UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

DEC 18 1998

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act, an environmental review has been performed on the following action.

TITLE:	Amendment 51 to the Fishery Management Plan for Groundfish of the Gulf of Alaska and Amendment 51 to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands
LOCATION:	Federal Waters of the Gulf of Alaska
SUMMARY:	Amendments 51 and 51 continue the catcher vessel operational area in the Bering Sea but exclude catcher vessels catching pollock for the offshore sector, allocate 100 percent of pollock in the Gulf of Alaska to the inshore component, allocate Gulf of Alaska Pacific cod as follows, 90 percent to the inshore component and 10 percent to the offshore component, and extend the allocations in the Gulf of Alaska for the period, January 1, 1999, through December 31, 2001.
RESPONSIBLE OFFICIAL:	Steven Pennoyer Administrator Alaska Region National Marine Fisheries Service P.O. Box 21668 Juneau, AK 99802 Phone: 907-586-7221

The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact, including the environmental assessment, is enclosed for your information. Also, please send one copy of your comment to me in Room 5805, PSP, U.S. Department of Commerce, Washington, D.C. 20230.

Sincerely,

Susan Fruchter

Susan Fruchter, Director
Director of the Office of Policy
and Strategic Planning

Enclosure

Final Environmental Assessment
Regulatory Impact Review
Initial Regulatory Flexibility Analysis

Amendments 51/51
(Inshore/Offshore 3)

Prepared by
Staff

North Pacific Fishery Management Council
National Marine Fisheries Service
Alaska Fishery Science Center

December 9, 1998

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List of Acronyms

Acronym	Definition
AAC	Alaska Administrative Code
ADF&G	Alaska Department of Fish & Game
AKR	NMFS Alaska Region
AP	Advisory Panel
APEC	Asia-Pacific Economic Cooperation
AYK	Angoon-Yukon-Kuskokwim
BANR	Blair-Atkinson News Report
BOD	Biochemical Oxygen Demand
BS/AI	Bering Sea/Aleutian Islands
CDQ	Community Development Quota
CMS	Centimeters
CP	Catcher Processor
CPUE	Catch Per Unit Effort
CRP	Comprehensive Rational Program
CV	Catcher Vessel
CVOA	Catcher Vessel Operating Area
DAH	Domestic Annual Harvest
DAP	Domestic Annual Processing
DCRA	Alaska Department of Community and Regional Affairs
DO	Dissolved Oxygen
DOR	Alaska Department of Revenue
EA	Environmental Assessment
EEZ	Exclusive Econmic Zone
EIMWT	Echo-Integration Midwater Trawl
EIS	Environmental Impact Statement
EIT	Echo-Integration Trawl
EO	Executive Order
ESA	Endangered Species Act
EU	European Union
FAO	Food and Agricultural Organization
FMP	Fishery Management Plan
FOB	Free on Board
FONSI	Finding of No Significant Impact
FR	Federal Register
FRFA	Final Regulatory Flexibility Analysis
FWS	US Fish and Wildlife Service
GHL	Guideline Harvest Level
GOA	Gulf of Alaska
IFQ	Individual Fishing Quota
I/O1	Inshore/Offshore 1
I/O2	Inshore/Offshore 2
I/O3	Inshore/Offshore 3
I/O4	Inshore/Offshore 4
IAI	Impact Assessment, Inc.
INPFC	International North Pacific Fisheries Commission
IR/IU	Improved Retention/ Improved Utilization
IQF	Individually Quick Frozen
IRFA	Initial Regulatory Flexibility Analysis
JV	Joint Venture
JVP	Joint Venture Processing
LLP	License Limitation Program
LOA	Length Overall
MMT	Million Metric Tons
MS	Mothership
MT or t	Metric Ton
NEPA	National Environmental Policy Act of 1996
NM	Nautical Miles
NMFS	National Marine Fisheries Service
NOAA GC	National Oceanic and Atmospheric Administration General Counsel
NPFMC	North Pacific Fishery Management Council
OFL	Over Fishing Level
PRR	Product Recovery Rate
PSC	Prohibited Species Bycatch
RFA	Regulatory Flexibility Analysis
SAFE	Stock Assessment Fishery Evaluation
SEIS	Supplemental Environmental Impact Statement
SIA	Social Impact Analysis
SSC	Scientific and Statistical Committee
TAC	Total Allowable Catch
TALFF	Total Allowable Level of Foreign Fishing
TMDL	Total Maximum Daily Load
WGOA	Western Gulf of Alaska
WPR	NMFS Weekly Production Reports

EXECUTIVE SUMMARY

Elements of the Council's Preferred Alternative

The North Pacific Fishery Management Council (Council) selected their preferred alternatives for the Gulf of Alaska (GOA) and the Bering Sea and Aleutian Islands (BS/AI) at the June Council meeting in Dutch Harbor. The current allocation in the GOA was rolled over for three more years. This means that 100% of the GOA pollock and 90% of the GOA Pacific cod will be allocated to the inshore sector. The offshore sector is allocated the remaining 10% of the GOA Pacific cod total allowable catch (TAC). This allocation will be in effect through December 31, 2001. If further action is not taken by the Council, the inshore/offshore allocation will expire before the 2002 fishing season.

The Council's preferred alternative in the BS/AI allocates 39% of the pollock TAC to the inshore sector and 61% to the offshore sector. The current allocation allocates 35% inshore and 65% offshore, so the preferred alternative shifts 4% of the BS/AI pollock TAC inshore. In addition to changing the basic allocation percentages, the Council also created a set-aside for catcher vessels <125' length over all (LOA) which may only be delivered to the inshore sector. The set-aside will consist of 2.5% of the combined BS/AI TAC (after CDQs are deducted), and will be harvested prior to the B-season, starting on or about August 25. The inshore B-season quota will be adjusted to account for any overage or underage resulting from that year's set-aside fishery. A change was also made to the catcher vessel operational area (CVOA). Under the Council's preferred alternative, all vessels in the offshore sector must operate outside the CVOA during the B-season. Currently, catcher processors are restricted from operating inside the CVOA during the B-season, while motherships are allowed to operate inside. The BS/AI allocation, like the allocation in the GOA, is scheduled to sunset after three years (December 31, 2001).

This section was provided to describe the elements of the Council's preferred alternatives. Impacts of these alternatives are presented in the appropriate chapters of this document.

Chapter 1

This Chapter of the document describes the management background and contains a summary of historical inshore/offshore issues, including previous Problem Statements and the results from the I/O1 and I/O2 analyses. The current Problem Statement and list of alternatives being considered are also contained in this chapter. Alternatives for the GOA are limited to (1) No Action - allow the allocations to expire, or (2) extend the existing allocations which are 100% of pollock and 90% of Pacific cod allocated to vessels delivering inshore. The time frame for the GOA extensions could be one to three years, or until replaced by other measures related to the comprehensive rationalization program (CRP).

BS/AI alternatives include (1) No Action - allow allocations to expire; (2) rollover of the existing allocations; (3) a range of possible reallocation alternatives among sectors; and, (4) a new alternative (added in April 1998) which makes direct allocations to smaller catcher vessels, without delivery requirements, combined with partial 'guarantees' for processor sector deliveries. Additional alternatives are being considered relative to the Catcher Vessel Operational Area (CVOA), relative to suballocations to vessel categories within the major sectors, and relative to a separate allocation for a "true" mothership category.

Chapter 2

This Chapter is devoted entirely to the GOA allocation alternatives and is essentially the only place in the document that the GOA alternatives are addressed. Background information on the GOA pollock and Pacific cod fisheries is provided, though the analysis is primarily qualitative in nature, reflecting the scope of alternatives (expiration or continuation of the existing allocations) and relatively straightforward decision facing the Council with regard to the GOA. This chapter assesses the GOA alternatives in a threshold manner; i.e., whether it can be shown that one alternative is superior to the other, in the context of the Council's Problem Statement, including the primary issues of industry stability and management considerations.

In terms of industry stability, the analysis illustrates the relatively small quotas of both Pacific cod and pollock in the GOA (compared to the BS/AI), the ability for these quotas to be harvested and processed by the resident GOA fishing fleet and GOA based processors, and the importance of that fishing and harvesting activity to the fishermen, processors, and communities within which they reside. Allowing the allocations to expire would potentially allow significant amounts of catcher/processor vessel capacity into the GOA fisheries, resulting in potentially dramatic re-apportionment of the harvest and processing activities for both pollock and Pacific cod. With these allocations in place for six years now, the harvest and processing industries have adapted to a relatively stable business planning environment. Alternative 2, extending and maintaining the current allocations, is necessary to maintain this balance in the GOA and is the only alternative which is consistent with the Council's Problem Statement for the GOA. Existing within-sector preemption issues (primarily with regard to western/central GOA pollock and Pacific cod harvest by catcher vessels) are being addressed by separate Council initiatives, including development of additional management alternatives by a Council appointed Committee of industry representatives.

Pollock fisheries in the GOA are apportioned on a quarterly (now trimester) basis, primarily to spread the fishery out temporally to address marine mammal concerns. The small quotas are difficult for NMFS to manage on an in-season basis and frequent quota overruns have occurred within these seasonal apportionments. Allowing additional, high-power fishing capacity in these fisheries would exacerbate management difficulties and defeat the recent progress made by the agency in managing the GOA pollock fisheries. Continuation of the current allocations appears to offer far greater benefits (relative to Alternative 1 - allowing the allocations to expire) in terms of management considerations and marine mammal considerations.

After reviewing the information in this section of the document, the Council selected the option that rolls over the current GOA allocations for three more years. This option was felt to provide the industry more stability than allowing the current allocation to expire.

<u>Chapter 3</u>

This Chapter, along with information in Appendix 1, contains the baseline information for the BS/AI pollock fisheries. Primarily this is 1996 information, the most recent year for which we have 'complete' data. Major findings include the following:

- Current TAC levels for BS/AI pollock (1.1 mmt) are expected through at least the year 2000 and are therefore assumed to be at that level for the purposes of this analysis. We have also assumed that 7.5% of the 1.1 mmt TAC will be allocated to CDQ fisheries.

- Season lengths have declined for both sectors under the existing allocations. During the A-season the offshore sector has markedly lower season lengths compared to the inshore sector, while B-season lengths are very similar for both sectors. From 1992 to 1997 the overall season length (A and B seasons combined) has declined from 159 days to 75 days for the inshore sector, and from 103 days to 56 days for the offshore sector, a relatively similar decline for both sectors.

- In terms of catch and production over time, the inshore sector's share of the total increased from 26% to 34% under the existing allocations, while their actual tonnage has remained virtually unchanged. The "true" mothership share has increased over time from 9% to around 11.5% (in 1997), while the actual tonnage was a slight decrease. The offshore sector share declined from about 67% in 1991 to about 56% in 1997, while the actual tonnage declined significantly, by about 35%. The Tables E.1 and E.2 below summarizes the catch and relative shares over time, including a further breakdown of the offshore sector for the "true" motherships and for that portion of the offshore sector which is from catcher vessel deliveries.

Table E.1 Harvest of Pollock in Pollock Target Fisheries (Includes CDQ)

Industry Sector	1991	1994	1996	1997
C/Ps Own Catch	1,005,803	733,018	582,208	556,272
C/V Deliveries to C/Ps	22,436	35,031	63,386	44,612
C/P Total	1,028,239	768,049	645,594	600,884
"True" Motherships	144,138	113,077	121,959	123,571
Inshore (Shoreplants)	375,570	375,602	324,846	296,421
Inshore (Motherships&C/Ps)	32,372	48,519	70,696	58,370
Inshore Total	407,942	424,121	395,542	354,791
Grand Total	1,580,319	1,305,247	1,163,095	1,079,246

Table E.2 Harvest of Pollock in Pollock Target Fisheries (Includes CDQ)

Industry Sector	1991	1994	1996	1997
Inshore (Shorebased plants)				
% of Inshore	92.06%	88.56%	82.13%	83.55%
% of Total	23.77%	28.78%	27.93%	27.47%
Inshore (Motherships&C/P)				
% of Inshore	7.94%	11.44%	17.87%	16.45%
% of Total	2.05%	3.72%	6.08%	5.41%
Inshore Total	25.81%	32.49%	34.01%	32.87%
"True" Motherships				
% Offshore	12.29%	12.83%	15.89%	17.06%
% Total	9.12%	8.66%	10.49%	11.45%
Offshore C/Ps (All Processing)				
% Offshore	87.71%	87.17%	84.11%	82.94%
% Total	65.07%	58.84%	55.51%	55.68%
C/V Deliveries to Offshore C/Ps				
% of CP	2.18%	4.56%	9.82%	7.42%
% of Offshore	1.91%	3.98%	8.26%	6.16%
% of total	1.42%	2.68%	5.45%	4.13%
Offshore Total (C/Ps & True MS)	74.19%	67.51%	65.99%	67.13%

- Regarding the distribution of catch among catcher vessels, relative share for small catcher vessels (<125') overall has declined over time, from about 65% in 1991 to about 42% in 1996 - the number of catcher vessels in this 'small' category has increased from 71 in 1991 to 89 in 1996. Vessels from 125'-155' have increased in numbers over time (from 6 in 1991 to 20 in 1996) and catch share (from 14% in 1991 to 37% in 1996). Numbers (7 in 1991, 10 in 1994, 9 in 1996) and catch share (less than 20%)for the largest category of catcher vessels (>155') have remained fairly constant over this same period.

- For both inshore and offshore sectors, approximately 96% of the total pollock catch is taken in pollock target fisheries. In terms of pelagic vs bottom trawl mode (in target pollock fisheries), the inshore sector takes about 97% in pelagic mode, and the offshore sector takes about 91% in pelagic mode.

- NMFS published product recovery rates (PRRs) are currently utilized as part of the blend data in estimating overall catch for the offshore sector. PRRs were used for catch estimation for the inshore sector prior to 1992 (scale weights are now used). Catch estimation procedures are therefore different for the two sectors, but represent the best available information and are what is used to manage TAC attainment in the fisheries.

- Overall utilization rates, across all product forms, are calculated to indicate the amount of product derived from raw fish input. Utilization rates have changed over time, with improvement in both sectors, though the inshore sector utilization rates have improved more dramatically, from 23% in 1991 to 33% in 1996, while the offshore overall rate has gone from about 17% in 1991 to near 21% in 1996.

- Discard rates of pollock in pollock target fisheries are very low for all sectors - approximately 2.5% for offshore operations and around 1% for inshore and "true" mothership operations (1996 data). Future economic discards of pollock are assumed to be zero due to provisions of the IR/IU program. Continued regulatory discarding may occur, but is not quantifiable without further experience under the IR/IU program, but is expected to be minimal overall.

- Prices used in the analysis are as follows:

  The ex-vessel price for pollock delivered to inshore processors is $0.085/lb, and was derived from the 1996 COAR data. The offshore price used in this analysis is $0.0744/lb, and is set equal to 87.5% of the inshore price.

  First wholesale prices for both the inshore and offshore sectors were derived from 1996 COAR data, except for the offshore mince price. Only one offshore processor reported a mince price in the 1996 COAR, and confidentiality standards do not allow that price to be reported. In that one case, data supplied by the At-sea Processors Association was used in the analysis.

- Because the offshore sector was not well represented in the COAR data, the At-sea Processor's Association provided data on 14 of their vessels to verify the offshore component of the COAR report. The results of that comparison showed that prices were almost identical in both the COAR and APA data. The COAR prices are reported in Table E.3.

Table E.3 First Wholesale Prices Reported by Alaska Processors

	Fillets&Blocks Skinless-Boneless &DeepSkin	Fillets&Blocks Skinless-Boneless	Fillets&Blocks DeepSkin	Roe	Surimi	Meal	Minced[1]
Inshore	$/lb	$/lb	$/lb	$/lb	$/lb	$/lb	$/lb
1991	1.38			3.79	1.26	0.26	
1994		0.71	1.11	3.65	0.91	0.22	
1996		0.96	1.24	4.52	0.82	0.30	0.52
Offshore							
1991	1.38			4.66	1.58	0.25	
1994		0.71	1.11	5.79	0.94	0.22	
1996		0.96	1.24	6.03	0.86	0.29	0.42[1]

Source: 1991, 1994, and 1996 COAR data.

Note: To protect the confidentiality of processors, fillet prices are based on combined inshore and offshore data.

Minced prices for 1991 and 1994 were not estimated.

[1] / The 1996 Offshore Minced price was provided by the At-sea Processors Association (APA) as only one At-sea company reported minced prices to ADF&G in the COAR. If APA and ADF&G data were combined the 1996 Offshore minced price would be $0.45.

- Product mix is assumed throughout the analysis to remain proportional to the 1996 information. In summary, this is shown below, for major product forms, by sector:

Table E.4 Pollock Products Processed During 1996 (mt)

Inshore/Offshore Class	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Catcher Processor Total	57,938	7,851	6,035	25,214	12,312	344	7,346
Inshore Total[1]	71,349	2,626	9,229	7,442	27,864	8,514	4,417
"True" Mothership Total	21,992	-	-	-	5,016	353	1,075
Grand Total	151,279	10,478	15,263	32,657	45,192	9,211	12,838

[1] / The Shoreside total includes CDQ production. The other sectors do not include CDQ in this summary table.

- Regarding foreign ownership of pollock harvesting and processing operations, the inshore processing sector and the "true" mothership processing sectors exhibit a significant degree of non-U.S. ownership (primarily Japanese). Four of the six principle shorebased processors were affiliated with Japanese parent companies. The two other plants operating inshore were owned by the same US company. The two inshore motherships were both US owned. One of the three "true" motherships was US owned. The offshore catcher/processor fleet exhibits significant degrees of non-U.S. ownership (primarily Norwegian) though that also varies across companies and vessels. Overall, 20 catcher processors appear to have some foreign ownership, while the remaining 17 are fully US owned. The catcher vessel fleet is a mixed bag with 14 catcher vessels delivering inshore having some foreign ownership, and eight catcher vessels delivering to offshore processors having some foreign ownership.

- Employment information is contained in Appendix I, Tab 6 - an attempt was made to provide comparable information for both inshore and offshore sectors regarding total employment and relative degree of Alaskan employment. The information is not specific to pollock fishing/processing activities, though the information provided for the at-sea sector is only from member companies of the At-sea Processor's Association (APA), which are primarily pollock-intensive operations. While care should be taken in making direct comparisons of this information, it does illustrate an overall low level of Alaskan employment by both sectors - around 14% Alaskan residents for the inshore sector (overall) and around 8% for the offshore sector (APA companies).

- Overall bycatch of PSC species (by rate and by total volume) is quite low in the pollock fisheries, with the exception of salmon and herring, for all sectors involved. The 1996 fishery information illustrates the trade-offs associated with PSC bycatch when comparing the sectors. The catcher processor fleet, in general, had higher bycatch of halibut, herring, and crab species, while the inshore and "true" mothership sectors showed higher bycatch of chinook salmon. Looking at 'other' salmon specifically, the "true" mothership sector, takes 'other' salmon (primarily chum) at a higher rate than any other processing sector. While these trade-offs are reflected across the alternatives being considered, none of the alternatives is expected to significantly change the overall bycatch (by rate or volume) across PSC species.

- Regarding vessels which participated in BS/AI pollock target fisheries anytime between 1992 and 1996, and which also participated (checked in or out) in Russian water fisheries, the information shows that 22 such vessels fished in Russia in 1992, only one did so in 1993 and one again in 1994, three in 1995, and five in 1996. All of these vessels were catcher/processors when they fished the BS/AI pollock fisheries.

- Regarding state and local fish tax payments, both the inshore and offshore sectors pay such taxes. Some 'leakage' occurs where deliveries are landed outside Alaska, or transhipped overseas, and the tax is not applied. Primarily this leakage has occurred with the offshore catch landings tax ("true" motherships included in this sector), and has run at about 16 to 18% of the offshore total catch (1996 and 1995 respectively).

Chapter 4

This Chapter contains the projections for the major allocation alternatives, including the expected amounts of each product (assuming proportions realized in the 1996 fisheries) under each primary allocations alternative and the gross revenue changes associated with each primary alternative (recognizing that the Council may choose any percentage within the ranges specifically analyzed).

Table E.5 reports the relationship between a 50,875 mt change in each sector's allocation (5% of the 1,017,500 mt CDQ-adjusted TAC) and the change in total gross revenue (both ex-vessel and first wholesale) and the products produced within the sector. All of the information reported in Table E.5 represents the change from the status quo allocation. Because the calculations are linear, the effects of other allocation amounts may be calculated easily using the information in the table. For example, an allocation that would grant a sector 7.5% more of the TAC would increase their revenues and products by 1.5 times those listed in Table E.5.

Table E.5 Changes resulting from a 5% shift in the BS/AI Pollock TAC within each industry sector

	Inshore	"True" Mothership	Catcher Processor
% Change Within the Sector[1]	14.3 %	50.0 %	9.1 %
Raw Fish (mt)	50,875	50,875	50,875
Cat. Ves. Gross Rev. (ex-ves, $ millions)[2]	$ 9.5	$ 8.3	$ 0.8
Gross Revenue (1st Wholesale, $ millions)	$ 30.1	$ 26.8	$ 27.1
Surimi (mt)	9,179	9,910	5,149
Minced (mt)	338	-	698
Fillet/Block and IQF (mt)	1,187	-	536
Deep Skin Fillet (mt)	957	-	2,241
Meal (mt)	3,585	2,260	1,094
Oil (mt)	1,095	159	31
Roe (mt)	568	484	653

1/ The percentage change within a sector is calculated as (((status quo tons + 50,875)/(status quo tons))- 1)*100. So, it represents the percentage increase that sector will receive.

2/ Only the catch delivered by catcher vessels is included for catcher processors.

Note: A 5% TAC decrease to a sector will result in numbers of equal magnitude, but with a negative sign

Also included are more qualitative assessments of various sub-options being considered. These include: (1) potential separation of "true" motherships with their own allocation; (2) sub-allocation of the inshore quota to small (<125') catcher vessels; (3) sub-allocation of the offshore quota to catcher vessels delivering offshore; and, (4) options for the duration of the allocation (sunset alternatives).

In 1996, deliveries to the three "true" motherships accounted for about 10% of the BS/AI pollock catch. The Council is considering allocating 5-15% of the BS/AI TAC to this sector. There is still some question regarding who is classified as a "true" mothership. Under the strictest interpretation only about six vessels could be classified as "true" motherships, and this raises limited entry questions.

An allocation of 40-65% of the inshore quota is being considered for catcher vessels less than 125'. This roughly covers the range that subsector has taken over time (it has decreased to about 40% currently). This suboption could not be implemented in 1999. NMFS current catch accounting system will need to be modified before this allocation could be monitored. This does not mean the Council cannot consider this option, but actual implementation would be delayed beyond the January 1, 1999 start of I/O3.

A set aside of 9-15% of the offshore quota is also being considered by the Council. In 1996, catcher vessels delivered about 10% of the pollock catcher processors processed (down to 7.4% in 1997). So, the low range of the allocation represents the catcher vessels largest historical percentage of pollock processed by offshore catcher processors. This allocation could be monitored in 1999 as long as there were no catcher vessel length restrictions associated with this allocation.

The Council may choose to keep I/O3 in effect until replaced by CRP. However, there is still a question of what is meant by CRP. The Council is also considering two potentially shorter allocations. A sunset date one year after implementation of I/O3 would require the Council to immediately begin analysis of I/O4. One additional year would likely not provide enough time to collect the necessary data and do a formal cost/benefit analysis. It would also create an unstable planning environment for the fleet. The three year sunset would likely resolve most of the problems associated with a one year allocation.

A new option was added to the Inshore/offshore suite of alternatives call the "Harvester's Choice". This allocation would create a set-aside for catcher vessels less than 125' LOA (a second option would include catcher vessels 155' LOA or shorter in the set-aside). The set-aside would be created using 40-65% of the inshore quota, 9-15% of the offshore (catcher processor) quota, and 100% of the "true" mothership quota. Once the quota is placed in the set-aside, the catcher vessels would be allowed to deliver their catch (from the set-aside) to any processing sector. This will result in less pollock being guaranteed to each processing sector. However, depending on their success in purchasing pollock from the set-aside, they may be able to process more BS/AI than they would have received under the initial allocation.

Including catcher vessels from 125' through 155' in the set-aside will likely reduce the benefits of this option for catcher vessels less than 125' LOA. Catcher vessels less than 125' LOA have had their share of the inshore quota reduced from 65% in 1991 to 42% in 1996. All of that reduction was the result of increased harvest in the 125' through 155' catcher vessel class. Catcher vessels greater than 155' harvested 19% of the inshore quota in 1991 and 1996.

According to NMFS the "Harvester's Choice" option could not be implemented in 1999. However, the Council may select this option with the understanding that NMFS would implement the set-aside when their in-season catch accounting system was changed to track catch at the harvest vessel level.

After considering all of their options the Council selected a preferred alternative for the BS/AI which will move an additional 4% of the TAC inshore, changing the allocation split to 39% inshore and 61% offshore. In addition to changing the allocation percentages, the Council also voted to restrict the entire offshore sector from operating inside the CVOA during the pollock B-season. They also created a set-aside of 2.5% of the total BS/AI TAC (after CDQs are deducted) to be fished only by catcher vessels less than 125' LOA delivering to inshore processors. The set-aside fishery will take place on or about August 25. Any overages or underage resulting from the set-aside fishery will be subtracted/added to the inshore open access B-season fishery. The Council's new program is scheduled to remain in place only for the 1999, 2000, and 2001 fishing years and then sunset. A new Council action will be required to keep an inshore/offshore type allocation in place after 2001.

Table E.6 provides a summary of the projected changes under the Council's preferred alternative. Projections are based on a TAC of 1,017,500 mt, after CDQs are deducted from the quota. Processing in the inshore sector is assumed to increase by 40,700 mt, while processing in the offshore sector is expected to decline by the same amount.

Given constant product mixes and prices, exvessel revenue is expected to increase by $5.1 million and first wholesale revenue is expected to increase by $2.4 million. Only catcher vessel revenues are included in the exvessel calculation. Because less fish is harvested by catcher processors under the Council's preferred alternative, increases in exvessel revenues are expected. Greater catcher vessel harvests may also make the exvessel revenue increase seem larger than expected. The change in first wholesale revenues represents less than 0.5% of the total, and if the uncertainty around the estimate was considered, the change may not be significantly different than zero.

Changes in product mix are also included in this Table. They show that surimi, fillet, and meal production is expected to increase, while deep skin fillet, mince, and roe production decreases.

Table E.6 Changes resulting from a 4% BS/AI pollock TAC increase to the inshore sector

	Inshore	Offshore	Total
% Change Within the Sector	11.4 %	(6.2 %)	-
Raw Fish (mt)	40,700	(40,700)	-
Catcher Vessel Gr. Rev. (ex-vessel)1	$ 7.6	($ 2.5)	$ 5.1
Gross Revenue (1st Wholesale)	$ 24.1	($ 21.7)	$ 2.4
Surimi (mt)	7,343	(4,595)	2,748
Minced (mt)	270	(488)	(218)
Fillet/Block and IQF (mt)	950	(375)	574
Deep Skin Fillet (mt)	766	(1,569)	(803)
Meal (mt)	2,868	(992)	1,876
Oil (mt)	876	(37)	839
Roe (mt)	455	(505)	(51)

1/Only the catch delivered by catcher vessels is included for catcher processors

2/The sector's allocation was calculated using the following formula:
Allocation = (allocation percentage * 1,100,000mt * 0.925)

3/The status quo was assumed that catcher processors process 55%, "true" motherships 10%, and Inshore 35%

4/Use caution when comparing gross revenues across sectors, because they are dependent upon utilization rates and wholesale prices which were derived differently.

Chapter 5

This Chapter is devoted entirely to the CVOA options and includes historical fishing patterns relative to the CVOA and projections of CVOA fishing patterns under the alternatives. Major findings include:

- Pollock tend to be larger and have less size variation inside the CVOA.
- CPUE tends to be higher outside the CVOA.
- Increased pollock allocations to the offshore sector leads to less pollock catch in the CVOA relative to the status quo;
- During the A-season, excluding the offshore sectors (CVOA alternative 1), and offshore and "true" mothership sectors (CVOA alternative 2) from the CVOA yields *reductions* in A-season CVOA pollock catches. Total CVOA catch is also reduced in every case except when only catcher processors are excluded under Alternative 3(D). In all the other options, the projections indicate that catch inside the CVOA is reduced 15-57%;
- During the A-season, no combination of allocation alternative or CVOA alternative leads to *increases* in A-season CVOA pollock catch greater than 6%. Therefore, even under the no CVOA option catch is projected to increase only slightly during the A-season;
- Predicting B-season removals from the CVOA under the No CVOA alternative is highly speculative regardless of the allocation alternative, and depend considerably on how the offshore fleet is distributed.

- In the B-season and for CVOA alternatives 1, 2, and status quo, *reductions* in CVOA pollock catches are predicted for those sector allocation alternatives that *increase* the offshore sector's allocation (except for the combination of sector alternative 3(C) and CVOA alternative 2);

Alternatives which require sectors to operate outside the CVOA during the A-season appear to have greater impacts during years when the ice edge is further south. In 1991 and 1994 the ice edge was about 200 nautical miles further south that during 1996. Those years almost all of the catcher processor's and catcher vessel's catch came from inside the CVOA. In 1996 the catch distribution was much closer to a 50/50 spilt inside and outside the CVOA. Forcing vessels to fish closer to the ice edge may also cause safety concerns.

The Council's preferred alternative allocates more pollock to the inshore sector, but then reduces the removals of pollock which may be taken from the CVOA by allowing only the inshore sector to operate inside the CVOA during the B-season. The Council opted to restrict "true" motherships from operating in the CVOA to create a more equitable offshore fishery. "True" motherships had increased their share of the offshore quota over time, so this was viewed as a way to help balance the offshore sector. The issue of marine mammals in general, and Stellar sea lions in particular, was considered a larger problem that should be dealt with outside of the inshore/offshore allocation. A paper will be prepared by NMFS over the summer and fall, in conjunction with the Stellar sea lion recovery team, to look at the needs of Stellar sea lions in a comprehensive fashion.

Chapter 6

This is the Environmental Assessment (EA) and is primarily focused on marine mammal issues as they relate to the CVOA. Also included is a discussion of EPA considerations as they relate to the issue of air and water quality and processing discharges. Just prior to the April 1998 meeting, the NMFS issued guidance to the Council regarding pollock removals from the CVOA, which overlaps with critical habitat area for Steller sea lions. The gist of the NMFS guidance was that, whatever alternatives and options were selected by the Council, those should not result in a *proportional* increase in pollock removals from the CVOA. This draft of the analysis provides additional discussion regarding the definition of proportional (what is the baseline from which we would measure the relative change), and examines the possible combinations of alternatives and suboptions which would comply with this guidance. For example, basic allocation alternatives which might increase proportional CVOA removals can be offset by options which specifically limit harvests from the CVOA by sector and/or season. Additional general information on Steller sea lions, such as life history and feeding habits, is also included in Chapter 6.

The Council's preferred alternative will not result in a proportional increase in pollock removals from the CVOA. Increasing the inshore allocation was more than offset by restricting the entire offshore sector from operating inside the CVOA during the pollock B-season.

Chapter 7

This Chapter contains a summary of economic implications of the alternatives, including E.O. 12866 considerations, and addresses other issues raised by the Council.

- Net benefit impacts are not quantifiable given the lack of cost data and other information. Gross revenue projections indicate very little change in overall gross revenues from the fisheries, under any of the alternatives. Impacts are expected to be primarily distributional in nature, with impacts to industry sectors being proportional to the allocation changes considered. With such small changes in gross revenues overall, net impacts to the Nation from any of the alternatives will not likely be significant under the provisions of E.O. 12866, which specify a $100 (net) million annual effect on the economy as the trigger for a 'significant' action.

- Utilization rates, as previously summarized, have changed over time, with the inshore sector exhibiting a much higher overall utilization rate (and improvement over time) than the offshore sector. During I/O1, underlying (assumed) PRRs were a significant and contentious factor in the analyses, and were factored into the analyses to arrive at overall net impact projections. The I/O2 analyses did not attempt to quantify net benefits, but did examine several primary parameters of the fisheries, including overall utilization rates (not to be confused with assumed PRRs). Based largely on improved utilization rates by the inshore sector from 1991 to 1994, the analysis for I/O2 projected that the original net loss estimates associated with the allocations were likely overstated.

- For the current analysis (I/O3), overall utilization rates are factored into the projections for product and gross revenues for each of the alternatives. The higher utilization rates for the inshore sector equate to a higher gross revenue per ton of raw fish for that sector, when compared to the offshore sector, and therefore results in slightly higher overall gross revenues from the fishery for alternatives which allocate more pollock inshore. However, these projections do not take into account relative production costs between the sectors. Higher utilization rates alone do not necessarily equate to 'highest value' from the fisheries. NOAA GC advice on this issue is that, while the Magnuson-Stevens Act does not dictate management measures based on achievement of higher product utilization rates, the Council may well consider this as a criterion in its decision process.

- Regarding excessive shares/capital concentration issues, there is little in the way of analysis directly focused on this issue. Relative share of the harvest and processing of pollock, by individual firms or vessels, cannot be published, though information of this nature is available in industry publications, has been referenced in public testimony before the Council, or is generally known. NOAA GC advice is that, because the inshore/offshore alternatives do not allocate fishing privileges to individual fishermen (or entities), and the alternatives do not directly result in acquisition of shares, National Standard 4 does not apply in the context of addressing a particular company's share of pollock harvest/processing (though Standard 4 does apply generally). Additional discussion of excessive share issues as they relate to the National Standards is contained in Chapter 7.

- Regarding progress toward overall Comprehensive Rationalization Planning (CRP), the place of I/O3 depends on the ultimate CRP goal - if it is some type of IFQ program then the allocations will likely serve to establish the 'playing field' for those allocations, at least among sectors, regardless of the specific percentages chosen. With an IFQ program at least 4 to 5 years away, due to the Congressional moratorium, continuation of the allocations would appear to constitute a critical 'holding place' for the fisheries. If an IFQ program is not the eventual goal, then the allocations are perhaps even more critical to defining the fishery. Regardless of the ultimate CRP solution, it would appear that continuation of the allocations (without prejudice to the percentages), is critical to orderly prosecution of the fisheries and a stable management environment.

- Regarding potential implications of the American Fisheries Act (currently proposed in Congress), enactment of this Act would result in a significant potential reduction in offshore sector capacity. As many as 15 vessels could be immediately impacted, with those vessels accounting for 32% of the total offshore catch in 1996 (21% of the overall pollock total in 1996).

Chapter 8

Chapter 8 contains discussions of consistency with other applicable laws, including: Magnuson Act, National Standards, and the Regulatory Flexibility Act. These assessments focus on the Council's preferred alternative.

- The Council's preferred alternative appears to be consistent with the National Standards, based on the information available. For example, community stability and sustained participation (National Standard 8) is dependent, in many cases, on continued participation by all major industry sectors, both offshore and inshore. The Council's preferred alternative changed the basic allocation percentages, but should allow continued participation by all sectors.

- Section 303(a)(9) of the Act requires consideration of potential impacts to participants in the fisheries, and to other (adjacent) fisheries. Chapters 4 and 5, and other sections of this document address impacts to participants in the pollock fisheries. Chapter 8 contains information regarding potential impacts to other fisheries ('spillover effects'). While this information does not allow for conclusive statements regarding the likelihood or magnitude of such spillover effects, it is intended to assist the Council and other reviewers by providing background information relative to this issue.

  Included in that Chapter is the following: (1) information on the operational capacity and capability of vessels/processors operating in the pollock fisheries; (2) patterns of entry and exit in the pollock fisheries over time; (3) profiles of vessel/processor activity in alternative fisheries over time; (4) detailed information on the 1997 fishing activities by vessels/processors involved in pollock fisheries; (5) value estimates for other species (intended to provide insights on 'replacement' potential of other species for lost pollock opportunities); and, (6) discussion of the potential for spillover and possible mitigating measures. The analysis recognizes the potential for lost pollock opportunities to be replaced, to some extent, by alternative fisheries such as yellowfin sole and Atka mackerel, which are primary targets of the H&G factory trawl fleet. Mitigating measures could include additional stand-down provisions to reduce the potential incursion into these fisheries by 'pollock' vessels. Stand-down measures could probably be implemented, if desired, in time for the 1999 fisheries. Species endorsements in the Council's LLP are another measure that could potentially address this issue, though that proposal has previously been discussed and rejected by the Council.

- Section 303(b)(6) requires certain specific analysis when considering limited entry programs. The creation of a "true" mothership category, limited only to those operations which "have processed, but never caught" pollock in the BS/AI, would have created a limited entry program (the three existing "true" motherships and four others would appear to be the only eligible operations). However the Council's preferred alternative does not separate the offshore sector into catcher processor and "true" mothership categories. So, the additional analysis that would have been needed to fulfill requirements under 303(b)6 are not a necessary.

- The Regulatory Flexibility Act (RFA) requires analysis of impacts on small entities, and determination of whether management actions would 'significantly impact a substantial number of small entities'. Significance can be triggered by a reduction in revenues of more than 5%; a substantial number is defined as more than 20% of the affected universe of small entities. A discussion of the proposed GOA action relative to the IRFA is contained under section 2.4.3, and it concludes that no significant impacts are expected. However, because the action for the GOA and the BSAI will be contained in a single rulemaking, the IRFA findings must be considered in a collective fashion. It appears that 63 BS/AI pollock catcher vessels, 6 CDQ groups, and 60 government jurisdictions would be considered small entities for RFA purposes, based on existing interpretations of the Regulatory Flexibility Act. Of the 63 catcher vessels that are considered small entities (out of 119 total), 38 vessels are < 125' LOA and deliver inshore at least part of the year. These vessels would be able to participate in the small catcher vessel set-aside and should benefit under the Council's preferred alternative. Twenty-one offshore catcher vessels may also find markets and be able to deliver inshore during the set-aside fishery, but these vessels may need to leave that fishery before it closes in order to be outside of the CVOA at the start of the B-season. The impacts on small organizations and small government jurisdictions are discussed in appendices II and III. Overall it appears that the proposed action with respect to the BSAI may result in significant impacts as defined under the RFA. Therefore, the combined actions with respect to the GOA and the BSAI may result in significant impacts based on this IRFA. NMFS will complete the FRFA (final analysis) after the public comment period on the proposed rule and IRFA.

1.0 INTRODUCTION AND MANAGEMENT BACKGROUND

Inshore/offshore (I/O) allocations of the pollock TAC were originally established under Amendments 18/23 to the Bering Sea/Aleutian Island and Gulf of Alaska Fishery Management Plans, respectively.[1] The allocations were continued by the Council in Amendments 38/40 to the respective FMPs. Both the original amendments and the continuation contained "sunset" provisions, requiring the Council to reexamine the allocations, or see them expire. The current I/O management program will sunset December 31, 1998, without further Council action.

In June 1997 the Council requested information, in the form of pollock industry profiles, which enabled them to examine the evolution of, and current status of, the BS/AI pollock fisheries from 1991 through 1996. These profiles are included as Appendix I to this document. Based on its examination of those profiles, and other input received through public comment and Council discussion, the Council, at its September 1997 meeting, adopted a Problem Statement (with an associated set of alternatives) to examine the inshore/offshore pollock allocation, within "current" biological, economic, social, and regulatory contexts. This proposal is referred to as *Inshore/offshore Three* (I/O3).

The Council proposed that an analysis be undertaken to examine I/O3 alternatives which include continuation of the existing sector-share allocations and, in the case of the BS/AI management area, a series of changes in allocation shares and sector definitions, as well as possible changes in 'reserved-area' boundaries and access (i.e., management of the CVOA). In response, the Council staff has initiated development of an EA/RIR/RFA, to assist the Council in its deliberations and to permit the Council to take action on I/O3, prior to its scheduled sunset, if deemed appropriate.

1.1 Purpose and Need for Action

As noted above, in September 1997 the Council developed the following Problem Statement relative to the inshore/offshore pollock allocation issue:

<u>GOA Problem Statement</u>:

Allowing the current Gulf of Alaska Inshore/offshore allocative regime to expire December 31, 1998, would allow the same preemption of resident fleets by factory trawlers in the pollock and Pacific cod fisheries which occurred in 1989. It was this dramatic preemption which triggered the original proposal for an inshore/offshore allocation. In 1989, there was still pollock available in the Bering Sea when the preemption occurred when vessels moved into the Gulf to take advantage of fish with high roe content.

A rollover of the current Gulf of Alaska inshore/offshore program which allocates 100% of the pollock and 90% of the Pacific cod to inshore operations is a proactive action to prevent the reoccurrence of the original problem.

<u>BS/AI Problem Statement</u>:

The current inshore/offshore allocation expires at the end of 1998. The Council thus faces an inevitable allocation decision regarding the best use of the pollock resource. Many of the issues that originally prompted the Council to adopt an inshore/offshore allocation (e.g., concerns for preemption, coastal community dependency, and stability), resurface with the specter of expiration of the current allocation.

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[1] In the GOA, the Pacific cod TAC was also apportioned between 'inshore' and 'offshore' sectors under the I/O amendment.

The current allocation was made on the basis of several critical assumptions including utilization rates, foreign ownership, the balance between social gains and assumed economic losses to the nation, and the nature of progress on the Council's Comprehensive Rationalization Program (CRP) initiative. Many of these assumptions have not been revisited since approval of the original amendment. It is not clear that these assumptions hold or that the Council and the nation are well-served by continuing to manage the pollock fishery without a reexamination of allocation options. The Magnuson-Stevens Act presents the Council with a new source of guidance to evaluate national benefits. In the context of Council deliberations over Inshore/offshore 3, this includes enhanced statutory emphasis on increased utilization, reduction of waste, and fishing communities.

There have also been substantial changes in the structure and characteristics of the affected industry sectors including number of operations, comparative utilization rates, and outmigration and concentration of capital. These changes are associated with several issues, including: optimization of food production resulting from wide differences in pollock utilization; shares of pollock harvesting and processing; discards of usable pollock protein, reliance on pollock by fishing communities; and decreases in the total allowable catch of pollock. In addition, changes in fishing patterns could lead to local depletion of pollock stocks or other behavioral impacts to stocks which may negatively impact Steller sea lions and other ecosystem components dependent upon stock availability during critical seasons.

Therefore, the problem facing the Council is to identify what allocation would best serve to ensure compliance with the new Act and address the issues identified above.

1.2 Alternatives Being Considered

<u>Alternative 1</u>: No action.

<u>Alternative 2</u>: Rollover existing inshore/offshore program, including:
GOA pollock (100% inshore) and Pacific cod (90% inshore) allocations
BS/AI pollock (35% inshore, 65% offshore) allocation
suboption a: 1-year rollover
suboption b: 3-year rollover

<u>Alternative 3</u>: Allocation range **(BS/AI only)** of following percentages:

Option:	A	B	C	D
Inshore sector	25	30	40	45
"True" Motherships	05	10	10	15
Offshore sector	70	60	50	40

Staff intends to look at these ranges as four separate allocation alternatives. However, it is the Council's intent that these be considered as bounds for the allocation, and that the Council may select any allocation that falls within the bounds of the study, including the existing 65/35. Therefore, the Council may select as its preferred alternative any allocation that issues the Inshore sector 25-45%, "True" Motherships 5-15%, and the Offshore sector 40-70% of the BS/AI pollock quota. The Council wants to emphasize to the public that this wide range of allocations is for analysis and does not necessarily signal that the Council will choose such a wide divergence from status quo when the final decision is made next June.

Option: Establish a reserve set aside for catcher vessels less than 125 feet. The range considered for this set aside is 40-65% of the inshore and "true" mothership sector quotas. This range is based on the percentage of harvest that these smaller catcher vessels accounted for between 1991 and 1996.

Allocations would be analyzed such that the "true" motherships (which could operate in the BS/AI only) would be looked at as a sub-component of either the inshore or offshore component or as a separate component.

Option: Nine to 15% of the offshore quota shall be reserved for catcher vessels delivering to catcher processors. This is in addition to the allocation that catcher vessels may receive under the "true" motherships and inshore sectors.

Alternative 4: "Harvester's Choice" for Catcher Vessels Less Than 125' LOA.

Establish a set-aside for catcher vessels less than 125' LOA. The set-aside would be based upon a combination of:

- 40 to 60% of the inshore quota, plus
- 9-15% of the offshore (catcher processor) quota, plus
- 100% of the "true" mothership sector quota.

This alternative would use the main allocation percentages and small vessel set-aside sub-options, considered under Alternative 3, to determine the amount of pollock allocated to small catcher vessels (<125' LOA). Once their allocation percentage is determined, each of the small catcher vessels would be allowed to develop markets and deliver their pollock to the inshore, "true" mothership, or catcher processor sectors. Larger catcher vessels would only be allowed to sell their allocation to the inshore sector. Catcher processors would still be allowed to harvest some or all of the catcher processor quota depending on the option selected.

Under the Status Quo allocation percentages, this options reduces the pollock guaranteed to all of the processing sectors. However, any processing sector could increase the amount of pollock they process if they are relatively more successful in developing contracts with small catcher vessels.

Alternative 5: "Harvester's Choice" for Catcher Vessels 155' LOA and Shorter.

This alternative is the same as Alternative 4 except that the set-aside also includes catcher vessels from 125' through 155' LOA.

The definitions provided by staff for the Inshore, Offshore, Catcher Vessel, and "True" Mothership sectors will be used in this analysis. These same definitions were used in the sector profiles developed for the Council, and presented at the September meeting. Those breakdowns include:

Alternative 6: The Council's Preferred Alternative.

Thirty-nine percent of the BS/AI pollock would be allocated inshore and 61% offshore, after CDQs are deducted from the BS/AI TAC. No separate allocation to "true" motherships was included in this alternative. Instead, the "true" motherships will remain within the offshore sector.

In addition to the basic allocation split, the Council created a set-aside for BS/AI catcher vessels less than 125' LOA delivering to processors in the inshore sector. These small catcher vessels were allocated 2.5% of the combined BS/AI pollock TAC (adjusted for the 7.5% CDQ). Harvest of the set-aside will take place before the Bering Sea pollock B-season (there is no Aleutian Island B-season), starting on or about August 25. Any overages or underages resulting from the set-aside fishery will be subtracted from/added to the inshore BS open access B-season quota.

The rules and regulations pertaining to the CVOA will remain the same as under I/O2, except that during the B-season, harvesting operations allowed inside the CVOA will be restricted to catcher vessels delivering to the inshore sector. Under the current regulations, catcher vessels delivering to any sector are allowed to operate inside the CVOA during both the A and B-seasons. The new regulations will restrict catcher vessels delivering to offshore processors (including "true" motherships) from operating inside the CVOA during the pollock B-season. Catcher processors will continue to be restricted from harvesting pollock inside the CVOA during the B-season.

A three year sunset date is also included in the Council's preferred alternative. Therefore, I/O3 will remain in effect only for the 1999, 2000, and 2001 pollock fishing seasons, if the Secretary implements this program.

Catcher Vessels:
- < 125' Length Overall (LOA)
- 125' through 155' LOA
- > 155' LOA

Inshore Processors:
- Surimi Capability
- No Surimi Capability

Catcher Processors:
- Surimi Capability
- No Surimi Capability

"True" Motherships:
A vessel that has processed, but never caught, pollock in a "pollock target" fishery in the BS/AI EEZ.

Also included as options under Alternative 2 and Alternative 3:

1. Catcher vessel operational area (CVOA) Issues:
   a. Keep the CVOA as currently defined.
   b. Restrict catcher/processors from operation in the CVOA during both the A & B season with an examination of allowing "true" motherships to operate in the CVOA exclusively as well as excluding them from CVOA.
   c. Restrict larger catcher vessels (>155' or >125') fishing in CVOA (added in April 1998)
   d. Repeal the CVOA.

2. Sunset Issues:
   a. No sunset date, but intended to serve as an interim measure until the Comprehensive Rationalization Program has been completed.
   b. 3-year sunset.

3. The analysis identifies and examines potential conservation impacts on fish stocks, marine mammals and other marine resources that may result from status quo, or any changes in the structure of the fishery as well as other recommendations made by the SSC in their June 1997 meeting.

1.3 Summary of Previous Analyses

The purpose of this section is to provide the reviewer with additional background on the evolution of the inshore/offshore pollock allocations. Drawn from previous analyses, the following section summarizes the context and results of the analyses for the original inshore/offshore program (Amendments 18/23) and the second iteration (Amendments 38/40).

Original SEIS from March 1992

The original SEIS prepared by Council staff focused on input/output modeling which projected distributional changes in employment and income at the community/regional level. This analysis indicated that losses in employment and income for the Pacific Northwest induced by the inshore/offshore allocations analyzed would be more than offset by gains in direct income to Alaska regional economies. The magnitude of this effect depends on the specific allocation alternative chosen, but holds true across all alternatives to some degree. The Preferred Alternative of the Council was a three-year phase-in of allocation percentages (35/65, 40/60, and 45/55 inshore/offshore). Combining offshore and inshore regional impacts yielded a net gain in direct income of around $9 million in the first year of the program, based on the projections in that analysis.

Cost-Benefit Study from April 1992

As part of the Secretarial review process, NMFS economists conducted a cost-benefit oriented analysis which focused on overall net benefits (or losses) to the nation which would result from the inshore/offshore analysis. The basic methodology of that analysis was to measure producer surplus for each sector and then to predict the relative changes in that producer surplus for each sector—inshore and offshore. This involved estimation, for each sector, of relative harvest percentages, product mixes, recovery rates, and prices for fish. From this estimate, total revenues are projected, then subtracted from total estimated costs of production to arrive at net revenues (or producer surplus) for each sector, for both the "allocation case" and "no-allocation case." The net revenue difference between the two cases is the estimate of overall changes in net revenues to the nation of the allocation.

That analysis projected a net loss to the nation of $181 million over the three-year life of the allocation. Gains to the inshore sector were outweighed by losses to the offshore sector by that amount. Assumptions and parameters used in this analysis were the subject of intense disagreement and debate, and the analysis was largely silent on the issues of distributional and community impacts. The analysis was part of the basis of Secretarial review, and subsequent disapproval of the BS/AI pollock allocation (the GOA allocations were approved as well as the CDQ program for the BS/AI).

Supplemental Analysis from September 1992

Following Secretarial disapproval, a final Supplemental Analysis was jointly prepared by NMFS economists and Council staff. This analysis combined a cost-benefit assessment with an income/distributional analysis. The analysis also contained a detailed examination of the CVOA. Alternatives examined included the three-year phase-in as described above and a more straightforward 30/70 split over the entire three years. The Council finally approved, and forwarded to the Secretary, an allocation of 35/65, 37.5/62.5, 37.5/62.5. The final analysis projected the following major findings for the Preferred Alternative:

- Cost-benefit analyses projected an overall loss to the nation of $33.6 to $37.6 million over the three years of the allocation, depending on which set of parameters was used in the models. Sensitivity analysis indicated that, with certain parameters in the model, these projected losses could be reduced substantially, or could result in a net gain to the nation of $11 million. Essentially, the projections of net benefits/(losses) covered a range of possibility, from positive to negative depending on parameters and assumptions used, with the expected value in the negative.

- Distributional income analyses, using the same parameters assumed in the cost/benefit study, also projected an overall net loss, in terms of direct income at the U.S. level, with offshore losses outweighing gains to the inshore sectors. The estimated loss was $20 - 28 million over the three-year allocation (Preferred Alternative), though a potential overall gain of $11 million could be projected using model parameters based on public testimony to the Council.

- The Social Impact Assessment (SIA) which accompanied this analysis concluded that benefits to Alaskan coastal communities from the proposed allocation would be immediate and direct, while corresponding losses to Pacific Northwest communities would be less direct and less immediate. Overall, the study concluded that a given level of benefits accruing to Alaskan coastal communities was proportionally more significant when compared to regions like the Pacific Northwest where alternative industries and employment existed. The SIA noted that continuation of status quo (no inshore/offshore allocation) would have immediate and direct negative consequences for economic development and social stability in Alaskan coastal communities who rely heavily on fish harvesting and processing.

<u>Inshore/offshore 2 - Amendments 38/40</u>

The analysis of the proposed reauthorization of Amendment 18/23 did not attempt to respade the previous cost-benefit or distributional analyses; rather, it examined the current state of the fisheries (through 1994) and identified any significant changes which had occurred which would affect the overall findings of the previous analyses. Any directional changes, and their likely magnitudes, from the original analyses were identified in this iteration. Projections were made regarding the likely distributions of fishing and processing activities under both current alternatives—expiration of the allocation or reauthorization. Using the 1993 and 1994 fisheries as a base case for comparison, impacts of these projections were offered.

That analysis also examined additional issues which had been identified by the Council in the proposed reauthorization. In addition to potential preemption, these included stability within the industry, future trade-offs for affected industry sectors, and the potential impacts on the Council's overall CRP development. The pollock CDQ program was examined from the perspective of the current status of each of the six CDQ organizations' development, relative to the overall goals and objectives of the CDQ program created by the Council. In terms of projected impacts during the 1995, three-year reauthorization, the following is excerpted from the Executive Summary of that analysis:

<u>*BS/AI Pollock Fisheries*</u>

- *Price trends were similar to GOA with surimi and fillets decreasing significantly and roe maintaining high levels. Both sectors have increased surimi production relative to other product forms, while fillet and roe production as a percentage of overall production has remained fairly constant, with the exception of roe production for the offshore sector which has dropped as a percentage of overall production.*

- *Lower prices have decreased gross revenues for both sectors; gross revenues per mt of catch have also dropped for both sectors, though differentially. The inshore sector revenue per mt decreased 11.3% from 1991 to 1994 while the offshore sector revenue per mt decreased 32.6% over the same period. This is due primarily to higher overall utilization rates by inshore (were production per mt of raw fish) which affects the price reduction.*

- *Compared to the projected impacts of inshore/offshore as modeled in the original analyses, these changes indicate that projected impacts (net losses to the nation) were likely overstated, and that actual net losses are likely much less. The current analysis indicates that the range of expected economic impacts of the allocation would be shifted more toward a neutral point.*

The conclusions noted above must be tempered by the limitations of the information available to the analysis. The most notable caveat is the lack of new information regarding costs of harvest and production for both sectors. The best cost information available was that used in the original study which was based on an "OMB Survey" conducted in the fall of 1990. Efforts to update cost information since that time have not been successful. Therefore, the analysis assumes that costs per ton of harvest and production remained constant for all producers in both sectors, and attempts to work around this shortcoming by focusing on utilization rates, changes in product mix, and apparent changes in weekly catch and production. Additionally, information regarding product prices for 1994 has not yet been compiled, and therefore, 1993 prices were applied to 1994 production totals.

Projections with Expiration of Amendment 18/23

Chapter 5 projects probable implications of Alternative 1, the Expiration of the Inshore/offshore Amendments. The chapter focuses on projection of the harvest splits and potential economic impacts which might occur in the BS/AI pollock fishery without the inshore/offshore allocation. It goes on to a more qualitative discussion of possible outcomes in the GOA pollock and Pacific cod fisheries.

BS/AI Pollock Fishery Under Alternative 1

Seasonal averages and maximum catches were used to estimate harvest splits under Alternative 1. These two different methodologies projected inshore harvests of 29.15% and 25.46%, respectively. It appeared that using the seasonal averages predicted the 1991 harvest split more accurately than did the seasonal maximums. Using the projected harvest splits along with total product to total catch ratios (the "Utilization Rate"), product mixes and prices assumed for the 1994 fisheries, we estimated gross revenues. The results showed a probable decline in overall gross revenues accruing to the BS/AI pollock fisheries under Alternative 1 from $515 million estimated for the 1994 fishery to $511 million using the seasonal averages or $509 million using the season maximums, a very small change relative to the overall magnitude of the fishery. Further, the projected harvest splits using the seasonal average approach indicated that the overall shift in harvest to the inshore sector from the offshore sector, which was predicted to occur under the inshore/offshore allocation in the Supplemental Analysis, were likely overstated. This implies that the estimated net losses to the Nation, resulting from Amendment 18 in the Supplemental Analysis, were also overstated.

The analysis also concluded that Alternative 1 would likely have negative impacts on the stability of coastal communities, and upon the industry itself, particularly during the crucial period in which the Council attempts to rationalize the fisheries with comprehensive solutions.

Overall, it was concluded that Alternative 1 is less likely to provide significant gains in net benefits to the Nation than might have been supposed in the Supplemental Analysis. It is also likely that, given the inherent uncertainty of the information and the models used, the cost/benefit implications of the inshore/offshore allocation approach neutrality, and therefore the cost/benefit implications of the lack of an allocation also approach neutrality. These conclusions are based on several key assumptions:

1. *Discard and utilization rates remain at the same relative levels during 1996-1998 as in 1994.*
2. *1993 prices used to estimate 1994 gross revenue will be applicable for the years 1996-1998.*
3. *Product mix in each of the years from 1996-1998 will be identical to those found in 1994.*

4. Relative weekly catch and production between sectors will remain as it was in 1994.
5. Relative harvests and product costs between sectors remain the same as in the supplemental analysis.
6. Biomass levels, TACs, and therefore CPUEs, remain at 1994 levels.

These are fairly strong assumptions and thus give rise to the fairly weak conclusion of the neutral impact on the cost/benefit implications of the allocation. Given a neutral allocation, in terms of efficiency, conclusions regarding stability and impacts on communities become all the more relevant.

GOA Pollock Fishery Under Alternative 1

Estimates of impacts of Alternative 1 on the GOA pollock fishery were qualitative. In general, it was concluded that under the Alternative offshore catcher-processors would likely enter the GOA pollock fisheries in the second and third quarter apportions, causing shorter seasons and destabilizing the current participants, noting that these conclusions are based on assumptions similar to those listed above.

GOA Pacific Cod Fishery Under Alternative 1

Estimates of impacts of Alternative 1 on the GOA Pacific cod fishery were also somewhat qualitative. In general it was concluded that freezer longliners would benefit significantly under the Alternative. It appears that they would be able to enter the GOA Pacific cod fishery until the TAC was reached, and then continue on into the BS/AI to fish under the guaranteed fixed gear TAC. It is also possible that some offshore catcher-processors would participate in the GOA Pacific cod fisheries. Both of these conclusions would lead to shorter seasons and would likely be destabilizing for the current participants.

Projections with Reauthorization of Amendment 18/23

Chapter 6 contains the projections of impacts of Alternative 2 - reauthorization of Amendment 18/23 for an additional three years. Projections of harvest/processing activity are straightforward for this alterative - it would be 35/65 for the BS/AI pollock, GOA pollock would be 100% inshore, and GOA Pacific cod would be 90% inshore. Patterns of harvesting and processing are expected to be relatively unchanged from the base case; i.e., the 1993 and 1994 fisheries. GOA pollock stocks are relatively small, decreasing, and quarterly allocated. Alternative 2 would facilitate inseason management of the pollock stocks and avoid quota overruns by limiting the harvest of pollock to smaller, lower capacity shore based trawlers. If the Council chooses Alternative 2, other considerations include the CVOA and the definition of 'inshore' relative to freezer/longliners. Major findings from the analysis are presented below:

CVOA Considerations

- *Shore based vessels are more dependent on the CVOA (and any nearer shore fisheries) than the offshore sector.*

- *Pollock are harvested disproportional to their areal distribution; harvest rates of pollock are concentrated in the CVOA in the 'A' season, and harvest rates are much higher inside the CVOA than outside in the 'B' season.*

- *Allowing offshore sector vessels inside the CVOA in the 'B' season will likely exacerbate the disproportionate harvest rates relative to pollock distribution.*

- *Variation from year to year is exhibited relative to average size of pollock inside and outside the CVOA, with average size rates being similar; percentage of fish > 30 cm (commercially viable size) is higher inside the CVOA than outside.*

- *Overall, CPUEs of exploitable fish have been similar overall both inside and outside the CVOA, so exclusion from the CVOA should pose no significant impediments to offshore sector fishing operations. Operating costs, however, could be higher outside the CVOA.*

- *Increased harvest rates in the CVOA could adversely affect marine mammal critical habitat areas in the CVOA if the restrictions are relaxed.*

- *Bycatch rates of salmon and herring are higher inside the CVOA during the 'B' season time period. Additional effort could result in higher overall bycatch of these species.*

Cost-Benefit Implications

A reauthorization of Amendment 18/23 would be expected to result in the same general cost-benefit impacts as projected in the original Supplementary Analysis from 1992, as adjusted by findings from this current analysis. A substantive, comprehensive, quantitative reassessment has not been conducted in this analysis primarily because of the lack of new cost information which is a key element of a cost/benefit analysis, but changes in other primary model parameters have been identified which may directionally affect the original findings. In Chapter 4, it was concluded that the expected net losses to the nation were likely overstated in the original analysis, and that changes in the actual fisheries relative to assumptions used in that analysis would tend to move the expected impacts more towards neutral, given the data available to the analysis and the assumptions used.

Distributional Impacts

The methodologies for projecting distributional changes in employment and income, at a community/regional level, are directly dependent on the revenues generated from the fisheries for each sector. The original analysis (Supplemental analysis from September 1992) predicted net losses in direct income of $20-28 million, depending on model parameters used, and could project a gain of $11 million using selected model parameters. In that analysis benefits to inshore sectors were more than outweighed by losses to the offshore sector. Based on information presented in Chapter 4, fish prices and product mixes have changed to the point that overall revenues from the fisheries for both sectors are significantly reduced, relative to the projections made in the original analysis. The bottom line effect of this is to dampen the magnitude of any distributional effects overall; i.e., drive them towards the zero, or neutral point, keeping in mind that distributional effects are a function of both income from fisheries and employment from fisheries. Previous projections indicated a substantial loss of employment for the Pacific Northwest communities, and a gain for Alaska based communities. There is no information contained in this analysis to indicate that those employment projections were inaccurate.

The reductions in direct income from the fisheries for both sectors tend to reduce the aggregate income effects when compared to the original analyses, though we still expect gains to the inshore sector and losses to the offshore sector overall, when combined with employment effects. It is important to reiterate, however, that even though the trend is more towards a more neutral impact in aggregate, some distributional impacts will certainly still be expected, and any level of impacts to Alaska coastal economies is far more significant than a similar level of impacts to Pacific Northwest economies. This is a consistent finding in both the distributional analyses previously conducted and the Social Impact Assessment previously conducted. Therefore, although net negative impacts in direct income may still be expected, these impacts are reduced *from projections in the original analysis. These impacts for 1996-1998, under the three-year extension, would be similar to the impacts <u>actually</u> occurring in 1993-1995.*

<u>Stability Implications</u>

Compared to the base case (the 1993 and 1994 fisheries), continuation of the inshore/offshore allocations as they now exist would result in the least change, relative to that base case. Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The existing allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations for an additional three years would maintain the relationships between these sectors as they have developed over the past three years. The stability which has been established <u>between</u> these various industry sectors may not guarantee survival of entities within these sectors, but may be crucial to the successful fruition of the CRP program over the next three years. A stable environment in the fisheries has been cited by the Council as critical to successful CRP development. Indeed, the disruption of existing distributions of harvesting and processing of pollock and Pacific cod, and the business relationships based on those distributions, could have serious and adverse implications for successful CRP development.

Allowing the inshore/offshore allocations to expire would result in a projected "reallocation" of about 6% of the overall pollock quota in the BS/AI; i.e., the split between inshore and offshore processing is estimated to be about 29/71, closer to pre-inshore/offshore splits (26.5/73.5), as opposed to the current 35/65. Because of this projected change, the reauthorization of Amendment 18/23 holds implications for future tradeoffs between industry sectors. Under the reauthorization, the offshore sector would be giving up about 6% of pollock harvests/processing which it would enjoy if the allocations were allowed to expire. Conversely, the inshore sector enjoys about a 6% "gain" under the reauthorization relative to expiration of the allocations. From the offshore sector's perspective, this 6% relative loss represents a tradeoff between increased revenues and some amount of upheaval in the industry which may result if the allocations are allowed to expire. Continuation of the allocations may provide the stable operating environment necessary for eventual implementation of CRP programs such as IFQs, something the offshore sector generally has been striving towards.

<u>Community Impacts</u>

Although the distributional, income based analyses previously conducted (and described above) are based on economic activity at the community/regional level, an additional, more qualitative examination of community impacts is provided in this analysis. A review of the previous SIA from 1992, which focused on the communities of St. Paul, Dutch Harbor, Sand Point/King Cove, Kodiak, Newport, and Bellingham/Seattle, indicates that the smaller Alaska communities, which are fundamentally dependent on the groundfish fisheries, exhibit the most variability and vulnerability to socially disruptive forces. Inshore allocations were determined to provide the greatest benefit to Alaskan coastal communities and afford them the greatest opportunities for development and growth, while the only community negatively affected would be Ballard/Seattle. The absence of an allocation would very likely impact coastal Alaskan communities negatively, both economically and socially.

Immediate and direct positive impacts would be expected by Alaskan communities with the allocation, partially offset by negative impacts to Pacific Northwest employment and income, though the latter would be more easily absorbed by the more diverse economies of that region. Since 1992, additional infrastructures have developed in Alaskan coastal communities, partially in response to the guaranteed allocations from Amendment 18/23. Given the current status of the fisheries, and these communities which rely on fishing and *processing, allowing the inshore/offshore allocations to expire, in the absence of alternative management remedies, would likely result in at least the same level of impacts as previously projected. Impacts at this time could be exacerbated beyond those previously predicted due to the additional infrastructures and the ability of these communities to utilize the current allocations.*

Preferred Alternative

Chapter 10 discusses the preferred alternative, and provides updated information on prices and products. The Council approved the reauthorization of the Inshore/offshore Allocations of Pollock in the BS/AI and of pollock and Pacific cod in the GOA. They also approved the continuation of the Pollock CDQ program for Western Alaska. If approved by the Secretary of Commerce, these amendments will be enacted as Amendment 40 to the GOA Groundfish FMP and Amendment 38 to the BS/AI Groundfish FMP, and will be in effect for three years through 1998. Amendment 40 to the GOA FMP will allocate 100% of the pollock and 90% of the Pacific cod to the inshore sector. Under Amendment 38 in the BS/AI, 7½% of the pollock TAC will be allocated to the Pollock CDQ Program, with the remaining pollock TAC divided between inshore and offshore harvesters; 35% to the inshore sector and 65% to the offshore sector. The CVOA is defined for the pollock "B-Season," within which only catcher vessels may operate. The Council also made some minor changes to the Catcher Vessel Operational Area (CVOA), and asked that any other regulations that deal with the inshore and offshore sectors also be reauthorized, including an extension of the delay of the start of the A-season for the offshore sector.

In reaching their decision to reauthorize inshore/offshore, the Council relied on the information contained in the original EA/RIR dated May 4, 1995, as well as information provided by the public in comments and testimony at the Council meeting. The Council also relied on a presentation from its Staff and from the SSC and the Advisory Panel. Staff indicated that updated information regarding 1994 product prices and 1993 production information had become available, and that a preliminary examination of that information did not result in any changes in the conclusion drawn in the EA/RIR. The Council concurred with those findings overall and concluded that reauthorizing the inshore/offshore allocations for an additional three-year period would promote stability in the industry, while allowing the Council adequate time to further develop its Comprehensive Rationalization Plan.

1.4 Elements of the Current Inshore/Offshore Regulations

1.4.1 Amendment 40 to the GOA Groundfish FMP

Changes to the FMP:

Permit Requirements

All U.S. vessels fishing in the Gulf of Alaska and all U.S. processors receiving fish from the Gulf of Alaska must have current permits issued annually by the Secretary of Commerce.

Inshore/offshore allocations of pollock and Pacific cod

The allowed harvests of Gulf of Alaska pollock and Pacific cod will be allocated between the inshore and offshore components of industry in specific shares in order to lessen or resolve resource use conflicts and preemption of one segment of the groundfish industry by another, to promote stability between and within industry sectors and affected communities, and to enhance conservation and management of groundfish and other fish resources.

Definitions

Inshore is defined to consist of three components of the industry:

1. All shoreside processors as defined in Federal regulations.
2. All catcher/processors which meet length requirements defined in Federal regulations and which have declared themselves to be "Inshore".
3. All motherships or floating processors which have declared themselves to be "Inshore."

Offshore is defined to consist of two components of the industry:

1. All catcher/processors not included in the inshore processing category, or which have declared themselves to be "Offshore."
2. All motherships and floating processing vessels not included in the inshore processing category, or which have declared themselves to be "Offshore."

Declarations and operating restrictions

Annually before operations commence, each mothership, floating processing vessel and catcher/processor vessel must declare on its Federal Permit application whether it will operate in the inshore or offshore component of industry. This declaration must be the same for both the BS/AI and the GOA if applications for both are made. All shoreside processors will be in the inshore component. Once declared, a vessel cannot switch to the other component, and will be subject to restrictions on processing amounts or locations for pollock and Pacific cod for the rest of the fishing year. Harvesting vessels can choose to deliver their catch to either or both components.

Catcher Processors which have declared themselves to be inshore have the following restrictions:

1. The vessel must be less than 125' LOA.
2. The vessel may not catch or process more than 126 mt (round weight) of pollock or GOA Pacific cod in combination in a given week of operations.

Motherships and floating processors which have declared themselves to be inshore have the following restriction:

1. Processing from a directed pollock fishery or a directed GOA Pacific cod fishery must occur in a single location within the waters of the State of Alaska.

Allocations

One hundred percent of the allowed harvest of pollock is allocated to inshore catcher/processors or to harvesting vessels which deliver their catch to the inshore component, with the exception that offshore catcher/processors, and vessels delivering to the offshore component, will be able to take pollock incidentally as bycatch in other directed fisheries. All pollock caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

Ninety percent of the allowed harvest of Pacific cod is allocated to inshore catcher/processors or to harvesting vessels which deliver to the inshore component and to inshore catcher processors; the remaining 10% is allocated to offshore catcher/processors and harvesting vessels which deliver to the offshore component. All Pacific cod caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

These allocations shall be made by subarea and period as provided in Federal regulations implementing this FMP.

Reapportionment of unused allocations

If during the course of the fishing year it becomes apparent that a component will not process the entire amount of the allocation, the amount which will not be processed shall be released to the other component for that year. This shall have no impact upon the allocation formula.

Duration

Inshore/offshore allocations of pollock and Pacific cod shall cease to be a part of this FMP either (1) at midnight on December 31, 1998; or (2) earlier if replaced with another management regime approved by the Secretary.

1.4.2 Amendment 38 to the BS/AI Groundfish FMP

Permit Requirements

All U.S. vessels fishing in the Bering Sea or Aleutian Islands sub-management areas and all U.S. processors receiving fish from the Bering Sea or Aleutian Islands sub-management areas must have current permits issued annually by the Secretary of Commerce.

Inshore/offshore allocations of pollock

The allowed harvest of Bering Sea and Aleutians pollock will be allocated between the inshore and offshore components of industry in specific shares in order to lessen or resolve resource use conflicts and preemption of one segment of the groundfish industry by another, to promote stability between and within industry sectors and affected communities, and to enhance conservation and management of groundfish and other fish resources.

Definitions

Inshore is defined to consist of three components of the industry:

1. All shoreside processors as defined in Federal regulations.
2. All catcher/processors which meet length requirements defined in Federal regulations and which have declared themselves to be "Inshore."
3. All motherships or floating processors which have declared themselves to be "Inshore."

Offshore is defined to consist of two components of the industry:

1. All catcher/processors not included in the inshore processing category, or which have declared themselves to be "Offshore."
2. All motherships and floating processing vessels not included in the inshore processing category, or which have declared themselves to be "Offshore."

Declarations and operating restrictions

Annually before operations commence, each mothership, floating processing vessel and catcher/processor vessel must declare on its Federal Permit application whether it will operate in the inshore or offshore component of industry. This declaration must be the same for both the BS/AI and the GOA if applications for both are made. All shoreside processors will be in the inshore component. Once declared, a vessel cannot switch to the other component, and will be subject to restrictions on processing amounts or locations for pollock for the rest of the fishing year. Harvesting vessels can choose to deliver their catch to either or both components.

Catcher processors which have declared themselves to be inshore have the following restrictions:

1. The vessel must be less than 125' LOA.
2. The vessel may not catch or process more than 126 mt (round weight) of pollock or GOA Pacific cod in combination in a given week of operations.

Motherships and floating processors which have declared themselves to be inshore have the following restriction:

1. Processing from a directed pollock fishery or a directed GOA Pacific cod fishery must occur in a single location within the waters of the State of Alaska.

Allocations

The allowed harvest of BS/AI pollock shall be allocated as follows: Thirty-five percent (35%) of the pollock in each subarea, for each season, will be allocated to the inshore component beginning in 1996 and continuing through 1998. By the same action, the offshore fleet will be allocated 65% of the pollock resource beginning in 1996 and continuing through 1998 in each subarea and in each season. The percentage allocations are made by subarea and period as provided in Federal regulations implementing this FMP. All pollock caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

Reapportionment of unused allocations

If, during the course of the fishing year, it becomes apparent that a component will not process the entire amount of the allocation, the amount which will not be processed shall be released to the other component for that year. This shall have no impact upon the allocation formula.

Western Alaska Community Quota

For a Western Alaska Community Quota, 50% of the BS/AI pollock reserve as prescribed in the FMP will be held annually. This held reserve shall be released to communities on the Bering Sea Coast which submit a plan, approved by the Governor of Alaska, for the wise and appropriate use of the released reserve.

The Western Alaska Community Quota program will be structured such that the Governor of Alaska is authorized to recommend to the Secretary that a Bering Sea Rim community be designated as an eligible fishing community to receive a portion of the reserve. To be eligible a community must meet the specified criteria and have developed a fisheries development plan approved by the Governor of Alaska. The Governor shall develop such recommendations in consultation with the Council. The Governor shall forward any such recommendations to the Secretary, following consultation with the Council. Upon receipt of such recommendations, the Secretary may designate a community as an eligible fishing community and, under the plan, may release appropriate portions of the reserve.

Bering Sea Catcher Vessel Operational Area

For directed pollock harvesting and processing activities, a catcher vessel operational area (CVOA) shall be defined as inside 167°30' through 163° West longitude, and 56° North latitude south to the Aleutian Islands. The CVOA shall be in effect commencing on the date that the second allowance of pollock is available for directed fishing until the inshore allocation is taken, or the end of the fishing year. Only catcher vessels and catcher/processors fishing under the Western Alaska Community Quota Program, may participate in a directed pollock fishery in this area during this period.

Duration

Inshore/offshore allocations of pollock, the CVOA, and the Western Alaska Community Quota program shall cease to be a part of this FMP either (1) at midnight on December 31, 1998; or (2) earlier if replaced with another management regime approved by the Secretary.

1.4.3 Changes to the CVOA

The changes to the CVOA were made by the Council in June 1995. Specifically, the Council moved the Western border of the CVOA from 168° W. longitude to 167°30' W. longitude, and allowed the offshore sector to operate in the CVOA during the B season once the inshore quota is taken.

The information in Chapter 2 of the EA/RIR, as well as the figures in Appendices I and II, and comment made by then American Factory Trawlers Association (now the At-Sea Processors Association) at the June 1995 Council meeting, provided sufficient evidence to the Council that the shift in the Western border of the CVOA would not significantly impact the catcher vessels operating in the CVOA during the B season, nor would there be a significant impact on marine mammals. The offshore sector would benefit by having the option to fish in additional areas of the Bering Sea, without negatively impacting overall bycatch of salmon and other prohibited species, and without negatively impacting the inshore sector operations.

1.5 Current Analysis and Organization of the Document

As discussed in Section 1.1, the Council considered a wide range of alternatives relative to the inshore/offshore pollock allocations. The pollock CDQ program has been separated and is proceeding on its own course as a separate plan amendment. For the Gulf of Alaska there were only two alternatives considered: expiration of the allocations or continuation of the existing allocations. Therefore, the Gulf of Alaska issue is treated in a separate chapter, and is largely a qualitative, 'threshold' analysis. The analysis for the BS/AI alternatives is much more detailed and attempts to provide the Council and industry with a detailed profile of the evolution and current status of the BS/AI pollock fisheries, its importance to each industry sector involved, and the linkages to coastal communities and fishermen. Part of the analysis addresses the alternatives quantitatively, but primarily in the projection of gross revenues derived from the fishery.

A significant part of the analysis is devoted to illuminating the various issues raised during Council discussions and which are contained in the Council's Problem Statement. Examples of the parameters and issues of concern to the Council, which are addressed in the document, include: pollock TAC, catch estimates by sector, catch location, product recovery rates, overall utilization rates of raw fish, discards, pollock product mix, markets, fish prices, level of foreign ownership, employment (wages and residency), PSC bycatch, protected species implications, CVOA issues, impacts to other fisheries, fish taxes and revenue streams, capital concentration and market share, environmental impacts, social and community impacts, and, CDQ program impacts. Some of these issues are addressed to a greater extent than others in the analysis, but all have been raised as issues surrounding the inshore/offshore allocation decision.

Chapter 2 of the document is devoted specifically to the Gulf of Alaska inshore/offshore program. There were only two alternatives under consideration for the GOA I/O3 amendment. These were, the *'No Action'* alternative (i.e., the allocations expire), or a 'rollover' of the existing allocations (i.e., 100% of pollock and 90% of Pacific cod allocated inshore). As with the *'No Action'* alternative described for the BS/AI, little or no empirical data exist with which to make quantitative estimates of impacts, should the allocations be allowed to expire. Probable implications for sectoral performance, community stability, regulatory stability, and effects on future management are characterized in qualitative terms.

In the case of the GOA, the only alternative to "expiration" under the sunset provision of I/O2, was continuation of the *status quo* allocation (i.e., base case). This analysis does not include a detailed, quantitative examination of the GOA status quo. Rather, it addresses the likely implications within the context of 'with or without' the existing pollock and Pacific cod allocations, based upon a 'threshold' analyses. This approach allows us to suggest the 'probable' type, direction, magnitude, and distribution of impacts, in a general sense. If these can be shown to most probably exceed any expected 'benefit' relative to *No Action*, then the Council should be in a position to judge the relative desirability of the two competing alternatives. This is similar to the approach taken in the 1995 analysis for the GOA, and appears consistent with the Council's Problem Statement for the GOA. This approach is not meant to minimize the importance of the allocations to the GOA pollock and cod fisheries, but is a reflection of the relatively simple decision facing the Council with regard to the GOA allocations.

Chapter 3 addresses the issues surrounding the BS/AI allocation decision and is a critical centerpiece of the analysis. This chapter contains the description of the numerous parameters surrounding the analysis, and constitutes the 'baseline' status of the BS/AI pollock fisheries. Based primarily on 1996 information, this chapter contains the baseline against which the alternatives are measured. Included in this chapter are product mix and gross revenue projections associated with the status quo allocations. Additional detail on the baseline information is contained in Appendix I to the document.

Chapter 4 examines the major allocation alternatives between inshore, offshore, and "true" mothership operations. In this chapter baseline information on product mix, prices, and utilization rates are extrapolated across the various alternatives to illustrate the changes in product on the market, and gross revenues (both by sector and overall), resulting from the alternatives. This chapter also addresses the specific sub-options that were considered, including: percentage set-asides for small catcher vessels (<125') within the inshore sector allocation; percentage set-asides within the offshore sector for catcher vessels which deliver offshore; whether to include "true" mothership within the inshore or offshore sector, or to have a separate allocation to that category; and, the duration of the allocation chosen (one, two, or three years, or indefinite). Chapter 4 also examines the alternative that would allocate the BS/AI pollock quota to harvesting vessels and give small catcher vessels the opportunity to deliver their allocation to any processing sector. Also discussed in this chapter are NMFS management and catch accounting considerations which may be applicable to the allocation decision, particularly to some of the sub-options that were considered.

Chapter 5 is devoted to treatment of the catcher vessel operational area (CVOA) issue. This includes a baseline description of CVOA fishing activities as well as projections of CVOA activities under the various alternatives. These alternatives include repeal of the CVOA as well as further restrictions on fishing in the CVOA for the offshore sector.

Chapter 6 contains an Environmental Assessment (EA). Marine mammal (steller sea lion) implications of CVOA fishing activity are addressed there, as well as other environmental issues which have been raised.

Chapter 7 is a summary of the expected impacts of the Council's preferred alternative, from the perspective of Regulatory Impact Review (RIR) and Executive Order 12866 considerations. Distributional impacts, as well as a discussion of net benefit *considerations*, is contained in this chapter. Other issues relative to the inshore/offshore decision are also addressed in this chapter.

Chapter 8 addresses the consistency of the Council's preferred alternative with other applicable laws including: the Magnuson-Stevens Act, National Standards and the Regulatory Flexibility Act.

In addition to Appendix I which has baseline fishery profiles, there are two other appendices which are critical to rounding out the overall analysis, and warrant further explanation. Community and social impacts have been a concern of the Council relative to this issue, and the new Magnuson-Stevens Act places additional emphasis on consideration of dependent communities, relative to any actions taken by a Council. Immediately following the September 1997 Council meeting we contracted with Impact Assessment, Inc. (IAI) to conduct an analysis of potential social and community impacts, based on the alternatives formulated by the Council. The primary focus of that research is two-fold: (1) updating the relevant community and sector profiles compiled under previous initiatives, with an emphasis on describing the linkages between the industry sectors involved and the communities involved in the pollock fisheries, and (2) assessing potential impacts to those sectors, and their participants, from the allocation alternatives under consideration.

In December 1997 we supplemented that contract with additional funds, primarily due to concerns that the overall analyses as planned would be deficient in terms of describing the specific sector/community linkages, particularly employment-related linkages, and particularly for the Puget Sound (Seattle) region. Because these sector linkages are less obvious in the Puget Sound economy than in Alaska communities, a majority of the *supplemental* resources were devoted to assessing these linkages in the Puget Sound area. This is not intended to detract in any way from the original research focus, or to detract from the information being developed for Alaska communities; rather, it is a reflection of the extra effort anticipated to develop a comparable 'picture' for the Puget Sound area, with the expectation that the research by IAI will address all sector linkages to the Seattle area (i.e., catcher vessels, at-sea processors, motherships, and shore-based processors). It is also expected that the IAI work will shed additional light on the employment issue, particularly for the catcher vessel sector where we have little quantitative information.

Appendix II is the report from IAI regarding community impacts.

In September 1997, as well as in other discussions, the issue of impacts to the CDQ program was raised. At the September meeting we received a preliminary report from the State of Alaska Department of Community and Regional Affairs (DCRA) which attempted to summarize the linkages between the CDQ organizations and the pollock industry sectors. Given the business relationships involved, and planned development projects related to pollock and other CDQ species, the goal is to define these relationships and assess whether and to what extent a change in the inshore/offshore pollock allocations might impact the CDQ program and the member communities.

Following the September meeting we requested assistance on this issue from the State of Alaska, specifically from DCRA (as well as on the separate amendment to extend the pollock CDQ program at 7.5%, beyond 1998). An initial survey was sent to the CDQ groups by DCRA to begin this process. Since that time we have devoted Council funding to the State of Alaska to help cover the personnel and subcontracting costs associated with this task. The State of Alaska subsequently contracted with McDowell Group to assist in a revised survey process and subsequent analyses. Information gathered in this process was also relevant to the separate amendment to extend the pollock CDQ program.

Appendix III is the report from the State of Alaska regarding potential CDQ program impacts.

1.6 Use of Industry Submitted Data

As the I/O3 analytical process developed, staff were queried regarding the availability of data on a variety of issues, and whether industry submitted information could be used to supplement the analyses. While we recognize that much of the information which could be provided would be useful to both the analysts and the Council decision-making process, we are sensitive to using such data in our analyses, particularly where it would create an asymmetry between sector information. In December 1997 the SSC also discussed this issue and stated in their minutes:

- *"The issue of voluntary industry data submissions presents a challenge to the analysts. While the SSC welcomes and encourages industry cooperation, methods and standards for appropriate integration of such data into the analysis are not yet clearly established and will require further consideration by the staff and SSC."*

After several discussions of this issue, which included members of various industry sectors involved, staff suggested to the Council (in February 1998) to employ the following basic policy: If information could be provided which would help fill existing holes in the analysis, and result in symmetry in the information across sectors, we would accept that information subject to some type of internal review, and perhaps independent 'audit'. We would also clearly state in the analysis where the information came from, as well as any caveats or concerns we have with the use of that information.

At the February 1998 Council meeting, the Council formally approved an audit process for such information, including appointment of a Committee to help develop the agreed-upon-procedures for independent review, by an accounting firm approved by the Council, of the data submitted (Committee report is available separately). In summary, that process resulted in the submittal of two sets of information by the At-Sea Processors Association (APA): employment data by residency and first wholesale price data for offshore products.

The employment information is contained in Appendix 1 - Tab 6 along with similar information for the inshore processing plants, and is also summarized in Chapter 3 as relevant baseline information, but is not used in any further projections. The price data is summarized in Chapter 3, as relevant baseline information, and is further used in the gross revenue projections contained in Chapter 4.

2.0 GULF OF ALASKA INSHORE/OFFSHORE ALLOCATIONS

2. 1 Introduction and Management Background

The North Pacific Council originally approved an inshore/offshore allocation in June 1991, in response to growing preemption problems between U.S. industry sectors harvesting and processing groundfish in the EEZ off Alaska. Dominated by foreign fleets through the early 1980s, the domestic fisheries had expanded by the late 1980s, and by 1988 the fisheries were effectively domesticated. As one fishery after another became fully U.S. utilized, the Council was increasingly faced with highly controversial, allocative decisions concerning domestic users. In 1989, following a short season on Bering Sea/Aleutian Islands (BS/AI) pollock, several factory trawlers (catcher/processors) moved into the Gulf of Alaska (GOA), quickly taking a substantial portion of the pollock quota which a shore based catching and processing industry was planning to utilize later that year (Figure 2.1). This became the catalyst for Amendment 18/23, also referred to as Inshore/offshore 1 or I/O1.

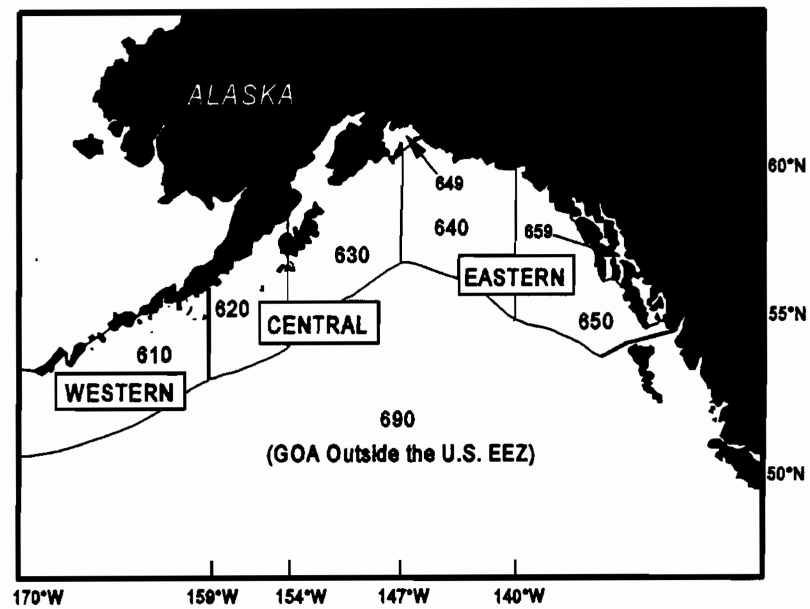


Figure 2.1 Regulatory and statistical areas in the Gulf of Alaska

Current and potential future preemption of resources by one industry sector over another became a focal issue for the Council, particularly with regard to pollock and Pacific cod in the GOA, and pollock in the BS/AI. Though not necessarily a problem at that time in the BS/AI, it was apparent that the capacity of the offshore catcher/processor fleet posed a real preemption threat to the inshore processing industry, which relied heavily on the pollock resource. Through a series of meetings in 1989 and 1990 the Council and industry developed analyses of various alternative solutions to the preemption problem. This was occurring at the same time as the Council was developing a moratorium on further entry into the fisheries off Alaska. The inshore/offshore allocation issue became an integral part of the overall effort towards addressing overcapitalization in the fisheries. In April 1990, the Council developed the following problem statement as the context for addressing the inshore/offshore processing allocations.

<u>PROBLEM STATEMENT (I/O1)</u>

> The finite availability of fishery resources, combined with current and projected levels of harvesting and processing capacity and the differing capabilities of the inshore and offshore components of the industry, has generated concern for the future ecological, social and economic health of the resource and the industry. These concerns include, but are not limited to, localized depletion of stocks or other behavioral impacts to stocks, shortened seasons, increased waste, harvests which exceed the TAC, and possible pre-emption of one industry component by another with the attendant social and economic disruption.

Domestic harvesting and processing capacity currently exceeds available fish for all species in the Gulf of Alaska and most species in the Bering Sea. The seafood industry is composed of different geographic, social, and economic components which have differing needs and capabilities, including but not limited to the inshore and offshore components of the industry.

The Council defines the problem as a resource allocation problem where one industry sector faces the risk of preemption by another. The analysis will evaluate each of the alternatives as to their ability to solve the problem within the context of harvesting/processing capacity exceeding available resources.

The Council will address these problems through the adoption of appropriate management measures to advance the conservation needs of the fishery resources in the North Pacific and to further the economic and social goals of the Act.

2.1.1 Summary of I/O1 Findings

Prior to, and following, the drafting of the I/O1 problem statement, the Council spent considerable time developing and refining alternatives, with the help of industry and a Fishery Planning Committee (FPC) appointed by the Council. This sequence of events is summarized here. By the end of 1989, the Council, with the help of the FPC, had established a list of alternatives to address the budding problem which included: traditional management tools, specific allocations of the quotas between industry sectors (with and without operational areas for each), quota allocations based on vessel size, and limited entry alternatives including an immediate moratorium. Also included were provisions for CDQ considerations within each of the primary alternatives. By late 1990, the Council had identified a direct quota allocation as the most viable alternative to the problem as identified in the problem statement shown above. Various potential percentage splits became the focus of further discussion and development, with the focus now centered on pollock and Pacific cod in the GOA and pollock in the BS/AI.

The analysis of the various alternatives was completed in early 1991 and a decision was made by the Council in June 1991. The Council's preferred alternative for the GOA was 100% of pollock reserved for vessels delivering to inshore plants and 90% of Pacific cod reserved for vessels delivering to inshore plants. These allocations were scheduled to expire at the end of 1995.

The Council began development of a Comprehensive Rationalization Program (CRP) in November 1992. By early 1994, the Council also recognized that a license limitation program would not address the issue of inshore/offshore, and directed staff to begin an evaluation of continuing the program beyond the 1995 sunset date. Specifically, the Council continued the existing allocations for an additional three years to allow for further development of the overall CRP initiative. In doing so, the Council continued the mandate established for itself back in 1992, when they recognized that a more permanent solution to overcapacity and preemption was needed. If the inshore/offshore allocations were allowed to lapse, the management void could indeed create the preemption problems envisioned when the amendments were originally approved and implemented. In December 1994, the Council developed the following problem statement for I/O2.

<u>PROBLEM STATEMENT (I/O2)</u>

The problem to be addressed is the need to maintain stability while the Comprehensive Rationalization Program (CRP) process goes forward. The Council believes that timely development and consideration of a continuing inshore/offshore and pollock CDQ allocation may preserve stability in the groundfish industry, while clearing the way for continuing development of a CRP management system. The industry is in a different state than existed in

1990 as a consequence of many factors outside the scope of the Council process, as well as the inshore/offshore allocation. The Council intends that staff analyze the effects of rapidly reauthorizing an interim inshore/offshore allocation relative to maintaining stability in the industry during the CRP development process, as well as the consequences of not continuing the present allocation. These alternatives are appropriate as they address the problem of maintaining stability. Therefore, the focus of analysis to be done over the next few months should assist the Council to:

1. Identify which alternative is least likely to cause further disruption and instability, and thus increase the opportunity for the Council to accomplish its longer-term goal of CRP management.
2. Identify the future trade-offs involved for all impacted sectors presented by the two alternatives.

As the Council was deciding on reauthorizing the inshore/offshore allocations in 1995 (Inshore/offshore 2), it also embarked on an initiative to develop more comprehensive, long-term management programs to address the overcapitalization and allocations problems facing the industry, not only with regard to inshore/offshore, but to the overall groundfish and crab fisheries off Alaska. This Comprehensive Rationalization Plan (CRP) examined a myriad of alternative approaches, but focused on some type of limited entry or Individual Fishing Quota (IFQ) program as the solution.

Eventually, focus evolved to a license limitation program and the Council approved a vessel license limitation program (LLP) in June 1995. Since LLP was predicted to take two to three years to implement, the Council extended the existing inshore/offshore allocations for an additional three years to maintain stability between industry sectors and to facilitate further development of more comprehensive management regimes. No new regulations or program changes would be necessary for (continued) implementation of the program under this schedule. In June 1995, the Council approved Amendments 38/40 to reauthorize a rollover of the pollock and Pacific cod allocations through 1998. This was approved by the SOC in 1995. At that time, the Council indicated that its next major step would be consideration of an individual quota system for BS/AI pollock; however, a Congressional moratorium postponed approval of any IFQ program until after October 6, 2001. The LLP is expected to be implemented by year 2000.

2.1.2 Summary of I/O2 Findings

Chapter 4 of the EA/RIR for I/O2 described the status of the fisheries under the inshore/offshore allocations from 1992-94 and focused on economic indices related to the harvesting and processing of BS/AI and GOA pollock and Pacific cod. A description of fish prices used in the analysis, and status and trends of these prices was provided. Prices for major pollock products, other than roe, declined significantly from 1991 and 1992 levels to 1994 levels for both sectors. A detailed examination of the GOA Pacific cod and pollock fisheries was provided to describe actual activities which occurred during 1992-94. The results of this examination were compared to results as projected in the analyses of I/O1. Major findings from the 1995 analysis are summarized below:

I/O2 Alternative 1. No action. Allow the pollock and Pacific cod allocations in the GOA to expire on January 1, 1996.

Pollock Fishery Estimates of impacts of Alternative 1, the no action alternative, to allow the allocation of GOA pollock to expire, were qualitative. In general, it was concluded that under Alternative 1, offshore catcher/processors would likely enter the GOA pollock fisheries in the second and third quarters, causing shorter seasons and destabilizing current participants:

- Total offshore sector harvest of pollock was about 1% in 1993 and 1994; the processing locations for GOA pollock have shifted significantly to Kodiak and Sand Point/King Cove locations (from Dutch Harbor) from a combined 65% in 1991 to 85% in 1994.

- Processed product form has shifted substantially over the period 1991-1994; more emphasis was placed on surimi in 1992, then shifted back to fillets and roe by 1994. Roe prices have risen and remained at high levels through 1994, while both fillet and surimi prices have dropped dramatically, with a relatively higher price decrease in surimi.

- Total product utilization by the inshore sector is higher than offshore sector utilization (21-22% of total weight for the inshore sector, over all years vs. 16% for the offshore sector in 1991).

- By 1994, roe comprised nearly 18% of total gross revenues for the inshore sector, with fillets accounting for 49% and surimi for just over 29%.

- Gross revenue per mt has fallen from 1991 to 1994 for the inshore sector, but not by much considering product price reductions. Changes in product mix combined with differential prices for each product have contributed to relative 'maintenance' of revenues per ton.

- Lower revenues per ton in the offshore sector (based only on 1991 data) may indicate that total revenues generated from the pollock fisheries would have been lower without the implementation of the Amendment.

Pacific Cod Fishery Estimates of impacts of Alternative 1, the no action alternative, to allow the allocation of GOA Pacific cod to expire, were also qualitative. In general, it was concluded that freezer longliners would benefit significantly under Alternative 1. It appears that they would be able to enter the GOA Pacific cod fishery until the TAC was reached, and then continue on into the BS/AI to fish under the guaranteed fixed gear TAC. It is also possible that some offshore catcher-processors (trawlers) would participate in the GOA Pacific cod fisheries. Both of these conclusions would lead to shorter seasons and would likely be destabilizing for the current participants. Other primary findings were:

- Despite the 10% allocation of Pacific cod, the offshore sector took only 3% of the TAC in 1993 and 1994.

- About 10% of the overall GOA quota in 1993 and 1994 was taken by longline catcher/processors designated to the inshore category.

- Production for the inshore sector has shifted to higher priced fillets, while falling prices overall and reduced harvest levels have kept revenues per ton constrained.

- Revenues per ton decreased relatively more for the offshore sector, though some of this may be attributable to mandatory discarding under the rules of the allocations.

I/O2 Alternative 2. Reauthorize the pollock and Pacific cod allocations in the GOA through 1998.

Chapter 6 in the EA/RIR for I/O2 contains projections through 1998 of impacts of Alternative 2. Projections of harvest/processing activity are straightforward for this alternative. Pollock landings were 100% inshore and Pacific cod landings were 90% inshore, except for overages. Patterns of harvesting and processing are expected to be relatively unchanged from the 1993 and 1994 fisheries. In 1995, GOA pollock stocks were relatively small, decreasing, and quarterly allocated. The rollover facilitated in-season management of the pollock stocks and attempted to avoid quota overruns by limiting the harvest of pollock to smaller, lower capacity shore based trawlers. Major findings from the analysis are presented below.

Stability Implications

Compared to the 1993 and 1994 fisheries, continuation of the inshore/offshore allocations would have resulted in the least change. Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations through 1998 would maintain the relationships between these sectors as they have developed since 1993. The stability which has been established between these various industry sectors may not guarantee survival of entities within these sectors, but may be crucial to the successful implementation of the CRP program. A stable environment in the fisheries has been cited by the Council as critical to successful CRP development. Indeed, the disruption of existing distributions of harvesting and processing of pollock and Pacific cod, and the business relationships based on those distributions, could have serious and adverse implications for successful CRP development.

Community Impacts

Although the distributional, income-based analyses conducted for I/O1 are based on economic activity at the community/regional level, an additional, more qualitative examination of community impacts was provided in the analysis for I/O2. A review of the previous Social Impact Assessment from 1992, which focused on the communities of St. Paul, Dutch Harbor, Sand Point/King Cove, Kodiak, Newport, and Bellingham/Seattle, indicated that smaller Alaska communities, which are fundamentally dependent on the groundfish fisheries, exhibited the most variability and vulnerability to socially disruptive forces. Inshore allocations were determined to provide the greatest benefit to Alaskan coastal communities and afford them the greatest opportunities for development and growth, while the only community negatively affected would be Ballard/Seattle. The absence of an allocation (Alternative 1) would very likely impact coastal Alaskan communities negatively, both economically and socially.

Immediate and direct positive impacts would be expected by Alaskan communities with the allocation (Alternative 2), partially offset by negative impacts to Pacific Northwest employment and income, though the latter would be more easily absorbed by the more diverse economies of that region. Since 1992, additional infrastructures have developed in Alaskan coastal communities, partially in response to the guaranteed allocations under I/O1. Given the current status of the fisheries, and the communities which rely on fishing and processing, allowing the inshore/offshore allocations to expire, in the absence of alternative management remedies, would likely result in at least the same level of impacts as previously projected. Impacts at this time could be exacerbated beyond those previously predicted due to the additional infrastructures and the ability of these communities to utilize the current allocations.

2.1.3 Current Management Issues in GOA Fisheries

The Council has identified preemption of GOA fisheries by BS/AI-based vessels as a problem. The issue of sector preemption in the pollock and Pacific cod fisheries was first addressed by the Council in 1991. Amendments 18/23 addressed concerns about preemption by offshore vessels (factory trawlers) in the GOA, however, it did not address the issue of preemption of inshore vessels based in the BS/AI crossing over to fish in GOA waters.

The following section describes some of the preemption issues by BS/AI-based inshore vessels identified in GOA pollock and Pacific cod fisheries. While it pertains more directly to preemption of GOA fisheries by both BS/AI catcher and catcher/processors, the preemption issue for the inshore/offshore allocation is not geographically-based, but sector-based. It illustrates the ability of BS/AI catcher and factory trawl fleet to take the quota, and can be viewed as an example of the trawl fleet's capacity to take a majority of the GOA quota in the absence of an inshore/offshore allocation. While the inshore/offshore allocations do not address 'within sector' preemption issues, those issues are summarized here as background to illustrate the importance of resolving the basic inshore/offshore sector allocations to provide a stable playing field, which will allow the Council to successfully address other preemption management issues in the GOA.

2.1.3.1 Pollock Fisheries in the Western GOA

The pollock fishery in Area 610 has been one of the most difficult fisheries for NMFS to manage in recent years due to small TACs relative to potential effort and the constant potential that numerous large catcher vessels based in the BS/AI may crossover to the GOA to participate in this fishery. The disposition of pollock catch from Area 610 from 1992 to 1997 is displayed in Table 2.1, which illustrates the unpredictability of effort in this fishery. In 1992, the fishery was dominated by catcher vessels delivering to Bering Sea-based shore plants (Dutch Harbor and Akutan), and several at-sea factory trawlers and "true" motherships. The "true" mothership and catcher processor effort would have occurred before the Inshore/offshore allocations went into place in the fall of 1992. Vessels delivering to GOA-based shore plants accounted for less than 20% of the total catch from Area 610. In 1993, catcher vessels delivering to Bering Sea-based shore plants and Inshore floating processors accounted for about half of the Area 610 pollock harvest. In 1994 and 1995, the catch of pollock from Area 610 was distributed relatively evenly between catcher vessels delivering to Bering sea-based inshore plants and catcher vessels delivering to GOA-based shore plants. At-sea processors (catcher/processors and floating processors) are prohibited from GOA waters. During 1994 and 1995, participation by Bering Sea-based vessels occurred only during the June, July and October quarterly pollock openings in Area 610 during which time the Bering Sea pollock fisheries were closed. The ability of the CP fleet to add to this influx of effort, under no inshore/offshore allocation, would have magnified the impact.

Table 2.1 Total catch of pollock from Area 610 by location of processor in metric tons.

Year	*BS/AI*[1]	*GOA*[2]	*Other*[3]	*Total*
1992	9,660	3,580	5,926	19,165
1993	11,743	9,125	335	21,204
1994	7,254	9,753	259	17,266
1995	15,008	14,200	1,170	30,378
1996	1,089	21,721	567	23,376
1997	11,184	14,690	762	26,636

[1]Includes shore-based processors in Dutch Harbor and Akutan and the Inshore floating processors (Northern Victor and Arctic Enterprise)
[2]Includes GOA shore-based processors
[3]Includes factory trawlers, factory longliners, and "true" motherships.

2.1.3.2 Inshore Pacific Cod Fisheries in the Western GOA

The inshore Pacific cod fishery in Area 610 has a similar history of participation by BS/AI and GOA vessels. The total inshore catch of Pacific cod from Area 610 by location of processor is displayed in Table 2.2.

Table 2.2 Total inshore sector catch of Pacific cod from Area 610 by location of processor in metric tons.

Year	BS/AI[1]	GOA[2]	At-sea[3]	Total
1992	1,091	16,229	1,318	18,638
1993	63	10,293	5,539	15,895
1994	161	10,789	3,777	14,728
1995	2,357	10,289	5,501	18,146
1996	155	13,769	3,939	17,862
1997	1,256	17,593	4,081	22,930

[1]Includes shore-based processors in Dutch Harbor and Akutan
[2]Includes shore-based processors in Sand Point, King Cove, and Kodiak
[3]Includes inshore catcher/processors and inshore floating processors.

While shifts of effort in this fishery are not as dramatic as with the pollock fishery in Area 610, effort is also sometimes difficult to predict in this fishery.

The 1997 fishery is a case in point. In March 1997, after announcing the closure of the inshore Pacific cod fishery in Area 610 effective March 3, 1997, NMFS re-opened the fishery on March 10 for a 24 hour "mop-up" fishery to harvest a small amount of remaining TAC on the assumption that effort in the fishery would continue at the level experienced during January and February up to the March 3 closure.

Until March 3, 1997, catcher vessels based in the Bering Sea had not participated in the Pacific cod fishery in Area 610 to any great extent and were not expected to participate in the 24-hour "mop-up" fishery. However, a substantial number of Bering Sea-based catcher vessels entered the GOA on March 10, 1997, and harvested over 1,200 mt of Pacific cod during that 24 hour opening. As a consequence of this unanticipated effort, the 21,803 mt Pacific cod TAC for Area 610 was exceeded by 1,288 mt or 6% of the total. If a registration program had been in effect for this fishery in 1997, it would have provided NMFS with the information necessary to prevent such a substantial overharvest of the TAC. An overharvest of the Pacific cod TAC in the GOA has the potential to significantly affect State-managed Pacific cod fisheries in State waters as well as IFQ fisheries that normally retain incidental catch of Pacific cod. The ability of the CP fleet to add to this influx of effort, under no inshore/offshore allocation, would have magnified the impact.

2.1.3.3 Offshore Pacific Cod Fishery in the GOA

The offshore Pacific cod fishery in the GOA has also proven problematic for NMFS due to a small TAC relative to the potential effort (10% of TAC is allocated to the offshore fleet). In 1996, a number of factory trawlers checked into the central GOA indicating flatfish as their target species. It was not until NMFS began to receive weekly production reports that it became apparent that most of these vessels had high catches of and were in part targeting on Pacific cod. By the time NMFS realized that numerous catcher/processors were targeting on Pacific cod and was able to close the fishery, the 1996 TAC of 4,290 mt for the offshore sector in the central GOA was exceeded by 1,061 mt or 25% of the total.

2.1.4 Current GOA Problem Statement

Inshore/offshore allocations of pollock and Pacific cod Total Allowable Catches (TACs) in the GOA were originally established under Amendments 18/23 (I/O1) to the BS/AI and GOA FMPs, respectively, in 1992. The allocations were "rolled over" by the Council in Amendments 38/40 (I/O2) in 1995. Both the original amendments and the rollover amendments contained "sunset" provisions, requiring the Council to reexamine the allocations, or see them expire. The current I/O management program will sunset on December 31, 1998, without Council action by June 1998.

At its September 1997 meeting, the Council adopted a problem statement and an associated set of management alternatives to examine the inshore/offshore allocations, within current biological, economic, social, and regulatory contexts. An overriding concern of the Council is to ensure industry stability, both between and within sectors, which had been created during the six years of the program. This issue is also of primary importance in this third iteration of the inshore/offshore allocations after six years of implementation and will be of primary interest in the analyses of a continuation of that program. The Council limited its GOA analysis to two alternatives: the no action alternative (Alternative 1) and a rollover of current allocations with no sunset provision (Alternative 2). It approved the following problem statement for the GOA pollock and Pacific cod fisheries for this analysis:

PROBLEM STATEMENT (I/O3)

> Allowing the current Gulf of Alaska Inshore/offshore allocative regime to expire December 31, 1998, would allow the same preemption of resident fleets by factory trawlers in the pollock and Pacific cod fisheries which occurred in 1989. It was this dramatic preemption which triggered the original proposal for an inshore/offshore allocation. In 1989, there was still pollock available in the Bering Sea when the preemption occurred when vessels moved into the Gulf to take advantage of fish with high roe content.
>
> A rollover of the current Gulf of Alaska inshore/offshore program which allocates 100% of the pollock and 90% of the Pacific cod to shore-based operations is a proactive action to prevent the reoccurrence of the original problem.

2.1.5 Purpose and Need for Action

As stated above in the GOA problem statement, the Council has identified stability in GOA fishing communities as a critical factor in its decision to allocate 100% of pollock and 90% of Pacific cod to the inshore sector and that a return to the possibility of preemption by factory trawlers of resident fleets in the pollock and Pacific cod fisheries in the GOA is not acceptable. Continuation of the inshore/offshore allocations will maintain the status quo in these fisheries.

Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations would maintain the relationships between these sectors as they have developed since 1993. If the inshore/offshore allocations were allowed to lapse, the management void could indeed create the preemption problems envisioned when the amendments were originally approved and implemented.

The discussion in Section 2.1.3, Current Management Issues in GOA Fisheries, described recent Council action to address preemption of these small, resident GOA fisheries. The Council also recently formed an industry committee to review additional management measures and the Council is on record that it will make additional management decisions to maintain the stability of those small, resident fisheries and communities on which those fisheries are based. The ability of the Council to address 'within sector' preemption issues in the GOA is dependent upon resolution of the larger preemption issue being addressed by inshore/offshore allocations.

Alternatives Considered

The Council limited the alternatives in this analysis to two: the no action alternative and the 'rollover' alternative. The Council further indicated its preference to a simple rollover of the GOA allocations, perhaps with no sunset date.

Alternative 1. No action.

Under Alternative 1, the current inshore/offshore allocation for pollock and Pacific cod in the Gulf of Alaska would expire at the end of 1998.

Alternative 2. Rollover GOA pollock (100% inshore) and Pacific cod (90% inshore) allocations.

Alternative 2 would reauthorize the current inshore/offshore processing allocations for pollock and Pacific cod in the GOA. Amendment 23 to the GOA FMP established that 100% of pollock would be reserved for vessels delivering to inshore plants and 90% of Pacific cod would be reserved for vessels delivering to inshore plants through 1995. Amendment 40 reauthorized these allocations through 1998. This current alternative would reauthorize these allocations in the GOA, with or without a sunset date.

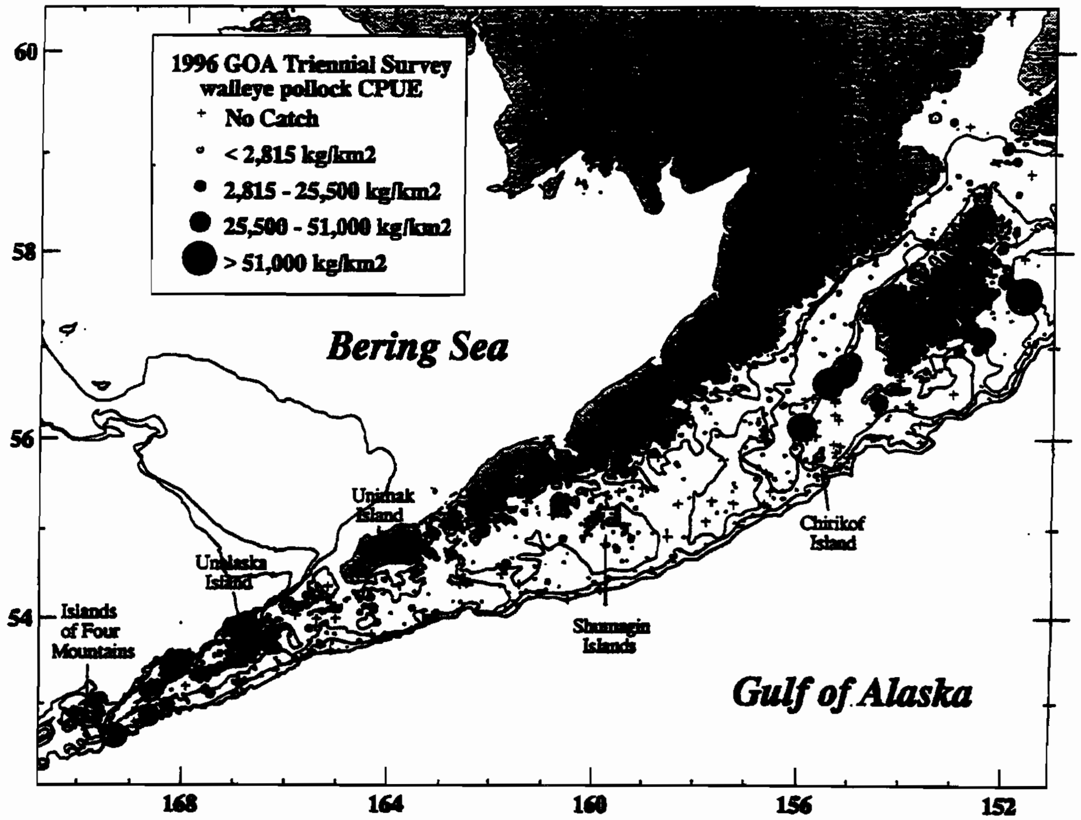
2.2 Description of the Fisheries

2.2.1 Biology and Status of Pacific Cod Stocks

Pacific cod (*Gadus macrocephalus*) is a widespread demersal species found along the continental shelf of the Gulf of Alaska from inshore waters to the upper slope. In the Gulf of Alaska, Pacific cod are most abundant in the western area, where large schools may be encountered at varying depths depending upon the season of the year. Adult Pacific cod are commonly found at depths of 50-200 m. During the winter and spring, Pacific cod appear to concentrate in the canyons that cut across the shelf and along the shelf edge and upper slope between depths of 100-200 m where they overwinter and spawn. In the summer, they shift to shallower depths, usually less than 100 m. NMFS bottom trawl surveys of the Gulf conducted in 1990, 1993, and 1996 have found that about half of the biomass is located at depths of 100 m or less, with about a third between 100-200 m depth. Distribution and relative abundance of Pacific cod are shown in Figure 2.2.

Information on the life history of Pacific cod is limited, but it is known that Pacific cod are a fast-growing, short-lived species. Age determination for Pacific cod is difficult; the approximate maximum age is 10-13 years. Estimates of the instantaneous rate of natural mortality range from 0.22-0.45. The natural mortality rate estimate is 0.37.

Pacific cod migrate to deeper waters in autumn, spawn in winter and return to shallow waters in spring. Spawning in the Gulf has been observed from February-July, with most spawning occurring in March at depths of 150-200 m. Spawners have been observed mostly along the outer continental shelf off Kodiak Island but also in Shelikof Strait and off Prince William Sound. Female Pacific cod begin to attain maturity at about 50 cm in length and 50% reach maturity at 55-62 cm (4-6 years). Estimated fecundity of females 55-62 cm in length ranges from 860,000-1,300,000 eggs. Pacific cod deposit demersal eggs which hatch within 10-20 days, releasing pelagic larvae.



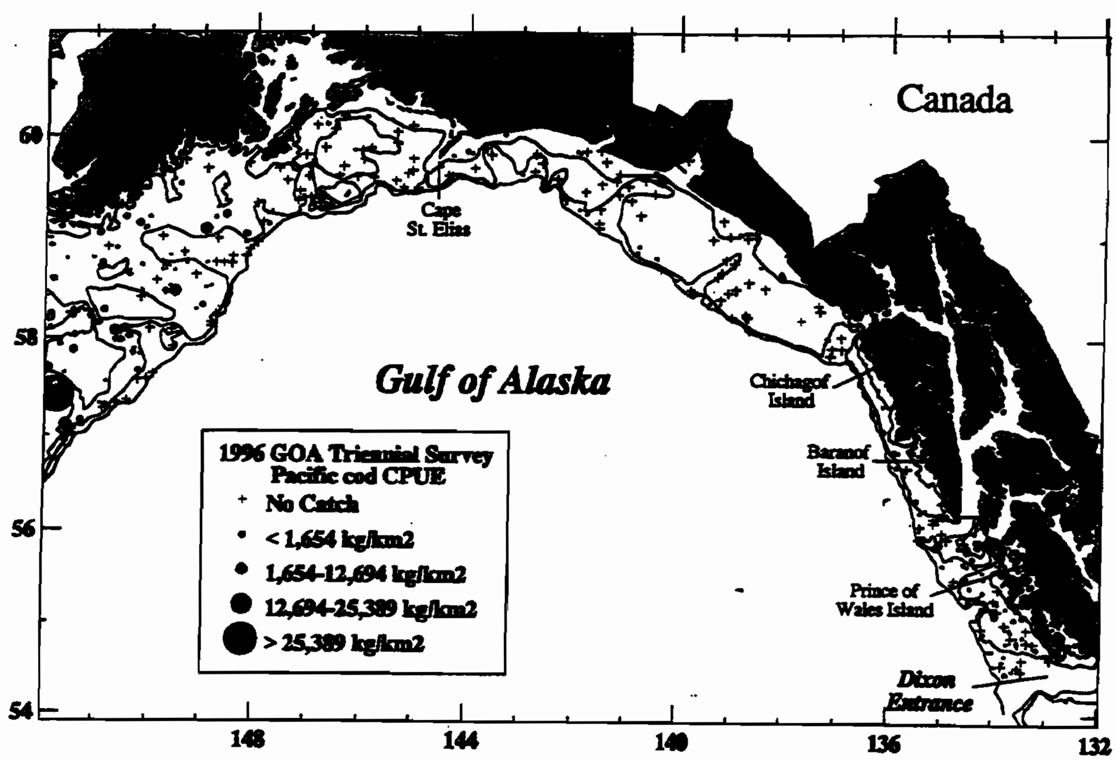


Figure 2.2 Distribution and relative abundance of walleye pollock from the Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between mean CPUE and two standard deviations above mean CPUE, between two and four standard deviations above mean CPUE, and greater than four standard deviations above mean CPUE. Each symbol is proportional to the sample CPUE.

Pacific cod are benthopelagivores. Pacific cod feed on a wide variety of prey in the Gulf, including shrimp, crabs, flatfish, pollock, fishery discards, amphipods, euphausiids, and capelin (Yang 1993). Pacific cod become increasingly piscivorous with increasing size (Yang 1993). Pacific cod larger than 60 cm in length consumed mostly fish, particularly 1-3 year old pollock. Pacific cod are also known to feed on red king crab, particularly during their molting period in spring. Juveniles feed on benthic amphipods and worms. Small adults feed primarily on benthic crabs, shrimps, and fishes. Pacific cod are preyed upon by Pacific halibut, fur seals, and some cetaceans.

There is some evidence to suggest that there are subpopulations of Pacific cod. Grant et al. (1987) reported that Gulf, Bering Sea, and Aleutian Islands Pacific cod stocks may be genetically indistinguishable. Tagging studies show that Pacific cod move between the Bering Sea and the Gulf (Shimada and Kimura 1994). A study of meristic characters suggested that northern and western Bering Sea Pacific cod may represent a stock distinct from that in the eastern Gulf of Alaska, but was limited by sample sizes.

The biomass increased in the 1996 bottom trawl survey (525,643 mt) compared with 1990 (379,494 mt) and 1993 (405,431 mt). The depth and area distributions of Pacific cod were similar for the 1990, 1993, and 1996 surveys. Most Gulf Pacific cod are located in the Western/Central area (which includes the Kodiak, Chirikof and Shumagin subareas from 147°-170°W longitude). The surveys found significant concentrations in Marmot and Shelikof Gullies near Kodiak Island, Shumagin Gully east of the Shumagin Island, on Davidson Bank south of Unimak Island, and on the shelf south of the Fox Islands (Umnak and Unalaska Islands).

The 1997 stock assessment (Thompson et al. 1997) reported that the GOA Pacific cod exploitable (age 3+) biomass increased from 552,000 mt in 1978 to a peak of 983,000 mt in 1988, and declined to about 650,000 mt in 1997. This was due to two above average-sized year-classes in 1977 and 1979, and a long series of average year-classes from 1978-1990 (except 1988). Age 3 fish are used as the index age for assessing year class strength. A reclassification of year class strength in the 1997 assessment results in 1989 as the last above average year class, with the last four year classes all below average. The trend may be reversing from indications from the 1996 bottom trawl survey, where the length frequency distribution suggests that the 1995 year class (observed at age 1) may be exceptionally large. However, it should be stressed that this finding is extremely preliminary.

Depending on the fishing mortality rate utilized in the near future and assuming average year-class recruitment sizes, exploitable biomass is projected to decline from 785,000 mt in 1998 to between 587,000 mt ($F_{0.1}$=0.52) and 685,000 mt ($F_{40\%}$=0.34) by the year 2002, with annual catches ranging from a low of 109,000 mt ($F_{40\%}$=0.34) to a high of 127,000 mt ($F_{0.1}$=0.57) in the year 2002. The ABC in 1998 was set at 77,300 mt (TAC was reduced 17% by the State water Pacific cod GHL). Note that these estimates have increased from those reported in I/O1 and I/O2 due to an increase in the biomass. A risk-averse strategy for harvest strategies was employed in the assessment and accepted by the Council, so that the ABCs and TACs were conservatively determined.

Table 2.3 Allocation (in percent) of the Gulf Pacific cod TAC by NPFMC.

	Regulatory Area		
Year(s)	Western	Central	Eastern
1977-85	28	56	16
1986	40	44	16
1987	27	56	17
1988-89	19	73	8
1990	33	66	1
1991	33	62	5
1992	37	61	2
1993-94	33	62	5
1995	29	66	5
1996	29	66	5
1997	35	63	2

Departing from the initial allocation scheme devised in 1977, the geographic distribution of TAC for 1986 was changed in order to permit all of the total allowable level of foreign fishing to be taken from the NPFMC Western Regulatory Area. With the cessation of foreign fishing in 1987, allocation of DAH by regulatory area was restored to near pre-1986 levels. Allocations have been adjusted to reflect the results of the 1987, 1990, 1993, and 1996 Gulf of Alaska triennial groundfish surveys in subsequent years. The 1990 allocation accommodated developing fisheries around Kodiak Island and in the western Gulf of Alaska. Additionally, the 1992 allocation was increased in the Western area and decreased in the Central and Eastern Areas and the 1993 allocation returned to that of 1991, and remained constant in 1994. The history of allocations (in percent) by NPFMC Regulatory Area within the Gulf is listed in Table 2.3. The history of ABCs, TACs, and foreign and domestic allocations is listed in Table 2.4.

Table 2.4 Final allocations and catches (t) of Pacific cod in the Gulf of Alaska, by fishery category, 1978-97. Estimated domestic discards are excluded.

	Allocation[1]						Catch[2]			
Year	ABC	TAC	TALFF	DAP	JVP	Reserve	Foreign	Jt. Venture	Domestic	Total
1978	--	40,600	25,100	15,500	--	0	11,370	7	813	12,190
1979	--	34,800	29,300	4,000	--	1,500	13,173	711	1,020	14,904
1980	--	60,000	53,442	4,058	2,500	0	34,245	466	634	35,345
1981	--	70,000	63,634	5,167	1,199	0	34,969	58	1,104	36,131
1982	--	60,000	51,688	6,902	1,410	0	26,937	193	2,335	29,465
1983	--	60,000	50,936	5,312	3,752	0	29,777	2,426	4,337	36,540
1984	--	60,000	32,518	9,320	18,162	0	15,896	4,649	3,353	23,898
1985	--	60,000	10,200	30,360	7,640	11,800	9,086	2,266	3,076	14,428
1986	--	75,000	15,520	35,000	9,480	15,000	15,211	1,357	8,444	25,012
1987	125,000	50,000	0	48,000	2,000	0	0	1,978	30,961	32,939
1988	99,000	80,000	0	68,950	11,050	0	0	1,661	32,141	33,802
1989	71,200	71,200	0	71,200	0	0	0	0	43,293	43,293
1990	90,000	90,000	0	90,000	0	0	0	0	72,517	72,517
1991	77,900	77,900	0	77,900	0	0	0	0	76,977	76,977
1992	63,500	63,500	0	63,500	0	0	0	0	80,100	80,100
1993	56,700	56,700	0	56,700	0	0	0	0	56,487	56,487
1994	50,400	50,400	0	50,400	0	0	0	0	45,603	45,603
1995	69,200	69,200	0	69,200	0	0	0	0	69,060	69,060
1996	65,000	65,000	0	65,000	0	0	0	0	68,280	68,280
1997	81,500	69,115	0	69,115	0	0	0	0	68,825	68,825

1/ "Fishing year" 1981 was extended to 14 months in order that subsequent fishing years would coincide with calendar years.

2/ Sources: Foreign and joint venture catches – personal communications with Jerald Berger, U.S. Fisheries Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 7600 Sand Point Way NE, Bin C15700, Bldg 4, Seattle, WA 98115; U.S. Landings 1978-80 – Rigby (1984), landings subsequently adjusted for estimated discards; U.S. Landings 1981-1989 – Pacific Fishery Information Network (PacFIN), Pacific State Marine Fisheries Commission, 45 SE 82nd Drive, Suite 100, Gladstone, OR 97028 (landings subsequently adjusted for estimated discards); U.S. catches, 1990-93 (observer/industry reported catches, blend estimates) -- U.S. Fisheries Observer Program; U.S. Catches 1994-97 (blend estimate) – NMFS Alaska Regional Office.

3/ "Fishing year" 1981 was extended to 14 months in order that subsequent fishing years would coincide with calendar years.

The Pacific cod stock is exploited by a multiple-gear fishery, including trawls, longlines, and pots. The fishery opens to fixed gear on January 1, and to trawl gear on January 20. As shown below, trawlers account for the majority of Gulf Pacific cod landings. Catches by pot gear have increased in recent years, facilitated in part by the comparatively low halibut bycatch rates associated with such gear. The Pacific cod trawl fleet, which has caught between 67-90% of the GOA from 1987-93 (Thompson and Zenger 1994), fishes throughout the western and central Gulf of Alaska, frequenting the gullies where the bottom trawl surveys found concentrations of Pacific cod. Most of the observed Pacific cod pot locations during 1990-93 have been near Kodiak Island; the percentage of the GOA Pacific cod harvest caught using pots has increased from 1-5% in 1987-89 to almost 20% in 1994 (Thompson and Zenger 1994). The longline fleet has fished throughout the western/central GOA and has caught between 8-28% of the GOA Pacific cod catch since 1987.

Historically, the majority of Pacific cod landings came from the INPFC Shumagin and Chirikof Areas (Table 2.5). Foreign trawl catches of Pacific cod were usually incidental to directed fisheries for other species. In 1987 and 1988 the vast majority of landings was taken by trawls in the Kodiak area, reflecting the absence of foreign fishing effort in the western Gulf and an increase in domestic effort near the principal landing port of Kodiak. Pacific cod catches from the Western Gulf increased from 33% to 47% of total Gulf Pacific cod landings between 1989 and 1992.

Table 2.5 Landings[4] (mt) of Pacific cod in the Gulf of Alaska by International North Pacific Fisheries Commission (INPFC) statistical area, including the Shelikof subdivision of the Chirikof and Kodiak areas, 1978-1996.

	Statistical Area						
Year	Shumagin	Chirikof	Kodiak	Shelikof	Yakutat	Southeast	Total
1978	5,591	4,707	1,488	--	202	174	12,162
1979	3,982	6,541	3,829	--	371	147	14,870
1980	8,705	18,627	5,871	--	2,004	116	35,323
1981	11,579	19,115	3,036	--	2,249	109	36,088
1982	7,343	14,361	5,543	--	2,108	25	29,380
1983	9,178	15,675	9,567	--	1,963	18	36,401
1984	11,748	5,844	6,149	--	1	34	23,766
1985	8,426	3,224	2,564	--	<1	92	14,306
1986	12,751	4,092	7,362	--	222	185	24,612
1987	2,473	2,378	26,162	--	30	389	31,432
1988	5,562	2,451	20,922	3,329	39	254	32,557
1989	13,830	3,072	22,130	2,423	18	203	41,676
1990	29,309	8,248	28,503	2,685	29	294	69,068
1991	31,704	13,755	25,094	3,486	88	188	74,315
1992	36,080	14,613	24,526	--	899	214	76,332
1993	17,270	8,215	23,655	--	1212	249	50,602
1994	14,665	9,310	18,751	--	1,546	91	44,563
1995	21,322	10,943	32,334	--	810	104	65,513
1996	18,957	16,946	24,580	--	198	60	60,741

1/ Sources: Foreign and joint venture catches – personal communication with Jerald Berger, U.S. Fisheries Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 7600 Sand Point Way NE., Bin C15700, Building 4, Seattle, WA 98115-0070; U.S. landings, 1978-80 – Rigby (1984); U.S. landings, 1981-89 – Pacific Fishery Information Network (PacFIN), Pacific States Marine Fisheries Commission, 45 SE. 82nd Dr., Suite 100, Gladstone, OR 97027-2522; U.S. landings, 1990-93 – personal communication with Michael Guttormsen, U.S. Fisheries Observer Program; U.S. landings, 1994-96 – NMFS Alaska Regional Office.

Gulf-wide, landings have almost always been less than the TAC, with the two exceptions occurring in 1992 and 1996 (Table 2.4). Individual regulatory area TAC overages have occurred somewhat more frequently. Slight overages occurred in the Western area in 1989, 1991, 1992, 1995, and 1996; in the Central area in 1987, and in the Eastern area in 1988 and 1992 (Table 2.6).

Table 2.6 Pacific cod landings (mt) and percent of area-specific allocation landed (% AL), by North Pacific Fishery Management Council (NPFMC) Gulf of Alaska regulatory area, 1978-97.

	NPFMC Regulatory Area							
	Western		Central		Eastern		Gulf of Alaska	
Year	Landings	% AL	Landings	% AL	Landings	% AL	Landings	% AL
1978	5,591	49	6,195	27	376	6	12,162	30
1979	3,982	41	10,370	53	518	9	14,870	43
1980	8,705	52	24,498	73	2,120	24	35,323	59
1981	11,579	59	22,151	56	2,358	21	36,088	52
1982	7,343	44	19,904	59	2,133	22	29,380	49
1983	9,178	55	25,242	75	1,981	21	36,401	61
1984	11,748	70	11,993	36	35	<1	23,776	40
1985	8,426	50	5,788	17	92	1	14,306	24
1986	12,751	42	11,454	35	407	3	24,612	33
1987	2,473	18	28,540	102	419	5	31,432	63
1988	5,562	29	26,702	44	293	146	32,557	41
1989	13,830	102	27,625	53	221	4	41,676	58
1990	29,309	98	39,436	66	323	36	69,068	77
1991	31,704	123	42,335	88	276	7	74,315	95
1992	36,080	154	39,139	100	1,113	111	76,332	120
1993	17,270	92	31,870	91	1,462	52	50,602	89
1994	14,665	88	28,061	90	1,637	65	44,363	88
1995	21,322	106	43,277	95	914	26	65,513	95
1996	18,957	101	41,526	97	258	8	60,741	93
1997	24,070	99	43,657	100	1,103	92	68,825	100

1/ Sources: Foreign and joint venture catches – personal communication with Jerald Berger, U.S. Fisheries Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 7600 Sand Point Way NE., Bin C15700, Building 4, Seattle, WA 98115-0070; U.S. landings, 1978-80 – Rigby (1984); U.S. landings, 1981-89 – Pacific Fishery Information Network (PacFIN), Pacific States Marine Fisheries Commission, 45 SE. 82nd Dr., Suite 100, Gladstone, OR 97027-2522; U.S. landings, 1990-1993 – personal communication with Michael Guttormsen, U.S. Fisheries Observer Program; U.S. landings, 1994-97 – NMFS Alaska Regional Office.

2/ The NPFMC Western Regulatory Area is the International North Pacific Fisheries Commission (INPFC) Shumagin Statistical Area, the NPFMC Central area combines the INPFC Chirikof and Kodiak areas, and the NPFMC Eastern area encompasses the INPFC Yakutat and Southeastern INPFC areas.

Beginning in 1997, the State of Alaska instituted an inshore Pacific cod fishery for pot, mechanical jig gear, or hand troll gear (hand jig) only in the GOA (Figure 2.3). This fishery does not limit participation to Federal moratorium permit holders. The Alaska Board of Fisheries set the Western and Central area Guideline Harvest Levels (GHL) at 15% of the respective Federal ABC, and the Eastern area GHL at 25% of the EGA ABC. The Central area GHL is further allocated to Cook Inlet (15%), Kodiak (50%), and Chignik (35%). A vessel may register to fish in only one registration area in a calendar year (exclusive registration). The season opens 7 days after the closure of the Federal fishery. Jig and pot gear apportionments occur in some subareas. The pot fishery may start harvesting any unharvested jig quota in Cook Inlet and Kodiak on September 1 and in Prince William Sound on October 1. The Alaska Peninsula (EGA) and Chignik subarea fisheries have a maximum 58-foot vessel size limit. The Council reduces the GOA area TACs by the GHL amounts to conservatively manage the Pacific cod stock. NMFS and ADF&G manage these fisheries cooperatively and exchange survey and in-season data for Pacific cod. Landings for the 1997 State water fishery are reported in Figure 2.4.

Table 2.7 Gulf-wide Pacific cod landings (mt), 1978-97.

Year	Trawls	Longline	Pots
1978	4,547	6,800	0
1979	3,629	9,545	0
1980	6,464	27,780	0
1981	10,484	25,472	0
1982	6,679	22,667	0
1983	9,512	26,756	0
1984	8,805	14,844	0
1985	4,876	9,411	2
1986	6,850	17,619	141
1987	22,486	8,261	642
1988	27,145	3,933	1,422
1989	37,637	3,662	376
1990	59,188	5,919	5,661
1991	58,091	7,630	10,464
1992	54,305	15,467	9,984
1993	37,806	8,962	9,707
1994	31,446	6,778	9,160
1995	41,877	11,054	16,050
1996	45,991	10,196	12,040
1997	48,414	11,002	9,056

A description of the 1993-95 fishery in State and Federal waters is provided by Jackson and Urban (1996). Smaller vessels predominate in some Western/Central GOA areas, notably near the Shumagin Islands. Pot fishing was more prevalent near Kodiak Island, especially with smaller vessels. More than half of Western/Central area harvests for 1993-96 were taken by smaller pot vessels (Table 2.7). Longline vessels accounted for 11% of the total 1993-95 harvest in the Western/Central area, with smaller vessels predominating near Kodiak and the outer Kenai Peninsula. Trawls accounted for about 66% of the Gulf-wide 1993-95 harvest, and 30% in state waters. Small trawlers predominate in this fishery, particularly near the Shumagins. Jig gear landed very little; nearly all vessels were <61 ft.

2.2.2 Biology and Status of Pollock Stocks

Walleye pollock (*Theragra chalcogramma*) is a semidemersal schooling fish that is widely distributed throughout the North Pacific in temperate and subarctic waters. They are found throughout the water column from shallow to deep water, frequently forming large schools at depths of 100-400 m along the outer continental shelf and slope. In the Gulf, major exploitable concentrations are found primarily in the Central and Western regulatory areas (147° - 170°W longitude).

Several subpopulations of pollock may exist but the evidence is inconclusive. There are two groups in the Bering Sea which can be distinguished by different growth rates, and perhaps five discrete spawning groups which exist from the Aleutians to Puget Sound, Washington. Pollock from this region are managed as a single stock that is separate from the Bering Sea and Aleutian Island pollock stocks (Alton and Megrey 1986).

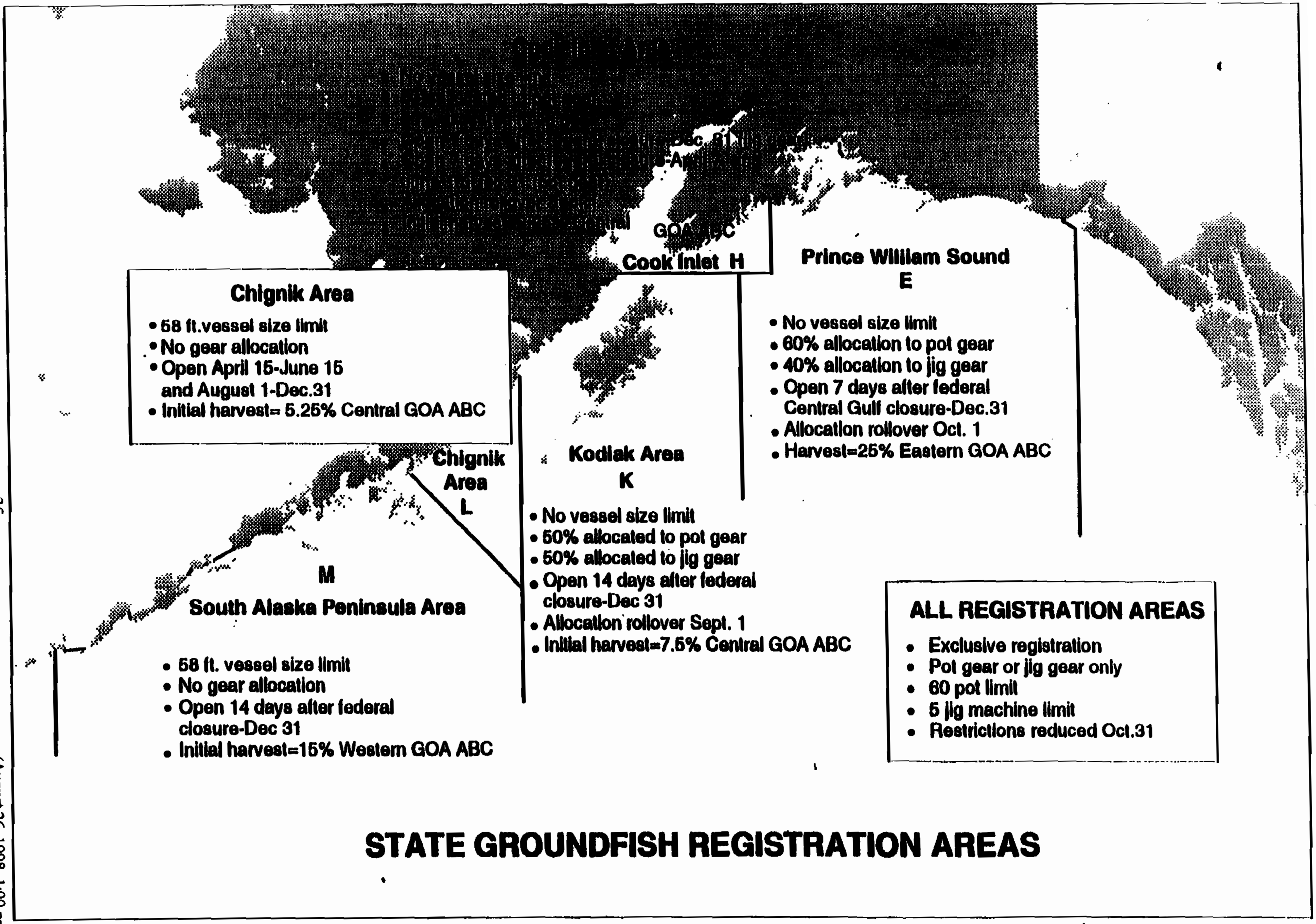


Figure 2.3 Elements of State Water Pacific Cod Management Plans

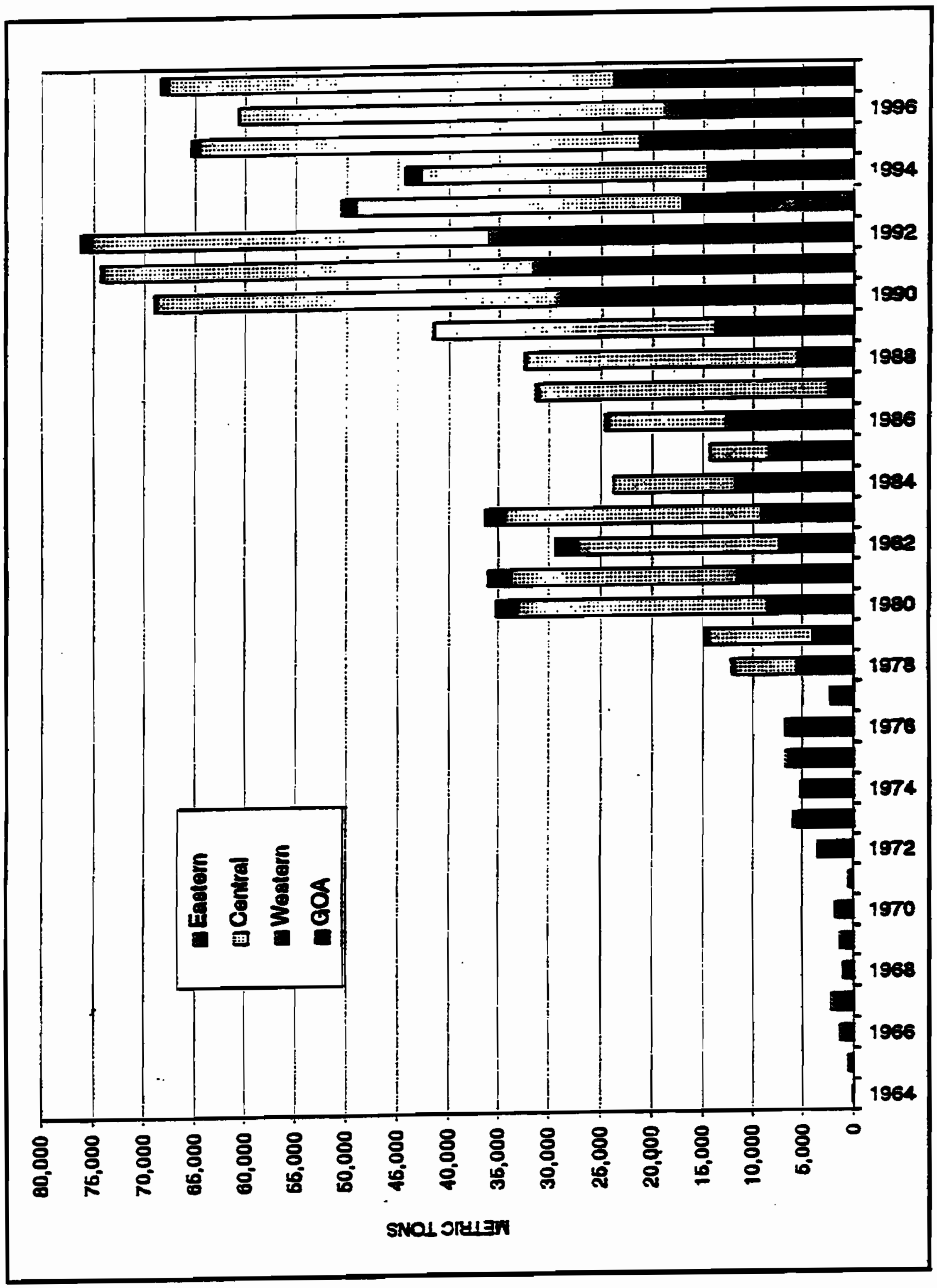


Figure 2.4 Pacific Cod landings in the GOA 1964-1997. Source: NPFMC SAFE report, Nov. 1997

Major spawning concentrations of pollock in the Gulf of Alaska have been observed in Shelikof Strait and the Shumagin Islands. Eggs have been found at depths of 0-1,000 m. Spawning is seasonal and occurs during the late winter/early spring period. The species is a mass spawner that forms large mid-water concentrations during the spawning season. The greatest spawning biomass has been observed in Shelikof Strait, with spawning also occurring off the east coast of Kodiak Island and off Prince William Sound. Both male and female pollock begin to attain sexual maturity at about 25 cm fork length and 50% are mature by 30-34 cm (3-4 years of age). Estimated fecundity of females 30-34 cm of length is about 100,000 eggs.

Young-of-the-year occur in the upper 40 m and older juveniles are found in depths of 10-400 m in the water column. Adult are usually found at 50-300 m, but occasionally to 975 m. Seasonal movements between inshore/offshore habitats have been observed, with adult fish moving in the spring from deep water to shallower depths where they remain throughout the summer. In the fall they return to deep water. In addition to seasonal movements, there may be vertical movements in the water column associated with time of day and feeding patterns.

Walleye pollock are opportunistic feeders, feeding on free-swimming pelagic animals. Juveniles feed on copepods, euphausiids, amphipods, and isopods. Small adults feed primarily on euphausiids while large adults may concentrate on juvenile pollock. Walleye pollock are preyed upon by pinnipeds, cetaceans, diving birds, and larger fishes. They are also cannibalistic.

Growth of pollock is rapid until about 4 years of age. Maximum size is about 91 cm, and maximum ages are 13 years for males and 17 years for females. The maximum age observed was 22 years. Estimates of the instantaneous rate of natural mortality range from 0.30-0.65. Natural mortality was assumed to be 0.3 for all ages.

The Gulf-wide pollock biomass estimate in 1997 was 707,434 mt. The time series used for the stock assessment is based only on the regions west of Cape St. Elias. The 1996 point estimate of pollock biomass in this region was 653,905 mt, a 14% drop from 1993. The long term trend in biomass in regions west of Cape St. Elias has been flat.

The regional distribution of pollock biomass shifted between each of the five bottom trawl surveys. In 1996, the largest concentration of pollock biomass was in the Chirikof area (39%), followed by the Kodiak (30%) and Shumagin areas (22%). Large concentrations of pollock were observed in the Western Gulf, Shumagin Islands, and in regions surrounding Kodiak Island (Hollowed et al. 1996). Relative to 1993, pollock biomass estimates in the Eastern Gulf (Yakutat and Southeast combined) increased 45%. Most of this increase occurred in the Southeast area in the shallow 0-100m depth range. The first year bottom trawl samples were taken in shallow waters in the Southeast region in 1996. The biomass in the Yakutat region dropped from 35,413 to 19,587 mt between 1993 and 1996.

The 1996 catch-at-age data continue to show that the strong 1984 year class (age 12) was still present in Central area in the second and third trimesters. Strong 1988 and 1989 year classes were present in roughly equal proportions in the third trimester. The 1989 year class (age 7) dominated the first trimester data. Evidence of the incoming 1994 year class (age 2) was revealed in the first trimester data. Length frequency distributions from the 1996 bottom trawl survey in the Western and Central areas show a fairly large mode at about 24 cm, which is evidence of a strong 1994 year class. The 1994 year class represents the largest estimate of 1 and 2 year old fish in the history of the Shelikof Strait surveys. Another pronounced mode was observed at about 16 cm in the Eastern area and the Shumagin region, which is evidence of a potentially strong 1995 year class. An estimate of the number of age 2 fish (the 1994 year class) in the Western and Central areas (138 million fish) is much higher than the previous survey estimate of age 2 fish in 1993 (47.6 million fish). The 1997 year-class is predicted to be average.

Stock projections show the spawner biomass level in 1998 will be below $B_{40\%}$. Under all recruitment options, the spawner biomass is predicted to peak in 1999. Exploitable biomass of age 3+ fish is projected to drop from 1,156,000 mt in 1998 to between 449,506 mt and 842,960 mt, depending on recruitment.

The commercial fishery for walleye pollock in the Gulf of Alaska started as a foreign fishery in the early 1970s (Megrey 1988). Catches increased rapidly during the late 1970s and early 1980s (Table 2.8). Major spawning concentrations of pollock were discovered in Shelikof Strait in 1981 and roe fisheries developed. The biomass of spawning pollock was estimated at 2.7 million mt in 1981 based on revised EIT surveys of Shelikof Strait. The domestication of the pollock fishery occurred quickly in the Gulf with only a short period of joint venture operations in the mid-1980s. The fishery was fully domesticated by 1988. Historical fishing locations through 1992 are reported in Fritz (1993). The seasonal distribution of domestic trawl locations where pollock was the target is shown in Figure 2.2.

Table 2.8 Landed catch including discard pollock (1000 t) in the Western and Central regions of the Gulf of Alaska 1977-97.

Year	Western/ Central Catch	Western/ Central TAC	% AL[1]	Yakutat/ S.E. Catch	Yakutat/ S.E.TAC
1977	112.3	118.0*	95	-	-
1978	95.8	168.0*	57	3.5	-
1979	99.8	168.0*	59	5.4	-
1980	110.4	168.0*	66	4.6	-
1981	139.2	168.0*	83	8.6	-
1982	165.1	168.0*	98	3.6	-
1983	215.5	256.6*	84	T	-
1984	306.7	400	77	0.00	16.6
1985	284.8	305	93	0.00	16.6
1986	93.6	150	62	0.00	16.6
1987	69.5	104	67	-	4
1988	65.6	90	73	-	3
1989	78.2	72	109	-	0.2
1990	90.5	70	129	-	3.4
1991	107.5	100	108	-	3.4
1992	93.9	84	112	-	3.4
1993	107.4	111	97	0.7	3.4
1994	104	102	102	6.9	7.3
1995	69.9	62	113	3.4	3.6
1996	49.8	52.5	95	0.6	2.8
1997	84.0	74.4	113	5.9	5.6
Avg.	121	142	90	3.2	6

*: Gulf-wide TAC from 1977 - 1983.

Sources: Foreign and joint venture catches 1977-84--Berger et al. (1986); 1985-88--Pacific Fishery Information Network (PacFIN), Pacific Marine Fisheries Commission. Domestic catches 1978-80--Rigby (1984); 1981-90--PacFIN, 1991-97 NMFS Alaska Regional Office.

1/ The percentage of the Western and Central GOA TAC that was harvested.

Section 2.1.3 describes recent Council action to address the pollock and Pacific cod fisheries in the BS/AI and GOA, which have been "at risk" of exceeding their specified total allowable catch (TAC) or prohibited species catch (PSC) limits.

2.3 NEPA Requirements: Environmental Impacts of the Alternatives

An environmental assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will result in significant impact on the human environment. If the action is determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact (FONSI) would be the final environmental documents required by NEPA. An environmental impact statement (EIS) must be prepared for major Federal actions significantly affecting the human environment.

An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose and alternatives were discussed in Sections 2.1 and 2.2, and the list of preparers is in Section 6. This section contains the discussion of the environmental impacts of the alternatives including impacts on threatened and endangered species and marine mammals.

2.3.1 Environmental Impacts of the Alternatives

The environmental impacts generally associated with fishery management actions are effects resulting from (1) harvest of fish stocks which may result in changes in food availability to predators and scavengers, changes in the population structure of target fish stocks, and changes in the marine ecosystem community structure; (2) changes in the physical and biological structure of the marine environment as a result of fishing practices, e.g., effects of gear use and fish processing discards; and (3) entanglement/entrapment of non-target organisms in active or inactive fishing gear.

A summary of the effects of the annual groundfish total allowable catch amounts on the biological environment and associated impacts on marine mammals, seabirds, and other threatened or endangered species are discussed in the final environmental assessment for the annual groundfish total allowable catch specifications.

2.3.2 Impacts on Endangered or Threatened Species

Background. The ESA provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The program is administered jointly by NMFS for most marine species, and the US Fish and Wildlife Service (FWS) for terrestrial and freshwater species.

The ESA procedure for identifying or listing imperiled species involves a two-tiered process, classifying species as either threatened or endangered, based on the biological health of a species. Threatened species are those likely to become endangered in the foreseeable future [16 U.S.C. §1532(20)]. Endangered species are those in danger of becoming extinct throughout all or a significant portion of their range [16 U.S.C. §1532(20)]. The Secretary, acting through NMFS, is authorized to list marine mammal and fish species. The Secretary of Interior, acting through the FWS, is authorized to list all other organisms.

In addition to listing species under the ESA, the critical habitat of a newly listed species must be designated concurrent with its listing to the "maximum extent prudent and determinable" [16 U.S.C. §1533(b)(1)(A)]. The ESA defines critical habitat as those specific areas that are essential to the conservation of a listed species and that may be in need of special consideration. The primary benefit of critical habitat designation is that it informs Federal agencies that listed species are dependent upon these areas for their continued existence, and that consultation with NMFS on any Federal action that may affect these areas is required. Some species, primarily the cetaceans, listed in 1969 under the Endangered Species Conservation Act and carried forward as endangered under the ESA, have not received critical habitat designations.

Listed Species. The following species are currently listed as endangered or threatened under the ESA and occur in the GOA:

Endangered

Northern Right Whale	*Balaena glacialis*
Bowhead Whale[2]	*Balaena mysticetus*
Sei Whale	*Balaenoptera borealis*
Blue Whale	*Balaenoptera musculus*
Fin Whale	*Balaenoptera physalus*
Humpback Whale	*Megaptera novaeangliae*
Sperm Whale	*Physeter macrocephalus*
Snake River Sockeye Salmon	*Oncorhynchus nerka*
Short-tailed Albatross	*Diomedia albatrus*
Steller Sea Lion[3]	*Eumetopias jubatus*

Threatened

Snake River Fall Chinook Salmon	*Oncorhynchus tshawytscha*
Snake River Spring/Summer Chinook Salmon	*Oncorhynchus tshawytscha*
Steller Sea Lion[4]	*Eumetopias jubatus*
Spectacled Eider	*Somateria fishcheri*

Section 7 Consultations. Because both groundfish fisheries are federally regulated activities, any negative affects of the fisheries on listed species or critical habitat and any takings[5] that may occur are subject to ESA section 7 consultation. NMFS initiates the consultation and the resulting biological opinions are issued to NMFS. The Council may be invited to participate in the compilation, review, and analysis of data used in the consultations. The determination of whether the action "is likely to jeopardize the continued existence of" endangered or threatened species or to result in the destruction or modification of critical habitat, however, is the responsibility of the appropriate agency (NMFS or FWS). If the action is determined to result in jeopardy, the opinion includes reasonable and prudent measures that are necessary to alter the action so that jeopardy is avoided. If an incidental take of a listed species is expected to occur under normal promulgation of the action, an incidental take statement is appended to the biological opinion.

Section 7 consultations have been done for all the above listed species, some individually and some as groups. Below are summaries of the consultations.

Endangered Cetaceans. NMFS concluded a formal section 7 consultation on the effects of the GOA groundfish fisheries on endangered cetaceans within the GOA on December 14, 1979, and April 19, 1991, respectively. These opinions concluded that the fisheries are unlikely to jeopardize the continued existence or recovery of endangered whales. Consideration of the bowhead whale as one of the listed species present within the area of the Bering Sea fishery was not recognized in the 1979 opinion, however, its range and status are not known to have changed. No new information exists that would cause NMFS to alter the conclusion of the 1979 or 1991

[2] species is present in Bering Sea area only.

[3] listed as endangered west of Cape Suckling.

[4] listed as threatened east of Cape Suckling.

[5] the term "take" under the ESA means "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct" (16 U.S.C. §1538(a)(1)(B).

opinions. NMFS has no plan to reopen Section 7 consultations on the listed cetaceans for this action or for the 1998 TAC specification process. Of note, however, are observations of Northern Right Whales during Bering Sea stock assessment cruises in the summer of 1997 (NMFS per. com). Prior to these sightings, and one observation of a group of two whales in 1996, confirmed sightings had not occurred.

Steller sea lion. The Steller sea lion range extends from California and associated waters to Alaska, including the Gulf of Alaska and Aleutian Islands, and into the Bering Sea and North Pacific and into Russian waters and territory. In 1997, based on biological information collected since the species was listed as threatened in 1990 (60 FR 51968), NMFS reclassified Steller sea lions as two distinct population segments under the ESA (62 FR 24345). The Steller sea lion population segment west of 144°W. longitude (a line near Cape Suckling, Alaska) is listed as endangered; the remainder of the U.S. Steller sea lion population maintains the threatened listing.

NMFS designated critical habitat in 1993 (58 FR 45278) for the Steller sea lion based on the Recovery Team's determination of habitat sites essential to reproduction, rest, refuge, and feeding. Listed critical habitats in Alaska include all rookeries, major haul-outs, and specific aquatic foraging habitats of the GOA. The designation does not place any additional restrictions on human activities within designated areas. No changes in critical habitat designation were made as result of the 1997 re-listing.

Beginning in 1990 when Steller sea lions were first listed under the ESA, NMFS determined that both groundfish fisheries may adversely affect Steller sea lions, and therefore conducted Section 7 consultation on the overall fisheries (NMFS 1991), and subsequent changes in the fisheries (NMFS 1992). The most recent biological opinion on the GOA fisheries effects on Steller sea lions was issued by NMFS March 2, 1998. The 1998 biological opinion concluded that the 1998 fishery is not likely to jeopardize the continued existence and recovery of Steller sea lions or to adversely modify critical habitat. The 1996 biological opinion concluded that these fisheries and harvest levels are unlikely to jeopardize the continued existence and recovery of the Steller sea lion or adversely modify critical habitat.

Pacific Salmon. No species of Pacific salmon originating from freshwater habitat in Alaska are listed under the ESA. These listed species originate in freshwater habitat in the headwaters of the Columbia (Snake) River. During ocean migration to the Pacific marine waters a small (undetermined) portion of the stock go into the Gulf of Alaska as far east as the Aleutian Islands. In that habitat they are mixed with hundreds to thousands of other stocks originating from the Columbia River, British Columbia, Alaska, and Asia. The listed fish are not visually distinguishable from the other, unlisted, stocks. Mortal take of them in the chinook salmon bycatch portion of the fisheries is assumed based on sketchy abundance, timing, and migration pattern information.

NMFS designated critical habitat in 1992 (57 FR 57051) for the Snake River sockeye, Snake River spring/summer chinook, and Snake River fall chinook salmon. The designations did not include any marine waters, therefore, does not include any of the habitat where the groundfish fisheries are promulgated.

NMFS has issued two biological opinions and no-jeopardy determinations for listed Pacific salmon in the Alaska groundfish fisheries (NMFS 1994, NMFS 1995). Conservation measures were recommended to reduce salmon bycatch and improve the level of information about the salmon bycatch. The no jeopardy determination was based on the assumption that if total salmon bycatch is controlled, the impacts to listed salmon are also controlled. The incidental take statement appended to the second biological opinion allowed for take of one Snake River fall chinook and zero take of either Snake River spring/summer chinook or Snake River sockeye, per year. As explained above, it is not technically possible to know if any have been taken. Compliance with the biological opinion is stated in terms of limiting salmon bycatch per year to under 55,000 and 40,000 for chinook salmon, and 200 and 100 sockeye salmon in the GOA fisheries, respectively.

Short-tailed albatross. The entire world population in 1995 was estimated as 800 birds; 350 adults breed on two small islands near Japan (H. Hasegawa, per. com.). The population is growing but is still critically endangered because of its small size and restricted breeding range. Past observations indicate that older short-tailed albatrosses are present in Alaska primarily during the summer and fall months along the shelf break from the Alaska Peninsula to the Gulf of Alaska, although 1- and 2-year old juveniles may be present at other times of the year (FWS 1993). Consequently, these albatrosses generally would be exposed to fishery interactions most often during the summer and fall--during the latter part of the second and the whole of the third fishing quarters.

Short-tailed albatrosses reported caught in the longline fishery include two in 1995, one in October 1996, and none so far in 1997. Both 1995 birds were caught in the vicinity of Unimak Pass and were taken outside the observers' statistical samples.

Formal consultation on the effects of the groundfish fisheries on the short-tailed albatross under the jurisdiction of the FWS concluded that GOA groundfish fisheries would adversely affect the short-tailed albatross and would result in the incidental take of up to two birds per year, but would not jeopardize the continued existence of that species (FWS 1989). Subsequent consultations for changes to the fishery that might affect the short-tailed albatross also concluded no jeopardy (FWS 1995, FWS 1997). The US Fish and Wildlife Service does not intend to renew consultation for this action or the 1998 TAC specification process.

Spectacled Eider. These sea ducks feed on benthic mollusks and crustaceans taken in shallow marine waters or on pelagic crustaceans. The marine range for spectacled eider is not known, although Dau and Kitchinski (1977) review evidence that they winter near the pack ice in the northern Bering Sea. Spectacled eider are rarely seen in U.S. waters except in August through September when they molt in northeast Norton Sound and in migration near St. Lawrence Island. The lack of observations in U.S. waters suggests that, if not confined to sea ice polyneas, they likely winter near the Russian coast (FWS 1993). Although the species is noted as occurring in the GOA and management areas no evidence exists that they interact with these groundfish fisheries.

Conditions for Re-initiation of Consultation. For all ESA listed species, consultation must be reinitiated if: the amount or extent of taking specified in the Incidental Take Statement is exceeded, new information reveals effects of the action that may affect listed species in a way not previously considered, the action is subsequently modified in a manner that causes an effect to listed species that was not considered in the biological opinion, or a new species is listed or critical habitat is designated that may be affected by the action.

Impacts of the Alternatives on Endangered or Threatened Species. None of the alternatives under consideration would affect the prosecution of the groundfish fisheries of the GOA in a way not previously considered in the above consultations. The proposed alternatives are administrative in nature and are designed to improve the in-season management of certain groundfish fisheries. None of the alternatives would affect TAC amounts, PSC limits, or takes of listed species. Therefore, none of the alternatives are expected to have a significant impact on endangered, threatened, or candidate species.

2.3.3 Impacts on Marine Mammals

Marine mammals not listed under the ESA that may be present in the GOA include cetaceans, [minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), and the beaked whales (e.g., *Berardius bairdii* and *Mesoplodon spp.*)] as well as pinnipeds [northern fur seals (*Callorhinus ursinus*), and Pacific harbor seals (*Phoca vitulina*)] and the sea otter (*Enhydra lutris*).

The proposed alternatives are administrative (or allocational) in nature and are designed to improve the in-season management of certain groundfish fisheries and maintain industry stability and coastal communities. None of the alternatives would affect TAC amounts, PSC limits, or takes of marine mammals. Therefore, none of the alternatives are expected to have a significant impact on marine mammals. Additional information on pollock removals from critical habitat areas are in the GOA is provided in Chapter 6.

2.3.4 Coastal Zone Management Act

Implementation of each of the alternatives would be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Management Program within the meaning of Section 30(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

2.3.5 Conclusions or Finding of No Significant Impact

The action currently contemplated is a continuation of Amendment 23 and Amendment 40 in perpetuity. Potential impacts relative to NEPA are expected to be consistent with those previously predicted. Total removals of the pollock and Pacific cod resources are controlled by the setting of total allowable catches (TAC), and their monitoring has been enhanced recently to guard against overruns. Allocations between industry sectors will not change total removals from the stocks, and may provide an extra margin of safety against overruns by further partitioning the TACs.

Prohibited species catch (PSC) such as crab, herring, and halibut are controlled as necessary and appropriate by extensive management measures in the GOA, including closed areas, PSC quotas, bycatch disincentive programs, and authorizations to the NMFS Regional Director to limit bycatch and close areas.

None of the alternatives are likely to significantly affect the quality of the human environment, and the preparation of an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations.

Gary C. Matlock — 12-15-98

for Assistant Administrator for Fisheries, NOAA — Date

2.4 Regulatory Impact Review: Economic and Socioeconomic Impacts of the Alternatives

This section provides information about the economic and socioeconomic impacts of the alternatives including identification of the individuals or groups that may be affected by the action, the nature of these impacts, quantification of the economic impacts if possible, and discussion of the trade offs between qualitative and quantitative benefits and costs.

The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

> In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

This section also addresses the requirements of both E.O. 12866 and the RFA to provide adequate information to determine whether an action is "significant" under E.O. 12866 or will result in "significant" impacts on small entities under the RFA.

E. O. 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be "significant." A "significant regulatory action" is one that is likely to:

1. Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

2. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

3. Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

4. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

A regulatory program is "economically significant" if it is likely to result in the effects described above. The Regulatory Impact Review (RIR) is designed to provide information to determine whether the proposed regulation is likely to be "economically significant." None of the alternatives is expected to result in a "significant regulatory action" as defined in E.O. 12866.

Final Environmental Assessment
Regulatory Impact Review
Initial Regulatory Flexibility Analysis

Amendments 51/51
(Inshore/Offshore 3)

Prepared by
Staff

North Pacific Fishery Management Council
National Marine Fisheries Service
Alaska Fishery Science Center

December 9, 1998

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List of Acronyms

Acronym	Definition
AAC	Alaska Administrative Code
ADF&G	Alaska Department of Fish & Game
AKR	NMFS Alaska Region
AP	Advisory Panel
APEC	Asia-Pacific Economic Cooperation
AYK	Angoon-Yukon-Kuskokwim
BANR	Blair-Atkinson News Report
BOD	Biochemical Oxygen Demand
BS/AI	Bering Sea/Aleutian Islands
CDQ	Community Development Quota
CMS	Centimeters
CP	Catcher Processor
CPUE	Catch Per Unit Effort
CRP	Comprehensive Rational Program
CV	Catcher Vessel
CVOA	Catcher Vessel Operating Area
DAH	Domestic Annual Harvest
DAP	Domestic Annual Processing
DCRA	Alaska Department of Community and Regional Affairs
DO	Dissolved Oxygen
DOR	Alaska Department of Revenue
EA	Environmental Assessment
EEZ	Exclusive Econmic Zone
EIMWT	Echo-Integration Midwater Trawl
EIS	Environmental Impact Statement
EIT	Echo-Integration Trawl
EO	Executive Order
ESA	Endangered Species Act
EU	European Union
FAO	Food and Agricultural Organization
FMP	Fishery Management Plan
FOB	Free on Board
FONSI	Finding of No Significant Impact
FR	Federal Register
FRFA	Final Regulatory Flexibility Analysis
FWS	US Fish and Wildlife Service
GHL	Guideline Harvest Level
GOA	Gulf of Alaska
IFQ	Individual Fishing Quota
I/O1	Inshore/Offshore 1
I/O2	Inshore/Offshore 2
I/O3	Inshore/Offshore 3
I/O4	Inshore/Offshore 4
IAI	Impact Assessment, Inc.
INPFC	International North Pacific Fisheries Commission
IR/IU	Improved Retention/ Improved Utilization
IQF	Individually Quick Frozen
IRFA	Initial Regulatory Flexibility Analysis
JV	Joint Venture
JVP	Joint Venture Processing
LLP	License Limitation Program
LOA	Length Overall
MMT	Million Metric Tons
MS	Mothership
MT or t	Metric Ton
NEPA	National Environmental Policy Act of 1996
NM	Nautical Miles
NMFS	National Marine Fisheries Service
NOAA GC	National Oceanic and Atmospheric Administration General Counsel
NPFMC	North Pacific Fishery Management Council
OFL	Over Fishing Level
PRR	Product Recovery Rate
PSC	Prohibited Species Bycatch
RFA	Regulatory Flexibility Analysis
SAFE	Stock Assessment Fishery Evaluation
SEIS	Supplemental Environmental Impact Statement
SIA	Social Impact Analysis
SSC	Scientific and Statistical Committee
TAC	Total Allowable Catch
TALFF	Total Allowable Level of Foreign Fishing
TMDL	Total Maximum Daily Load
WGOA	Western Gulf of Alaska
WPR	NMFS Weekly Production Reports

EXECUTIVE SUMMARY

Elements of the Council's Preferred Alternative

The North Pacific Fishery Management Council (Council) selected their preferred alternatives for the Gulf of Alaska (GOA) and the Bering Sea and Aleutian Islands (BS/AI) at the June Council meeting in Dutch Harbor. The current allocation in the GOA was rolled over for three more years. This means that 100% of the GOA pollock and 90% of the GOA Pacific cod will be allocated to the inshore sector. The offshore sector is allocated the remaining 10% of the GOA Pacific cod total allowable catch (TAC). This allocation will be in effect through December 31, 2001. If further action is not taken by the Council, the inshore/offshore allocation will expire before the 2002 fishing season.

The Council's preferred alternative in the BS/AI allocates 39% of the pollock TAC to the inshore sector and 61% to the offshore sector. The current allocation allocates 35% inshore and 65% offshore, so the preferred alternative shifts 4% of the BS/AI pollock TAC inshore. In addition to changing the basic allocation percentages, the Council also created a set-aside for catcher vessels <125' length over all (LOA) which may only be delivered to the inshore sector. The set-aside will consist of 2.5% of the combined BS/AI TAC (after CDQs are deducted), and will be harvested prior to the B-season, starting on or about August 25. The inshore B-season quota will be adjusted to account for any overage or underage resulting from that year's set-aside fishery. A change was also made to the catcher vessel operational area (CVOA). Under the Council's preferred alternative, all vessels in the offshore sector must operate outside the CVOA during the B-season. Currently, catcher processors are restricted from operating inside the CVOA during the B-season, while motherships are allowed to operate inside. The BS/AI allocation, like the allocation in the GOA, is scheduled to sunset after three years (December 31, 2001).

This section was provided to describe the elements of the Council's preferred alternatives. Impacts of these alternatives are presented in the appropriate chapters of this document.

Chapter 1

This Chapter of the document describes the management background and contains a summary of historical inshore/offshore issues, including previous Problem Statements and the results from the I/O1 and I/O2 analyses. The current Problem Statement and list of alternatives being considered are also contained in this chapter. Alternatives for the GOA are limited to (1) No Action - allow the allocations to expire, or (2) extend the existing allocations which are 100% of pollock and 90% of Pacific cod allocated to vessels delivering inshore. The time frame for the GOA extensions could be one to three years, or until replaced by other measures related to the comprehensive rationalization program (CRP).

BS/AI alternatives include (1) No Action - allow allocations to expire; (2) rollover of the existing allocations; (3) a range of possible reallocation alternatives among sectors; and, (4) a new alternative (added in April 1998) which makes direct allocations to smaller catcher vessels, without delivery requirements, combined with partial 'guarantees' for processor sector deliveries. Additional alternatives are being considered relative to the Catcher Vessel Operational Area (CVOA), relative to suballocations to vessel categories within the major sectors, and relative to a separate allocation for a "true" mothership category.

Chapter 2

This Chapter is devoted entirely to the GOA allocation alternatives and is essentially the only place in the document that the GOA alternatives are addressed. Background information on the GOA pollock and Pacific cod fisheries is provided, though the analysis is primarily qualitative in nature, reflecting the scope of alternatives (expiration or continuation of the existing allocations) and relatively straightforward decision facing the Council with regard to the GOA. This chapter assesses the GOA alternatives in a threshold manner; i.e., whether it can be shown that one alternative is superior to the other, in the context of the Council's Problem Statement, including the primary issues of industry stability and management considerations.

In terms of industry stability, the analysis illustrates the relatively small quotas of both Pacific cod and pollock in the GOA (compared to the BS/AI), the ability for these quotas to be harvested and processed by the resident GOA fishing fleet and GOA based processors, and the importance of that fishing and harvesting activity to the fishermen, processors, and communities within which they reside. Allowing the allocations to expire would potentially allow significant amounts of catcher/processor vessel capacity into the GOA fisheries, resulting in potentially dramatic re-apportionment of the harvest and processing activities for both pollock and Pacific cod. With these allocations in place for six years now, the harvest and processing industries have adapted to a relatively stable business planning environment. Alternative 2, extending and maintaining the current allocations, is necessary to maintain this balance in the GOA and is the only alternative which is consistent with the Council's Problem Statement for the GOA. Existing within-sector preemption issues (primarily with regard to western/central GOA pollock and Pacific cod harvest by catcher vessels) are being addressed by separate Council initiatives, including development of additional management alternatives by a Council appointed Committee of industry representatives.

Pollock fisheries in the GOA are apportioned on a quarterly (now trimester) basis, primarily to spread the fishery out temporally to address marine mammal concerns. The small quotas are difficult for NMFS to manage on an in-season basis and frequent quota overruns have occurred within these seasonal apportionments. Allowing additional, high-power fishing capacity in these fisheries would exacerbate management difficulties and defeat the recent progress made by the agency in managing the GOA pollock fisheries. Continuation of the current allocations appears to offer far greater benefits (relative to Alternative 1 - allowing the allocations to expire) in terms of management considerations and marine mammal considerations.

After reviewing the information in this section of the document, the Council selected the option that rolls over the current GOA allocations for three more years. This option was felt to provide the industry more stability than allowing the current allocation to expire.

Chapter 3

This Chapter, along with information in Appendix 1, contains the baseline information for the BS/AI pollock fisheries. Primarily this is 1996 information, the most recent year for which we have 'complete' data. Major findings include the following:

- Current TAC levels for BS/AI pollock (1.1 mmt) are expected through at least the year 2000 and are therefore assumed to be at that level for the purposes of this analysis. We have also assumed that 7.5% of the 1.1 mmt TAC will be allocated to CDQ fisheries.

- Season lengths have declined for both sectors under the existing allocations. During the A-season the offshore sector has markedly lower season lengths compared to the inshore sector, while B-season lengths are very similar for both sectors. From 1992 to 1997 the overall season length (A and B seasons combined) has declined from 159 days to 75 days for the inshore sector, and from 103 days to 56 days for the offshore sector, a relatively similar decline for both sectors.

- In terms of catch and production over time, the inshore sector's share of the total increased from 26% to 34% under the existing allocations, while their actual tonnage has remained virtually unchanged. The "true" mothership share has increased over time from 9% to around 11.5% (in 1997), while the actual tonnage was a slight decrease. The offshore sector share declined from about 67% in 1991 to about 56% in 1997, while the actual tonnage declined significantly, by about 35%. The Tables E.1 and E.2 below summarizes the catch and relative shares over time, including a further breakdown of the offshore sector for the "true" motherships and for that portion of the offshore sector which is from catcher vessel deliveries.

Table E.1 Harvest of Pollock in Pollock Target Fisheries (Includes CDQ)

Industry Sector	1991	1994	1996	1997
C/Ps Own Catch	1,005,803	733,018	582,208	556,272
C/V Deliveries to C/Ps	22,436	35,031	63,386	44,612
C/P Total	1,028,239	768,049	645,594	600,884
"True" Motherships	144,138	113,077	121,959	123,571
Inshore (Shoreplants)	375,570	375,602	324,846	296,421
Inshore (Motherships&C/Ps)	32,372	48,519	70,696	58,370
Inshore Total	407,942	424,121	395,542	354,791
Grand Total	1,580,319	1,305,247	1,163,095	1,079,246

Table E.2 Harvest of Pollock in Pollock Target Fisheries (Includes CDQ)

Industry Sector	1991	1994	1996	1997
Inshore (Shorebased plants)				
% of Inshore	92.06%	88.56%	82.13%	83.55%
% of Total	23.77%	28.78%	27.93%	27.47%
Inshore (Motherships&C/P)				
% of Inshore	7.94%	11.44%	17.87%	16.45%
% of Total	2.05%	3.72%	6.08%	5.41%
Inshore Total	25.81%	32.49%	34.01%	32.87%
"True" Motherships				
% Offshore	12.29%	12.83%	15.89%	17.06%
% Total	9.12%	8.66%	10.49%	11.45%
Offshore C/Ps (All Processing)				
% Offshore	87.71%	87.17%	84.11%	82.94%
% Total	65.07%	58.84%	55.51%	55.68%
C/V Deliveries to Offshore C/Ps				
% of CP	2.18%	4.56%	9.82%	7.42%
% of Offshore	1.91%	3.98%	8.26%	6.16%
% of total	1.42%	2.68%	5.45%	4.13%
Offshore Total (C/Ps & True MS)	74.19%	67.51%	65.99%	67.13%

- Regarding the distribution of catch among catcher vessels, relative share for small catcher vessels (<125') overall has declined over time, from about 65% in 1991 to about 42% in 1996 - the number of catcher vessels in this 'small' category has increased from 71 in 1991 to 89 in 1996. Vessels from 125'-155' have increased in numbers over time (from 6 in 1991 to 20 in 1996) and catch share (from 14% in 1991 to 37% in 1996). Numbers (7 in 1991, 10 in 1994, 9 in 1996) and catch share (less than 20%)for the largest category of catcher vessels (>155') have remained fairly constant over this same period.

- For both inshore and offshore sectors, approximately 96% of the total pollock catch is taken in pollock target fisheries. In terms of pelagic vs bottom trawl mode (in target pollock fisheries), the inshore sector takes about 97% in pelagic mode, and the offshore sector takes about 91% in pelagic mode.

- NMFS published product recovery rates (PRRs) are currently utilized as part of the blend data in estimating overall catch for the offshore sector. PRRs were used for catch estimation for the inshore sector prior to 1992 (scale weights are now used). Catch estimation procedures are therefore different for the two sectors, but represent the best available information and are what is used to manage TAC attainment in the fisheries.

- Overall utilization rates, across all product forms, are calculated to indicate the amount of product derived from raw fish input. Utilization rates have changed over time, with improvement in both sectors, though the inshore sector utilization rates have improved more dramatically, from 23% in 1991 to 33% in 1996, while the offshore overall rate has gone from about 17% in 1991 to near 21% in 1996.

- Discard rates of pollock in pollock target fisheries are very low for all sectors - approximately 2.5% for offshore operations and around 1% for inshore and "true" mothership operations (1996 data). Future economic discards of pollock are assumed to be zero due to provisions of the IR/IU program. Continued regulatory discarding may occur, but is not quantifiable without further experience under the IR/IU program, but is expected to be minimal overall.

- Prices used in the analysis are as follows:

  The ex-vessel price for pollock delivered to inshore processors is $0.085/lb, and was derived from the 1996 COAR data. The offshore price used in this analysis is $0.0744/lb, and is set equal to 87.5% of the inshore price.

  First wholesale prices for both the inshore and offshore sectors were derived from 1996 COAR data, except for the offshore mince price. Only one offshore processor reported a mince price in the 1996 COAR, and confidentiality standards do not allow that price to be reported. In that one case, data supplied by the At-sea Processors Association was used in the analysis.

- Because the offshore sector was not well represented in the COAR data, the At-sea Processor's Association provided data on 14 of their vessels to verify the offshore component of the COAR report. The results of that comparison showed that prices were almost identical in both the COAR and APA data. The COAR prices are reported in Table E.3.

Table E.3 First Wholesale Prices Reported by Alaska Processors

	Fillets&Blocks Skinless-Boneless &DeepSkin	Fillets&Blocks Skinless-Boneless	Fillets&Blocks DeepSkin	Roe	Surimi	Meal	Minced[1]
Inshore	$/lb	$/lb	$/lb	$/lb	$/lb	$/lb	$/lb
1991	1.38			3.79	1.26	0.26	
1994		0.71	1.11	3.65	0.91	0.22	
1996		0.96	1.24	4.52	0.82	0.30	0.52
Offshore							
1991	1.38			4.66	1.58	0.25	
1994		0.71	1.11	5.79	0.94	0.22	
1996		0.96	1.24	6.03	0.86	0.29	0.42[1]

Source: 1991, 1994, and 1996 COAR data.

Note: To protect the confidentiality of processors, fillet prices are based on combined inshore and offshore data.

Minced prices for 1991 and 1994 were not estimated.

[1] / The 1996 Offshore Minced price was provided by the At-sea Processors Association (APA) as only one At-sea company reported minced prices to ADF&G in the COAR. If APA and ADF&G data were combined the 1996 Offshore minced price would be $0.45.

- Product mix is assumed throughout the analysis to remain proportional to the 1996 information. In summary, this is shown below, for major product forms, by sector:

Table E.4 Pollock Products Processed During 1996 (mt)

Inshore/Offshore Class	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Catcher Processor Total	57,938	7,851	6,035	25,214	12,312	344	7,346
Inshore Total[1]	71,349	2,626	9,229	7,442	27,864	8,514	4,417
"True" Mothership Total	21,992	-	-	-	5,016	353	1,075
Grand Total	151,279	10,478	15,263	32,657	45,192	9,211	12,838

[1] / The Shoreside total includes CDQ production. The other sectors do not include CDQ in this summary table.

- Regarding foreign ownership of pollock harvesting and processing operations, the inshore processing sector and the "true" mothership processing sectors exhibit a significant degree of non-U.S. ownership (primarily Japanese). Four of the six principle shorebased processors were affiliated with Japanese parent companies. The two other plants operating inshore were owned by the same US company. The two inshore motherships were both US owned. One of the three "true" motherships was US owned. The offshore catcher/processor fleet exhibits significant degrees of non-U.S. ownership (primarily Norwegian) though that also varies across companies and vessels. Overall, 20 catcher processors appear to have some foreign ownership, while the remaining 17 are fully US owned. The catcher vessel fleet is a mixed bag with 14 catcher vessels delivering inshore having some foreign ownership, and eight catcher vessels delivering to offshore processors having some foreign ownership.

- Employment information is contained in Appendix I, Tab 6 - an attempt was made to provide comparable information for both inshore and offshore sectors regarding total employment and relative degree of Alaskan employment. The information is not specific to pollock fishing/processing activities, though the information provided for the at-sea sector is only from member companies of the At-sea Processor's Association (APA), which are primarily pollock-intensive operations. While care should be taken in making direct comparisons of this information, it does illustrate an overall low level of Alaskan employment by both sectors - around 14% Alaskan residents for the inshore sector (overall) and around 8% for the offshore sector (APA companies).

- Overall bycatch of PSC species (by rate and by total volume) is quite low in the pollock fisheries, with the exception of salmon and herring, for all sectors involved. The 1996 fishery information illustrates the trade-offs associated with PSC bycatch when comparing the sectors. The catcher processor fleet, in general, had higher bycatch of halibut, herring, and crab species, while the inshore and "true" mothership sectors showed higher bycatch of chinook salmon. Looking at 'other' salmon specifically, the "true" mothership sector, takes 'other' salmon (primarily chum) at a higher rate than any other processing sector. While these trade-offs are reflected across the alternatives being considered, none of the alternatives is expected to significantly change the overall bycatch (by rate or volume) across PSC species.

- Regarding vessels which participated in BS/AI pollock target fisheries anytime between 1992 and 1996, and which also participated (checked in or out) in Russian water fisheries, the information shows that 22 such vessels fished in Russia in 1992, only one did so in 1993 and one again in 1994, three in 1995, and five in 1996. All of these vessels were catcher/processors when they fished the BS/AI pollock fisheries.

- Regarding state and local fish tax payments, both the inshore and offshore sectors pay such taxes. Some 'leakage' occurs where deliveries are landed outside Alaska, or transhipped overseas, and the tax is not applied. Primarily this leakage has occurred with the offshore catch landings tax ("true" motherships included in this sector), and has run at about 16 to 18% of the offshore total catch (1996 and 1995 respectively).

Chapter 4

This Chapter contains the projections for the major allocation alternatives, including the expected amounts of each product (assuming proportions realized in the 1996 fisheries) under each primary allocations alternative and the gross revenue changes associated with each primary alternative (recognizing that the Council may choose any percentage within the ranges specifically analyzed).

Table E.5 reports the relationship between a 50,875 mt change in each sector's allocation (5% of the 1,017,500 mt CDQ-adjusted TAC) and the change in total gross revenue (both ex-vessel and first wholesale) and the products produced within the sector. All of the information reported in Table E.5 represents the change from the status quo allocation. Because the calculations are linear, the effects of other allocation amounts may be calculated easily using the information in the table. For example, an allocation that would grant a sector 7.5% more of the TAC would increase their revenues and products by 1.5 times those listed in Table E.5.

Table E.5 Changes resulting from a 5% shift in the BS/AI Pollock TAC within each industry sector

	Inshore	"True" Mothership	Catcher Processor
% Change Within the Sector[1]	14.3 %	50.0 %	9.1 %
Raw Fish (mt)	50,875	50,875	50,875
Cat. Ves. Gross Rev. (ex-ves, $ millions)[2]	$ 9.5	$ 8.3	$ 0.8
Gross Revenue (1st Wholesale, $ millions)	$ 30.1	$ 26.8	$ 27.1
Surimi (mt)	9,179	9,910	5,149
Minced (mt)	338	-	698
Fillet/Block and IQF (mt)	1,187	-	536
Deep Skin Fillet (mt)	957	-	2,241
Meal (mt)	3,585	2,260	1,094
Oil (mt)	1,095	159	31
Roe (mt)	568	484	653

1/ The percentage change within a sector is calculated as (((status quo tons + 50,875)/(status quo tons))- 1)*100. So, it represents the percentage increase that sector will receive.

2/ Only the catch delivered by catcher vessels is included for catcher processors.

Note: A 5% TAC decrease to a sector will result in numbers of equal magnitude, but with a negative sign

Also included are more qualitative assessments of various sub-options being considered. These include: (1) potential separation of "true" motherships with their own allocation; (2) sub-allocation of the inshore quota to small (<125') catcher vessels; (3) sub-allocation of the offshore quota to catcher vessels delivering offshore; and, (4) options for the duration of the allocation (sunset alternatives).

In 1996, deliveries to the three "true" motherships accounted for about 10% of the BS/AI pollock catch. The Council is considering allocating 5-15% of the BS/AI TAC to this sector. There is still some question regarding who is classified as a "true" mothership. Under the strictest interpretation only about six vessels could be classified as "true" motherships, and this raises limited entry questions.

An allocation of 40-65% of the inshore quota is being considered for catcher vessels less than 125'. This roughly covers the range that subsector has taken over time (it has decreased to about 40% currently). This suboption could not be implemented in 1999. NMFS current catch accounting system will need to be modified before this allocation could be monitored. This does not mean the Council cannot consider this option, but actual implementation would be delayed beyond the January 1, 1999 start of I/O3.

A set aside of 9-15% of the offshore quota is also being considered by the Council. In 1996, catcher vessels delivered about 10% of the pollock catcher processors processed (down to 7.4% in 1997). So, the low range of the allocation represents the catcher vessels largest historical percentage of pollock processed by offshore catcher processors. This allocation could be monitored in 1999 as long as there were no catcher vessel length restrictions associated with this allocation.

The Council may choose to keep I/O3 in effect until replaced by CRP. However, there is still a question of what is meant by CRP. The Council is also considering two potentially shorter allocations. A sunset date one year after implementation of I/O3 would require the Council to immediately begin analysis of I/O4. One additional year would likely not provide enough time to collect the necessary data and do a formal cost/benefit analysis. It would also create an unstable planning environment for the fleet. The three year sunset would likely resolve most of the problems associated with a one year allocation.

A new option was added to the Inshore/offshore suite of alternatives call the "Harvester's Choice". This allocation would create a set-aside for catcher vessels less than 125' LOA (a second option would include catcher vessels 155' LOA or shorter in the set-aside). The set-aside would be created using 40-65% of the inshore quota, 9-15% of the offshore (catcher processor) quota, and 100% of the "true" mothership quota. Once the quota is placed in the set-aside, the catcher vessels would be allowed to deliver their catch (from the set-aside) to any processing sector. This will result in less pollock being guaranteed to each processing sector. However, depending on their success in purchasing pollock from the set-aside, they may be able to process more BS/AI than they would have received under the initial allocation.

Including catcher vessels from 125' through 155' in the set-aside will likely reduce the benefits of this option for catcher vessels less than 125' LOA. Catcher vessels less than 125' LOA have had their share of the inshore quota reduced from 65% in 1991 to 42% in 1996. All of that reduction was the result of increased harvest in the 125' through 155' catcher vessel class. Catcher vessels greater than 155' harvested 19% of the inshore quota in 1991 and 1996.

According to NMFS the "Harvester's Choice" option could not be implemented in 1999. However, the Council may select this option with the understanding that NMFS would implement the set-aside when their in-season catch accounting system was changed to track catch at the harvest vessel level.

After considering all of their options the Council selected a preferred alternative for the BS/AI which will move an additional 4% of the TAC inshore, changing the allocation split to 39% inshore and 61% offshore. In addition to changing the allocation percentages, the Council also voted to restrict the entire offshore sector from operating inside the CVOA during the pollock B-season. They also created a set-aside of 2.5% of the total BS/AI TAC (after CDQs are deducted) to be fished only by catcher vessels less than 125' LOA delivering to inshore processors. The set-aside fishery will take place on or about August 25. Any overages or underage resulting from the set-aside fishery will be subtracted/added to the inshore open access B-season fishery. The Council's new program is scheduled to remain in place only for the 1999, 2000, and 2001 fishing years and then sunset. A new Council action will be required to keep an inshore/offshore type allocation in place after 2001.

Table E.6 provides a summary of the projected changes under the Council's preferred alternative. Projections are based on a TAC of 1,017,500 mt, after CDQs are deducted from the quota. Processing in the inshore sector is assumed to increase by 40,700 mt, while processing in the offshore sector is expected to decline by the same amount.

Given constant product mixes and prices, exvessel revenue is expected to increase by $5.1 million and first wholesale revenue is expected to increase by $2.4 million. Only catcher vessel revenues are included in the exvessel calculation. Because less fish is harvested by catcher processors under the Council's preferred alternative, increases in exvessel revenues are expected. Greater catcher vessel harvests may also make the exvessel revenue increase seem larger than expected. The change in first wholesale revenues represents less than 0.5% of the total, and if the uncertainty around the estimate was considered, the change may not be significantly different than zero.

Changes in product mix are also included in this Table. They show that surimi, fillet, and meal production is expected to increase, while deep skin fillet, mince, and roe production decreases.

Table E.6 Changes resulting from a 4% BS/AI pollock TAC increase to the inshore sector

	Inshore	Offshore	Total
% Change Within the Sector	11.4 %	(6.2 %)	-
Raw Fish (mt)	40,700	(40,700)	-
Catcher Vessel Gr. Rev. (ex-vessel)1	$ 7.6	($ 2.5)	$ 5.1
Gross Revenue (1st Wholesale)	$ 24.1	($ 21.7)	$ 2.4
Surimi (mt)	7,343	(4,595)	2,748
Minced (mt)	270	(488)	(218)
Fillet/Block and IQF (mt)	950	(375)	574
Deep Skin Fillet (mt)	766	(1,569)	(803)
Meal (mt)	2,868	(992)	1,876
Oil (mt)	876	(37)	839
Roe (mt)	455	(505)	(51)

1/Only the catch delivered by catcher vessels is included for catcher processors

2/The sector's allocation was calculated using the following formula:
Allocation = (allocation percentage * 1,100,000mt * 0.925)

3/The status quo was assumed that catcher processors process 55%, "true" motherships 10%, and Inshore 35%

4/Use caution when comparing gross revenues across sectors, because they are dependent upon utilization rates and wholesale prices which were derived differently.

Chapter 5

This Chapter is devoted entirely to the CVOA options and includes historical fishing patterns relative to the CVOA and projections of CVOA fishing patterns under the alternatives. Major findings include:

- Pollock tend to be larger and have less size variation inside the CVOA.
- CPUE tends to be higher outside the CVOA.
- Increased pollock allocations to the offshore sector leads to less pollock catch in the CVOA relative to the status quo;
- During the A-season, excluding the offshore sectors (CVOA alternative 1), and offshore and "true" mothership sectors (CVOA alternative 2) from the CVOA yields *reductions* in A-season CVOA pollock catches. Total CVOA catch is also reduced in every case except when only catcher processors are excluded under Alternative 3(D). In all the other options, the projections indicate that catch inside the CVOA is reduced 15-57%;
- During the A-season, no combination of allocation alternative or CVOA alternative leads to *increases* in A-season CVOA pollock catch greater than 6%. Therefore, even under the no CVOA option catch is projected to increase only slightly during the A-season;
- Predicting B-season removals from the CVOA under the No CVOA alternative is highly speculative regardless of the allocation alternative, and depend considerably on how the offshore fleet is distributed.

In the B-season and for CVOA alternatives 1, 2, and status quo, *reductions* in CVOA pollock catches are predicted for those sector allocation alternatives that *increase* the offshore sector's allocation (except for the combination of sector alternative 3(C) and CVOA alternative 2);

Alternatives which require sectors to operate outside the CVOA during the A-season appear to have greater impacts during years when the ice edge is further south. In 1991 and 1994 the ice edge was about 200 nautical miles further south that during 1996. Those years almost all of the catcher processor's and catcher vessel's catch came from inside the CVOA. In 1996 the catch distribution was much closer to a 50/50 spilt inside and outside the CVOA. Forcing vessels to fish closer to the ice edge may also cause safety concerns.

The Council's preferred alternative allocates more pollock to the inshore sector, but then reduces the removals of pollock which may be taken from the CVOA by allowing only the inshore sector to operate inside the CVOA during the B-season. The Council opted to restrict "true" motherships from operating in the CVOA to create a more equitable offshore fishery. "True" motherships had increased their share of the offshore quota over time, so this was viewed as a way to help balance the offshore sector. The issue of marine mammals in general, and Stellar sea lions in particular, was considered a larger problem that should be dealt with outside of the inshore/offshore allocation. A paper will be prepared by NMFS over the summer and fall, in conjunction with the Stellar sea lion recovery team, to look at the needs of Stellar sea lions in a comprehensive fashion.

Chapter 6

This is the Environmental Assessment (EA) and is primarily focused on marine mammal issues as they relate to the CVOA. Also included is a discussion of EPA considerations as they relate to the issue of air and water quality and processing discharges. Just prior to the April 1998 meeting, the NMFS issued guidance to the Council regarding pollock removals from the CVOA, which overlaps with critical habitat area for Steller sea lions. The gist of the NMFS guidance was that, whatever alternatives and options were selected by the Council, those should not result in a *proportional* increase in pollock removals from the CVOA. This draft of the analysis provides additional discussion regarding the definition of proportional (what is the baseline from which we would measure the relative change), and examines the possible combinations of alternatives and suboptions which would comply with this guidance. For example, basic allocation alternatives which might increase proportional CVOA removals can be offset by options which specifically limit harvests from the CVOA by sector and/or season. Additional general information on Steller sea lions, such as life history and feeding habits, is also included in Chapter 6.

The Council's preferred alternative will not result in a proportional increase in pollock removals from the CVOA. Increasing the inshore allocation was more than offset by restricting the entire offshore sector from operating inside the CVOA during the pollock B-season.

Chapter 7

This Chapter contains a summary of economic implications of the alternatives, including E.O. 12866 considerations, and addresses other issues raised by the Council.

- Net benefit impacts are not quantifiable given the lack of cost data and other information. Gross revenue projections indicate very little change in overall gross revenues from the fisheries, under any of the alternatives. Impacts are expected to be primarily distributional in nature, with impacts to industry sectors being proportional to the allocation changes considered. With such small changes in gross revenues overall, net impacts to the Nation from any of the alternatives will not likely be significant under the provisions of E.O. 12866, which specify a $100 (net) million annual effect on the economy as the trigger for a 'significant' action.

- Utilization rates, as previously summarized, have changed over time, with the inshore sector exhibiting a much higher overall utilization rate (and improvement over time) than the offshore sector. During I/O1, underlying (assumed) PRRs were a significant and contentious factor in the analyses, and were factored into the analyses to arrive at overall net impact projections. The I/O2 analyses did not attempt to quantify net benefits, but did examine several primary parameters of the fisheries, including overall utilization rates (not to be confused with assumed PRRs). Based largely on improved utilization rates by the inshore sector from 1991 to 1994, the analysis for I/O2 projected that the original net loss estimates associated with the allocations were likely overstated.

- For the current analysis (I/O3), overall utilization rates are factored into the projections for product and gross revenues for each of the alternatives. The higher utilization rates for the inshore sector equate to a higher gross revenue per ton of raw fish for that sector, when compared to the offshore sector, and therefore results in slightly higher overall gross revenues from the fishery for alternatives which allocate more pollock inshore. However, these projections do not take into account relative production costs between the sectors. Higher utilization rates alone do not necessarily equate to 'highest value' from the fisheries. NOAA GC advice on this issue is that, while the Magnuson-Stevens Act does not dictate management measures based on achievement of higher product utilization rates, the Council may well consider this as a criterion in its decision process.

- Regarding excessive shares/capital concentration issues, there is little in the way of analysis directly focused on this issue. Relative share of the harvest and processing of pollock, by individual firms or vessels, cannot be published, though information of this nature is available in industry publications, has been referenced in public testimony before the Council, or is generally known. NOAA GC advice is that, because the inshore/offshore alternatives do not allocate fishing privileges to individual fishermen (or entities), and the alternatives do not directly result in acquisition of shares, National Standard 4 does not apply in the context of addressing a particular company's share of pollock harvest/processing (though Standard 4 does apply generally). Additional discussion of excessive share issues as they relate to the National Standards is contained in Chapter 7.

- Regarding progress toward overall Comprehensive Rationalization Planning (CRP), the place of I/O3 depends on the ultimate CRP goal - if it is some type of IFQ program then the allocations will likely serve to establish the 'playing field' for those allocations, at least among sectors, regardless of the specific percentages chosen. With an IFQ program at least 4 to 5 years away, due to the Congressional moratorium, continuation of the allocations would appear to constitute a critical 'holding place' for the fisheries. If an IFQ program is not the eventual goal, then the allocations are perhaps even more critical to defining the fishery. Regardless of the ultimate CRP solution, it would appear that continuation of the allocations (without prejudice to the percentages), is critical to orderly prosecution of the fisheries and a stable management environment.

- Regarding potential implications of the American Fisheries Act (currently proposed in Congress), enactment of this Act would result in a significant potential reduction in offshore sector capacity. As many as 15 vessels could be immediately impacted, with those vessels accounting for 32% of the total offshore catch in 1996 (21% of the overall pollock total in 1996).

Chapter 8

Chapter 8 contains discussions of consistency with other applicable laws, including: Magnuson Act, National Standards, and the Regulatory Flexibility Act. These assessments focus on the Council's preferred alternative.

- The Council's preferred alternative appears to be consistent with the National Standards, based on the information available. For example, community stability and sustained participation (National Standard 8) is dependent, in many cases, on continued participation by all major industry sectors, both offshore and inshore. The Council's preferred alternative changed the basic allocation percentages, but should allow continued participation by all sectors.

- Section 303(a)(9) of the Act requires consideration of potential impacts to participants in the fisheries, and to other (adjacent) fisheries. Chapters 4 and 5, and other sections of this document address impacts to participants in the pollock fisheries. Chapter 8 contains information regarding potential impacts to other fisheries ('spillover effects'). While this information does not allow for conclusive statements regarding the likelihood or magnitude of such spillover effects, it is intended to assist the Council and other reviewers by providing background information relative to this issue.

  Included in that Chapter is the following: (1) information on the operational capacity and capability of vessels/processors operating in the pollock fisheries; (2) patterns of entry and exit in the pollock fisheries over time; (3) profiles of vessel/processor activity in alternative fisheries over time; (4) detailed information on the 1997 fishing activities by vessels/processors involved in pollock fisheries; (5) value estimates for other species (intended to provide insights on 'replacement' potential of other species for lost pollock opportunities); and, (6) discussion of the potential for spillover and possible mitigating measures. The analysis recognizes the potential for lost pollock opportunities to be replaced, to some extent, by alternative fisheries such as yellowfin sole and Atka mackerel, which are primary targets of the H&G factory trawl fleet. Mitigating measures could include additional stand-down provisions to reduce the potential incursion into these fisheries by 'pollock' vessels. Stand-down measures could probably be implemented, if desired, in time for the 1999 fisheries. Species endorsements in the Council's LLP are another measure that could potentially address this issue, though that proposal has previously been discussed and rejected by the Council.

- Section 303(b)(6) requires certain specific analysis when considering limited entry programs. The creation of a "true" mothership category, limited only to those operations which "have processed, but never caught" pollock in the BS/AI, would have created a limited entry program (the three existing "true" motherships and four others would appear to be the only eligible operations). However the Council's preferred alternative does not separate the offshore sector into catcher processor and "true" mothership categories. So, the additional analysis that would have been needed to fulfill requirements under 303(b)6 are not a necessary.

The Regulatory Flexibility Act (RFA) requires analysis of impacts on small entities, and determination of whether management actions would 'significantly impact a substantial number of small entities'. Significance can be triggered by a reduction in revenues of more than 5%; a substantial number is defined as more than 20% of the affected universe of small entities. A discussion of the proposed GOA action relative to the IRFA is contained under section 2.4.3, and it concludes that no significant impacts are expected. However, because the action for the GOA and the BSAI will be contained in a single rulemaking, the IRFA findings must be considered in a collective fashion. It appears that 63 BS/AI pollock catcher vessels, 6 CDQ groups, and 60 government jurisdictions would be considered small entities for RFA purposes, based on existing interpretations of the Regulatory Flexibility Act. Of the 63 catcher vessels that are considered small entities (out of 119 total), 38 vessels are < 125' LOA and deliver inshore at least part of the year. These vessels would be able to participate in the small catcher vessel set-aside and should benefit under the Council's preferred alternative. Twenty-one offshore catcher vessels may also find markets and be able to deliver inshore during the set-aside fishery, but these vessels may need to leave that fishery before it closes in order to be outside of the CVOA at the start of the B-season. The impacts on small organizations and small government jurisdictions are discussed in appendices II and III. Overall it appears that the proposed action with respect to the BSAI may result in significant impacts as defined under the RFA. Therefore, the combined actions with respect to the GOA and the BSAI may result in significant impacts based on this IRFA. NMFS will complete the FRFA (final analysis) after the public comment period on the proposed rule and IRFA.

1.0 INTRODUCTION AND MANAGEMENT BACKGROUND

Inshore/offshore (I/O) allocations of the pollock TAC were originally established under Amendments 18/23 to the Bering Sea/Aleutian Island and Gulf of Alaska Fishery Management Plans, respectively.[1] The allocations were continued by the Council in Amendments 38/40 to the respective FMPs. Both the original amendments and the continuation contained "sunset" provisions, requiring the Council to reexamine the allocations, or see them expire. The current I/O management program will sunset December 31, 1998, without further Council action.

In June 1997 the Council requested information, in the form of pollock industry profiles, which enabled them to examine the evolution of, and current status of, the BS/AI pollock fisheries from 1991 through 1996. These profiles are included as Appendix I to this document. Based on its examination of those profiles, and other input received through public comment and Council discussion, the Council, at its September 1997 meeting, adopted a Problem Statement (with an associated set of alternatives) to examine the inshore/offshore pollock allocation, within "current" biological, economic, social, and regulatory contexts. This proposal is referred to as *Inshore/offshore Three* (I/O3).

The Council proposed that an analysis be undertaken to examine I/O3 alternatives which include continuation of the existing sector-share allocations and, in the case of the BS/AI management area, a series of changes in allocation shares and sector definitions, as well as possible changes in 'reserved-area' boundaries and access (i.e., management of the CVOA). In response, the Council staff has initiated development of an EA/RIR/RFA, to assist the Council in its deliberations and to permit the Council to take action on I/O3, prior to its scheduled sunset, if deemed appropriate.

1.1 Purpose and Need for Action

As noted above, in September 1997 the Council developed the following Problem Statement relative to the inshore/offshore pollock allocation issue:

GOA Problem Statement:

Allowing the current Gulf of Alaska Inshore/offshore allocative regime to expire December 31, 1998, would allow the same preemption of resident fleets by factory trawlers in the pollock and Pacific cod fisheries which occurred in 1989. It was this dramatic preemption which triggered the original proposal for an inshore/offshore allocation. In 1989, there was still pollock available in the Bering Sea when the preemption occurred when vessels moved into the Gulf to take advantage of fish with high roe content.

A rollover of the current Gulf of Alaska inshore/offshore program which allocates 100% of the pollock and 90% of the Pacific cod to inshore operations is a proactive action to prevent the reoccurrence of the original problem.

BS/AI Problem Statement:

The current inshore/offshore allocation expires at the end of 1998. The Council thus faces an inevitable allocation decision regarding the best use of the pollock resource. Many of the issues that originally prompted the Council to adopt an inshore/offshore allocation (e.g., concerns for preemption, coastal community dependency, and stability), resurface with the specter of expiration of the current allocation.

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[1] In the GOA, the Pacific cod TAC was also apportioned between 'inshore' and 'offshore' sectors under the I/O amendment.

The current allocation was made on the basis of several critical assumptions including utilization rates, foreign ownership, the balance between social gains and assumed economic losses to the nation, and the nature of progress on the Council's Comprehensive Rationalization Program (CRP) initiative. Many of these assumptions have not been revisited since approval of the original amendment. It is not clear that these assumptions hold or that the Council and the nation are well-served by continuing to manage the pollock fishery without a reexamination of allocation options. The Magnuson-Stevens Act presents the Council with a new source of guidance to evaluate national benefits. In the context of Council deliberations over Inshore/offshore 3, this includes enhanced statutory emphasis on increased utilization, reduction of waste, and fishing communities.

There have also been substantial changes in the structure and characteristics of the affected industry sectors including number of operations, comparative utilization rates, and outmigration and concentration of capital. These changes are associated with several issues, including: optimization of food production resulting from wide differences in pollock utilization; shares of pollock harvesting and processing; discards of usable pollock protein, reliance on pollock by fishing communities; and decreases in the total allowable catch of pollock. In addition, changes in fishing patterns could lead to local depletion of pollock stocks or other behavioral impacts to stocks which may negatively impact Steller sea lions and other ecosystem components dependent upon stock availability during critical seasons.

Therefore, the problem facing the Council is to identify what allocation would best serve to ensure compliance with the new Act and address the issues identified above.

1.2 Alternatives Being Considered

Alternative 1: No action.

Alternative 2: Rollover existing inshore/offshore program, including:
GOA pollock (100% inshore) and Pacific cod (90% inshore) allocations

BS/AI pollock (35% inshore, 65% offshore) allocation
suboption a: 1-year rollover
suboption b: 3-year rollover

Alternative 3: Allocation range **(BS/AI only)** of following percentages:

Option:	A	B	C	D
Inshore sector	25	30	40	45
"True" Motherships	05	10	10	15
Offshore sector	70	60	50	40

Staff intends to look at these ranges as four separate allocation alternatives. However, it is the Council's intent that these be considered as bounds for the allocation, and that the Council may select any allocation that falls within the bounds of the study, including the existing 65/35. Therefore, the Council may select as its preferred alternative any allocation that issues the Inshore sector 25-45%, "True" Motherships 5-15%, and the Offshore sector 40-70% of the BS/AI pollock quota. The Council wants to emphasize to the public that this wide range of allocations is for analysis and does not necessarily signal that the Council will choose such a wide divergence from status quo when the final decision is made next June.

Option: Establish a reserve set aside for catcher vessels less than 125 feet. The range considered for this set aside is 40-65% of the inshore and "true" mothership sector quotas. This range is based on the percentage of harvest that these smaller catcher vessels accounted for between 1991 and 1996.

Allocations would be analyzed such that the "true" motherships (which could operate in the BS/AI only) would be looked at as a sub-component of either the inshore or offshore component or as a separate component.

Option: Nine to 15% of the offshore quota shall be reserved for catcher vessels delivering to catcher processors. This is in addition to the allocation that catcher vessels may receive under the "true" motherships and inshore sectors.

Alternative 4: "Harvester's Choice" for Catcher Vessels Less Than 125' LOA.

Establish a set-aside for catcher vessels less than 125' LOA. The set-aside would be based upon a combination of:

- 40 to 60% of the inshore quota, plus
- 9-15% of the offshore (catcher processor) quota, plus
- 100% of the "true" mothership sector quota.

This alternative would use the main allocation percentages and small vessel set-aside sub-options, considered under Alternative 3, to determine the amount of pollock allocated to small catcher vessels (<125' LOA). Once their allocation percentage is determined, each of the small catcher vessels would be allowed to develop markets and deliver their pollock to the inshore, "true" mothership, or catcher processor sectors. Larger catcher vessels would only be allowed to sell their allocation to the inshore sector. Catcher processors would still be allowed to harvest some or all of the catcher processor quota depending on the option selected.

Under the Status Quo allocation percentages, this options reduces the pollock guaranteed to all of the processing sectors. However, any processing sector could increase the amount of pollock they process if they are relatively more successful in developing contracts with small catcher vessels.

Alternative 5: "Harvester's Choice" for Catcher Vessels 155' LOA and Shorter.

This alternative is the same as Alternative 4 except that the set-aside also includes catcher vessels from 125' through 155' LOA.

The definitions provided by staff for the Inshore, Offshore, Catcher Vessel, and "True" Mothership sectors will be used in this analysis. These same definitions were used in the sector profiles developed for the Council, and presented at the September meeting. Those breakdowns include:

Alternative 6: The Council's Preferred Alternative.

Thirty-nine percent of the BS/AI pollock would be allocated inshore and 61% offshore, after CDQs are deducted from the BS/AI TAC. No separate allocation to "true" motherships was included in this alternative. Instead, the "true" motherships will remain within the offshore sector.

In addition to the basic allocation split, the Council created a set-aside for BS/AI catcher vessels less than 125' LOA delivering to processors in the inshore sector. These small catcher vessels were allocated 2.5% of the combined BS/AI pollock TAC (adjusted for the 7.5% CDQ). Harvest of the set-aside will take place before the Bering Sea pollock B-season (there is no Aleutian Island B-season), starting on or about August 25. Any overages or underages resulting from the set-aside fishery will be subtracted from/added to the inshore BS open access B-season quota.

The rules and regulations pertaining to the CVOA will remain the same as under I/O2, except that during the B-season, harvesting operations allowed inside the CVOA will be restricted to catcher vessels delivering to the inshore sector. Under the current regulations, catcher vessels delivering to any sector are allowed to operate inside the CVOA during both the A and B-seasons. The new regulations will restrict catcher vessels delivering to offshore processors (including "true" motherships) from operating inside the CVOA during the pollock B-season. Catcher processors will continue to be restricted from harvesting pollock inside the CVOA during the B-season.

A three year sunset date is also included in the Council's preferred alternative. Therefore, I/O3 will remain in effect only for the 1999, 2000, and 2001 pollock fishing seasons, if the Secretary implements this program.

Catcher Vessels:
- < 125' Length Overall (LOA)
- 125' through 155' LOA
- > 155' LOA

Inshore Processors:
- Surimi Capability
- No Surimi Capability

Catcher Processors:
- Surimi Capability
- No Surimi Capability

"True" Motherships:
A vessel that has processed, but never caught, pollock in a "pollock target" fishery in the BS/AI EEZ.

Also included as options under Alternative 2 and Alternative 3:

1. Catcher vessel operational area (CVOA) Issues:
   a. Keep the CVOA as currently defined.
   b. Restrict catcher/processors from operation in the CVOA during both the A & B season with an examination of allowing "true" motherships to operate in the CVOA exclusively as well as excluding them from CVOA.
   c. Restrict larger catcher vessels (>155' or >125') fishing in CVOA (added in April 1998)
   d. Repeal the CVOA.

2. Sunset Issues:
   a. No sunset date, but intended to serve as an interim measure until the Comprehensive Rationalization Program has been completed.
   b. 3-year sunset.

3. The analysis identifies and examines potential conservation impacts on fish stocks, marine mammals and other marine resources that may result from status quo, or any changes in the structure of the fishery as well as other recommendations made by the SSC in their June 1997 meeting.

1.3 Summary of Previous Analyses

The purpose of this section is to provide the reviewer with additional background on the evolution of the inshore/offshore pollock allocations. Drawn from previous analyses, the following section summarizes the context and results of the analyses for the original inshore/offshore program (Amendments 18/23) and the second iteration (Amendments 38/40).

Original SEIS from March 1992

The original SEIS prepared by Council staff focused on input/output modeling which projected distributional changes in employment and income at the community/regional level. This analysis indicated that losses in employment and income for the Pacific Northwest induced by the inshore/offshore allocations analyzed would be more than offset by gains in direct income to Alaska regional economies. The magnitude of this effect depends on the specific allocation alternative chosen, but holds true across all alternatives to some degree. The Preferred Alternative of the Council was a three-year phase-in of allocation percentages (35/65, 40/60, and 45/55 inshore/offshore). Combining offshore and inshore regional impacts yielded a net gain in direct income of around $9 million in the first year of the program, based on the projections in that analysis.

Cost-Benefit Study from April 1992

As part of the Secretarial review process, NMFS economists conducted a cost-benefit oriented analysis which focused on overall net benefits (or losses) to the nation which would result from the inshore/offshore analysis. The basic methodology of that analysis was to measure producer surplus for each sector and then to predict the relative changes in that producer surplus for each sector—inshore and offshore. This involved estimation, for each sector, of relative harvest percentages, product mixes, recovery rates, and prices for fish. From this estimate, total revenues are projected, then subtracted from total estimated costs of production to arrive at net revenues (or producer surplus) for each sector, for both the "allocation case" and "no-allocation case." The net revenue difference between the two cases is the estimate of overall changes in net revenues to the nation of the allocation.

That analysis projected a net loss to the nation of $181 million over the three-year life of the allocation. Gains to the inshore sector were outweighed by losses to the offshore sector by that amount. Assumptions and parameters used in this analysis were the subject of intense disagreement and debate, and the analysis was largely silent on the issues of distributional and community impacts. The analysis was part of the basis of Secretarial review, and subsequent disapproval of the BS/AI pollock allocation (the GOA allocations were approved as well as the CDQ program for the BS/AI).

Supplemental Analysis from September 1992

Following Secretarial disapproval, a final Supplemental Analysis was jointly prepared by NMFS economists and Council staff. This analysis combined a cost-benefit assessment with an income/distributional analysis. The analysis also contained a detailed examination of the CVOA. Alternatives examined included the three-year phase-in as described above and a more straightforward 30/70 split over the entire three years. The Council finally approved, and forwarded to the Secretary, an allocation of 35/65, 37.5/62.5, 37.5/62.5. The final analysis projected the following major findings for the Preferred Alternative:

- Cost-benefit analyses projected an overall loss to the nation of $33.6 to $37.6 million over the three years of the allocation, depending on which set of parameters was used in the models. Sensitivity analysis indicated that, with certain parameters in the model, these projected losses could be reduced substantially, or could result in a net gain to the nation of $11 million. Essentially, the projections of net benefits/(losses) covered a range of possibility, from positive to negative depending on parameters and assumptions used, with the expected value in the negative.

- Distributional income analyses, using the same parameters assumed in the cost/benefit study, also projected an overall net loss, in terms of direct income at the U.S. level, with offshore losses outweighing gains to the inshore sectors. The estimated loss was $20 - 28 million over the three-year allocation (Preferred Alternative), though a potential overall gain of $11 million could be projected using model parameters based on public testimony to the Council.

- The Social Impact Assessment (SIA) which accompanied this analysis concluded that benefits to Alaskan coastal communities from the proposed allocation would be immediate and direct, while corresponding losses to Pacific Northwest communities would be less direct and less immediate. Overall, the study concluded that a given level of benefits accruing to Alaskan coastal communities was proportionally more significant when compared to regions like the Pacific Northwest where alternative industries and employment existed. The SIA noted that continuation of status quo (no inshore/offshore allocation) would have immediate and direct negative consequences for economic development and social stability in Alaskan coastal communities who rely heavily on fish harvesting and processing.

Inshore/offshore 2 - Amendments 38/40

The analysis of the proposed reauthorization of Amendment 18/23 did not attempt to respade the previous cost-benefit or distributional analyses; rather, it examined the current state of the fisheries (through 1994) and identified any significant changes which had occurred which would affect the overall findings of the previous analyses. Any directional changes, and their likely magnitudes, from the original analyses were identified in this iteration. Projections were made regarding the likely distributions of fishing and processing activities under both current alternatives—expiration of the allocation or reauthorization. Using the 1993 and 1994 fisheries as a base case for comparison, impacts of these projections were offered.

That analysis also examined additional issues which had been identified by the Council in the proposed reauthorization. In addition to potential preemption, these included stability within the industry, future trade-offs for affected industry sectors, and the potential impacts on the Council's overall CRP development. The pollock CDQ program was examined from the perspective of the current status of each of the six CDQ organizations' development, relative to the overall goals and objectives of the CDQ program created by the Council. In terms of projected impacts during the 1995, three-year reauthorization, the following is excerpted from the Executive Summary of that analysis:

BS/AI Pollock Fisheries

- *Price trends were similar to GOA with surimi and fillets decreasing significantly and roe maintaining high levels. Both sectors have increased surimi production relative to other product forms, while fillet and roe production as a percentage of overall production has remained fairly constant, with the exception of roe production for the offshore sector which has dropped as a percentage of overall production.*

- *Lower prices have decreased gross revenues for both sectors; gross revenues per mt of catch have also dropped for both sectors, though differentially. The inshore sector revenue per mt decreased 11.3% from 1991 to 1994 while the offshore sector revenue per mt decreased 32.6% over the same period. This is due primarily to higher overall utilization rates by inshore (were production per mt of raw fish) which affects the price reduction.*

- *Compared to the projected impacts of inshore/offshore as modeled in the original analyses, these changes indicate that projected impacts (net losses to the nation) were likely overstated, and that actual net losses are likely much less. The current analysis indicates that the range of expected economic impacts of the allocation would be shifted more toward a neutral point.*

The conclusions noted above must be tempered by the limitations of the information available to the analysis. The most notable caveat is the lack of new information regarding costs of harvest and production for both sectors. The best cost information available was that used in the original study which was based on an "OMB Survey" conducted in the fall of 1990. Efforts to update cost information since that time have not been successful. Therefore, the analysis assumes that costs per ton of harvest and production remained constant for all producers in both sectors, and attempts to work around this shortcoming by focusing on utilization rates, changes in product mix, and apparent changes in weekly catch and production. Additionally, information regarding product prices for 1994 has not yet been compiled, and therefore, 1993 prices were applied to 1994 production totals.

Projections with Expiration of Amendment 18/23

Chapter 5 projects probable implications of Alternative 1, the Expiration of the Inshore/offshore Amendments. The chapter focuses on projection of the harvest splits and potential economic impacts which might occur in the BS/AI pollock fishery without the inshore/offshore allocation. It goes on to a more qualitative discussion of possible outcomes in the GOA pollock and Pacific cod fisheries.

BS/AI Pollock Fishery Under Alternative 1

Seasonal averages and maximum catches were used to estimate harvest splits under Alternative 1. These two different methodologies projected inshore harvests of 29.15% and 25.46%, respectively. It appeared that using the seasonal averages predicted the 1991 harvest split more accurately than did the seasonal maximums. Using the projected harvest splits along with total product to total catch ratios (the "Utilization Rate"), product mixes and prices assumed for the 1994 fisheries, we estimated gross revenues. The results showed a probable decline in overall gross revenues accruing to the BS/AI pollock fisheries under Alternative 1 from $515 million estimated for the 1994 fishery to $511 million using the seasonal averages or $509 million using the season maximums, a very small change relative to the overall magnitude of the fishery. Further, the projected harvest splits using the seasonal average approach indicated that the overall shift in harvest to the inshore sector from the offshore sector, which was predicted to occur under the inshore/offshore allocation in the Supplemental Analysis, were likely overstated. This implies that the estimated net losses to the Nation, resulting from Amendment 18 in the Supplemental Analysis, were also overstated.

The analysis also concluded that Alternative 1 would likely have negative impacts on the stability of coastal communities, and upon the industry itself, particularly during the crucial period in which the Council attempts to rationalize the fisheries with comprehensive solutions.

Overall, it was concluded that Alternative 1 is less likely to provide significant gains in net benefits to the Nation than might have been supposed in the Supplemental Analysis. It is also likely that, given the inherent uncertainty of the information and the models used, the cost/benefit implications of the inshore/offshore allocation approach neutrality, and therefore the cost/benefit implications of the lack of an allocation also approach neutrality. These conclusions are based on several key assumptions:

1. *Discard and utilization rates remain at the same relative levels during 1996-1998 as in 1994.*
2. *1993 prices used to estimate 1994 gross revenue will be applicable for the years 1996-1998.*
3. *Product mix in each of the years from 1996-1998 will be identical to those found in 1994.*

4. Relative weekly catch and production between sectors will remain as it was in 1994.
5. Relative harvests and product costs between sectors remain the same as in the supplemental analysis.
6. Biomass levels, TACs, and therefore CPUEs, remain at 1994 levels.

These are fairly strong assumptions and thus give rise to the fairly weak conclusion of the neutral impact on the cost/benefit implications of the allocation. Given a neutral allocation, in terms of efficiency, conclusions regarding stability and impacts on communities become all the more relevant.

GOA Pollock Fishery Under Alternative 1

Estimates of impacts of Alternative 1 on the GOA pollock fishery were qualitative. In general, it was concluded that under the Alternative offshore catcher-processors would likely enter the GOA pollock fisheries in the second and third quarter apportions, causing shorter seasons and destabilizing the current participants, noting that these conclusions are based on assumptions similar to those listed above.

GOA Pacific Cod Fishery Under Alternative 1

Estimates of impacts of Alternative 1 on the GOA Pacific cod fishery were also somewhat qualitative. In general it was concluded that freezer longliners would benefit significantly under the Alternative. It appears that they would be able to enter the GOA Pacific cod fishery until the TAC was reached, and then continue on into the BS/AI to fish under the guaranteed fixed gear TAC. It is also possible that some offshore catcher-processors would participate in the GOA Pacific cod fisheries. Both of these conclusions would lead to shorter seasons and would likely be destabilizing for the current participants.

Projections with Reauthorization of Amendment 18/23

Chapter 6 contains the projections of impacts of Alternative 2 - reauthorization of Amendment 18/23 for an additional three years. Projections of harvest/processing activity are straightforward for this alterative - it would be 35/65 for the BS/AI pollock, GOA pollock would be 100% inshore, and GOA Pacific cod would be 90% inshore. Patterns of harvesting and processing are expected to be relatively unchanged from the base case; i.e., the 1993 and 1994 fisheries. GOA pollock stocks are relatively small, decreasing, and quarterly allocated. Alternative 2 would facilitate inseason management of the pollock stocks and avoid quota overruns by limiting the harvest of pollock to smaller, lower capacity shore based trawlers. If the Council chooses Alternative 2, other considerations include the CVOA and the definition of 'inshore' relative to freezer/longliners. Major findings from the analysis are presented below:

CVOA Considerations

- *Shore based vessels are more dependent on the CVOA (and any nearer shore fisheries) than the offshore sector.*

- *Pollock are harvested disproportional to their areal distribution; harvest rates of pollock are concentrated in the CVOA in the 'A' season, and harvest rates are much higher inside the CVOA than outside in the 'B' season.*

- *Allowing offshore sector vessels inside the CVOA in the 'B' season will likely exacerbate the disproportionate harvest rates relative to pollock distribution.*

- *Variation from year to year is exhibited relative to average size of pollock inside and outside the CVOA, with average size rates being similar; percentage of fish > 30 cm (commercially viable size) is higher inside the CVOA than outside.*

- *Overall, CPUEs of exploitable fish have been similar overall both inside and outside the CVOA, so exclusion from the CVOA should pose no significant impediments to offshore sector fishing operations. Operating costs, however, could be higher outside the CVOA.*

- *Increased harvest rates in the CVOA could adversely affect marine mammal critical habitat areas in the CVOA if the restrictions are relaxed.*

- *Bycatch rates of salmon and herring are higher inside the CVOA during the 'B' season time period. Additional effort could result in higher overall bycatch of these species.*

Cost-Benefit Implications

A reauthorization of Amendment 18/23 would be expected to result in the same general cost-benefit impacts as projected in the original Supplementary Analysis from 1992, as adjusted by findings from this current analysis. A substantive, comprehensive, quantitative reassessment has not been conducted in this analysis primarily because of the lack of new cost information which is a key element of a cost/benefit analysis, but changes in other primary model parameters have been identified which may directionally affect the original findings. In Chapter 4, it was concluded that the expected net losses to the nation were likely overstated in the original analysis, and that changes in the actual fisheries relative to assumptions used in that analysis would tend to move the expected impacts more towards neutral, given the data available to the analysis and the assumptions used.

Distributional Impacts

The methodologies for projecting distributional changes in employment and income, at a community/regional level, are directly dependent on the revenues generated from the fisheries for each sector. The original analysis (Supplemental analysis from September 1992) predicted net losses in direct income of $20-28 million, depending on model parameters used, and could project a gain of $11 million using selected model parameters. In that analysis benefits to inshore sectors were more than outweighed by losses to the offshore sector. Based on information presented in Chapter 4, fish prices and product mixes have changed to the point that overall revenues from the fisheries for both sectors are significantly reduced, relative to the projections made in the original analysis. The bottom line effect of this is to dampen the magnitude of any distributional effects overall; i.e., drive them towards the zero, or neutral point, keeping in mind that distributional effects are a function of both income from fisheries and employment from fisheries. Previous projections indicated a substantial loss of employment for the Pacific Northwest communities, and a gain for Alaska based communities. There is no information contained in this analysis to indicate that those employment projections were inaccurate.

The reductions in direct income from the fisheries for both sectors tend to reduce the aggregate income effects when compared to the original analyses, though we still expect gains to the inshore sector and losses to the offshore sector overall, when combined with employment effects. It is important to reiterate, however, that even though the trend is more towards a more neutral impact in aggregate, some distributional impacts will certainly still be expected, and any level of impacts to Alaska coastal economies is far more significant than a similar level of impacts to Pacific Northwest economies. This is a consistent finding in both the distributional analyses previously conducted and the Social Impact Assessment previously conducted. Therefore, although net negative impacts in direct income may still be expected, these impacts are reduced *from projections in the original analysis. These impacts for 1996-1998, under the three-year extension, would be similar to the impacts actually occurring in 1993-1995.*

Stability Implications

Compared to the base case (the 1993 and 1994 fisheries), continuation of the inshore/offshore allocations as they now exist would result in the least change, relative to that base case. Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The existing allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations for an additional three years would maintain the relationships between these sectors as they have developed over the past three years. The stability which has been established between these various industry sectors may not guarantee survival of entities within these sectors, but may be crucial to the successful fruition of the CRP program over the next three years. A stable environment in the fisheries has been cited by the Council as critical to successful CRP development. Indeed, the disruption of existing distributions of harvesting and processing of pollock and Pacific cod, and the business relationships based on those distributions, could have serious and adverse implications for successful CRP development.

Allowing the inshore/offshore allocations to expire would result in a projected "reallocation" of about 6% of the overall pollock quota in the BS/AI; i.e., the split between inshore and offshore processing is estimated to be about 29/71, closer to pre-inshore/offshore splits (26.5/73.5), as opposed to the current 35/65. Because of this projected change, the reauthorization of Amendment 18/23 holds implications for future tradeoffs between industry sectors. Under the reauthorization, the offshore sector would be giving up about 6% of pollock harvests/processing which it would enjoy if the allocations were allowed to expire. Conversely, the inshore sector enjoys about a 6% "gain" under the reauthorization relative to expiration of the allocations. From the offshore sector's perspective, this 6% relative loss represents a tradeoff between increased revenues and some amount of upheaval in the industry which may result if the allocations are allowed to expire. Continuation of the allocations may provide the stable operating environment necessary for eventual implementation of CRP programs such as IFQs, something the offshore sector generally has been striving towards.

Community Impacts

Although the distributional, income based analyses previously conducted (and described above) are based on economic activity at the community/regional level, an additional, more qualitative examination of community impacts is provided in this analysis. A review of the previous SIA from 1992, which focused on the communities of St. Paul, Dutch Harbor, Sand Point/King Cove, Kodiak, Newport, and Bellingham/Seattle, indicates that the smaller Alaska communities, which are fundamentally dependent on the groundfish fisheries, exhibit the most variability and vulnerability to socially disruptive forces. Inshore allocations were determined to provide the greatest benefit to Alaskan coastal communities and afford them the greatest opportunities for development and growth, while the only community negatively affected would be Ballard/Seattle. The absence of an allocation would very likely impact coastal Alaskan communities negatively, both economically and socially.

Immediate and direct positive impacts would be expected by Alaskan communities with the allocation, partially offset by negative impacts to Pacific Northwest employment and income, though the latter would be more easily absorbed by the more diverse economies of that region. Since 1992, additional infrastructures have developed in Alaskan coastal communities, partially in response to the guaranteed allocations from Amendment 18/23. Given the current status of the fisheries, and these communities which rely on fishing and *processing, allowing the inshore/offshore allocations to expire, in the absence of alternative management remedies, would likely result in at least the same level of impacts as previously projected. Impacts at this time could be exacerbated beyond those previously predicted due to the additional infrastructures and the ability of these communities to utilize the current allocations.*

Preferred Alternative

Chapter 10 discusses the preferred alternative, and provides updated information on prices and products. The Council approved the reauthorization of the Inshore/offshore Allocations of Pollock in the BS/AI and of pollock and Pacific cod in the GOA. They also approved the continuation of the Pollock CDQ program for Western Alaska. If approved by the Secretary of Commerce, these amendments will be enacted as Amendment 40 to the GOA Groundfish FMP and Amendment 38 to the BS/AI Groundfish FMP, and will be in effect for three years through 1998. Amendment 40 to the GOA FMP will allocate 100% of the pollock and 90% of the Pacific cod to the inshore sector. Under Amendment 38 in the BS/AI, 7½% of the pollock TAC will be allocated to the Pollock CDQ Program, with the remaining pollock TAC divided between inshore and offshore harvesters; 35% to the inshore sector and 65% to the offshore sector. The CVOA is defined for the pollock "B-Season," within which only catcher vessels may operate. The Council also made some minor changes to the Catcher Vessel Operational Area (CVOA), and asked that any other regulations that deal with the inshore and offshore sectors also be reauthorized, including an extension of the delay of the start of the A-season for the offshore sector.

In reaching their decision to reauthorize inshore/offshore, the Council relied on the information contained in the original EA/RIR dated May 4, 1995, as well as information provided by the public in comments and testimony at the Council meeting. The Council also relied on a presentation from its Staff and from the SSC and the Advisory Panel. Staff indicated that updated information regarding 1994 product prices and 1993 production information had become available, and that a preliminary examination of that information did not result in any changes in the conclusion drawn in the EA/RIR. The Council concurred with those findings overall and concluded that reauthorizing the inshore/offshore allocations for an additional three-year period would promote stability in the industry, while allowing the Council adequate time to further develop its Comprehensive Rationalization Plan.

1.4 Elements of the Current Inshore/Offshore Regulations

1.4.1 Amendment 40 to the GOA Groundfish FMP

Changes to the FMP:

Permit Requirements

All U.S. vessels fishing in the Gulf of Alaska and all U.S. processors receiving fish from the Gulf of Alaska must have current permits issued annually by the Secretary of Commerce.

Inshore/offshore allocations of pollock and Pacific cod

The allowed harvests of Gulf of Alaska pollock and Pacific cod will be allocated between the inshore and offshore components of industry in specific shares in order to lessen or resolve resource use conflicts and preemption of one segment of the groundfish industry by another, to promote stability between and within industry sectors and affected communities, and to enhance conservation and management of groundfish and other fish resources.

Definitions

Inshore is defined to consist of three components of the industry:

1. All shoreside processors as defined in Federal regulations.
2. All catcher/processors which meet length requirements defined in Federal regulations and which have declared themselves to be "Inshore".
3. All motherships or floating processors which have declared themselves to be "Inshore."

Offshore is defined to consist of two components of the industry:

1. All catcher/processors not included in the inshore processing category, or which have declared themselves to be "Offshore."
2. All motherships and floating processing vessels not included in the inshore processing category, or which have declared themselves to be "Offshore."

Declarations and operating restrictions

Annually before operations commence, each mothership, floating processing vessel and catcher/processor vessel must declare on its Federal Permit application whether it will operate in the inshore or offshore component of industry. This declaration must be the same for both the BS/AI and the GOA if applications for both are made. All shoreside processors will be in the inshore component. Once declared, a vessel cannot switch to the other component, and will be subject to restrictions on processing amounts or locations for pollock and Pacific cod for the rest of the fishing year. Harvesting vessels can choose to deliver their catch to either or both components.

Catcher Processors which have declared themselves to be inshore have the following restrictions:

1. The vessel must be less than 125' LOA.
2. The vessel may not catch or process more than 126 mt (round weight) of pollock or GOA Pacific cod in combination in a given week of operations.

Motherships and floating processors which have declared themselves to be inshore have the following restriction:

1. Processing from a directed pollock fishery or a directed GOA Pacific cod fishery must occur in a single location within the waters of the State of Alaska.

Allocations

One hundred percent of the allowed harvest of pollock is allocated to inshore catcher/processors or to harvesting vessels which deliver their catch to the inshore component, with the exception that offshore catcher/processors, and vessels delivering to the offshore component, will be able to take pollock incidentally as bycatch in other directed fisheries. All pollock caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

Ninety percent of the allowed harvest of Pacific cod is allocated to inshore catcher/processors or to harvesting vessels which deliver to the inshore component and to inshore catcher processors; the remaining 10% is allocated to offshore catcher/processors and harvesting vessels which deliver to the offshore component. All Pacific cod caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

These allocations shall be made by subarea and period as provided in Federal regulations implementing this FMP.

Reapportionment of unused allocations

If during the course of the fishing year it becomes apparent that a component will not process the entire amount of the allocation, the amount which will not be processed shall be released to the other component for that year. This shall have no impact upon the allocation formula.

Duration

Inshore/offshore allocations of pollock and Pacific cod shall cease to be a part of this FMP either (1) at midnight on December 31, 1998; or (2) earlier if replaced with another management regime approved by the Secretary.

1.4.2 Amendment 38 to the BS/AI Groundfish FMP

Permit Requirements

All U.S. vessels fishing in the Bering Sea or Aleutian Islands sub-management areas and all U.S. processors receiving fish from the Bering Sea or Aleutian Islands sub-management areas must have current permits issued annually by the Secretary of Commerce.

Inshore/offshore allocations of pollock

The allowed harvest of Bering Sea and Aleutians pollock will be allocated between the inshore and offshore components of industry in specific shares in order to lessen or resolve resource use conflicts and preemption of one segment of the groundfish industry by another, to promote stability between and within industry sectors and affected communities, and to enhance conservation and management of groundfish and other fish resources.

Definitions

Inshore is defined to consist of three components of the industry:

1. All shoreside processors as defined in Federal regulations.
2. All catcher/processors which meet length requirements defined in Federal regulations and which have declared themselves to be "Inshore."
3. All motherships or floating processors which have declared themselves to be "Inshore."

Offshore is defined to consist of two components of the industry:

1. All catcher/processors not included in the inshore processing category, or which have declared themselves to be "Offshore."
2. All motherships and floating processing vessels not included in the inshore processing category, or which have declared themselves to be "Offshore."

Declarations and operating restrictions

Annually before operations commence, each mothership, floating processing vessel and catcher/processor vessel must declare on its Federal Permit application whether it will operate in the inshore or offshore component of industry. This declaration must be the same for both the BS/AI and the GOA if applications for both are made. All shoreside processors will be in the inshore component. Once declared, a vessel cannot switch to the other component, and will be subject to restrictions on processing amounts or locations for pollock for the rest of the fishing year. Harvesting vessels can choose to deliver their catch to either or both components.

Catcher processors which have declared themselves to be inshore have the following restrictions:

1. The vessel must be less than 125' LOA.
2. The vessel may not catch or process more than 126 mt (round weight) of pollock or GOA Pacific cod in combination in a given week of operations.

Motherships and floating processors which have declared themselves to be inshore have the following restriction:

1. Processing from a directed pollock fishery or a directed GOA Pacific cod fishery must occur in a single location within the waters of the State of Alaska.

Allocations

The allowed harvest of BS/AI pollock shall be allocated as follows: Thirty-five percent (35%) of the pollock in each subarea, for each season, will be allocated to the inshore component beginning in 1996 and continuing through 1998. By the same action, the offshore fleet will be allocated 65% of the pollock resource beginning in 1996 and continuing through 1998 in each subarea and in each season. The percentage allocations are made by subarea and period as provided in Federal regulations implementing this FMP. All pollock caught as bycatch in other fisheries will be attributed to the sector which processes the remainder of the catch.

Reapportionment of unused allocations

If, during the course of the fishing year, it becomes apparent that a component will not process the entire amount of the allocation, the amount which will not be processed shall be released to the other component for that year. This shall have no impact upon the allocation formula.

Western Alaska Community Quota

For a Western Alaska Community Quota, 50% of the BS/AI pollock reserve as prescribed in the FMP will be held annually. This held reserve shall be released to communities on the Bering Sea Coast which submit a plan, approved by the Governor of Alaska, for the wise and appropriate use of the released reserve.

The Western Alaska Community Quota program will be structured such that the Governor of Alaska is authorized to recommend to the Secretary that a Bering Sea Rim community be designated as an eligible fishing community to receive a portion of the reserve. To be eligible a community must meet the specified criteria and have developed a fisheries development plan approved by the Governor of Alaska. The Governor shall develop such recommendations in consultation with the Council. The Governor shall forward any such recommendations to the Secretary, following consultation with the Council. Upon receipt of such recommendations, the Secretary may designate a community as an eligible fishing community and, under the plan, may release appropriate portions of the reserve.

Bering Sea Catcher Vessel Operational Area

For directed pollock harvesting and processing activities, a catcher vessel operational area (CVOA) shall be defined as inside 167°30' through 163° West longitude, and 56° North latitude south to the Aleutian Islands. The CVOA shall be in effect commencing on the date that the second allowance of pollock is available for directed fishing until the inshore allocation is taken, or the end of the fishing year. Only catcher vessels and catcher/processors fishing under the Western Alaska Community Quota Program, may participate in a directed pollock fishery in this area during this period.

Duration

Inshore/offshore allocations of pollock, the CVOA, and the Western Alaska Community Quota program shall cease to be a part of this FMP either (1) at midnight on December 31, 1998; or (2) earlier if replaced with another management regime approved by the Secretary.

1.4.3 Changes to the CVOA

The changes to the CVOA were made by the Council in June 1995. Specifically, the Council moved the Western border of the CVOA from 168° W. longitude to 167°30' W. longitude, and allowed the offshore sector to operate in the CVOA during the B season once the inshore quota is taken.

The information in Chapter 2 of the EA/RIR, as well as the figures in Appendices I and II, and comment made by then American Factory Trawlers Association (now the At-Sea Processors Association) at the June 1995 Council meeting, provided sufficient evidence to the Council that the shift in the Western border of the CVOA would not significantly impact the catcher vessels operating in the CVOA during the B season, nor would there be a significant impact on marine mammals. The offshore sector would benefit by having the option to fish in additional areas of the Bering Sea, without negatively impacting overall bycatch of salmon and other prohibited species, and without negatively impacting the inshore sector operations.

1.5 Current Analysis and Organization of the Document

As discussed in Section 1.1, the Council considered a wide range of alternatives relative to the inshore/offshore pollock allocations. The pollock CDQ program has been separated and is proceeding on its own course as a separate plan amendment. For the Gulf of Alaska there were only two alternatives considered: expiration of the allocations or continuation of the existing allocations. Therefore, the Gulf of Alaska issue is treated in a separate chapter, and is largely a qualitative, 'threshold' analysis. The analysis for the BS/AI alternatives is much more detailed and attempts to provide the Council and industry with a detailed profile of the evolution and current status of the BS/AI pollock fisheries, its importance to each industry sector involved, and the linkages to coastal communities and fishermen. Part of the analysis addresses the alternatives quantitatively, but primarily in the projection of gross revenues derived from the fishery.

A significant part of the analysis is devoted to illuminating the various issues raised during Council discussions and which are contained in the Council's Problem Statement. Examples of the parameters and issues of concern to the Council, which are addressed in the document, include: pollock TAC, catch estimates by sector, catch location, product recovery rates, overall utilization rates of raw fish, discards, pollock product mix, markets, fish prices, level of foreign ownership, employment (wages and residency), PSC bycatch, protected species implications, CVOA issues, impacts to other fisheries, fish taxes and revenue streams, capital concentration and market share, environmental impacts, social and community impacts, and, CDQ program impacts. Some of these issues are addressed to a greater extent than others in the analysis, but all have been raised as issues surrounding the inshore/offshore allocation decision.

Chapter 2 of the document is devoted specifically to the Gulf of Alaska inshore/offshore program. There were only two alternatives under consideration for the GOA I/O3 amendment. These were, the *'No Action'* alternative (i.e., the allocations expire), or a 'rollover' of the existing allocations (i.e., 100% of pollock and 90% of Pacific cod allocated inshore). As with the *'No Action'* alternative described for the BS/AI, little or no empirical data exist with which to make quantitative estimates of impacts, should the allocations be allowed to expire. Probable implications for sectoral performance, community stability, regulatory stability, and effects on future management are characterized in qualitative terms.

In the case of the GOA, the only alternative to "expiration" under the sunset provision of I/O2, was continuation of the *status quo* allocation (i.e., base case). This analysis does not include a detailed, quantitative examination of the GOA status quo. Rather, it addresses the likely implications within the context of 'with or without' the existing pollock and Pacific cod allocations, based upon a 'threshold' analyses. This approach allows us to suggest the 'probable' type, direction, magnitude, and distribution of impacts, in a general sense. If these can be shown to most probably exceed any expected 'benefit' relative to *No Action*, then the Council should be in a position to judge the relative desirability of the two competing alternatives. This is similar to the approach taken in the 1995 analysis for the GOA, and appears consistent with the Council's Problem Statement for the GOA. This approach is not meant to minimize the importance of the allocations to the GOA pollock and cod fisheries, but is a reflection of the relatively simple decision facing the Council with regard to the GOA allocations.

Chapter 3 addresses the issues surrounding the BS/AI allocation decision and is a critical centerpiece of the analysis. This chapter contains the description of the numerous parameters surrounding the analysis, and constitutes the 'baseline' status of the BS/AI pollock fisheries. Based primarily on 1996 information, this chapter contains the baseline against which the alternatives are measured. Included in this chapter are product mix and gross revenue projections associated with the status quo allocations. Additional detail on the baseline information is contained in Appendix I to the document.

Chapter 4 examines the major allocation alternatives between inshore, offshore, and "true" mothership operations. In this chapter baseline information on product mix, prices, and utilization rates are extrapolated across the various alternatives to illustrate the changes in product on the market, and gross revenues (both by sector and overall), resulting from the alternatives. This chapter also addresses the specific sub-options that were considered, including: percentage set-asides for small catcher vessels (<125') within the inshore sector allocation; percentage set-asides within the offshore sector for catcher vessels which deliver offshore; whether to include "true" mothership within the inshore or offshore sector, or to have a separate allocation to that category; and, the duration of the allocation chosen (one, two, or three years, or indefinite). Chapter 4 also examines the alternative that would allocate the BS/AI pollock quota to harvesting vessels and give small catcher vessels the opportunity to deliver their allocation to any processing sector. Also discussed in this chapter are NMFS management and catch accounting considerations which may be applicable to the allocation decision, particularly to some of the sub-options that were considered.

Chapter 5 is devoted to treatment of the catcher vessel operational area (CVOA) issue. This includes a baseline description of CVOA fishing activities as well as projections of CVOA activities under the various alternatives. These alternatives include repeal of the CVOA as well as further restrictions on fishing in the CVOA for the offshore sector.

Chapter 6 contains an Environmental Assessment (EA). Marine mammal (steller sea lion) implications of CVOA fishing activity are addressed there, as well as other environmental issues which have been raised.

Chapter 7 is a summary of the expected impacts of the Council's preferred alternative, from the perspective of Regulatory Impact Review (RIR) and Executive Order 12866 considerations. Distributional impacts, as well as a discussion of net benefit *considerations*, is contained in this chapter. Other issues relative to the inshore/offshore decision are also addressed in this chapter.

Chapter 8 addresses the consistency of the Council's preferred alternative with other applicable laws including: the Magnuson-Stevens Act, National Standards and the Regulatory Flexibility Act.

In addition to Appendix I which has baseline fishery profiles, there are two other appendices which are critical to rounding out the overall analysis, and warrant further explanation. Community and social impacts have been a concern of the Council relative to this issue, and the new Magnuson-Stevens Act places additional emphasis on consideration of dependent communities, relative to any actions taken by a Council. Immediately following the September 1997 Council meeting we contracted with Impact Assessment, Inc. (IAI) to conduct an analysis of potential social and community impacts, based on the alternatives formulated by the Council. The primary focus of that research is two-fold: (1) updating the relevant community and sector profiles compiled under previous initiatives, with an emphasis on describing the linkages between the industry sectors involved and the communities involved in the pollock fisheries, and (2) assessing potential impacts to those sectors, and their participants, from the allocation alternatives under consideration.

In December 1997 we supplemented that contract with additional funds, primarily due to concerns that the overall analyses as planned would be deficient in terms of describing the specific sector/community linkages, particularly employment-related linkages, and particularly for the Puget Sound (Seattle) region. Because these sector linkages are less obvious in the Puget Sound economy than in Alaska communities, a majority of the *supplemental* resources were devoted to assessing these linkages in the Puget Sound area. This is not intended to detract in any way from the original research focus, or to detract from the information being developed for Alaska communities; rather, it is a reflection of the extra effort anticipated to develop a comparable 'picture' for the Puget Sound area, with the expectation that the research by IAI will address all sector linkages to the Seattle area (i.e., catcher vessels, at-sea processors, motherships, and shore-based processors). It is also expected that the IAI work will shed additional light on the employment issue, particularly for the catcher vessel sector where we have little quantitative information.

Appendix II is the report from IAI regarding community impacts.

In September 1997, as well as in other discussions, the issue of impacts to the CDQ program was raised. At the September meeting we received a preliminary report from the State of Alaska Department of Community and Regional Affairs (DCRA) which attempted to summarize the linkages between the CDQ organizations and the pollock industry sectors. Given the business relationships involved, and planned development projects related to pollock and other CDQ species, the goal is to define these relationships and assess whether and to what extent a change in the inshore/offshore pollock allocations might impact the CDQ program and the member communities.

Following the September meeting we requested assistance on this issue from the State of Alaska, specifically from DCRA (as well as on the separate amendment to extend the pollock CDQ program at 7.5%, beyond 1998). An initial survey was sent to the CDQ groups by DCRA to begin this process. Since that time we have devoted Council funding to the State of Alaska to help cover the personnel and subcontracting costs associated with this task. The State of Alaska subsequently contracted with McDowell Group to assist in a revised survey process and subsequent analyses. Information gathered in this process was also relevant to the separate amendment to extend the pollock CDQ program.

Appendix III is the report from the State of Alaska regarding potential CDQ program impacts.

1.6 Use of Industry Submitted Data

As the I/O3 analytical process developed, staff were queried regarding the availability of data on a variety of issues, and whether industry submitted information could be used to supplement the analyses. While we recognize that much of the information which could be provided would be useful to both the analysts and the Council decision-making process, we are sensitive to using such data in our analyses, particularly where it would create an asymmetry between sector information. In December 1997 the SSC also discussed this issue and stated in their minutes:

"The issue of voluntary industry data submissions presents a challenge to the analysts. While the SSC welcomes and encourages industry cooperation, methods and standards for appropriate integration of such data into the analysis are not yet clearly established and will require further consideration by the staff and SSC."

After several discussions of this issue, which included members of various industry sectors involved, staff suggested to the Council (in February 1998) to employ the following basic policy: If information could be provided which would help fill existing holes in the analysis, and result in symmetry in the information across sectors, we would accept that information subject to some type of internal review, and perhaps independent 'audit'. We would also clearly state in the analysis where the information came from, as well as any caveats or concerns we have with the use of that information.

At the February 1998 Council meeting, the Council formally approved an audit process for such information, including appointment of a Committee to help develop the agreed-upon-procedures for independent review, by an accounting firm approved by the Council, of the data submitted (Committee report is available separately). In summary, that process resulted in the submittal of two sets of information by the At-Sea Processors Association (APA): employment data by residency and first wholesale price data for offshore products.

The employment information is contained in Appendix 1 - Tab 6 along with similar information for the inshore processing plants, and is also summarized in Chapter 3 as relevant baseline information, but is not used in any further projections. The price data is summarized in Chapter 3, as relevant baseline information, and is further used in the gross revenue projections contained in Chapter 4.

2.0 GULF OF ALASKA INSHORE/OFFSHORE ALLOCATIONS

2.1 Introduction and Management Background

The North Pacific Council originally approved an inshore/offshore allocation in June 1991, in response to growing preemption problems between U.S. industry sectors harvesting and processing groundfish in the EEZ off Alaska. Dominated by foreign fleets through the early 1980s, the domestic fisheries had expanded by the late 1980s, and by 1988 the fisheries were effectively domesticated. As one fishery after another became fully U.S. utilized, the Council was increasingly faced with highly controversial, allocative decisions concerning domestic users. In 1989, following a short season on Bering Sea/Aleutian Islands (BS/AI) pollock, several factory trawlers (catcher/processors) moved into the Gulf of Alaska (GOA), quickly taking a substantial portion of the pollock quota which a shore based catching and processing industry was planning to utilize later that year (Figure 2.1). This became the catalyst for Amendment 18/23, also referred to as Inshore/offshore 1 or I/O1.

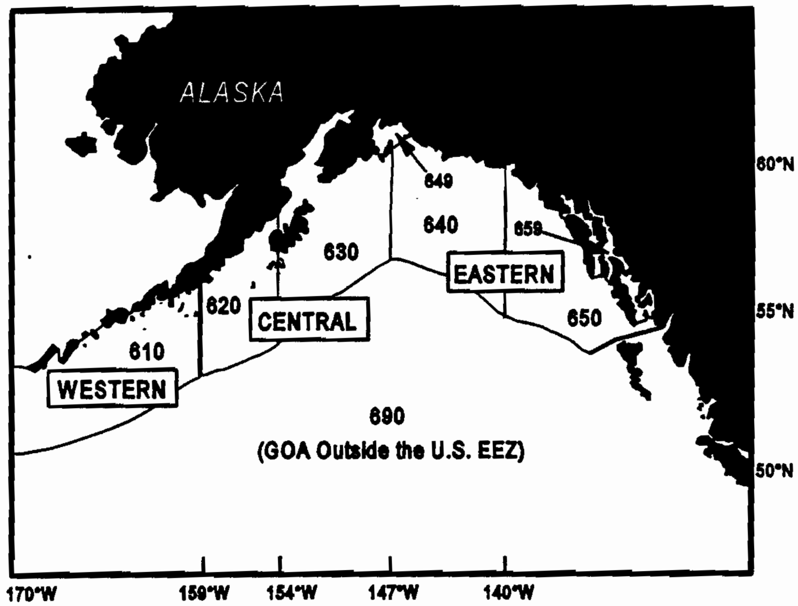


Figure 2.1 Regulatory and statistical areas in the Gulf of Alaska

Current and potential future preemption of resources by one industry sector over another became a focal issue for the Council, particularly with regard to pollock and Pacific cod in the GOA, and pollock in the BS/AI. Though not necessarily a problem at that time in the BS/AI, it was apparent that the capacity of the offshore catcher/processor fleet posed a real preemption threat to the inshore processing industry, which relied heavily on the pollock resource. Through a series of meetings in 1989 and 1990 the Council and industry developed analyses of various alternative solutions to the preemption problem. This was occurring at the same time as the Council was developing a moratorium on further entry into the fisheries off Alaska. The inshore/offshore allocation issue became an integral part of the overall effort towards addressing overcapitalization in the fisheries. In April 1990, the Council developed the following problem statement as the context for addressing the inshore/offshore processing allocations.

<u>PROBLEM STATEMENT (I/O1)</u>

> The finite availability of fishery resources, combined with current and projected levels of harvesting and processing capacity and the differing capabilities of the inshore and offshore components of the industry, has generated concern for the future ecological, social and economic health of the resource and the industry. These concerns include, but are not limited to, localized depletion of stocks or other behavioral impacts to stocks, shortened seasons, increased waste, harvests which exceed the TAC, and possible pre-emption of one industry component by another with the attendant social and economic disruption.

- Domestic harvesting and processing capacity currently exceeds available fish for all species in the Gulf of Alaska and most species in the Bering Sea. The seafood industry is composed of different geographic, social, and economic components which have differing needs and capabilities, including but not limited to the inshore and offshore components of the industry.

  The Council defines the problem as a resource allocation problem where one industry sector faces the risk of preemption by another. The analysis will evaluate each of the alternatives as to their ability to solve the problem within the context of harvesting/processing capacity exceeding available resources.

  The Council will address these problems through the adoption of appropriate management measures to advance the conservation needs of the fishery resources in the North Pacific and to further the economic and social goals of the Act.

2.1.1 Summary of I/O1 Findings

Prior to, and following, the drafting of the I/O1 problem statement, the Council spent considerable time developing and refining alternatives, with the help of industry and a Fishery Planning Committee (FPC) appointed by the Council. This sequence of events is summarized here. By the end of 1989, the Council, with the help of the FPC, had established a list of alternatives to address the budding problem which included: traditional management tools, specific allocations of the quotas between industry sectors (with and without operational areas for each), quota allocations based on vessel size, and limited entry alternatives including an immediate moratorium. Also included were provisions for CDQ considerations within each of the primary alternatives. By late 1990, the Council had identified a direct quota allocation as the most viable alternative to the problem as identified in the problem statement shown above. Various potential percentage splits became the focus of further discussion and development, with the focus now centered on pollock and Pacific cod in the GOA and pollock in the BS/AI.

The analysis of the various alternatives was completed in early 1991 and a decision was made by the Council in June 1991. The Council's preferred alternative for the GOA was 100% of pollock reserved for vessels delivering to inshore plants and 90% of Pacific cod reserved for vessels delivering to inshore plants. These allocations were scheduled to expire at the end of 1995.

The Council began development of a Comprehensive Rationalization Program (CRP) in November 1992. By early 1994, the Council also recognized that a license limitation program would not address the issue of inshore/offshore, and directed staff to begin an evaluation of continuing the program beyond the 1995 sunset date. Specifically, the Council continued the existing allocations for an additional three years to allow for further development of the overall CRP initiative. In doing so, the Council continued the mandate established for itself back in 1992, when they recognized that a more permanent solution to overcapacity and preemption was needed. If the inshore/offshore allocations were allowed to lapse, the management void could indeed create the preemption problems envisioned when the amendments were originally approved and implemented. In December 1994, the Council developed the following problem statement for I/O2.

<u>PROBLEM STATEMENT (I/O2)</u>

> The problem to be addressed is the need to maintain stability while the Comprehensive Rationalization Program (CRP) process goes forward. The Council believes that timely development and consideration of a continuing inshore/offshore and pollock CDQ allocation may preserve stability in the groundfish industry, while clearing the way for continuing development of a CRP management system. The industry is in a different state than existed in

1990 as a consequence of many factors outside the scope of the Council process, as well as the inshore/offshore allocation. The Council intends that staff analyze the effects of rapidly reauthorizing an interim inshore/offshore allocation relative to maintaining stability in the industry during the CRP development process, as well as the consequences of not continuing the present allocation. These alternatives are appropriate as they address the problem of maintaining stability. Therefore, the focus of analysis to be done over the next few months should assist the Council to:

1. Identify which alternative is least likely to cause further disruption and instability, and thus increase the opportunity for the Council to accomplish its longer-term goal of CRP management.
2. Identify the future trade-offs involved for all impacted sectors presented by the two alternatives.

As the Council was deciding on reauthorizing the inshore/offshore allocations in 1995 (Inshore/offshore 2), it also embarked on an initiative to develop more comprehensive, long-term management programs to address the overcapitalization and allocations problems facing the industry, not only with regard to inshore/offshore, but to the overall groundfish and crab fisheries off Alaska. This Comprehensive Rationalization Plan (CRP) examined a myriad of alternative approaches, but focused on some type of limited entry or Individual Fishing Quota (IFQ) program as the solution.

Eventually, focus evolved to a license limitation program and the Council approved a vessel license limitation program (LLP) in June 1995. Since LLP was predicted to take two to three years to implement, the Council extended the existing inshore/offshore allocations for an additional three years to maintain stability between industry sectors and to facilitate further development of more comprehensive management regimes. No new regulations or program changes would be necessary for (continued) implementation of the program under this schedule. In June 1995, the Council approved Amendments 38/40 to reauthorize a rollover of the pollock and Pacific cod allocations through 1998. This was approved by the SOC in 1995. At that time, the Council indicated that its next major step would be consideration of an individual quota system for BS/AI pollock; however, a Congressional moratorium postponed approval of any IFQ program until after October 6, 2001. The LLP is expected to be implemented by year 2000.

2.1.2 Summary of I/O2 Findings

Chapter 4 of the EA/RIR for I/O2 described the status of the fisheries under the inshore/offshore allocations from 1992-94 and focused on economic indices related to the harvesting and processing of BS/AI and GOA pollock and Pacific cod. A description of fish prices used in the analysis, and status and trends of these prices was provided. Prices for major pollock products, other than roe, declined significantly from 1991 and 1992 levels to 1994 levels for both sectors. A detailed examination of the GOA Pacific cod and pollock fisheries was provided to describe actual activities which occurred during 1992-94. The results of this examination were compared to results as projected in the analyses of I/O1. Major findings from the 1995 analysis are summarized below:

I/O2 Alternative 1. No action. Allow the pollock and Pacific cod allocations in the GOA to expire on January 1, 1996.

Pollock Fishery Estimates of impacts of Alternative 1, the no action alternative, to allow the allocation of GOA pollock to expire, were qualitative. In general, it was concluded that under Alternative 1, offshore catcher/processors would likely enter the GOA pollock fisheries in the second and third quarters, causing shorter seasons and destabilizing current participants:

- Total offshore sector harvest of pollock was about 1% in 1993 and 1994; the processing locations for GOA pollock have shifted significantly to Kodiak and Sand Point/King Cove locations (from Dutch Harbor) from a combined 65% in 1991 to 85% in 1994.

- Processed product form has shifted substantially over the period 1991-1994; more emphasis was placed on surimi in 1992, then shifted back to fillets and roe by 1994. Roe prices have risen and remained at high levels through 1994, while both fillet and surimi prices have dropped dramatically, with a relatively higher price decrease in surimi.

- Total product utilization by the inshore sector is higher than offshore sector utilization (21-22% of total weight for the inshore sector, over all years vs. 16% for the offshore sector in 1991).

- By 1994, roe comprised nearly 18% of total gross revenues for the inshore sector, with fillets accounting for 49% and surimi for just over 29%.

- Gross revenue per mt has fallen from 1991 to 1994 for the inshore sector, but not by much considering product price reductions. Changes in product mix combined with differential prices for each product have contributed to relative 'maintenance' of revenues per ton.

- Lower revenues per ton in the offshore sector (based only on 1991 data) may indicate that total revenues generated from the pollock fisheries would have been lower without the implementation of the Amendment.

<u>Pacific Cod Fishery</u> Estimates of impacts of Alternative 1, the no action alternative, to allow the allocation of GOA Pacific cod to expire, were also qualitative. In general, it was concluded that freezer longliners would benefit significantly under Alternative 1. It appears that they would be able to enter the GOA Pacific cod fishery until the TAC was reached, and then continue on into the BS/AI to fish under the guaranteed fixed gear TAC. It is also possible that some offshore catcher-processors (trawlers) would participate in the GOA Pacific cod fisheries. Both of these conclusions would lead to shorter seasons and would likely be destabilizing for the current participants. Other primary findings were:

- Despite the 10% allocation of Pacific cod, the offshore sector took only 3% of the TAC in 1993 and 1994.

- About 10% of the overall GOA quota in 1993 and 1994 was taken by longline catcher/processors designated to the inshore category.

- Production for the inshore sector has shifted to higher priced fillets, while falling prices overall and reduced harvest levels have kept revenues per ton constrained.

- Revenues per ton decreased relatively more for the offshore sector, though some of this may be attributable to mandatory discarding under the rules of the allocations.

<u>I/O2 Alternative 2</u>. Reauthorize the pollock and Pacific cod allocations in the GOA through 1998.

Chapter 6 in the EA/RIR for I/O2 contains projections through 1998 of impacts of Alternative 2. Projections of harvest/processing activity are straightforward for this alternative. Pollock landings were 100% inshore and Pacific cod landings were 90% inshore, except for overages. Patterns of harvesting and processing are expected to be relatively unchanged from the 1993 and 1994 fisheries. In 1995, GOA pollock stocks were relatively small, decreasing, and quarterly allocated. The rollover facilitated in-season management of the pollock stocks and attempted to avoid quota overruns by limiting the harvest of pollock to smaller, lower capacity shore based trawlers. Major findings from the analysis are presented below.

Stability Implications

Compared to the 1993 and 1994 fisheries, continuation of the inshore/offshore allocations would have resulted in the least change. Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations through 1998 would maintain the relationships between these sectors as they have developed since 1993. The stability which has been established between these various industry sectors may not guarantee survival of entities within these sectors, but may be crucial to the successful implementation of the CRP program. A stable environment in the fisheries has been cited by the Council as critical to successful CRP development. Indeed, the disruption of existing distributions of harvesting and processing of pollock and Pacific cod, and the business relationships based on those distributions, could have serious and adverse implications for successful CRP development.

Community Impacts

Although the distributional, income-based analyses conducted for I/O1 are based on economic activity at the community/regional level, an additional, more qualitative examination of community impacts was provided in the analysis for I/O2. A review of the previous Social Impact Assessment from 1992, which focused on the communities of St. Paul, Dutch Harbor, Sand Point/King Cove, Kodiak, Newport, and Bellingham/Seattle, indicated that smaller Alaska communities, which are fundamentally dependent on the groundfish fisheries, exhibited the most variability and vulnerability to socially disruptive forces. Inshore allocations were determined to provide the greatest benefit to Alaskan coastal communities and afford them the greatest opportunities for development and growth, while the only community negatively affected would be Ballard/Seattle. The absence of an allocation (Alternative 1) would very likely impact coastal Alaskan communities negatively, both economically and socially.

Immediate and direct positive impacts would be expected by Alaskan communities with the allocation (Alternative 2), partially offset by negative impacts to Pacific Northwest employment and income, though the latter would be more easily absorbed by the more diverse economies of that region. Since 1992, additional infrastructures have developed in Alaskan coastal communities, partially in response to the guaranteed allocations under I/O1. Given the current status of the fisheries, and the communities which rely on fishing and processing, allowing the inshore/offshore allocations to expire, in the absence of alternative management remedies, would likely result in at least the same level of impacts as previously projected. Impacts at this time could be exacerbated beyond those previously predicted due to the additional infrastructures and the ability of these communities to utilize the current allocations.

2.1.3 Current Management Issues in GOA Fisheries

The Council has identified preemption of GOA fisheries by BS/AI-based vessels as a problem. The issue of sector preemption in the pollock and Pacific cod fisheries was first addressed by the Council in 1991. Amendments 18/23 addressed concerns about preemption by offshore vessels (factory trawlers) in the GOA, however, it did not address the issue of preemption of inshore vessels based in the BS/AI crossing over to fish in GOA waters.

The following section describes some of the preemption issues by BS/AI-based inshore vessels identified in GOA pollock and Pacific cod fisheries. While it pertains more directly to preemption of GOA fisheries by both BS/AI catcher and catcher/processors, the preemption issue for the inshore/offshore allocation is not geographically-based, but sector-based. It illustrates the ability of BS/AI catcher and factory trawl fleet to take the quota, and can be viewed as an example of the trawl fleet's capacity to take a majority of the GOA quota in the absence of an inshore/offshore allocation. While the inshore/offshore allocations do not address 'within sector' preemption issues, those issues are summarized here as background to illustrate the importance of resolving the basic inshore/offshore sector allocations to provide a stable playing field, which will allow the Council to successfully address other preemption management issues in the GOA.

2.1.3.1 Pollock Fisheries in the Western GOA

The pollock fishery in Area 610 has been one of the most difficult fisheries for NMFS to manage in recent years due to small TACs relative to potential effort and the constant potential that numerous large catcher vessels based in the BS/AI may crossover to the GOA to participate in this fishery. The disposition of pollock catch from Area 610 from 1992 to 1997 is displayed in Table 2.1, which illustrates the unpredictability of effort in this fishery. In 1992, the fishery was dominated by catcher vessels delivering to Bering Sea-based shore plants (Dutch Harbor and Akutan), and several at-sea factory trawlers and "true" motherships. The "true" mothership and catcher processor effort would have occurred before the Inshore/offshore allocations went into place in the fall of 1992. Vessels delivering to GOA-based shore plants accounted for less than 20% of the total catch from Area 610. In 1993, catcher vessels delivering to Bering Sea-based shore plants and Inshore floating processors accounted for about half of the Area 610 pollock harvest. In 1994 and 1995, the catch of pollock from Area 610 was distributed relatively evenly between catcher vessels delivering to Bering sea-based inshore plants and catcher vessels delivering to GOA-based shore plants. At-sea processors (catcher/processors and floating processors) are prohibited from GOA waters. During 1994 and 1995, participation by Bering Sea-based vessels occurred only during the June, July and October quarterly pollock openings in Area 610 during which time the Bering Sea pollock fisheries were closed. The ability of the CP fleet to add to this influx of effort, under no inshore/offshore allocation, would have magnified the impact.

Table 2.1 Total catch of pollock from Area 610 by location of processor in metric tons.

Year	*BS/AI*[1]	*GOA*[2]	*Other*[3]	*Total*
1992	9,660	3,580	5,926	19,165
1993	11,743	9,125	335	21,204
1994	7,254	9,753	259	17,266
1995	15,008	14,200	1,170	30,378
1996	1,089	21,721	567	23,376
1997	11,184	14,690	762	26,636

[1]Includes shore-based processors in Dutch Harbor and Akutan and the Inshore floating processors (Northern Victor and Arctic Enterprise)
[2]Includes GOA shore-based processors
[3]Includes factory trawlers, factory longliners, and "true" motherships.

2.1.3.2 Inshore Pacific Cod Fisheries in the Western GOA

The inshore Pacific cod fishery in Area 610 has a similar history of participation by BS/AI and GOA vessels. The total inshore catch of Pacific cod from Area 610 by location of processor is displayed in Table 2.2.

Table 2.2 Total inshore sector catch of Pacific cod from Area 610 by location of processor in metric tons.

Year	BS/AI[1]	GOA[2]	At-sea[3]	Total
1992	1,091	16,229	1,318	18,638
1993	63	10,293	5,539	15,895
1994	161	10,789	3,777	14,728
1995	2,357	10,289	5,501	18,146
1996	155	13,769	3,939	17,862
1997	1,256	17,593	4,081	22,930

[1]Includes shore-based processors in Dutch Harbor and Akutan
[2]Includes shore-based processors in Sand Point, King Cove, and Kodiak
[3]Includes inshore catcher/processors and inshore floating processors.

While shifts of effort in this fishery are not as dramatic as with the pollock fishery in Area 610, effort is also sometimes difficult to predict in this fishery.

The 1997 fishery is a case in point. In March 1997, after announcing the closure of the inshore Pacific cod fishery in Area 610 effective March 3, 1997, NMFS re-opened the fishery on March 10 for a 24 hour "mop-up" fishery to harvest a small amount of remaining TAC on the assumption that effort in the fishery would continue at the level experienced during January and February up to the March 3 closure.

Until March 3, 1997, catcher vessels based in the Bering Sea had not participated in the Pacific cod fishery in Area 610 to any great extent and were not expected to participate in the 24-hour "mop-up" fishery. However, a substantial number of Bering Sea-based catcher vessels entered the GOA on March 10, 1997, and harvested over 1,200 mt of Pacific cod during that 24 hour opening. As a consequence of this unanticipated effort, the 21,803 mt Pacific cod TAC for Area 610 was exceeded by 1,288 mt or 6% of the total. If a registration program had been in effect for this fishery in 1997, it would have provided NMFS with the information necessary to prevent such a substantial overharvest of the TAC. An overharvest of the Pacific cod TAC in the GOA has the potential to significantly affect State-managed Pacific cod fisheries in State waters as well as IFQ fisheries that normally retain incidental catch of Pacific cod. The ability of the CP fleet to add to this influx of effort, under no inshore/offshore allocation, would have magnified the impact.

2.1.3.3 Offshore Pacific Cod Fishery in the GOA

The offshore Pacific cod fishery in the GOA has also proven problematic for NMFS due to a small TAC relative to the potential effort (10% of TAC is allocated to the offshore fleet). In 1996, a number of factory trawlers checked into the central GOA indicating flatfish as their target species. It was not until NMFS began to receive weekly production reports that it became apparent that most of these vessels had high catches of and were in part targeting on Pacific cod. By the time NMFS realized that numerous catcher/processors were targeting on Pacific cod and was able to close the fishery, the 1996 TAC of 4,290 mt for the offshore sector in the central GOA was exceeded by 1,061 mt or 25% of the total.

2.1.4 Current GOA Problem Statement

Inshore/offshore allocations of pollock and Pacific cod Total Allowable Catches (TACs) in the GOA were originally established under Amendments 18/23 (I/O1) to the BS/AI and GOA FMPs, respectively, in 1992. The allocations were "rolled over" by the Council in Amendments 38/40 (I/O2) in 1995. Both the original amendments and the rollover amendments contained "sunset" provisions, requiring the Council to reexamine the allocations, or see them expire. The current I/O management program will sunset on December 31, 1998, without Council action by June 1998.

At its September 1997 meeting, the Council adopted a problem statement and an associated set of management alternatives to examine the inshore/offshore allocations, within current biological, economic, social, and regulatory contexts. An overriding concern of the Council is to ensure industry stability, both between and within sectors, which had been created during the six years of the program. This issue is also of primary importance in this third iteration of the inshore/offshore allocations after six years of implementation and will be of primary interest in the analyses of a continuation of that program. The Council limited its GOA analysis to two alternatives: the no action alternative (Alternative 1) and a rollover of current allocations with no sunset provision (Alternative 2). It approved the following problem statement for the GOA pollock and Pacific cod fisheries for this analysis:

PROBLEM STATEMENT (I/O3)

Allowing the current Gulf of Alaska Inshore/offshore allocative regime to expire December 31, 1998, would allow the same preemption of resident fleets by factory trawlers in the pollock and Pacific cod fisheries which occurred in 1989. It was this dramatic preemption which triggered the original proposal for an inshore/offshore allocation. In 1989, there was still pollock available in the Bering Sea when the preemption occurred when vessels moved into the Gulf to take advantage of fish with high roe content.

A rollover of the current Gulf of Alaska inshore/offshore program which allocates 100% of the pollock and 90% of the Pacific cod to shore-based operations is a proactive action to prevent the reoccurrence of the original problem.

2.1.5 Purpose and Need for Action

As stated above in the GOA problem statement, the Council has identified stability in GOA fishing communities as a critical factor in its decision to allocate 100% of pollock and 90% of Pacific cod to the inshore sector and that a return to the possibility of preemption by factory trawlers of resident fleets in the pollock and Pacific cod fisheries in the GOA is not acceptable. Continuation of the inshore/offshore allocations will maintain the status quo in these fisheries.

Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations would maintain the relationships between these sectors as they have developed since 1993. If the inshore/offshore allocations were allowed to lapse, the management void could indeed create the preemption problems envisioned when the amendments were originally approved and implemented.

The discussion in Section 2.1.3, Current Management Issues in GOA Fisheries, described recent Council action to address preemption of these small, resident GOA fisheries. The Council also recently formed an industry committee to review additional management measures and the Council is on record that it will make additional management decisions to maintain the stability of those small, resident fisheries and communities on which those fisheries are based. The ability of the Council to address 'within sector' preemption issues in the GOA is dependent upon resolution of the larger preemption issue being addressed by inshore/offshore allocations.

Alternatives Considered

The Council limited the alternatives in this analysis to two: the no action alternative and the 'rollover' alternative. The Council further indicated its preference to a simple rollover of the GOA allocations, perhaps with no sunset date.

Alternative 1. No action.

Under Alternative 1, the current inshore/offshore allocation for pollock and Pacific cod in the Gulf of Alaska would expire at the end of 1998.

Alternative 2. Rollover GOA pollock (100% inshore) and Pacific cod (90% inshore) allocations.

Alternative 2 would reauthorize the current inshore/offshore processing allocations for pollock and Pacific cod in the GOA. Amendment 23 to the GOA FMP established that 100% of pollock would be reserved for vessels delivering to inshore plants and 90% of Pacific cod would be reserved for vessels delivering to inshore plants through 1995. Amendment 40 reauthorized these allocations through 1998. This current alternative would reauthorize these allocations in the GOA, with or without a sunset date.

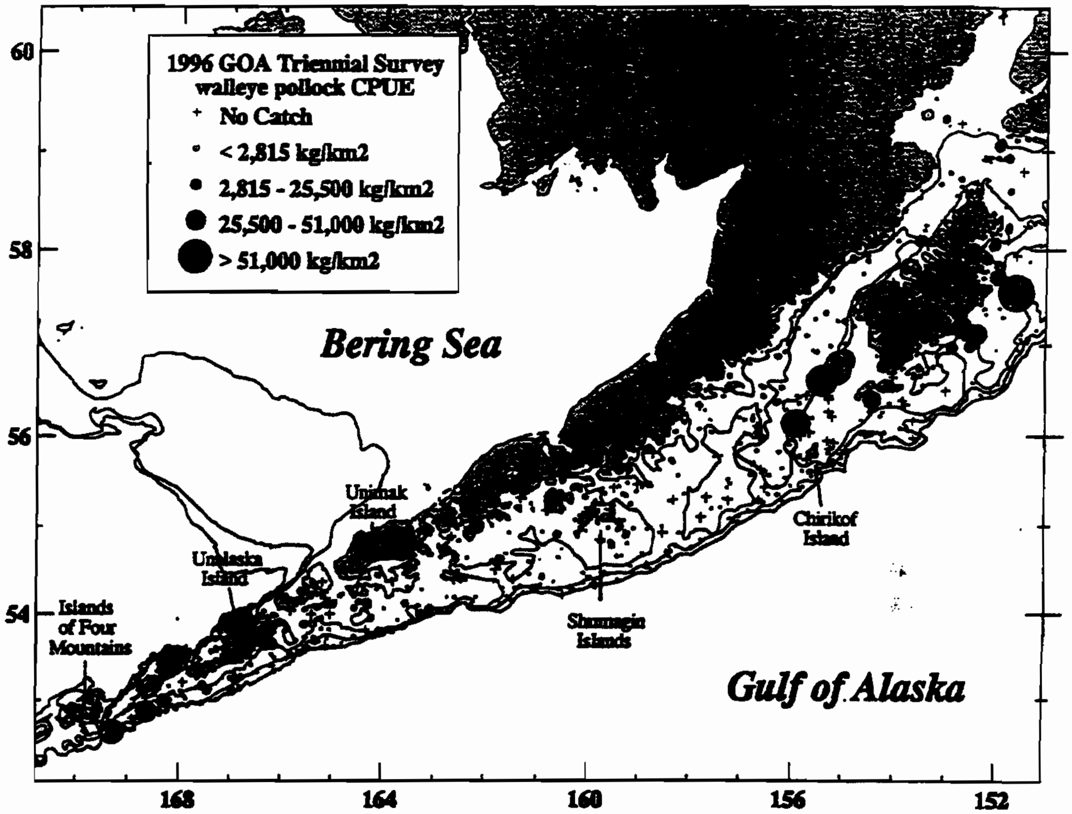
2.2 Description of the Fisheries

2.2.1 Biology and Status of Pacific Cod Stocks

Pacific cod (*Gadus macrocephalus*) is a widespread demersal species found along the continental shelf of the Gulf of Alaska from inshore waters to the upper slope. In the Gulf of Alaska, Pacific cod are most abundant in the western area, where large schools may be encountered at varying depths depending upon the season of the year. Adult Pacific cod are commonly found at depths of 50-200 m. During the winter and spring, Pacific cod appear to concentrate in the canyons that cut across the shelf and along the shelf edge and upper slope between depths of 100-200 m where they overwinter and spawn. In the summer, they shift to shallower depths, usually less than 100 m. NMFS bottom trawl surveys of the Gulf conducted in 1990, 1993, and 1996 have found that about half of the biomass is located at depths of 100 m or less, with about a third between 100-200 m depth. Distribution and relative abundance of Pacific cod are shown in Figure 2.2.

Information on the life history of Pacific cod is limited, but it is known that Pacific cod are a fast-growing, short-lived species. Age determination for Pacific cod is difficult; the approximate maximum age is 10-13 years. Estimates of the instantaneous rate of natural mortality range from 0.22-0.45. The natural mortality rate estimate is 0.37.

Pacific cod migrate to deeper waters in autumn, spawn in winter and return to shallow waters in spring. Spawning in the Gulf has been observed from February-July, with most spawning occurring in March at depths of 150-200 m. Spawners have been observed mostly along the outer continental shelf off Kodiak Island but also in Shelikof Strait and off Prince William Sound. Female Pacific cod begin to attain maturity at about 50 cm in length and 50% reach maturity at 55-62 cm (4-6 years). Estimated fecundity of females 55-62 cm in length ranges from 860,000-1,300,000 eggs. Pacific cod deposit demersal eggs which hatch within 10-20 days, releasing pelagic larvae.



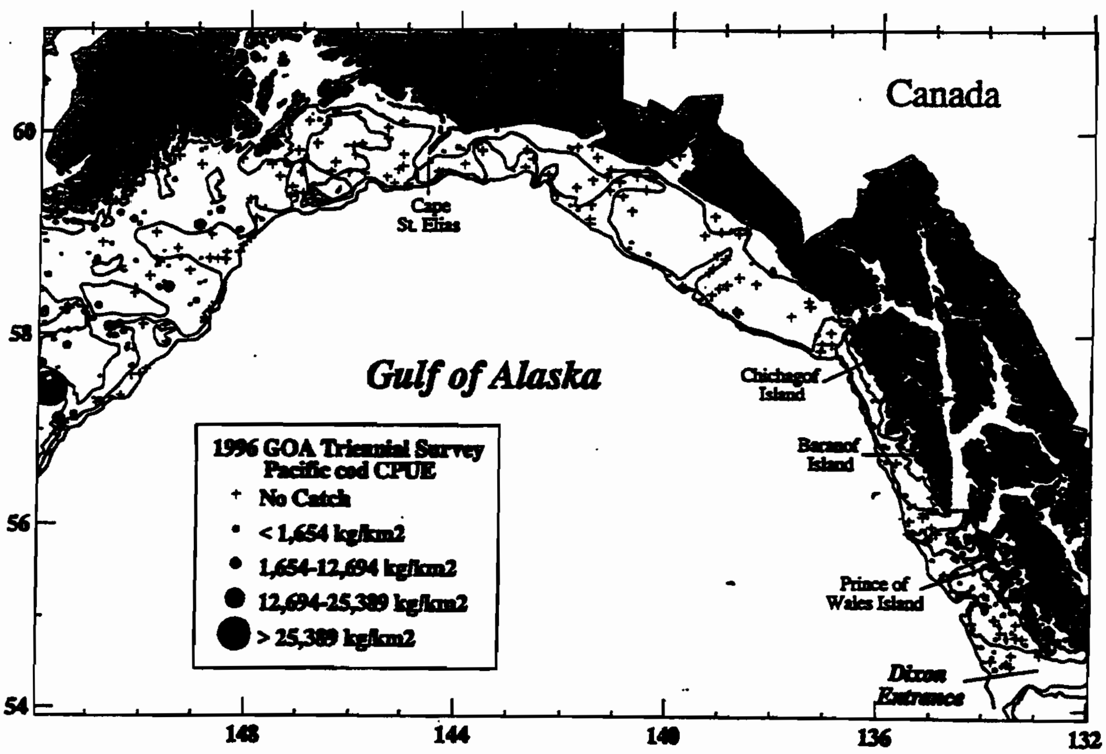


Figure 2.2 Distribution and relative abundance of walleye pollock from the Gulf of Alaska bottom trawl survey. Relative abundance is categorized by no catch, sample CPUE less than the mean CPUE, between mean CPUE and two standard deviations above mean CPUE, between two and four standard deviations above mean CPUE, and greater than four standard deviations above mean CPUE. Each symbol is proportional to the sample CPUE.

Pacific cod are benthopelagivores. Pacific cod feed on a wide variety of prey in the Gulf, including shrimp, crabs, flatfish, pollock, fishery discards, amphipods, euphausiids, and capelin (Yang 1993). Pacific cod become increasingly piscivorous with increasing size (Yang 1993). Pacific cod larger than 60 cm in length consumed mostly fish, particularly 1-3 year old pollock. Pacific cod are also known to feed on red king crab, particularly during their molting period in spring. Juveniles feed on benthic amphipods and worms. Small adults feed primarily on benthic crabs, shrimps, and fishes. Pacific cod are preyed upon by Pacific halibut, fur seals, and some cetaceans.

There is some evidence to suggest that there are subpopulations of Pacific cod. Grant et al. (1987) reported that Gulf, Bering Sea, and Aleutian Islands Pacific cod stocks may be genetically indistinguishable. Tagging studies show that Pacific cod move between the Bering Sea and the Gulf (Shimada and Kimura 1994). A study of meristic characters suggested that northern and western Bering Sea Pacific cod may represent a stock distinct from that in the eastern Gulf of Alaska, but was limited by sample sizes.

The biomass increased in the 1996 bottom trawl survey (525,643 mt) compared with 1990 (379,494 mt) and 1993 (405,431 mt). The depth and area distributions of Pacific cod were similar for the 1990, 1993, and 1996 surveys. Most Gulf Pacific cod are located in the Western/Central area (which includes the Kodiak, Chirikof and Shumagin subareas from 147°-170°W longitude). The surveys found significant concentrations in Marmot and Shelikof Gullies near Kodiak Island, Shumagin Gully east of the Shumagin Island, on Davidson Bank south of Unimak Island, and on the shelf south of the Fox Islands (Umnak and Unalaska Islands).

The 1997 stock assessment (Thompson et al. 1997) reported that the GOA Pacific cod exploitable (age 3+) biomass increased from 552,000 mt in 1978 to a peak of 983,000 mt in 1988, and declined to about 650,000 mt in 1997. This was due to two above average-sized year-classes in 1977 and 1979, and a long series of average year-classes from 1978-1990 (except 1988). Age 3 fish are used as the index age for assessing year class strength. A reclassification of year class strength in the 1997 assessment results in 1989 as the last above average year class, with the last four year classes all below average. The trend may be reversing from indications from the 1996 bottom trawl survey, where the length frequency distribution suggests that the 1995 year class (observed at age 1) may be exceptionally large. However, it should be stressed that this finding is extremely preliminary.

Depending on the fishing mortality rate utilized in the near future and assuming average year-class recruitment sizes, exploitable biomass is projected to decline from 785,000 mt in 1998 to between 587,000 mt ($F_{0.1}$=0.52) and 685,000 mt ($F_{40\%}$=0.34) by the year 2002, with annual catches ranging from a low of 109,000 mt ($F_{40\%}$=0.34) to a high of 127,000 mt ($F_{0.1}$=0.57) in the year 2002. The ABC in 1998 was set at 77,300 mt (TAC was reduced 17% by the State water Pacific cod GHL). Note that these estimates have increased from those reported in I/O1 and I/O2 due to an increase in the biomass. A risk-averse strategy for harvest strategies was employed in the assessment and accepted by the Council, so that the ABCs and TACs were conservatively determined.

Departing from the initial allocation scheme devised in 1977, the geographic distribution of TAC for 1986 was changed in order to permit all of the total

Table 2.3 Allocation (in percent) of the Gulf Pacific cod TAC by NPFMC.

		Regulatory Area	
Year(s)	Western	Central	Eastern
1977-85	28	56	16
1986	40	44	16
1987	27	56	17
1988-89	19	73	8
1990	33	66	1
1991	33	62	5
1992	37	61	2
1993-94	33	62	5
1995	29	66	5
1996	29	66	5
1997	35	63	2

allowable level of foreign fishing to be taken from the NPFMC Western Regulatory Area. With the cessation of foreign fishing in 1987, allocation of DAH by regulatory area was restored to near pre-1986 levels. Allocations have been adjusted to reflect the results of the 1987, 1990, 1993, and 1996 Gulf of Alaska triennial groundfish surveys in subsequent years. The 1990 allocation accommodated developing fisheries around Kodiak Island and in the western Gulf of Alaska. Additionally, the 1992 allocation was increased in the Western area and decreased in the Central and Eastern Areas and the 1993 allocation returned to that of 1991, and remained constant in 1994. The history of allocations (in percent) by NPFMC Regulatory Area within the Gulf is listed in Table 2.3. The history of ABCs, TACs, and foreign and domestic allocations is listed in Table 2.4.

Table 2.4 Final allocations and catches (t) of Pacific cod in the Gulf of Alaska, by fishery category, 1978-97. Estimated domestic discards are excluded.

	Allocation[1]						Catch[2]			
Year	ABC	TAC	TALFF	DAP	JVP	Reserve	Foreign	Jt. Venture	Domestic	Total
1978	--	40,600	25,100	15,500	--	0	11,370	7	813	12,190
1979	--	34,800	29,300	4,000	--	1,500	13,173	711	1,020	14,904
1980	--	60,000	53,442	4,058	2,500	0	34,245	466	634	35,345
1981	--	70,000	63,634	5,167	1,199	0	34,969	58	1,104	36,131
1982	--	60,000	51,688	6,902	1,410	0	26,937	193	2,335	29,465
1983	--	60,000	50,936	5,312	3,752	0	29,777	2,426	4,337	36,540
1984	--	60,000	32,518	9,320	18,162	0	15,896	4,649	3,353	23,898
1985	--	60,000	10,200	30,360	7,640	11,800	9,086	2,266	3,076	14,428
1986	--	75,000	15,520	35,000	9,480	15,000	15,211	1,357	8,444	25,012
1987	125,000	50,000	0	48,000	2,000	0	0	1,978	30,961	32,939
1988	99,000	80,000	0	68,950	11,050	0	0	1,661	32,141	33,802
1989	71,200	71,200	0	71,200	0	0	0	0	43,293	43,293
1990	90,000	90,000	0	90,000	0	0	0	0	72,517	72,517
1991	77,900	77,900	0	77,900	0	0	0	0	76,977	76,977
1992	63,500	63,500	0	63,500	0	0	0	0	80,100	80,100
1993	56,700	56,700	0	56,700	0	0	0	0	56,487	56,487
1994	50,400	50,400	0	50,400	0	0	0	0	45,603	45,603
1995	69,200	69,200	0	69,200	0	0	0	0	69,060	69,060
1996	65,000	65,000	0	65,000	0	0	0	0	68,280	68,280
1997	81,500	69,115	0	69,115	0	0	0	0	68,825	68,825

1/ "Fishing year" 1981 was extended to 14 months in order that subsequent fishing years would coincide with calendar years.

2/ Sources: Foreign and joint venture catches – personal communications with Jerald Berger, U.S. Fisheries Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 7600 Sand Point Way NE, Bin C15700, Bldg 4, Seattle, WA 98115; U.S. Landings 1978-80 – Rigby (1984), landings subsequently adjusted for estimated discards; U.S. Landings 1981-1989 – Pacific Fishery Information Network (PacFIN), Pacific State Marine Fisheries Commission, 45 SE 82nd Drive, Suite 100, Gladstone, OR 97028 (landings subsequently adjusted for estimated discards); U.S. catches, 1990-93 (observer/industry reported catches, blend estimates) -- U.S. Fisheries Observer Program; U.S. Catches 1994-97 (blend estimate) – NMFS Alaska Regional Office.

3/ "Fishing year" 1981 was extended to 14 months in order that subsequent fishing years would coincide with calendar years.

The Pacific cod stock is exploited by a multiple-gear fishery, including trawls, longlines, and pots. The fishery opens to fixed gear on January 1, and to trawl gear on January 20. As shown below, trawlers account for the majority of Gulf Pacific cod landings. Catches by pot gear have increased in recent years, facilitated in part by the comparatively low halibut bycatch rates associated with such gear. The Pacific cod trawl fleet, which has caught between 67-90% of the GOA from 1987-93 (Thompson and Zenger 1994), fishes throughout the western and central Gulf of Alaska, frequenting the gullies where the bottom trawl surveys found concentrations of Pacific cod. Most of the observed Pacific cod pot locations during 1990-93 have been near Kodiak Island; the percentage of the GOA Pacific cod harvest caught using pots has increased from 1-5% in 1987-89 to almost 20% in 1994 (Thompson and Zenger 1994). The longline fleet has fished throughout the western/central GOA and has caught between 8-28% of the GOA Pacific cod catch since 1987.

Historically, the majority of Pacific cod landings came from the INPFC Shumagin and Chirikof Areas (Table 2.5). Foreign trawl catches of Pacific cod were usually incidental to directed fisheries for other species. In 1987 and 1988 the vast majority of landings was taken by trawls in the Kodiak area, reflecting the absence of foreign fishing effort in the western Gulf and an increase in domestic effort near the principal landing port of Kodiak. Pacific cod catches from the Western Gulf increased from 33% to 47% of total Gulf Pacific cod landings between 1989 and 1992.

Table 2.5 Landings[1] (mt) of Pacific cod in the Gulf of Alaska by International North Pacific Fisheries Commission (INPFC) statistical area, including the Shelikof subdivision of the Chirikof and Kodiak areas, 1978-1996.

	Statistical Area						
Year	Shumagin	Chirikof	Kodiak	Shelikof	Yakutat	Southeast	Total
1978	5,591	4,707	1,488	--	202	174	12,162
1979	3,982	6,541	3,829	--	371	147	14,870
1980	8,705	18,627	5,871	--	2,004	116	35,323
1981	11,579	19,115	3,036	--	2,249	109	36,088
1982	7,343	14,361	5,543	--	2,108	25	29,380
1983	9,178	15,675	9,567	--	1,963	18	36,401
1984	11,748	5,844	6,149	--	1	34	23,766
1985	8,426	3,224	2,564	--	<1	92	14,306
1986	12,751	4,092	7,362	--	222	185	24,612
1987	2,473	2,378	26,162	--	30	389	31,432
1988	5,562	2,451	20,922	3,329	39	254	32,557
1989	13,830	3,072	22,130	2,423	18	203	41,676
1990	29,309	8,248	28,503	2,685	29	294	69,068
1991	31,704	13,755	25,094	3,486	88	188	74,315
1992	36,080	14,613	24,526	--	899	214	76,332
1993	17,270	8,215	23,655	--	1212	249	50,602
1994	14,665	9,310	18,751	--	1,546	91	44,563
1995	21,322	10,943	32,334	--	810	104	65,513
1996	18,957	16,946	24,580	--	198	60	60,741

1/ Sources: Foreign and joint venture catches -- personal communication with Jerald Berger, U.S. Fisheries Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 7600 Sand Point Way NE., Bin C15700, Building 4, Seattle, WA 98115-0070; U.S. landings, 1978-80 -- Rigby (1984); U.S. landings, 1981-89 -- Pacific Fishery Information Network (PacFIN), Pacific States Marine Fisheries Commission, 45 SE. 82nd Dr., Suite 100, Gladstone, OR 97027-2522; U.S. landings, 1990-93 -- personal communication with Michael Guttormsen, U.S. Fisheries Observer Program; U.S. landings, 1994-96 -- NMFS Alaska Regional Office.

Gulf-wide, landings have almost always been less than the TAC, with the two exceptions occurring in 1992 and 1996 (Table 2.4). Individual regulatory area TAC overages have occurred somewhat more frequently. Slight overages occurred in the Western area in 1989, 1991, 1992, 1995, and 1996; in the Central area in 1987, and in the Eastern area in 1988 and 1992 (Table 2.6).

Table 2.6 Pacific cod landings (mt) and percent of area-specific allocation landed (% AL), by North Pacific Fishery Management Council (NPFMC) Gulf of Alaska regulatory area, 1978-97.

	NPFMC Regulatory Area							
	Western		Central		Eastern		Gulf of Alaska	
Year	Landings	% AL	Landings	% AL	Landings	% AL	Landings	% AL
1978	5,591	49	6,195	27	376	6	12,162	30
1979	3,982	41	10,370	53	518	9	14,870	43
1980	8,705	52	24,498	73	2,120	24	35,323	59
1981	11,579	59	22,151	56	2,358	21	36,088	52
1982	7,343	44	19,904	59	2,133	22	29,380	49
1983	9,178	55	25,242	75	1,981	21	36,401	61
1984	11,748	70	11,993	36	35	<1	23,776	40
1985	8,426	50	5,788	17	92	1	14,306	24
1986	12,751	42	11,454	35	407	3	24,612	33
1987	2,473	18	28,540	102	419	5	31,432	63
1988	5,562	29	26,702	44	293	146	32,557	41
1989	13,830	102	27,625	53	221	4	41,676	58
1990	29,309	98	39,436	66	323	36	69,068	77
1991	31,704	123	42,335	88	276	7	74,315	95
1992	36,080	154	39,139	100	1,113	111	76,332	120
1993	17,270	92	31,870	91	1,462	52	50,602	89
1994	14,665	88	28,061	90	1,637	65	44,363	88
1995	21,322	106	43,277	95	914	26	65,513	95
1996	18,957	101	41,526	97	258	8	60,741	93
1997	24,070	99	43,657	100	1,103	92	68,825	100

1/ Sources: Foreign and joint venture catches – personal communication with Jerald Berger, U.S. Fisheries Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 7600 Sand Point Way NE., Bin C15700, Building 4, Seattle, WA 98115-0070; U.S. landings, 1978-80 – Rigby (1984); U.S. landings, 1981-89 – Pacific Fishery Information Network (PacFIN), Pacific States Marine Fisheries Commission, 45 SE. 82nd Dr., Suite 100, Gladstone, OR 97027-2522; U.S. landings, 1990-1993 – personal communication with Michael Guttormsen, U.S. Fisheries Observer Program; U.S. landings, 1994-97 – NMFS Alaska Regional Office.

2/ The NPFMC Western Regulatory Area is the International North Pacific Fisheries Commission (INPFC) Shumagin Statistical Area, the NPFMC Central area combines the INPFC Chirikof and Kodiak areas, and the NPFMC Eastern area encompasses the INPFC Yakutat and Southeastern INPFC areas.

Beginning in 1997, the State of Alaska instituted an inshore Pacific cod fishery for pot, mechanical jig gear, or hand troll gear (hand jig) only in the GOA (Figure 2.3). This fishery does not limit participation to Federal moratorium permit holders. The Alaska Board of Fisheries set the Western and Central area Guideline Harvest Levels (GHL) at 15% of the respective Federal ABC, and the Eastern area GHL at 25% of the EGA ABC. The Central area GHL is further allocated to Cook Inlet (15%), Kodiak (50%), and Chignik (35%). A vessel may register to fish in only one registration area in a calendar year (exclusive registration). The season opens 7 days after the closure of the Federal fishery. Jig and pot gear apportionments occur in some subareas. The pot fishery may start harvesting any unharvested jig quota in Cook Inlet and Kodiak on September 1 and in Prince William Sound on October 1. The Alaska Peninsula (EGA) and Chignik subarea fisheries have a maximum 58-foot vessel size limit. The Council reduces the GOA area TACs by the GHL amounts to conservatively manage the Pacific cod stock. NMFS and ADF&G manage these fisheries cooperatively and exchange survey and in-season data for Pacific cod. Landings for the 1997 State water fishery are reported in Figure 2.4.

Table 2.7 Gulf-wide Pacific cod landings (mt), 1978-97.

Year	Trawls	Longline	Pots
1978	4,547	6,800	0
1979	3,629	9,545	0
1980	6,464	27,780	0
1981	10,484	25,472	0
1982	6,679	22,667	0
1983	9,512	26,756	0
1984	8,805	14,844	0
1985	4,876	9,411	2
1986	6,850	17,619	141
1987	22,486	8,261	642
1988	27,145	3,933	1,422
1989	37,637	3,662	376
1990	59,188	5,919	5,661
1991	58,091	7,630	10,464
1992	54,305	15,467	9,984
1993	37,806	8,962	9,707
1994	31,446	6,778	9,160
1995	41,877	11,054	16,050
1996	45,991	10,196	12,040
1997	48,414	11,002	9,056

A description of the 1993-95 fishery in State and Federal waters is provided by Jackson and Urban (1996). Smaller vessels predominate in some Western/Central GOA areas, notably near the Shumagin Islands. Pot fishing was more prevalent near Kodiak Island, especially with smaller vessels. More than half of Western/Central area harvests for 1993-96 were taken by smaller pot vessels (Table 2.7). Longline vessels accounted for 11% of the total 1993-95 harvest in the Western/Central area, with smaller vessels predominating near Kodiak and the outer Kenai Peninsula. Trawls accounted for about 66% of the Gulf-wide 1993-95 harvest, and 30% in state waters. Small trawlers predominate in this fishery, particularly near the Shumagins. Jig gear landed very little; nearly all vessels were <61 ft.

2.2.2 Biology and Status of Pollock Stocks

Walleye pollock (*Theragra chalcogramma*) is a semidemersal schooling fish that is widely distributed throughout the North Pacific in temperate and subarctic waters. They are found throughout the water column from shallow to deep water, frequently forming large schools at depths of 100-400 m along the outer continental shelf and slope. In the Gulf, major exploitable concentrations are found primarily in the Central and Western regulatory areas (147° - 170°W longitude).

Several subpopulations of pollock may exist but the evidence is inconclusive. There are two groups in the Bering Sea which can be distinguished by different growth rates, and perhaps five discrete spawning groups which exist from the Aleutians to Puget Sound, Washington. Pollock from this region are managed as a single stock that is separate from the Bering Sea and Aleutian Island pollock stocks (Alton and Megrey 1986).

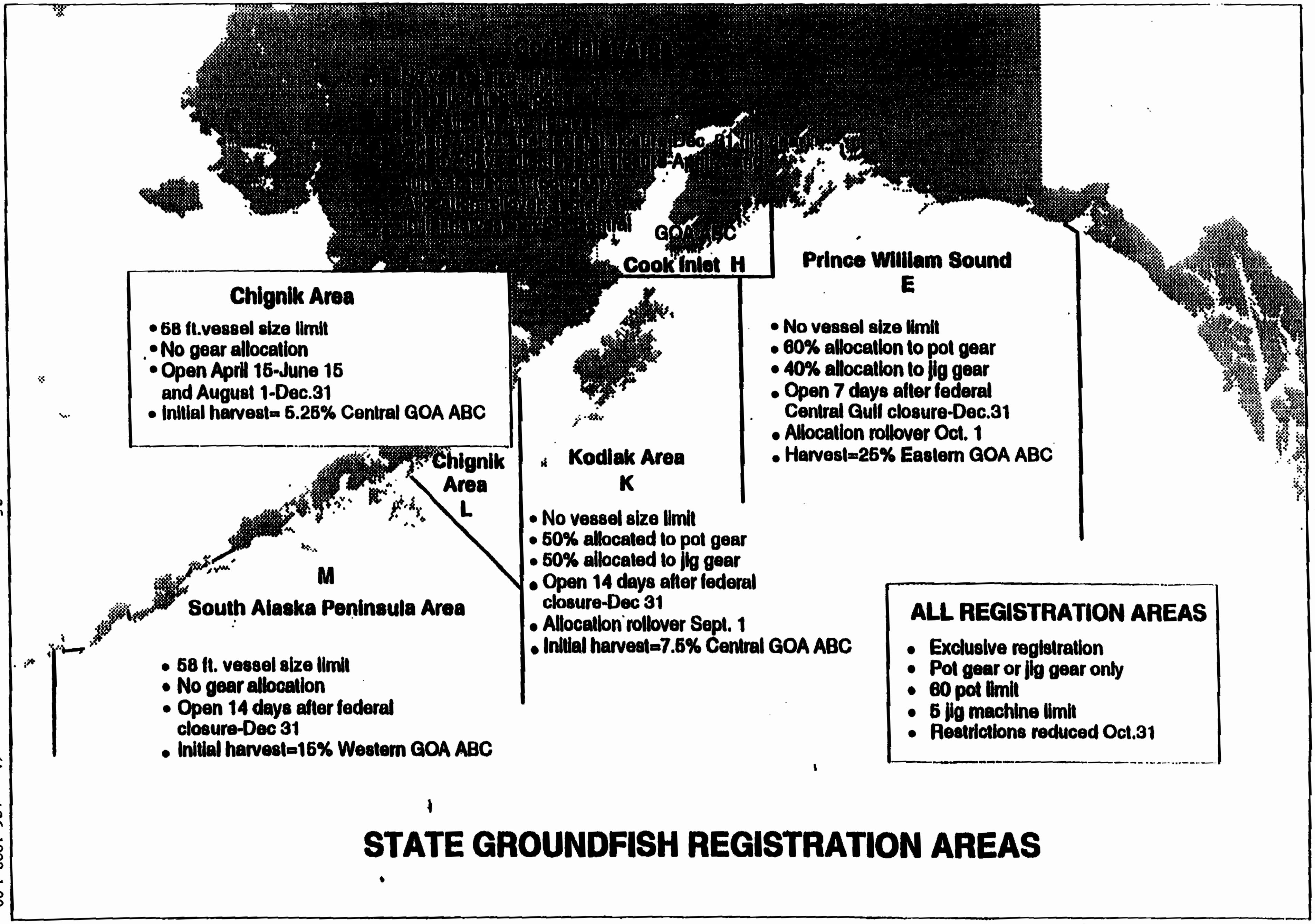


Figure 2.3 Elements of State Water Pacific Cod Management Plans

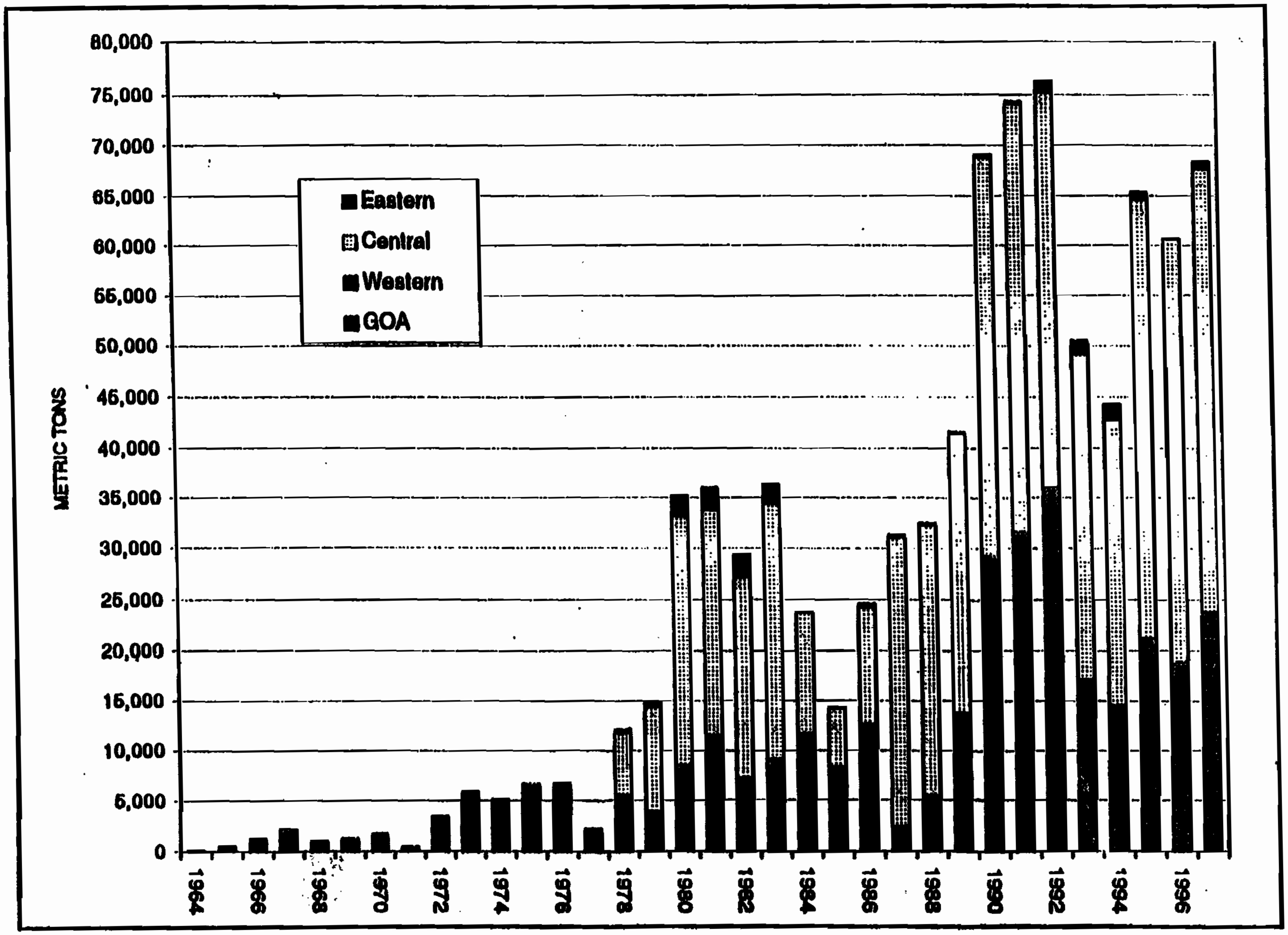


Figure 2.4 Pacific Cod landings in the GOA 1964-1997. Source: NPFMC SAFE report, Nov. 1997

Major spawning concentrations of pollock in the Gulf of Alaska have been observed in Shelikof Strait and the Shumagin Islands. Eggs have been found at depths of 0-1,000 m. Spawning is seasonal and occurs during the late winter/early spring period. The species is a mass spawner that forms large mid-water concentrations during the spawning season. The greatest spawning biomass has been observed in Shelikof Strait, with spawning also occurring off the east coast of Kodiak Island and off Prince William Sound. Both male and female pollock begin to attain sexual maturity at about 25 cm fork length and 50% are mature by 30-34 cm (3-4 years of age). Estimated fecundity of females 30-34 cm of length is about 100,000 eggs.

Young-of-the-year occur in the upper 40 m and older juveniles are found in depths of 10-400 m in the water column. Adult are usually found at 50-300 m, but occasionally to 975 m. Seasonal movements between inshore/offshore habitats have been observed, with adult fish moving in the spring from deep water to shallower depths where they remain throughout the summer. In the fall they return to deep water. In addition to seasonal movements, there may be vertical movements in the water column associated with time of day and feeding patterns.

Walleye pollock are opportunistic feeders, feeding on free-swimming pelagic animals. Juveniles feed on copepods, euphausiids, amphipods, and isopods. Small adults feed primarily on euphausiids while large adults may concentrate on juvenile pollock. Walleye pollock are preyed upon by pinnipeds, cetaceans, diving birds, and larger fishes. They are also cannibalistic.

Growth of pollock is rapid until about 4 years of age. Maximum size is about 91 cm, and maximum ages are 13 years for males and 17 years for females. The maximum age observed was 22 years. Estimates of the instantaneous rate of natural mortality range from 0.30-0.65. Natural mortality was assumed to be 0.3 for all ages.

The Gulf-wide pollock biomass estimate in 1997 was 707,434 mt. The time series used for the stock assessment is based only on the regions west of Cape St. Elias. The 1996 point estimate of pollock biomass in this region was 653,905 mt, a 14% drop from 1993. The long term trend in biomass in regions west of Cape St. Elias has been flat.

The regional distribution of pollock biomass shifted between each of the five bottom trawl surveys. In 1996, the largest concentration of pollock biomass was in the Chirikof area (39%), followed by the Kodiak (30%) and Shumagin areas (22%). Large concentrations of pollock were observed in the Western Gulf, Shumagin Islands, and in regions surrounding Kodiak Island (Hollowed et al. 1996). Relative to 1993, pollock biomass estimates in the Eastern Gulf (Yakutat and Southeast combined) increased 45%. Most of this increase occurred in the Southeast area in the shallow 0-100m depth range. The first year bottom trawl samples were taken in shallow waters in the Southeast region in 1996. The biomass in the Yakutat region dropped from 35,413 to 19,587 mt between 1993 and 1996.

The 1996 catch-at-age data continue to show that the strong 1984 year class (age 12) was still present in Central area in the second and third trimesters. Strong 1988 and 1989 year classes were present in roughly equal proportions in the third trimester. The 1989 year class (age 7) dominated the first trimester data. Evidence of the incoming 1994 year class (age 2) was revealed in the first trimester data. Length frequency distributions from the 1996 bottom trawl survey in the Western and Central areas show a fairly large mode at about 24 cm, which is evidence of a strong 1994 year class. The 1994 year class represents the largest estimate of 1 and 2 year old fish in the history of the Shelikof Strait surveys. Another pronounced mode was observed at about 16 cm in the Eastern area and the Shumagin region, which is evidence of a potentially strong 1995 year class. An estimate of the number of age 2 fish (the 1994 year class) in the Western and Central areas (138 million fish) is much higher than the previous survey estimate of age 2 fish in 1993 (47.6 million fish). The 1997 year-class is predicted to be average.

Stock projections show the spawner biomass level in 1998 will be below $B_{40\%}$. Under all recruitment options, the spawner biomass is predicted to peak in 1999. Exploitable biomass of age 3+ fish is projected to drop from 1,156,000 mt in 1998 to between 449,506 mt and 842,960 mt, depending on recruitment.

The commercial fishery for walleye pollock in the Gulf of Alaska started as a foreign fishery in the early 1970s (Megrey 1988). Catches increased rapidly during the late 1970s and early 1980s (Table 2.8). Major spawning concentrations of pollock were discovered in Shelikof Strait in 1981 and roe fisheries developed. The biomass of spawning pollock was estimated at 2.7 million mt in 1981 based on revised EIT surveys of Shelikof Strait. The domestication of the pollock fishery occurred quickly in the Gulf with only a short period of joint venture operations in the mid-1980s. The fishery was fully domesticated by 1988. Historical fishing locations through 1992 are reported in Fritz (1993). The seasonal distribution of domestic trawl locations where pollock was the target is shown in Figure 2.2.

Table 2.8 Landed catch including discard pollock (1000 t) in the Western and Central regions of the Gulf of Alaska 1977-97.

Year	Western/ Central Catch	Western/ Central TAC	% AL[1]	Yakutat/ S.E. Catch	Yakutat/ S.E.TAC
1977	112.3	118.0*	95	-	-
1978	95.8	168.0*	57	3.5	-
1979	99.8	168.0*	59	5.4	-
1980	110.4	168.0*	66	4.6	-
1981	139.2	168.0*	83	8.6	-
1982	165.1	168.0*	98	3.6	-
1983	215.5	256.6*	84	T	-
1984	306.7	400	77	0.00	16.6
1985	284.8	305	93	0.00	16.6
1986	93.6	150	62	0.00	16.6
1987	69.5	104	67	-	4
1988	65.6	90	73	-	3
1989	78.2	72	109	-	0.2
1990	90.5	70	129	-	3.4
1991	107.5	100	108	-	3.4
1992	93.9	84	112	-	3.4
1993	107.4	111	97	0.7	3.4
1994	104	102	102	6.9	7.3
1995	69.9	62	113	3.4	3.6
1996	49.8	52.5	95	0.6	2.8
1997	84.0	74.4	113	5.9	5.6
Avg.	121	142	90	3.2	6

*: Gulf-wide TAC from 1977 - 1983.

Sources: Foreign and joint venture catches 1977-84–Berger et al. (1986); 1985-88–Pacific Fishery Information Network (PacFIN), Pacific Marine Fisheries Commission. Domestic catches 1978-80–Rigby (1984); 1981-90–PacFIN, 1991-97 NMFS Alaska Regional Office.

1/ The percentage of the Western and Central GOA TAC that was harvested.

Section 2.1.3 describes recent Council action to address the pollock and Pacific cod fisheries in the BS/AI and GOA, which have been "at risk" of exceeding their specified total allowable catch (TAC) or prohibited species catch (PSC) limits.

2.3 NEPA Requirements: Environmental Impacts of the Alternatives

An environmental assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will result in significant impact on the human environment. If the action is determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact (FONSI) would be the final environmental documents required by NEPA. An environmental impact statement (EIS) must be prepared for major Federal actions significantly affecting the human environment.

An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose and alternatives were discussed in Sections 2.1 and 2.2, and the list of preparers is in Section 6. This section contains the discussion of the environmental impacts of the alternatives including impacts on threatened and endangered species and marine mammals.

2.3.1 Environmental Impacts of the Alternatives

The environmental impacts generally associated with fishery management actions are effects resulting from (1) harvest of fish stocks which may result in changes in food availability to predators and scavengers, changes in the population structure of target fish stocks, and changes in the marine ecosystem community structure; (2) changes in the physical and biological structure of the marine environment as a result of fishing practices, e.g., effects of gear use and fish processing discards; and (3) entanglement/entrapment of non-target organisms in active or inactive fishing gear.

A summary of the effects of the annual groundfish total allowable catch amounts on the biological environment and associated impacts on marine mammals, seabirds, and other threatened or endangered species are discussed in the final environmental assessment for the annual groundfish total allowable catch specifications.

2.3.2 Impacts on Endangered or Threatened Species

Background. The ESA provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The program is administered jointly by NMFS for most marine species, and the US Fish and Wildlife Service (FWS) for terrestrial and freshwater species.

The ESA procedure for identifying or listing imperiled species involves a two-tiered process, classifying species as either threatened or endangered, based on the biological health of a species. Threatened species are those likely to become endangered in the foreseeable future [16 U.S.C. §1532(20)]. Endangered species are those in danger of becoming extinct throughout all or a significant portion of their range [16 U.S.C. §1532(20)]. The Secretary, acting through NMFS, is authorized to list marine mammal and fish species. The Secretary of Interior, acting through the FWS, is authorized to list all other organisms.

In addition to listing species under the ESA, the critical habitat of a newly listed species must be designated concurrent with its listing to the "maximum extent prudent and determinable" [16 U.S.C. §1533(b)(1)(A)]. The ESA defines critical habitat as those specific areas that are essential to the conservation of a listed species and that may be in need of special consideration. The primary benefit of critical habitat designation is that it informs Federal agencies that listed species are dependent upon these areas for their continued existence, and that consultation with NMFS on any Federal action that may affect these areas is required. Some species, primarily the cetaceans, listed in 1969 under the Endangered Species Conservation Act and carried forward as endangered under the ESA, have not received critical habitat designations.

Listed Species. The following species are currently listed as endangered or threatened under the ESA and occur in the GOA:

Endangered

Northern Right Whale	*Balaena glacialis*
Bowhead Whale[2]	*Balaena mysticetus*
Sei Whale	*Balaenoptera borealis*
Blue Whale	*Balaenoptera musculus*
Fin Whale	*Balaenoptera physalus*
Humpback Whale	*Megaptera novaeangliae*
Sperm Whale	*Physeter macrocephalus*
Snake River Sockeye Salmon	*Oncorhynchus nerka*
Short-tailed Albatross	*Diomedia albatrus*
Steller Sea Lion[3]	*Eumetopias jubatus*

Threatened

Snake River Fall Chinook Salmon	*Oncorhynchus tshawytscha*
Snake River Spring/Summer Chinook Salmon	*Oncorhynchus tshawytscha*
Steller Sea Lion[4]	*Eumetopias jubatus*
Spectacled Eider	*Somateria fishcheri*

Section 7 Consultations. Because both groundfish fisheries are federally regulated activities, any negative affects of the fisheries on listed species or critical habitat and any takings[5] that may occur are subject to ESA section 7 consultation. NMFS initiates the consultation and the resulting biological opinions are issued to NMFS. The Council may be invited to participate in the compilation, review, and analysis of data used in the consultations. The determination of whether the action "is likely to jeopardize the continued existence of" endangered or threatened species or to result in the destruction or modification of critical habitat, however, is the responsibility of the appropriate agency (NMFS or FWS). If the action is determined to result in jeopardy, the opinion includes reasonable and prudent measures that are necessary to alter the action so that jeopardy is avoided. If an incidental take of a listed species is expected to occur under normal promulgation of the action, an incidental take statement is appended to the biological opinion.

Section 7 consultations have been done for all the above listed species, some individually and some as groups. Below are summaries of the consultations.

Endangered Cetaceans. NMFS concluded a formal section 7 consultation on the effects of the GOA groundfish fisheries on endangered cetaceans within the GOA on December 14, 1979, and April 19, 1991, respectively. These opinions concluded that the fisheries are unlikely to jeopardize the continued existence or recovery of endangered whales. Consideration of the bowhead whale as one of the listed species present within the area of the Bering Sea fishery was not recognized in the 1979 opinion, however, its range and status are not known to have changed. No new information exists that would cause NMFS to alter the conclusion of the 1979 or 1991

[2]species is present in Bering Sea area only.

[3]listed as endangered west of Cape Suckling.

[4]listed as threatened east of Cape Suckling.

[5] the term "take" under the ESA means "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct" (16 U.S.C. §1538(a)(1)(B).

opinions. NMFS has no plan to reopen Section 7 consultations on the listed cetaceans for this action or for the 1998 TAC specification process. Of note, however, are observations of Northern Right Whales during Bering Sea stock assessment cruises in the summer of 1997 (NMFS per. com). Prior to these sightings, and one observation of a group of two whales in 1996, confirmed sightings had not occurred.

Steller sea lion. The Steller sea lion range extends from California and associated waters to Alaska, including the Gulf of Alaska and Aleutian Islands, and into the Bering Sea and North Pacific and into Russian waters and territory. In 1997, based on biological information collected since the species was listed as threatened in 1990 (60 FR 51968), NMFS reclassified Steller sea lions as two distinct population segments under the ESA (62 FR 24345). The Steller sea lion population segment west of 144°W. longitude (a line near Cape Suckling, Alaska) is listed as endangered; the remainder of the U.S. Steller sea lion population maintains the threatened listing.

NMFS designated critical habitat in 1993 (58 FR 45278) for the Steller sea lion based on the Recovery Team's determination of habitat sites essential to reproduction, rest, refuge, and feeding. Listed critical habitats in Alaska include all rookeries, major haul-outs, and specific aquatic foraging habitats of the GOA. The designation does not place any additional restrictions on human activities within designated areas. No changes in critical habitat designation were made as result of the 1997 re-listing.

Beginning in 1990 when Steller sea lions were first listed under the ESA, NMFS determined that both groundfish fisheries may adversely affect Steller sea lions, and therefore conducted Section 7 consultation on the overall fisheries (NMFS 1991), and subsequent changes in the fisheries (NMFS 1992). The most recent biological opinion on the GOA fisheries effects on Steller sea lions was issued by NMFS March 2, 1998. The 1998 biological opinion concluded that the 1998 fishery is not likely to jeopardize the continued existence and recovery of Steller sea lions or to adversely modify critical habitat. The 1996 biological opinion concluded that these fisheries and harvest levels are unlikely to jeopardize the continued existence and recovery of the Steller sea lion or adversely modify critical habitat.

Pacific Salmon. No species of Pacific salmon originating from freshwater habitat in Alaska are listed under the ESA. These listed species originate in freshwater habitat in the headwaters of the Columbia (Snake) River. During ocean migration to the Pacific marine waters a small (undetermined) portion of the stock go into the Gulf of Alaska as far east as the Aleutian Islands. In that habitat they are mixed with hundreds to thousands of other stocks originating from the Columbia River, British Columbia, Alaska, and Asia. The listed fish are not visually distinguishable from the other, unlisted, stocks. Mortal take of them in the chinook salmon bycatch portion of the fisheries is assumed based on sketchy abundance, timing, and migration pattern information.

NMFS designated critical habitat in 1992 (57 FR 57051) for the Snake River sockeye, Snake River spring/summer chinook, and Snake River fall chinook salmon. The designations did not include any marine waters, therefore, does not include any of the habitat where the groundfish fisheries are promulgated.

NMFS has issued two biological opinions and no-jeopardy determinations for listed Pacific salmon in the Alaska groundfish fisheries (NMFS 1994, NMFS 1995). Conservation measures were recommended to reduce salmon bycatch and improve the level of information about the salmon bycatch. The no jeopardy determination was based on the assumption that if total salmon bycatch is controlled, the impacts to listed salmon are also controlled. The incidental take statement appended to the second biological opinion allowed for take of one Snake River fall chinook and zero take of either Snake River spring/summer chinook or Snake River sockeye, per year. As explained above, it is not technically possible to know if any have been taken. Compliance with the biological opinion is stated in terms of limiting salmon bycatch per year to under 55,000 and 40,000 for chinook salmon, and 200 and 100 sockeye salmon in the GOA fisheries, respectively.

Short-tailed albatross. The entire world population in 1995 was estimated as 800 birds; 350 adults breed on two small islands near Japan (H. Hasegawa, per. com.). The population is growing but is still critically endangered because of its small size and restricted breeding range. Past observations indicate that older short-tailed albatrosses are present in Alaska primarily during the summer and fall months along the shelf break from the Alaska Peninsula to the Gulf of Alaska, although 1- and 2-year old juveniles may be present at other times of the year (FWS 1993). Consequently, these albatrosses generally would be exposed to fishery interactions most often during the summer and fall--during the latter part of the second and the whole of the third fishing quarters.

Short-tailed albatrosses reported caught in the longline fishery include two in 1995, one in October 1996, and none so far in 1997. Both 1995 birds were caught in the vicinity of Unimak Pass and were taken outside the observers' statistical samples.

Formal consultation on the effects of the groundfish fisheries on the short-tailed albatross under the jurisdiction of the FWS concluded that GOA groundfish fisheries would adversely affect the short-tailed albatross and would result in the incidental take of up to two birds per year, but would not jeopardize the continued existence of that species (FWS 1989). Subsequent consultations for changes to the fishery that might affect the short-tailed albatross also concluded no jeopardy (FWS 1995, FWS 1997). The US Fish and Wildlife Service does not intend to renew consultation for this action or the 1998 TAC specification process.

Spectacled Eider. These sea ducks feed on benthic mollusks and crustaceans taken in shallow marine waters or on pelagic crustaceans. The marine range for spectacled eider is not known, although Dau and Kitchinski (1977) review evidence that they winter near the pack ice in the northern Bering Sea. Spectacled eider are rarely seen in U.S. waters except in August through September when they molt in northeast Norton Sound and in migration near St. Lawrence Island. The lack of observations in U.S. waters suggests that, if not confined to sea ice polyneas, they likely winter near the Russian coast (FWS 1993). Although the species is noted as occurring in the GOA and management areas no evidence exists that they interact with these groundfish fisheries.

Conditions for Re-initiation of Consultation. For all ESA listed species, consultation must be reinitiated if: the amount or extent of taking specified in the Incidental Take Statement is exceeded, new information reveals effects of the action that may affect listed species in a way not previously considered, the action is subsequently modified in a manner that causes an effect to listed species that was not considered in the biological opinion, or a new species is listed or critical habitat is designated that may be affected by the action.

Impacts of the Alternatives on Endangered or Threatened Species. None of the alternatives under consideration would affect the prosecution of the groundfish fisheries of the GOA in a way not previously considered in the above consultations. The proposed alternatives are administrative in nature and are designed to improve the in-season management of certain groundfish fisheries. None of the alternatives would affect TAC amounts, PSC limits, or takes of listed species. Therefore, none of the alternatives are expected to have a significant impact on endangered, threatened, or candidate species.

2.3.3 Impacts on Marine Mammals

Marine mammals not listed under the ESA that may be present in the GOA include cetaceans, [minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), Dall's porpoise *(Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), and the beaked whales (e.g., *Berardius bairdii* and *Mesoplodon spp.*)] as well as pinnipeds [northern fur seals (*Callorhinus ursinus*), and Pacific harbor seals (*Phoca vitulina*)] and the sea otter (*Enhydra lutris*).

The proposed alternatives are administrative (or allocational) in nature and are designed to improve the in-season management of certain groundfish fisheries and maintain industry stability and coastal communities. None of the alternatives would affect TAC amounts, PSC limits, or takes of marine mammals. Therefore, none of the alternatives are expected to have a significant impact on marine mammals. Additional information on pollock removals from critical habitat areas are in the GOA is provided in Chapter 6.

2.3.4 Coastal Zone Management Act

Implementation of each of the alternatives would be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Management Program within the meaning of Section 30(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

2.3.5 Conclusions or Finding of No Significant Impact

The action currently contemplated is a continuation of Amendment 23 and Amendment 40 in perpetuity. Potential impacts relative to NEPA are expected to be consistent with those previously predicted. Total removals of the pollock and Pacific cod resources are controlled by the setting of total allowable catches (TAC), and their monitoring has been enhanced recently to guard against overruns. Allocations between industry sectors will not change total removals from the stocks, and may provide an extra margin of safety against overruns by further partitioning the TACs.

Prohibited species catch (PSC) such as crab, herring, and halibut are controlled as necessary and appropriate by extensive management measures in the GOA, including closed areas, PSC quotas, bycatch disincentive programs, and authorizations to the NMFS Regional Director to limit bycatch and close areas.

None of the alternatives are likely to significantly affect the quality of the human environment, and the preparation of an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations.

Gary C. Matlock

for Assistant Administrator for Fisheries, NOAA

12-15-98

Date

2.4 Regulatory Impact Review: Economic and Socioeconomic Impacts of the Alternatives

This section provides information about the economic and socioeconomic impacts of the alternatives including identification of the individuals or groups that may be affected by the action, the nature of these impacts, quantification of the economic impacts if possible, and discussion of the trade offs between qualitative and quantitative benefits and costs.

The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

> In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

This section also addresses the requirements of both E.O. 12866 and the RFA to provide adequate information to determine whether an action is "significant" under E.O. 12866 or will result in "significant" impacts on small entities under the RFA.

E. O. 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be "significant." A "significant regulatory action" is one that is likely to:

1. Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

2. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

3. Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

4. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

A regulatory program is "economically significant" if it is likely to result in the effects described above. The Regulatory Impact Review (RIR) is designed to provide information to determine whether the proposed regulation is likely to be "economically significant." None of the alternatives is expected to result in a "significant regulatory action" as defined in E.O. 12866.

2.4.1 Impacts of the Alternatives

2.4.1.1 Alternative 1: No Action

2.4.1.1.1 GOA pollock fishery

The Council has identified preemption of GOA fisheries by BS/AI-based vessels as a problem, and has taken numerous regulatory actions to avert preemption. One such action occurred in 1996, when the Council submitted a recommendation for a September 1 opening for the Central GOA pollock fishery and October 1 in the Western GOA for third trimester season opening dates. The Secretary, however, implemented a simultaneous September 1 opening for both GOA areas to coincide with the BS/AI 'B' season opening to prevent preemption of the Western area fishery by larger, more numerous BS/AI-based vessels. Scheduling simultaneous openings in various areas disperses effort, resulting in more manageable fisheries and more equitable distribution of opportunity. Additional actions include stand-down periods for vessels transiting between fisheries and a vessel registration program.

In the absence of an inshore/offshore allocation (Alternative 1), it appears unlikely that a significant amount of offshore effort would be directed at the GOA in the first trimester and third trimesters, given the relative magnitude of the GOA pollock fishery compared to the BS/AI pollock fishery and simultaneous openings. There is some likelihood that offshore vessels may enter the second trimester fishery, which opens June 1, triggering the preemption and stability problems identified in previous analyses, and which are identified in the Council's Problem Statement.

2.4.1.1.2 GOA Pacific cod fishery

Alternative 1 would benefit the offshore freezer longline and catcher/processor fleets at the expense of the current inshore participants in the Pacific cod fishery. Given the longline allocation for Pacific cod in the BS/AI, offshore vessels would likely enter the GOA prior to fishing their larger guaranteed allocation in the BS/AI. If the Pacific cod TAC increases in the GOA as expected, it is estimated that this sector would be able to process the entire amount of that increase without giving up any catch in BS/AI (Analysis for Amendment 38).

2.4.1.1.3 General Conclusions

Sufficient data necessary to quantify projections of the Pacific cod fishery in the GOA under Alternative 1 are lacking. Qualitatively, however, allowing the freezer longliner and trawler/processor fleet access to GOA Pacific cod would not be beneficial to the current inshore sector. Given the longline allocation for Pacific cod in the BS/AI, these vessels would likely enter the GOA prior to fishing their larger guaranteed allocation in the BS/AI. If the Pacific cod TAC increases in the GOA as expected, it is possible that this sector of the fleet would be able to process the entire amount of that increase without giving up any catch in BS/AI. Participation by the trawler/processor fleet is less certain because of the timing of the seasons. Recall that the Gulf Pacific cod fisheries have typically ended around the end of March, about the same time the BS/AI A-season for pollock ends. However, any trawler/processor effort in the GOA Pacific cod fishery has the potential to dramatically decrease the season length in the GOA.

Overall it would appear that Alternative 1 would benefit the freezer longliner class and some catcher/processors at the possible expense of the rest of the current inshore fleet. An important caveat in all of these conclusions is the impact of the GOA pollock fishery on the GOA Pacific cod fishery. If pollock TACs are high, more effort will be expended in that fishery early in the year causing the Pacific cod season to be longer. If pollock TACs are low, then effort will shift to the Pacific cod fishery. This will be the case whether or not the inshore/offshore amendments are reauthorized.

The implications of Alternative 1 for both fisheries are reduced seasons, intensified races for fish, and lower utilization rates. All of these will lead to destabilizing effects for the GOA inshore sector, and the communities dependent on those processors. The absence of an allocation under Alternative 1 would very likely impact coastal Alaskan communities negatively, both economically and socially, as detailed in the analyses for Amendment 38/40, which extended the allocations through 1998.

2.4.1.2 Alternative 2: Rollover GOA pollock (100% inshore) and Pacific cod (90% inshore) allocations

2.4.1.2.1 Summary of Findings for I/O1 and 2

With its approval of I/O1 and I/O2, the Council reached consensus that a direct allocation of pollock and/or Pacific cod TACs in the GOA was the most appropriate means of offering a timely solution to the inshore/offshore preemption problem. Qualitative estimates suggest that the net national effects of Alternative 2 are positive under normative assumptions. Such benefits incorporate the economic effects noted above, as well as positive national impacts created by: (1) maintaining a balance in the social and economic opportunities associated with the pollock and Pacific cod fisheries; (2) helping insure that the fishery resources are available to provide private and community benefits to all parties; and (3) reducing the uncertainty and operational instability caused by the threat of preemption. It is intended that the pollock and Pacific cod allocations made for the GOA are in the best interest of resource management, dependent communities, and the nation at large.

The social impact analysis (SIA) in the original study of Amendment 23, and as augmented in the Supplemental Analysis, concluded there would be positive social gains from an inshore allocation of pollock, and that social benefits to inshore operations may arise from increased or stabilized incomes, employment, and related economic activity, and simply from reductions in the uncertainty, or threat of preemption that accompanies a set allocation. The GOA communities of Kodiak and Sand Point were addressed in the original SIA compiled in 1991. The SIA found that Kodiak was particularly dependent on the GOA fisheries, from both the harvesting and processing perspective. The study also indicated that Kodiak was "in the enviable position that it has both the harvesting and processing capacity to handle the full GOA pollock and Pacific cod allocations." This is likely still the case, even though GOA Pacific cod quotas are considerably higher currently than when this study was compiled (though a significant percent is now allocated to State water fisheries). The study also indicated that, although there are temporary workers hired from outside during the summer months, most of the processing plant employees in Kodiak are local residents. Though the lack of employment may be greater in other western Alaska communities, there is little alternative employment for many of these plant workers in Kodiak. Fish processing has accounted for 10 - 40% of the overall industrial payroll for Kodiak residents since 1980, with the majority of other residents engaged in fish harvesting or fisheries support activities.

Similar to Kodiak, the community of Sand Point has an economic base primarily dependent on fisheries, with the fishing industry accounting for 87% of the employment in 1987. Of the total employment, fish processing accounted for 35%. Sand Point is located within the Aleutians East Borough, which has generally benefitted from commercial fishing operations; for example, there were approximately $140 million worth of fish processed or sold within the borough boundaries in 1989. At least one plant in Sand Point has heavily invested in Pacific cod fish processing capability. Historically there was less emphasis on pollock processing in this area. However, over time they have become more dependent on the pollock resource from both the GOA and BS/AI.

2.4.1.2.2 Economic and Social Indices

Stability has been highlighted in the problem statement as a primary consideration for reauthorization of the inshore/offshore allocations (Alternative 2). The inshore/offshore allocation inherently provides the inshore and offshore sectors access to specified percentages of the pollock and Pacific cod resources. The set harvest percentage may add to the stability of the relationship between the inshore and offshore sectors. Similarly, the allocation may provide stability within the sectors.

Although the distributional, income-based analyses conducted for I/O1 are based on economic activity at the community/regional level, an additional, more qualitative examination of community impacts was provided in the analysis for I/O2. A review of the 1992 SIA, which focused on the communities of St. Paul, Dutch Harbor, Sand Point/King Cove, Kodiak, Newport, and Bellingham/Seattle, indicated that smaller Alaska communities, which are fundamentally dependent on the groundfish fisheries, exhibited the most variability and vulnerability to socially disruptive forces. Inshore allocations were determined to provide the greatest benefit to Alaskan coastal communities and afford them the greatest opportunities for development and growth, while the only community negatively affected would be Ballard/Seattle, and to a much less relative degree.

Immediate and direct positive impacts would be expected by Alaskan communities with the allocation (Alternative 2). Since 1992, additional infrastructures have developed in Alaskan coastal communities, partially in response to the guaranteed allocations under I/O1. Given the current status of the fisheries, and the communities which rely on fishing and processing, allowing the inshore/offshore allocations to expire, in the absence of alternative management remedies, would likely result in at least the same level of impacts as previously projected. Impacts at this time could be exacerbated beyond those previously predicted due to the additional infrastructures and the ability of these communities to utilize the current allocations.

2.4.1.2.3 Gulf of Alaska Pacific Cod - Current Status of Fisheries under the Allocation

Amendment 23 allocated 90% of the Pacific cod in the Gulf of Alaska to the inshore sector. The remaining 10% was allocated to the offshore sector. The 1996 GOA Pacific cod fishery opened to fixed gear on January 1 and trawl gear on January 20. TAC specifications totaled 18,500 mt for the Western area, 42,900 mt for the Central area, and 3,250 mt for the Eastern area. Inshore processors were allocated 90% of the TAC (16,650 mt, 38,610 mt, and 2,925 mt by area). Halibut bycatch rates were moderate for hook-and-line and trawl gear. Halibut PSC limits did not affect fishing time for these gear types, rather, closures were due to TAC attainment. The Western area closed to all gear types for the inshore sector on March 3; the offshore sector closed on March 9. In the Central area, the offshore sector closed on March 13; the inshore sector closed on March 18.

For 1997, TACs totaled 24,225 mt, 43,690 mt, and 1,200 mt for the Western, Central, and Eastern areas, respectively. The Western area inshore season closed March 3 and reopened for a one day fishery on March 10; the offshore season stayed on bycatch status for the year. The Central area inshore season closed March 11, and reopened on October 1; the offshore season opened on October 1. The Eastern area is on bycatch status every year on January 1. A summary of first season closures since 1993 is listed in Table 2.9.

Table 2.9 Federal Pacific cod closures in the GOA by area for 1993-1997.

	WESTERN		CENTRAL	
Inshore	**status**	**close**	**status**	**close**
93	B	9- Mar	B	24-Mar
94	B	8-Mar	B	16-Mar
			P	9-Apr
95	B	17-Mar	B	22-Mar
	P	30-Mar	B	11-Oct
			P	29-Nov
96	B	3 Mar	B	18-Mar
	P	5-May	P	5-May
97	B	3-Mar	B	11-Mar
Offshore				
93	B	1-Jan	B	1-Jan
94	B	1-Jan	B	1-Jan
95	B	7-Mar	B	13-Mar
	P	5-May		
96	B	9-Mar	B	13-Mar
	P	5-May	P	5-May
97	B	1-Jan	B	1-Jan

B = bycatch retainable
P = prohibited species, bycatch not retainable

Figure 2.5 depicts the number of days in each inshore Pacific cod season for 1991-97. The season length has been fairly stable for 1992-97, with an increase in 1995, for the inshore Western GOA target fishery. The season length has shown a declining trend for 1991-97, with a short spike in 1995, for the inshore Central GOA fishery. Season length and amount of quota taken in these fisheries is listed in Table 2.10.

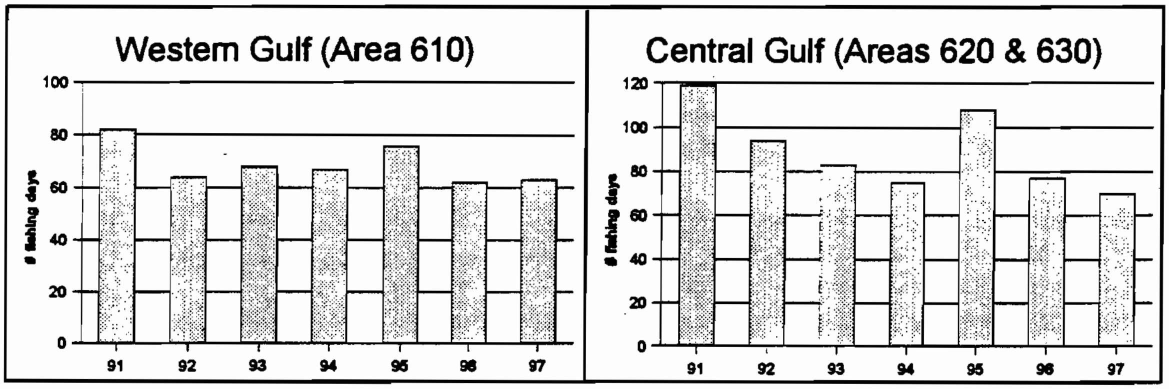


Figure 2.5 Season length (days) in the inshore Pacific cod fishery by GOA subarea.

Table 2.10. Season length in GOA Pacific cod fishery (inshore component only), 1991 - 1997.

Year	Area	Directed fishing Season (days)	Quota (mt)	Catch	Underage/ Overage
1991	W	82	30,000	29,212	-3%
	C	119	45,000	40,421	
	E	0	2,900	253	
1992	W	64	23,500	34,399	32%
	C	94	39,000	38,940	
	E	94	1,000	1,087	
1993	W	68	18,700	18,397	-2%
	C	83	38,200	35,972	
	E	0	2,800	1,650	
1994	W	67	16,630	15,214	-9%
	C	75	31,250	31,067	
	E	0	2,520	1,704	
1995	W	76	20,100	22,574	11%
	C	108	45,650	45,477	
	E	0	3,450	1,002	
1996	W	62	18,850	19,763	5%
	C	77	42,900	47,564	
	E	0	3,250	952	
1997	W	63	24,225	23,932	-1%
	C	70	43,690	43,677	
	E	0	1,200	865	

Note: 1997 does not include State water fishery.

Table 2.11 lists the Pacific cod catch and exvessel value for the GOA and BS/AI inshore and offshore sectors. BS/AI data are included to illustrate the scale of the GOA fisheries and the possibility of preemption of the GOA fisheries by the larger BS/AI fleet. Pacific cod catches (mt) are approximately at the five year (1992-96) average for the GOA offshore sector, and slightly above the average for the inshore sector. The Pacific cod catch in the GOA totaled 68 thousand mt (round weight) in 1996, with an exvessel value of $25.2 million. The offshore sector brought in landings of 13 thousand mt worth $4.9 million; the inshore sector landed 55 thousand mt worth $20.3 million.

Table 2.11 Pacific cod and pollock catch and exvessel value off Alaska by area, processor category and species, 1992-1996 (1,000 metric tons round weight, $ millions)

TOTAL CATCH	Gulf of Alaska			Bering Sea and Aleutian			All Alaska		
	At-sea	Inshore	Total	At-sea	Inshore	Total	At-sea	Inshore	Total
Pacific cod									
1992	24	56	80	180	25	205	204	81	285
1993	9	48	57	128	40	168	137	87	224
1994	6	41	47	147	47	194	153	89	242
1995	14	55	69	188	57	245	202	112	314
1996	13	55	68	177	63	240	191	118	309
Pollock									
1992	9	84	93	1,040	399	1,439	1,049	483	1,532
1993	1	108	109	947	438	1,385	948	545	1,493
1994	2	105	107	950	438	1,388	952	544	1,496
1995	3	70	73	919	409	1,328	922	479	1,401
1996	3	49	52	843	379	1,222	846	428	1,274

TOTAL Exvessel	Gulf of Alaska			Bering Sea and Aleutian			All Alaska		
	At-sea	Inshore	Total	At-sea	Inshore	Total	At-sea	Inshore	Total
Pacific cod									
1992	12.0	29.1	41.1	92.4	10.2	102.6	104.4	39.3	143.7
1993	3.9	16.5	20.4	55.2	12.3	67.5	59.0	28.8	87.8
1994	2.2	13.6	15.8	61.1	12.6	73.7	63.3	26.3	89.6
1995	5.9	24.6	30.5	73.8	18.6	92.4	79.8	43.1	122.9
1996	4.9	20.3	25.2	80.0	21.8	101.8	84.9	42.2	127.1
Pollock									
1992	1.7	21.3	23.0	248.2	105.0	353.2	249.8	126.3	376.1
1993	.1	16.9	17.0	123.3	60.8	184.1	123.4	77.7	201.1
1994	.1	16.5	16.6	138.0	68.1	206.1	138.1	84.6	222.7
1995	.5	15.7	16.2	181.1	84.9	266.0	181.6	100.5	282.1
1996	.2	10.2	10.4	152.1	71.3	223.4	152.3	81.5	233.8

Effort as measured by fishing vessel weeks by catcher vessels targeting Pacific cod in the BS/AI and GOA is listed in Table 2.12. Of 3,070 vessel weeks of Pacific cod fishing by catcher trawl vessels in the GOA during 1992-96, 54% of fishing effort was by vessels ≤60 ft; 45% was by vessels 60 - 124 ft, and 1% was by vessels >125 ft. Of 5,925 vessel weeks by hook-and-line (H&L) catcher vessels, 94% was by vessels ≤60 ft; 6% was by vessels 60 - 124 ft, and only 1 was by a vessel >125 ft. Fishing effort declined by half from 1992 to 1996, although the 1996 value was 16% below the five-year average in the small H&L catcher boat category. Pot boats totaled 4,056 fishing vessel weeks for the period; 67% was by vessels ≤60 ft; 32% was by vessels 60 - 124 ft, and <1% was by vessels >125 ft. In 1996, mid-size pot boat effort increased by 15%, and large boat effort doubled the five-year average. Pot effort in 1995, however, was nearly equal to 1992 fishing vessel weeks and may have been a result of speculation towards the minimum landing and participation requirements then in discussion for the License Limitation Program that was approved in June 1995. H&L effort also spiked in 1995.

Of the 84 fishing vessel weeks targeting Pacific cod by trawl catcher/processors (CP) in the GOA, none was by vessels <60 ft; 40% was by vessels 60 - 124 ft, 55% was by vessels ≤125 ft, and 5% was by vessels >230 ft (Table 2.13). Of the 461 vessel weeks expended by H&L catcher/processors, 5% was by vessels ≤60 ft; 81% was by vessels 60 - 124 ft, and 13% was by vessels >125 ft. The H&L Pacific cod effort dropped from 12 to 0 weeks in the small boat category, by 25% in the 60 - 124 ft category, and by half, to only six weeks, in the >125 ft category, compared with the five-year average. Only two weeks of CP pot fishing were reported during 1992 and 1995, in the 125 - 230 ft category.

Table 2.12 Catcher vessel (excluding catcher processors) weeks of fishing groundfish off Alaska by area, vessel length class (feet), gear, and target, 1992-1996.

	Gulf of Alaska Vessel length class			Bering Sea and Aleutian Vessel length class			All Alaska Vessel length class		
	<60	60-124	>124	<60	60-124	>124	<60	60-124	>124
H & L Pacific cod									
1992	1,891	112	1	119	35	-	2,010	146	1
1993	964	49	-	12	0	-	976	49	-
1994	712	44	-	245	8	-	958	52	-
1995	1,069	97	-	360	4	-	1,428	101	-
1996	935	51	-	268	7	0	1,202	58	0
Pot Pacific cod									
1992	713	347	10	3	167	31	716	514	40
1993	349	159	-	-	47	13	349	207	13
1994	403	156	1	13	122	24	416	278	25
1995	716	341	10	68	383	69	783	724	79
1996	538	298	15	22	479	77	561	777	92
Trawl Pacific cod									
1992	403	368	16	2	288	40	405	656	56
1993	327	275	0	7	362	30	334	638	30
1994	335	229	1	11	367	57	346	597	58
1995	246	268	7	-	368	37	246	636	44
1996	359	231	5	2	580	118	361	811	123
Trawl Pollock									
1992	62	414	26	8	1,245	385	70	1,658	411
1993	79	488	27	8	861	320	87	1,349	348
1994	100	416	48	-	781	340	100	1,197	388
1995	91	301	39	4	934	248	95	1,235	288
1996	96	204	21	13	853	358	109	1,058	379

Fishing effort in the BS/AI catcher vessel Pacific cod fishery during 1992-96 is provided for comparison (Table 2.12). Of the 2,269 fishing vessel weeks by trawl catcher vessels in this fishery,<1% of effort was by vessels ≤60 ft; 87% was by vessels 60 - 124 ft, and 12% was by vessels >125 ft. Of the 1,058 fishing weeks by H&L catcher vessels, 95% was by vessels ≤60 ft; 5% was by vessels 60 - 124 ft, and none by vessels >125 ft. Pot boats totaled 1,518 fishing vessel weeks for the period; 7% was by vessels ≤60 ft; 79% was by vessels 60 - 124 ft, and 14% was by vessels >125 ft. Catcher boat pot effort approximately doubled in the mid-size and large boat categories in 1996, compared with the five-year average.

Table 2.13 Catcher processor vessel weeks of fishing groundfish off Alaska by area, vessel length class (feet), gear, and target, 1992-1996.

	Gulf of Alaska Vessel length class			Bering Sea and Aleutian Vessel length class			All Alaska Vessel length class		
	<60	60-124	125-230	<60	60-124	125-230	<60	60-124	125-230
H & L Pacific cod									
1992	12	122	45	-	432	672	12	554	717
1993	5	68	2	-	251	382	5	318	384
1994	7	60	-	0	335	526	7	395	526
1995	0	69	9	2	289	574	2	358	582
1996	-	56	6	-	198	583	-	254	589
Pot Pacific cod									
1992	-	-	2	-	2	193	-	2	196
1993	-	-	-	-	1	9	-	1	9
1994	-	0	0	-	7	27	-	7	27
1995	0	0	2	1	62	55	1	62	57
1996	-	-	-	-	62	153	-	62	153
	60-124	125-230	>230	60-124	125-230	>230	60-124	125-230	>230
Trawl Pacific cod									
1992	20	15	1	16	123	18	36	138	18
1993	5	6	-	8	108	27	13	114	27
1994	2	6	1	11	46	16	13	52	17
1995	4	9	1	20	79	28	24	88	29
1996	3	10	1	17	84	12	20	94	13
Trawl Pollock									
1992	3	0	2	8	303	358	11	303	360
1993	-	0	-	9	234	315	9	235	315
1994	-	-	0	-	223	303	-	223	303
1995	-	2	0	1	176	290	1	179	291
1996	-	0	0	-	189	278	-	189	278

Of the 594 vessel weeks expended by trawl CPs in 1996, none was by vessels ≤60 ft; 3% was by vessels 60 - 124 ft, 48% by vessels 125-230 ft, and 49% by vessels >230 ft (Table 2.13). Fishing weeks declined by 10% in the >230 ft category during 1996, compared with the five-year average. Of the 4,244 vessel weeks expended by H&L CPS in the BS/AI, < 1% was by vessels ≤ 60 ft; 36% by vessels 60 - 124 ft, and 65% by vessels >125 ft. H&L effort dropped by more than 34% in the mid-size category, compared with the five-year average. There were 572 vessel weeks of CP pot effort in the BS/AI from 1992 through 1996; <1% by vessels <60 ft, 23% by vessels 60-124 ft, and 76% by vessels >125 ft. Effort was approximately double the five-year average for the mid and large-size boat categories in 1996.

Effort as measured by vessels participating in the directed GOA Pacific cod fisheries by inshore/offshore sector is provided in Table 2.14. Of 125 trawlers in the 1996 fishery, 14% participated in the offshore fishery and 86% were inshore. Participation in 1996 was down by 11% for the offshore and 14% for the inshore sectors. Of 348 H&L vessels, 5% participated offshore and 95% inshore. Participation in 1996 was down by 20% for the offshore and 28% for the inshore sectors. There were 148 pot boats; all delivered inshore.

Vessel participation in the directed BS/AI Pacific cod fisheries is provided for comparison (Table 2.14). Of 162 trawlers in the 1996 target fishery, 40% participated in the offshore fishery and 60% inshore. Participation in 1996 was up by 24% for the offshore and 29% for the inshore sectors. Of 90 H&L vessels, 43% participated in the offshore fishery and 57% were inshore. Participation in 1996 was down by 19% for the offshore and up by 11% for the inshore sectors. There were 105 pot boats; 92 delivered inshore and 13 delivered offshore.

Table 2.14 Number of vessels that caught groundfish off Alaska by area, processor category, target, and gear, 1992-96

Gear/Target/ Year	Gulf of Alaska			Bering Sea and Aleutian			All Alaska		
	At-sea	Inshore	Total	At-sea	Inshore	Total	At-sea	Inshore	Total
H & L Pacific cod									
1992	36	708	745	56	69	125	64	754	818
1993	17	442	459	53	9	62	54	449	503
1994	12	312	324	48	43	91	48	333	381
1995	20	506	526	44	57	101	46	550	596
1996	16	335	351	39	51	90	41	377	418
Pot Pacific cod									
1992	4	221	225	19	54	73	19	257	276
1993	0	102	102	3	17	20	3	114	117
1994	2	109	111	5	34	39	5	131	136
1995	4	187	191	11	116	127	11	258	269
1996	0	148	148	13	92	105	13	208	221
Trawl Pacific cod									
1992	27	140	167	49	66	115	56	174	230
1993	10	120	130	51	70	121	53	171	224
1994	7	114	121	39	70	109	40	167	207
1995	17	138	155	59	72	131	62	172	234
1996	18	107	125	65	97	162	67	180	247
Trawl Pollock									
1992	12	118	130	86	94	180	88	146	234
1993	1	99	100	94	82	176	94	139	233
1994	2	115	117	79	76	155	79	131	210
1995	10	129	139	99	84	183	99	139	238
1996	6	96	102	81	92	173	81	137	218

Table 2.15 shows the harvest rate by gear for 1995 and 1996 at the middle and end of the first fishing quarter. The fishery is fast-paced, with harvests rates generally peaking as the end of the fishing period is approached for trawl, hook-and-line and pot gear. This is also evident in the overages in some of these fisheries as described above.

Table 2.15 Pace of GOA Pacific cod fishery as depicted by a snapshot of weekly landing rates.

		Trawl			H&L			Pots			Fishery
Area/Year	As of	mt	weeks	mt/week	mt	weeks	mt/week	mt	weeks	mt/week	closed
Western											
1996	3-Feb	1,864	2	932	1,417	5	283	1,305	5	261	3-Mar
	2-Mar	10,274	6	1,712	3,815	9	424	1,611	9	179	3-Mar
1995	4-Feb	872	2	436	7,365	5	1,473	1,442	5	288	17-Mar
	11-Mar	5,218	7	745	5,015	10	502	1,873	10	187	17-Mar
	4-Apr	10,763	8	1,345	5,377	11	488	2,164	11	197	17-Mar
Central											
1996	3-Feb	439	2	220	1,197	5	239	3,867	5	773	18-Mar
	2-Mar	3,727	6	621	2,453	9	273	6,618	9	735	18-Mar
	16-Mar	14,515	8	1,814	4,953	11	450	9,152	11	832	18-Mar
1995	4-Feb	623	2	312	1,249	5	250	4,047	5	809	22-Mar
	11-Mar	11,494	7	1,642	3,932	10	393	9,293	10	929	22-Mar
	16-Mar	17,749	8	2,219	4,415	11	401	12,086	11	1,099	22-Mar

Production of Pacific cod into fishery products is listed in Table 2.16. The Pacific cod target fishery accounted for near 87% of the GOA Pacific cod TAC in 1996 (Table 2.17a). Approximately 0.5% of Pacific cod taken in the target fishery were discarded. Nearly 77% of retained catch were processed by Kodiak and Peninsula processors. The inshore sector accounted for 95% of harvests (Table 2.17b), while the offshore sector accounted for 5% (Table 2.17c). These percentages are dictated by the inshore/offshore allocations

Pacific cod is generally processed into two major product forms: 1) headed and gutted; and 2) fillets. Table 2.18 depicts the production of various product forms from the GOA by sector and processing location for 1996. More than 68% of GOA Pacific cod is processed by Kodiak and Peninsula shore plants. Across all processors, most of the Pacific cod is processed into fillets (block and individual quick frozen) (36%) or in the round (29%). Lesser amounts are split and salted, minced, frozen whole, and sold as bait. There also appears to have been some attempts to produce surimi from Pacific cod. Ancillary products from Pacific cod are also produced, mainly roe, millet, cheeks, tongues bellies, heads, meal, oil and bones. Monthly wholesale prices of Pacific cod and minced Pacific cod are reported in Table 2.19.

Table 2.16. Production of groundfish products in the fisheries off Alaska by species, product and area, 1992-96, (1,000 metric tons product weight).

	Bering Sea and Aleutians					Gulf of Alaska				
	1992	1993	1994	1995	1996	1992	1993	1994	1995	1996
Pacific cod										
Whole fish	1.4	2.5	1.9	1.8	2.9	5.9	7.7	3.3	1.9	5.3
H&G	57.4	32.7	48.8	55.1	54.0	10.9	4.6	3.0	5.8	3.7
Salted/split	-	-	-	7.1	10.3	-	-	-	.5	.5
Fillets	7.9	6.9	5.6	9.0	10.4	7.0	5.6	6.6	10.2	8.8
Other products	5.5	5.2	5.3	10.2	10.5	6.3	2.7	3.0	7.1	6.6
Pollock										
Whole fish	2.4	4.0	1.5	2.7	3.2	1.3	.2	.1	.0	.0
H&G	3.1	1.2	.9	.9	.7	.8	.1	.1	.0	.0
Roe	17.2	11.4	10.7	15.3	13.9	.3	.4	1.1	.6	.6
Fillets	35.7	56.5	45.1	51.6	55.1	6.6	11.5	9.7	8.1	5.1
Surimi	154.9	144.3	172.9	170.7	156.1	7.9	6.0	9.1	7.4	4.8
Minced fish	13.8	13.2	9.8	9.3	13.7	1.0	3.2	1.1	.5	.5
Fish meal	58.8	52.8	51.4	49.7	45.7	1.1	1.1	.7	1.3	1.1
Other products	8.2	11.0	11.9	14.5	13.4	.1	.4	.3	.7	.2

Table 2.17a Total Catch (mt) of Gulf of Alaska Pacific Cod in the 1996 Pacific Cod Target Fishery.

All Sectors	Processor Location	Harvest Area Western Gulf	Central Gulf	Eastern Gulf	Grand Total
Total Catch	Bering Sea and Aleutian Islands	140	320	-	460
	Catcher Processor	4,273	1,575	1	5,848
	Kodiak & Peninsula	13,375	29,836	-	43,211
	Catcher Vessels Delivering At-sea	19	1,663	-	1,682
	Central Gulf of Alaska	-	5,255	106	5,361
	Southeastern Gulf of Alaska	-	-	63	63
Total Catch		17,807	38,650	170	56,626
1996 P. cod TAC		42,900	3,250	18,850	65,000
Discarded Catch	Bering Sea and Aleutian Islands	-	-	-	0
	Catcher Processor	96	34	0	130
	Kodiak & Peninsula	7	151	-	157
	Catcher Vessels Delivering At-sea	-	11	-	11
	Central Gulf of Alaska	-	2	-	2
	Southeastern Gulf of Alaska	-	-	0	0
Total Discards		103	198	0	301
Retained Catch	Bering Sea and Aleutian Islands	140	320	-	460
	Catcher Processor	4,176	1,541	1	5,718
	Kodiak & Peninsula	13,369	29,685	-	43,054
	CV Deliveries to CPs and MSs	19	1,652	-	1,671
	Central Gulf of Alaska	-	5,253	106	5,359
	Southeastern Gulf of Alaska	-	-	63	63
Total Retained		17,704	38,451	170	56,325

Note: None of the Bering Sea and Aleutian Islands True Motherships took deliveries of Gulf Pacific cod.
Source: 1996 National Marine Fisheries Service Blend Data

Table 2.17b Inshore Sectors Catch (mt) of Gulf of Alaska Pacific Cod in the 1996 Pacific Cod Target Fishery.

Inshore	Processor Location	Harvest Area Western Gulf	Central Gulf	Eastern Gulf	Grand Total
Total Catch	Bering Sea and Aleutian Islands	140	320	-	460
	Catcher Processor	3,717	739	1	4,457
	Kodiak & Peninsula	13,375	29,836	-	43,211
	Catcher Vessels Delivering At-sea	17	-	-	17
	Central Gulf of Alaska	-	5,255	106	5,361
	Southeastern Gulf of Alaska	-	-	63	63
Total Catch		17,249	36,150	170	53,569
Discarded Catch	Bering Sea and Aleutian Islands	-	-	-	-
	Catcher Processor	39	25	0	64
	Kodiak & Peninsula	7	151	-	157
	Catcher Vessels Delivering At-sea	-	-	-	-
	Central Gulf of Alaska	-	2	-	2
	Southeastern Gulf of Alaska	-	-	0	0
Total Discards		46	178	0	224
Retained Catch	Bering Sea and Aleutian Islands	140	320	-	460
	Catcher Processor	3,678	714	1	4,393
	Kodiak & Peninsula	13,369	29,685	-	43,054
	Catcher Vessels Delivering At-sea	17	-	-	17
	Central Gulf of Alaska	-	5,253	106	5,359
	Southeastern Gulf of Alaska	-	-	63	63
Total Retained		17,203	35,973	170	53,346

Note: None of the Bering Sea and Aleutian Islands True Motherships took deliveries of Gulf Pacific cod.
Source: 1996 National Marine Fisheries Service Blend Data

Table 2.17c Offshore Sectors Catch (mt) of Gulf of Alaska Pacific Cod in the 1996 Pacific Cod Target Fishery.

Offshore	Processor Location	Harvest Area			
		Western Gulf	Central Gulf	Eastern Gulf	Grand Total
Total Catch	Bering Sea and Aleutian Islands	-	-	-	-
	Catcher Processor	556	836	-	1,392
	Kodiak & Peninsula	-	-	-	-
	Catcher Vessels Delivering At-sea	2	1,663	-	1,665
	Central Gulf of Alaska	-	-	-	-
	Southeastern Gulf of Alaska	-	-	-	-
Total Catch		558	2,499	-	3,057
Discarded Catch	Bering Sea and Aleutian Islands	-	-	-	-
	Catcher Processor	57	9	-	66
	Kodiak & Peninsula	-	-	-	-
	Catcher Vessels Delivering At-sea	-	11	-	11
	Central Gulf of Alaska	-	-	-	-
	Southeastern Gulf of Alaska	-	-	-	-
Total Discards		57	21	-	78
Retained Catch	Bering Sea and Aleutian Islands	-	-	-	-
	Catcher Processor	499	827	-	1,326
	Kodiak & Peninsula	-	-	-	-
	Catcher Vessels Delivering At-sea	2	1,652	-	1,654
	Central Gulf of Alaska	-	-	-	-
	Southeastern Gulf of Alaska	-	-	-	-
Total Retained		501	2,479	-	2,980

Note: None of the Bering Sea and Aleutian Islands True Motherships took deliveries of Gulf Pacific cod.

Source: 1996 National Marine Fisheries Service Blend Data

Table 2.18 Products Produced from the 1996 Gulf of Alaska Pacific Cod Fishery.

Processor's Location		Surimi	Minced	Fillet/Block and IQF	H&G	Meal	Milt	Roe	Salted	Round or Bled	Other	Total	%
Bering Sea and Aleutian Islands Inshore		-	-	10	30	130	7	5	217	12	10	421	1.7
Kodiak & Peninusula Shoreplants		90	1,318	7,812	285	-	713	1,523	127	4,566	292	16,726	68.4
Central Gulf of Alaska Shoreplants		-	-	218	383	-	35	87	-	2,389	-	3,112	12.7
Southeastern Gulf of Alaska Shoreplants		-	-	41	12	-	5	10	-	81	12	161	0.7
Inshore Catcher Processors		-	-	-	2,276	-	7	1	-	3	0	2,287	9.3
Offshore Catcher Processors		-	153	738	485	-	6	149	185	-	39	1,755	7.2
Total	mt	90	1,471	8,819	3,471	130	773	1,775	529	7,051	353	24,462	
	%	0.3	6	36	14.2	0.5	3.2	7.3	2.1	28.8	1.4		

Table 2.19. Monthly wholesale prices of selected frozen fish blocks and fillets, F.O.B. East Coast, 1994-1996, in cents/lb.

	Blocks			
			Alaska Pollock	
Month	Cod	Minced Cod	Imported	Domestic
1994				
Jan	172.5	45.0	66.5	85.0
Feb	172.5	45.0	66.5	81.0
Mar	172.0	45.0	66.5	81.0
Apr	170.0	TFQ	67.5	80.0
May	170.0	44.0	67.5	80.0
Jun	172.5	44.0	67.5	80.0
Jul	172.5	44.0	67.5	80.0
Aug	175.0	44.0	67.5	79.0
Sep	177.5	44.0	66.5	79.0
Oct	177.5	44.0	66.5	81.0
Nov	182.5	43.5	66.5	82.5
Dec	187.5	43.5	67.5	86.5
1995				
Jan	187.5	43.5	67.5	86.5
Feb	187.5	43.5	69.0	87.5
Mar	190.0	43.5	69.0	88.5
Apr	192.5	43.5	71.5	88.5
May	192.5	43.5	71.5	92.5
Jun	190.0	44.0	71.5	93.0
Jul	190.0	44.0	73.5	95.5
Aug	190.0	44.0	76.0	101.0
Sep	187.5	47.5	79.0	107.5
Oct	187.5	47.5	79.0	107.5
Nov	187.5	47.5	79.0	107.5
Dec	187.5	52.0	79.0	81.5
1996				
Jan	172.5	52.0	81.5	107.0
Feb	162.5	55.0	81.0	92.5
Mar	162.5	56.0	81.0	87.5
Apr	162.5	56.0	78.0	85.0
May	162.5	56.0	78.0	85.0
Jun	162.5	56.0	78.0	85.0
Jul	162.5	56.0	78.0	85.0
Aug	162.5	56.0	76.0	87.5
Sep	152.5	56.0	76.0	87.5
Oct	152.5	56.0	76.5	87.5
Nov	152.5	56.0	76.5	92.5
Dec	157.5	56.0	76.5	92.5

2.4.1.2.4 Gulf of Alaska Pollock - Current Status of the Fisheries under the Allocations

The inshore/offshore Amendment allocated 100% of GOA pollock to the inshore sector. To a large degree, the inshore/offshore dispute came about because of an influx of catcher-processor activity in the GOA in the spring of 1989. That year, domestic catcher-processors fished heavily for roe bearing pollock and the fishery closed much earlier than expected. In 1988, shore based processors in the Gulf were able to process most of the pollock TAC because the foreign and J.V. processors had been relegated to the BS/AI. The few domestic catcher-processors had also chosen to concentrate their efforts in the BS/AI where the TAC and biomass were higher. This led to the eventual ban on roe stripping and to seasonal allocations of the pollock TACs. In 1991, the Council and NMFS enacted quarterly apportionments for GOA pollock harvests along with a delay in the opening of the second apportionment, the latter of which was to prevent the influx of effort from BS/AI to GOA pollock fisheries by coinciding with the BS/AI 'B' season opening. In 1996, the third and fourth seasonal apportionments were combined so that trimester allocations now occur for January (25%), June (25%), and September (50%) openings. In 1998, the Council adjusted the allocation percentages to 25/35/40 for the Western and Central areas because of concerns for Steller sea lions.

The season length for the inshore pollock fishery in each Gulf subarea for 1991-97 has fluctuated widely, but an overall trend is for a shortened fishing season even as TACs have been increased (Figure 2.6). In the Western Gulf (Area 610), the directed season lasted approximately 90 days in 1991, fell to approximately 54 days in 1992, rebounded to 88 days in 1993, and averaged 18 days for 1994-97. The Central Gulf (Area 620 and 630) directed pollock fishery has also shrunk, from approximately 90 days in 1991 to a low of 16 in 1995 for Area 620; the 1997 season lasted about 45 days. In Area 630, the season length has ranged from 90 days in 1993 to slightly less than 10 days in 1996; the 1997 season lasted 34 days.

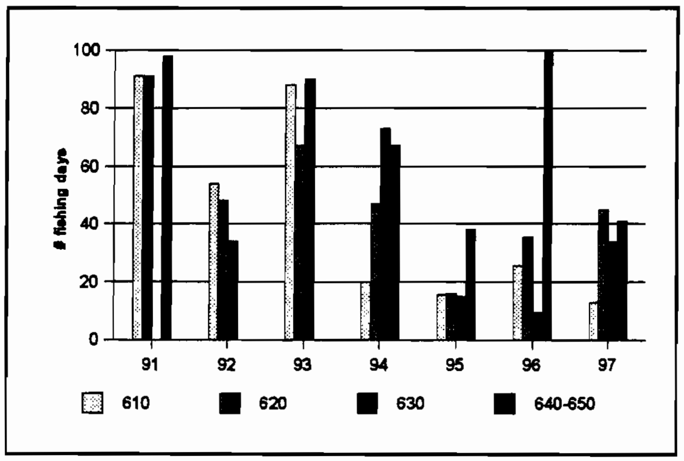


Figure 2.6 Season length (days) in the inshore pollock fishery by GOA subarea.

Table 2.11 lists the pollock catch and exvessel value for the GOA and BS/AI and inshore/offshore sector. Pollock catches (mt) are approximately at 60% of the five year (1992-96) average for the GOA offshore sector, and slightly below the average for the inshore sector. The commercial pollock catch in the GOA totaled 51 thousand mt (round weight) in 1996, with an exvessel value of $10.4 million. For 1996, offshore pollock catches totaled 3 thousand mt worth $0.2 million, while the inshore catches totaled 49 thousand mt worth $10.2 million.

Effort as measured by fishing vessel weeks by catcher vessels targeting Pacific cod in the BS/AI and GOA is listed in Table 2.12. Of 2,412 weeks of pollock fishing by catcher trawl vessels in the GOA during 1992-96, 18% of fishing effort was by vessels ≤60 ft; 76% was by vessels 60 - 124 ft, and 6% was by vessels >125 ft. Pollock was the target fishery for CPs in the GOA for only 7 weeks during this five-year period (Table 2.13).

Of the 6,358 fishing weeks targeting Pacific cod by trawl catcher vessels in the BS/AI, <1% was by vessels <60 ft; 74% was by vessels 60 - 124 ft, and 25% was by vessels ≤125 ft (Table 2.12). Of the 2,687 fishing weeks targeting pollock by BS/AI trawl CPs, <1% was by vessels 60 -124 ft; 42% was by vessels 125 - 230 ft, and 57% was by vessels >230 ft (Table 2.13). Effort declined by 10% in the >230 ft category in 1996, compared with the five-year average.

Effort as measured by vessels participating in the directed GOA pollock fisheries by inshore/offshore sector is provided in Table 2.14. Of 101 trawlers in the 1996 fishery, 95% participated in the inshore fishery and 5% were offshore. Participation in 1996 was down by 14% for the offshore and equal to the five-year average for the inshore sector.

Production of pollock into fishery products is listed in Table 2.16. Pollock is generally processed into surimi, fish meal, fillets, and roe. The pollock target fishery accounted for near 85% of the GOA pollock TAC in 1996 (Table 2.20). Less than 3% of pollock taken in the target fishery was discarded. Nearly all of the retained catch were processed by GOA processors.

Table 2.21 depicts the production of various product forms from the GOA by sector and processing location for 1996. More than 90% of GOA pollock were processed by GOA shore plants. Monthly wholesale prices of Pacific cod and minced Pacific cod are reported in Table 2.19.

A careful examination of the figure reveals some broadening of seasons from 1991 to 1994. The most pronounced spike occurs in the fourth quarter of 1991, when nearly 20,000 tons were harvested in a single week. In later years, the fourth quarter allocation (the third mode) was harvested in periods lasting two weeks. Looking at the second and third quarters as a single mode reveals that in 1991 harvests grew steadily in the second quarter and then jumped as the third quarter apportionment was released. In 1992, 1993, and 1994, there are two distinguishable modes corresponding to each apportionment, with the second apportionment generally lasting longer than the third, which in each year has been harvested in two weeks. Harvests of the first quarter apportionment also show a mini bi-modal distribution. This occurs as areas are shut down generally progressing from west to east. Also evident is the delay of the trawl opening to January 20 which began in 1992.

Table 2.20 depicts the total amount of pollock discarded, the amount retained, and the total catch for the inshore sector for 1996. Less than 3% of pollock in the target fishery was discarded in 1996. Of the retained catch, 97% were processed by Gulf shore plants.

Pollock is generally processed into two major product forms: 1) fillets; and 2) surimi. Table 2.21 depicts the production of various product forms from the GOA by processing location for 1996. More than 91% of GOA Pacific cod are processed by Gulf shore plants. Across all processors, most of the Pacific cod is processed into fillets (block and individual quick frozen) (41%) and surimi (40%). Lesser amounts are mince, deep skin fillets, meal, oil, and roe products.

2.4.1.2.5 Projected Outcomes Under Alternative 2: Reauthorization

2.4.1.2.5.1 Harvest and Processing

Under Alternative 2, allocation percentages would be the same as they have been for the past six years for the GOA: 100% of the pollock and 90% of the Pacific cod would be allocated inshore. Continuation of the allocations, combined with the vessel moratorium and license limitation program, will result in approximately the same patterns of harvesting and processing as have occurred in the past three years, except as modified by other restrictions such as PSC related closures or mandatory retention standards. Further, it is likely that the same harvesting and processing vessels would be participating in these activities. Additional action recommended by the Council has placed further restrictions on the movement of vessels from the BS/AI to the GOA in these fisheries (simultaneous season openings, vessel registration, and stand-down requirements).

Though the relative proportions of harvesting and processing by sector would not be expected to change, resource conditions for the two GOA fisheries are significantly different than they have been in the past two to three years. GOA pollock are increasing in abundance, with current 1998 ABC (130,000 mt) and TAC (124,730 mt) set at the highest level since 1986. This is the reverse situation from when the Council was deliberating I/O2, when pollock abundance and TACs were declining. GOA Pacific cod are also increasing in abundance since I/O2. The ABC was set at 77,900 mt, with TAC reduced by a State water fishery to 66,060 mt. State and Federal harvests will match the 1991 ABC, the highest in the last ten years.

Table 2.20 Total Catch (mt) of Gulf of Alaska Pollock in the Pollock Target Fisheries.

	Catch Area			
Processor's Location	Western Gulf	Central Gulf	Eastern Gulf	Total
Gulf of Alaska	21,720	22,754	781	45,255
Bering Sea and Aleutian Islands	1,089	-	-	1,089
CVs Delivering At-sea & CPs	340	83	-	423
Total	23,149	22,837	781	46,767
1996 Pollock TAC	2,810	26,520	25,480	54,810

Discarded Catch (mt) of Gulf of Alaska Pollock in the Pollock Target Fisheries

	Catch Area			
Processor's Location	Western Gulf	Central Gulf	Eastern Gulf	Total
Gulf of Alaska	86	1,101	6	1,193
Bering Sea and Aleutian Islands	-	-	-	-
CVs Delivering At-sea & CPs	8	-	-	8
Total	94	1,101	6	1,201

Source: 1996 National Marine Fisheries Service Blend Data.

Retained Catch (mt) of Gulf of Alaska Pollock in the Pollock Target Fisheries

	Catch Area			
Processor's Location	Western Gulf	Central Gulf	Eastern Gulf	Total
Gulf of Alaska	21,634	21,653	775	44,062
Bering Sea and Aleutian Islands	1,089	-	-	1,089
CVs Delivering At-sea & CPs	332	83	-	415
Total	23,055	21,736	775	45,566

Source: 1996 National Marine Fisheries Service Blend Data.

Table 2.21 Products Produced (mt) from the 1996 Gulf of Alaska Pollock Target Fishery

Processor's Location		Surimi	Minced	Fillet/Block and IFQ	Deep Skin Fillet	Meal	Oil	Roe	Total	%
Gulf of Alaska Shorebased		3,997	464	4,945	28	1,033	101	520	11,087	91.3
Gulf of Alaska At-sea		-	-	30	14	-	-	-	44	0.4
Bering Sea and Aleutian Islands Inshore		807	3	6	8	54	74	55	1,007	8.3
Total	mt	4,804	467	4,980	51	1,087	174	575	12,139	
	%	39.6	3.8	41	0.4	9	1.4	4.7		

One consideration relative to GOA pollock is the impact to the pollock stocks themselves, and the ability of fisheries managers to effectively monitor catch rates and prevent quota overruns. The pollock quotas are divided into three trimester allocations, in 25/35/40% allocations for both the Western and Central Gulf areas. Alternative 2 would limit the harvest of this resource to smaller, shore based vessels with much lower catching capacities than, for example, larger factory trawl vessels. The ability to effectively monitor pollock catch, and prevent quota overruns, would be maintained and enhanced under adoption of this Alternative 2.

Viability of inshore processing plants in the GOA is heavily dependent on groundfish resources, particularly pollock and Pacific cod. A continuation of the I/O2 allocations under Alternative 2 would facilitate continued viability of these plants. Additional processing opportunities have occurred with extended fishing periods under higher seasonal allocations as a result of increased TACs. The trend for Pacific cod and pollock in the GOA appears to be steady or slightly increasing for the next few years at least.

2.4.1.2.5.2 Stability Implications

The Council's problem statement for this analysis emphasizes the issue of stability in the fishing industry and between affected industry sectors. Partly due to the inshore/offshore allocations in place through 1998, the industry is in a different state than existed in 1991. Further, the vessel moratorium and license limitation are steps in the Council process of moving toward comprehensive rationalization. While the Council is under a moratorium for approving future IFQ programs until October 2001, the Council has continued to express an interest in developing IFQ programs for at least the pollock fisheries, and possibly for all North Pacific groundfish.

In the interim, a stable environment in the fisheries has been cited by the Council as critical to successful CRP development. Indeed, the disruption of existing distributions of harvesting and processing of pollock and Pacific cod, and the business relationships based on those distributions, could have serious and adverse implications for successful CRP development.

It is intuitively obvious that, compared to Alternative 1, continuation of the inshore/offshore allocations as they now exist would result in the least change to the status quo. Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The existing allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations would maintain the relationships between these sectors as they have developed since 1991. The stability which has been established between these various industry sectors may not guarantee survival of entities within these sectors, but may be crucial to the successful fruition of the CRP program, and possible future IFQ program. Even without further management programs, the GOA pollock and Pacific cod fisheries will benefit from the stability provided by these allocations.

One other aspect of stability which may hinge indirectly on the inshore/offshore allocations is the prices of pollock products. As was seen in the EA/RIR for I/O2, prices for pollock products, particularly fillets and surimi, increased dramatically in 1991 and 1992, prior to the approval and implementation of the allocations. Once the allocations were implemented, these prices fell back to around previous levels, a dramatic decrease from the prices experienced in 1991 and 1992. To the extent that these price fluctuations were caused by uncertainty associated with the potential processing allocations, a continuation of the allocations would more likely smooth out these fluctuations relative to allowing the allocations to expire.

2.4.1.2.5.3 In-Season Management

In addition to unquantifiable effects on small fishing communities, reauthorization of the inshore/offshore allowances under Alternative 2 would benefit in-season management of small, hard-to-manage quotas. Overages of quarterly and trimester releases of TACs have frequently occurred in the GOA pollock and Pacific cod fisheries (Table 2.22). While many seasonal allowance overages have been reduced or eliminated by the end of the year tally, some year-end TAC overages persist. These in-season overages have approached 200% in 1995 (WGOA offshore pollock) and 140% in 1997 (WGOA pollock).

Table 2.22 In-season allocation and TAC overages (%) in the GOA pollock and Pacific cod fisheries, 1995-98. (I = inshore; O = offshore)

	1998	1997			1996			1995		
As of:	21-Mar	1-Mar	16-Aug	31-Dec	16-Mar	10-Aug	31-Dec	11-Mar	12-Aug	31-Dec
Pollock										
Western	87	148	92	141	130	73	95	133	98	102
Central	99	121	100	105	112	72	96	118	104	85
Eastern	94	153	106	102	188	99	98	100	100	158
Pacific cod										
Western I	121	94	106	105	103	105	105	67	101	103
Western O	4	31	38	39	112	99	101	91	197	197
Central I	106	55	95	103	74	106	109	60	89	101
Central O	1	0	6	20	68	123	125	48	85	90
Eastern I	47	34	73	100	4	30	32	19	36	32
Eastern O	0	22	5	1	0	1	1	0	1	3

Seasonal allowances were designed to allow for business planning by the fishing industry, as well as to temporally and spatially separate the fleet from marine mammal grounds. This has been particularly critical for the pollock fleet and Steller sea lion, which are endangered in the Western and Central GOA. Sixteen rookeries and approximately 50 haulouts of the endangered western population of Steller sea lion are located within these two regulatory areas.

The 1998 Biological Opinion on the effects of the 1998 TAC specifications and Steller sea lions reports that GOA fisheries could adversely impact the foraging success of Steller sea lions by: (1) depleting fish resources in a local geographic area due to aggregation of fishing effort; (2) fishing pressure could alter the age structure of fish stocks targeted by and fishing, shifting the biomass to a younger age class; and (3) fishing could alter the actual and relative abundance of fish stocks in the ecosystem and increase the dominance of less desirable fish species as food for the Steller sea lions.

Recent actions recommended by the Council and instituted by NMFS to minimize these seasonal allowance overruns have been described in Section 2.1.3. Despite these efforts, seasonal allowance overages have continued into 1998 for Western and Central GOA inshore Pacific cod. These allowances would face even greater threat to overages and shorter seasons should the inshore/offshore allowances be allowed to expire. Increased effort by offshore -based catcher and catch/processor vessels would decrease the ability of in-season management to monitor and accurately predict appropriate closure dates to avoid exceeding seasonal allowances, resulting in possibly deleterious effects on Steller sea lions.

2.4.2 Consistency with the Current Problem Statement

The Council's problem statement for the proposed reauthorization of Amendment 40 emphasizes the issue of stability in the fishing industry and between affected industry sectors. Stability is epitomized by lack of change in a given industry or between sectors in a given industry. The existing allocations provide a reasonable assurance to each industry sector involved regarding the amount of fish for harvesting and processing. Business planning is largely affected by these allocations for both inshore and offshore processors and harvesting vessels which deliver to them. The continuation of these allocations would maintain the relationships between these sectors as they have developed over the past six years and maintain the stability of Gulf harvest and processing operations, and the communities which depend on those operations.

Projections are not quantitatively performed for the GOA fisheries, but the impacts to the GOA pollock and Pacific cod fisheries would be expected to be relatively greater than those in the BS/AI, if the allocations are allowed to expire. The much smaller quotas in the GOA have the inherent ability to be more dramatically affected without the protection provided by Amendment 40. The current allocations provide some level of stability for the harvesting and processing sectors in both areas. Current operating and business relationships which rely on that stability would likely be compromised if the allocations were allowed to expire. Continuation of the allocations (Alternative 2) may provide the stable operating environment necessary for eventual implementation of further CRP management programs or other measures.

2.4.3 Impacts on Small Entities (Regulatory Flexibility Act)

The Regulatory Flexibility Act requires an examination of the impacts of proposed actions on small businesses, small organizations, and small jurisdictions to determine whether a substantial number of these small entities will be significantly impacted by the proposed management measures. When a Council determines that the proposal will have a significant impact on a substantial number of small entities, it must prepare an initial regulatory flexibility analysis (IRFA) to be provided to the Small Business Administration and the public for review and comment.

In general, fishing vessels and many processing operations are considered (under NMFS guidelines) to be small businesses. The action under Alternative 2 would impact the entire GOA commercial fishing fleet. In 1996, the most recent year for which vessel participation data is available, 1,508 vessels participated in the groundfish fisheries of the GOA; 1,254 longline vessels, 148 pot vessels, and 202 trawl vessels. The commercial pollock catch in the GOA totaled 51 thousand mt (round weight) in 1996, with an exvessel value of $10.3 million. The Pacific cod catch in the GOA totaled 68 thousand mt (round weight) in 1996, with an exvessel value of $25.2 million. Catch and value by sector are listed in Table 2.23

Table 2.23 Catch (in 000's) and exvessel value of 1996 GOA pollock and Pacific cod fishery by sector.

	At-sea		Inshore		Total	
	mt	$M	mt	$M	mt	$M
Pollock	3	.2	49	10.2	51	10.3
Pacific cod	13	4.9	55	20.3	68	25.2

Alternative 2 will positively impact a majority of small entities. Most of the businesses involved in the support service industry (e.g., equipment, supplies, fuel, groceries, entertainment, transportation) are considered to be small businesses (basically, a small business is any business with an annual gross revenue of not more than $2 million; 13 CFR part 121). Alternative 2 could benefit small harvesting and processing operations associated with the one component and, conversely, negatively impact small operations associated with the other component. The magnitudes of the impacts are related to the sizes of the allocations and the size of the operations. The support industry benefits directly from the economic activity in both the inshore and offshore sector. Probably, the loss in revenue associated with one component will be offset by gains obtained from the other. Given other fishing activities of C/Ps (in the BS/AI), their continued exclusion from the GOA fisheries is not expected to significantly (negatively) impact their operations. Since positive impacts are not deemed to have a "significant" impact on small entities, the Council's actionwith respect to the GOA is not expected to have significant impacts relative to the RFA. However, because there will be a single rulemaking for the GOA and BSAI combined, and because the proposed action may have significant impacts relative to operators in the BSAI (see Section 8.4 of this document), the overall effect is a finding of significance relative to the combined IRFA.

The reporting, record keeping, and other compliance requirements are specified in the regulations implementing Amendment 40 of the GOA FMP in 50 CFR Part 679.5, Subpart A. In summary, for the inshore/offshore issue, the owners of processing vessels must declare on their applications for Federal permits whether they are part of the inshore component or offshore component.

2.5 The Council's Preferred Alternative for the GOA

The Council selected the option which rolls over the current inshore/offshore allocation in the GOA. As discussed earlier, this option should provide the most stabile operating environment for harvesters and processors in the GOA. It will allow the pollock and Pacific cod fisheries to be prosecuted as they have for the past six years, with 100% of the pollock and 90% of the Pacific cod allocated to the inshore sector. The allocation is for three calendar years (1999, 2000, and 2001). If the Council does not take further action, the I/O3 allocation will expire on December 31, 2001, and there will be no allocation between the inshore and offshore sectors after that date.

2.6 Acknowledgments

Portions of Section 2 were adapted from:

Hollowed, A.B., E. Brown, J. Ianelli, P. Livingston, B. Megrey, and C. Wilson. 1997. Walleye pollock. *in* Stock assessment and fishery evaluation report for groundfish resources in the Gulf of Alaska Region as projected for 1998. North Pacific Fishery Management Council. 605 W. 4th Ave., Suite 306, Anchorage, AK.

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3.0 BASE CASE - CURRENT STATUS OF THE BS/AI FISHERIES

This chapter summarizes the current status of the BS/AI pollock fisheries, primarily based on the 1996 fisheries, the last year for which there are complete data. This information was presented initially in September 1997, for 1991, 1994, and 1996 - that detail is contained in Appendix I. That information was reviewed again by the Council in February 1998 and additional detail has been added where necessary based on Council direction at that meeting. Consistent with the SSC direction in September and December 1997, the analysts have attempted to illuminate the various issues which have been raised and provide an accurate characterization of the fisheries. Information in this chapter will be used as the baseline against which to compare the alternatives that were under consideration.

3.1 Pollock Biomass and TAC Projections

Throughout the now more than 31-year history of pollock fishing in the eastern Bering Sea the catch has been reasonably steady, averaging 1.1 million metric tons (mmt), and has ranged from a minimum of 0.2 mmt in 1964 to a maximum of 1.9 mmt in 1972. Since the advent of the U.S. EEZ in 1977, the average eastern Bering Sea pollock catch has been 1.2 mmt and has ranged from 0.9 mmt in 1987 to 1.6 mmt in 1991. The stability of the eastern Bering Sea pollock stock is remarkable, in light of trends in most Asian pollock stocks and North Atlantic gadoid stocks which have collapsed or strongly fluctuated in catch and abundance.

Pollock catches have been near, or in excess of, 1 mmt since 1970, while stock biomass has ranged from 4-5 mmt to 12-14 mmt. The Stock Assessment and Fishery Evaluation (SAFE) document for the 1996 fishing year concluded that, "It appears that eastern Bering Sea pollock catches in the range of recent years are sustainable and well within the productive capacity of the stock and stock fluctuations observed over the history of the fishery."

When the base year 1996 BS/AI SAFE document was prepared the biomass of eastern Bering Sea pollock exceeded six million tons. Historically, eastern Bering Sea pollock ABC has been set at the $F_{0.1}$ level of fishing, derived from the yield per recruit model with knife-edge recruitment at age 3. For 1996, pollock ABC was set equal to TAC for the Eastern Bering Sea and Aleutians. These were, respectively, 1.19 mmt, and 35,600 mt.

For 1998, the BS/AI Groundfish Plan Team reported to the Council in December 1997 on the condition and potential of the Eastern Bering Sea pollock resource for the 1998 fishing year (BS/AI Groundfish SAFE document, 1998). Based on the Plan Team and SSC recommendations, the Council recommended the following pollock catch specifications for 1998 (mt) in Table 3.1:

Table 3.1 Pollock catch specification for 1998 (mt).

AREA	BIOMASS	OFL	ABC	TAC
EBS	**5,820,000**	**2,080,000**	**1,110,000**	**1,110,000**
A-season				**45%**
B-season				**55%**
Aleutians	**106,000**	**31,700**	**23,800**	**23,800**
Bogoslof	**280,000**	**8,750**	**8,410**	**1,000**

Scientists at the Alaska Fisheries Science Center monitor the status of pollock stocks and project probable resource abundance. These extrapolations are based upon a cohort analysis model, tuned to resource surveys, performed periodically by the Center's RACE Division. The latest BS/AI projections are in Table 3.2:

Table 3.2 Projections of BS/AI Biomass and Catch, 1997-2004.

Year	Spawners (million)	Total Biomass (mmt)	Catch (mmt)	R	F	Exploit.	Total Number (million)
1997	**7.671**	**6.408**	**1.129**	**0.67**	**0.24**	**0.18**	**9.150**
1998	**8.246**	**6.016**	**1.150**	**5.05**	**0.30**	**0.19**	**10.564**
1999	**7.200**	**6.575**	**1.046**	**7.48**	**0.30**	**0.16**	**13.824**
2000	**8.725**	**7.492**	**1.109**	**7.97**	**0.30**	**0.15**	**16.463**
2001	**9.916**	**8.224**	**1.255**	**7.80**	**0.30**	**0.15**	**17.863**
2002	**10.708**	**8.820**	**1.392**	**8.08**	**0.30**	**0.16**	**18.918**
2003	**11.089**	**9.099**	**1.485**	**7.63**	**0.30**	**0.16**	**19.066**
2004	**11.075**	**9.094**	**1.521**	**7.13**	**0.30**	**0.17**	**18.623**

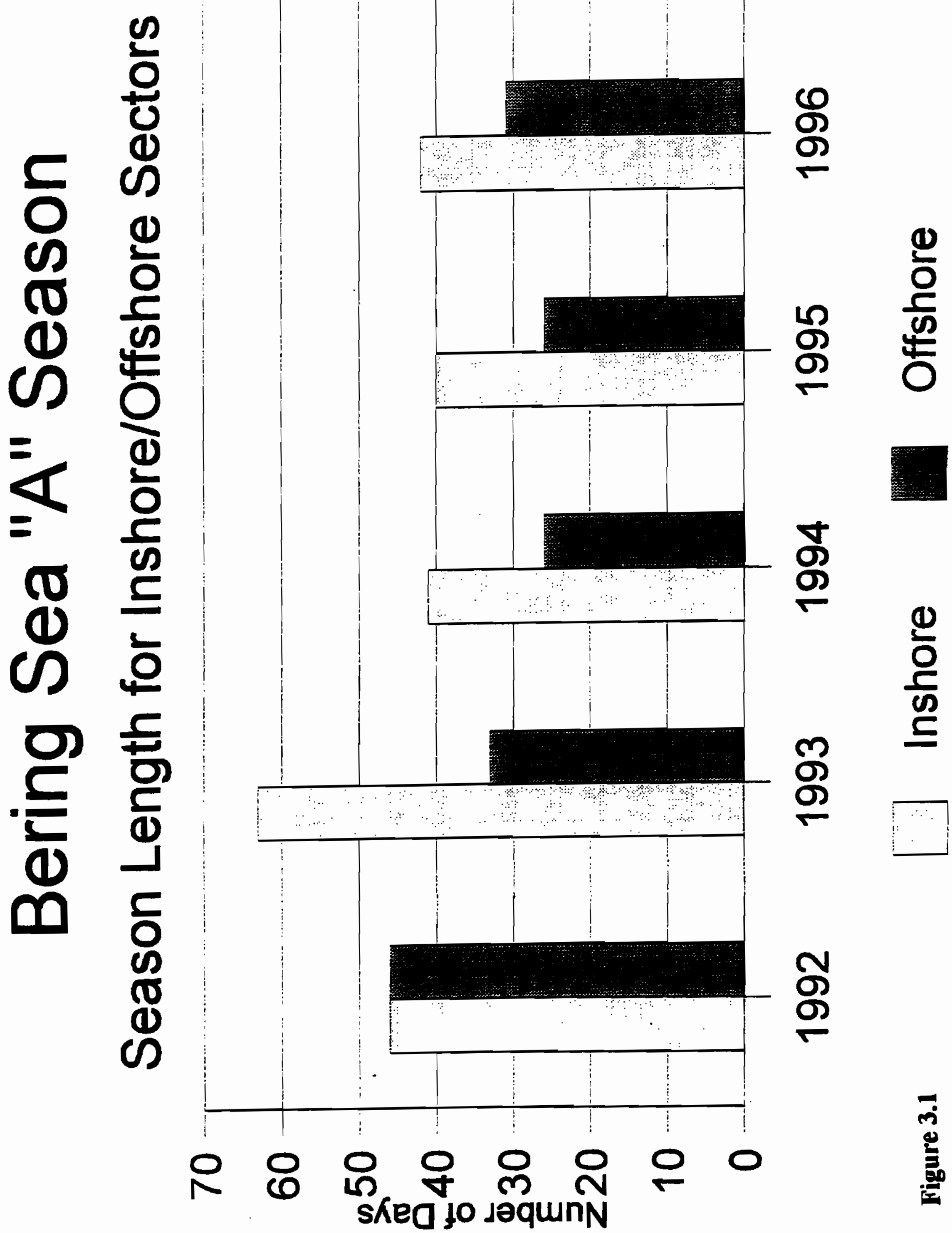
Source: Status of Stocks Document, AFSC, December 1997.

These projections have implications for the analysis. For 1999-2000, the TAC level is very near (though slightly below) current levels, and through 2001 the average TAC level is almost exactly at the current level (1.136 mmt per year). This simplifies the analysis in that there is no need to project impacts across any range of TAC levels, or into the future where TAC levels are expected to increase back to levels experienced in the early 1990s. If we were making formal net benefit projections, we would likely feel more compelled to make such long-term projections to capture the summary impact of the allocation alternatives being considered.

Gross revenue and other impact projections will be based on a 'snapshot' approach; i.e., the expected impacts relative to the status quo allocations for year one of an alternative allocation. Such impacts could be assumed to be additive over the life of the allocation chosen, though that is likely an over- simplification due to uncertainty over fish prices, product mix, markets, and a variety of other variables in the fisheries.

3.2 Pollock Seasons

The progression of season length for the BS/AI pollock fisheries is illustrated in figures 3.1 - 3.6 and tables 3.3 - 3.5. They show the length of season (number of days) for each sector, for both A and B pollock seasons and for the combined seasons from 1991 through 1997. The offshore A-season typically is shorter than the inshore A-season, despite having a larger allocation, and the ratio has remained fairly constant over the past few years. The B-seasons do not exhibit the same disparity between sectors, except for 1997 when the offshore season was 70% as long as the inshore B-season. Undoubtedly these differences are due to a variety of factors, including the higher catching power of the offshore catcher/processors and a more spread out delivery pattern for the inshore plants, as well as differences in processing patterns for the two sectors. Changes in the allocations between sectors will likely change season lengths - less allocation to a sector resulting in reduced season length.



Bering Sea "A" Season
Season Length for Inshore/Offshore Sectors
Number of Days
70
60
50
40
30
20
10
0
1992
1993
1994
1995
1996
1997
Inshore
Offshore

Figure 3.1

Bering Sea "B" Season

Season Length for Inshore/Offshore Sectors

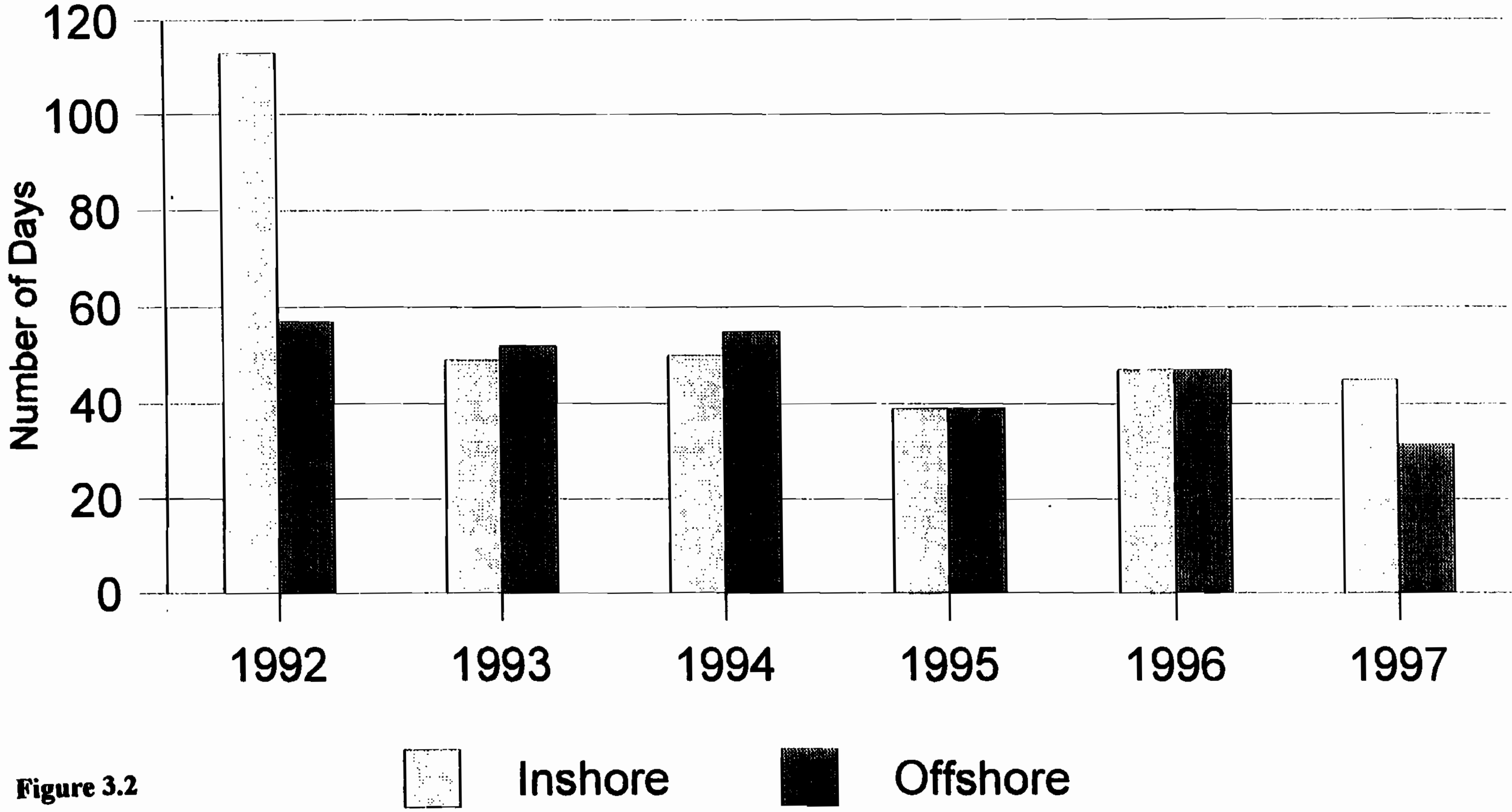


Figure 3.2

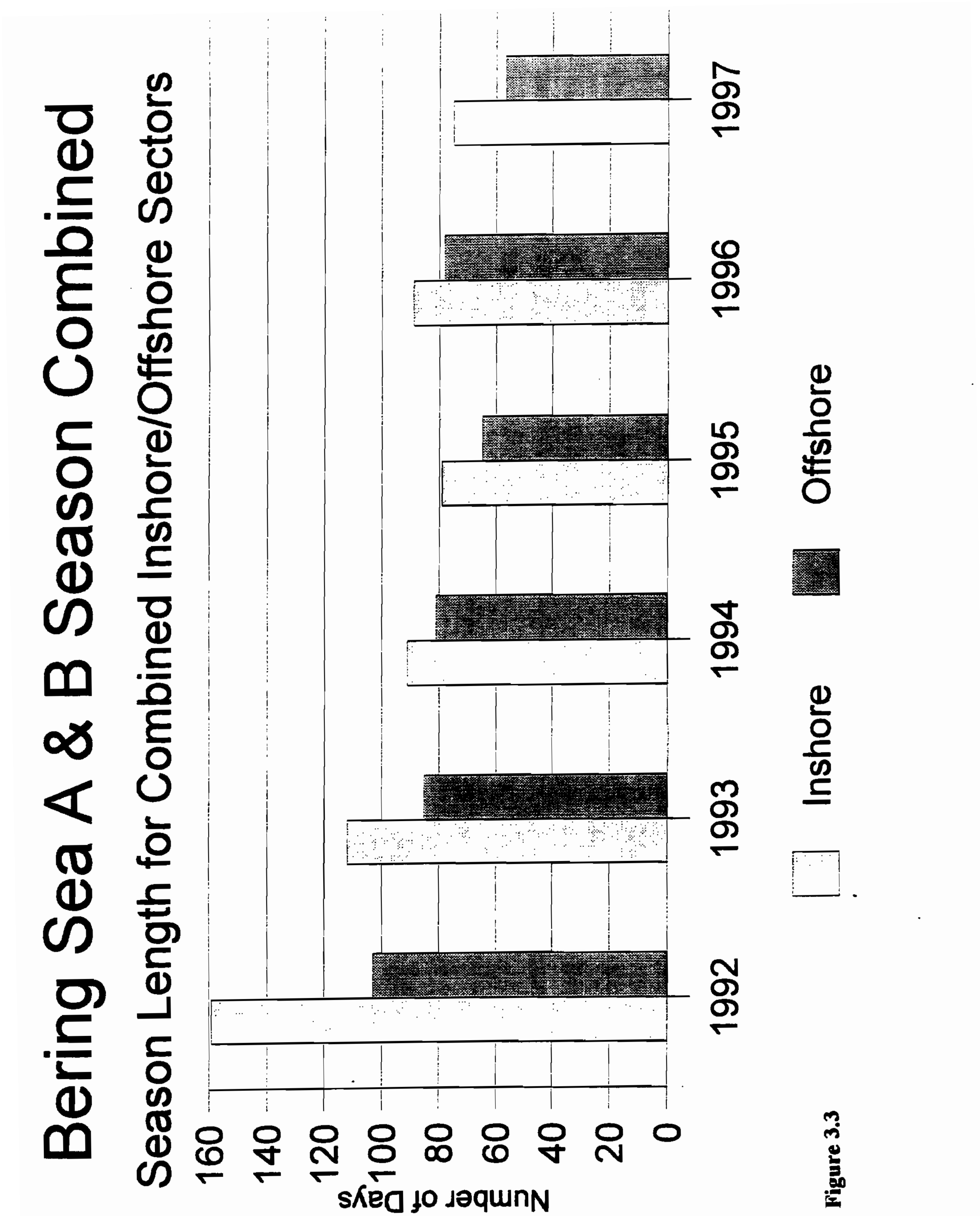
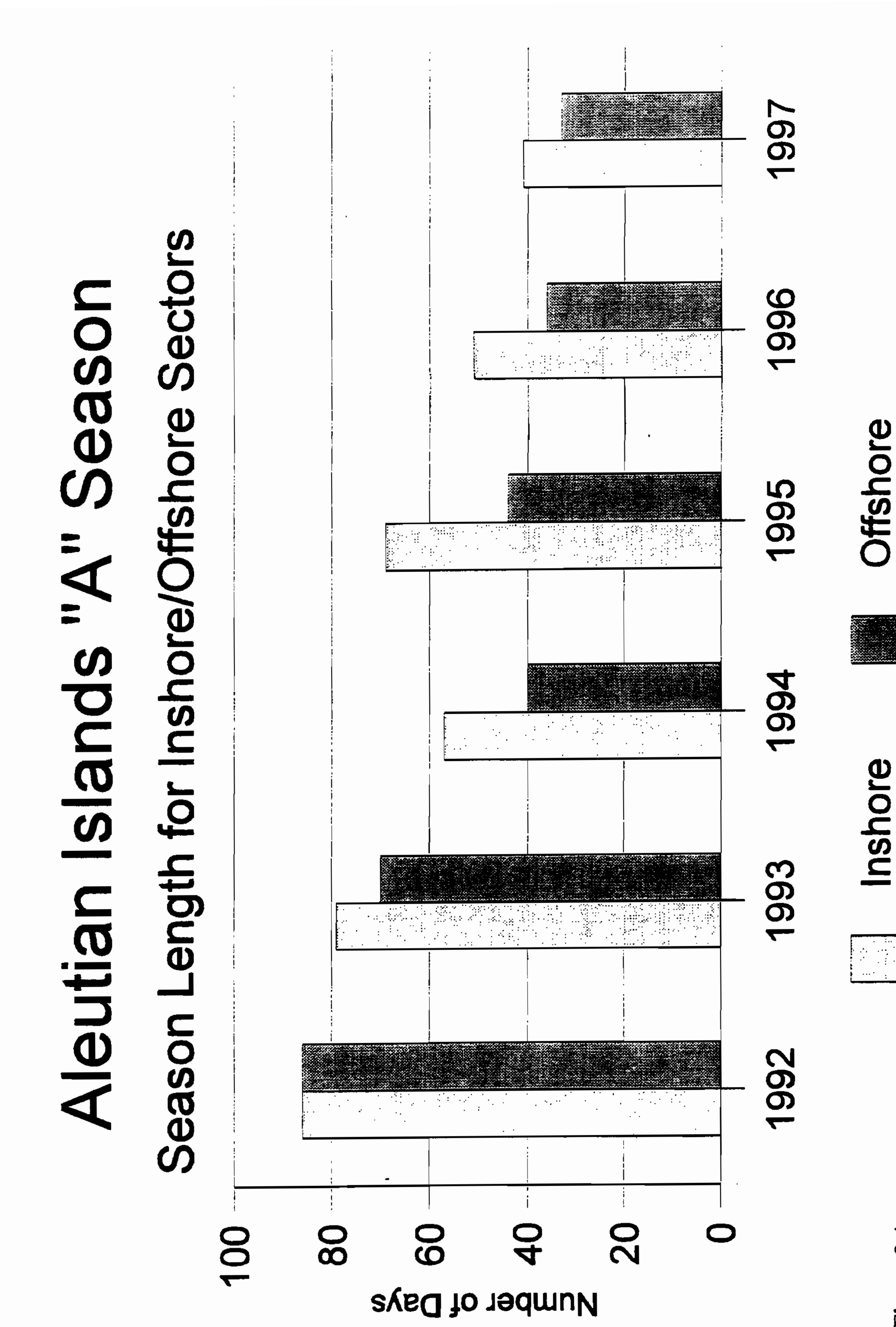

Bering Sea A & B Season Combined
Season Length for Combined Inshore/Offshore Sectors
Number of Days
160
140
120
100
80
60
40
20
0
1992
1993
1994
1995
1996
1997
Inshore
Offshore

Figure 3.3



Aleutian Islands "A" Season
Season Length for Inshore/Offshore Sectors
Number of Days
100
80
60
40
20
0
1992
1993
1994
1995
1996
1997
Inshore
Offshore

Figure 3.4

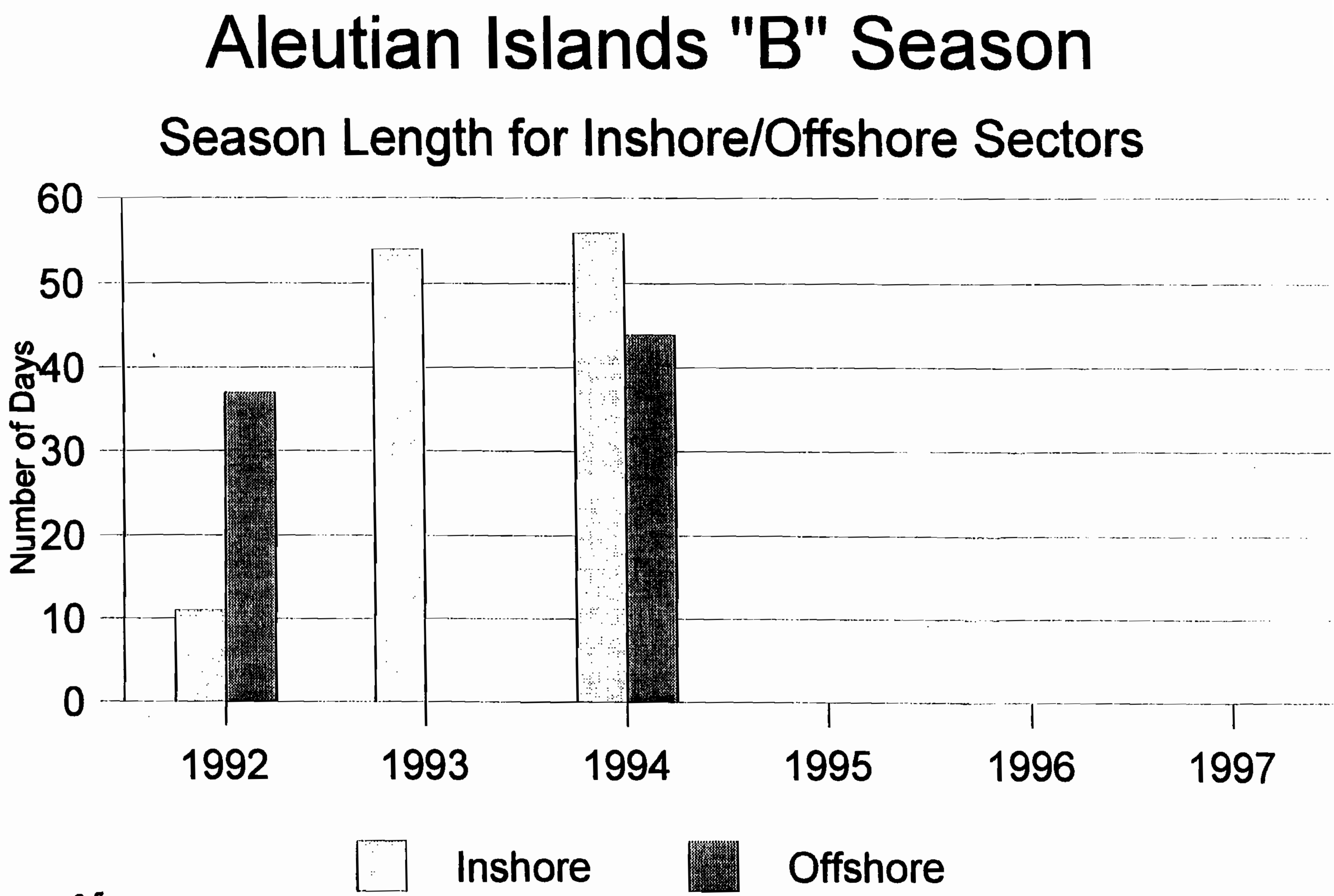

Aleutian Islands "B" Season
Season Length for Inshore/Offshore Sectors
Number of Days
60
50
40
30
20
10
0
1992
1993
1994
1995
1996
1997
Inshore
Offshore

Figure 3.5

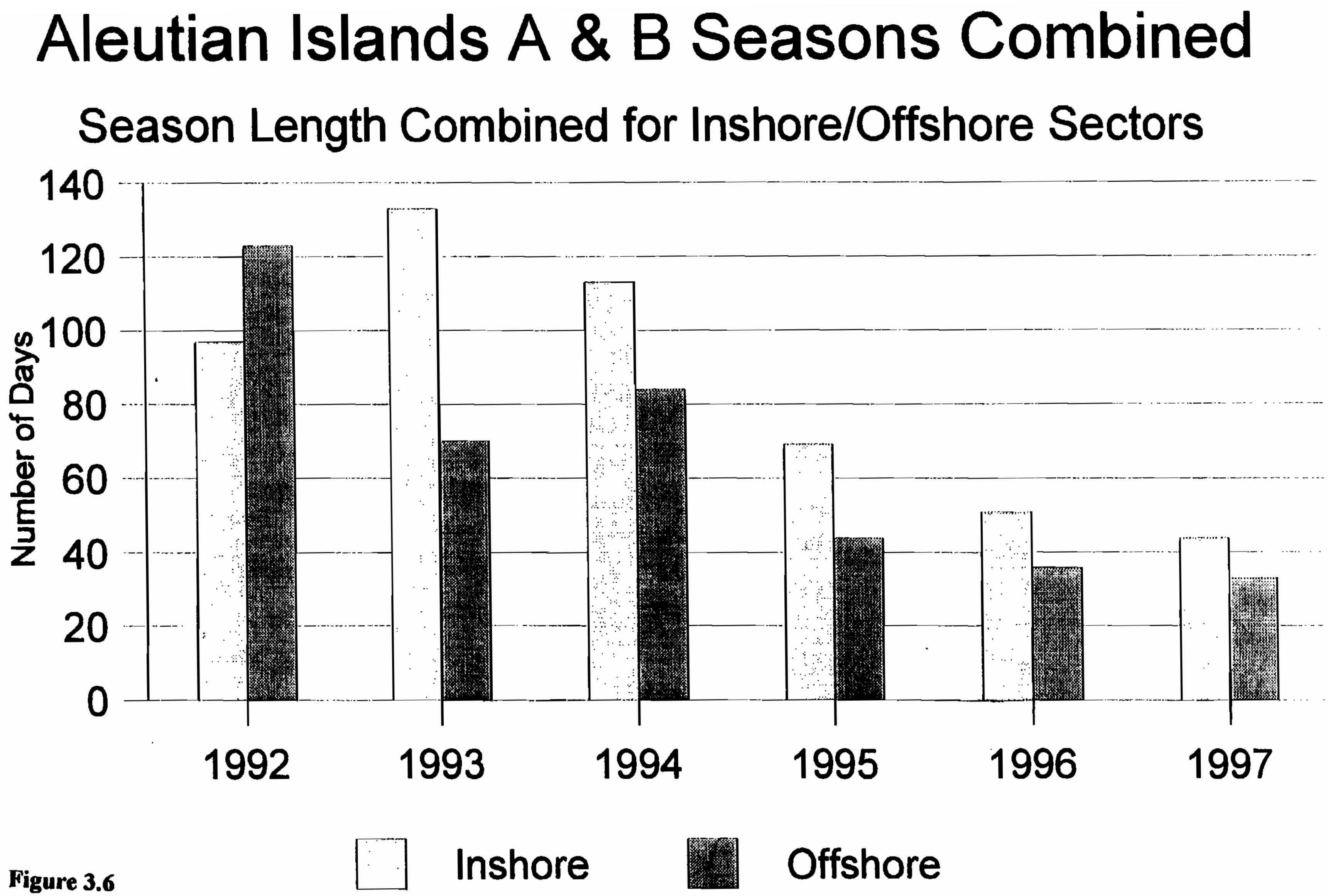


Figure 3.6

NOTE: In 1993, there was no B season for the offshore sector.
For 1995, 1996, 1997 there was no B season for either the inshore or offshore sectors.

Table 3.3 Length of Bering Sea "A" season for the inshore and offshore sectors, 1992 - 1997.

	1992	1993	1994	1995	1996	1997
Inshore	46	63	41	40	42	30
Offshore	46	33	29	26	31	25
Difference (days)	0	(30)	(12)	(14)	(11)	(5)
Relative Difference (%)	0%	52%	71%	65%	42%	83%

Table 3.4 Length of Bering Sea "B" season for the inshore and offshore sectors, 1992 - 1997.

	1992	1993	1994	1995	1996	1997
Inshore	113	49	50	39	47	45
Offshore	57	52	55	39	47	31.5
Difference (days)	(56)	3	5	0	0	(13.5)
Relative Difference (%)	50%	106%	110%	100%	100%	70%

Table 3.5 Length of combined Bering Sea "A" and "B" seasons for the inshore and offshore sectors, 1992 - 1997.

	1992	1993	1994	1995	1996	1997
Inshore	159	112	91	79	89	75
Offshore	103	71	69	62	78	56.5
Difference (days)	(56)	(41)	(22)	(17)	(11)	(18.5)
Relative Difference (%)	65%	63%	76%	78%	88%	72%

Notes:
* Relative difference means how long the offshore sector fished compared to the inshore sector.
**1992 A-season not split between inshore and offshore sectors.

3.3 Catch and Production Estimates

The most recent year for which 'complete' catch and production data are available is 1996. If 1996 data are incomplete/inadequate (e.g., prices), then they are supplemented with data from earlier years. In general, the sector profiles presented to the Council in September are expected to provide the necessary historical context to evaluate the base year case. To the extent that consistent/comparable data are not available, results derived and conclusions drawn will necessarily be subject to wide (although largely unmeasurable) confidence-intervals, and will be so noted in the analysis. Catch estimates employed in the I/O3 analysis derive from one of two primary data bases, either Alaska Department of Fish and Game's fish ticket files, or NMFS' blend catch data files.

ADF&G Fish Tickets: Alaska statutes require that a fish ticket be prepared and submitted to the State for each and every exvessel commercial landing of catch made within State waters. Fish tickets contain (among other entries) information on the species landed, the weight of the catch, gear-type employed, location of catch and landing, vessel identity and identity of purchaser, date of landing, and (in some cases) value information. Fish tickets are the official record of catch for those commercial operations to processors operating in state waters. Some offshore operators voluntarily submit fish ticket data to the State of Alaska, as well, but these data are incomplete and therefore will not be employed as catch estimates for this sector.

NMFS Blend Catch Data: In the case of NMFS blend files, catch estimates are compiled from two separate sources, using a strict decision algorithm: Total groundfish catch for all species combined is computed each week for each processor vessel from Weekly Production Reports (WPR) [submitted to NMFS by the operator] and from NMFS-certified observer reports. If either of these reports is missing for a given operation in a given week, the report which is present is selected as the catch record. If both reports are present, the blend compares the two numbers. If the WPR and observer total catch numbers are within 5% of one another, the WPR estimate is selected as the source. If, for pollock target fisheries[6], the WPR is more than 30% higher than the NMFS observer total catch estimate, the WPR is selected as the source. In all other cases, the observer catch estimate report is selected as the source. The blend program then returns to the source data (WPR or NMFS-observer) and copies the detailed record, including gear-type, area, and species. Blend records carry an identifier which indicates which source was used to compile the individual observation.

On the basis of these data sources (utilizing the 1996 base-year and including CDQ harvests), the estimated groundfish catch in BS/AI pollock-target fisheries, by principal I/O3 sector, is listed below in Table 3.6 below:

Processing Category	Pollock (mt)	Total Groundfish (mt)
Inshore (surimi)	**319,307**	**325,362**
Inshore (non-surimi)	**76,032**	**78,032**
"True" Mothership	**121,959**	**124,724**
Catcher/Processor (surimi)	**432,308**	**441,594**
Catcher/Processor (non-surimi)	**213,756**	**222,649**

The original Inshore/offshore Amendment to the BS/AI Groundfish FMP established an apportionment regime which allocated 65% of the pollock TAC to the offshore sector, with the remaining 35% set aside for the inshore sector. In the last full year of the fishery preceding I/O1 (i.e., 1991), the offshore sector actually accounted for more than 74% of the pollock harvest in these areas, with the inshore sector reporting catches of just under 26% of the total. The offshore catch was divided between catcher/processors (accounting for 65% of the total BS/AI

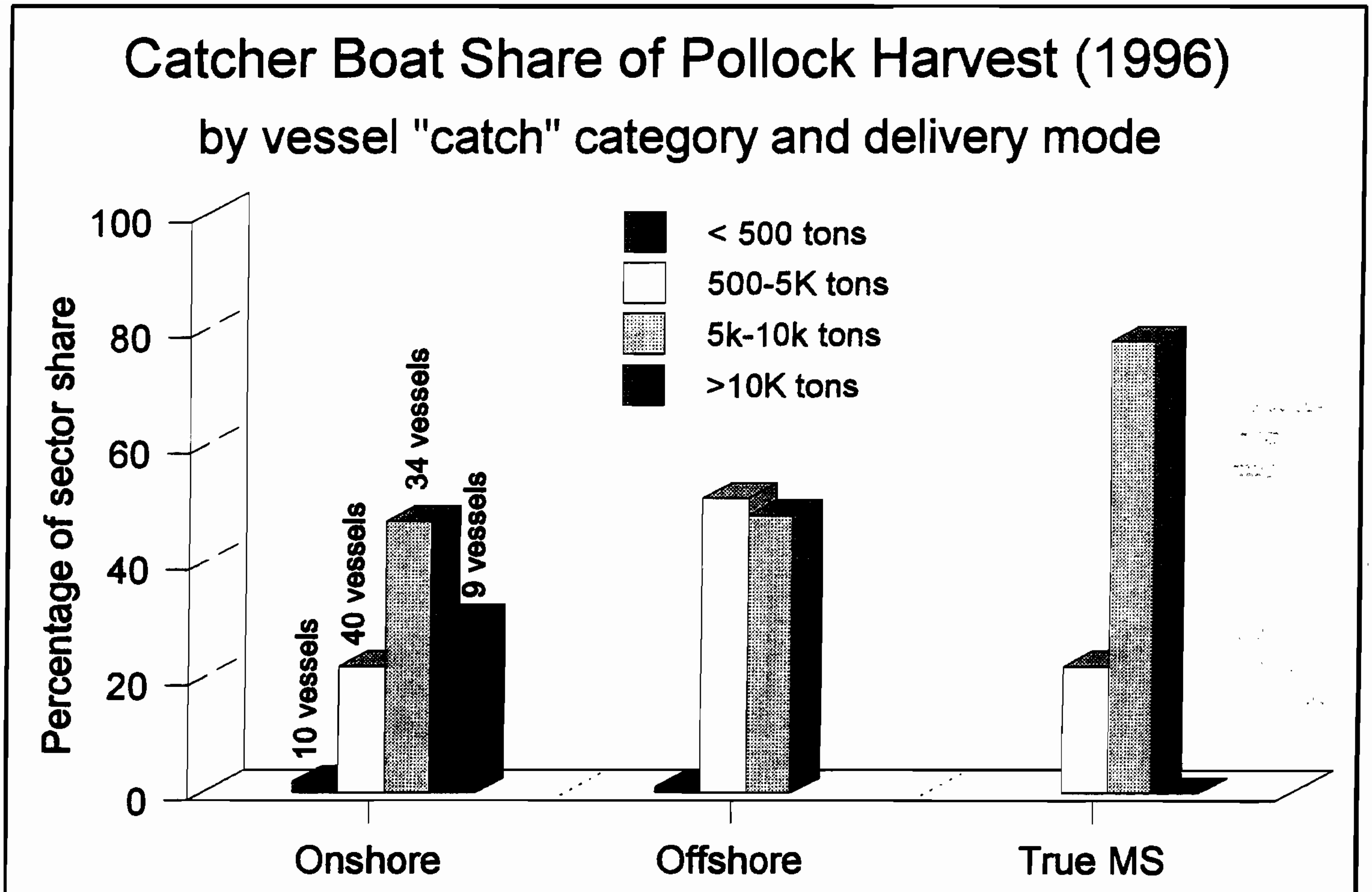
[6] Or more than 20% higher for all other targets.

target pollock harvest, or more than 87.5% of the offshore share) and "true" motherships (accounting for just over 9% of the total, or approximately 12.5% of the offshore target catch).

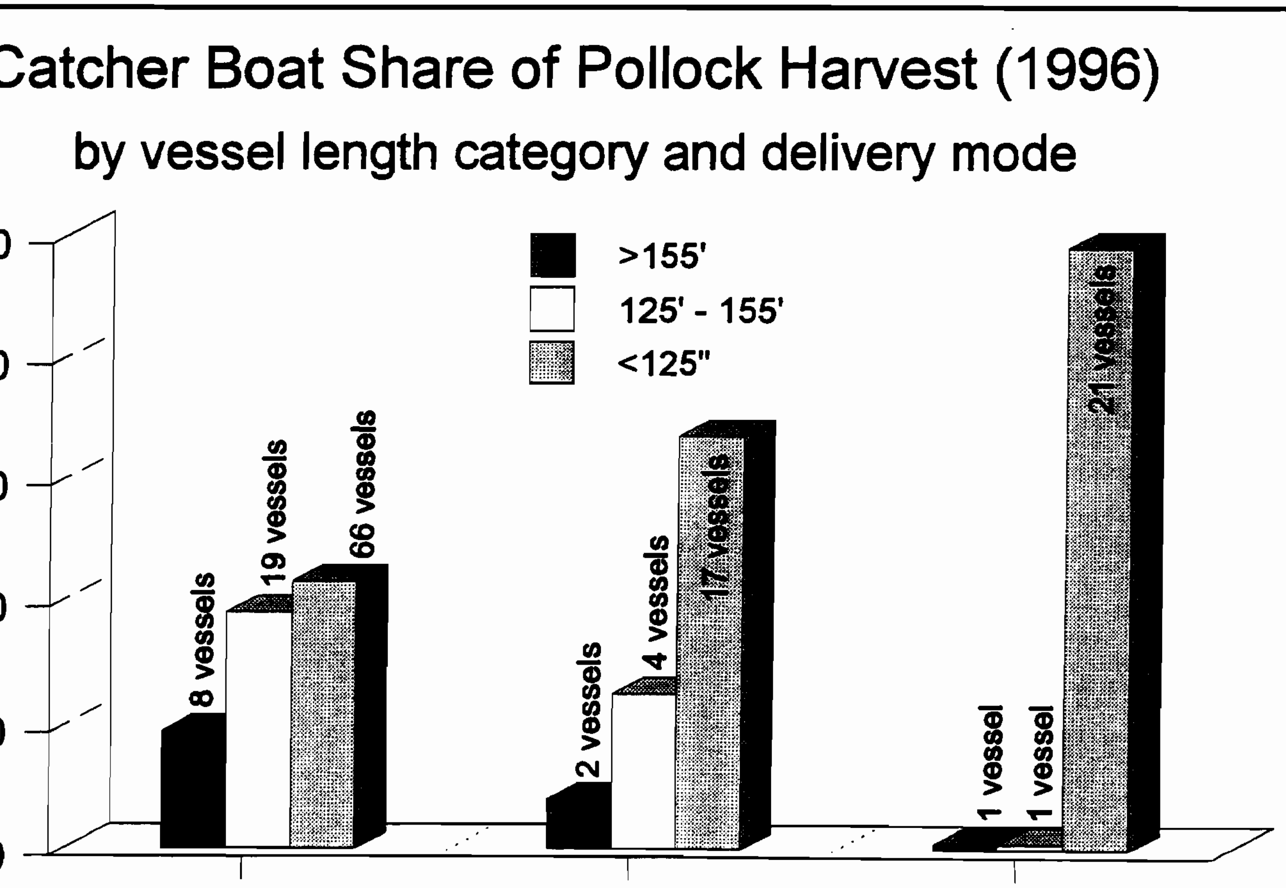
By 1996, I/O had apparently largely accomplished it's original objective, at least with respect to reapportioning the BS/AI pollock target catch (i.e., 35%/65% between the inshore and offshore segments of the industry). Catch records in 1996 indicate that the inshore catch represented 34% of the total target landings of pollock in these areas, while the offshore sector accounted for 66% of the total. Within the offshore sector, catcher/processors accounted for 55.5% of the total BS/AI target pollock catch, with the remaining 10.5% accruing to "true" mothership operations.

It is important to note that these respective percentage shares, by sector, were shares of significantly different total catch amounts. That is, the total reported target pollock catch in 1991 for the BS/AI management area was 1,541,660 mt. In 1996, this total was reportedly 1,163,660 mt, nearly a 25% decline in total target catch for all sectors combined. This means that, for example, while the inshore sector share of the total *increased* as a percentage from 26% to 34%, between 1991 and 1996, the actual tonnage was virtually *unchanged* (i.e., 395,400 mt in 1991; 395,600 mt in 1996). In the offshore sector, the "true" mothership share as a percent of total target catch *increased*, from just over 9.0% to 10.5%, but the sub-sector's actual pollock catch tonnage *declined* (i.e., 142,900 mt in 1991; 121,900 mt in 1996). And for the catcher/processor (offshore) sub-sector, the difference was most dramatic. While this segment of the industry recorded approximately a 9.5% reduction in its recorded share of the total BS/AI target pollock catch from 1991 to 1996, the sub-sector's actual pollock tonnage *declined* by more than 35.5% (i.e., 1,003,300 mt in 1991; 646,100 mt in 1996).

More detailed information on catch distribution is contained in Appendix 1 - for example, distribution of catch among different vessel sizes within each category, and how that has changed over time. In February 1997 the Council specifically requested further detail on catcher vessel harvest by delivery mode, vessel length, and catch levels. That is presented below in Figure 3.7



Catcher Boat Share of Pollock Harvest (1996)
by vessel "catch" category and delivery mode
Percentage of sector share
100
80
60
40
20
0
< 500 tons
500-5K tons
5k-10k tons
>10K tons
10 vessels
40 vessels
34 vessels
9 vessels
Onshore
Offshore
True MS



Catcher Boat Share of Pollock Harvest (1996)
by vessel length category and delivery mode
Percentage of sector share
100
80
60
40
20
0
>155'
125' - 155'
<125"
8 vessels
19 vessels
66 vessels
2 vessels
4 vessels
17 vessels
1 vessel
1 vessel
21 vessels
Onshore
Offshore
True MS

Figure 3.7

3.4 NMFS Management and Catch Accounting Considerations

The way in which NMFS manages and accounts for the specific I/O allocations of pollock may hold implications for some of the alternatives (and suboptions) being considered. These involve the assignment of quota based on target vs total catch, and the implications of some of the current sub-alternatives from the management perspective. These include the potential separation of "true" motherships to their own category, the set aside for catcher vessels delivering offshore, and the set aside for smaller size catcher vessels within the inshore delivery sector. These do not necessarily affect projected analytical outcomes, but may be useful to the Council's consideration of alternatives. Rather than detail those issues in this section, they are incorporated in the relevant section of the analysis, primarily in Chapter 4. Also included in these discussions are legal ramifications of some of the suboptions; for example, the creation of a "true" mothership category which excludes future entry by operations not currently included in this category. A discussion of how target (vs bycatch amounts) pollock is accounted for by NMFS is provided below.

3.4.1 Accounting for Target and Non-Target Bycatch of Pollock in the BS/AI

During the course of fishing for groundfish in the BS/AI, vessels in all target fisheries incidentally catch pollock, in addition to the vessels targeting on pollock with pelagic and bottom trawl gear. Vessels directly fishing for yellowfin sole and Pacific cod encounter the highest incidental catch of pollock; vessels directly fishing for rock sole, flathead sole, other flatfish, Atka mackerel, and rockfish have lesser bycatches of pollock.

Table 3.7 Pollock catches and bycatches in various fisheries in 1996 (all in mt).

Target Fishery	Inshore	Offshore	Total
Pelagic pollock	382,925	686,195	1,069,120
Bottom pollock	12,617	81,358	93,975
Yellowfin sole	1,875	20,380	22,254
Pacific cod	14,599	7,821	22,419
Rock sole	725	6,974	7,698
Flathead sole	432	3,651	4,083
Other Flatfish	424	915	1,339
Atka mackerel	0	508	508
Rockfish	0	303	303
Turbot	7	25	32
Arrowtooth	0	3	3
Sablefish	1	3	4
No retained target	28	572	600
TOTAL	413,631	808,709	1,222,339

In managing the inshore and offshore pollock TACs in the BS/AI and GOA, NMFS must monitor and account for pollock removals in all target fisheries, not just those for pollock. Consequently, all reported catch of pollock in the BS/AI and GOA, regardless of target fishery, is attributed to either the inshore or offshore component depending upon whether the processor is in the inshore or offshore component. In other words, all processors are tagged with an inshore or offshore component tag, regardless of whether or not they actually process pollock harvested in the directed fishery for pollock.

3.5 Product Recovery Rates (PRRs) and Utilization Rates

Groundfish Product Recovery Rates (PRRs) have been a source of contention within the BS/AI and GOA fisheries management context, (see, for example, the discussion of PRRs in the BS/AI and GOA Improved Retention/Improved Utilization (IR/IU) FMP amendments). PRRs are relevant to inshore/offshore in two ways: (1) to estimate overall catch, and (2) as intrinsic factors in the estimates of overall utilization rates. In the discussions below, the shortcomings of PRRs are noted clearly, based on previous experience in analyzing fishery management proposals.

PRRs as a basis for catch estimates

PRRs are used by NMFS in the 'blend system' to estimate overall catch in the groundfish fisheries. NMFS Alaska Regional Office publishes a list of Standard Product Recovery Rates, by product form, which are used in this study in combination with sector-specific TAC allocation alternatives to project expected product output, based upon historic product-mix patterns.

PRRs are surrounded by controversy and considerable uncertainty in their estimation. Changes to the assumed, standard PRRs would result in some changes to estimates of overall catch by sector. The most recent discussion of the use of PRRs was in the IR/IU analysis. In the final analysis of that amendment to the BS/AI groundfish plan, dated May 21, 1997, Section 4.2.3 discussed the use of PRRs in monitoring and compliance. It noted that PRRs can vary, not only between operations, but within any single operation, over the course of the season. Such factors as the size and condition of the fish, seasonality, efficiency/performance of processing equipment, and market demands (affecting product form/quality/mix), may all influence the actual realized recovery rates for any given operation. Any operation, at any time, may obtain an actual PRR which significantly differs from the published standard.

Nevertheless, NMFS has developed standardized PRRs for use in tracking aggregate fleet performance and overall catch. NMFS uses these standards also for performing calculations for directed fishing and other formulas. The standard PRRs are approximations of the average product recovery rate performance observable in the fleet over a given interval of time, e.g., a fishing year, or season opening.

The IR/IU approach is used in this analysis. It acknowledges that PRRs are variable and uncertain, but uses the same "Official NMFS Product Recovery Rates" as the basis for judging utilization (by way of overall catch) as discussed further below. It is beyond the scope of the current analysis to derive separate PRRs or question the harvest estimates provided by NMFS on the basis of PRRs. It should also be noted that PRRs may change significantly over the next few years as new product forms are developed in response to new requirements to retain and utilize all pollock and Pacific cod.

In the original inshore/offshore analysis PRRs were a major variable of contention. At that time overall catch estimates were derived primarily from application of PRRs to the production reports, for both sectors involved. It was also possible to input a variety of PRRs (as well as prices, costs, and other variables) into the Monte Carlo simulation models to obtain probability distributions of expected net benefits. The current analysis does not employ that modeling technique. Nor should PRRs be as contentious this time around, since underlying catch estimates are not nearly so dependent upon PRRs as they were in 1991. Further, to the extent that actual PRRs differ from the published standards, such differences would essentially be captured in the overall utilization rate comparisons.

Overall Utilization Rates

The second important aspect of PRRs is associated with the treatment of *relative* 'utilization' rates, per unit of raw pollock input. Specifically, in order to address the Council's request for relative sectoral-performance indices, pollock catch estimates are compared to reported product output quantities to derive a crude measure of utilization by sector. The resulting analytical output expresses the effective aggregate 'Utilization Rate' for each operational sector.[7]

In Table 3.8 listed below are the analytical base-year (1996), these relative utilization estimates, by sector-category:

Table 3.8 1996 Catch, Production and Utilization Rates.

Processing Category	Pollock Catch(mt)*	Product (mt)*	'Effective' Gross PRR
Inshore (surimi)	**319,307**	**110,928**	**34.74%**
Inshore (non-surimi)	**76,032**	**20,513**	**26.98%**
"True" Mothership	**121,959**	**30,391**	**24.90%**
Catcher/Processor (surimi)	**432,308**	**90,750**	**21.01%**
Catcher/Processor (non-surimi)	**213,756**	**42,349**	**19.81%**

*Includes CDQ catch and production, because production cannot be broken out for Inshore deliveries.

When we examine the overall utilization rate based only on selected products (excluding meal production basically), the effective rates fall for all sectors, though the reduction is slightly more for the inshore sector overall, due to a higher proportion of overall meal production. To illustrate the change in overall utilization over time, Table 3.9 below provides similar information for 1996, 1994, and 1991.

Table 3.9 Production and Total Catch of Target Pollock in the Bering Sea and Aleutian Islands in 1991, 1994, and 1996.

1996		Total Catch	Total Product	Limited Products*
Fillet Catcher Processor	Tons Product/Total Catch (PRR)	213,756	42,349 19.81%	42,349 19.81%
Surimi Catcher Processor	Tons Product/Total Catch (PRR)	432,308	90,750 21.01%	78,438 18.14%
"True" Mothership	Tons Product/Total Catch (PRR)	121,959	30,391 24.90%	25,375 20.81%
Inshore	Tons Product/Total Catch (PRR)	395,339	131,441 33.25%	103,577 26.20%
BS/AI Total	Tons Product/Total Catch (PRR)	1,163,362	294,931 25.35%	249,739 18.65%

[7] Weekly Production Reports (WPR) are the sole source of product data for these fisheries. Because WPRs are compiled and submitted by the operator, these data are effectively 'self-reported' (i.e., there is no independent source of verification).

Table 3.9 (continued) Production and Total Catch of Target Pollock in the Bering Sea and Aleutian Islands in 1991, 1994, and 1996.				
1994		Total Catch	Total Product	Limited Products*
Fillet Catcher Processor	Tons Product/Total Catch (PRR)	233,005	44,011 18.89%	41,231 17.70%
Surimi Catcher Processor	Tons Product/Total Catch (PRR)	535,669	103,571 19.33%	88,150 16.46%
"True" Mothership	Tons Product/Total Catch (PRR)	113,077	24,864 21.99%	19,480 17.23%
Inshore	Tons Product/Total Catch (PRR)	423,912	128,547 30.32%	94,676 22.33%
BS/AI Total	Tons Product/Total Catch (PRR)	1,305,663	300,993 23.05%	243,537 18.65%

Table 3.9 (continued) Production and Total Catch of Target Pollock in the Bering Sea and Aleutian Islands in 1991, 1994, and 1996.				
1991		Total Catch	Total Product	Limited Products*
Fillet Catcher Processor	Tons Product/Total Catch (PRR)	265,249	43,598 16.44%	35,032 13.21%
Surimi Catcher Processor	Tons Product/Total Catch (PRR)	738,069	129,846 17.59%	110,839 15.02%
"True" Mothership	Tons Product/Total Catch (PRR)	142,956	26,606 18.61%	19,899 13.92%
Inshore	Tons Product/Total Catch (PRR)	395,421	90,525 22.89%	57,982 14.66%
BS/AI Total	Tons Product/Total Catch (PRR)	1,541,695	300,355 19.48%	231,491 15.02%

*Limited Products include surimi, minced, fillet, oil, and roe products.

Concerns about interpreting comparative 'utilization' rates, among the several elements of the domestic pollock target fishing industry of the BS/AI, have been cited above in reference to basic PRRs. Utilization rates are not directly monitored and reported by independent observers. Therefore, the performance data which can be derived are subject to interpretation. While utilization is an important topic of concern within the Council's I/O3 debate, the ability of the analysts to address this topic in a rigorous empirical way is quite limited. It is assumed that the issue of overall utilization (how much total product is produced per ton of raw pollock input) raised in Council discussions, and highlighted in the Council's I/O3 Problem Statement, remains a principal concern of the Council. Therefore, the analysis in Chapter 4 incorporates overall utilization rates in the gross revenue projections.

Additional discussions regarding utilization rates are contained in Chapter 7.

3.6 Discards

Discards - The source of discard estimates employed in this analysis depends on how total catch is estimated for a particular vessel or processor. For catcher/processors and "true" mothership vessels with NMFS-certified observers onboard, the NMFS "blend" system is used to estimate total catch by species. In the case of at-sea processing operations without a NMFS-certified observer onboard, the agency uses the estimates of discards provided by the processor on the WPR. For unobserved catcher vessels delivering to shoreside processing plants, NMFS applies information about the weight and species composition of discards from observed catcher vessels operating in the same area, using the same gear-type, and participating in the same directed fishery.

For fish landed and then discarded from shoreside processing plants, NMFS uses information supplied by processors on WPRs about the weight and species composition of plant discards, regardless of whether the plant is observed or unobserved. It is difficult to assess the accuracy of either industry or observer estimates. In the case of at-sea operators, neither source provides direct measurement of discards, and once the discards are made, estimates cannot be verified. On-shore estimates, drawn from WPRs, are no better documented, since they depend solely on the data supplied by the operation, itself, and are filed with NMFS well after the discards have been sorted and disposed of, making physical verification impossible.

For the base-year, discard estimates by sector in pollock target fisheries in the BS/AI were reported as described in the following Table 3.10. These discard statistics may be misleading, however, as the Council considers the various I/O3 alternatives, because of the consequences of the Improved Retention/Improved Utilization Amendments (IR/IU) to the BS/AI and GOA Groundfish FMPs. Under those amendments, beginning January 1, 1998, all discards of pollock and Pacific cod will be prohibited, by any operation fishing groundfish, with any gear-type, in the EEZ off Alaska. ***Therefore, for purposes of this analysis, it assumed that pollock and Pacific cod discards in pollock target fisheries will be effectively 'zero'.***

All else being equal, discards of other groundfish species, not regulated under IR/IU, will be assumed to be as observed in the base-year (1996), unless otherwise indicated. This simplifying assumption may perhaps be unrealistic, since actions taken to eliminate pollock and Pacific cod discards could change the pattern of discards of other groundfish. Unfortunately, it may take the monitoring of several seasons of fishing activity under IR/IU to fully assess these changes. Alternative scenarios can be envisioned within which discards of other groundfish species both increase and decrease, as the fleets attempt to adjust to a new operational environment. Until empirical data become available, the 'true' effect on discards cannot be anticipated.

In addition to the potential impacts of IR/IU on discards under I/O3, several sub-options within the current inshore/offshore proposal have the capacity to alter discard patterns for some segments of the industry. For example, changes in access to specific sub-areas or fishing grounds (e.g., CVOA) may have significant implications for discard patterns for some sectors.

The AP requested information regarding the magnitude of continued regulatory discards in the pollock fisheries. Separation of economic and regulatory discards is difficult for a variety of reasons, and quantitative estimates of regulatory discards are unavailable. It will require more experience under the IR/IU program for such estimates to be made.

Table 3.10

Catch (Including CDQ) and Discards of Groundfish in the 1996 BS/AI Pollock Target Fishery

	Catch metric tons	Species percent of catch	Discards metric tons	Species percent of discards	Discard rate
		Non-surimi Catcher/Processors			
Pollock	**213,756**	**96.0%**	**5,268**	**42.7%**	**2.5%**
Pacific cod	4,076	1.8%	3,497	28.4%	85.8%
Turbot	6	<.1%	6	<.1%	100.0%
Rock sole	1,035	.5%	812	6.6%	78.5%
Yellowfin	1,205	.5%	906	7.3%	75.2%
Flathead	1,504	.7%	914	7.4%	60.8%
Arrowtooth	395	.2%	375	3.0%	94.8%
Flat other	184	.1%	115	.9%	62.7%
Rockfish	18	<.1%	16	.1%	84.7%
Atka mack	1	<.1%	1	<.1%	100.0%
Oth/unk	470	.2%	425	3.4%	90.3%
Groundfish total	222,649	100.0%	12,334	100.0%	5.5%
		Non-surimi Inshore Processing			
Pollock	**76,254**	**97.7%**	**845**	**38.8%**	**1.1%**
Pacific cod	1,225	1.6%	841	38.6%	68.7%
Rock sole	64	.1%	61	2.8%	96.2%
Yellowfin	7	<.1%	4	.2%	59.3%
Flathead	67	.1%	58	2.7%	86.9%
Arrowtooth	98	.1%	97	4.5%	98.9%
Flat other	58	.1%	57	2.6%	99.0%
Rockfish	48	.1%	38	1.7%	77.7%
Atka mack	149	.2%	115	5.3%	77.6%
Oth/unk	63	.1%	63	2.9%	99.9%
Groundfish total	78,032	100.0%	2,180	100.0%	2.8%

'Non-surimi' designation denotes catch processed by processors which did not report making pollock surimi in the fishing year.

	Catch metric tons	Species percent of catch	Discards metric tons	Species percent of discards	Discard rate
		Surimi Catcher/Processors			
Pollock	**432,308**	**97.9%**	**11,553**	**60.8%**	**2.7%**
Pacific cod	4,384	1.0%	3,494	18.4%	79.7%
Turbot	31	<.1%	29	.2%	95.9%
Rock sole	790	.2%	590	3.1%	74.7%
Yellowfin	691	.2%	580	3.1%	83.9%
Flathead	885	.2%	757	4.0%	85.5%
Arrowtooth	651	.1%	594	3.1%	91.2%
Flat other	208	<.1%	75	.4%	36.2%
Rockfish	64	<.1%	52	.3%	80.3%
Atka mack	200	<.1%	200	1.1%	100.0%
Oth/unk	1,381	.3%	1,061	5.6%	76.8%
Groundfish total	441,594	100.0%	18,986	100.0%	4.3%

(Table 3.10 continued)

Surimi "True" Mothership Processing

Pollock	**121,959**	**97.8%**	**430**	**13.6%**	**.4%**
Pacific cod	1,991	1.6%	1,966	62.0%	98.7%
Turbot	1	<.1%	1	<.1%	100.0%
Rock sole	77	.1%	77	2.4%	100.0%
Yellowfin	5	<.1%	5	.2%	100.0%
Flathead	226	.2%	226	7.1%	100.0%
Arrowtooth	268	.2%	268	8.4%	100.0%
Flat other	67	.1%	67	2.1%	100.0%
Rockfish	40	<.1%	39	1.2%	99.3%
Oth/unk	91	.1%	91	2.9%	100.0%
Groundfish total	124,724	100.0%	3,171	100.0%	2.5%

Surimi Inshore Processing

Pollock	**319,307**	**98.1%**	**3,233**	**69.5%**	**1.0%**
Pacific cod	3,569	1.1%	267	5.7%	7.5%
Sablefish	3	<.1%	<1	<.1%	6.7%
Turbot	19	<.1%	7	.1%	36.0%
Rock sole	82	<.1%	36	.8%	44.5%
Yellowfin	11	<.1%	3	.1%	29.5%
Flathead	530	.2%	312	6.7%	59.0%
Arrowtooth	445	.1%	290	6.2%	65.2%
Flat other	497	.2%	146	3.1%	29.5%
Rockfish	196	.1%	59	1.3%	30.1%
Atka mack	34	<.1%	22	.5%	63.0%
Oth/unk	669	.2%	273	5.9%	40.7%
Groundfish total	325,362	100.0%	4,649	100.0%	1.4%

'Surimi' designation denotes catch processed by processors which reported making any amount of pollock surimi in the fishing year.

The elimination of pollock discards may imply marginal changes to overall utilization rates discussed in the previous section. The utilization rates for 1996 were calculated by dividing the total tons of pollock products by the total pollock catch. That means discarded pollock were included in the denominator of the utilization rate calculation. However, with the implementation of IR/IU in 1998, those pollock cannot legally be discarded. Creating products out of those previously discarded fish will increase the utilization rates for all sectors of the industry, assuming that the retained portion of the harvest would be processed the same before and after implementation of IR/IU. While we do know the utilization rates will increase, the amount they will increase by sector is not known. That will depend on the products produced from fish that would have been discarded prior to IR/IU.

It is possible to calculate the maximum utilization rate that would have been realized if the discarded pollock in 1996 had been processed into round pollock. Table 3.11 shows that such an assumption could have potentially increased the catcher processor's utilization rate by up to 3%, inshore 1%, and "true" motherships 0.5%. We do not expect that all the discarded pollock would have been processed into round product under IR/IU. However, if IR/IU were in place in 1996, we would expect the utilization rate to have been between the actual and the maximum. While the rates below may be illustrative of the IR/IU implications, they result in only slight changes and the analyses will employ the actual (1996) rates.

Table 3.11 Catch, Production, Discards, and Utilization Rates for 1996.

Sector	Catch (mt)*	Product (mt)*	Discards (mt)	Actual Utilization*	Maximum Utilization
Inshore (Surimi)	319,307	110,928	3,193	34.74%	35.74%
Inshore (Non-surimi)	76,032	20,513	839	26.98%	28.08%
"True" Mothership	121,959	30,371	488	24.90%	25.30%
Catcher Processor (Surimi)	432,308	90,750	11,672	21.01%	23.72%
Catcher Processor (Non-surimi)	213,756	42,349	5,344	19.81%	22.31%

*Includes CDQ catch and production, because CDQ production cannot be broken out from Inshore plants.

3.7 Exvessel and Wholesale Price Information

3.7.1 Inshore Exvessel Prices

Three sources of exvessel prices are reported in this section. Two are collected by the State of Alaska, the prices reported on fish tickets and in the Commercial Operator's Annual Reports (COAR). The third source is the negotiated prices from the Bering Sea Marketing Association. Each of these sources has its own strengths and weaknesses.

<u>Commercial Operator's Annual Reports</u>

The COAR are our best source for inshore exvessel prices in 1996. They provide exvessel price data that include post season adjustments. This is an important consideration in the pollock fishery, where historically, inshore processors have offered pollock harvesters a roe bonus based on the pollock's roe content. The weakness of the COAR is that they are submitted for the entire year. Therefore, separating out the differences in prices paid in the A and B season is not possible. The COAR also include payments made for CDQ pollock, so any difference in price paid in the CDQ and open access fisheries would not be captured.

<u>Annual Reports From Inshore Pollock Processors</u>

	Reported Tons	Reported Value	$/lb.
1991	289,363	$ 54,082,820	$ 0.085
1994	464,243	$ 79,215,082	$ 0.077
1996	386,026	$ 72,187,911	$ 0.085

<u>Fishtickets</u>

Exvessel prices are also reported on ADF&G fish tickets. The problem with using fish ticket data, and the reason they will not be used in this analysis, is that they do not seem to include all of the post season adjustments. The fact that these adjustments do not seem to be included is reflected in the table of fish ticket prices in Table 3.12. Processors often pay a higher price for pollock in the A-season, because of the valuable roe. However, the prices on fish tickets consistently report a lower A-season price when compared to the B-season. This is especially troublesome since the Bering Sea Marketing Association reported that a roe bonus was negotiated for the 1996 pollock season.

Table 3.12 Fishtickets from Inshore Processors

1991	Estimated Price	Low Price	High Price
A-season	$ 0.080	$ 0.076	$ 0.085
B-season	$ 0.086	$ 0.075	$ 0.098
Pollock Closed	$ 0.078	$ 0.071	$ 0.085
1994			
A-season	$ 0.072	$ 0.059	$ 0.086
B-season	$ 0.078	$ 0.066	$ 0.089
Pollock Closed	$ 0.048	$ 0.048	$ 0.049
1996			
A-season	$ 0.079	$ 0.062	$ 0.096
B-season	$ 0.082	$ 0.070	$ 0.093
Pollock Closed	$ 0.049	$ 0.043	$ 0.056

The low and high prices are the prices that are two standard deviations below and above the estimated price, respectively.

The fish ticket prices above were estimated by the staff of the Commercial Fisheries Entry Commission (CFEC). To arrive at these prices the following rules were applied to CFEC's Fishticket files.

1. Selection of data.

All fish ticket data for pollock (ADF&G species codes '270') were selected from fish ticket files supplied by the Alaska Department of Fish and Game (ADF&G) for 1991, 1994 and 1996. This selection did not include data for CDQ pollock (ADF&G species code '970').

The Federal Zone number of the harvest area was appended to the records by merging to a statistical area translation table received from the ADF&G (July 7, 1995). Records for the Bering Sea were selected if the Federal zone began with a '5', Federal zone 550 excepted (Donut Hole). The observed Federal zones were reviewed for each year.

2. Assignment of Data to Inshore/Catcher Processor/"True" Mothership Sectors:

1994 and 1996 Data

These years' fish ticket data were assigned to the inshore, catcher processor, or "true" mothership sectors by merging to yearly vessel files maintained by the NMFS. These particular NMFS files contained the official inshore/offshore designation for each processor. The NMFS data also contain a field that identifies whether at-sea processors harvested their own pollock or took deliveries from catcher vessels. The information from that field was used to determine the "true" motherships.

Fish ticket data from offshore catcher/processor vessels were selected only if the ADF&G number of the harvesting vessel differed from the ADF&G number of the processing vessel. This eliminated any fish harvested by the catcher/processor itself.

1991 Data

There was no Inshore/offshore designation in 1991, since the I/O1 did not go into place until 1992.

3. Exvessel Price Estimation

Only fish ticket data with round weight deliveries were examined. These data were then edited to remove extraneous data entry errors before a weighted average fish ticket exvessel price was computed. This procedure was modified from existing CFEC programs which edit prices for a wide variety of species and product codes.

The editing procedure constructed a lower and upper boundary for acceptable fish ticket pricing information as follows:

A. Data Assignments to Fishing Period

Data were assigned to the 'A', 'B' or 'C' fishing period based upon the month of landing shown on the fish ticket as shown in Table 3.13. The 'A' and 'B' periods reflect targeted fisheries, and the 'C' season contains landings occurring at other times. A hyphen ('-') means that there were no data in this month.

Table 3.13: Assignment of Harvest to Season, by NMFS Designation, Month and Year

	All	Inshore		True MS		C/Ps	
Month	1991	1994	1996	1994	1996	1994	1996
January	A	A	A	A	A	-	-
February	A	A	A	A	A	-	A
March	A	A	A	C	A	-	A
April	C	C	C	-	-	-	C
May	C	C	C	-	-	-	C
June	B	C	C	-	C	-	C
July	B	C	C	-	-	-	-
August	B	B	C	B	-	-	-
September	B	B	B	B	B	B	B
October	C	B	B	-	B	-	B
November	-	C	C	-	C	C	-
December	C	C	-	-	-	-	-

B. Data were grouped by processor, period, gear, and delivery code.

C. Gross Outlier Test:

The first edit eliminated any data containing prices greater than $7.00 per pound or less than $ 0.011 per pound (1994 and 1996) or prices greater than $1.00 or less than $0.01 (1991). The eliminated tickets were placed in a separate file and reviewed. (See Test 1 in Table 3.14)

D. Simple Average # 1

The average price (unweighted) was computed for the remaining data in each group (Mprice1). (An unweighted average was used because legitimate prices with a small number of pounds are eliminated below if a weighted average is used in this step.)

E. Factor of Ten Test:

Each price observation was then tested against Mprice1. Only data whose prices were > (Mprice1/9.5) and < (Mprice1 * 10) were retained. This is basically a 'factor of ten' edit. For example, if the average price is $.08, then any record with a price of $ .80 or more is eliminated. Eliminated records were placed in a separate file and reviewed. (See Test 2 in Table 3.14.)

F. Simple Average # 2

A second average price (unweighted) and a standard deviation was computed for the remaining data in each group (Mprice2 and Sprice2). If the standard deviation was less than a penny ($ 0.01) then the standard deviation was made equal to a penny. This manipulation to the standard deviation is done because the ultimate goal is to create a low or high range; thus standard deviations less than a penny are not helpful here.

A low range of acceptable prices was computed as Mprice2 - (3 * Sprice2). If this resulted in a negative number for the low range, then the low range was recompute as (Mprice2/5).

Likewise, a high range of acceptable prices was computed as the Mprice2 + (3 * Sprice2). If this resulted in a high range which was greater than twice the average, the high range was recompute as the Mprice2 + (2 * Sprice2).

G. Low/High Test

Prices from individual records were then tested against the low and high ranges. Records with prices less than the low range or higher than the high range were placed in a separate file and reviewed. (See Test 3 in Table 3.14). In a few instances, this examination (and subsequent look at the paper fish tickets) resulted in a relaxation of the lower or higher boundary for a given processor and period.

H. Weighted Average Price

An average price, weighted by the pounds acceptably priced, and a standard deviation was computed for the tickets passing the low/high test. The lowest observed priced and the highest observed price were noted and output, as well as the standard deviation, low range, high range, number of records, amount of pounds successfully passing through the edit, the number of total pounds in the group, the percent of acceptably priced pounds.

I. Additional Information Appended

The summarized records were then merged to the ADF&G's Intent to Operate file, and the name, Federal tax identification number, and type of operation of the processor appended to the records.

Table 3.14 - Review of Fish Ticket Prices Eliminated from Final Weighted Average Price

TEST 1 Gross Outlier Test

YEAR	Total Pounds Harvested	Acceptably Priced Pounds	Pounds from Eliminated Prices	Percent Priced Pounds	Total Records	Priced Records	Eliminated Records	Percent Priced Records
1991	1,030,523,893	605,895,888	4,509,559	0.74	3,711	2,463	18	0.73
1994	984,222,002	922,450,895	2,563,547	0.28	5,888	4,392	38	0.87
1996	965,446,624	896,384,860	842,732	0.09	6,239	4,472	27	0.60

TEST 2 "Factor of Ten" test

YEAR	Total Pounds Harvested	Acceptably Priced Pounds	Pounds from Eliminated Prices	Percent Priced Pounds	Total Records	Priced Records	Eliminated Records	Percent Priced Records
1991	1,030,523,893	605,895,888	15,896	0.0	3,711	2,463	2	0.08
1994	984,222,002	922,450,895	929,783	0.1	5,888	4,392	7	0.16
1996	965,446,624	896,384,860	1,762,588	0.2	6,239	4,472	5	0.11

TEST 3 Failed low/high test

YEAR	Total Pounds Harvested	Acceptably Priced Pounds	Pounds from Eliminated Prices	Percent Priced Pounds	Total Records	Priced Records	Eliminated Records	Percent Priced Records
1991	1,030,523,893	605,895,888	95,765	0.02	3,711	2,463	6	0.24
1994	984,222,002	922,450,895	2,536,113	0.27	5,888	4,392	14	0.32
1996	965,446,624	896,384,860	1,175,750	0.13	6,239	4,472	24	0.54

The third data source for inshore exvessel prices comes from the Bering Sea Marketing Association. They provided negotiated prices for the 1996 fishing seasons. The base price during the A-season was reported as $0.08500. The processors that paid a roe bonus in the A-season used the following scale: $0.065 (<1% roe), $0.07 (1 to 2% roe), plus $0.015/lb. for each additional roe percent thereafter. The B-season price was set at $0.08375 per pound.

Bering Sea Marketing Association prices were not selected for use in this analysis because the prices received by fishermen after the roe bonus was paid cannot be determined. The roe content of the fish delivered to processors paying a roe bonus is required to make that calculation, and those data are not available.

3.7.2 Offshore Exvessel Prices

Exvessel prices for the offshore sector are unavailable for 1996. Both Fish tickets and COAR are filed on a voluntary basis by the offshore sector of the industry. During 1996, only two firms submitted price data to the State in either source. To release data under the confidentiality standards of the State, information must generally be aggregated over at least four firms. Because only two firms reported prices, that information cannot be released.

Because there is no official source of exvessel prices for the offshore sector, an alternative method to determine exvessel prices was developed. Discussions with participants in the offshore sector indicated they typically negotiate a agreement that is based on a percentage of the price paid to catcher vessels delivering shoreside.

Representatives of catcher vessels and processors, taking deliveries from catcher vessels in the offshore fishery, indicated that they generally negotiate a price that is 85-90% of the price paid to catcher vessels delivering shoreside. Using the shoreside price of $0.085/lb. in 1996, and using the midpoint of the negotiated range (87.5%), yields an offshore price of $0.0744/lb. This price will be used for the offshore sector.

3.7.3 Wholesale price

First wholesale prices collected under the Alaska Department of Fish and Game's COAR were used in this analysis. Processors operating either inshore or within Alaska's state waters are required by law to file these reports on an annual basis. The information submitted to the State is FOB Alaska. Therefore, no shipping charges should be included in the price reported to the State. Processors operating outside of Alaska's territorial waters were required to file these forms under a joint agreement between NMFS and ADF&G from 1991 through 1994. From 1995 through the present, some members of the offshore processing fleet have continued to submit the COAR to ADF&G on a voluntary basis. However by 1996 the amount of surimi reported to the State by the offshore sector had fallen to approximately 33% of the offshore total reported in the NMFS Weekly Processor's Report (Table 3.15).

Table 3.15 Reported Alaska Surimi Production in 1,000 Metric Tons

Year	ADF&G COAR		NMFS Weekly Production Reports		ADF&G / NMFS %	
	At-sea	Shorebased	At-sea	Shorebased	At-sea	Shorebased
1990	94	38	133	40	71%	95%
1991	87	45	89	51	98%	88%
1992	94	65	92	72	102%	90%
1993	70	71	75	75	93%	94%
1994	66	79	93	89	71%	89%
1995	35	84	87	91	40%	92%
1996	26	74	80	76	33%	97%

Because of the small sample size the analysts were concerned that the prices reported by the offshore sector might not accurately reflect the overall prices they were paid. The At-sea Processors Association (APA) was also concerned about the quality of the COAR data, and voluntarily supplied their first wholesale prices for 1996 (Table 3.16).

Table 3.16 First Wholesale Prices Reported[1] by the At-sea Processors Association

Product	$/mt	$/lb
Roe	$ 13,169	$ 5.97
Surimi	$ 1,907	$ 0.86
Deep-skin Fillet	$ 2,668	$ 1.21
Fillets	$ 2,220	$ 1.01
Mince	$ 931	$ 0.42
Fish Meal	$ 666	$ 0.30

[1]These prices are being audited by a Council selected CPA firm to verify the data's quality in accordance with the Council's guidelines.

The quantities of product and their values were reported by APA. Values reported were gross sales values (CIF). Therefore, shipping charges needed to be subtracted off the total gross value to determine the FOB Alaska price. The following CIF charges ($/lb) were used to arrive at an FOB Alaska price: $0.098 Japan, $0.088 Korea, $0.090 SE Asia, $0.073 Seattle, and $0.105 US East Coast. These rates were also supplied by APA.

Once the data were received by NMFS and the Council staff, it was determined that the APA data closely reflected the information reported in the COAR data (Table 3.17). Therefore, the COAR data were used for both the inshore and offshore sectors.

Table 3.17 First Wholesale Prices Reported by Alaska Processors

	Fillets&Blocks Skinless-Boneless &DeepSkin	Fillets&Blocks Skinless-Boneless	Fillets&Blocks DeepSkin	Roe	Surimi	Meal	Minced[1]
Inshore	$/lb	$/lb	$/lb	$/lb	$/lb	$/lb	$/lb
1991	1.38			3.79	1.26	0.26	
1994		0.71	1.11	3.65	0.91	0.22	
1996		0.96	1.24	4.52	0.82	0.30	0.52
Offshore							
1991	1.38			4.66	1.58	0.25	
1994		0.71	1.11	5.79	0.94	0.22	
1996		0.96	1.24	6.03	0.86	0.29	0.42

Source: 1991, 1994, and 1996 COAR data.

Note: To protect the confidentiality of processors, fillet prices are based on combined inshore and offshore data.
[1]Minced prices for 1991 and 1994 were not estimated. The 1996 Offshore Minced price was provided by the At-sea Processors Association (APA) as only one At-sea company reported minced prices to ADF&G. If APA and ADF&G data were combined the 1996 Offshore minced price would be $0.45.

Estimating COAR Prices

Annual price and production data by processing plant are being organized by product and sector. The average prices are then screened for outliers using StatPad by Skyline Technologies Inc.--a statistical program that adds statistical capabilities to Microsoft Excel. This software is used to compute summaries for each sector's average prices: count, average or mean, median, smallest, largest, quartiles, and standard deviation. Histograms are drawn to explore the data, showing the shape of the distribution, typical values, variability and outliers. Box Plot analysis is also used to explore the data. These plots show a 5-number summary (smallest, lower quartile, median, upper quartile, and largest) with outliers (noted by small black boxes) indicated. An annual weighted average price is computed where each company's price and production are multiplied to estimate total revenue. The total revenue and total production of each company are then aggregated into sector totals. Sector total revenue is divided by sector total production to produce the weighted average price. If outliers are indicated, then a second weighted average price is computed by eliminating the outlier companies from the computation.

The outliers are data points that lie outside of the following limits:

Upper quartile + 1.5(Upper quartile-Lower quartile)
Lower quartile - 1.5 (Upper quartile-Lower quartile)

"Outliers are extreme measurements that stand out from the rest of the sample and may be faulty--incorrectly recorded observations or members of a different population from the rest of the sample. At the least, they are very unusual measurements from the same population." (Statistics for Business and Economics (Sixth Edition), James T. McClave and P.George Benson, Prentice Hall, New Jersey, 1994, page 95).

3.8 Product Mix and Markets

The profiles presented last September contained product mix information over the past several years. The most recent, complete information we have in this regard is from the 1996 fisheries, shown in Table 3.18.

Table 3.18 Pollock Products Processed During 1996 (mt)

Inshore/offshore Class	Who Harvested the Pollock	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Fillet - CP	Caught own fish	-	6,567	3,971	15,832	-	-	1,574
	Catcher Vessels	-	1,271	933	2,290	-	-	167
Fillet - Catcher Processor Total		-	7,837	4,904	18,122	-	-	1,741
Surimi - CP	Caught own fish	50,755	14	1,104	6,426	10,940	344	5,157
	Catcher Vessels	7,183	-	26	666	1,372	-	448
Surimi - Catcher Processor Total		57,938	14	1,131	7,092	12,312	344	5,605
Catcher Processor Total		**57,938**	**7,851**	**6,035**	**25,214**	**12,312**	**344**	**7,346**
Shoreside Total[1]		**71,349**	**2,626**	**9,229**	**7,442**	**27,864**	**8,514**	**4,417**
"True" Mothership Total		**21,992**	-	-	-	**5,016**	**353**	**1,075**
Grand Total		**151,279**	**10,478**	**15,263**	**32,657**	**45,192**	**9,211**	**12,838**
Fillet - CP	CDQ	-	3,220	3,359	2,802	-	-	364
Surimi - CP	CDQ	4,203	10	158	1,081	356	0	506
"True" Mothership	CDQ	1,369	-	-	-	278	-	288
Shoreside	CDQ	n/a[2]	n/a	n/a	n/a	n/a	n/a	n/a

1/ The Northern Victor and Arctic Enterprise have been included in the Shoreside class and designation in years they participated.

2/ The n/a indicates the information cannot be broken out using National Marine Fisheries Service WPR data
Source: National Marine Fisheries Service AKR Weekly Production Reports for 1996

Changes in the amounts of product on the market which result from the various alternatives being considered are assumed proportional to the allocation percentages. Based on the proportion of products shown for each sector, it is possible to quantitatively project probable changes in supply, by product-form, resulting from alternative reapportionment percentages of the pollock TAC (and thus catch) among sectors as is done in Chapter 4, Analysis of the Alternatives. This is obviously an over-simplifying assumption due to the fact that there will likely be changes in prices and changes in market aspects resulting from changes in the sector allocations. Ideally an analysis would attempt to project such changes for an issue which holds potentially significant implications in terms of world-wide markets, and overall market control for pollock products. We have no ability to quantitatively make such projections, though some qualitative assessments can be offered.

Based upon suppositions about existing production capability in each sector, it may be possible to hypothesize product mix adjustments which might be made, in the short-run and intermediate-run. These hypothetical results will be constrained by our knowledge of existing capacities and capabilities within each sector. At present, this information is quite limited. In addition, issues associated with patterns of retention under IR/IU can be qualitatively addressed.

- The analysts believe that the market share, export vs. domestic supply, and retail level response to changes in supply, supplier, and product form can be addressed by employing a qualitative analysis, to supplement the foregoing. This would involve extrapolating from recent historical patterns. For example, a reapportionment of TAC among sectors would be expected to result in predictable changes in the market share, destination, and price structure for pollock outputs, based upon assumptions cited above. TAC-reapportionment may also have implications for substitute products and suppliers serving domestic (and for that matter, foreign) markets. These theoretical results may be extended, if appropriate, to trade considerations for the U.S., as a whole, e.g., balance-of-trade considerations;

Any such analysis would be limited to a qualitative, largely hypothetical, treatment of these topics. No empirical data exist with which to undertake a rigorous quantitative analysis of the issues cited. While the results of a hypothetical assessment could provide some useful insights into the likely implications of any proposed reapportionment of TAC, it would be vulnerable to criticism by those who may make alternative assumptions.

In summary, we will use the existing product mix information as the primary basis for projections. More qualitative discussions regarding possible changes will be included to supplement the basic projections.

3.8.1 Trends In Pollock Fillet, Roe, and Surimi Markets--1991, 1994, and 1996

Fillets: Comparison of production estimates for the years 1991, 1994 and 1996 (Table 3.19) show that the majority of fillet processors in the BS/AI pollock target fishery have shifted to producing 'deep-skin' fillet blocks, a higher valued fillet product that is mainly consumed in the U.S. fast-food market, where there a two major buyers. A comparison of U.S. export and production statistics show that almost of all of the U.S. production of deep-skin fillets is consumed domestically.

The U.S. domestic market is also supplied by fillet products from other countries. U.S. imports of pollock blocks and fillets, especially from China and Russia, have increased significantly and now match U.S. production in terms of quantity. Most of this production is believed to be 'twice-frozen' product.

Europe is the other major market for pollock fillets, and this market is growing, but U.S. exports of this product to Europe are now minimal. As in the U.S. market, Russian and Chinese pollock exports to Europe have increased significantly.

Prices for fillet product have varied greatly over time. Price differences have varied by as much as $0.24/lb in the export market, and $0.53/lb in the U.S. import market, between the years of 1991 and 1994.

Roe: A comparison of U.S. pollock roe production and U.S. export statistics indicates that almost all of the U.S. production is exported to Japan (Tables 3.20). In comparison to U.S. exports, U.S. imports of roe are minimal indicating that the domestic consumption is very small.

Japanese import statistics indicate that the Japanese pollock roe market has grown, primarily as a result of Russian production, from a 1991 level of 59,000 tons to a 1996 level of 83,000 tons. During 1991, the U.S. share of the Japanese market was 33%, but as a result of the Russian product, the U.S. share of this market fell to 18%.

U.S. export prices for pollock roe increased over the years 1991, 1994, and 1996. The U.S. export price in 1996 was 35% and 17% higher than the 1991 and 1994 average export prices, respectively.

Surimi: Most of the U.S. production of pollock surimi is exported to Japan where the United States is the major supplier to the Japanese market (Tables 3.21). Other significant markets for U.S. surimi products are Korea and the United States.

While Japanese production of surimi has declined, this reduction has been met with increased production of surimi by other countries, using species other than pollock, so that total world production has been relatively stable -- approximately 500,000 tons per year (Figure 3.8).

In terms of consumption, Japan is by far the greatest consumer of surimi. Over the period, Japanese consumption has been in the neighborhood of 400,000 tons annually (Figure 3.9). U.S. consumption of surimi has decreased slightly since the 1994 peak, where approximately 150 million pounds of surimi-based products were produced and sold in the United States -- 30 to 50% of which is comprised of surimi. Industry reports suggest that the Chinese market could expand from current levels of about 10,000 tons to 60,000 tons of surimi, annually.

China is currently expanding its imitation crab manufacturing capability for export and domestic markets, while trends in the Chinese economy will lead to increased demand for surimi and surimi-based products.

U.S. exports of pollock surimi to Europe have been stable, with increased growth in the European market being met primarily by South American production. At a recent trade show, one industry analyst reported that the European market for surimi was about 7,000 tons in 1996, over 10,000 tons in 1997, and will be over 15,000 mt in 1998.

Japanese market prices have varied greatly, but generally have declined between the years 1991, 1994, and 1996. The choice of these years masks the potential volatility of surimi prices as indicated by the 1991-1993 trend where surimi prices doubled and then declined by the same amount (Figure 3.10).

3.8.2 Destination Markets and Cost-Benefit Issues

As indicated above, almost all of the BS/AI pollock surimi and roe production is exported, while almost all of the fillet production is used for U.S. domestic consumption. These patterns have an implication for cost-benefit analysis because, as shown elsewhere, the at-sea sector produces a substantially greater amount (as well as proportion) of deep-skin fillets in comparison to the shoreside sector. Cost-benefit analysis, as employed in an RIR analytical context, measures the 'net benefits' of changed regulations to consumers and to producers. These differential product-mix patterns indicate that, all else equal, as more BS/AI pollock is processed inshore, resulting 'increases' in consumer benefits from the fishery will accrue (primarily) to foreign consumers. Reductions in at-sea production from the BS/AI pollock resource means less product available to the U.S. domestic consumer market. Therefore, in evaluating changes in *"net benefits to the Nation"*, which are based upon the welfare of U.S. citizens, potential losses from, in this example, less fillet production would have to taken into account, while resulting increases in welfare enjoyed by foreign consumers (e.g., as a result of lower prices and increased supplies of surimi) would not be.

Similarly, based on estimates of 'foreign versus domestic' ownership of the factors of production, changes in producer benefits should also be adjusted accordingly. That is, changes in producers surpluses which accrue to foreign entities do not count, while those accruing to U.S. entities do, in assessing the *"net benefit to the Nation"* attributable to a proposed action.

3.8.3 At-Sea, Shoreside, and Market Prices

Prices: One source of price data is the processor prices reported to NMFS and ADF&G which were discussed in Section 3 and presented in Table 3.22. (Except for minced prices, these prices are repeated in Table 3.17).

Processor prices have generally increased for roe products and decreased for surimi products -- with inshore processors receiving, on average, lower prices for these products. Because of confidentiality constraints, fillet prices for inshore and offshore have been combined into industry-wide averages. Generally, according to the NMFS and ADF&G processed products data for the years 1991, 1994, and 1996, average inshore fillet prices were higher than offshore prices. Current price information indicates that Japanese and U.S. surimi wholesale prices are starting to increase relative to fillet prices (Figures 3.10 &3.12). This may be the result of current Japanese inventory trends, where inventories are at their lowest level since 1988 (Figure 3.11).

Quality: Market prices are influenced by many factors, one of which is the quality of the product. With respect to fillets, meal, and minced products, market reports seldom discuss differences between offshore and inshore prices. For roe, these reports do demonstrate that there are differences between at-sea and shoreside prices, as indicated in the prices cited below. With respect to surimi, one argument for why at-sea prices should be higher than inshore prices is that at-sea processors produce a greater amount of top quality surimi.

Depending on the year and destination market, surimi processors produce various amounts of high and low quality surimi. A gross generalization concerning destination markets is that Korean and U.S. markets reflect the demand for low quality surimi as the surimi-based products that are produced from surimi are either imitation crab or a fried product -- where a high quality surimi is not needed. Because Japan produces more "sophisticated" products, where whiteness and gel strength are important factors, the Japanese market demands high quality surimi. However, there have been some changes to the Japanese demand for high quality surimi, especially as result of the high prices of the 1991- 1993 period. In reaction to these high prices, Japanese surimi buyers developed new recipes, wherein lower quality surimi is mixed with high quality surimi in order to keep costs down.

Prices for surimi by grade level are not collected by either the U.S. or Japanese governments. Available industry reports also do not systematically show prices, by grade, by at-sea and shoreside sector. Various industry reports (e.g., Bill Atkinson's News Reports, Seafood Trend Newsletter, and Seaworld's Fishery Information System Market Reports) were reviewed for price information and are summarized in Table 3.33. This information does report prices by grade, but their were few instances where at-sea and shoreside prices were reported in a way that would permit direct comparison (same month, market, grade level, etc.) Nor does this information show the amount of production associated with the reported prices.

3.8.4 Current Changes in the Industry and the Markets

Russian and Chinese influence on U.S., European, and Japanese pollock markets has grown significantly. Additional growth in foreign markets will depend upon the status of Russian pollock stocks, potential increased processing capacity, and government policies that may shift supplies away from export markets and toward internal domestic consumption.

Future APEC international trade negotiations may aid U.S. exports to Japan, Russia, and China through reduction in foreign tariff and non-tariff barriers. The discussion below is based on a review of recent industry publications.

Russia: Russian TAC's for pollock are declining. According to FAO sources, at the beginning of 1997, Russian quotas were cut by 300,000 mt (despite scientific recommendations of a 600,000 mt reduction). The 1998, Russian EEZ pollock TAC is reported to be 2.27 million tons, down from a reported TAC of 2.73 million tons; while the quota in the Sea of Okhotst has been reduced 30%. Average fish sizes are reported to be declining.

Korea: Recent Korean trade barrier reductions are affecting the international market place. During 1996, Korea lifted its import restrictions on Russian product and, thus, became a significant market for Russian pollock surimi and fillets. Also affecting the Korean market for surimi was the increase in EU import duties on Korean imitation crab products. During 1997, Korea lost its preferential treatment and now faces the same duties as U.S. imitation crab manufacturers.

World Demand: Compared to the 1991-1996 period, world demand for surimi is changing. At a recent trade show, one industry analyst reported that the European import market for surimi was about 7,000 tons in 1996, over 10,000 tons in 1997, and will be over 15,000 mt in 1998.

The same analyst also reported that the European market for surimi-based products is currently 100,000 mt, with growth in consumption expected to increase 10%, annually. As indicated previously, the Chinese market is growing and is expected to become the second most important market for surimi, after Japan.

U.S. Industry: In recent years, there have been both a reduction in, and an ownership consolidation of, the at-sea pollock target fleet. A similar pattern of consolidation is observed in the U.S. imitation crab processing sector. Several vessels were sold and moved to Russia, while several others have changed ownership, but remain in the U.S. zone. One major at-sea company has diversified into shore-based surimi processing plants and into U.S. imitation crab plants. This has resulted in the closure of several U.S. imitation crab plants. Another at-sea company has diversified into at-sea processing in South America and Russia. In addition, vertically integrated shore-based processors who make breaded fillets are expanding into fillet markets, either by increased production of Alaska pollock fillets or through the use of imported pollock fillets for their breading operations.

3.8.5 Exchange Rates

Companies base prices on, among other things, knowledge of consumer habits, their competitive position relative to other companies, and distribution channels. Consequently, prices for the same product can vary between markets. In addition, the product may be modified to suit the particular needs of each market. When there are fluctuations in currency-exchange rates, as recently seen with respect to, for example, the Japanese yen and Thai baht, companies revisit their pricing policies (Figure 3.14).

When, say, the U.S. dollar appreciates relative to the Japanese yen, U.S. products become less competitive in the Japanese market, since without price adjustment it takes more yen to purchase the same amount of product. This is an example of the impact of currency appreciation.

All else equal, appreciation of an exporter's currency increases the importer's cost of foreign exchange, which raises the commodity's price in the import market and decreases the quantity demanded. In the face of a rising U.S. dollar, relative to the Japanese yen, a U.S. based exporting firm can choose not to adjust the price of the product in dollars and suffer reduced sales and profit margins. Consider the following example. If surimi is being exported at $1.00 per pound with a unit profit level of $.20 and the exchange rate is 100 yen per $1.00, the price of surimi in yen is 100 yen per pound. If the dollar appreciates to 125 yen per dollar, and the firm continues to export surimi at $1.00 per pound, the import price becomes 125 yen. The firm can keep the price of the product in yen constant, in which case the result is less profit per unit sold.

In this example, a constant sales price of 100 yen, in the face of the new exchange rate of 125 yen per dollar, results in a sales price of U.S.$0.80/lb for surimi -- just covering the costs of production, but at this price there is no profit. Another option is for the company to implement a moderate price increase in yen which will result in lower sales volume, but also permits the firm to partially capture lost profits. Which course of action the firm will take is dependent on many economic factors, including, the elasticity of demand for the product, the relative market position of the firm (i.e., is it a 'price setter' or 'price taker'), inventory holdings, supplies of substitutes in the market, etc.

This latter point makes the picture, in reality, much more complex. Consider that, while the U.S. dollar has appreciated somewhat against the Japanese yen, the current dramatic depreciation of the Thai baht against both the yen and dollar makes predicting market behavior even more difficult. This is so because, as a result of this currency depreciation, Thai surimi has become much 'cheaper' than the U.S. product in the Japanese market. According to Bill Atkinson's News Report (2/19/98) -- "With the economic troubles in Thailand, surimi and imitation crab packers are aggressively trying to export their production to get foreign exchange."

Note that dramatic changes in the market price of surimi can, in turn, change product mix decisions for U.S. producers, as falling surimi prices make fillet production more attractive. However, many operations in the U.S. pollock-target fishery off Alaska are constrained with respect to capacity and capability and , therefore, may not be able to respond to changes in market signals, at least in the short-run. That is, for example, a facility which, at present, does not have the ability to produce a marketable fillet product, cannot simply (nor costlessly) shift product-mix to respond to an increased demand for fillets. In the longer run, this firm may make a business decision to 'invest' in capacity, so that it may participate in the changed market, but this will require time and impose capital and operating costs. In some instances, regulatory constraints may preclude such adjustments, altogether (e.g., NPFMC vessel moratorium limits).

Table 3.19 Imports and Exports of Pollock Fillets

			1991	1994	1996
U.S. Production		Tons			
	Fillet/Block/IQF		N/A	28,985	22,232
	Deep Skin		N/A	24,602	43,234
	Total		65,029	53,587	65,466
U.S. Exports	Fillets and Blocks				
	Germany	Tons	8,602	3,080	*
	Germany	1000$	$20,781	$5,328	*
	Germany	$/Ton	$2,416	$1,730	*
	Germany	$/lb	$1.10	$0.78	
	Canada	Tons	1,304	133	760
	Denmark	Tons	2,692	0	0
	U.K.	Tons	637	2	0
	Japan	Tons	387	1,053	3,563
	R.Korea	Tons	668	170	2,147
	Total	Tons	16,075	5,218	7,352
	Total	1000$	$42,601	$11,091	$16,069
	Total	$/Ton	$2,650	$2,126	$2,186
	Total	$/lb	$1.20	$0.96	$0.99

Blocks				
China	Tons	7,804	23,468	34,323
China	1000$	$17,844	$27,882	$51,640
China	$/Ton	$2,287	$1,188	$1,505
China	$/lb	$1.04	$0.54	$0.68
Russia	Tons	3,014	8,672	29,574
Russia	1000$	$7,434	$13,446	$55,604
Russia	$/Ton	$2,466	$1,551	$1,880
Russia	$/lb	$1.12	$0.70	$0.85
R.Korea	Tons	9,776	*	*
Poland	Tons	4,363	483	*
Thailand	Tons	3,569	*	*
Total	Tons	31,329	33,700	65,425
Total	1000$	$77,272	$44,134	$109,985
Total	$/Ton	$2,466	$1,310	$1,681
Total	$/lb	$1.12	$0.59	$0.76

U.S. Imports

		1991	1994	1996
Fillets				
China	Tons	1,584	9,302	18,954
China	1000$	$3,905	$13,009	$30,751
China	$/Ton	$2,465	$1,399	$1,622
China	$/lb	$1.12	$0.63	$0.74
Russia		0	1,256	*
R.Korea	Tons	1,785	*	*
Poland	Tons	544	0	0
Thailand	Tons	458	*	*
Total	Tons	13,829	19,937	24,298
Total	1000$	$42,471	$38,974	$46,273
Total	$/Ton	$3,071	$1,955	$1,904
Total	$/lb	$1.39	$0.89	$0.86

Alaska Pollock Fillets and Blocks

European Imports

USA	Tons	17,137	9,557	1,167
China	Tons	5,729	27,694	42,011
S.Korea	Tons	2,522	742	65
Russia	Tons	4,212	23,978	77,742
Poland	Tons	26,648	43,537	18,494
Other	Tons	563	658	852
Total	Tons	56,811	106,166	140,331

* less than 100 tons or less than $1 million

Totals include countries not listed

U.S. Imports include Atlantic pollock.

U.S. Exports and Imports are National Estimates (All Customs Districts)

Table 3.20 Imports and Exports of Pollock Roe

			1991	1994	1996
U.S. Production		Tons	21,326	11,622	14,419
U.S. Exports					
	Japan	Tons	15,055	7,975	11,687
	Japan	1000$	$129,396	$79,924	$140,050
	Japan	$/Ton	$8,595	$10,022	$11,983
	Japan	$/lb	$3.90	$4.55	$5.44
	Korea	Tons	2,947	937	864
	Other	Tons	967	94	732
	Total	Tons	18,969	9,006	13,283
	Total	1000$	$163,449	$89,817	$154,633
	Total	$/Ton	$8,617	$9,973	$11,641
	Total	$/lb	$3.91	$4.52	$5.28
U.S. Imports					
	Total	Tons	53	55	176
	Total	1000$	$600	$451	$2,251
	Total	$/Ton	$11,321	$8,200	$12,790
	Total	$/lb	$5.14	$3.72	$5.80

Japanese Imports		(pollock, hake, and cod roe frozen)		
Total	Tons	34,167	36,038	44,868
Total	1000$	$336,332	$408,437	$449,568
Total	$/Ton	$9,844	$11,334	$10,020
U.S.	Tons	19,844	11,831	15,653
U.S.	1000$	$200,336	$135,468	$181,953
U.S.	$/Ton	$10,096	$11,451	$11,624
Russia	Tons	9,083	21,875	25,576
Russia	1000$	$82,844	$250,694	$231,141
Russia	$/Ton	$9,121	$11,461	$9,038
China	Tons	253	295	289
China	1000$	$2,043	$2,441	$1,904
China	$/Ton	$8,075	$8,284	$6,577
R. Korea	Tons	3,811	1,305	1,628
R.Korea	1000$	$42,930	$14,399	$18,626
R.Korea	$/Ton	$11,265	$11,036	$11,440

Roe-2

Japanese	Supply	1991	1994	1996
	Beginning Inventory	10000	20000	28000
	Domestic Production	12120	8000	3700
	Donut Hole	2200	0	0
	Import	34900	37230	51520
	Total	59220	65230	83220
	Mentai Roe	2540	4870	15700

Source BANR Issue 681-12/18/96

Exports and Import totals may include countries not listed.
Japanese imports include Japanese joint-venture production and U.S. flag production in non-U.S. waters.

Table 3.21 Imports and Exports of Surimi

Surimi Overview

		1991	1994	1996		1994	1996
U.S. Production							
Pollock	Tons	131,772	178,238	156,851			
Whiting*	Tons	21,000	33,000	30,000			
Total	Tons	152,772	211,238	186,851			
U.S. Exports							
France	Tons	N/A	1,328	2002.4			
Italy	Tons	N/A	866	360.4			
Spain	Tons	N/A	132	582.2			
Malaysia	Tons	N/A	1,026	1174.9			
Singapore	Tons	N/A	0	536.8			
China	tons	N/A	12,909	840.9			
R.Korea	Tons	N/A	12,909	14,734			
Hong Kong	Tons	N/A	856	177			
Taiwan	Tons	N/A	3,014	3,023			
Japan	Tons	N/A	120,506	102,694			
Total	Tons	N/A	142,499	128,471			
France	1000$	N/A	2,475	3697.9			
Italy	1000$	N/A	1,988	855.6			
Spain	1000$	N/A	270	1350.7			
Malaysia	1000$	N/A	2,044	2512			
Singapore	1000$	N/A	0	1100.1			
China	1000$	N/A	25,577	1060.9			
R.Korea	1000$	N/A	25,577	28,335			
Hong Kong	1000$	N/A	1,299	458			
Taiwan	1000$	N/A	6,015	6,061			
Japan	1000$	N/A	275,484	217,441			
Total	1000$	N/A	318,842	268,095			
France	$/Ton	N/A	$1,864	$1,847	$/lb	$0.85	$0.84
Italy	$/Ton	N/A	$2,297	$2,374	$/lb	$1.04	$1.08
Spain	$/Ton	N/A	$2,044	$2,320	$/lb	$0.93	$1.05
Malaysia	$/Ton	N/A	$1,992	$2,138	$/lb	$0.90	$0.97
Singapore	$/Ton	N/A		$2,049	$/lb	$0.00	$0.93
China	$/Ton	N/A	$1,981	$1,262	$/lb	$0.90	$0.57
R.Korea	$/Ton	N/A	$1,981	$1,923	$/lb	$0.90	$0.87
Hong Kong	$/Ton	N/A	$1,517	$2,593	$/lb	$0.69	$1.18
Taiwan	$/Ton	N/A	$1,996	$2,005	$/lb	$0.91	$0.91
Japan	$/Ton	N/A	$2,286	$2,117	$/lb	$1.04	$0.96
Total	$/Ton	N/A	$2,238	$2,087	$/lb	$1.01	$0.95

U.S. Imports

		1991	1994	1996		1991	1994	1996
Canada	Tons		2,189	400				
Russia	Tons		0	12,707				
Total	Tons		2,207	13,296				
Canada	$1,000		$3,408	$482				
Russia	$1,000		$0	$15,262				
Total	$1,000		$3,433	$15,956				
Canada	$/Ton		$1,557	$1,206	$/lb		$0.71	$0.55
Russia	$/Ton			$1,201	$/lb			$0.54
Total	$/Ton		$1,556	$1,200	$/lb		$0.71	$0.54

Japanese Imports

Cod, Pollock, & Hake		1991	1994	1996		1991	1994	1996
R. Korea	Tons	1,787	677	211				
China	Tons		2,886	339				
USSR	Tons	12,368	17,306	15,765				
USA	Tons	102,938	142,599	126,887				
Total	Tons	118,971	163,714	143,978				
R. Korea	$1,000	$8,174	$1,544	$459				
China	$1,000	$0	$4,734	$611				
USSR	$1,000	$41,793	$36,639	$35,407				
USA	$1,000	$374,265	$335,926	$259,088				
Total	$1,000	$428,512	$379,257	$297,099				
R. Korea	$/Ton	$4,574	$2,280	$2,175	$/lb	$2.07	$1.03	$0.99
China	$/Ton		$1,641	$1,804	$/lb	$0.00	$0.74	$0.82
USSR	$/Ton	$3,379	$2,117	$2,246	$/lb	$1.53	$0.96	$1.02
USA	$/Ton	$3,636	$2,356	$2,042	$/lb	$1.65	$1.07	$0.93
Total	$/Ton	$3,602	$2,317	$2,064	$/lb	$1.63	$1.05	$0.94

Itoyroi				
Thailand	Tons	29,128	19,779	21,582
Total	Tons	29,884	22,153	28,507

European Imports of Surimi

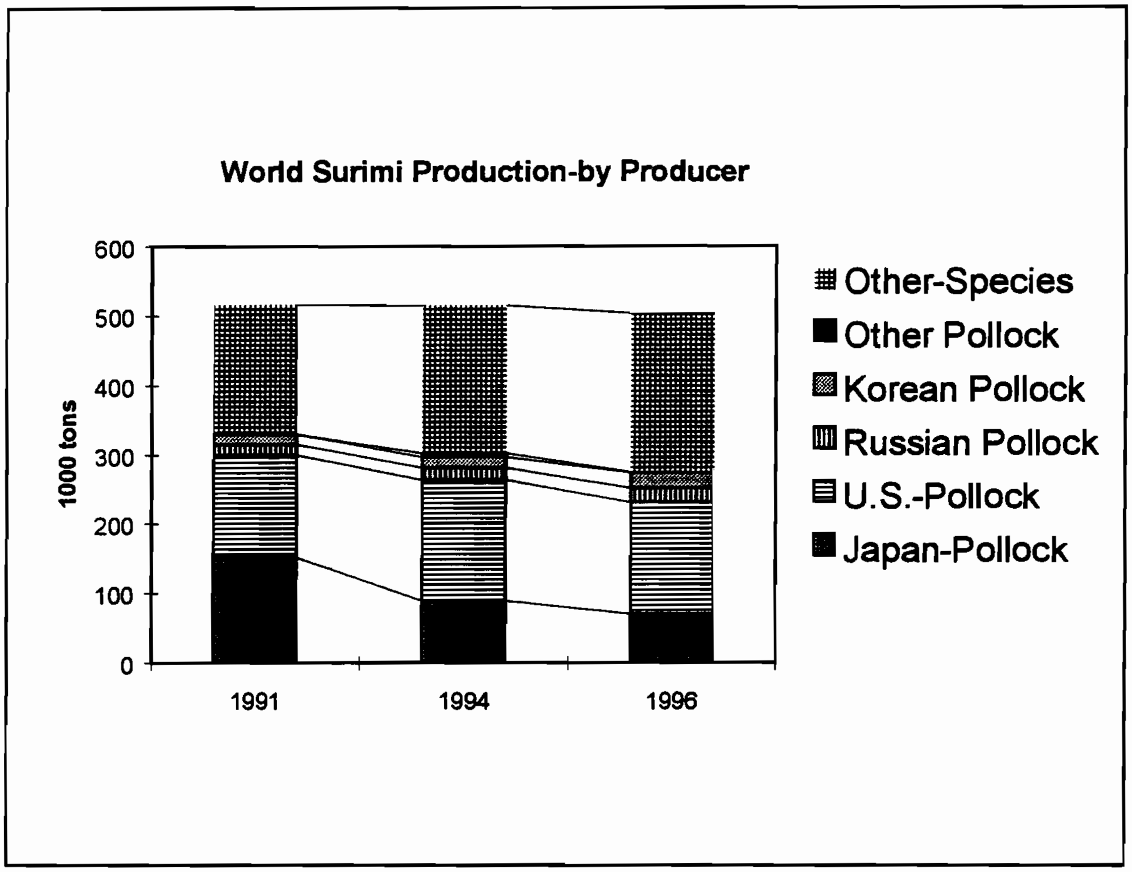
			1991	1994	1996
U.S.	Tons	N/A		3,957	3,493
Thailand	Tons	N/A		178	25
China	Tons	N/A		0	2
R.Korea	Tons	N/A		81	11
Russia	Tons	N/A		78	0
Argentina	Tons	N/A		16	797
Chile	Tons	N/A		48	1,240
Total	Tons	N/A		4,727	5,746

European Imports Provided by Bill Aberle of Alaska Center for International Business and Eric Fleury, U.S. Embassy to the European Union (Brussels)

Exports and Import totals may include countries not listed.
Japanese imports include Japanese joint-venture production and U.S. flag production in non-U.S. waters.

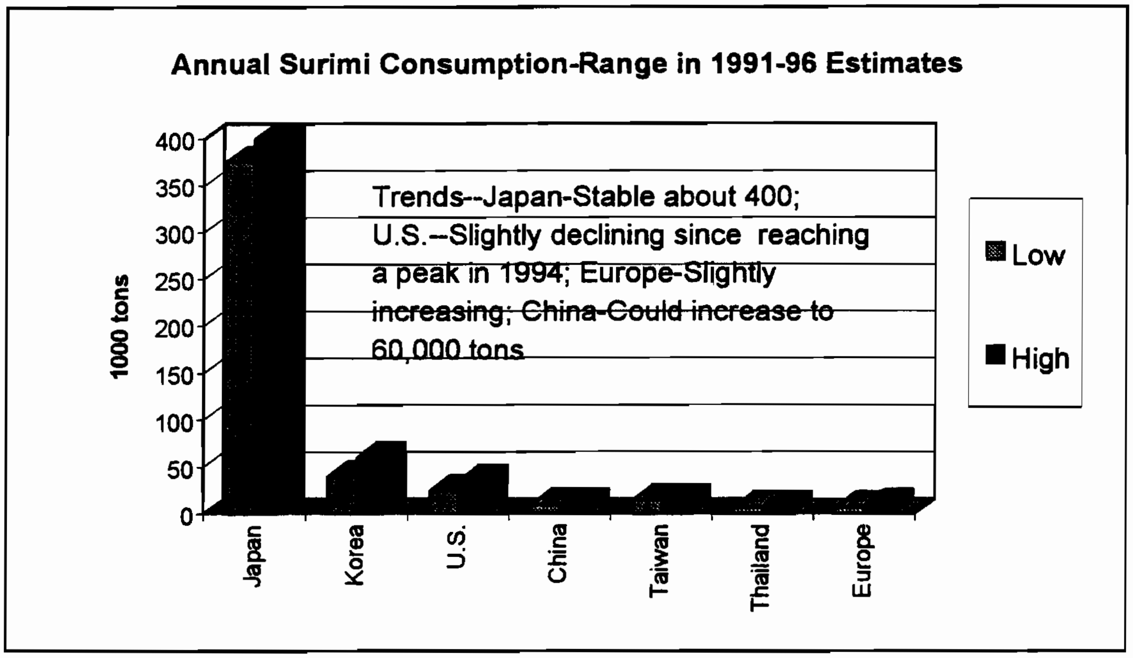
Figure 3.8

World Surimi Production and Consumption



Sources of Surimi Consumption and Production Estimates: BANR-various issues; "Pacific Whiting--Harvesting, Processing, and Quality Assurance-A Workshop: 1992 (Sylvia and Morrissey editors), INFOFISH.

Figure 3.9



Sources of Surimi Consumption and Production Estimates: BANR-various issues; "Pacific Whiting, Processing, and Quality Assurance-A Workshop: 1992 (Sylvia and Morrissey editors), INFOFISH.

Table 3.22

(15) Processor Prices--F.O.B. Alaska

Wholesale Prices Reported by Alaska Processors

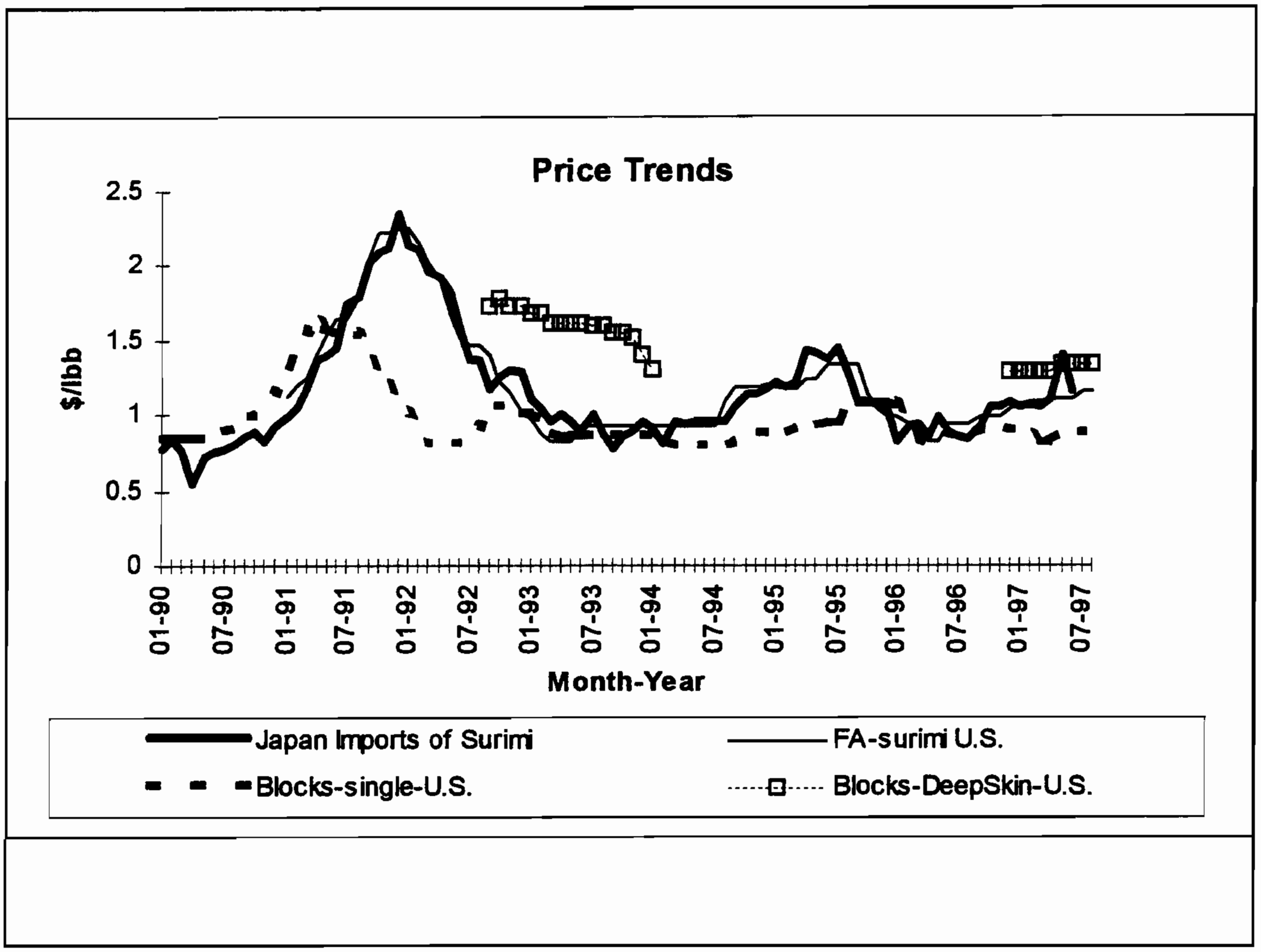
		Fillets&Blocks Skinless-Boneless &DeepSkin	Fillets&Blocks Skinless-Boneless	Fillets&Blocks DeepSkin	Roe	Surimi
Inshore		$/lb	$/lb	$/lb	$/lb	$/lb
	1991	$1.38			$3.79	$1.26
	1994		$0.71	$1.11	$3.65	$0.91
	1996		$0.96	$1.24	$4.52	$0.82
Offshore						
	1991	$1.38			$4.66	$1.58
	1994		$0.71	$1.11	$5.79	$0.94
	1996		$0.96	$1.24	$6.03	$0.86

Based on Production and Revenue/Price Data Reported to NMFS (1991, 1994) and ADF&G(1996) Annual Surveys of Processors

To protect the confidentiality of processors, fillet prices are based on combining inshore and offshore data.

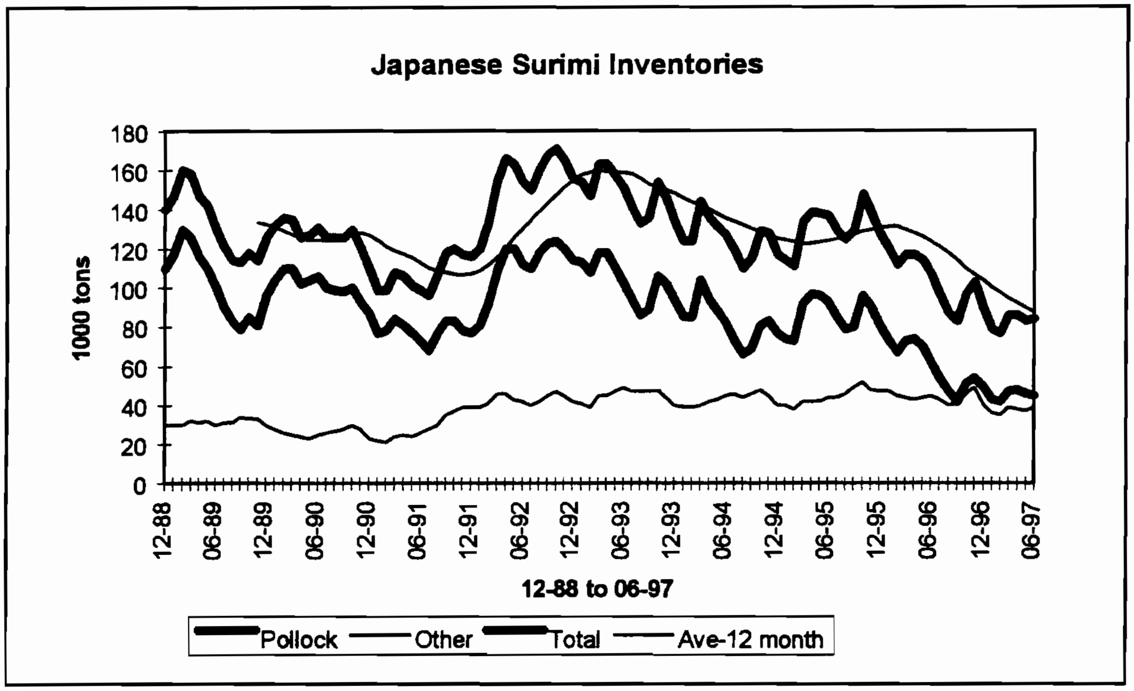
Figure 3.10

Wholesale Prices--C&F Japan or F.O.B--U.S. Market



Source--Urner Barry; Japan Marine Products Importers Association

Figure 3.11



Sources of Inventory data include BANR (various issues) and U.S. Embassy of Japan.

Figure 3.12

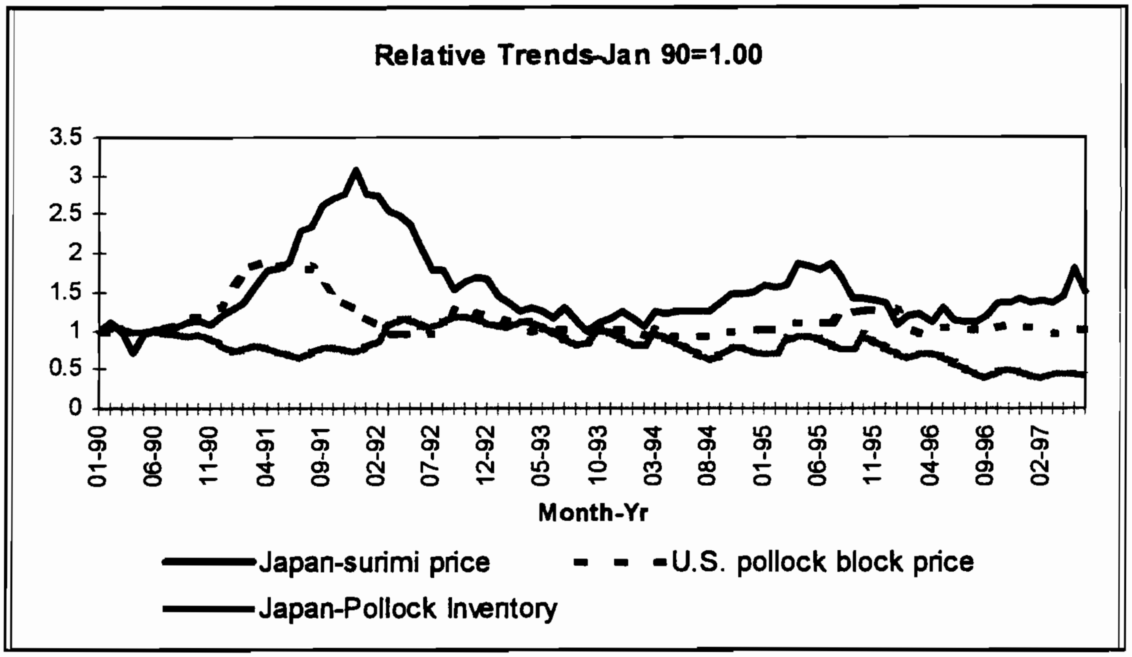
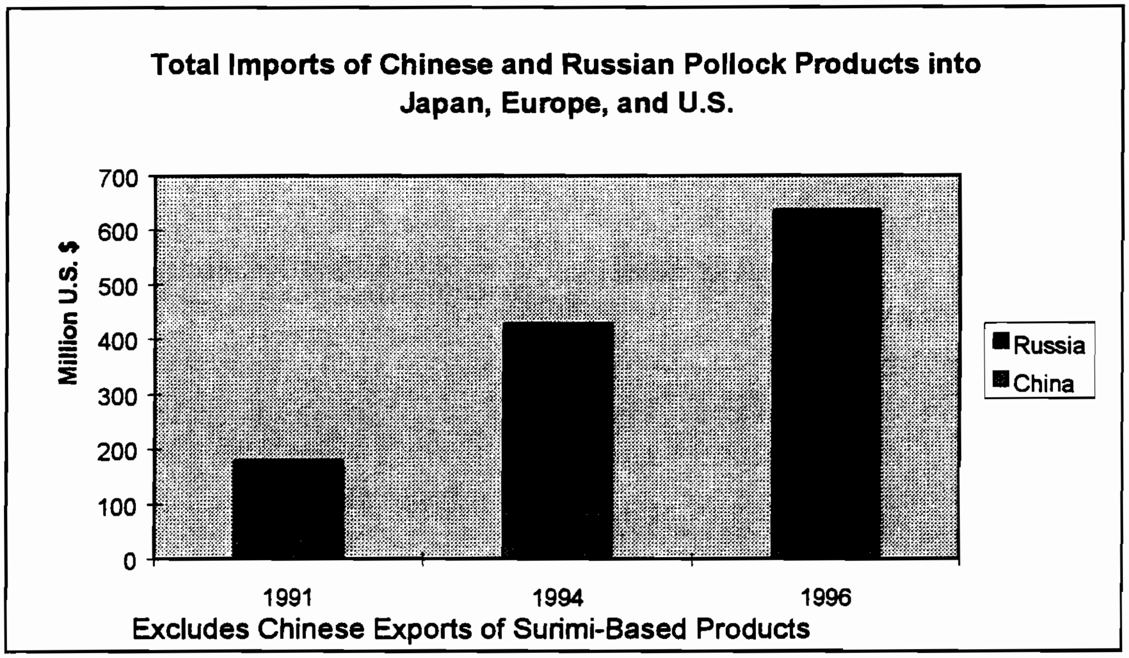
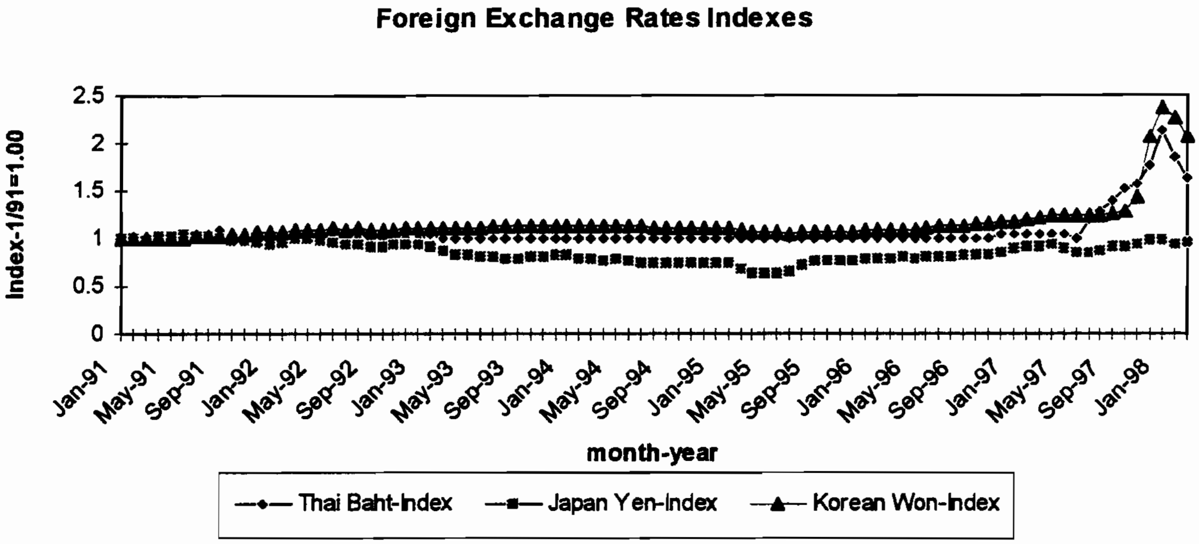

Relative Trends-Jan 90=1.00
3.5
3
2.5
2
1.5
1
0.5
0
01-90
06-90
11-90
04-91
09-91
02-92
07-92
12-92
05-93
10-93
03-94
08-94
01-95
06-95
11-95
04-96
09-96
02-97
Month-Yr
Japan-surimi price
U.S. pollock block price
Japan-Pollock Inventory

Figure 3.13



Total Imports of Chinese and Russian Pollock Products into Japan, Europe, and U.S.
Million U.S. $
700
600
500
400
300
200
100
0
1991
1994
1996
Russia
China
Excludes Chinese Exports of Surimi-Based Products

Figure 3.14



Foreign Exchange Rates Indexes
2.5
2
1.5
1
0.5
0
Index-1/91=1.00
Jan-91
May-91
Sep-91
Jan-92
May-92
Sep-92
Jan-93
May-93
Sep-93
Jan-94
May-94
Sep-94
Jan-95
May-95
Sep-95
Jan-96
May-96
Sep-96
Jan-97
May-97
Sep-97
Jan-98
month-year
Thai Baht-Index
Japan Yen-Index
Korean Won-Index

Table 3.23 Weekly Surimi Prices by Market and Grade.

Rpt Date	Source	Period	Price-Y/kg	Price-$/Kg	Price-$/lb	Level of Sale	Grade	Species	Producer	Type	Market
3/23/98	SW	98-A	300			CNF-Japan	FA	Pollock	At-Sea	O	Japan
12/16/97	SW	Nov-97	-35	-0.27			SA	Pollock	At-Sea	A	Japan
12/16/97	SW	Nov-97	-35	-0.27			SA	Blue Whiting		A	Japan
12/16/97	SW	Nov-97	-35	-0.27				Atka Mackerel		A	Japan
12/16/97	SW	Nov-97	-7.5	-0.06				Hake-WOC	At-Sea	A	Japan
12/16/97	SW	Nov-97	-7.5	-0.06				Hake-WOC	Shore	A	Japan
12/16/97	SW	Nov-97	-7.5	-0.06			KA	Horse Mackerel-Chile		A	Japan
12/16/97	SW	Nov-97	-55	-0.42				Pollock	Hokkaido	A	Japan
12/1/97	SW	Oct-97	350	2.73		end-user	SA	golden threadfin		A	Japan
12/1/97	SW	Oct-97	350	2.73		end-user	SA	golden threadfin		A	Japan
12/1/97	SW	Oct-97	300	2.34		end-user	No.2	Pollock	Hokkaido	A	Japan
11/20/97	SW	Oct-97			1.1	Seattle	A	Pollock		A	U.S.
11/20/97	SW	Oct-97			1	Seattle	KA	Pollock		A	U.S.
11/20/97	SW	Oct-97			0.97	Seattle	KB	Pollock		A	U.S.
10/27/97	SW	Jul-97		2.15		FOB-?		Hake-WOC		A	Korea
10/27/97	SW	Jul-96		1.64		FOB-?		Hake-WOC		A	Korea
10/27/97	SW	97-B	460			end-user	SA	Pollock		A	Japan
10/27/97	SW	97-B	440			end-user	FA	Pollock		A	Japan
10/27/97	SW	97-B	420			end-user	A	Pollock		A	Japan
10/27/97	SW	97-B	365			end-user	KA	Pollock		A	Japan
10/10/97	SW	Sep-97	450	3.69			SA	Pollock		A	Japan
10/10/97	SW	Sep-97	440	3.61			SA	Blue Whiting		A	Japan
10/10/97	SW	Sep-97	400	3.28			FA	Pollock	At-Sea	A	Japan
10/10/97	SW	Sep-97	390-400	3.20-3.28			FA	Pollock	Shore	A	Japan
10/10/97	SW	Sep-97	285	2.34				Pollock	Hokkaido	A	Japan
10/10/97	SW	Sep-97	245	2.01				Atka Mackerel		A	Japan
10/10/97	SW	Sep-97	225	1.84				Jurel		A	Japan
10/10/97	SW	Sep-97	320	2.62			AA	Melrusa		A	Japan
10/10/97	SW	Sep-97	295	2.42			A	Melrusa		A	Japan
10/10/97	SW	Oct-97	285	2.34				Pollock	Hokkaido	A	Japan
10/1/97	SW	97-B	348	2.85		CNF-Japan	FA	Pollock		A	Japan
10/1/97	SW	97-B	355	2.91		CNF-Japan	FA	Pollock	CDQ	A	Japan
10/1/97	SW	97-B	420	3.44		ex-warehouse Japan	FA	Pollock	CDQ	A	Japan
10/1/97	SW	Spring-97	325	2.66		end-user		Pollock	Hokkaido	A	Japan
10/1/97	SW	Sep-97	265	2.17		end-user		Pollock	Hokkaido	A	Japan

Table 3.23 - continued

Rpt Date	Source	Period	Price-Y/kg	Price-$/Kg	Price-$/lb	Level of Sale	Grade	Species	Producer	Type	Market
9/9/97	SW	Jul-97	317	2.6		CNF-Japan		Pollock		A	Japan
9/20/97	SW	Sep-97	325	2.66		ex-plant		Pollock	Hokkaido	A	Japan
8/27/97	SW	97-B	355	2.98			FA	Pollock	At-Sea	O	Japan
8/27/97	SW	97-A	328			CNF-Japan		Pollock		A	Japan
8/27/98	SW	97-B	370	3.11		CNF-Japan	FA	Pollock	CDQ	A	Japan
8/27/98	SW	97-B	385	3.24		CNF-Japan	SA	Pollock			Japan
8/11/97	SW	Aug-97	405	3.43			SA	Pollock	At-Sea	A	Japan
8/11/97	SW	Aug-97	315	2.69			KB	Pollock	At-Sea	A	Japan
8/11/97	SW	Aug-97	395	3.35			High	Pollock	Shore	A	Japan
8/11/97	SW	Aug-97	365	3.09			Low	Pollock	Shore	A	Japan
8/11/97	SW	Aug-97	395	3.35			SA	Argentine		A	Japan
8/11/97	SW	Aug-97	208	1.76			KA	Horse Mackerel-Chile		A	Japan
8/11/97	SW	Contract 97	315	2.67		CNF Japan	FA	Hake-WOC	Tysons-shore?	O	Japan
8/11/97	SW	Contract 97	300	2.54		CNF-Japan	A	Hake-WOC	Tysons-shore?		Japan
										O	
8/11/97	SW	Contract 97	270	2.29		CNF-Japan	KA	Hake-WOC	Tysons-shore?	O	Japan
8/11/97	SW	Import	300	2.5		CNF-Japan	ALL	Pollock	Imports from U.S. to Japan	A	Japan
8/11/97	SW	Import	286	2.4		CNF-Japan	All	Other Cod	Imports from U.S. to Japan		Japan
8/11/97	SW	Import	272	2.3		CNF Japan	All	Threadfin	Japanese Imports	A	Japan
8/19/97	SW		Jan-May 97	2.3		CNF-Korea		Pollock	U.S.	A	Korea
8/19/97	SW		Jan-May 96	2.04		CNF-Korea		Pollock	U.S.	A	Korea
8/19/97	SW		Jan-May 97	1.83		CNF-Korea		Hake-WOC	U.S.	A	Korea
8/19/97	SW		Jan-May 96	1.73		CNF-Korea		Hake-WOC	U.S.	A	Korea
8/19/97	SW	Aug-97	345	2.92		CNF Japan	FA	Hake-WOC	Trident	A	Japan
8/19/97	SW	Aug-97	325	2.75		CNF-Japan	A	Hake-WOC	Trident	A	Japan
8/19/97	SW	Aug-97	290	2.46		CNF-Japan	KA	Hake-WOC	Trident	A	Japan
8/19/97	SW	Aug-97	170	1.43				Blue Shark	Japan	A	Japan
8/19/97	SW	Aug-96	136					Blue Shark	Japan	A	Japan
7/22/97	SW	Jul-97	380	3.3		end-user	FA	Hake-WOC	At-Sea	A	Japan
7/22/97	SW	Jul-97	370	3.22		end-user	A	Hake-WOC	At-Sea	A	Japan
7/22/97	SW	Jul-97	340	2.94		end-user	KA	Hake-WOC	At-Sea	A	Japan
7/16/97	SW	Jul-97	320	2.78		dealers-Japan		Pollock		A	Japan
7/16/97	SW	Jul-97	247	1.94		dealers-Japan		Atka-Maekerel		A	Japan
7/16/97	SW	Jul-97	380	3.3		end-user		Hake-WOC		A-High	Japan
6/30/97	ST	Jun-97	305					Hake-WOC	At-Sea	A	Japan

Table 3.23 - continued

Rpt Date	Source	Period	Price- Y/kg	Price- $/Kg	Price- $/lb	Level of Sale	Grade	Species	Producer	Type	Market
1/13/97	ST	Jan-97?	353			FOB-Dutch Harbor	SA	Pollock		A	Japan
1/13/97	ST	Jan-97?	310			FOB-Dutch Harbor	FA	Pollock			Japan
3/19/97	BANR	96-B	310	1.15		CNF-Japan	SA	Pollock	American Seafoods?	A	Japan
3/19/97	BANR	96-B	290	1.08		CNF-Japan	FA	Pollock	American Seafoods?	A	Japan
3/19/97	BANR	96-B	270	1.01		CNF-Japan	A	Pollock	American Seafoods?	A	Japan
3/19/97	BANR	97-A	340	1.27		CNF-Japan	SA	Pollock	American Seafoods?	P	Japan
3/19/97	BANR	97-A	320	1.19		CNF-Japan	FA	Pollock	American Seafoods?	P	Japan
3/19/97	BANR	97-A	300	1.12		CNF-Japan	A	Pollock	American Seafoods?	P	Japan
3/19/97	BANR	97-A	430	1.6		end-user	SA	Pollock	American Seafoods?	P	Japan
3/19/97	BANR	97-A	400	1.49		end-user	FA	Pollock	American Seafoods?	P	Japan
3/19/97	BANR	97-A	380	1.42		end-user	A	Pollock	American Seafoods?	P	Japan
5/14/97	BANR	Apr-97	450	1.64		wholesale-Japan	SA	Pollock	U.S.	O	Japan
5/14/97	BANR	Apr-97	430	1.56		wholesale-Japan	FA	Pollock	U.S.	O	Japan
5/14/97	BANR	Apr-97	350	1.27		wholesale-Japan	A&KA	Pollock	U.S.	O	Japan
6/25/97	BANR	Season-97	310	1.24		CNF-Japan		Hake-WOC	At-Sea	P	Japan
6/25/97	BANR	Season-96	210	0.8		CNF		Hake-WOC	At-Sea	P	Japan
7/2/97	BANR	Season-97	315	1.38		CNF	FA	Hake-WOC	Shore	P	Japan
7/2/97	BANR	Season-97	300	1.2		CNF-Japan	FA?	Hake-WOC	At-Sea	P	Japan
1/7/98	BANR	Apr-97	450	1.55		end-user				A	Japan
1/7/98	BANR	Apr-96	350	1.21		end-user				A	Japan
2/18/98	BANR	Feb-98	390	1.43		end-user	SA	threadfin bream		A	Japan
10/17/98	SD	Oct-97	360				SA	Pollock		A	Japan
10/17/98	SD	Oct-97		1.14			KA	Pollock		A	U.S.

SW = Seaworld=HTTP://www.sea-world.com
BANR = Bill Atkison News Reports-newsletter
ST=Seafood Trends-newsletter
SD=Sseafood Datasearch:+http://www.seafood.com
Type=is the type of price-A-Actual, O=Offer, P=Projected

3.9 Foreign Ownership

Among the information requested by the Council was a description of the ownership patterns in the pollock industry, including levels of foreign ownership and control of harvest and processing capacity. While some of the major foreign investments in the pollock fisheries are generally known, more specific information was requested by the Council. As we have described for the Council previously, the business and corporate ownership structures of various fishing and processing entities make it extremely difficult to provide definitive information in this regard. Nevertheless we have pursued this issue and have provided a summary of the information collected under Tab 8 of Appendix I. This information is based on who owns the vessels and plants. The analysts have not attempted to determine any arrangements, such as bare boat leases, where the nationality of the owner is different from the entity leasing the vessel. However, information presented by the public indicates that this may be occurring in the "true" mothership and possibly other sectors of the industry.

There appear to be three basic sources of information on foreign ownership. The first is the report produced by the Alaska State Legislative Research Agency in early 1994. Because these ownership structures appear to change frequently for a variety of the operators involved, we need to have more recent information than what is in the State report. A second source of information is the Lexis-Nexis computer data base which we have queried for foreign ownership data. Bits and pieces of information in that database come from many diverse sources that are difficult to verify independently. It is hard to meld those bits and pieces together into a credible depiction of the ownership of a particular company or vessel, and there is a high likelihood that we will get it wrong, inadvertently embarrass a company, and then have to make all sorts of public retractions. And this leads to the third source of information which is, of course, the companies and vessel owners themselves.

What we have done since the February 1998 meeting is to meld the State report and more recent Lexis-Nexis information together for each company. We then sent that information out to each company to allow them to comment and revise as necessary. A compilation of the results is contained in Appendix I.

There are 168 vessels or plants which participated in the 1996 pollock Bering Sea and Aleutian Islands fishery. Of the 168 vessels or plants there are 22 catcher-boats which operated in both inshore and offshore sectors (there are 119 different catcher-boats altogether). The count of the inshore plants (eight) does not include the International Seafoods of Kodiak inshore plant or one inshore catcher processor which harvested small amounts of pollock in 1996. In the inshore sector there are 99 vessels or plants, and in the offshore sector there are 89 vessels (one vessel has multi-country affiliation and is subtracted from 90).

In Table 3.24, three foreign countries, Japan, Norway, and South Korea have some degree of foreign-affiliation in plants, catcher vessels or processors:

Table 3.24

Country of Ownership	Inshore Plants (#)	Inshore Catcher-Vessels	Offshore Catcher-Processors	Offshore Catcher-Vessels	Offshore "True" Motherships
Japan	4	11 [4]	1 [3]	3 [4]	1
Norway	0	0	18	2	0
South Korea	0	3 [2]	3 [3]	3 [2]	1
Fully US	4 [1]	77	16	42[5]	1
Total	8	91	37	50	3

1/ Including two anchored processors in Dutch Harbor.
2/ Includes two vessels with inconclusive parent-company affiliation of South Korea.
3/ Has a vessel with multi-country affiliation.
4/ A vessel was Lost at Sea since 1996.
5/ Includes a vessel with inconclusive partial UK affiliation.

Inshore Sector Processing Plants: Parent-companies that are affiliated with Japan account for 4 of the 8 total plants of the inshore sector, or 50%. There aren't any plants in the inshore sector where the parent company is from Norway or South Korea. The remaining four plants, 50% of the inshore sector, are fully US owned.

Catcher-Boats Overall: There are 119 catcher-boats altogether: 91 in the inshore sector and 50 in the offshore sector. When added this makes 141 vessels, and subtracting 22 for those that operated in both sectors again equals 119 different catcher-vessels. Ownership of catcher-boats by parent companies of Japan account for 14 or about 12%. A little less than 2% of the catcher-boats have ownership by parent companies foreign-affiliated in Norway. There are two to six vessels where the parent company is from South Korea (four of these vessels are inconclusively of South Korea), or less than 5%. The remaining catcher-boats are fully US owned (which includes one vessel with some inconclusive UK affiliation).

Offshore Catcher Processors: Parent-companies that are affiliated with Japan account for one of the 37 catcher processors in the offshore sector, or about 2%. Norway-affiliation includes 18 vessels or about 49%. South Korea includes two to three vessels (because some vessels have ownership by parent companies of Japan as well as South Korea), or about 5%. There remains 16 catcher processors in the offshore sector which are fully US owned, or 46% of the total.

"True" Motherships: There are three "true" motherships operating in the offshore sector. One is fully-affiliated with Japan (33% of the total), one is 10% affiliated with South Korea and 90% US or about 3% of the total, and one is fully US. Ownership by US companies accounts for 63% of the total of "true" motherships.

3.10 Employment Information

We presented employment information in September which was incomplete, due primarily to our lack of employment information for the at-sea sector. Reporting requirements in Alaska are different than in Washington, for example, and we were able to give you employment information for the primary inshore plants involved in the pollock fishery, but not the at-sea sector. This included total employment, a breakdown by month (which may give some indications of pollock-specificity), and residency of those employees, as compiled by the Alaska Department of Labor. We received assistance from the Washington Department of Fisheries, including Council member Austin, to try and get symmetrical information for the offshore fleet; unfortunately there is no official, agency source for the data we need.

In February 1998 we received guidance from the Council on the use of industry submitted data to help us fill the employment gap in our analysis, including an independent audit process to check the veracity of that information. We have coordinated with the Alaska Department of Labor and representatives of the at-sea sector (At-sea Processors Association member companies only) who have provided us with social security numbers for all Alaskan employees of their Bering Sea operations, and their total employment numbers. These have been cross-checked against the Alaska Permanent Fund Dividend files to confirm the number and percentage of Alaskan resident employment. These are not necessarily specific to pollock employment, but as with the inshore plant information, cover all employment (we have no way to really differentiate by species, though the members of APA are primarily pollock specific operations). This information has been compiled and is now incorporated in the document under Tab 6 of Appendix I.

We should also mention that the analysis prepared by Impact Assessment, Inc. may provide another, less quantitative perspective on the overall employment issue (Appendix II). A major focus of their work is to identify the linkages, from a community and employment perspective, to each industry sector, and therefore be able to make some assessments regarding impacts of the alternatives.

3.11 PSC Bycatch Information

Bycatches of 'prohibited species' in the BS/AI pollock target fisheries have the potential to impose both direct and indirect costs. Rates and species composition vary significantly by area, time, gear-type, and sector. They also would be expected to vary, over time, with the relative abundance of the individual PSC species, e.g., an exceptionally strong AYK chum salmon return could produce unusually high rates of bycatch of "other salmon" in BS/AI pollock target trawl fisheries. Anticipating variability in rates is particularly difficult.

Utilizing NMFS catch and bycatch data (principally from 'blend' files), base-year PSC statistics for BS/AI pollock target fisheries were examined. The following tables summarize these PSC bycatch performance data, by processing mode and sub-sector for 1996 (data from the 1991 and 1994 fisheries were presented in September to illustrate the trends and variability over time - that information is included in Appendix I). The first table presents the total bycatch in 'metric tons' or *'numbers of animals'* taken by a sector in directed pollock fisheries for the entire year. The second table converts these estimates into *'PSC bycatch rates'*, expressed in terms of *'tons of PSC-bycatch'* per ton of groundfish catch, or *'numbers of PSC animals'* per ton of groundfish catch. **A discussion at the Advisory Panel in February suggested deleting the table showing absolute bycatch amounts, and instead focusing on the <u>rates</u> of bycatch. That table has not been deleted, due to the analysts' decision that the information illustrates the overall low levels (relative to other fisheries) of PSC bycatch in the pollock target fisheries, for both sectors involved.**

Comparisons between the tables 3.25 and 3.26 suggest that, in some instances, relatively large absolute PSC numbers (either tons or animals) may actually be associated with relatively small *'rates'* of bycatch, due to the absolute volumes of groundfish catch recorded by a given sector. Salmon and herring, for example, show significant amounts of bycatch in the pollock fisheries, but low overall rates of bycatch. Other PSC species have both low amounts and low rates overall. This further suggests that these two aspects of PSC-bycatch performance be assessed in combination in order to evaluate relative sector (and/or sub-sector) impacts.

Table 3.25 BS/AI Pollock Target Fishery Prohibited Species Bycatch, by Processing Mode

[Metric tons or number]

	Halibut mort.	Herring	Red king crab	Other k.crab	Bairdi	Other Tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
				Catcher/Processor				
Non-surimi								
1996	125.6	49.5	4.9	.0	20.1	20.5	6.1	4.2
Surimi								
1996	129.9	720.6	1.0	.1	62.0	24.5	14.4	35.3
				"True" Motherships				
1996	20.5	30.7	.0	.0	.1	.2	8.8	18.6
				Inshore				
Non-surimi								
1996	11.0	186.5	.0	.0	.8	3.3	4.3	4.8
Surimi								
1996	33.7	254.3	.1	.1	6.5	15.0	22.0	14.5

Members of the Council's Advisory Panel requested that the metric tons of halibut mortality in the pollock target fisheries be expressed in numbers of halibut. To convert the tons of halibut to numbers of animals, the total weight of halibut bycatch was divided by the mean weight of a halibut (3.5 kg was the assumed weight) taken in the bottom or midwater pollock target fisheries[8]. This calculation indicates that 91,600 halibut were removed as bycatch mortality in the 1996 pollock fishery. Halibut mortality in the 1997 pollock fishery was estimated to be about 74,300 animals[9].

[8] The average size of a halibut taken as bycatch in the 1996 bottom pollock fishery was 3.14 kg, and in the mid-water pollock fishery the average was 3.84 kg. These weights were taken from the 1997 "Report of Assessment and Research Activities" published by the International Pacific Halibut Commission, p. 286, 1998.

[9] Taken from the May 1998 draft of the Pelagic Trawl EA/RIR, D. Witherell, NPFMC.

Table 3.26 BS/AI Pollock Target Fishery Prohibited Species Bycatch Rates, by Processing Mode

[Metric tons/ton or number/ton]

	Halibut mort.	Herring	Red king crab	Other k.crab	Bairdi	Other Tanner	Chinook	Other salmon
	t/t	t/t	No./t	No./t	No./t	No./t	No./t	No./t
Catcher/Processor								
Non-surimi								
1996	.00059	.00023	.02290	.00012	.09400	.09600	.02700	.01950
Surimi								
1996	.00030	.00167	.00220	.00015	.14300	.05660	.03300	.08170
"True" Motherships								
1996	.00017	.00025	.00000	.00000	.00060	.00170	.07100	.15250
Inshore								
Non-surimi								
1996	.00014	.00245	.00000	.00000	.01050	.04300	.05560	.06300
Surimi								
1996	.00011	.00080	.00021	.00038	.02048	.04690	.06770	.04550

Projections of PSC bycatch under the various alternatives are contained in Chapter 4.

3.12 Fishing in the Russian EEZ

In September, 1997, a report was prepared at the request of the Council, summarizing the entry and exit patterns of American fishing vessels moving between the U.S. EEZ off Alaska and the Russian zone. At that time, the question posed to the NMFS Enforcement Office, Juneau, which monitors these passages, was, "... how many U.S. vessels fished in the BS/AI or GOA pollock fisheries ***and*** operated in the Russian zone... ***in the same year***?" In other words, how many vessels fished ***both*** in the Russian zone and in the BS/AI or GOA pollock fishery in 1992; how many in ***both*** in 1993; etc.

The results suggested that almost no vessels had exhibited this pattern of operation over the period 1992 through 1996. When these data were presented to the Council, however, the Council expressed the opinion that the question had been too narrowly phrased. They asked that the data be re-examined to determine, "... how many American vessels had fished in a BS/AI or GOA pollock fishery, ***any time during this period***, and ***also*** "checked-in" to, or "checked-out" of, the Russian zone?" That is, for example, had a U.S. fishing vessel which fished in a pollock target fishery in the BS/AI in, say, 1994, ***ever*** notified NMFS of its intention to exit the U.S. zone to participate in fishing activities in the Russian zone, either before or after its pollock activity in 1994?

By re-phrasing the question in this way, it should be possible to identify vessels moving between the two zones across multiple-years, rather than within a single year, as posed in the original question.

Some limited opportunity apparently existed, over the period of interest, for U.S. groundfish operations to participate in fisheries in the Russian western Bering Sea and North Pacific EEZ. Federal regulations require that domestic fishing vessels 'check-in' and 'check-out' when moving between fisheries in the U.S. and Russian zones. The NMFS Enforcement Office, Juneau, maintains records of such activity. They report that these data were not collected for 1991 (the first year of this profile), but were compiled beginning in 1992.

The original draft of this discussion contained information on the total number of vessels which either checked in or out, and provided information regarding the subset of vessels which have also been involved in the BS/AI or GOA pollock fisheries over the same time period. The relevant information was that, in 1992 there were 22 vessels which checked in/out, and which also had some involvement in the pollock fishery between 1991 and 1996. In 1993 only one such vessel was identified; in 1994 only one vessel; in 1995 there were three vessels; and, in 1996 there were five. All the vessels involved were *C/Ps*, within the definition of this analysis, having operated as such in the U.S. EEZ. Despite this fact, some reportedly operated as motherships or catcher boats while fishing in the Russian zone.

No operations defined within the I/O3 analysis as *'true' motherships* exhibited these U.S. to Russian zone switching patterns, over the period. And no operations, identified as *catcher boats* within the I/O3 analytical definitions, fished in both the Russian EEZ and in the BS/AI *pollock target* fishery, over this period, according to NMFS Enforcement records.

Ideally, we would provide information to the Council which identifies the entry/exit patterns of the unique vessels over time, as well as perhaps their EEZ pollock activity; however, we have been informed that this is confidential data and cannot be disclosed.

3.13 State of Alaska Fish Taxes

In order to augment the discussion on value of the pollock fisheries to the state, the Alaska Department of Revenue has conducted the following analyses to compare tax revenues generated by fishery and by inshore and offshore sectors.

The Fisheries Business Tax (AS 43.75)

The current structure of the fisheries business tax was adopted by the Alaska legislature in 1979. This tax structure differentiates between established and developing species and whether or not the processing activity occurs in a floating facility, or shorebased facility. The tax is a percentage of the exvessel value (the amount paid to commercial fishers). For established species the tax rate is 5% for floating processing and 3% for other shorebased processing. For developing species it is 3% for floating processing, and 1% for shorebased processing.

For revenue from processing activities within a municipality, 50% of the taxes are shared with the respective municipalities in which the processing took place. If a municipality is within a borough, the 50% amount to be shared is generally split equally between the municipality and borough. For revenue from processing activities outside a municipality (unorganized borough), 50% of the taxes are shared through an allocation program administered by the Alaska Department of Community and Regional Affairs.

Because pollock was classified by the Alaska Department of Fish and Game as an established fishery in 1995 and 1996 (the two years addressed in this report), the relevant tax rates for pollock are 5% for floating processing, and 3% for shorebased processing. A shorebased business is defined under Alaska Statute (AS 43.75.290) as a business that is either "permanently attached to the land" or "remains in the same location in the state for the entire tax year."

The Fishery Resource Landing Tax (AS 43.77)

The landing tax became effective January 1, 1994. The tax is levied on processed fishery resources first landed in Alaska. The tax rate is 3% of the exvessel value for established species (e.g. pollock) and 1% for developing species. For the landing tax, the exvessel value is determined by multiplying the statewide average price per pound (computed by the Alaska Department of Fish and Game) by the unprocessed weight of the fish. For example, if a firm processes 100,000 pounds of raw pollock (outside of the 3 mile limit and then brings it into Alaska for transshipment) and the statewide average price is $.10/lb., they would owe $300 in tax.

Revenue from the fishery resource landing tax is shared in the same manner as from the fisheries business tax except the location of the sharing is a function of where the fish was landed not processed.

Assumptions for Excise Fish Tax Comparisons

Because data used by the Department of Revenue comes from fisheries business and fishery resource landing tax returns, the following assumptions need be made in order to identify pounds, value and revenue by species and area.

1. Pollock pounds and value attributed to the share locations Atka, Akutan, Saint Paul, Unalaska, the unorganized borough, and outside (longitude and latitude outside of borough boundaries) are representative of the Bering Sea and Aleutian Islands pollock harvest. Although some pollock caught in the Gulf might be processed in these share locations, and some pollock caught in the Bering Sea might be processed outside of these share locations, this is the only way we have to differentiate between Gulf, and Bering Sea and Aleutian Islands pollock. The total Fishery Business Tax for both the BS/AI and GOA combined are listed in Table 3.27.

2. Pollock pounds and value listed on fisheries business tax returns correspond to inshore pollock. Pollock pounds and value listed on landing tax returns correspond to offshore pollock.

3. The pounds and value listed on the fisheries business and fishery resource landing tax returns correspond to actual pounds and value caught.

4. Revenues are a direct calculation from pounds and value, not the actual revenue paid by taxpayers. Actual revenues will differ from these numbers because of carryforwards, credits, amended returns and the timing of estimated payments.

Comparison of Excise Taxes for BS/AI Pollock by Sector (see 3.28)

Using the above assumptions, we calculated the pounds, value and revenue for 1995 and 1996 inshore and offshore BS/AI pollock.

Comparison of Inshore and Offshore BS/AI Pollock

1. In 1995, the number of pounds of BS/AI pollock subject to the fisheries business tax (inshore) was 915 million (859 million in 1996) and the number of pounds subject to the landing tax (offshore) was 1.5 billion (1.4 billion in 1996).

Table 3.27: 1995 and 1996 Pollock Tax Revenue Data

FISHERIES BUSINESS TAX[1]
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
SHORE	1,016,357,336	$102,603,904		3.0%	$3,078,117
FLOAT	73,966,138	$4,766,612		5.0%	$238,331
1995	**1,090,323,474**	**$107,370,516**	**$0.098**		**$3,316,448**
POLLOCK					
SHORE	818,014,874	$68,549,631		3.0%	$2,056,489
FLOAT	175,261,183	$12,685,276		5.0%	$634,264
1996	**993,276,056**	**$81,235,005**	**$0.082**		**$2,690,753**

FISHERY RESOURCE LANDING TAX[2]
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
1995	**1,473,380,396**	**$135,550,996**	**$0.092**	3.0%	**$4,066,530**
1996	**1,388,720,806**	**$113,875,104**	**$0.082**	3.0%	**$3,416,253**

TAX TOTALS
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	REVENUE
1995	**2,563,703,871**	**$242,921,512**	**$0.095**	**$7,382,978**
1996	**2,381,996,862**	**$195,110,109**	**$0.082**	**$6,107,006**

NOTE: FROM FISHERIES BUSINESS TAX RETURNS & FISHERY RESOURCE LANDING TAX RETURNS (tax period ends 1995 & 1996)

[1] Estimated revenue is calculated using a 3% tax rate for shore processors and a 5% tax rate for floating processors. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Additionally, 50% of this revenue is shared to qualifying communities

[2] Estimated revenue is calculated using a 3% tax rate. Actual pounds and value might vary due to amended returns. Actual revenue will vary due to amended returns, credits, the timing of estimated payments. Additionally, 50% of this revenue is shared to qualifying communities.

Prepared by Alaska Department of Revenue, Income and Excise Audit Division

Table 3.28: Bering Sea 1995 and 1996 Pollock Tax Revenue

BERING SEA[1] FISHERIES BUSINESS TAX[2]
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
SHORE	840,717,171	$84,273,515		3.0%	$2,528,205
FLOAT	73,966,138	$4,766,612		5.0%	$238,331
1995	**914,683,309**	**$89,040,127**	**$0.097**		**$2,766,536**
POLLOCK					
SHORE	683,825,490	$56,644,800		3.0%	$1,699,344
FLOAT	175,261,183	$12,685,276		5.0%	$634,264
1996	**859,086,673**	**$69,330,076**	**$0.081**		**$2,333,608**

BERING SEA[1] FISHERY RESOURCE LANDING TAX[3]
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
1995	**1,473,380,396**	**$135,550,996**	**$0.092**	3.0%	**$4,066,530**
1996	**1,388,646,983**	**$113,869,050**	**$0.082**	3.0%	**$3,416,072**

BERING SEA[1] TOTALS
ESTIMATED

POLLOCK	POUNDS	VALUE	PRICE	REVENUE
1995	**2,388,063,705**	**$224,591,123**	**$0.094**	**$6,833,066**
1996	**2,247,733,656**	**$183,199,126**	**$0.082**	**$5,749,679**

NOTE: FROM BERING SEA FISHERIES BUSINESS TAX RETURNS & FISHERY RESOURCE LANDING TAX RETURNS (tax period ends 1995 & 1996)

[1] Bering Sea (as defined here) corresponds to the following share locations: Atka, Akutan, Saint Paul, Unalaska, the unorganized borough, and outside (long. and lat. outside Borough and municipal boundaries).
[2] Estimated revenue is calculated using a 3% tax rate for shore processors and a 5% tax rate for floating processors. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Additionally, 50% of this revenue is shared to qualifying communities
[3] Estimated revenue is calculated using a 3% tax rate. Actual pounds and value might vary due to amended returns. Actual revenue will vary due to amended returns, credits, the timing of estimated payments. Additionally, 50% of this revenue is shared to qualifying communities.

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2. In 1995, the inshore BS/AI pollock total value was $89 million ($69 million in 1996) and the offshore BS/AI pollock total value was $136 million ($114 million in 1996). This translated to a total state revenue of $2.8 million for inshore ($2.3 million in 1996) and $4.1 million ($3.4 million in 1996) for offshore.

3. For 1995 and 1996, inshore BS/AI pollock (as defined here) accounted for 38% of BS/AI pounds (inshore plus offshore BS/AI pollock) and 40% of total revenue. For 1995, the two reasons for the higher revenue percentage were the higher tax rate on floating processing and the higher price on inshore BS/AI pollock. In 1996, the reason for the higher revenue percentage was the higher tax rate on floating processing ($250,000 in additional revenue).

4. In 1996, the inshore pounds of BS/AI pollock are down by 6%, total value down by 22%, and revenue down by 16% from 1995. The offshore pounds are down by 6%, and total value and revenue down by 16%.

Thus, for the indicator year for this analysis, the total 1996 value of the Bering Sea and Aleutian Islands pollock harvest (as defined here) is $195 million. This translates into approximately $2.3 million in revenue from the fisheries business tax (inshore) and $3.4 million in revenue from the fishery resource landing tax (offshore), for a total of $5.7 million.

Potential Reasons for High Inshore/Offshore Percentage

The Bering Sea and Aleutian Island pollock allocation for 1995 and 1996 was 35% inshore and 65% offshore (our data shows 38% inshore and 62% offshore). The following are possible reasons why our percentages differ from the allocation percentages:

1. The data used in this report are from fisheries business and fishery resource landing tax returns. Taxpayers list where the pollock was processed on their fisheries business tax returns not where it was caught. Consequently, if a taxpayer caught his pollock in the Gulf but then took this pollock to Bering Sea or Aleutian Island communities to be processed, we would still count this as BS/AI pollock. Conversely, if the pollock was caught in the Bering Sea but processed in Gulf communities, we would count this as Gulf pollock.

2. Processors or DOR may have made errors in data capturing and reporting pounds.

3. Taxpayers are taking their last load of pollock with them out of state (see leakage discussion below).

Comparison of BS/AI Pollock with Other Species (see Tables 3.29-.3.32)

The following percentages should help to put the revenue generated from BS/AI pollock in perspective relative to the revenue generated by other fish species.

1. In 1995, BS/AI pollock revenue was 93% of total statewide (landing and fisheries business) pollock revenue (94% in 1996).

2. In 1995, pollock revenue was 53% of total statewide groundfish revenue (50% in 1996).

Table 3.29: 1995 Landing Tax Pounds and Values

		ESTIMATED[1]			
SPECIES	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
GROUNDFISH	2,118,032,016	$216,634,800	$0.102	3.0%	$6,117,150 [2]
SHELLFISH	7,612,422	$19,540,840	$2.567	3.0%	$586,225
OTHER	79,845	$123,092	$1.542	3.0%	$3,693
TOTALS	**2,125,724,282**	**$236,298,731**	**$0.111**		**$6,707,068**
NOTE:	FROM FISHERY RESOURCE LANDING TAX RETURNS (tax period ends 1995)				

[1] Estimated revenue is calculated using a 3% rate for established species and a 1% rate for developing species. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Actual pounds and value might vary due to amended returns. Additionally, 50% of this revenue is shared to qualifying communities

[2] Adjusted for $381,894 in refunds due to retroactive application of developing species designation to the landing tax.

Table 3.30: Landing Tax Pounds and Values[1]

		ESTIMATED			
SPECIES	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
GROUNDFISH					
DEV.	280,840,684	$14,393,419	$0.051	1.0%	$143,934
EST.	1,805,400,910	$175,725,308	$0.097	3.0%	$5,271,759
TOTAL	**2,086,241,594**	**$190,118,728**	**$0.091**		**$5,415,693**
SHELLFISH					
DEV.	295,515	$1,587,610	$5.372	1.0%	$15,876
EST.	8,924,944	$14,159,576	$1.587	3.0%	$424,787
TOTAL	**9,220,459**	**$15,747,186**	**$1.708**		**$440,663**
OTHER					
EST.	35,189	$23,269	$0.661	3.0%	$698
TOTAL	**35,189**	**$23,269**	**$0.661**		**$698**
TOTALS	**2,095,497,242**	**$205,889,183**	**$0.098**		**$5,857,055**
NOTE: FROM FISHERY RESOURCE LANDING TAX RETURNS (tax period ends 1996)					

[1] Estimated revenue is calculated using a 3% tax rate for established species and a 1% tax rate for developing species. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Actual pound and value might vary due to amended returns. Additionally, 50% of this revenue is shared to qualifying communities

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Table 3.31: 1995 Fisheries Business Pounds, Value and Revenue Data

	FISHERIES BUSINESS TAX[1]				
		ESTIMATED			
	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
SALMON					
SHORE EST.	395,789,374	$228,043,167		3.0%	$6,841,295
CAN EST.	406,055,010	$134,204,187		4.5%	$6,039,188
FLOAT EST.	163,825,497	$117,102,567		5.0%	$5,855,128
TOTAL	**965,669,881**	**$479,349,922**	**$0.496**		**$18,735,612**
SHELLFISH					
SHORE EST.	57,569,487	$142,786,796		3.0%	$4,283,604
SHORE DEV.	5,212,551	$4,904,600		1.0%	$49,046
FLOAT EST.	41,470,646	$99,774,526		5.0%	$4,988,726
TOTAL	**104,252,684**	**$247,465,922**	**$2.374**		**$9,321,376**
GROUNDFISH					
SHORE EST.	1,297,228,431	$237,045,595		3.0%	$7,111,368
SHORE DEV.	12,844,539	$1,409,814		1.0%	$14,098
FLOAT	110,880,098	$15,019,886		5.0%	$750,994
FLOAT DEV.	3,429,017	$283,506		3.0%	$8,505
TOTAL	**1,424,382,085**	**$253,758,801**	**$0.178**		**$7,884,965**
HERRING					
SHORE EST.	41,815,672	$20,707,448		3.0%	$621,223
FLOAT EST.	76,631,166	$32,300,628		5.0%	$1,615,031
TOTAL	**118,446,838**	**53,008,075**	**$0.448**		**$2,236,255**
HALIBUT					
SHORE EST.	30,014,357	$57,946,825		3.0%	$1,738,405
FLOAT EST.	249,360	$550,584		5.0%	$27,529
TOTAL	**30,263,717**	**58,497,409**	**$1.933**		**$1,765,934**
ALL SPECIES					
TOTALS	**2,643,015,205**	**$ 1,092,080,129**	**$0.413**		**$39,944,142**
NOTE:	FROM 1995 FISHERIES BUSINESS TAX RETURNS (tax period ends 1995)				

[1] **Estimated revenue is calculated for established species using a 3% tax rate for shore processors, a 5% tax rate for floating processors and a 4.5% rate for canneries. For developing species (not broken out if they comprise less than 1% of total value), a 1% rate is used for shore and a 3% rate used for floating processors. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Actual pounds and value might vary due to amended returns. Additionally, 50% of this revenue is shared to qualifying communities.**

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Table 3.32: 1996 Fisheries Business Pounds, Value and Revenue Data

		FISHERIES BUSINESS TAX[1]			
		ESTIMATED			
	POUNDS	VALUE	PRICE	TAX RATE	REVENUE
SALMON					
SHORE EST.	377,120,717	$207,103,505		3.0%	$6,213,105
CAN EST.	341,258,470	$89,641,178		4.5%	$4,033,853
FLOAT EST.	134,581,570	$82,161,868		5.0%	$4,108,093
TOTALS	**852,960,756**	**$378,906,550**	**$0.444**		**$14,355,052**
SHELLFISH					
SHORE EST.	57,013,720	$106,784,403		3.0%	$3,203,532
SHORE DEV.	6,619,129	$3,041,020		1.0%	$30,410
FLOAT EST.	31,931,619	$47,935,399		5.0%	$2,396,770
TOTALS	**95,564,468**	**$157,760,822**	**$1.651**		**$5,630,712**
GROUNDFISH					
SHORE EST.	1,113,875,396	$187,583,227		3.0%	$5,627,497
SHORE DEV.	15,586,309	$1,569,994		1.0%	$15,700
FLOAT EST.	227,947,357	$20,825,772		5.0%	$1,041,289
TOTALS	1,357,409,062	$209,978,993	$0.155		$6,684,485
HERRING					
SHORE EST.	51,800,870	$30,810,059		3.0%	$924,302
FLOAT EST.	58,924,511	$28,681,052		5.0%	$1,434,053
TOTALS	110,725,381	$59,491,111	$0.537		$2,358,354
HALIBUT					
SHORE EST.	32,387,495	$70,955,762		3.0%	$2,128,673
FLOAT EST.	183,933	$394,973		5.0%	$19,749
TOTALS	32,571,428	$71,350,734	$2.191		$2,148,421
ALL SPECIES					
TOTALS	**2,449,231,095**	**877,488,210**	**$0.358**		**$31,177,025**

NOTE: FROM 1996 FISHERIES BUSINESS TAX RETURNS (tax period ends 1996)

[1] Estimated revenue is calculated for established species using a 3% tax rate for shore processors, a 5% tax rate for floating processors and a 4.5% rate for canneries. For developing species (not broken out if they comprise less than 1% of total value), a 1% rate is used for shore and a 3% rate used for floating processors. Actual revenue will vary due to amended returns, credits, the timing of estimated payments and carryforwards from previous years. Actual pounds and value might vary due to amended returns. Additionally, 50% of this revenue is shared to qualifying communities.

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3. In 1995 and 1996, pollock revenue was 16% of total statewide fish revenue. In comparison salmon represented 40% (39% in 1996), shellfish 21% (16% in 1996), halibut 4% (6% in 1996) and Herring 5% (6% in 1996) of the total statewide fish revenue.

In summary, the total 1996 value of pollock represents 9% ($81.2 million) of the total value of all fish (shellfish, salmon, halibut, herring, groundfish & shellfish) listed on 1996 fisheries business returns ($877.5 million). Additionally, pollock represents 55% ($113.9 million) of the total value of all fish listed on fishery resource landing tax returns ($205.9 million).

Comparison of Corporate Revenues

In order to provide the council with a comprehensive view of revenues generated through the pollock fishery, the Department of Revenue attempted to analyze corporate tax revenue amounts attributable to pollock fishing activities. However, it was found that it is not possible to estimate the pollock only component. These corporations might fish multiple species or be involved in other business activities. The structure of the corporate tax reporting system precludes identifying corporate revenue attributable to the inshore and offshore pollock fisheries. Instead, the best data that can be provided is the total corporate revenue of landing and fisheries business taxpayers.

Evaluation of the Leakage Phenomenon (see Table 3.33 and table 3.34)

In order to be fully responsive to the Council's request, it was necessary to compare "tons-taxed" to "total tons" produced, on an annual basis. The council generally assumed that any difference observed represents the amount of catch which was landed 'outside' Alaska taxing jurisdictions. These ratios can be used to extrapolate leakages attributable to offshore catches landed outside Alaska for a given TAC apportionment.

The definition of leakage being applied for purposes of this discussion is "transshipments made outside of 3 miles and the last-load phenomenon". Federal data may exist to resolve this issue. Absent this information, one approach to addressing the leakage issue is to compare Department of Revenue and National Marine Fisheries Service (NMFS) pollock data. However, leakage is only one of many possible explanations for differences between the DOR and NMFS data.

Comparison between DOR and NMFS Pollock Data

Because of differences between the DOR and NMFS price estimation methodology, we use unprocessed pounds of pollock as our basis of comparison. Our data comes from fisheries business and landing taxpayers returns while NMFS data comes from information provided by the North Pacific Fishery Management Council on January 22, 1998.

As a result of looking into these issues of differences in reporting and possible leakages, the following findings emerged:

1. There is less than a 1% difference between the total pounds of pollock listed on 1996 Bering Sea and Aleutian Islands fisheries business tax returns and the total inshore 1996 pounds of Bering Sea and Aleutians Islands pollock identified by the National Marine Fisheries Service.

2. There is an 16% difference between the total pounds of pollock listed on 1996 fishery resource landing tax returns and the total offshore 1996 pounds of Bering Sea and Aleutians Islands pollock identified by the National Marine Fisheries Service.

Table 3.33: Comparison of 1995 & 1996 DOR Bering Sea and Aleutians Pollock Pounds Data with National Marine Fisheries Service Data

	DOR LANDING	NMFS OFFSHORE	% DIFF. NMFS	DOR FISH BUS.	NMFS INSHORE	% DIFF. NMFS
1995	1,473,380,396	1,797,899,331	-18.05%	914,683,309	915,068,440	-0.04%
1996	1,388,646,983	1,654,519,021	-16.07%	859,086,673	863,125,980	-0.47%

Tax data is from original fisheries business and fishery landing 1995 & 1996 tax returns. The NMFS data is from the National Pacific Fishery Management Council (January 22, 1998).

Table 3.34: Comparison of 1995 & 1996 DOR Bering Sea and Aleutians Pollock Pounds Data with National Marine Fisheries Service Data, and Revenue Difference if Assumed Taxable

	DOR LANDING	NMFS OFFSHORE	% DIFF. NMFS	DIFFERENCE POUNDS	REVENUE IF DIFF. ASSUMED TAXABLE
1995	1,473,380,396	1,797,899,331	-18.05%	-324,518,935	**-895,672**
1996	1,388,646,983	1,654,519,021	-16.07%	-265,872,038	**-654,045**
	DOR FISH BUS.	**NMFS INSHORE**	**% DIFF. NMFS**	**DIFFERENCE POUNDS**	**REVENUE IF DIFF. ASSUMED TAXABLE**
1995	914,683,309	915,068,440	-0.04%	-385,131	**-1,121**
1996	859,086,673	863,125,980	-0.47%	-4,039,307	**-9,816**

Tax data is from original fisheries business and fishery landing 1995 & 1996 tax returns. The NMFS data is from the National Pacific Fishery Management Council (January 22, 1998). Revenues were calculated for each year using the 3% landing tax for both offshore and onshore deliveries. The following product prices were used to estimate revenue: offshore (1995) $0.092/pound; (1996) $0.082/pound; onshore: (1995) $0.097/pound; (1996) $0.081/pound.

Prepared by the Alaska Department of Revenue, Income and Excise Audit Division

3. Although there is no clear source of these differences, if these pounds had been landed in Alaska and taxed, then the combined revenue for the two years 1995 and 1996 would be approximately $11 thousand for the inshore fishery and $1.5 million for the offshore fishery.

Possible Reasons for Differences between DOR and NMFS Estimates

Inshore. The following are potential reasons for differences between DOR and NMFS estimates of the size of the inshore pollock harvest. In spite of these potential differences the NMFS and DOR estimates are less than 1% apart.

1. Reference Area: Differences between NMFS and DOR data could result from differences in the definition of BS/AI pollock used by DOR and NMFS. DOR inshore data is from fisheries business tax returns. NMFS data is from weekly production reports and observer data. Fisheries business taxpayers are only required to state the physical location of where the processing took place. Thus, if Bering Sea pollock is being processed in the Gulf, we would not include it as BS/AI pollock and if Gulf pollock was being processed in BS/AI communities, we would include it as BS/AI pollock. It is possible that BS/AI pollock processed in the Gulf offsets Gulf pollock processed in BS/AI communities.

2. Errors: Processors, DOR or NMFS may have made errors in data capturing and reporting pounds.

3. Noncompliance: There may be some taxpayers who are not reporting the total number of pounds of taxable pollock.

Offshore. The following are some of the potential reasons for the 18% (1995) and 16% (1996) difference between NMFS and DOR estimates of offshore pollock.

1. Calculation of Pounds: The landing taxpayer has three choices in listing the unprocessed pounds on their landing tax returns: (1) actual scale weight, (2) NMFS volumetric measurement, (3) NMFS recovery rate or (4) other (see Alaska Administrative Code - 15 AAC 77.045). Other includes using a verifiable industry average recovery rate. Consequently, the taxpayer's calculation of unprocessed pounds on his landing tax return might differ from the calculation used by NMFS.

2. Leakage: Taxpayers might be taking their last load of pollock out of the state with them on their last run.

3. Errors: Errors made by processors, DOR or NMFS in data capturing and reporting pounds.

4. Noncompliance: There may be some taxpayers who are not reporting the total number of pounds of taxable pollock.

Summary of Findings

The following are some of the findings of this report:

1. The total 1996 value of the Bering Sea and Aleutian Islands pollock harvest (as defined here) is $195 million. This translates into approximately $2.3 million in revenue from the fisheries business tax and $3.4 million in revenue from the fishery resource landing tax (for a total of $5.7 million).

2. The total 1996 value of pollock represents 9% ($81.2 million) of the total value of all fish (shellfish, salmon, halibut, herring, groundfish & shellfish) listed on 1996 fisheries business returns ($877.5

million). Additionally, pollock represents 55% ($113.9 million) of the total value of all fish listed on fishery resource landing tax returns ($205.9 million).

3. There is less than a 1% difference between the total pounds of pollock listed on 1996 Bering Sea and Aleutian Islands fisheries business tax returns and the total inshore 1996 pounds of Bering Sea and Aleutians Islands pollock identified by the National Marine Fisheries Service. There is a 16% difference between the total pounds of pollock listed on 1996 fishery resource landing tax returns and the total offshore 1996 pounds of Bering Sea and Aleutians Islands pollock identified by the National Marine Fisheries Service.

4. Although there is no clear source of these differences, if these pounds had been landed in Alaska and taxed, then the combined revenue for the two years 1995 and 1996 would be approximately $11 thousand for the inshore fishery and $1.5 million for the offshore fishery.

In addition to the fish taxes collected by the State, local governments within Alaska also collect fish taxes. Table 3.35 below lists the tax rates assessed by the local governments throughout Alaska. These rates apply to the ex-vessel value of raw fish landed in the borough or city. Only the cities of King Cove, Sand Point, Akutan, and Unalaska have processors that reported taking landings of Bering Sea or Aleutian Islands pollock during 1996. The remaining cities and boroughs have been included to provide a complete list of local fish taxes, although they do not generate taxes from Bering Sea and Aleutian Islands pollock.

Table 3.35 Regional Raw Fish Taxes

Alaska City and Borough Raw Fish Taxes (These taxes are paid in addition to the State taxes)			
Location	Borough	City	Total
King Cove	2%	2%	4%
Sand Point	2%	2%	4%
Akutan	2%	1%	3%
Unalaska	0%	2%	2%
Atka	0%	1%	1%
Pilot Point	2%	3%	5%
St. George	0%	3%	3%
Togiak	3%	2%	5%

Oregon Fish Taxes

Chapter 635, Division 6 - Department of Fish and Wildlife, of the Oregon Administrative Rules states that fish taxes are levied at 1.09% of the exvessel value (salmon and steelhead taxes are levied at 3.15%). However, over the last ten years the largest reported pollock landing in Oregon was 148 pounds[10]. These rare landings of small

10 Personal communication with Jerry Lukas of the Oregon Department of Fish and Wildlife.

amounts of pollock are likely the result of bycatch in other target fisheries. Therefore, only insignificant amounts of Alaskan pollock have been landed and taxed in Oregon over the past ten years.

Washington Fish Taxes

Fish taxes are not paid on round pollock that are caught from waters off Alaska's coast, and landed in Washington, or on processed pollock products (i.e., surimi) landed in Washington, when the fish were caught from waters off Alaska. The only taxable fish in Washington, caught from waters off Alaska's coast, are chinook salmon harvested from southeast Alaska waters and caught by trolling. Chapter 82.27 Revised Code of Washington, contains the official language regarding fish tax laws.

Other State and Federal Taxes

A variety of other state taxes are collected based on revenues earned through fishing pollock. State business and income taxes are examples. Federal taxes are also collected through business and personal income taxes. A full examination of tax-related issues would ideally include an assessment of these types of taxes, in addition to the fish taxes discussed above. Tracing these taxes through the system is well beyond the scope of this analysis. The information required to study this complex issue in detail is not currently available, and likely could not be collected if the analysts were given additional time and resources.

4.0 ANALYSIS OF BS/AI ALTERNATIVES

Previous sections described the 1991, 1994, and 1996 BS/AI pollock fisheries. The focus will now shift to providing information on the pollock allocation alternatives identified by the Council. Seven specific alternatives were studied in addition to the Council's preferred alternative.

Alternative 1 is the no action alternative. The No Action alternative would allow the inshore/offshore allocation to expire on December 31, 1998. Members of the current inshore and offshore sectors would then be allowed to process as much of the pollock TAC as they can before the fishery is closed. Alternative 2 would rollover the current 35% inshore and 65% offshore pollock allocation. Alternatives 3(A) through 3(D) provide information on four specific allocations the Council considered. The Council also considered an option that would allocate a percentage of the TAC to catcher vessels. The catcher vessel allocation alternative - referred to as the Harvester's Choice - could be delivered to any processing sector. Finally a discussion of the Council's preferred alternative is provided. The projections for the Council's preferred alternative are based on the same assumptions that were used to describe the outcomes under Alternative 2-3(D).

Several sub-options have been identified by the Council in addition to the sector allocations. However, for the sake of simplicity, those will be discussed outside of the general allocation alternatives. For example, there is a sub-option to sunset I/O3. The Council may choose to sunset the I/O3 program one year after implementation, three years after implementation, or make the program permanent until replaced by a comprehensive rationalization program (CRP). Any of these sub-options may be chosen regardless of the TAC allocation selected. Therefore, instead of discussing the sunset sub-options within each alternative, a section will be devoted to sunset options after the six general alternatives have been presented. The same procedure will be used for each of the other I/O3 sub-options included by the Council.

4.1 Basic Allocation Percentages

4.1.1 "No Action" Alternative

In April, 1990, the Council adopted its Problem Statement for the Inshore/offshore FMP Amendment. It characterized the management dilemma in the following way:

> *"The finite availability of fishery resources, combined with current and projected levels of harvesting and processing capacity and the differing capabilities of the inshore and offshore components of the industry, has generated concern for the future ecological, social and economic health of the resource and industry. These concerns include, but are not limited to, localized depletion of stocks or other behavioral impacts on stocks, shortened seasons, increased waste, harvests which exceed the TAC, and possible preemption of one industry component by another with the attendant social and economic disruption.*
>
> *Domestic harvesting and processing capacity currently exceeds available fish for all species in the Gulf of Alaska and most species in the Bering Sea. The seafood industry is composed of different geographic, social, and economic components which have differing needs and capabilities, including but not limited to the inshore and offshore components of the industry.*
>
> *The Council defines the problem as a resource allocation problem where one industry sector faces the risk of preemption by another ..."*

(Excerpted from the SEIS and RIR/RFA for Amendments 18/23 to the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands and the Gulf of Alaska, March 5, 1992.)

While not explicitly referenced in the problem statement, the original inshore/offshore apportionment debate was contained within the context of a somewhat broader discussion of CRP for the groundfish fisheries of the BS/AI and GOA. Thus, according to the public record on this issue, the original inshore/offshore amendment was principally intended as a temporary, or interim, action to address, among other concerns[11], the *"... risk of preemption"* within the BS/AI and GOA pollock fisheries, while the Council contemplated the development of a CRP.

Preemption has been broadly defined within the amendment to include a range of adverse economic and social effects imposed upon one sector by the activities of another. While the subsequent debate over these impacts was primarily concerned with apportionment of "catch-shares" among the several components of the industry, there was also apprehension expressed about adverse impacts upon community stability, employment opportunities for rural Alaska (and especially Native) residents, market structure and supply considerations, "spill-over" effects on other fisheries, as well as, impacts on marine mammals, sea birds, and other components of the physical environment.

The source of much of this concern was attributed to the rapid rates of growth in capacity, within both the at-sea and inshore sectors. Indeed, by the time I/O1 was adopted and implemented, there was general agreement that *both* the inshore and offshore sectors were very substantially overcapitalized, and that several times more total capacity existed, within the industry as a whole, than was necessary (much less optimal) to harvest and process the entire available pollock TAC.

One direct effect of this expansive growth was that the BS/AI pollock fishing season was increasingly concentrated, in time and geographic location. The open access race-for-fish was believed to be resulting in wasteful and inefficient fishing and processing practices, imposing costs at the operational, local, and societal levels. Many of these costs were assessed qualitatively in the original Inshore/offshore analysis and supporting documents (see, the Final Supplemental Environmental Impact Statement and Regulatory Impact Review/Initial Regulatory Flexibility Analysis of Proposed Inshore/offshore Allocation Alternatives [Amendments 18/23] to the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands and the Gulf of Alaska, March 5, 1992).

The original I/O amendment provided a temporary management structure which has tended to "stabilize" sector-shares of the BS/AI pollock TAC (although, initially providing a somewhat greater percentage of the TAC to the inshore sector than it had historically enjoyed).[12] While I/O has not eliminated capital growth in this fishery, it has, in large part, accomplished the Council's primary objective of preventing the outright "preemption" of less mobile components of the industry. This has not been achieved without imposing direct economic and social costs, and introducing market distortions. Nonetheless, I/O has imposed a degree of stability *between* (if not within) the sectors which likely would not have been attainable in the open access environment of this fishery, as it existed prior to the original inshore/offshore amendment. In this respect, the I/O amendment (and its

[11] As the analysts responsible for assessing I/O1 explained in the EA/RIR, *"The original concerns expressed in the Problem Statement are broad-based, touching on resource conservation, operating characteristics of firms, competitive behavior, and possible preemption of one industry component by another with the attendant social and economic disruptions"* (page 3-21, op cit.).

[12] See sector share profiles in Appendix.

subsequent renewal under I/O2) can be regarded as a "qualified success", having achieved many of the Council's stated objectives for the original action.

I/O1 was implemented beginning in the B-season of 1992. Its provisions were continued under I/O2 in 1995. I/O2 contains a sunset of December 31, 1998. Inaction (or the decision to take "no action") by the Council on I/O3 will, therefore, automatically result in elimination of the inshore/offshore amendment provisions, including sector apportionment of the BS/AI (and GOA) pollock TAC, specific CDQ provisions of the original I/O amendment[13], and the CVOA harvest management area.

The intervening period between initial implementation and the present has seen numerous structural changes in both the inshore and offshore sectors of the industry. Capital-stuffing has reportedly continued in both sectors, although perhaps in some cases emphasizing greater utilization of each fish caught, rather than faster capture and through-put. Capital and capacity have exited the fishery over this period, although not proportionally across each subsector. And some of this displaced capacity has re-entered under new ownership or reorganization.

Therefore, while the industry probably is still substantially over-capitalized, given the size of the current pollock TAC, it is a significantly different fishery and industry than existed prior to I/O1 (see, for example, the Sector Profiles, contained in the Appendix of this analysis). As a result, it is impossible to predict with certainty how the several individual subsectors of the industry would react to a return to a single, unapportioned pollock TAC and removal of the CVOA restrictions.

It is probable, however, that virtually all of the *"destabilizing"* and *"preemptive"* behavior, believed to have been observed in the fishery, and which prompted Council action on I/O1, would reemerge, although the rate and pattern of reemergence are speculative. That is to say, it is highly likely that the fastest, largest, and most mobile components of the industry would exploit these inherent operational assets in the BS/AI pollock target fisheries, resulting as before in a heightened risk of, *"... one sector preempting another."*

Reversion to 'open access' management of this fishery, as under the "No Action" alternative, could also induce operations to accelerate rates of fishing to maximize catch-share. This, in turn, could further reduce season length and potentially result in (1) diminished rates of catch utilization, (2) idling of capacity and crews earlier and for longer periods, (3) placing greater stress on fishing communities and their associated infrastructure, (4) destabilizing operational and market planning horizons, and (5) further complicating and delaying progress towards CRP, should the Council choose to proceed in this direction.

While regulatory changes adopted by the Council and implemented by the Secretary since adoption of I/O1 may ameliorate some of these effects (e.g., IR/IU, and the Vessel Entry Moratorium), it is unlikely that a return to an undifferentiated or unapportioned TAC and 'open access' management of the BS/AI pollock resource would result in any ... *net benefit to the Nation*. Therefore, the No Action alternative appears to be (relatively) inferior to other alternatives under consideration in I/O3, in terms of achieving the Council's specific objectives for this proposed management action.

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[13] The CDQ provisions are being addressed under a separate amendment action and, therefore, are not automatically at risk of "sunsetting" with the rest of I/O, should the Council take no action before December 31, 1998 to renew or 'roll-over' the I/O amendment.

4.1.2 Status Quo: Alternative 2 (35% Inshore and 65% Offshore)

By selecting Alternative 2, the Council would have kept the BS/AI pollock TAC allocations that have been in place since the 1992 B-season. This allocation would continue to allow the inshore sector to process 35% of the available BS/AI pollock TAC, and the offshore sector to process 65%.

The projections of catch and product mix under this alternative differ from those reported for the 1996 fishery, which are discussed in the baseline section of the document, only because we have assumed the future BS/AI pollock TAC (1.10 mmt) will be different from the 1996 harvest (1.16 mmt). Had the TAC been expected to remain at the 1996 levels, the 1996 and status quo numbers for catch, product mix, and gross revenue would be exactly equal.

Projected Processing by Sector

Given a TAC of 1.1 mmt and a 35/65 split of the pollock TAC, the Inshore sector would be allowed to process 356,125 mt of pollock excluding any CDQ fish. "True" motherships would process about 101,750 mt and offshore catcher processors would process about 559,625 mt, if they maintain the same proportions of the offshore processing as in 1996. CDQs would account for the remaining 82,500 mt of BS/AI pollock.

The total amount of product produced will vary depending on the allocation selected, because industry sectors may have different markets and/or utilization rates. The fillet catcher processor sector, for example, is projected to produce nearly 18,000 mt of deep skin fillets under a 1.1 mt TAC (Table 4.1). By definition the fillet catcher processors will produce no surimi. "True" motherships, on the other hand, are expected to produce no fillets and just under 20,000 mt of surimi. Changing the allocation between these two sectors will have substantial impacts on our estimates of the various products produced. Though of "True" motherships may add fillet equipment to their vessels under the right market conditions, predicting when a "True" mothership might add equipment to produce fillets, or when an additional "True" mothership with the capability to produce fillets might enter the pollock fishery, are well beyond our current knowledge base and this analysis.

Product mix assumptions:
1. Processors within a sector will continue to process products in the same relative proportions as they did in 1996.
2. Sectors will continue to have the same utilization rates as 1996 (**Use caution when comparing product projections across industry sectors).** The methods for estimating total catch differs between shorebased and at-sea processors, and therefore utilization rates may not be directly comparable. See the utilization rate discussion in Chapter 3.

At the bottom of Table 4.1 is a section on products produced from pollock harvested under the CDQ program. The amount of product produced will be the same under any alternative. These numbers do not change because CDQ pollock fisheries are outside of the Inshore/offshore allocation.

The product mix for 1996 is reported in Section 3.8, and was presented in the baseline information. Inshore CDQ products were not broken out in that table, because the NMFS Weekly Production Reports cannot separate products made from fish caught in pollock target and CDQ fisheries. One reason they cannot be separated is due to the mixing of fish that may occur during that week's processing. Pollock taken as bycatch in the Pacific cod fishery or in an open access pollock target fishery may be mixed with CDQ fish. To breakout the inshore CDQ pollock products in Table 4.1, the utilization rate for the combined open access and CDQ fishery was applied to the projected CDQ harvest. For additional information on the interactions of CDQ pollock and the Inshore/offshore allocation see Appendix 3.

Table 4.1 Estimated product mix under the current Inshore/Offshore program

Alternative 2 (35% Inshore and 65% Offshore)									
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	6,420	3,882	15,477	-	-	1,539
	Catcher Vessels	-	1,243	912	2,239	-	-	163
Non-surimi C/P Total		-	7,663	4,794	17,716	-	-	1,702
Surimi - C/P	Self Caught	49,618	13	1,080	6,282	10,695	337	5,042
	Catcher Vessels	7,022	-	26	651	1,341	-	438
Surimi - C/P Total		56,640	13	1,105	6,933	12,036	337	5,480
Catcher Processor Total[1]		**56,640**	**7,675**	**5,899**	**24,649**	**12,036**	**337**	**7,182**
"True" Mothership Total[1]		**19,819**	**-**	**-**	**-**	**4,520**	**318**	**969**
Inshore Total[1]		**64,252**	**2,365**	**8,311**	**6,702**	**25,092**	**7,667**	**3,978**
Grand Total		**140,711**	**10,040**	**14,210**	**31,351**	**41,649**	**8,322**	**12,128**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
"True" Mothership	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: This estimate assumes a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

Prices and Gross Revenue

Exvessel Prices. Exvessel prices were discussed in Section 3.7 of this document. That section provided a detailed description of how the inshore and at-sea exvessel prices were determined. The text box to the right contains a summary of the exvessel prices that will be used in our projections. Because the at-sea price is set as a percentage of the shoreside price, any allocation to catcher vessels delivering at-sea will result in less gross revenue than if the same amount of fish were delivered shoreside. However, it is important to remember that revenues are only half of the equation. Catcher vessels that choose to deliver at-sea likely do so for a reason. If they are operating their vessel to maximize profits, which is a reasonable assumption, they must either have the option of delivering more fish or they have a lower cost structure when delivering at-sea. It is possible they may realize both of these benefits. The additional fish and/or lower costs would then counteract the lower price and potentially yield equal or greater profits for the catcher vessels. We must point out, however, that without information on the catcher vessel's cost structure, it is not possible to determine if this would actually be the result.

Offshore exvessel price assumption: The price of pollock delivered to catcher processors or "true" motherships is assumed to be 87.5% of inshore exvessel price. The inshore price used in this analysis is $0.0850, therefore the offshore price equals $0.0744. We have also assumed that the quantity of pollock harvested does not impact the exvessel price.

- Catcher Vessel's Gross Revenue from Pollock

Catcher vessels generate revenue by selling the pollock they harvest to processors. All of the pollock allocated to the inshore and "true" mothership sectors will be delivered by catcher vessels. Catcher processors also supplement harvesting capability by taking deliveries from catcher vessels. In 1996, approximately 10% of the total amount of pollock processed, by the catcher processor sector was harvested by catcher vessels. Only that portion of the catcher processor allocation that is harvested by catcher vessels will be included in our estimates of catcher vessel gross revenue. Pollock that was caught and processed by catcher processors is included in the column titled "Own Harvest", but the revenue fields are intentionally left blank.

The Council considered a sub-option that would require a minimum of nine to 15% of the catcher processor's allocation be delivered by catcher vessels. This sub-option will be discussed in more detail in Section 4.2.2.

If the Council had chosen to roll-over the current Inshore/offshore allocation, there would be no change in the gross revenue catcher vessels will receive (it is the same allocation). That is reflected in the last line of Table 4.2 below. The second line from the bottom reports the total revenue catcher vessels are expected to receive from each sector, based on the price assumptions used in this analysis. Those projections indicate that catcher vessels would earn almost $93 million. Inshore processors would have paid catcher vessels about $67 million, "true" motherships about $17 million, and catcher processors about $9 million.

Table 4.2 **Alternative 2**: Impacts on Catcher Vessel's Gross Revenue

			Catcher Processors		
	Inshore	"True" Motherships	CV Deliveries	Own Harvest	Total
Allocation Percentages	**35%**	**10%**	**5.5%**	**49.5%**	**100%**
Sector's Allocation (mt)	356,125	101,750	55,963	503,663	1,017,500
Change from Status Quo [1] (mt)	-	-	-	-	-
Sector's Allocation Change (%)	0 %	0 %	0 %	0 %	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	$ 164 [2]	n/a	n/a
Est. Total Exvessel Revenue (Million $)	$ 66.7	$ 16.7	$ 9.2	n/a	$ 92.6
Est. Change in Exvessel Revenue (Million $)	$ 0.0	$ 0.0	$ 0.0	n/a	$ 0.0

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of catcher processor's pollock was delivered to them by catcher vessels.

[2] Remember, "true" mothership and catcher processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

First Wholesale Prices. FOB Alaska prices for each product form (excluding oil) and sector are discussed in detail in Chapter 3. Those prices, summarized in Table 4.3 below, are multiplied by the products reported in the product mix tables to generate gross revenues at the first wholesale level.

Table 4.3 Pollock First Wholesale Prices

	Wholesale Prices per Metric Ton of Product		
Product Form	Inshore	Catcher Processors	"True" Motherships
Surimi	$ 1,808	$ 1,907	$ 1,907
Fillets, Blocks, IQF	$ 2,116	$ 2,116	$ 2,116
Deep Skin Fillets	$ 2,734	$ 2,734	$ 2,734
Minced[1]	$ 1,146	$ 931	$ 931
Roe	$ 9,965	$ 13,294	$ 13,294
Meal	$ 661	$ 639	$ 639

Source: Production and Revenue/Price Data Reported to NMFS (1991, 1994) and ADF&G (1996) in the Commercial Operators Annual Report (COAR).
Note: To protect the confidentiality of processors, fillet prices are based on combining inshore and offshore data.
[1]Mince prices for 1991 and 1994 were not estimated. The 1996 offshore mince price was provided by APA as only one At-sea company reported mince prices to ADF&G. If APA and ADF&G data were combined the average 1996 offshore minced price would be $992/mt.

Processor's Gross Revenue at First Wholesale

Gross revenue can be estimated by multiplying the first wholesale revenue per ton of raw pollock by the number of tons processed. This method does not provide detail on the contribution of each product form to total revenue, but it does allow the reader to easily calculate total revenue within a processing sector. The adjacent text box lists the revenues per ton used in this analysis. These values were derived using the following formula:

Gross Revenue per Ton = $\sum(P_i * Q_i)/R$;

where;

Pi = the first wholesale price of product I by the sector during 1996

Qi = the quantity of product I the sector produced in 1996

R = tons of raw pollock processed by the sector in 1996

Our method of estimating gross revenue is straight forward. Prices are assumed to remain fixed at 1996 levels. Constant first wholesale prices mean the amount of product produced has no impact on the price. This assumption was necessary because of the limited information available on pollock demand. The most recent attempt to study pollock price and quantity relationships was conducted by Herrmann et.

1st Wholesale Gross Revenue
($/mt Raw Fish)

Sector	With Fish Meal	Without Fish Meal
Surimi Catcher Processor	**$ 540**	**$ 520**
Fillet Catcher Processor	**$ 516**	**$ 516**
Catcher Processor Total	**$ 532**	**$ 519**
"True" Mothership	**$ 526**	**$ 498**
Surimi Inshore	**$ 587**	**$ 539**
Fillet Inshore	**$ 616**	**$ 576**
Total Inshore	**$ 592**	**$ 546**
Total (weight average)	**$ 554**	**$ 526**

al.[14] However the literature in this area is sparse at best, and given our current data constraints no reliable model could be developed under the I/O3 time line.

Table 4.4 contains estimates of each processing sectors' gross revenues under the Status Quo alternative. This table, and the other first wholesale gross revenue tables in this section, report values at the product level. The additional detail was included so the reader could readily see the contribution of each product form. However, the same totals would be estimated if the revenues per ton, in the above text box, were multiplied by the tons of pollock allocated to the sector (see Table 4.2).

Alternative 2 would have generated the same first wholesale gross revenues as were earned during 1996, except we have assumed a slightly lower TAC under the Status Quo than was in place that year. However, all other variables that feed into the first wholesale gross revenue calculation are held constant at 1996 levels.

The total first wholesale revenue generated by all processing sectors, is $562.7 million. Combined revenues of the Non-surimi and Surimi catcher processor sectors totaled $298.2 million, "true" motherships earned $53.6 million, and the Inshore processors $211.0 million. Surimi brought in the most revenue for all of the processing sectors. However, in the Non-surimi catcher processor sub-sector, deep-skin fillet production generated the most revenue.

Table 4.4 First Wholesale Gross Revenue(millions $) -FOB Alaska: Alternative 2 (35% Inshore and 65% Offshore)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 6.0	$ 8.2	$ 42.3	$ 0.0	$ 20.5	$ 77.0
	Catcher Vessels	$ 0.0	$ 1.2	$ 1.9	$ 6.1	$ 0.0	$ 2.2	$ 11.4
Non-surimi C/P Total		$ 0.0	$ 7.1	$ 10.1	$ 48.4	$ 0.0	$ 22.6	$ 88.3
Surimi - C/P	Self Caught	$ 94.6	$ 0.0	$ 2.3	$ 17.2	$ 6.8	$ 67.0	$ 187.9
	Catcher Vessels	$ 13.4	$ 0.0	$ 0.1	$ 1.8	$ 0.9	$ 5.8	$ 21.9
Surimi - C/P Total		$ 108.0	$ 0.0	$ 2.3	$ 19.0	$ 7.7	$ 72.8	$ 209.8
Catcher Processor Total[1]		**$ 108.0**	**$ 7.1**	**$ 12.5**	**$ 67.4**	**$ 7.7**	**$ 95.5**	**$ 298.2**
Inshore Total[1]		**$ 116.2**	**$ 2.7**	**$ 17.6**	**$ 18.3**	**$ 16.6**	**$ 39.6**	**$ 211.0**
"True" Mothership Total[1]		**$ 37.8**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 2.9**	**$ 12.9**	**$ 53.6**
Grand Total		**$ 261.9**	**$ 9.9**	**$ 30.1**	**$ 85.7**	**$ 27.2**	**$ 148.0**	**$ 562.7**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

[14] Herrmann, M., K. R. Criddle, E. M. Feller, and J. A. Greenberg, "Estimated Economic Impacts of Potential Policy Changes Affecting The Total Allowable Catch for Walleye Pollock." *North American Journal of Fisheries Management*, 16(1996):770-782.

PSC Bycatch

The bycatch of PSC species is always a sensitive issue. However, the pollock fishery has some of the lowest bycatch rates in the North Pacific. Minimal amounts of halibut and crab are taken in the midwater portion of this fishery. Herring and salmon bycatch is of more concern. Yet, if the amount of pollock harvested is considered, only about one kilogram of herring is caught for each ton of pollock, and over 20 mt of pollock are harvested for each chinook salmon caught.

Table 4.5 PSC Bycatch by Processing Sector: Alternative 2

Alternative 2	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	118.4	46.6	4.6	0.0	18.9	19.3	5.4	3.9
C/Ps (surimi)	121.3	672.7	0.9	0.1	57.7	22.8	13.3	33.0
"True" Motherships	18.5	27.7	-	-	0.1	0.2	7.8	16.8
Inshore	43.6	433.6	0.1	0.1	7.1	17.8	25.1	18.9
Total	301.8	1,180.6	5.6	0.2	83.8	60.1	51.6	72.6

4.1.3 Alternatives that Change the Current Allocation

Under the original "inshore/offshore" amendment, and the subsequent 'rollover'," true" motherships were assumed to be part of the at-sea processing sector, for purposes of apportioning BS/AI pollock TAC. Under the I/O3 amendment, however, the Council has proposed to reexamine this assumption. To this end, the Council has identified, under Alternative 3, a series of four different optional apportionments, listed as 3(A) through 3(D), which specify discrete percentage shares of the allocated pollock TAC for the *C/P sector*, the *Inshore sector*, ***and*** the *"True" Mothership sector*.

In this latter case, the share across options ranges from 5% to 15%. This TAC-share could be reserved exclusively for the true MS sector and, as such, tracked separately from either the inshore or offshore components of the industry. Or, alternatively, the true MS share could be combined with either the offshore or inshore apportionment. These **"three"** fundamental alternative treatments of the true MS apportionment have very different implications for the effected sectors.

1. Should the Council select an option which "lumps" the true MS share with the C/P share as an undifferentiated *offshore* apportionment, one would have the effective "status quo", as under I/O1 and I/O2. In this case, the analytical implications condense to the same dichotomous debate concerning **"... how much pollock should be processed *inshore* versus *at-sea*"**. "True" motherships would, therefore, continue to compete with C/Ps for a share of the common, undifferentiated at-sea pollock TAC. Historically, the true MS subsector has accounted for approximately 8.5% to 11.5% of the aggregate at-sea BS/AI pollock harvest under I/O (see, for example, figures A.8 through A.10, in **Appendix I** of this report and table 4.22 in the catcher vessel set-aside section of this document).

Presumably, the true MS sector would continue to garner something on the order of this same percentage share, although this result is not assured. Because true MS operators must compete for their share of the at-sea apportionment, they may take ***less*** than, or ***more*** than their historical percentage share. One cannot predict which result will emerge, however, the potential for either result exists. Furthermore, had the Council selected an option from among 3(A) through 3(D) which results in the aggregated at-sea percentage being *greater* than the 65% status quo (I/O2) level, true MS may realize a larger total catch, even if the percentage-share they enjoy does not change (or changes only marginally). That is, if the aggregate at-sea allocation exceeds the 65% TAC share currently taken by the offshore sector, the true MS catch could increase, even if the percentage remained essentially static.

Alternatively, if the Council had selected an allocation option from the four under consideration which *reduces* the aggregate at-sea apportionment from its current 65%, then "lumping" the true MS percentage share with the C/P share could intensify the competition between C/Ps and true MSs for an effectively *smaller* available pollock catch. If one assumes, for the sake of argument, that the larger and more operationally diverse C/P fleet has 'real' operational advantages over one or more of the three existing true MS operations, then depending upon the relative operational efficiency of the two modes, C/Ps could reduce the impact of a smaller *at-sea* allocation by taking a larger total percentage share of the aggregate apportionment, at the expense of the true MS segment of the at-sea sector. It is possible that the relative operational advantage could work in the opposite direction, too. In this case, the true MS sector share of a reduced aggregate at-sea apportionment could increase at the expense of the C/P sector. Empirical data bearing on this issue are not available. However, the industry may ultimately be in the best position to judge which of these alternative scenarios is most probable.

2. The Council had the option to "reserve" the proposed percentage of the total BS/AI pollock TAC for true MS operations. In this case, the Council would set-aside 5% under option 3(A), 10% under options 3(B) and 3(C), or 15% under option 3(D), for the exclusive use of the true MS sector. This approach would, for example, insulate true MS operations from having to compete with C/Ps for a share of an aggregate at-sea pollock harvest (as under the status quo), but would simultaneously preclude the true MS sector from improving its relative share of the total pollock allocation. Indeed, under option 3(A) the true MS sector would experience a significant reduction in its share of the total BS/AI pollock catch, if limited to the 5% apportionment specified. Under either Option 3(B) or 3(C), the true MS sector would have seen its share slightly reduced, as compared to the 1996 reported performance.

   Whether an assured set-aside for the MS sector is preferable to the opportunity to compete for a larger total share of an aggregate TAC apportionment is beyond the scope and capability of this analysis to determine. It does, however, raise an important question that can, perhaps, best be answered by this segment of the industry itself.

3. Finally, the true MS apportionment could have been combined with the inshore allocation, under any of the four options specified within Alternative 3. In this situation, true MS operators would have to compete with inshore and inshore processors for a share of the aggregate "inshore" allocation. How they might fair, relative to their historical share of the at-sea I/O allocation, cannot be anticipated, *a priori*.

   It seems likely that true MSs would enjoy some operational advantage over inshore (or fixed inshore) processors, simply due to their greater relative mobility. However, objective data on operational capacity and total capability of the MS vessels which make up the current BS/AI pollock target fleet are not available. Therefore, any projection of true MS catch share under this arrangement would be purely speculative.

It is true, however, that, if the true MS percentage allocation (specified in options 3(A) through 3(D)) were "lumped" into a single, common *inshore* allocation, under options 3(B) through 3(D) the aggregate share of the BS/AI TAC available to the joint-inshore/true MS sector would be significantly greater than the inshore-share has been over the period since I/O was originally implemented.

4.1.3.1 Options for Defining "True" Motherships

At its April 1998 meeting, the Council clarified its definition of "true" motherships (i.e., have processed but never caught) and established the following two options to address the treatment of this potential newly defined sector:

Option 1: A "true" mothership would be defined as any mothership or floating processor **not** included in the inshore sector and that does not harvest fish when operating as a "true" mothership. Processor vessels would be required to declare whether they will operate in the inshore, "true" mothership, or offshore sector either:

suboption a: annually
suboption b: for the effective period of inshore/offshore 3.

Under this option, vessels wishing to operate in the "true" mothership sector would indicate on their Federal fisheries permit application that they wish to operate as a "true" mothership. NMFS would then issue a Federal fisheries permit that restricts the vessel to operating as a "true" mothership in the BS/AI for the time period indicated. Under such an option, vessels declared as catcher processors **would not** be prohibited from receiving catch from catcher vessels and operating in "true" mothership mode. However, catcher vessel deliveries made to vessels declared as catcher processors would be accrued against the offshore pollock quota and not the "true" mothership quota.

Vessels declared as "true" motherships would be prohibited from harvesting groundfish either:

suboption c: for the duration of the time period that they have declared to be in the "true" mothership sector
suboption d: when directed fishing for pollock is open to vessels harvesting pollock for processing by the "true" mothership or offshore sectors.

These suboptions address the restrictions on harvesting that would be placed on vessels that have declared themselves to be "true" motherships. Under suboption c, "true" motherships would be prohibited from harvesting any groundfish in the BS/AI or GOA for the time period that they have declared themselves to be in the "true" mothership sector. This suboption would be the simplest to implement and monitor. NMFS would simply issue a Federal fisheries permit to such vessels that would authorize the vessel to process groundfish that was harvested in the BS/AI or GOA but that does not authorize the vessel to harvest groundfish in the BS/AI or GOA. A vessel operating under the terms of a "true" mothership permit would therefore be prohibited from harvesting any groundfish in the BS/AI or GOA for the duration of the permit.

Under suboption d, vessels declared as "true" motherships would be prohibited from harvesting groundfish only when the directed fishery for pollock is open for the "true" mothership or offshore sectors. Such a category would be more difficult to monitor and enforce. In addition, a "true" mothership category that allows "true" motherships to operate as catcher processors in other groundfish fisheries would raise the issue of which sector's quota their pollock bycatch would be attributed to when such vessels are operating as catcher processors in other fisheries. NMFS could count all pollock bycatch by such vessels against the "true" mothership quota even if the vessel is operating as a catcher processor in another fishery. Or, alternatively, NMFS could count pollock bycatch by "true" motherships against the offshore quota when such vessels are operating as catcher processors in other fisheries. If the Council chooses to select this suboption, it should clarify how pollock bycatch should be treated when "true" motherships are operating as catcher processors in other groundfish fisheries.

Option 2: A "true" mothership would be defined as a mobile fish processor which has processed, but never caught, their own fish in the U.S. EEZ.

This definition has several implications with respect to the approval of an allocation of pollock to processing by "true" motherships.

Limited Access Implications and 303(b)(6) Guidelines. On it's face, the Council's definition of "true" motherships implies a limited group of vessels, namely those vessels that have processed but have never caught pollock in a pollock target fishery in the BS/AI EEZ. Under this definition, vessels that have never processed pollock in a pollock fishery in the BS/AI would be permanently excluded from processing pollock under a "true" mothership BS/AI pollock allocation as would all vessels that have ever caught pollock in a pollock target fishery in the BS/AI.

If a pollock allocation is granted to a "true" mothership category that excludes either (1) new vessels, or vessels without pollock processing history in the BS/AI, that may wish to enter the fishery as "true" motherships; or (2) existing catcher/processors in the fishery that have caught pollock in the BS/AI but may wish to operate as "true" motherships rather than catcher processors, then such an allocation would establish a limited access program for "true" motherships. Such an allocation would, therefore, be subject to review under the 303(b)(6) guidelines in the Magnuson-Stevens Act which set out the criteria that must be taken into account when establishing a limited access program.

Section 303(b)(6) of the Magnuson-Stevens Act specifies that:

> *. . .Any fishery management plan which is prepared by any Council, or by the Secretary, with respect to any fishery, may—. . . .*

(6) establish a limited access system for the fishery in order to achieve optimum yield if, in developing such system, the Council and the Secretary take into account–

> *(A) present participation in the fishery,*
> *(B) historical fishing practices in, and dependence on, the fishery,*
> *(C) the economics of the fishery,*
> *(D) the capability of fishing vessels used in the fishery to engage in other fisheries,*
> *(E) the cultural and social framework relevant to the fishery and any affected fishing communities, and*
> *(F) any other relevant considerations;*

The Council must take into account all factors contained in the 303(b)(6) guidelines before approving a pollock allocation to a "true" mothership sector that, by definition, limits entry into the sector. Furthermore, National Standard 4 specifies that "if it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges."

In establishing an exclusive category for "true" motherships that excludes vessels with fishing history and vessels that lack processing history, the Council must establish provisions or criteria for permit transfers, vessel reconstruction or lengthening, replacement of vessels lost or retired from the fishery. NMFS also would have to establish permit review and hearings procedures for permit applicants that have been denied a "true" mothership permit based on apparent lack of qualifying criteria, as well as a system for issuing interim permits while a permit denial is appealed. Finally, the Council would have to establish limits to prevent a single entity from acquiring a excessive share of the "true" mothership permits in violation of National Standard 4.

Current Inshore and Offshore Component Definitions. The 303(b)(6) guidelines do not apply to the current inshore and offshore component definitions because the current inshore/offshore allocations do not limit access or participation within either of the two components. At present, anyone can participate in the inshore processing component by building an inshore processing plant on land, or anchoring a floating processor in a fixed location in Alaska. Similarly, the offshore component does not, by definition, limit access or participation within that component. To be sure, the vessel moratorium and license limitation programs do limit access to the offshore component. However, these programs were adopted and implemented as separate FMP amendments that were analyzed and reviewed in light of the Magnuson-Stevens Act requirements for limited access programs. Both the vessel moratorium and license limitation programs specifically exempted "true" motherships from the requirements and restrictions of those programs. If the Council had wished to implement a limited access program for "true" motherships, the rationale for excluding "true" motherships from the vessel moratorium and license limitation programs should have been reexamined.

The Council could avoid the necessity to take into account all of the factors in the 303(b)(6) guidelines in making an allocation to a "true" mothership component if entry into the "true" mothership component is unrestricted. For example, each processing vessel could elect at the beginning of each fishing year to participate in either the inshore, "true" mothership, or offshore components and then would be issued a permit for participation in that component which would restrict participation in either of the other two components. In this manner, processing vessels would be forced to chose which component they intend to participate in for a calendar year, but would not be restricted from participation in any component provided that they comply with the requirements and restrictions for that component. At the February 1998 meeting, one of the clarifications requested by the AP (and the Council) was to "note throughout the analysis that there could be more than 3 "true" motherships in the future'. Staff interpreted this clarification as recognition that some operations, other than the 3 existing "true" motherships, may 'qualify' under the definition used in the analysis - i.e., other operations likely exist that have processed, but never caught, pollock in a BS/AI pollock target fishery. However, if the Council's intent is that no other operations could participate in that category (for example, C/Ps that have operated in a mothership mode at some time), additional analyses would have been required to comply with section 303(b)(6) of the Act.

4.1.3.2 Alternative 3(A): 25% Inshore, 5% "True" Motherships, and 70% Offshore Catcher Processors

Alternative 3(A) would allocate 10% less of the BS/AI pollock TAC to the Inshore sector, approximately 5% less to "true" motherships, and approximately 15% more to offshore catcher processors, than they would have harvested under the status quo. In reality, status quo harvests by "true" motherships and catcher processors are only limited by the 65% offshore allocation. Therefore, the changes between these sectors are driven by the assumption that they will continue to harvest the same percentage of the offshore quota, under the status quo alternative, as they harvested in 1996.

Projected Processing by Sector

Reallocating pollock under Alternative 3(A) is projected to increase the production of deep skin fillets and decrease the amount of surimi produced. In fact, any allocation that increases the amount of pollock processed by catcher processors will increase deep skin fillet and roe production, and decrease the production of surimi and other product forms in this analysis.

Table 4.6. Estimated product mix under allocation Alternative 3(A).

Alternative 3(A): 25% Inshore, 5% "True" Motherships, and 70% Catcher Processors									
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	8,170	4,941	19,699	-	-	1,959
	Catcher Vessels	-	1,581	1,161	2,849	-	-	207
Non-surimi C/P Total		-	9,751	6,102	22,548	-	-	2,166
Surimi - C/P	Self Caught	63,150	17	1,374	7,995	13,612	429	6,417
	Catcher Vessels	8,937	-	33	829	1,707	-	557
Surimi - C/P Total		72,087	17	1,407	8,824	15,319	429	6,974
Catcher Processor Total[1]		**72,087**	**9,769**	**7,508**	**31,372**	**15,319**	**429**	**9,140**
"True" Mothership Total[1]		**9,910**	**-**	**-**	**-**	**2,260**	**159**	**484**
Inshore Total[1]		**45,894**	**1,689**	**5,936**	**4,787**	**17,923**	**5,476**	**2,841**
Grand Total		**127,891**	**11,458**	**13,445**	**36,159**	**35,502**	**6,064**	**12,466**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
"True" Mothership	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: This estimate assumes a 1.1 mmt TAC, with 7.5% allocated to CDQ fisheries.

Catcher Vessel's Gross Revenue from Pollock.

Increasing the allocation of pollock to the catcher processor sector will reduce the pollock available for catcher vessels to harvest. The impacts on catcher vessels would be lessened if a sub-option that guaranteed more than 10% of the catcher processor's allocation must be harvested by catcher vessels. However, even this sub-option would not prevent one catcher processor from delivering pollock to another, unless the catcher vessel definition was more tightly defined. Such a definition would likely require that catcher vessels never process their own fish.

The SSC has pointed out that "no new information is presented to the Council by calculating changes in gross earnings[15]". This is true because we have assumed constant prices for each of the industry sectors. These prices are then simply multiplied by the quantity of pollock allocated to the sector. The SSC's comment also holds true for gross revenue calculations at the first wholesale level.

[15] SSC minutes from their December 1998 meeting.

Table 4.7 **Alternative 3(A)**: Impacts on Catcher Vessel's Gross Revenue

	Inshore	"True" Motherships	Catcher Processors CV Deliveries	Catcher Processors Own Harvest	Total
Allocation Percentages	**25%**	**5%**	**7%**	**63%**	**100%**
Sector's Allocation (mt)	254,375	50,875	71,225	641,025	1,017,500
Change from Status Quo [1] (mt)	(101,750)	(50,875)	15,263	137,363	-
Sector's Allocation Change (%)	(29%)	(50%)	27%	27%	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	$ 164 [2]	n/a	n/a
Est. Total Exvessel Revenue (Million $)	$ 47.7	$ 8.3	$ 11.7	n/a	$ 67.7
Est. Change in Exvessel Revenue (Million $)	($ 19.1)	($ 8.3)	$ 2.5	n/a	($ 24.9)

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of Catcher Processor's pollock was delivered to them by catcher vessels.

[2] Remember, "true" mothership and Catcher Processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

Processor's Gross Revenue at First Wholesale

Total gross revenue, at the first wholesale level, is projected to be $557.0 million. Compared to the Alternative 2 (Status Quo), this option would generate $5.8 million less revenue. If fish meal were excluded from the calculation, the reduction in revenue would only be $1.7 million. That relatively small change in total revenue masks the revenue shifts which take place between sectors. For example, the catcher processor sectors are projected to experience a $81.3 million increase. "True" motherships are projected to realize a $26.8 million drop in revenue, and the Inshore sector's revenue loss is $60.3 million. So while the total change in gross revenue is small, the distributional impacts are quite large.

As discussed above, the total change in gross revenue between this allocation and the Status Quo is projected to be less than $6.0 million. Because the uncertainty surrounding this estimate is not known, it is not possible to determine if the estimate is significantly different from zero.

Given the concerns expressed throughout this document over utilization rates, prices, and costs, little can be said regarding the net economic benefits of selecting one alternative over another. However, changing the allocation will have distributional impacts, which may cause more instability within sectors.

Reducing the inshore and "true" mothership sector's gross revenues by $60.3 million and $26.8 million, respectively, is likely to cause hardships. The hardships may even be great enough to reduce the number of participants in these sectors. Catcher processors, on the other hand, would likely be in a better economic position. And individuals who have chosen not to participate in the catcher processor sector may see an opportunity to enter.

Table 4.8 1st Wholesale Gross Revenue (Million $)-FOB Alaska: Alternative 3(A) (25% Inshore, 5% "True" Motherships, and 70% Catcher Processors)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 7.6	$ 10.5	$ 53.9	$ 0.0	$ 26.0	$ 98.0
	Catcher Vessels	$ 0.0	$ 1.5	$ 2.5	$ 7.8	$ 0.0	$ 2.8	$ 14.5
Non-surimi C/P Total		$ 0.0	$ 9.1	$ 12.9	$ 61.6	$ 0.0	$ 28.8	$ 112.4
Surimi - C/P	Self Caught	$ 120.4	$ 0.0	$ 2.9	$ 21.9	$ 8.7	$ 85.3	$ 239.2
	Catcher Vessels	$ 17.0	$ 0.0	$ 0.1	$ 2.3	$ 1.1	$ 7.4	$ 27.9
Surimi - C/P Total		$ 137.4	$ 0.0	$ 3.0	$ 24.1	$ 9.8	$ 92.7	$ 267.1
Catcher Processor Total[1]		**$ 137.4**	**$ 9.1**	**$ 15.9**	**$ 85.8**	**$ 9.8**	**$ 121.5**	**$ 379.5**
Inshore Total[1]		**$ 83.0**	**$ 1.9**	**$ 12.6**	**$ 13.1**	**$ 11.9**	**$ 28.3**	**$ 150.7**
"True" Mothership Total[1]		**$ 18.9**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 1.4**	**$ 6.4**	**$ 26.8**
Grand Total		**$ 239.3**	**$ 11.0**	**$ 28.5**	**$ 98.8**	**$ 23.1**	**$ 156.3**	**$ 557.0**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

PSC Bycatch

Changes in our PSC bycatch estimates are driven by the 1996 rates detailed in Chapter 3. Those rates, multiplied by the tons of pollock each sector is allocated, yields the projected PSC bycatch estimate for each alternative. Reductions in PSC will occur if more pollock is allocated to a sector with a low rate in the 1996 fishery. These rates will likely change future years, and currently one sector does not have lower bycatch rates for every PSC species.

Comparing the total PSC bycatch between Alternatives 2 and 3(A) shows that halibut mortality is projected to increase by about 44 mt under 3(A), and herring bycatch would increase by 58 mt. Red king crab bycatch would increase by about 1,400 animals, and bycatch of other king crab would stay about the same. The changes are slightly different for salmon species. Chinook salmon bycatch is projected to decrease by about 6,000 animals, but bycatch of other salmon would increase by about 6,000 animals. Therefore, the reader is left to make an individual judgement as to which PSC species are more important, while realizing that the relative rates between sectors could change in future years.

Table 4.9 PSC Bycatch by Processing Sector: Alternative 3(A)

Alternative 3(A)	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	150.8	59.4	5.9	0.0	24.1	24.6	6.9	5.0
C/Ps (surimi)	154.2	855.6	1.1	0.1	73.4	29.0	16.9	41.9
"True" Motherships	9.3	13.9	0.0	0.0	0.0	0.1	3.9	8.4
Inshore	31.1	309.7	0.0	0.1	5.1	12.7	18.0	13.5
Total	345.4	1,238.6	7.0	0.2	102.6	66.4	45.7	68.8

4.1.3.3 Alternative 3(B): 30% Inshore, 10% "True" Motherships, and 60% Offshore Catcher Processors

Alternative 3(B) would hold the "true" mothership allocation constant while decreasing the inshore sector's share of the BS/AI pollock fishery by 5% and increasing the catcher processor's share by 5%. These allocation changes in the overall TAC result in the catcher processor sector being allocated about 9% more BS/AI pollock and the inshore sector about 14% less pollock - than they would process under the status quo alternative.

Projected Processing by Sector

Comparing the production from "true" motherships under Alternative 2, Alternative 3(C), and this Alternative, we see that they are exactly the same. Under each of these alternatives, the "true" motherships are projected to produce 19,819 mt of surimi, 4,520 mt of meal, 318 mt of oil, and 969 mt of roe. Production of surimi by the catcher processors will increase to 61,789 mt under Alternative 3(B), up from a status quo amount of 56,640 mt. Deep skin fillet production will also increase from 24,649 mt to 26,890 mt. That is about a 9% increase. In fact, because the calculations are linear, all of the catcher processor's products increase by about 9%. Inshore processors will make 9,179 mt less surimi and 1,187 mt less fillets under this alternative. For the inshore sector, output of each product will decrease by about 14%.

Table 4.10. Estimated product mix under allocation Alternative 3(B).

Alternative 3(B) (30% Inshore, 10% "True" Motherships, and 60% Catcher Processors)								
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	7,003	4,235	16,885	-	-	1,679
	Catcher Vessels	-	1,355	995	2,442	-	-	178
Non-surimi C/P Total		-	8,358	5,230	19,327	-	-	1,857
Surimi - C/P	Self Caught	54,128	15	1,178	6,853	11,667	367	5,500
	Catcher Vessels	7,661	-	28	710	1,463	-	478
Surimi - C/P Total		61,789	15	1,206	7,564	13,131	367	5,978
Catcher Processor Total[1]		**61,789**	**8,373**	**6,436**	**26,890**	**13,131**	**367**	**7,834**
"True" Mothership Total[1]		**19,819**	**-**	**-**	**-**	**4,520**	**318**	**969**
Inshore Total[1]		**55,073**	**2,027**	**7,124**	**5,745**	**21,508**	**6,572**	**3,409**
Grand Total		**136,681**	**10,400**	**13,559**	**32,635**	**39,159**	**7,257**	**12,213**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
"True" Mothership	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: This estimate assumes a 1.1 mmt TAC, with 7.5% allocated to CDQ fisheries.

Catcher Vessel's Gross Revenue from Pollock

The gross revenues earned by catcher vessels are estimated to decrease $8.7 million under this alternative. Total gross revenue under the status quo was $92.6 million, and for this alternative it is $83.9 million. Catcher vessels delivering to the Inshore sector are projected to earn $9.5 million fewer dollars. The catcher vessels delivering to catcher processors partially offset this loss by earning an extra $0.8 million.

Table 4.11 **Alternative 3(B)**: Impacts on Catcher Vessel's Gross Revenue

			Catcher Processors		
	Inshore	"True" Motherships	CV Deliveries	Own Harvest	Total
Allocation Percentages	**30%**	**10%**	**6%**	**54%**	**100%**
Sector's Allocation (mt)	305,250	101,750	61,050	549,450	1,017,500
Change from Status Quo [1] (mt)	(50,875)	-	5,088	45,788	-
Sector's Allocation Change (%)	(14 %)	0 %	9 %	9 %	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	$ 164 [2]	n/a	n/a
Est. Total Exvessel Revenue (Million $)	$ 57.2	$ 16.7	$ 10.0	n/a	$ 83.9
Est. Change in Exvessel Revenue (Million $)	($ 9.5)	$ 0.0	$ 0.8	n/a	($ 8.7)

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of catcher processor's pollock was delivered to them by catcher vessels.

[2] Remember, "true" mothership and catcher processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

Processor's Gross Revenue at First Wholesale

Almost $560 million in gross revenues are estimated to be earned under Alternative 3(B), which is down about $3 million from the Status Quo. Earnings from the catcher processor sector should total about $325 million. That number represents an increase of approximately $27 million over the Status Quo. "True" motherships receive the same allocation under this alterative as they received under the Status Quo, so their gross revenues are assumed not to change. The Inshore sector is allocated 5% less of the total BS/AI pollock quota under Alternative 3(B). That decrease in pollock is projected to decrease their gross revenue by about $30 million.

Table 4.12 First Wholesale Gross Revenue (Million $)-FOB Alaska: Alternative 3(B) (30% Inshore, 10% "True" Motherships, and 60% Catcher Processors)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 6.5	$ 9.0	$ 46.2	$ 0.0	$ 22.3	$ 84.0
	Catcher Vessels	$ 0.0	$ 1.3	$ 2.1	$ 6.7	$ 0.0	$ 2.4	$ 12.4
Non-surimi C/P Total		$ 0.0	$ 7.8	$ 11.1	$ 52.8	$ 0.0	$ 24.7	$ 96.4
Surimi - C/P	Self Caught	$ 103.2	$ 0.0	$ 2.5	$ 18.7	$ 7.5	$ 73.1	$ 205.0
	Catcher Vessels	$ 14.6	$ 0.0	$ 0.1	$ 1.9	$ 0.9	$ 6.3	$ 23.9
Surimi - C/P Total		$ 117.8	$ 0.0	$ 2.6	$ 20.7	$ 8.4	$ 79.5	$ 228.9
Catcher Processor Total[1]		**$ 117.8**	**$ 7.8**	**$ 13.6**	**$ 73.5**	**$ 8.4**	**$ 104.1**	**$ 325.3**
Inshore Total[1]		**$ 99.6**	**$ 2.3**	**$ 15.1**	**$ 15.7**	**$ 14.2**	**$ 34.0**	**$ 180.9**
"True" Mothership Total[1]		**$ 37.8**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 2.9**	**$ 12.9**	**$ 53.6**
Grand Total		**$ 255.1**	**$ 10.7**	**$ 28.7**	**$ 89.2**	**$ 25.5**	**$ 151.0**	**$ 559.7**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

PSC Bycatch

The allocation shifts under Alternative 3(B) are not as large as they were under 3(A). Therefore, the PSC bycatch changes within a sector will not be as large when compared to the Status Quo.

Halibut bycatch mortality increases by about 12 mt under Alternative 3(B). Recall that the increase under 3(A) was about 44 mt. The increase is about equal between the Non-surimi and Surimi catcher processor sectors. Their combined halibut bycatch mortality is projected to be 261 mt. This is up from the 240 mt under Alternative 2.

- Total herring bycatch decreased from 1,181 mt, under Alternative 2, to 1,136 mt. Surimi catcher processors increased their herring bycatch by about 61 mt, but with the smaller allocation the Inshore sector decreased their herring bycatch by about 96 mt.

Table 4.13 Estimated PSC Bycatch by Processing Sector: Alternative 3(B)

Alternative 3(B)	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	129.3	50.9	5.0	0.0	20.7	21.1	5.9	4.3
C/Ps (surimi)	132.2	733.4	1.0	0.0	62.9	24.9	14.5	35.9
"True" Motherships	18.5	13.9	-	-	0.0	0.1	3.9	8.4
Inshore	34.0	337.9	0.1	0.1	5.5	13.8	19.6	14.7
Total	314.0	1,136.1	6.1	0.1	89.1	59.9	43.9	63.3

4.1.3.4 Alternative 3(C): 40% Inshore, 10% "True" Motherships, and 50% Offshore Catcher Processors

All of the alternatives studied up to this point have held constant or reduced the allocation to the inshore and "true" mothership sectors. The next two alternatives will study allocations where the catcher processor sector is allocated less pollock and the Inshore sector is allocated more. Because Alternative 3(A) and 3(B) are the reciprocals of 3(C) and 3(D), respectively. The magnitude of change will be equal with opposite signs.

Projected Processing by Sector

The "true" mothership sector is allocated the same amount of pollock under Alternative 3(C) as they were under Alternatives 2 (status quo) and 3(B). The amounts of product produced is therefore also the same for each alternative. Inshore processors are allocated 5% more the BS/AI pollock TAC, under this alternative as compared to the status quo. This is about a 14% increase in the amount of pollock they are allowed to process. In terms of surimi production, the Inshore sector is projected to produce 73,431 mt, or 9,179 mt more than then would have produced under Alternative 2. The increase in surimi production under this alternative is exactly equal to the decrease under Alternative 3(B). Catcher processors, on the other hand, loose the same amount of production under this alternative as they gained under Alternative 3(B).

Table 4.14. Estimated product mix under allocation Alternative 3(C).

Alternative 3(C) (40% Inshore, 10% "True" Motherships, and 50% Catcher Processors)								
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	5,836	3,529	14,070	-	-	1,399
	Catcher Vessels	-	1,129	829	2,035	-	-	148
Non-surimi C/P Total		-	6,965	4,358	16,106	-	-	1,547
Surimi - C/P	Self Caught	45,107	12	981	5,711	9,723	306	4,583
	Catcher Vessels	6,384	-	23	592	1,219	-	398
Surimi - C/P Total		51,491	12	1,005	6,303	10,942	306	4,981
Catcher Processor Total[1]		**51,491**	**6,978**	**5,363**	**22,408**	**10,942**	**306**	**6,529**
"True" Mothership Total[1]		**19,819**	**-**	**-**	**-**	**4,520**	**318**	**969**
Inshore Total[1]		**73,431**	**2,703**	**9,498**	**7,659**	**28,677**	**8,762**	**4,546**
Grand Total		**144,741**	**9,681**	**14,861**	**30,068**	**44,140**	**9,386**	**12,043**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
"True" Mothership	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.
[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production
[3] CDQ production is assumed to remain constant under any of the allocation alternatives
Note: This estimate assumes a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

Catcher Vessel's Gross Revenue from Pollock.

The catcher vessel fleet's gross revenues increase $8.7 million under this alternative. As was discussed under the production section of this Alternative, this is the opposite of what happened under Alternative 3(B). All of the numbers in this table, which reflect changes from the status quo, are equal in magnitude, but have the opposite sign to those reported in Alternative 3(B) table.

Table 4.15 **Alternative 3(C)**: Impacts on Catcher Vessel's Gross Revenue

			Catcher Processors		
	Inshore	"True" Motherships	CV Deliveries	Own Harvest	Total
Allocation Percentages	**40%**	**10%**	**5%**	**45%**	**100%**
Sector's Allocation (mt)	407,000	101,750	50,875	457,875	1,017,500
Change from Status Quo [1] (mt)	50,875	-	(5,088)	(45,788)	-
Sector's Allocation Change (%)	14 %	0 %	(9 %)	(9 %)	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	$ 164 [2]	n/a	n/a
Est. Total Exvessel Revenue (Million $)	$ 76.3	$ 16.7	$ 8.3	n/a	$ 101.3
Est. Change in Exvessel Revenue (Million $)	$ 9.5	$ 0.0	($ 0.8)	n/a	$ 8.7

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of catcher processor's pollock was delivered to them by catcher vessels.

[2] Remember, "true" mothership and catcher processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

Processor's Gross Revenue at First Wholesale

The catcher vessel gross revenue discussion pointed out that the magnitude of the changes between the Status Quo and this alternative are the same, but of opposite sign, as those projected under Alternative 3(B). This same relationship occurs for gross revenues at the first wholesale level. Surimi catcher processors were expected to increase their gross revenue, under Alternative 2, from $210 million to $229 million. If Alternative 3(B) were selected instead, their gross revenues would be expected to decrease from $210 million to $191 million. In the first case the Surimi catcher processors would gain $19 million in gross revenue and in the second case they would loose $19 million. Inshore processors, on the other hand, would loose approximately $30 million under Alternative 2 and gain $30 million if Alternative 3 was selected by the Council.

Table 4.16 1st Wholesale Gross Revenue (Million $) FOB Alaska: Alternative 3(C) (40% Inshore, 10% "True" Motherships, and 50% Catcher Processors)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 5.4	$ 7.5	$ 38.5	$ 0.0	$ 18.6	$ 70.0
	Catcher Vessels	$ 0.0	$ 1.1	$ 1.8	$ 5.6	$ 0.0	$ 2.0	$ 10.3
Non-surimi C/P Total		$ 0.0	$ 6.5	$ 9.2	$ 44.0	$ 0.0	$ 20.6	$ 80.3
Surimi - C/P	Self Caught	$ 86.0	$ 0.0	$ 2.1	$ 15.6	$ 6.2	$ 60.9	$ 170.8
	Catcher Vessels	$ 12.2	$ 0.0	$ 0.0	$ 1.6	$ 0.8	$ 5.3	$ 19.9
Surimi - C/P Total		$ 98.2	$ 0.0	$ 2.1	$ 17.2	$ 7.0	$ 66.2	$ 190.8
Catcher Processor Total[1]		**$ 98.2**	**$ 6.5**	**$ 11.4**	**$ 61.3**	**$ 7.0**	**$ 86.8**	**$ 271.1**
Inshore Total[1]		**$ 132.7**	**$ 3.1**	**$ 20.1**	**$ 20.9**	**$ 19.0**	**$ 45.3**	**$ 241.2**
"True" Mothership Total[1]		**$ 37.8**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 2.9**	**$ 12.9**	**$ 53.6**
Grand Total		**$ 268.7**	**$ 9.6**	**$ 31.5**	**$ 82.2**	**$ 28.9**	**$ 145.0**	**$ 565.8**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

PSC Bycatch

Because catcher processors are allocated less pollock, and catcher vessels delivering to the Inshore processors are allocated more pollock, under this Alternative, halibut mortality is projected to decrease. From discussions provided for the earlier alternatives, we know that this is a result of the relative bycatch catch rates taken from the 1996 fishery. Those rates showed that the Inshore sector had a lower halibut mortality rate than the catcher processor sector. On the other hand, herring bycatch is projected to decrease by about 5 mt., because the Inshore sector had a slightly lower herring bycatch rate than catcher processors in 1996. Overall, the relative rates of halibut, herring, and crab bycatch were higher in the catcher processor pollock fisheries, and the inshore and "true" mothership pollock fisheries had higher bycatch rates of chinook and other salmon.

Table 4.17 Estimated PSC Bycatch by Processing Sector: Alternative 3(C)

Alternative 3(C)	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi Tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	108.1	42.6	4.2	0.0	17.3	17.7	5.0	3.6
C/Ps (surimi)	110.0	610.1	0.1	0.1	52.3	20.7	12.1	29.9
"True" Motherships	18.5	27.7	-	-	0.1	0.2	7.8	16.8
Inshore	49.8	495.6	0.1	0.1	8.1	20.3	28.8	21.6
Total	286.4	1,176.0	4.4	0.2	77.8	58.9	53.7	71.9

4.1.3.5 Alternative 3(D): 45% Inshore, 15% "True" Motherships, and 40% Offshore Catcher Processors

Alternative 3(D) would allocate more pollock for processing by the inshore and "true" mothership sectors. Processors in the inshore sector would be allowed to process 10% more of the BS/AI TAC while the "true" motherships would get an additional 5%. Catcher processors, on the other hand, would be allocated 15% less of the TAC. The changes in this allocation are basically the reciprocals of those under Alternative 3(A).

Projected Processing by Sector

This allocation would result in the Inshore sector producing over 82,610 mt of surimi, or 18,358 mt more than they would have produced under the status quo. "True" mothership would produce 29,729 mt of surimi. In total, 153,531 mt of pollock surimi would be made by all industry sectors under this alternative. The status quo estimate was 140,741 mt of surimi production. So, about 20,000 mt more surimi are projected to be produced from BS/AI pollock, if this alternative is selected.

Total deep skin fillet production would drop from 31,351 mt under the status quo to 26,544 mt. Decreasing production by about 4,800 mt represents about a 15% drop in total deep skin fillet production.

Table 4.18. Estimated product mix under allocation Alternative 3(D).

Alternative 3(D) (45% Inshore, 15% "True" Motherships, and 40% Catcher Processors)								
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	4,669	2,823	11,256	-	-	1,119
	Catcher Vessels	-	904	663	1,628	-	-	119
Non-surimi C/P Total		-	5,572	3,487	12,884	-	-	1,238
Surimi - C/P	Self Caught	36,086	10	785	4,569	7,778	245	3,667
	Catcher Vessels	5,107	-	19	474	976	-	318
Surimi - C/P Total		41,193	10	804	5,042	8,754	245	3,985
Catcher Processor Total[1]		**41,193**	**5,582**	**4,290**	**17,927**	**8,754**	**245**	**5,223**
"True" Mothership Total[1]		**29,729**	**-**	**-**	**-**	**6,781**	**477**	**1,453**
Inshore Total[1]		**82,610**	**3,041**	**10,685**	**8,617**	**32,262**	**9,857**	**5,114**
Grand Total		**153,531**	**8,623**	**14,976**	**26,544**	**47,796**	**10,580**	**11,790**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
"True" Mothership	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: This estimate assumes a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

Catcher Vessel's Gross Revenue from Pollock

The total amount of gross revenue earned by catcher vessels under this alternative is $117.5 million. Inshore delivery vessels and vessels delivering to "true" motherships are projected to increase their revenues by $19.1 and $8.3 million, respectively. Catcher vessels delivering to the catcher processor sector are projected to realize a $2.5 million decrease. Overall, catcher vessel revenues increase by $24.9 million.

Table 4.19 **Alternative 3(D)**: Impacts on Catcher Vessel's Gross Revenue

			Catcher Processors		
	Inshore	"True" Motherships	CV Deliveries	Own Harvest	Total
Allocation Percentages	**45%**	**15%**	**4%**	**36%**	**100%**
Sector's Allocation (mt)	457,875	152,625	40,700	366,300	1,017,500
Change from Status Quo [1] (mt)	101,750	50,875	(12,263)	(137,363)	-
Sector's Allocation Change (%)	29 %	50 %	(27 %)	(27 %)	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	$ 164 [2]	n/a	n/a
Est. Total Exvessel Revenue (Million $)	$ 85.8	$ 25.0	$ 6.7	n/a	$ 117.5
Est. Change in Exvessel Revenue (Million $)	$ 19.1	$ 8.3	($ 2.5)	n/a	$ 24.9

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1] Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of catcher processor's pollock was delivered to them by catcher vessels.

[2] Remember, "true" mothership and catcher processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

Processor's Gross Revenue at First Wholesale

Gross revenue estimates indicate that this alternative would generate about $6 million more income, for processors, than any of the other allocations under consideration. Overall, the change in gross revenue amounts to a 1.03% increase. Making definitive statements about the appropriateness of selecting this alternative, on economic grounds, not possible. The relatively small change in total gross revenue, coupled with the concerns expressed over the utilization rates and prices, which were important factors in generating these estimates of gross revenue, severely limit the analysts ability to make recommendations.

Table 4.20 1st Wholesale Gross Revenue (Million $) FOB Alaska: Alternative 3(D) (45% Inshore, 15% "True" Motherships, and 40% Catcher Processors)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 4.3	$ 6.0	$ 30.8	$ 0.0	$ 14.9	$ 56.0
	Catcher Vessels	$ 0.0	$ 0.8	$ 1.4	$ 4.5	$ 0.0	$ 1.6	$ 8.3
Non-surimi C/P Total		$ 0.0	$ 5.2	$ 7.4	$ 35.2	$ 0.0	$ 16.5	$ 64.2
Surimi - C/P	Self Caught	$ 68.8	$ 0.0	$ 1.7	$ 12.5	$ 5.0	$ 48.7	$ 136.7
	Catcher Vessels	$ 9.7	$ 0.0	$ 0.0	$ 1.3	$ 0.6	$ 4.2	$ 15.9
Surimi - C/P Total		$ 78.5	$ 0.0	$ 1.7	$ 13.8	$ 5.6	$ 53.0	$ 152.6
Catcher Processor Total[1]		**$ 78.5**	**$ 5.2**	**$ 9.1**	**$ 49.0**	**$ 5.6**	**$ 69.4**	**$ 216.9**
Inshore Total[1]		**$ 149.3**	**$ 3.5**	**$ 22.6**	**$ 23.6**	**$ 21.3**	**$ 51.0**	**$ 271.3**
"True" Mothership Total[1]		**$ 56.7**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 4.3**	**$ 19.3**	**$ 80.3**
Grand Total		**$ 284.6**	**$ 8.7**	**$ 31.7**	**$ 72.6**	**$ 31.3**	**$ 139.7**	**$ 568.5**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

PSC Bycatch

A mirror image of the changes in PSC bycatch between the Status Quo and Alternative 3(A) are presented under Alternative 3(D). Where the change in halibut bycatch was projected to increase by about 44 mt under Alternative 2, here it is projected to decrease by the same amount. The same patterns holds for all of the PSC species.

Table 4.21 Estimated PSC Bycatch by Processing Sector: Alternative 3(D)

Alternative 3(D)	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi Tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	86.4	34.0	3.4	0.0	13.8	14.1	4.0	2.9
C/Ps (surimi)	88.1	488.4	0.1	0.0	41.9	16.6	9.7	23.9
"True" Motherships	27.8	41.6	0.0	0.0	0.1	0.3	11.7	25.2
Inshore	56.0	557.5	0.1	0.2	9.1	22.9	32.3	24.3
Total	258.3	1,121.5	3.6	0.2	64.9	53.9	57.7	76.3

4.2 Suboptions

The Council has selected a suite of sub-options for each of the TAC allocations discussed in Section 4.1. Each of those sub-options will be outlined in this section of the document. The first sub-option would set up a reserve of 40-65% of the inshore and/or "true" mothership quotas from which only catcher vessels less than 125' could harvest pollock. The second sub-option would reserve nine to 15% of the offshore quota for catcher vessels delivering to catcher processors. Finally, the last sub-option defines the length of the I/O3 allocation. Here there are three basic choices: (1) An allocation that would expire only when replaced by the Comprehensive Rationalization Program, (2) a one-year allocation that would expire on December 31, 1999, (3) a three-year allocation that would expire on December 31, 2001. Any of these sub-options may be selected in conjunction with the TAC allocation selected by the Council. CVOA sub-options are discussed in Chapter 5.

4.2.1 Reserve set aside for catcher vessels less than 125 feet

The Council had proposed, as one option under I/O3, to reserve between 40% and 65% of *"... the inshore and "true" mothership sector quotas"* ... for catcher vessels under 125 feet in length. Based upon the "Fleet Profile", provided to the Council in September, 1998, these are approximately the percentages observed for catcher vessels delivering "inshore" over the period 1991 through 1996, inclusive. Note that the upper end of the range denotes the share percentage observed in 1991, while the lower end approximates the share in 1996. Therefore, depending upon the percentage selected, the Council could either "lock-in" the smaller boat share of the inshore pollock TAC at approximately 1996 levels, or "restore" to the smaller catcher boats some or all of the percentage share they enjoyed in 1991, but have surrendered to larger vessels since that time.

Very little economic or operational data exist with which to assess the potential impacts of this proposed option. Circumstantial evidence suggests that catcher boats under 125' are, perhaps, less operationally efficient than larger vessels, given that their total share of the inshore pollock catch has declined rather markedly over the period of analysis, even as their numbers have increased. But, there may be other structural changes or considerations at work within the inshore sector which equally well explain these relative declines, including delivery rotation systems used by many shorebased processors.

For example, prior to the implementation of the vessel moratorium, some vessels under 125' were lengthened and may now be substantially longer than 125' and the shift in catch to larger vessels may have been accounted for, in part, by vessel lengthening rather than a shift in catch between small and large vessels. However, the vessel moratorium and license limitation programs now restrict increases in vessel size that occur after the control date of June 24, 1992. Vessels under 125' may undergo a 20% increase in LOA from their original qualifying length up to a maximum LOA of 125'. Vessels over 125' may not be lengthened under the moratorium or license limitation programs. Consequently, any shift in catch from vessels under 125' to vessels over 125' that has occurred after the implementation of the vessel moratorium program cannot be accounted for by vessel reconstructions (i.e. the "loss of share" from 1994-1996 is actually because a different set of (larger) vessels taking more fish).

What one may conclude on this issue is that, if the Council places a high value on retaining a meaningful role for catcher vessels under 125' in the inshore pollock fisheries of the BS/AI, this option may achieve that objective. Absent this, based solely on the relative performance of this subsector over the period of analysis, it would appear that the share of inshore TAC caught and delivered by boats under 125' in the BS/AI pollock target fisheries will likely continue to decline.

The reduction in catch-share in the under 125' segment of the industry has been matched by increases in catch-share among the 125' to 155' category of catcher boats delivering inshore. That trend might be expected to continue, as well, absent the proposed option. Whether these trends are "desirable" or "undesirable" is dependent upon the specific objectives of the Council, with respect to the distribution of catch-share inshore, by vessel size category. There are, however, several other important implications which derive from the proposed "shares-option". These are directly related to the way in which management of the BS/AI pollock resource is currently performed.

4.2.1.1 Management barriers to implementing a "reserve" set aside for catcher vessels under 125'

Managing a reserve set aside for catcher vessels under 125' would require wholesale changes in NMFS quota monitoring procedures that **could not be implemented by January 1999.** Such an option would need to be phased-in for the 2000 fishing year or later. Currently, NMFS monitors TACs by processors rather than by individual catcher vessel. For shoreside processors, NMFS uses weekly reports of landings by species and area to monitor quotas. For motherships, NMFS uses weekly production data to monitor TACs. Neither of these two sources of information provide information to NMFS on landings by individual catcher vessels. As a consequence, NMFS would be unable to use the current shoreside and mothership reporting system to monitor a reserve set aside for catcher vessels under 125' without major revisions in shoreside processor and mothership recordkeeping and reporting requirements.

At a minimum, three major changes in the NMFS recordkeeping and reporting system would be required to monitor a reserve set aside based on catcher vessel size:

1. Shoreside daily cumulative production logbooks and shoreside weekly processor reports would have to be revised to accommodate reporting of pollock landings by individual catcher vessels. This information is currently reported on ADF&G fish tickets, but is not available to NMFS on a timely enough basis to accommodate inseason quota monitoring. An electronic fish ticket reporting system would be the least burdensome means of collecting this information from industry and the data generated could be shared by NMFS and ADF&G. However, an electronic fish ticket reporting system would require a significant time for development and implementation, and would not be available by January 1, 1999. In addition, substantial lead times are required for changes to recordkeeping and reporting regulations, OMB review and approval of revised logbook forms, and publication and distribution of 1999 logbooks and reporting forms. Consequently, major revisions to NMFS shoreside logbooks and shoreside reporting forms could not be made in time for the 1999 fishing season following Council action in June of 1998.

2. Mothership daily cumulative production logbooks and weekly production reports would have to be revised to accommodate reporting of information on the individual catcher vessel level. At present, NMFS uses weekly production reports from motherships for quota monitoring and these reports are not subdivided by individual catcher vessels. As is the case with shoreside logbooks and reporting forms, such major changes could not be made in time for the 1999 fishing season following Council action in June of 1998.

3. In addition to revising logbook and reporting forms, monitoring a reserve set aside for catcher vessels under 125' delivering to motherships would most likely require NMFS to shift to a scale weight system for quota monitoring aboard motherships so that codends from different catcher vessels could be weighed and reported individually. While scale requirements are currently being implemented for the CDQ fisheries, scales are not currently required aboard motherships fishing in open access fisheries. Given the lead time required to develop regulations and provide for installation and testing of scales, it is not reasonable to expect that a scale requirement for motherships could be implemented for the 1999 fishing year.

Nevertheless, none of the obstacles cited above appear to present a barrier to a phased-in implementation of a set-aside for catcher vessels under 125 ft beginning in the year 2000 or later had the Council decided to adopt such an option.

4.2.1.2 Other implications of a "reserve" set aside for catcher vessels under 125'

Other implications which the Council considered as it reviewed this option are as follows: Catcher boats under 125' are, in general, less mobile, e.g., have a shorter range of operation; have a smaller capacity to carry catch, and are more operationally constrained by weather, sea conditions, and ice than are larger vessels. To the extent that relatively "greater" amounts of the inshore catch (say, than was taken by these vessels in 1996 or 1997) is reserved for boats under 125', one might expect the inshore component of the BS/AI pollock target fishery to slow.

This could have both desirable and undesirable implications for the inshore industry, depending upon the rate of slowing, the condition of the fish, and other environmental and operational considerations. These cannot be readily characterized here, but might be appropriate subjects for discussion as the Council considers this option.

To the extent that relatively greater shares of the inshore pollock TAC are reserved for these smaller vessels, it seems likely that the fishery could be somewhat concentrated geographically. Because these boats, in general, have a more constrained operational range, there could be implications for the geographic distribution of catch, although no empirical data are available with which to rigorously evaluate this potentiality.

However, because virtually all of the inshore catch can be expected to come from the CVOA, and with this proposal, perhaps the majority of the catch from sub-areas of the CVOA nearer, rather than farther from, inshore processing facilities, there may be implications for marine mammal management, localized stock depletion, etc.

4.2.2 Set Aside for Catcher Vessels delivering offshore

The Council had proposed reserving 9-15% of the offshore quota for catcher vessels delivering to catcher processors. Blend data from the 1996 pollock target fisheries indicated that slightly less than 10% of the pollock processed by catcher processors was harvested by catcher vessels (Table 4.22). Information from 1991 through 1997 is also presented in the table to show trends. Using that 1996 ratio, projections of catch, product mix, and gross revenues are calculated and presented for alternatives 2 through 3(D).

Table 4.22 1991-1997 BS/AI Target Pollock Catch by Processing Mode (mt)

Sector	1991	1994	1996	1997
C/Ps Own Catch	1,005,803	733,018	582,208	556,272
C/V Deliveries to C/P	22,436	35,031	63,386	44,612
C/P Total	1,028,239	768,049	645,594	600,884
"True" Motherships	144,138	113,077	121,959	123,571
Inshore (Shoreplants)	375,570	375,602	324,846	296,421
Inshore (Motherships&CP)	32,372	48,519	70,696	58,370
Inshore Total	407,942	424,121	395,542	354,791
Grand Total	1,580,319	1,305,247	1,163,095	1,079,246
Catcher Vessel Deliveries to Catcher Processors				
% of CP	**2.18%**	**4.56%**	**9.82%**	**7.42%**
% of Offshore	1.91%	3.98%	8.26%	6.16%
% of total	1.42%	2.68%	5.45%	4.13%
Catcher Vessel Deliveries to "True" Motherships				
% Offshore	12.29%	12.83%	15.89%	17.06%
% Total	**9.12%**	**8.66%**	**10.49%**	**11.45%**

Note: Catch totals include CDQ harvests. Also the numbers may differ slightly from the information reported in the sector profiles because different versions of the Blend data sets were used. Recall that Blend data changes over time as the files are amended.
Source: NMFS Blend data for 1991, 1994, 1996, and 1997

In general, this allocation would likely benefit catcher vessels that have contracts to deliver to catcher processors. The ranges selected for this allocation are about equal to or are higher than those observed between 1991 and 1996. However, some of the alternatives would shift pollock away from the catcher processors and the catcher vessels would be guaranteed less pollock than they delivered in 1996.

4.2.2.1 Estimating the Catcher Vessel Reserve

This discussion assumes that the offshore quota applies only to the catcher processors share of the TAC. Still, there are two ways to estimate this allocation. Had the Council selected Alternative 2, the allocation to catcher vessels could have either come out of the entire 65% offshore quota or only that portion catcher processors historically (1996) processed. Calculating the catcher vessel allocation using the entire offshore quota would result in a range of 59,524 mt to 99,206 mt with a reserve of 9-15%, respectively. If only the catcher processors portion of the offshore quota was used the range would be 50,366 mt to 83,944 mt. In other words, under the 9% reserve and using the entire offshore quota (i.e., no "true" mothership allocation), catcher vessels delivering to catcher processors would receive about 9,000 mt more than if the calculation was based on the portion of the offshore quota that was historically taken by catcher processors.

4.2.2.2 In-season Management

Managing this allocation would have caused problems for NMFS. Weekly Production Reports submitted by the processor, and observer data will need to be analyzed to estimate when to close fisheries. These reports do indicate if the catch was delivered by a catcher vessel, or if a catcher processors harvested its own fish. As long as there are no size categories for the catcher vessels, and the fishery takes place over a long enough time period, this allocation could be monitored using the current reporting system[16]. However, tracking this allocation may require additional NMFS staff and resources, and problems will likely arise in determining when to close the catcher processor's own harvest. Sorting out these problems will depend on how the allocation is managed. It may be simpler to manage the catcher vessel set aside as an absolute amount of pollock catcher vessels are allowed to deliver to catcher processors. However, staff has assumed that the Council intended this allocation would be a guaranteed minimum, and catcher vessels would be allowed to deliver more, but not less, pollock to catcher processors than the allocation specified.

Under this allocation, catcher vessels are assumed to be allowed to make deliveries to catcher processors during the same time period catcher processors are harvesting their own fish. NMFS in-season management staff would then be required to determine if the catcher processors own harvest must be shut down before the entire quota is taken, or if catcher vessels have already harvested their TAC set aside. Tracking both catch rates will add another layer of complexity for NMFS in-season management.

4.2.3 Duration of Allocation

The Council has proposed two suboptions under the general alternative of an interim allocation until the Comprehensive Rationalization Program is completed. The first of these two suboptions would extend this apportionment for only one-year beyond the current December 31, 1998, I/O2 'sunset' date. The second suboption proposes to extend the selected allocation for a three year period (effectively retaining that apportionment through the 2001 fishing year).

Implicit in the two of these suboptions is the presence of the other 'sunset' date (until replaced by CRP), under which the Council will have had to complete work on a CRP program, decided to abandon CRP in favor of an alternative management strategy (e.g., allow the fishery to revert to its original 'open access' condition), or 'rollover' the I/O3 program for yet another interim period.

The first of the two proposed I/O suboptions would retain the inshore/offshore pollock TAC split in the BS/AI management area for the 1999 fishing year, only. If adopted, this suggests that the Council would effectively be required to revisit their I/O3 decision almost immediately upon completion of the current (1998) amendment cycle. This is so, because, by adopting a 'one-year rollover', the Council will have established a new 'sunset' date for I/O3 of December 31, 1999. In order to have an alternative management program in place by January 1, 2000 (for the BS/AI pollock fishing season), a "preliminary" decision on I/O4 (e.g., an EA/RIR/IRFA) would have to be made available for public comment by the Council's April 1999 meeting, and a "final" action taken on I/O4 by the Council at its June 1999 meeting.

Given the status of existing data collection programs (among other considerations), it would appear unlikely that substantially more quantitative information or empirical analysis can be made available to the Council, by April 1999, than the Council currently has before it for the I/O3 decision. That is, the one year rollover window would likely not provide adequate time for the analysis to be significantly strengthened, given the 'meeting' schedules and administrative submission deadlines involved, and the development process underway to systematically collect and analyze economic and performance data for the several commercial sectors of the BS/AI and GOA fishing industry.

[16]Implementation of the electronic reporting system will likely improve in-season management's ability to track smaller divisions of the TAC and close fisheries before the TAC is exceeded. Access to real time harvest information is critical as the quotas being managed become smaller and the season lengths are compressed.

A one year rollover could also occupy the Council's attention and perpetuate the "inshore - offshore" political conflict, when other pressing issues such as the Comprehensive Rationalization Program, Magnuson-Stevens Act mandates, limited access programs, bycatch amendments, and an assortment of other programs are before the Council. In addition, a one year rollover would likely not provide the industry with the structural stability (e.g., planning and marketing stability) which it has repeatedly testified is highly desirable for 'rational' commercial prosecution of the pollock fishery. These conclusions suggest that there is likely little meaningful potential benefit, either to the Council or the industry, from a 'one-year' rollover decision.

On the other hand, a 'three year' rollover (the second of the two suboptions proposed under this alternative) could potentially resolve many of these concerns. That is, if 'rolled over' for three years, I/O3 would effectively result in a December 31, 2001, 'sunset' date. This would likely provide time for the Council to acquire and adequately analyze additional economic and social data, and evaluate the implications of alternative allocation options, including the broader CRP initiative for which I/O was to be an interim measure, within a somewhat 'less politically charged' decision environment. It could also produce a degree of operational stability within the industry, not available under a 'one-year' rollover program.

If, however, the Council determined, at any time during the three-year I/O3 rollover period, that the BS/AI I/O pollock apportionment needed to be re-examined (e.g., if the status of stocks changed dramatically), the Council would retain the ability to take action it deemed necessary and appropriate (subject to Secretarial approval). Therefore, adoption of the three-year rollover suboption under Alternative 2 would appear to provide the Council with tangible benefits, when compared with the 'one-year' rollover suboption, while retaining significantly more flexibility to respond to a changing "inshore/offshore" management environment .

It should be noted that, over the next three years, ABC projections for the BS/AI pollock resource suggest a relatively stable biomass, permitting a TAC of approximately 1.1 mmt, annually. The Council, of course, may deviate from this level, but these data imply that the fishery could sustain catch levels on the order of those recorded in the most recent past, for the entire 'rollover' period (whether one or three-years). Therefore, sector catch *'shares'* (based upon the fixed percentages identified in I/O) would translate, in this case, into relatively stable sector catch *'tonnages'* over this period. This is in marked contrast to the situation observed between I/O1 and I/O2, when constant *'percentage shares'* actually resulted in smaller total catches for some sectors, when compared to pre-I/O base year performance (see, for example, the Sector Profiles contained in the Appendix of this report).

Because either of the rollover suboptions would result in continuation of the BS/AI pollock fisheries in essentially their present form (based upon 1996 and 1997 catch and production amounts), these suboptions represent the effective ***"Status Quo"*** alternative under I/O3. Due to the presence of the 'sunset' clause, they do not represent the ***"No Action"*** alternative. The latter option is, however, treated elsewhere in this analysis.

4.3 Alternative 4 (Harvester's Choice for Catcher Vessels Less Than 125' LOA)

A new alternative was added during the April 1998 Council meeting. The new alternative would provide a set-aside for catcher vessels less than 125' LOA. The set-aside would be based on:

- 40-65% of the inshore quota, plus
- 9-15% of the offshore (catcher processor) quota, plus
- 100% of the "true" mothership quota.

This alternative would allow catcher vessels less than 125' LOA to deliver their Inshore/offshore allocation to any processor. The amount of pollock that would be allocated to these small catcher vessels would be determined using the sector allocation percentages discussed under Alternatives 2 and 3, and the set-aside percentages above. Once the amount of the small catcher vessel quota is determined, they will be allowed to sell their pollock to the processor of their choice in the inshore, "true" mothership, or catcher processor sector.

NMFS currently measures total catch at the processor level and uses that information to manage fisheries in-season. This alternative will require NMFS to measure catch at the harvesting vessel level. We have been advised that because of the changes this allocation would require in the catch accounting system, this option could not be implemented for the 1999 fishing year. However, the Council could have selected this alternative with the understanding that it would be implemented at a latter date.

Table 4.23 provides a breakdown of some potential allocations under Alternative 4. The results show that changing the basic inshore/offshore allocation percentages has a greater impact on the catcher processors than changing the small catcher vessel set-aside. For example, the difference between the maximum and minimum catcher processors harvest allocation under Alternative 2 is 3.3% (50.1-46.8). A change of 3.3% is also the average difference between the maximum and minimum for all the alternatives. However, the change in the mid-range allocation between Alternative 2 and Alternatives 3(A) or 3(D) is 13.2%. This larger change is expected because the catcher processors allocation is only reduced by 9-15%, depending on the small vessel set-aside selected. However, their basic allocation changes by 27% (Table 4.7).

The opposite is true for the inshore sector. Their guaranteed processing allocation is impacted more by wide swings in the set-aside than the basic Inshore/offshore allocation split. This does not necessarily mean that the impacts of changing the set-aside versus the basic allocation percentages would be greater. That would depend on the inshore sectors ability to compete with the "true" motherships and catcher processors for the small catcher vessel quota.

The reason the inshore sector's guaranteed allocation is reduced more by the set-aside than the basic allocation percentages, is because a relatively larger percentage of their allocation goes to the set-aside (and it is the catcher vessel set-aside that is "up for grabs" in terms of where it is delivered). A range of 40-65% of the inshore quota is currently being considered. That mean using the basic inshore/offshore allocation split described under Alternative 2, the guaranteed inshore allocation could change by 8.7% (21.0 - 12.3) of the BS/AI TAC (after CDQs are taken off the top) depending on the set-aside selected. The difference between the mid-range set-aside under Alternative 2 and Alternatives 3(A) allocation splits is 4.7% of the TAC.

"True" motherships would not have any pollock guarantee under Alternative 4. Their entire allocation would be placed in the small vessel set-aside. The "true" motherships would then need to be successful in attracting small catcher vessels to deliver to them to maintain their market share. Public testimony before the Council has indicated that at least one of the "true" motherships is partially owned by the catcher vessels that deliver its pollock. This ownership arrangement will likely afford that "true" mothership more protection from loosing its harvest fleet than other "true" motherships that are only bound to their harvesting fleet through annual or seasonal contracts.

Table 4.24 lists the outcomes under the status quo split 35/10/55 and a 52.5% Inshore set aside for small catcher vessels, 12% set aside for small catcher vessels delivering to catcher processors, and 100% small vessel set aside of the "true" mothership quota. This the mid-range scenario of Alternative 2 in Table 4.23. The total ranges show that the Inshore sector may processes between 16.6% and 51.6% of the BS/AI pollock TAC. Their actual processing would depend on their success in purchasing catch from the small catcher vessels. The "true" motherships would process between zero and 35% of the TAC. Their processing levels would come totally from the small catcher vessel allocation. Finally the catcher processors would harvest 48.4% of the TAC, in this example, and if they were able to purchase all of the small catcher vessels quota they would be able to process up to 83.4% of the TAC. It is unlikely, however, that any processing sector would be able to purchase all of the small vessel quota.

Table 4.23 Alternative 4 (Harvester's Choice of Markets for Catcher Vessels Less Than 125' LOA)

Allocation Split	Potential Set-Aside Allocation Range	Harvesting Sectors Guaranteed Percent of TAC		
		Catcher Vessels		Catcher Processors[3]
		<125' LOA[1]	>= 125' LOA[2]	
35/10/55 (Alt. 2)	Minimum[4]	29.0%	12.3%	46.8%
35/10/55 (Alt. 2)	Mid-range[5]	35.0%	16.6%	48.4%
35/10/55 (Alt. 2)	Maximum[6]	41.0%	21.0%	50.1%
25/5/70 (Alt. 3A)	Minimum	21.3%	8.8%	59.5%
25/5/70 (Alt. 3A)	Mid-range	26.5%	11.9%	61.6%
25/5/70 (Alt. 3A)	Maximum	31.8%	15.0%	63.7%
30/10/60 (Alt. 3B)	Minimum	27.4%	10.5%	51.0%
30/10/60 (Alt. 3B)	Mid-range	33.0%	14.3%	52.8%
30/10/60 (Alt. 3B)	Maximum	38.5%	18.0%	54.6%
40/10/50 (Alt. 3C)	Minimum	30.5%	14.0%	42.5%
40/10/50 (Alt. 3C)	Mid-range	37.0%	19.0%	44.0%
40/10/50 (Alt. 3C)	Maximum	43.5%	24.0%	45.5%
45/15/40 (Alt. 3D)	Minimum	36.6%	15.8%	34.0%
45/15/40 (Alt. 3D)	Mid-range	43.4%	21.4%	35.2%
45/15/40 (Alt. 3D)	Maximum	50.3%	27.0%	36.4%

1 / May be delivered to any processing sector (inshore, catcher processors, or "true" motherships), **after the pollock is allocated to the small catcher vessels it no longer has an inshore/offshore designation**. This includes 100% of the "True" mothership allocation, 9-12-15% of the catcher processor allocation, and 40-52.5-65% of the Inshore allocation).
2 / Must be delivered to the Inshore sector (this is the only pollock guaranteed for the Inshore sector)
3 / This is the guaranteed harvest for catcher processors.
4 / The minimum allocation for catcher vessels less than 125' LOA would be when they receive 100% of the "true" mothership allocation, 40% of the Inshore allocation, and 9% of the catcher processor allocation. The minimum allocation for catcher vessels greater than or equal to 125' would be when the small catcher vessels are allocated 60% of the Inshore allocation. The minimum allocation for catcher processors would be when small catcher vessels are allocated 15% of the catcher processor allocation.
5 / The mid-range allocation for catcher vessels less than 125' LOA would be when they receive 100% of the "true" mothership allocation, 52.5% of the Inshore allocation, and 12% of the catcher processor allocation. The mid-range allocation for catcher vessels greater than or equal to 125' would be when the small catcher vessels are allocated 52.5% of the Inshore allocation. The mid-range allocation for catcher processors would be when small catcher vessels are allocated 12% of the catcher processor allocation.
6 / The maximum allocation for catcher vessels less than 125' LOA would be when they receive 100% of the "true" mothership allocation, 60% of the Inshore allocation, and 15% of the catcher processor allocation. The maximum allocation for catcher vessels greater than or equal to 125' would be when the small catcher vessels are allocated 40% of the Inshore allocation. The maximum allocation for catcher processors would be when small catcher vessels are allocated 9% of the catcher processor allocation.

Note: The "true" motherships are not guaranteed any pollock under Alternative 4, and catcher vessels not included in the set-aside are required to deliver their pollock inshore (they cannot deliver to offshore markets).

Table 4.24 Alternative 4 allocations using the Alternative 2 TAC splits and the mid-range small catcher vessel allocations.

Harvesters	Guaranteed Deliveries To: Inshore	"True" Motherships	Catcher Processors
Catcher Vessels			
<125' LOA	??	??	??
>125' LOA	16.6%	n/a	n/a
Catcher Processors	n/a	n/a	48.4%
Total	16.6% to 51.6%	0% to 35%	48.4% to 83.4%

Note: catcher vessels less than 125' LOA may deliver their allocation to any processing sector.

4.4 Alternative 5 (Harvester's Choice for Catcher Vessels 155' LOA and Shorter)

This alternative is basically the same as alternative 4 except that catcher vessels from 125' LOA through 155' LOA are also included in the small catcher vessel set-aside. Including these vessels would give them the freedom to deliver to the market of their choice. This would tend to reduce the guaranteed deliveries to the Inshore sector, while having no impact the guaranteed deliveries to the other processing sectors. It would also allow the 125' through 155' catcher vessels to compete directly with those less than 125' for the pollock in the set-aside.

The data provided in Tab 1 (Figure A.14) of Appendix 1 indicate that the catcher vessels less than 125' delivered about 65% of the Inshore quota in 1991, by 1996 their deliveries accounted for about 42% of the Inshore quota. All of that pollock lost by the catcher vessels less than 125' was taken by catcher vessels 125' through 155'. They increased their share from 15% in 1991 to 38% in 1996. The largest catcher vessels, those greater than 155' caught 19% of the Inshore quota in both 1991 and 1996.

One of the justifications for implementing allocations to small catcher vessels was to protect them from larger catcher vessels with greater harvesting capacity. Including the catcher vessels between 125' and 155' in the set-aside would not likely afford the protection that the boats less than 125' are seeking.

4.5 The Council's Preferred Alternative (Alternative 6)

After reviewing the alternatives analyzed in earlier drafts of this document, the Council selected their preferred alternative. This alternative would shift of 4% of the Bering Sea and Aleutian Islands (BS/AI) pollock TAC from the offshore sector to the inshore sector. The result would be that 39% of the BS/AI pollock would be allocated inshore and 61% offshore, after CDQs are deducted from the BS/AI TAC. No separate allocation to "true" motherships was included in this alternative. Instead, the "true" motherships will remain within the offshore sector.

In addition to the basic allocation split, the Council created a set-aside for BS/AI catcher vessels less than 125' LOA delivering to processors in the inshore sector. These small catcher vessels were allocated 2.5% of the combined BS/AI pollock TAC (adjusted for the 7.5% CDQ). Harvest of the set-aside will take place before the Bering Sea pollock B-season (there is no Aleutian Island B-season), starting on or about August 25. Any overages or underages resulting from the set-aside fishery will be subtracted from/added to the inshore BS open access B-season quota.

The rules and regulations pertaining to the CVOA will remain the same as under I/O2, except that during the B-season, harvesting operations allowed inside the CVOA will be restricted to catcher vessels delivering to the inshore sector. Under the current regulations, catcher vessels delivering to any sector are allowed to operate inside the CVOA during both the A and B-seasons. The new regulations will restrict catcher vessels delivering to offshore processors (including "true" motherships) from operating inside the CVOA during the pollock B-season. Catcher processors will continue to be restricted from harvesting pollock inside the CVOA during the B-season.

A three year sunset date is also included in the Council's preferred alternative. Therefore, I/O3 will remain in effect only for the 1999, 2000, and 2001 pollock fishing seasons, if the Secretary implements this program.

Projected Processing by Sector

Our estimates indicate that the Council's preferred allocation alternative would result in the Inshore sector producing over 71,595 mt of surimi, or 7,343 mt more than they would have produced under status quo. Offshore processors would produce 4,595 mt less surimi. In total, 143,459 mt of pollock surimi would be made by the Inshore and Offshore sectors under this alternative. The status quo estimate was 140,741 mt of surimi production. So, about 2,718 mt more surimi are projected to be produced under the Council's preferred alternative.

Total deep skin fillet production would drop from 31,351 mt under the status quo to 30,549 mt under the Council's preferred alternative. Decreasing the production by 802 mt represents about a 3% drop in the total BS/AI pollock deep skin fillet production. The production of minced product and roe are also expected to decline under this alternative. However, the production of other fillets, fish meal, and fish oil are expected to increase.

Table 4.25. Estimated product mix under allocation Alternative 6.

Alternative 5 (39% Inshore and 61% Offshore)								
Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Non-surimi C/P	Self Caught	-	6,011	3,635	14,493	-	-	1,441
	Catcher Vessels	-	1,163	854	2,096	-	-	152
Non-surimi C/P Total		-	7,174	4,489	16,589	-	-	1,594
Surimi - C/P	Self Caught	46,460	13	1,011	5,882	10,014	315	4,721
	Catcher Vessels	6,575	-	24	610	1,256	-	410
Surimi - C/P Total		53,036	13	1,035	6,492	11,271	315	5,131
Catcher Processor Total[1]		**53,036**	**7,187**	**5,524**	**23,081**	**11,271**	**315**	**6,725**
"True" Mothership Total[1]		**18,828**	**-**	**-**	**-**	**4,294**	**302**	**920**
Offshore Total[1]		**71,864**	**7,187**	**5,524**	**23,081**	**15,565**	**618**	**7,645**
Inshore Total[1]		**71,595**	**2,636**	**9,261**	**7,468**	**27,960**	**8,543**	**4,432**
Grand Total		**143,459**	**9,822**	**14,785**	**30,549**	**43,525**	**9,161**	**12,077**
Non-surimi C/P	CDQ Fishery[3]	-	3,059	3,191	2,662	-	-	346
Surimi - C/P	CDQ Fishery	3,993	10	150	1,027	338	-	481
True M'ship	CDQ Fishery	1,301	-	-	-	264	-	274
Inshore	CDQ Fishery[2]	1,897	70	245	198	741	226	117

[1] Use caution when comparing production across industry sectors. See the discussion of utilization rates in the baseline chapter.
[2] The utilization rates from the combined open access and CDQ catches were used to estimate this production
[3] CDQ production is assumed to remain constant under any of the allocation alternatives
Note: This estimate assumes a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

Catcher Vessel's Gross Revenue from Pollock

The total gross revenue earned by all catcher vessels is projected to be $97.7 million. Inshore delivery vessels are expected to increase their gross revenues by about $7.6 million, when compared to the status quo allocation. Catcher vessels delivering to processors in the offshore sector are projected to realize a $2.5 million decrease in gross revenue. Overall, catcher vessel revenues increase by $5.1 million. The increase appears rather large because a majority of the pollock harvested in the offshore sector is taken by catcher processors, and their harvests are not included in the catcher vessel gross revenue calculation. Only vessels that have a market transaction at the ex-vessel level are considered.

Given the projected increase in total catcher vessel gross revenue, catcher vessels as a whole will be better off under the Council's preferred alternative, when compared to the status quo. However, some catcher vessels in the offshore sector may be worse off. If catcher vessels that typically participate in the offshore sector are unable to develop markets to harvest part of the increased inshore quota, because of hold capacity, vessel configuration, or other constraints, they will likely realize a decrease in revenue.

Catcher vessels that currently have markets in both sectors, or offshore catcher vessels that can develop inshore markets may be able to recover some of the lost offshore revenues. Catcher vessels <125' LOA that have traditionally fished in the offshore sector may find a new market during the inshore set-aside fishery that takes place prior to the start of the B-season. Recall that about 58% of the inshore catch in 1996 was delivered by catcher vessels ≥ 125' LOA. To replace this harvesting capacity, inshore processors will likely contract with vessels that traditionally fish pollock in the GOA or offshore catcher vessels from the BS/AI. The offshore catcher vessels that gain markets in the inshore set-aside fishery may be in the best position to recover some of their lost revenues.

Table 4.26 **Alternative 6**: Impacts on Catcher Vessel's Gross Revenue

	Inshore	Offshore	Total
Allocation Percentages	**39%**	**61%**	**100%**
Sector's Allocation (mt)	396,825	620,675	1,017,500
Change from Status Quo [1] (mt)	40,700	(40,700)	-
Sector's Allocation Change (%)	11 %	(6 %)	-
Est. Exvessel Revenue per Ton of Raw Pollock	$ 187	$ 164 [2]	n/a
Est. Catcher Vessel Revenue (Million $)	$ 74.4	$ 23.4	$ 97.7
Est. Change in Exvessel Revenue (Million $)	$ 7.6	($ 2.5)	$ 5.1

The sector's allocation was calculated using the following formula: (allocation % *1,100,000mt * 0.925)

[1]Status quo allocation assumes that catcher processors harvest 55%, "true" motherships 10%, and Inshore 35%. The National Marine Fisheries Service 1996 Blend data also showed that about 10% of catcher processor's pollock was delivered to them by catcher vessels.

[2] Remember, "True" Mothership and catcher processor revenue per ton is assumed to be 87.5% of the Inshore revenue.

Processor's Gross Revenue at First Wholesale

First wholesale gross revenue estimates are about $2.4 million more under this alternative, than under the status quo allocation. Overall, the change in gross revenue amounts to less than a 0.5% increase. Making definitive statements about the appropriateness of selecting this alternative, on economic grounds, is not possible. The relatively small change in total first wholesale gross revenue, coupled with the concerns expressed over utilization rate and price data, which were important factors in generating these estimates of gross revenue, severely limit the analysts ability to make such statements.

Table 4.27 1st Wholesale Gross Revenue (Million $) FOB Alaska: Alternative 6 (39% Inshore and 61% Offshore)

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Roe	Total
Non-surimi C/P	Self Caught	$ 0.0	$ 5.6	$ 7.7	$ 39.6	$ 0.0	$ 19.2	$72.1
	Catcher Vessels	$ 0.0	$ 1.1	$ 1.8	$ 5.7	$ 0.0	$ 2.0	$ 10.6
Non-surimi C/P Total		$ 0.0	$ 6.7	$ 9.5	$ 45.3	$ 0.0	$ 21.2	$82.7
Surimi - C/P	Self Caught	$ 88.6	$ 0.0	$ 2.1	$ 16.1	$ 6.4	$ 62.8	$ 176.0
	Catcher Vessels	$ 12.5	$ 0.0	$ 0.1	$ 1.7	$ 0.8	$ 5.4	$ 20.5
Surimi - C/P Total		$ 101.1	$ 0.0	$ 2.2	$ 17.7	$ 7.2	$ 68.2	$ 196.5
Catcher Processor Total[1]		**$ 101.1**	**$ 6.7**	**$ 11.7**	**$ 63.1**	**$ 7.2**	**$ 89.4**	**$ 279.2**
"True" Mothership Total[1]		**$ 35.9**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**$ 2.7**	**$ 12.2**	**$ 50.8**
Offshore Total[1]		**$ 137.0**	**$ 6.7**	**$ 11.7**	**$ 63.1**	**$ 10.0**	**$ 101.6**	**$ 330.0**
Inshore Total[1]		**$ 129.4**	**$ 3.0**	**$ 19.6**	**$ 20.4**	**$ 18.5**	**$ 44.2**	**$ 235.1**
Grand Total		**$ 266.4**	**$ 9.7**	**$ 31.3**	**$ 83.5**	**$ 28.4**	**$ 145.8**	**$ 565.1**
Non-surimi C/P	CDQ Fishery[3]	$ 0.0	$ 2.8	$ 6.8	$ 7.3	$ 0.0	$ 4.6	$ 21.5
Surimi - C/P	CDQ Fishery	$ 7.6	$ 0.0	$ 0.3	$ 2.8	$ 0.2	$ 6.4	$ 17.4
"True" Mothership	CDQ Fishery	$ 2.5	$ 0.0	$ 0.0	$ 0.0	$ 0.2	$ 3.6	$ 6.3
Inshore	CDQ Fishery[2]	$ 3.4	$ 0.1	$ 0.5	$ 0.5	$ 0.5	$ 1.2	$ 6.2

[1] Use caution when comparing gross revenues across industry sectors. See the discussion of utilization rates and wholesale prices in the baseline chapter.

[2] The utilization rates from the combined open access and CDQ catches were used to estimate the quantity of products produced for the Inshore sector

[3] CDQ production is assumed to remain constant under any of the allocation alternatives

Note: These estimates assume a 1.1 million metric ton TAC, with 7.5% allocated to CDQ fisheries.

PSC Bycatch

Halibut bycatch mortality is projected to decrease by about 11 mt under the Council's preferred alternative, when compared to the status quo. This estimate is based on the halibut mortality rate of each sector during the 1996 pollock target fishery and their projected catch in 1999. However, an FMP amendment was approved at the June 1998 Council meeting that would ban bottom trawling for pollock. It is assumed that this amendment will be in place during the 1999 fishing season. Eliminating bottom trawling for pollock will likely reduce the amount of halibut bycatch mortality and crab bycatch by more than is reported in Table 4.28 (NPFMC, 1998[17]).

[17]NPFMC. 1998. Environmental Assessment/ Regulatory Impact Review /Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) for the Proposed Reauthorization of Amendments 57 to the Bering Sea/Aleutian Islands Fishery Management Plans (Pollock Bottom Trawl Prohibition). NPFMC, 605 W. 4th Avenue, Suite 306, Anchorage, AK.

Bairdi crab bycatch decreases by about 3,800 animals when the Council's preferred alternative is compared to the status quo estimate. This is approximately a 4% decrease in Bairdi crab bycatch.

Chinook salmon bycatch is projected to increase by about 1,300 animals under the Council's preferred alternative. This is a result of the catcher vessels delivering to inshore processors having higher chinook bycatch rates than vessels in the offshore sector. However, the amount of bycatch is still low. Only one chinook salmon is taken in the inshore sector for every 15.3 mt of pollock harvested.

Table 4.28 Estimated PSC Bycatch by Processing Sector: Alternative 6

Alternative 6	Halibut mort.	Herring	Red king crab	Other king crab	Bairdi Tanner	Other tanner	Chinook	Other salmon
	mt	mt	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
C/Ps (non-surimi)	111.1	43.8	4.3	0.0	17.8	18.2	5.1	3.7
C/Ps (surimi)	113.8	631.3	0.8	0.0	54.2	21.4	12.5	30.9
"True" Motherships	17.4	26.0	0.0	0.0	0.1	0.2	7.3	15.7
Inshore	48.6	483.2	0.1	0.1	7.9	19.8	28.0	21.0
Total	290.9	1,184.3	5.2	0.1	80.0	59.6	52.9	71.3

4.6 Summary and Conclusions

The Council has considered changing the pollock TAC allocation from the current split of 35% to the Inshore sector and 65% to the Offshore sector. In addition to letting the I/O allocation expire, the new alternatives would allocate between 25-45% of the TAC to the Inshore sector, 5-15% to "true" motherships, and 40-70% to offshore catcher processors. Three sub-options are also being considered within each of these general allocations. The first sub-option would reserve 40-65% of the Inshore quota for catcher vessels less than 125' LOA. The second sub-option would reserve nine to 15% of the offshore quota for catcher vessels delivering to catcher processors. Finally, the third sub-option defines the length of the I/O3 allocation which could be one year, three years, or until replaced by the Comprehensive Rationalization Program. There is also the decision of whether or not to separate the "true" mothership sector from the catcher processor sector. Currently both sectors are combined into the offshore component of the pollock fishery and fish from the same allocation. If the "true" motherships were separated from the catcher processors, each sector would be allocated their own quota.

Selecting the no action alternative would allow the I/O2 program to expire on December 31, 1998. Inshore/offshore was implemented originally as a temporary measure to address, among other concerns, the risk of preemption within the pollock fisheries. Implementation of the Inshore/offshore program has imposed a degree of stability between industry sectors. It is probable that virtually all of the destabilizing and preemptive behavior that existed prior to the first Inshore/offshore would resurface if the current program was not in place. Therefore, the no-action alternative appears to be inferior to the other alternatives under consideration by the Council.

Alternatives 3(A) through 3(D) change the current allocation percentages. Because each industry sector produces a different product mix, changing the allocation between sectors will alter the amounts of pollock products in the market. Within each sector, the product mix is assumed to remain at the 1996 proportions. The exvessel and first wholesale prices are also assumed to remain fixed at the 1996 levels. Therefore, the calculations to estimate gross revenue and total production within a sector are linear and the changes depend solely on the tons of raw pollock they process. Table 4.23 reports the relationship between a 50,875 mt change in each sector's allocation (5% of the 1,017,500 mt CDQ-adjusted TAC) and the change in total gross revenue (both exvessel and first wholesale) and the products produced within the sector. All of the information reported in Table 4.23 represents the change from the status quo allocation. Because the calculations are linear, the effects of other allocation amounts may be calculated easily using the information in the table. For example, an allocation that would grant a sector 7.5% more of the TAC would increase their revenues and products by 1.5 times those listed in Table 4.29.

Table 4.29 Changes resulting from a 5% shift in the BS/AI Pollock TAC within each industry sector

	Inshore	"True" Mothership	Catcher Processor
% Change Within the Sector[1]	14.3 %	50.0 %	9.1 %
Raw Fish (mt)	50,875	50,875	50,875
Catcher Vessel Gr. Rev. (exvessel, million $)[2]	$ 9.5	$ 8.3	$ 0.8
Gross Revenue (1st Wholesale, million $)	$ 30.1	$ 26.8	$ 27.1
Surimi (mt)	9,179	9,910	5,149
Minced (mt)	338	-	698
Fillet/Block and IQF (mt)	1,187	-	536
Deep Skin Fillet (mt)	957	-	2,241
Meal (mt)	3,585	2,260	1,094
Oil (mt)	1,095	159	31
Roe (mt)	568	484	653

1/ The percentage change within a sector is calculated as (((status quo tons + 50,875)/(status quo tons))- 1)*100. So, it represents the percentage increase that sector will receive.

2/ Only the catch delivered by catcher vessels is included for catcher processors.

Note: A 5% TAC decrease to a sector will result in numbers of equal magnitude, but with a negative sign

The reader should use caution when comparing the information in Table 4.23 across industry sectors. A complete discussion of the issues associated with comparing these data is provided in Chapters 3 and 4.

The Council considered reserving between 40% and 65% of the Inshore allocation for catcher vessels less than 125' LOA. The upper end of this range represents the pollock catch delivered inshore by catcher vessels less than 125' LOA in 1991. The lower end of the range is about equal to that group's harvest during 1996. Therefore, the Council could guarantee these smaller catcher vessels the percent of harvest they currently (1996) take or restore them to the levels they harvested in earlier years.

Catcher vessels less than 125' LOA are in general less mobile, carry fewer fish, and are more operationally constrained by weather and sea conditions than larger catcher vessels. These constraints may result in the inshore harvest being slowed somewhat, if the small catcher vessels are allocated more of the inshore pollock than they currently harvest.

NMFS has indicated that an allocation to catcher vessels less than 125' LOA could not be implemented by January 1999. To monitor this alternative the mechanisms currently used to estimate inshore catch would need to be changed. Presently NMFS estimates total catch at the processor level. To monitor catch at the harvest vessel level a new reporting system would need to be implemented. Changing the record keeping and reporting requirement must be reviewed and approved by OMB. Currently there is no estimate of how long this process would take.

The Council also considered a nine to 15% set aside of the offshore allocation to catcher vessels delivering to catcher processors. Between 1991 and 1997 catcher vessels have harvested between 2 and 10% of the pollock processed by offshore catcher processors annually. During 1996 catcher vessels delivered 9.8%, the most of any year in the time series. The allocation being considered would guarantee catcher vessels a level greater or about equal to their best year. This allocation could be monitored and in place January 1999 if no catcher vessel size requirements were included.

Three sunset dates were considered by the Council. A sunset date one year after I/O3 is implemented. This option will require the Council to begin analyzing the I/O4 immediately upon passing I/O3. An initial analysis would need to be prepared by April 1999 with a final decision at the June 1999 Council meeting. Given the status of the data collection programs it is unlikely that would allow enough time to conduct a formal cost/benefit analysis. A short allocation would also provide a less stable environment for vessel and plant owners to make business decisions.

A three-year sunset would potentially resolve many of the concerns expressed under the one-year option. Three years may provide adequate time to collect the cost and earnings data to conduct a formal cost/benefit analysis. Three years would also provide the industry with a more stable decision environment. Implicit within the one and three year sunset sub-options is the option to leave I/O3 in place until replaced by CRP, though the exact nature of CRP has not been specifically defined.

The alternatives that would set-aside a portion of the TAC for small catcher vessels to deliver to the processors of their choice, would give the small boats greater flexibility. However, the processors would realize reductions in the amount of pollock their sector is guaranteed. This reduction could be made up though deliveries from the small catcher vessel allocation, if a processing sector is successful in making purchases from the set-aside.

If the purpose of the set-aside is to protect catcher vessels less than 125' LOA, then only those vessels should be allowed to harvest the set-aside. The data presented in this document shows that all of the inshore share lost by catcher vessels less than 125' LOA, between 1991 and 1996, was taken by catcher vessels in the 125' through 155' LOA class. So, including those larger vessels in the set-aside would not afford the smaller catcher vessel class any protection from having their share eroded.

Preferred Alternative

After considering all of the above alternatives, the Council opted to change the basic percentage allocation to 39% inshore and 61% offshore, with no separate "true" mothership allocation. Part of the justification provided for not including a separate allocation to the "true" motherships was concern that a three way split could potentially allow the catcher processor sector to form a cooperative, much like they did in the whiting fishery off the Pacific coast. At least one Council member indicated that he felt the Pacific Council was unaware that the industry intended to form a cooperative in the whiting fishery when they passed the three sector allocation. Given his prior knowledge of the industries intent to form a cooperative, he could not support a three sector split.

Some members of the Council were uncomfortable with the short time frame they were given to consider the impacts of a cooperative. One member of the Council indicated that he had first heard of the cooperative concept earlier in the meeting, and that was not adequate time to develop an full understanding of the issues. Information available to the Council regarding the impacts of a cooperative, during the meeting, was limited to industry comments and personal studies they may have undertaken on the whiting industry.

The cooperative was believed to be much like an IFQ program, which some members of the Council were not willing to sanction. Given the current prohibition on IFQs in the Magnuson-Stevens Act, members felt that endorsing a cooperative would not reflect the current spirit, if not the letter, of the Act. Because of those concerns, the Council was unwilling to support a three sector allocation split.

The Council's preferred alternative moved 4% of the BS/AI TAC (after CDQs are deducted) from the offshore to the inshore sector. The justification used to move additional quota inshore was based on previous Council actions under the original inshore/offshore amendment and information provided to the Council in the I/O3 analysis. When the Council passed I/O1 it contained a stepwise increase of the inshore allocation, beginning at 35% in 1992 and increasing to 45%. The Secretary of Commerce disapproved the step increases, partly based on an economic analysis conducted within NMFS. Because the Council had originally intended to increase the inshore quota under I/O1, they felt that the increased inshore allocation was justified under I/O3, both in terms of their previous actions and the information contained with in the current analysis.

The I/O3 analysis indicated that the inshore sector produced more product from a ton of raw pollock than the offshore sector. Members of the Council felt that reducing waste was an important factor in their decision. They also cited slightly higher gross revenues reported in the document for the inshore sector, higher percentage of Alaskan employees, more taxes paid to the local and state governments, and less tax leakage due to product being shipped directly overseas or out of state, as important factors in their decision.

Protecting the inshore catcher vessels less than 125' LOA was a also raised as an area of concern. The analysis indicated that from 1991 to 1996 these catcher vessels have had their share of the inshore quota reduced from 65% to 42%. Basically all of the quota lost by the small catcher vessels, was taken by catcher vessels in the 125' to 155' LOA range. Vessels were added to the 125' - 155' LOA fleet during the 1991-1996 time period. At least one of the vessels was outfitted with a large holding tank and could transport more fish than other vessels in this class. This new vessel, and other vessels that were added, played an important role in increasing this sector's harvesting capacity. The largest catcher vessel class consisted of vessels > 155' LOA. The relative amount of catch taken by inshore catcher vessels in this class was fairly stable over the 1991-1996 time period (about 19%).

To provide some protection for the less than 125' LOA inshore catcher vessels, a 2.5% set-aside of the BS/AI TAC (after CDQs are deducted) was established. The set-aside will be harvested during a period starting on or about August 25, prior to the B-season.

Setting aside 2.5% of the BS/AI TAC, after CDQ deductions, is approximately equal to reserving 7% of the inshore quota. Therefore, if the small catcher vessels are able to maintain their current share of the inshore open access fishery, they should harvest between 45% and 50% of the inshore quota during 1999.

Catcher vessels delivering to the offshore sector will be restricted from fishing inside the CVOA during the B-season, if the Council's preferred alternative is approved by the Secretary. Previous inshore/offshore allocations have allowed catcher vessels delivering to any sector to fish inside the CVOA whenever the BS pollock fishery is open. The new definition requires all offshore harvesters to fish outside the CVOA during the B-season. This includes both catcher processors, which have traditionally been excluded during the B-season, and now the catcher vessels delivering to the offshore fleet.

The duration of the inshore/offshore allocation is for three years (1999, 2000, and 2001). After that time the program will sunset and revert to an open access fishery with no inshore/offshore allocation, unless the Council takes action to implement a new program. A three year sunset was also included in each of the previous inshore/offshore plan amendments.

5.0 CATCHER VESSEL OPERATIONAL AREA

This chapter describes the location and composition of pollock harvests in relation to the Catcher Vessel Operational Area (CVOA), and how they may change under the alternatives and options being considered in I/O3. Projected impacts are considered on the catcher/processor fleet, motherships, and catcher vessels. Though pollock fisheries are described in and around special Steller sea lion areas, the impacts on Steller sea lions are described in the environmental assessment in Chapter 6.

5.1. Pollock Catch Distribution and Composition for 1991-1996

This section provides information on pollock harvests and fishing effort inside and outside the CVOA during the A and B seasons of 1991, 1994, and 1996. The composition of the catch is described in terms of pollock length and mean individual weight. Harvest rates are compared for the three above years with the 1997 B-season fishery.

5.1.1 Data Sources and Methods

Observer data were used to summarize pollock fishery catch distribution, CPUE, and pollock size distribution by fishery sector inside and outside the CVOA in the A and B seasons of 1991, 1994, and 1996. Only data collected on the Eastern Bering Sea (EBS) shelf were considered; data from the Aleutian Islands (areas 540-543) and the Bogoslof districts (area 518) were excluded. A target species was assigned to each haul that was sampled by observers for species composition based on the groundfish species or species group that comprised the largest fraction of all of the groundfish caught in the haul. Only data from pollock target fisheries were included in this analysis. The fishery sectors considered were catcher processors (observer mode 1), catcher boats for shoreside processing plants (observer mode 3), and motherships (observer mode 2). A haul assigned a mode of 1 was done by a catcher-processor that both caught and processed the catch from that haul; this group consists solely of offshore vessels. The catch from a haul assigned a mode of 3 was delivered to a shoreside plant for processing, and as such, can be assigned entirely to the inshore group. The mothership sector in the observer summaries provided is a mixture of both offshore and inshore data. All data contained in the following summaries are representative of each sector's performance based on observer sampling.

Observer data were summarized for each season, A and B, based on the opening and closing dates of the entire pollock fishery in 1991 and each sector in 1994 and 1996 in Table 5.1:

Table 5.1 Opening and Closing Dates for Pollock Fisheries in 1991, 1994 and 1996

	A-Season		B-Season	
Year	***Offshore***	***Inshore***	***Offshore***	***Inshore***
1991	January 1 - February 22		June 1 - September 4	
1994	Jan 20 - Feb 18	Jan 20 - Mar 2	Aug 15 - Sep 24	Aug 15 - Oct 4
1996	Jan 26 - Feb 26	Jan 20 - Mar 2	Sep 1 - Oct 17	Sep 1 - Oct 17

Source: NMFS Alaska Region Bulletin Board (NMFS F/AKR home page on the Internet).

"True" mothership opening and closing dates were set equivalent to the inshore sector's dates. Catch-per-unit-effort was defined as the total pollock catch (metric tons=mt) divided by the total hours trawled summed over all sampled hauls in each sector-season cell. Similarly, mean individual pollock weight (in kg) was calculated as the total pollock catch weight divided by the total estimated number of pollock caught in all sampled hauls in each sector-season cell. Pelagic and bottom trawls were considered separately and only pelagic trawl data are reported for CPUE, mean weight, and length-frequency. However, data on catch distribution (charts and percent inside and outside of the CVOA) include both bottom and pelagic trawl-caught pollock. Charts of pollock fishery trawl locations include the Bogoslof area for 1991, but these data were not included in CPUE or mean pollock weight calculations nor pollock length-frequency summaries.

Pollock population-at-length estimates inside and outside of the CVOA were available from bottom trawl and hydroacoustic-midwater trawl surveys conducted in 1991, 1994, and 1996. These surveys were conducted in summer. Population-at-length estimates by region in the eastern Bering Sea are not available for any other season.

Important Note: The CVOA used in these analyses is 163° W to 168°W south of 56°N and north of the Alaskan peninsula and Aleutian Islands, as originally defined in the 1992 BS/AI FMP Amendment 18. CVOA was reduced in 1995 by moving the western boundary eastward by ½° longitude to 167°30'W. Consequently, the size of the CVOA used to characterize its impact on the 1996 fishery is slightly larger than that actually enforced that year. As shown in Figures 5.2 and 5.6 the deleted area was not used extensively during the A- or B-seasons of 1996 by any fishery sector.

5.1.2 A-Season Fisheries

In 1991 and 1994, 96-100% of the observed EBS shelf A-season pollock was caught within the CVOA by each sector (Figures 5.1 and 5.2). The CVOA percentage dropped to 46-75% in 1996, as all sectors utilized areas north and west of the CVOA along the 100 m contour. Ice could have constrained the fishery more in 1991 and 1994 than in 1996, since the extent of the ice edge was over 2° latitude (120 nautical miles) further south in mid-March of 1991 and 1994 than in 1996.

Latitude of Southern Extent of Ice Edge Along Meridian:

Year	*165°W*	*170°W*
1991	56.5°N	57.0°N
1994	56.5°N	57.0°N
1996	58.8°N	59.5°N

Source: National Ice Center

The last year that the Bogoslof district, to the southwest, was open was in 1991, and approximately 50% of the A-season pollock catch came from that area, primarily by offshore catcher-processors (Figure 5.2).

In 1991, the average pollock CPUE of catcher-processors during the A-season was 72% greater inside the CVOA than outside the CVOA on the EBS shelf (Figure 5.3). In the A-season of 1994, catcher processor CPUE was 107% greater inside the CVOA than outside, while that of catcher boats was 67% greater. In 1996, the spatial CPUE relationship reversed: the average CPUEs of catcher processors and catcher boats were 48% and 122% greater outside the CVOA than inside, respectively. These data should not be used to make firm conclusions regarding spatial differences in CPUE because of the small size of the sample available from outside the CVOA in 1991 and 1994 and differences in the southern extent of ice.

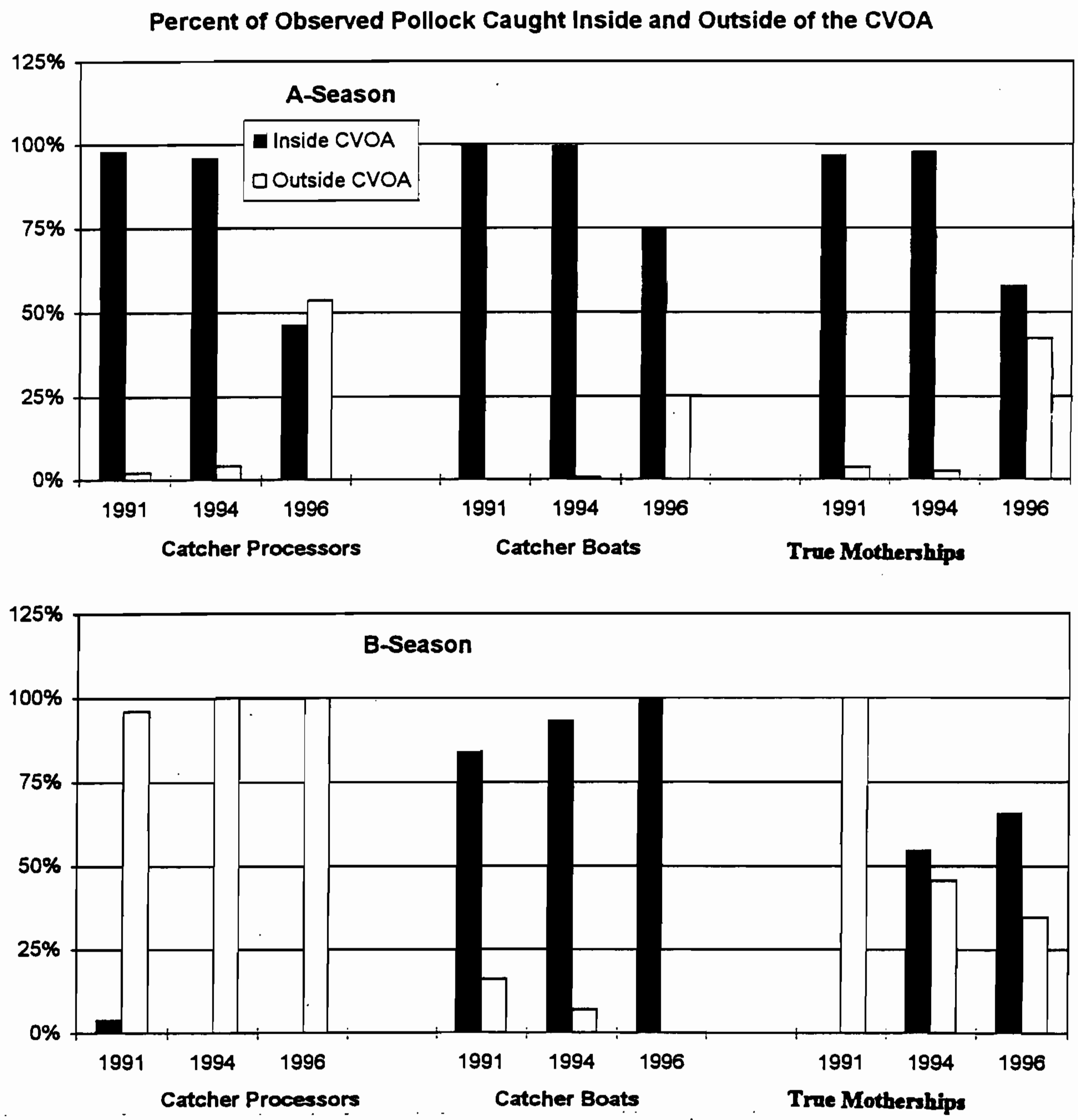

Figure 5.1 Observed pollock catch distribution by season, sector and area by pollock fisheries on the eastern Bering Sea shelf in 1991, 1994, and 1996. Aleutian Islands and Bogoslof data were excluded.

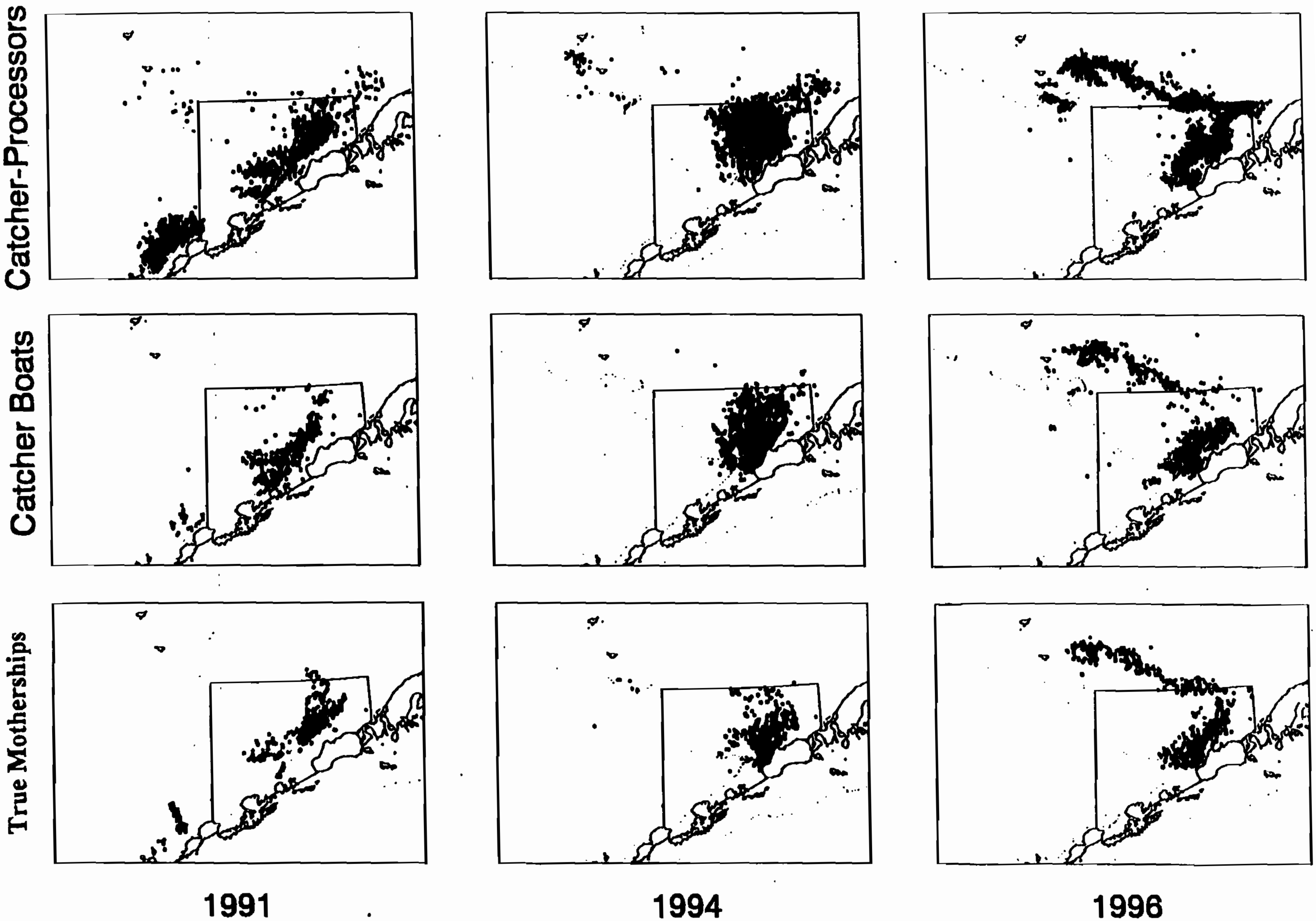

Figure 5.2 Observer pollock fishery trawl locations in the A-seasons of 1991, 1994, and 1996 by catcher processor (top), catcher boats (middle), and true motherships (bottom) inside (red) and outside(blue) of the CVOA. Dept contour=200 m.

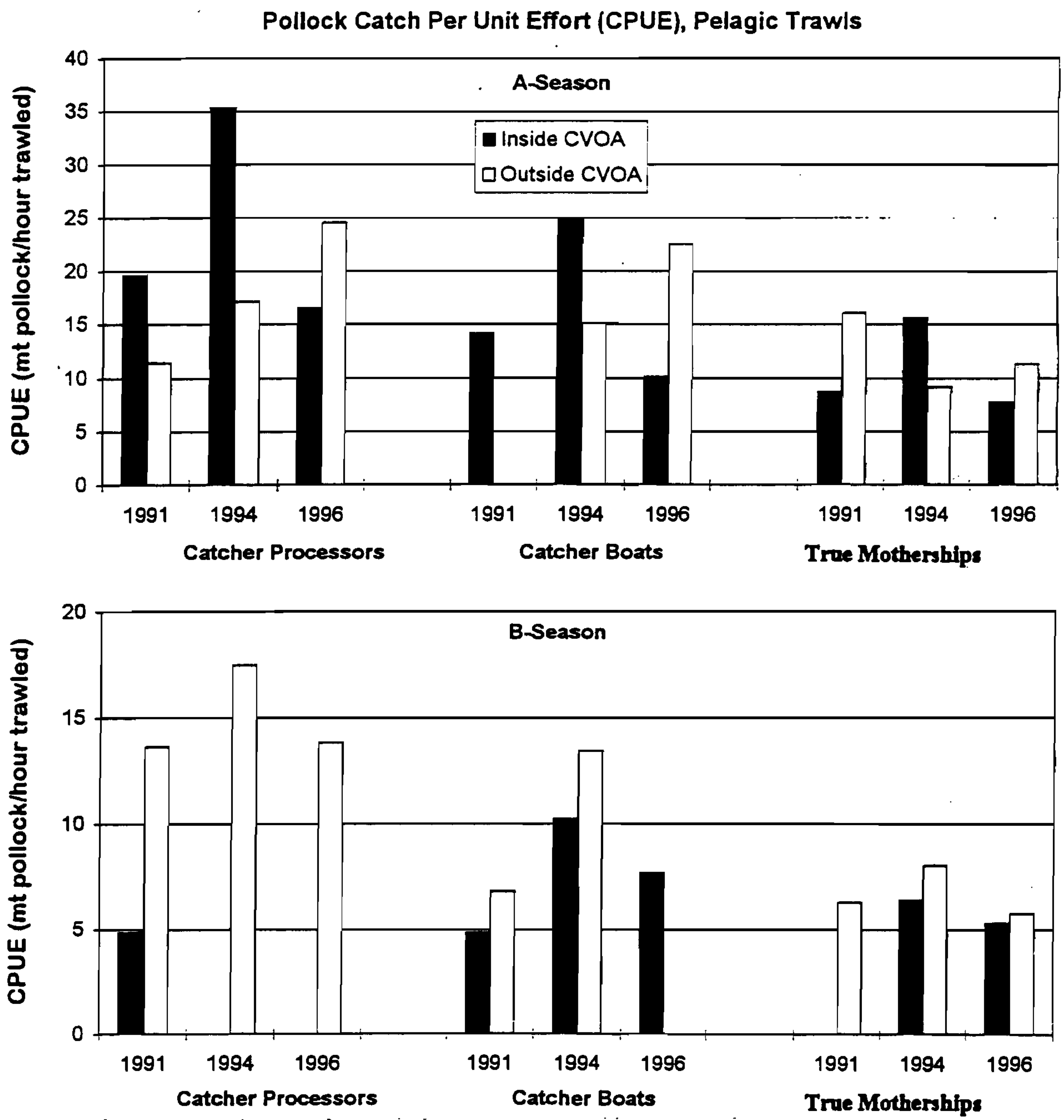

Figure 5.3 Pollock CPUE by season, sector and area by pollock fisheries on the eastern Bering Sea shelf in 1991, 1994, and 1996. Aleutian Islands and Bogoslof data were excluded.

Pollock caught by the fishery were generally larger and more uniform in size within the CVOA than outside on the EBS shelf during the A-seasons of 1991, 1994 and 1996 (Figures 5.4 and 5.5). This is most clearly evident in 1996 when the modal length and mean individual weight of pollock caught by each sector outside of the CVOA was 4-6 cm smaller and 0.2 kg lighter than inside of the CVOA. In 1991 and 1994, modal lengths were similar, but there were a greater percentage of pollock < 40 cm in length outside of the CVOA than inside (see table 5.2 below), and mean individual weight tended to be lighter (Figure 5.5):

Table 5.2 Percent of Pollock < 40 cm in Length in A-Season Fishery Samples

	Catcher Processors		Catcher Boats		"True" Motherships	
Year	***Outside CVOA***	***Inside CVOA***	***Outside CVOA***	***Inside CVOA***	***Outside CVOA***	***Inside CVOA***
1991	21%	5%		5%	2%	5%
1994	9%	4%	3%	3%	7%	2%
1996	6%	1%	11%	1%	5%	1%

5.1.3 B-Season Fisheries

The CVOA became operational in the B-season of 1992 and has been an exclusive inshore operational area each B-season since. In 1991, the last year that catcher-processor effort distribution was unconstrained by the CVOA, the offshore sector caught approximately 96% of its B-season pollock outside of the CVOA across a broad section of the outer shelf from the Pribilof Islands to the edge of the EEZ (Figures 5.1 and 5.6). In 1994, most of the catcher processor effort was concentrated north of the CVOA in the middle shelf and to a lesser extent west and north of the Pribilof Islands. However, in 1996, catcher processors worked exclusively north of the CVOA and west of St. Matthew Island, and not in the area west of the Pribilof Islands. Catcher boats caught about 84% of their B-season pollock in the CVOA in 1991, and this percentage increased to 100% in 1996 as the distribution of their B-season effort contracted (Figures 5.1 and 5.6).

Pollock CPUE was greater outside than inside of the CVOA in each of the paired comparisons available for the three years and fishery sectors (Figure 5.3). Pollock size, however, tended to be larger and more uniform inside than outside of the CVOA (Figures 5.5 and 5.7). Furthermore, pollock < 40 cm in length were more commonly encountered outside than inside the CVOA. This occurred even when there was a large, widely distributed incoming yearclass, which occurred in 1991 with the incoming 1989 yearclass as evidenced by the mode in the high 20 cms in all length-frequency samples (Figure 5.7) and the high percentages of pollock < 40 cm, particularly inside of the CVOA:

Table 5.3 Percent of Pollock < 40 cm in Length in B-Season Fishery Samples

	Catcher Processors		Catcher Boats		"True" Motherships	
Year	***Outside CVOA***	***Inside CVOA***	***Outside CVOA***	***Inside CVOA***	***Outside CVOA***	***Inside CVOA***
1991	20%	10%	10%	12%	18%	
1994	13%		5%	1%	21%	1%
1996	19%			1%	15%	0%

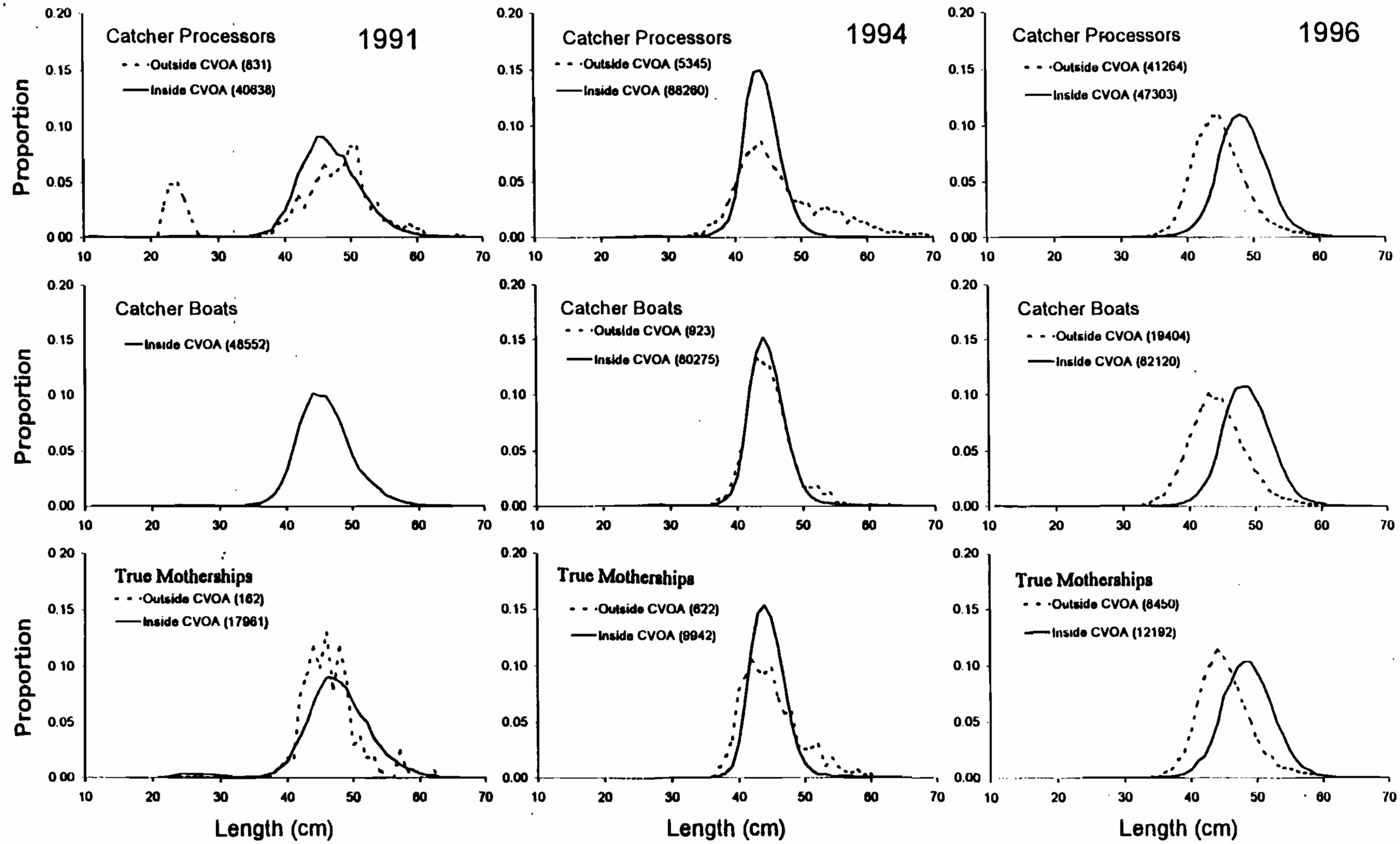

Figure 5.4 Pollock length-frequency from samples collected aboard offshore catch processors (top), onshore catcher boats (middle), and mixed true motherships (bottom) in the A-season of 1991 (left), 1994 (middle), and 1996 (right) inside and outside of the CVOA (number of pollock measured in legend).

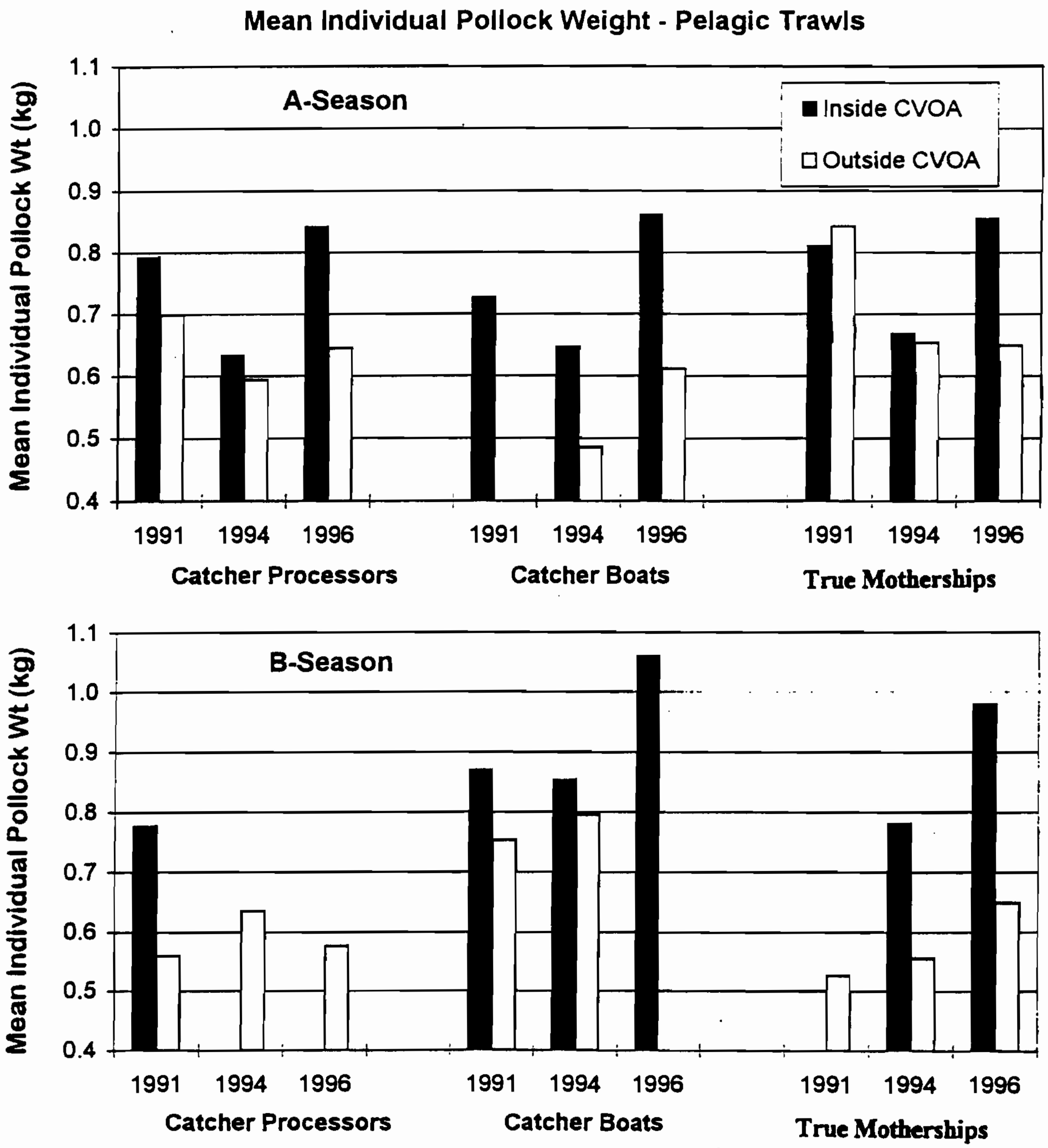

Figure 5.5 Mean individual pollock weight by season, sector and area by pollock fisheries on the eastern Bering Sea shelf in 1991, 1994, and 1996. Aleutian Islands and Bogoslof data were excluded.

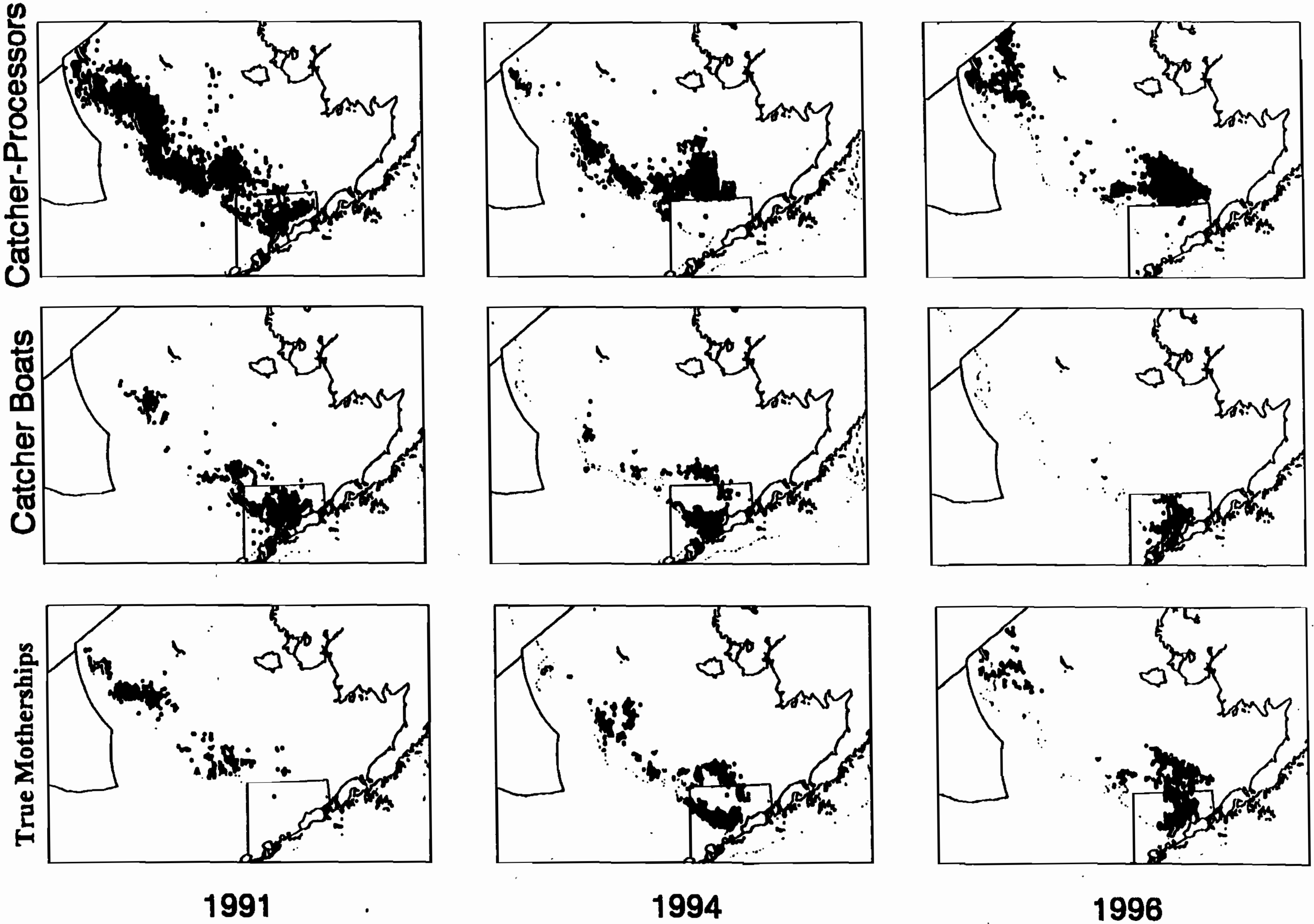

Figure 5.6 Observer pollock fishery trawl locations in the B-seasons of 1991, 1994, and 1996 by catcher processor (top), catcher boats (middle), and true motherships (bottom) inside (red) and outside(blue) of the CVOA. Dept contour=200 m.

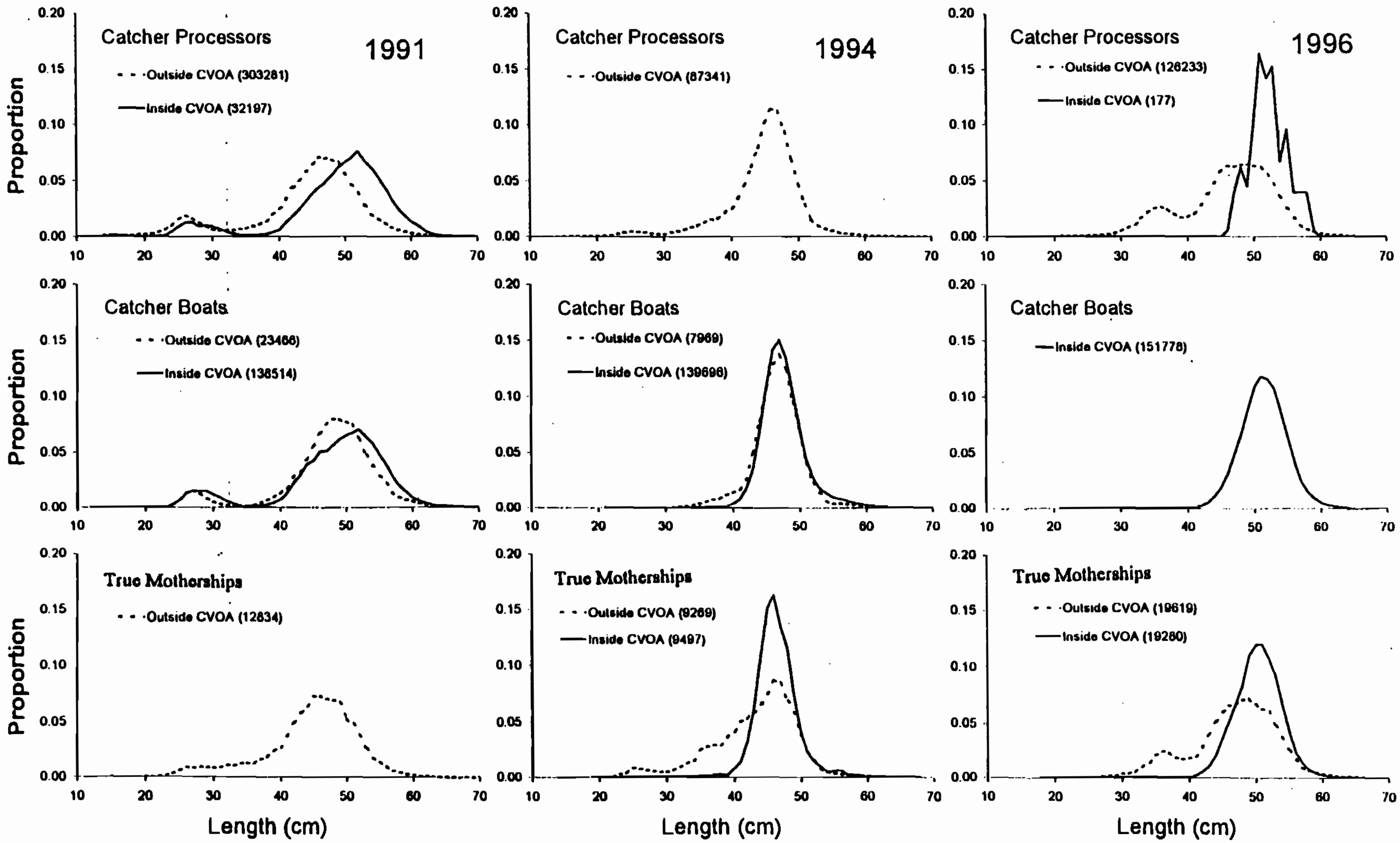

Figure 5.7 Pollock length-frequency from samples collected aboard offshore catch processors (top), onshore catcher boats (middle), and mixed true motherships (bottom) in the B-season of 1991 (left), 1994 (middle), and 1996 (right) inside and outside of the CVOA (number of pollock measured in legend).

5.1.4 Survey Biomass Distributions

Bottom trawl and echo-integration/midwater trawl (EIMWT) surveys of the pollock population were conducted in the summers of 1991, 1994 and 1996. The EIMWT estimate is from the surface to within 3 m of the bottom, while the bottom trawl estimate is for the bottom 3 m; hence the two estimates can be summed to estimate the total pollock population. Pollock population estimates by length in three regions for each of the three years are presented in Figure 5.8. The three regions are: the CVOA, east of 170°W outside of the CVOA (equivalent to INPFC Area 51 outside of the CVOA), and west of 170°W (equivalent to INPFC Area 52). Data east of 170°W from the 1991 EIMWT survey could not be separated into areas inside and outside of the CVOA. Therefore, in Figure 5.8 and in the Table 5.4 below, the 1991 CVOA data are from the bottom trawl survey only; for the area labeled as "East of 170°W, Outside of the CVOA", this includes both areas inside and outside of the CVOA east of 170°W for 1991.

Table 5.4 Pollock Population Estimates and Percentages < 40 cm in Length by Area for the 1991, 1994, and 1996 Combined Bottom Trawl and EIMWT Surveys of the Eastern Bering Sea Shelf

	CVOA		**East of 170°W Outside of CVOA**		**West of 170°W**	
Year	***Pollock Population ($x10^9$)***	***% < 40 cm***	***Pollock Population ($x10^9$)***	***% < 40 cm***	***Pollock Population ($x10^9$)***	***% < 40 cm***
1991	7.3[1]	1.1[1]	60.1[2]	62.2[2]	104.8	68.9
1994	18.7	2.1	32.7	23.3	116.1	68.8
1996	7.7	9.2	31.8	24.1	88.8	68.8

[1] For 1991, data for the CVOA is bottom trawl only. These data are included in the total for the area east of 170°W for 1991.

[2] For 1991, data for the area east of 170°W, outside of the CVOA is actually for the entire area east of 170°W including the CVOA, both midwater and bottom.

In each of the three summers surveyed, about 2/3 of the pollock population by numbers was located west of 170°W, but over 2/3 of those encountered each year were < 40 cm in length. In the summers of 1994 and 1996, the CVOA contained only 11% and 6%, respectively, of the eastern Bering Sea pollock population, but small pollock were generally absent.

5.1.5 B-Season Harvest Rates: 1991-1997

B-season pollock harvest rates were analyzed spatially by estimating pollock abundances and catches in three areas and four years. The three areas chosen were: (1) the CVOA, (2) east of 170°W outside of the CVOA, and (3) west of 170°W (Figure 5.9). The years 1991, 1994, 1996, and 1997 were chosen because combined bottom trawl-hydroacoustic surveys of the pollock population were conducted each summer. The following method was used to calculate areal harvest rates (shown in Figure 5.10):

- The distribution of survey estimates of age 3+ pollock biomass (30+ cm in length) in each area and year was used to apportion the stock assessment model (Wespestad et al. 1997) estimate of total eastern Bering Sea age 3+ biomass by area and year. This yielded estimates of age 3+ pollock biomass by area for each of the 4 years.

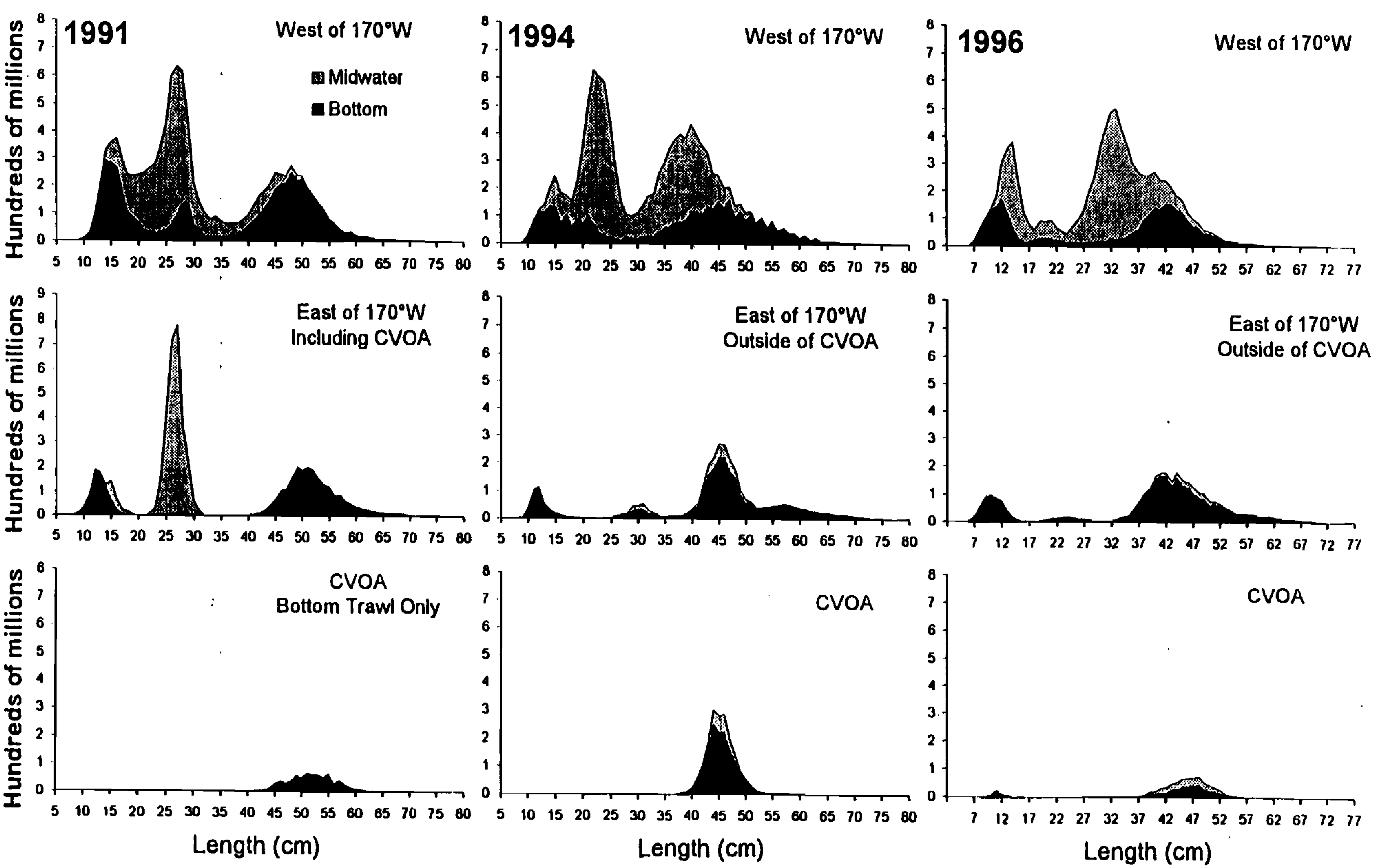

Figure 5.8 Pollock populations at-length estimates from the hydroacoustic-midwater (Midwater) and bottom trawl surveys conducted on the eastern Bering Sea shelf in 1991 (left), 1994 (middle), and 1996 (right). Population estimates are provided for the CVOA (bottom), east of 170 degrees W out side of the CVOA (middle), and west 170 degrees W (top). The 1991 midwater data east of 170 degrees could not be split inside and outside of the CVOA.

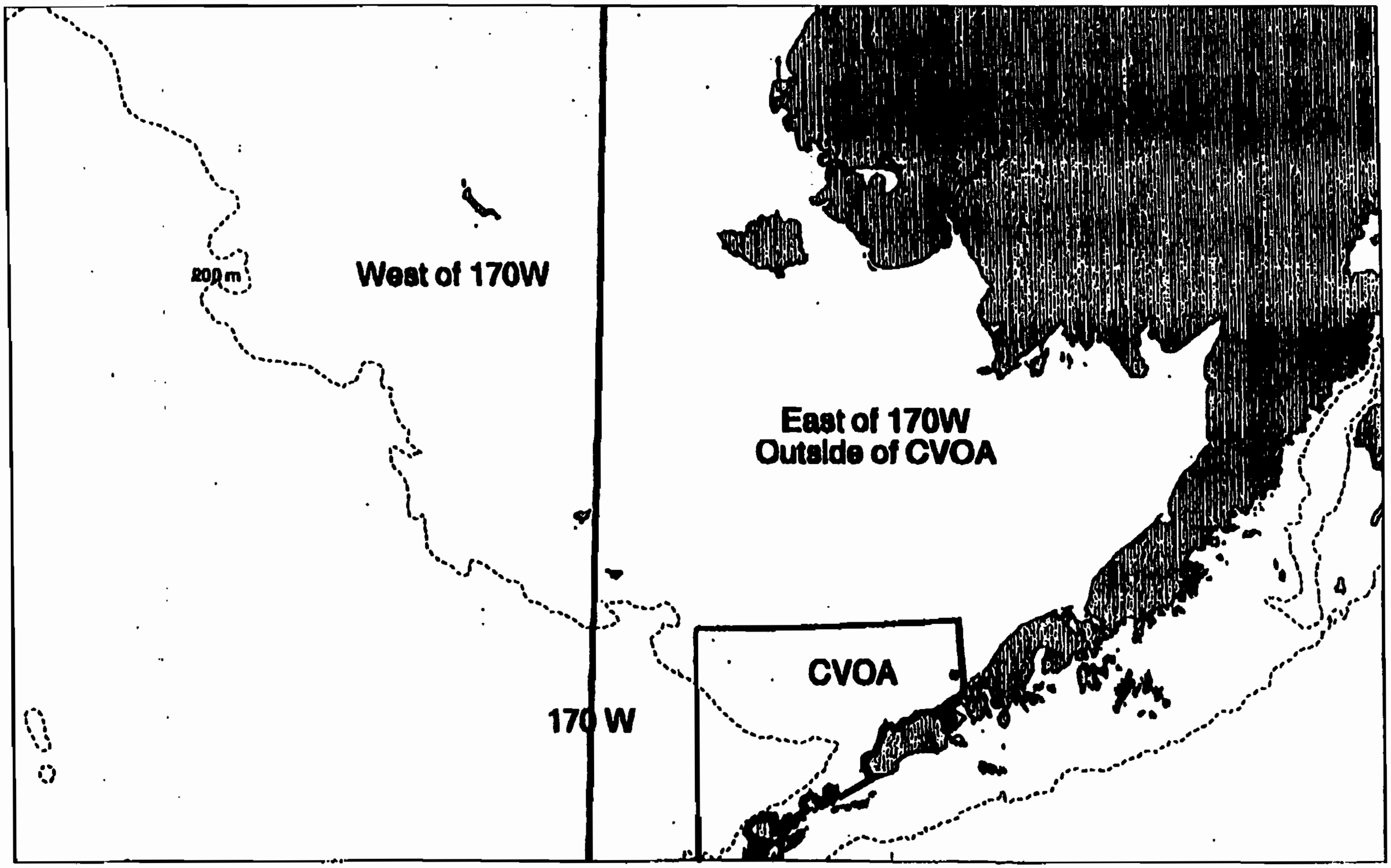

Figure 5.9 Areas of the eastern Bering Sea shelf used in the spatial analysis of pollock harvest rates.

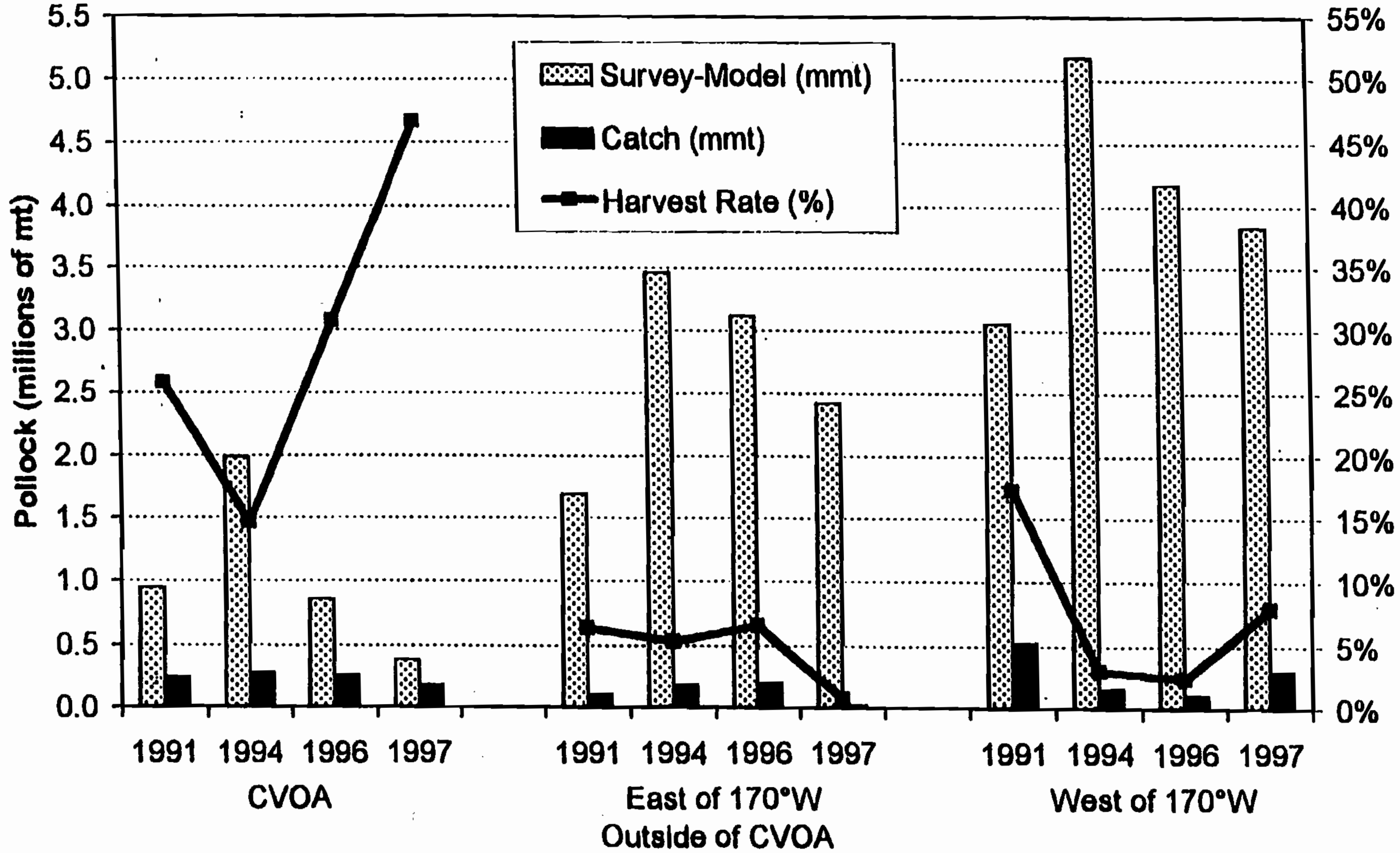

Figure 5.10 Distribution of age 3+ pollock biomass (millions of mt) from the combined bottom trawl and hydroacoustic surveys and the 1997 stock assessment, commercial catches of pollock (millions of mt) from observer and blend data, and pollock harvest rates (% caught) by area in the B-seasons of 1991, 1994, 1996, and 1997.

- Observer estimates of B-season pollock catch distribution by sector (offshore, "true" mothership, and inshore), area, and year were used to apportion the blend estimates of B-season pollock catch by sector and year to each area. This yielded estimates of B-season pollock catch (almost entirely composed of pollock age 3 years and older) by area for each of the 4 years.
- Harvest rates were calculating using the ratio of catch to biomass by area.

Harvest rates of age 3+ pollock have been higher in the CVOA than in either of the other two areas analyzed in the eastern Bering Sea (Figure 5.10). For each of the four years, harvest rates in the CVOA ranged from a low of 15% in 1994 to 47% in 1997, while in the other two areas, only one of the eight annual harvest rate estimates was greater than 10% and three were less than 5%. Furthermore, data suggest that harvest rates within the CVOA increased in 1996 and 1997 (when they were 31% and 46%, respectively) relative to 1991 and 1994 (when they were 26% and 15%, respectively). Total eastern Bering Sea survey/model age 3+ pollock biomass declined 38% from 1994 to 1997, but this decline was not evenly dispersed among each of the three areas. The decline was most acute in the CVOA, where pollock biomass declined 81% from 1994 to 1997, while in the other areas east and west of 170°, the decline was only 30% and 26%, respectively.

5.1.6 Pollock Catches in Steller Seal Lion Critical Habitat

The western stock of Steller sea lions, located west of Cape Suckling (147°W) including the Bering Sea and Aleutian Islands, was recently (1997) reclassified as endangered under the Endangered Species Act. Much of the CVOA is designated as Steller sea lion critical habitat or is closed to trawlers in an effort to spatially segregate trawl fisheries from sea lions (Figure 5.11). Trawl exclusion zones that overlap with the CVOA surround sea lion rookeries on the following islands (from east to west in Figure 5.9):

Table5.5 Trawl Exclusion Zones Around Steller sea lion rookeries that overlap with the CVOA

Rookery Island	*10 nm Annual Trawl Exclusion Zone*	*20 nm A-Season Trawl Exclusion Zone*
Sea Lion Rock	X	X
Ugamak Island	X	X
Akun Island	X	X
Akutan Island	X	X
Bogoslof Island	X	

The cause of the decline in the population of the western stock of Steller sea lions is not known. While there are a large number of possible causes including disease and predation, reduced food availability resulting from climate change and/or fisheries appears to be the most likely. Despite efforts to reduce interactions between groundfish fisheries and Steller sea lions, the population continues to decline and pollock removals from designated critical habitat in the Bering Sea/Aleutian Islands (BS/AI) increased 45% between 1991 and 1995 (Figure 5.12) (Fritz et al. 1995; Fritz and Ferrero, in press). Pollock harvests from critical habitat in the BS/AI come chiefly from the southeast Bering Sea foraging area which extends from 164°-170°W north of the Aleutian Islands and overlaps considerably with the CVOA. In 1996, pollock harvests from critical habitat declined to 1991 levels primarily because of the increased use of areas outside of the CVOA during the A-season (Figure 5.2).

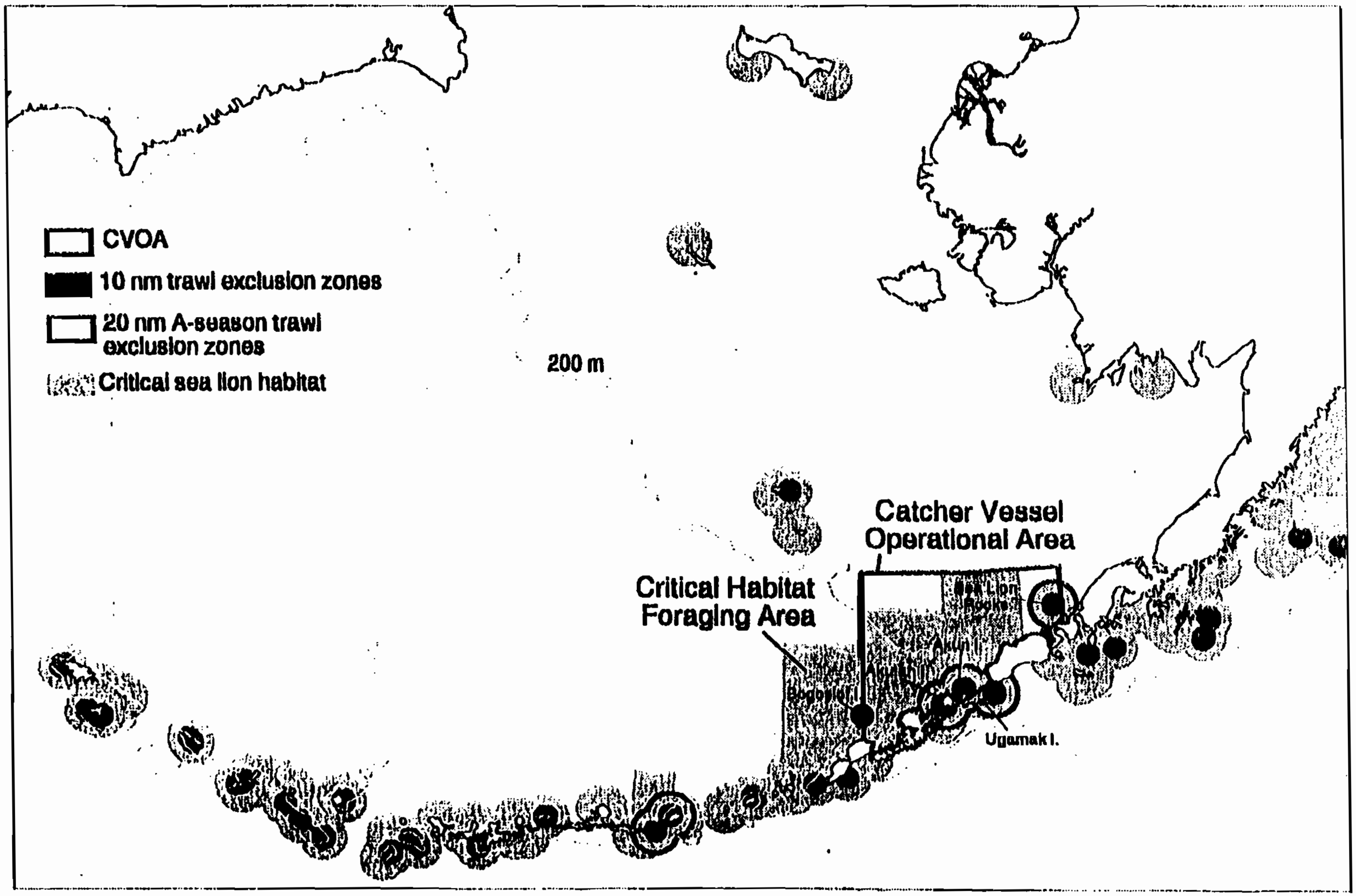

Figure 5.11 Location of the Catcher Vessel Operational Area (red line) in relation to Steller sea lion critical habitat and trawl exclusion zones around rookeries in the Bering Sea and Aleutian Islands.

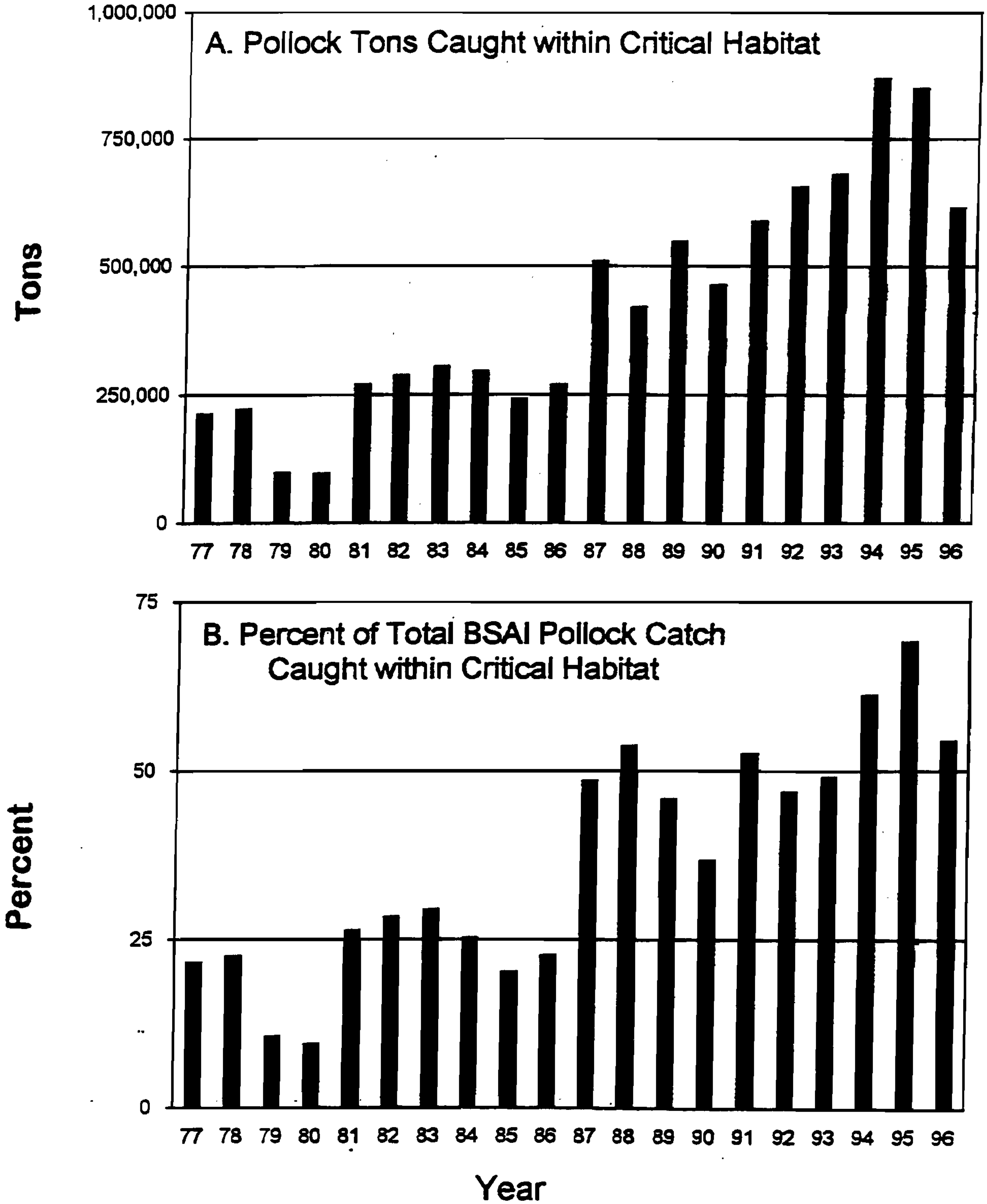

Figure 5.12 Pollock fishery effort within Steller sea lion critical habitat in the Bering Sea/Aleutian Islands region.

5.2 Projected Changes under the CVOA Alternatives

This section describes how the fishery may change under the various CVOA alternatives. Projections are made of pollock catches and harvest rates inside and outside the CVOA, and within Steller sea lion critical habitat. Actual impacts on Steller sea lions will be described in the environmental assessment in Chapter 6.

5.2.1 Estimation Procedures

Pollock catches inside and outside the CVOA were estimated using the following criteria and conditions:

- Eastern Bering Sea pollock TAC=1.1 million mt;
- A:B season split is 45%:55%;
- fishery sectors (offshore, motherships, inshore) are allocated percentages of the pollock TAC according to the Sector Allocation Alternatives 1-4 and Status Quo:

	Sector Allocation Alternatives				
Sector	1	2	Status Quo	3	4
Offshore	70	60	55	50	40
Motherships	5	10	10	10	15
Inshore	25	30	35	40	45

- fishery sectors are excluded from fishing in the CVOA by season according to the CVOA Alternatives 1-3 and Status Quo (SQ) (Y=can fish in the CVOA; N=cannot fish in the CVOA). Note that in the A-season, the SQ and Alternative 3 are the same, and in the B-season, the SQ and Alternative 1 are the same.

	A-Season CVOA Alternatives				B-Season CVOA Alternatives			
Sector	SQ	1	2	3	SQ	1	2	3
Offshore	Y	N	N	Y	N	N	N	Y
Motherships	Y	Y	N	Y	Y	Y	N	Y
Inshore	Y	Y	Y	Y	Y	Y	Y	Y

- two types of A-season pollock fishery distribution patterns, one in which each sector caught the vast majority of its allocation within the CVOA (the 1994 pattern: cold year), and one in which each sector caught significant amounts of pollock outside of the CVOA (the 1996 pattern: warm year):

Percent of A-Season Pollock Caught Inside and Outside of the CVOA

	1994		1996	
Sector	Inside	Outside	Inside	Outside
Offshore	95.5%	4.5%	46.7%	53.3%
"True" Motherships	99.5%	0.5%	65.5%	34.5%
Inshore	99.4%	0.6%	74.1%	25.9%

- pollock fishery distribution patterns observed in the B-season of 1996 were used to estimate B-season catch distributions under each CVOA alternative, except for the offshore sector under CVOA alternative 3 (no CVOA). In this single instance, two scenarios were run: (1) data were used from 1991, the most recent year when the offshore sector could fish in the CVOA; and (2) the distribution of "true" motherships in the B-season of 1996 was used to estimate the catch distribution of the offshore fleet. As the table below shows, the percentages inside and outside resulting from the two scenarios are very different (NA=not applicable):

Percent of B-Season Pollock Caught Inside and Outside of the CVOA

	1991		1996	
Sector	Inside	Outside	Inside	Outside
Offshore	4.0%	96.0%	0%	100%
"True" Motherships	NA	NA	99.6%	0.4%
Inshore	NA	NA	97.1%	2.9%

- if a sector could not fish inside the CVOA, it was assumed it could catch its entire allocation outside the CVOA. If a sector could fish in the CVOA, it was assumed it would have the same catch distribution inside and outside of the CVOA as it had in the A-seasons of 1994 and 1996, and the B-seasons of 1996 and 1991 (offshore sector, CVOA alternative 3 only).

Is should be noted that CVOA impacts were discussed in the I/O1 and I/O2 analyses, and some of that discussion is used here. However, the CVOA options under I/O3 are much broader. They include restricting catcher processors from operating in the CVOA during the A-season as well as the B-season, and doing away with the CVOA entirely. Additionally, catcher vessels delivering to the catcher processor or "true" mothership sectors may be restricted from operating in the CVOA during the A-season and/or B-season, in addition to the status quo. Finally, the Council considered options that would exclude catcher vessels longer than 155' LOA or catcher vessels 125' LOA and longer from the CVOA in the A-season and/or B-season.

To provide the reader some indication of the hold capacity of catcher vessels, Figure 5.13 had been included. This figure shows a comparison of catcher vessel length to hold capacity. Each of the 119 catcher vessels that were reported fishing in the 1996 pollock target fisheries are included in this figure. The hold capacity information was taken from the 1996 CFEC Vessel Permit file. Twenty-nine of the catcher vessels reported a hold capacity of zero in the CFEC file. This maybe the result of not filling out the field on the permit or not having useable hold capacity.

The information in Figure 5.13 shows that none of the catcher vessels less than 125' report a hold capacity greater than 12,500 cubic feet. However, six vessels greater than 125' reported hold capacities of 20,000 cubic feet or larger.

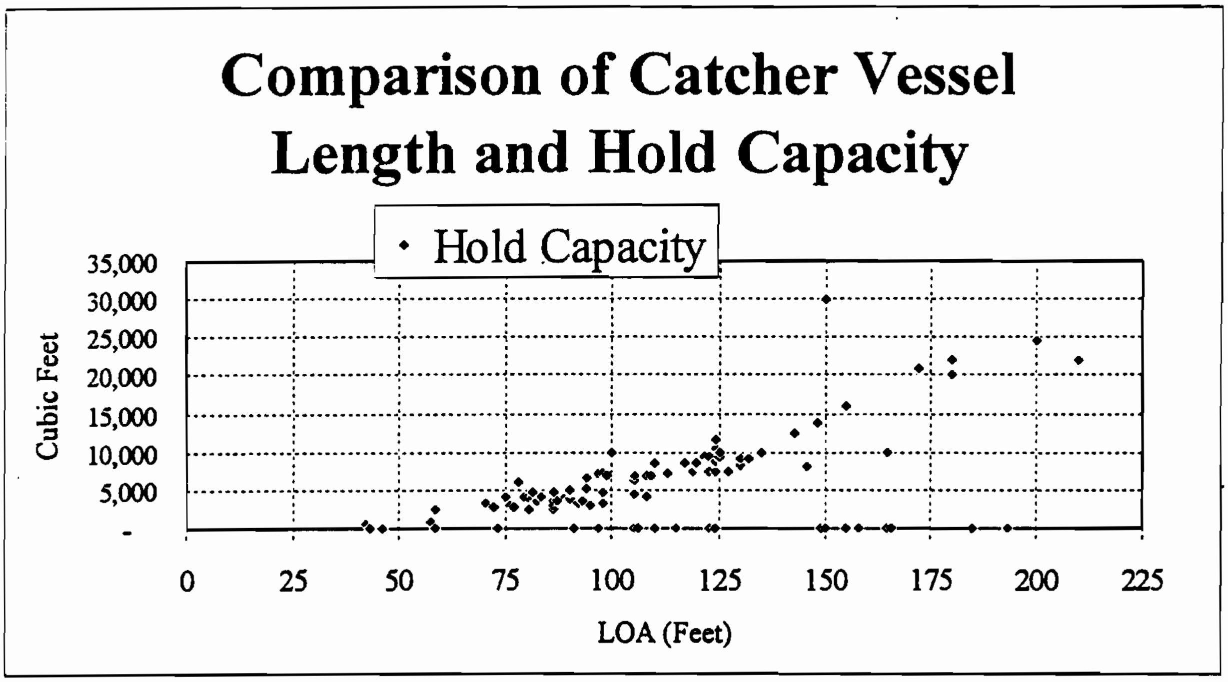

Figure 5.13. Catcher Vessel Length and Hold Capacity

5.2.2 Impacts on Catcher/Processors

Higher Cost for Fuel. Additional costs could result if catcher/processors have to run further to fishing grounds. However this cost is likely to be incremental because catcher/processors make generally less than 10 runs to and from an in-season port such as Dutch Harbor. Additionally, although fuel expenses are thought to be a significant portion of operating cost, much of this likely occurs in daily operations rather than in running to and from port.

Fish Finding Costs. If catcher/processors are forced into areas they did not fish in past years they may need to spend more time determining where fish aggregations are located. However, the incremental increase in costs may be small because aggregations of pollock are notoriously dynamic, and fish finding costs occur regardless of where one is fishing. Also, catcher processors did harvest more pollock outside the CVOA in 1996. This experience outside the CVOA may also tend to lessen their search costs in future years.

Length of Fish. Smaller fish are more expensive to process because filleting machines are constrained by the number of fish they can handle per unit of time. It appears, from data presented above, that fish are generally smaller outside than inside the CVOA. However, this trend was more pronounced in 1996 than earlier years. And the 1996 pollock size distribution inside and outside the CVOA could change in the future.

Greater Variance in the Length of Fish. The I/O2 analysis stated that the more variance in the size of fish, the less the product recovery rate in general. This occurs because filleting machines are set for an average fish size; therefore the more variance around the mean, the less consistent the fillets will be. Again referring to the figures presented earlier that show the length-frequency samples for 1996, the shape of the curves is similar inside and outside the CVOA. The same shape indicates that the variation in pollock lengths were about the same inside and outside the CVOA during 1996. However, this was not the case during the 1994 fishery when fish inside the CVOA were more uniform in size than those outside.

Higher CPUEs Outside CVOA. The offshore catcher processor sector experienced higher CPUEs outside the CVOA than inside during the 1996 A-season. However, during the 1991 and 1994 A-season their CPUE was higher inside the CVOA. This switch may also be linked to the location of the ice edge in those years.

Harvesting Roe Bearing Pollock. Preventing catcher processors from operating in the CVOA during the A-season raises questions about their ability to harvest quality roe bearing pollock outside the CVOA. Given that catcher processors received about $13,300/mt for pollock roe in 1996, reducing their ability to harvest/process a quality roe product would likely lead to negative economic impacts on their operations.

Until 1996, catcher processors harvested over 90% of their A-season pollock inside the CVOA. In 1996 the split was closer to a 53% outside the CVOA and 47% inside. One possible explanation for more pollock being harvested outside of the CVOA has to do with the location of the ice edge. Since predicting the location of the ice edge in future years is not possible, we cannot determine if ice will be a problem in the future. However, forcing catcher processors into areas close to the ice edge could raise safety as well as efficiency issues.

Summary of CVOA Alternatives for the Catcher Processor Sector. Since the majority of fishing effort for the catcher processor sector took place outside the CVOA during the 1996 A-season and in 1991, prior to implementation of the CVOA, one can assume it was more profitable for those vessels to operate there. Otherwise they would have operated at a higher rate inside the CVOA. Some individual vessels probably would find it more profitable to operate inside the CVOA. Those vessels will likely experience higher costs if forced to fish outside of the CVOA during the A-season, in years similar to 1996. In years where almost all of the catch was taken inside the CVOA, due to factors such as ice, pollock size, pollock roe maturity, or stock abundance, the catcher processors would likely be disadvantaged even more if forced to fish outside.

A sub-option would reserve 9-15% of the catcher processor allocation for harvest by catcher vessels. It is the analysts' assumption that the catcher processors choosing to buy pollock from catcher vessels will have the option of processing that fish inside or outside of the CVOA, and that the catcher vessels harvesting the pollock can fish inside or outside the CVOA, under the current system. If the CVOA definition changes such that "true" motherships are not allowed to process pollock harvested from within the CVOA, we will then assume that catcher processors acting as motherships would be required to abide by the same rules. In other words, "true" motherships and catcher processors acting as motherships will be treated the same under any of the CVOA alternatives.

5.2.3 Impacts on "True" Motherships

"True" mothership operations would face many of the same issues discussed for the catcher processors, if forced out of the CVOA during the A-and/or B-season. Perhaps they would experience even greater problems, because they have been more dependent over time on the CVOA. This is especially true in recent B-seasons, as catcher processors have been excluded from the CVOA since 1992 and "true" mothership have continued to operate inside. Additionally, catcher vessels delivering to "true" motherships would likely experience higher fuel costs due to increased running time to and from port. If "true" mothership operations are allowed to take deliveries from catcher vessels fishing inside the CVOA, that added flexibility would give them an advantage over industry sectors forced to operate outside of the CVOA. During years like 1991 and 1994 when almost all of the A-season harvest occurred inside the CVOA, it would be greater advantage than in years like 1996 when more catch was taken outside of the CVOA.

5.2.4 Impacts on Inshore Sector

Options that would allow additional effort to enter the CVOA during the B-season could potentially have adverse impacts on the Inshore sector. Recall the concerns expressed when the CVOA was initially considered. One point focused on the catcher processor fleet operating in the waters near the shoreplants and harvesting those fish first and moving on to the schools farther away from the plants. This would in turn force catcher vessels to fish farther away from the plants, increasing the harvest costs, and perhaps reducing the quality of the pollock they deliver.

Options that would reduce fishing effort close to the processing plants during the A-season would also likely benefit the Inshore sector. The figures presented earlier in this chapter that show trawl locations in the 1996 A-season reveal that catcher processors and catcher vessels often work in the same general locations. Forcing the catcher processors outside the CVOA would result in less direct competition between them. However, recall the discussion in the catcher processor section, that talks about the negative impacts that sector might incur.

In addition to these issues, the Council added options (in April 1998) which could limit the amount of catch in the CVOA by certain categories of catcher vessels (>155' or >125'). While such options could be used to mitigate sea lion concerns, they would likely impose negative operational impacts on these catcher vessels.

5.3 Effects of TAC Allocations on CVOA Catches

Table 5.1 contains the projected A and B-season pollock catches (in mt) inside and outside of the CVOA for each sector allocation and CVOA alternative combination. Figure 5.14 shows the percent change in A season, B season, and annual pollock catches within the CVOA under each sector allocation and CVOA alternative combination relative to the base year of 1996. While it has been noted that there are two different recent patterns of A-season fishery distribution, only the 1996 pattern will be discussed further for simplicity.

5.3.1 Alternative 2: Status Quo

Keeping the current CVOA definition would result in no change in the projected fishing patterns inside and outside of the CVOA. If catcher processors were excluded from fishing pollock inside the CVOA during both the A and B-seasons, the catch inside the CVOA is projected to decrease by 23% (from 554,628 mt to 426,111 mt). Excluding both the catcher processors and the catcher vessels delivering to "true" motherships would reduce the catch in the CVOA by 40% (to 333,558 mt). Forcing either of these sectors outside of the CVOA during the A-season could cause economic hardships. During bad ice years, for example, this may even force vessels to take additional risks and fish close to the ice or perhaps even forgo harvesting the pollock while roe is prime to avoid the ice.

figure 1 Chart 9

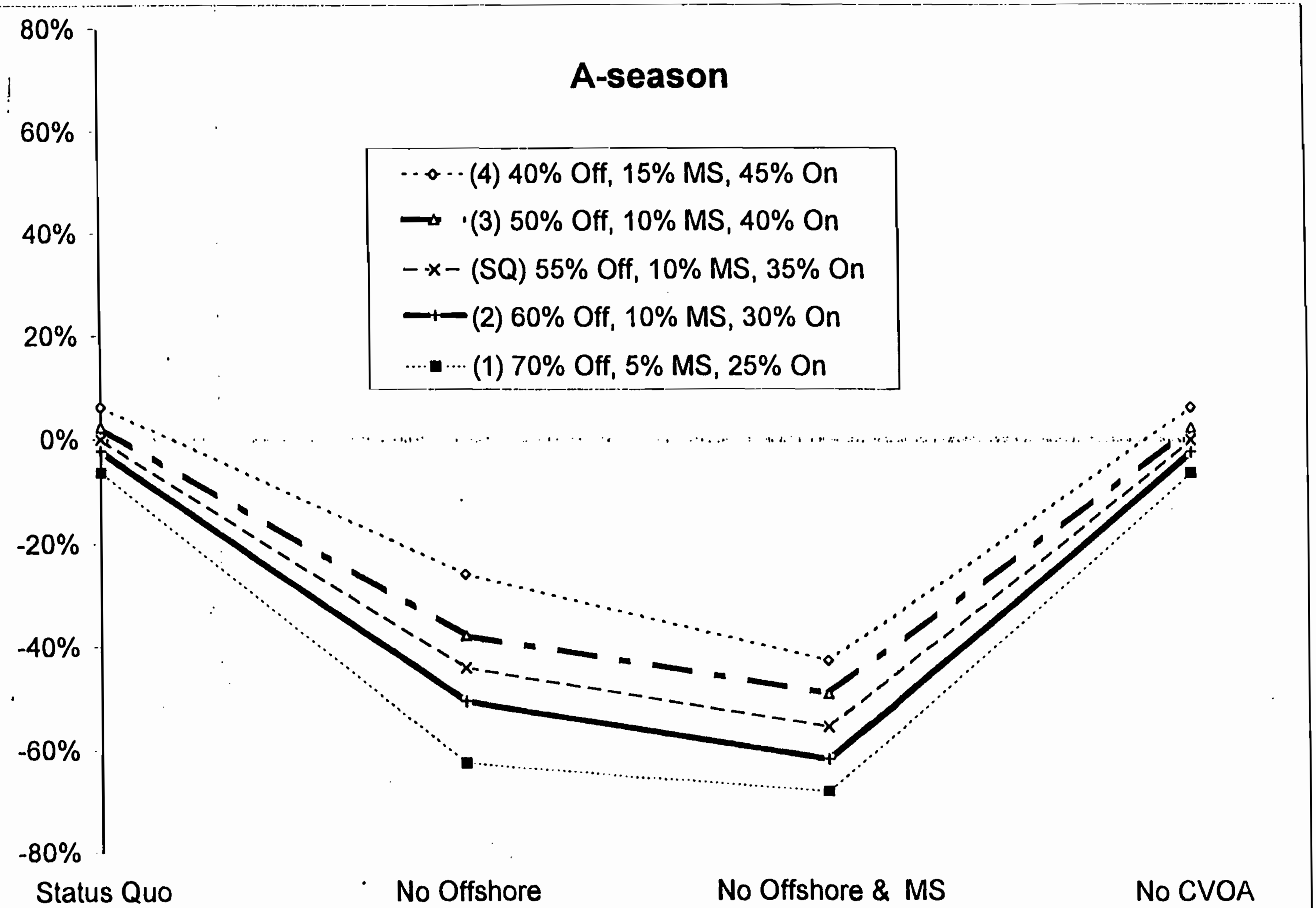

Figure 5.14

Table 5.1 Estimated pollock catches inside and outside of the CVOA under each sector allocation and CVOA alternative. 1996 sector distributions were used for all projections, except for the B-season, offshore, No CVOA (2 methods were used).

Pollock TAC assumed to be 1.1 million mt; A:B season split assumed to be 45%:55%.

CVOA Alternative

Sector Allocation Alternative 2: Status Quo

	Status Quo		No Offshore		No Offshore, No MS		No CVOA 1991 Used for Offshore, B		No CVOA 1996 MS Used for Offshore B	
	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA
1. A-season										
Offshore C/P	128,517	146,483	-	275,000	-	275,000	128,517	146,483	128,517	146,483
True MS	32,771	17,229	32,771	17,229	-	50,000	32,771	17,229	32,771	17,229
Inshore	129,665	45,335	129,665	45,335	129,665	45,335	129,665	45,335	129,665	45,335
Total	290,953	209,047	162,436	337,564	129,665	370,335	290,953	209,047	290,953	209,047
2. B-Season										
Offshore C/P	-	330,000	-	330,000	-	330,000	13,356	316,644	328,805	1,195
True MS	59,783	217	59,783	217	-	60,000	59,783	217	59,783	217
Inshore	203,892	6,108	203,892	6,108	203,892	6,108	203,892	6,108	203,892	6,108
Total	263,675	336,325	263,675	336,325	203,892	396,108	277,031	322,969	592,480	7,520
3. Annual	554,628	545,372	426,111	673,889	333,558	766,442	567,984	532,016	883,433	216,567
	0%		-23%		-40%		2%		59%	

Sector Allocation Alternative 3(C): 50% Offshore Catcher Processors, 10% True Motherships, 40% Inshore

	Status Quo		No Offshore		No Offshore, No MS		No CVOA 1991 Used for Offshore, B		No CVOA 1996 MS Used for Offshore B	
	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA
1. A-season										
Offshore C/P	116,834	133,166	-	250,000	-	250,000	116,834	133,166	116,834	133,166
True MS	32,771	17,229	32,771	17,229	-	50,000	32,771	17,229	32,771	17,229
Inshore	148,189	51,811	148,189	51,811	148,189	51,811	148,189	51,811	148,189	51,811
Total	297,793	202,207	180,960	319,040	148,189	351,811	297,793	202,207	297,793	202,207
2. B-Season										
Offshore C/P	-	300,000	-	300,000	-	300,000	12,142	287,858	298,913	1,087
True MS	59,783	217	59,783	217	-	60,000	59,783	217	59,783	217
Inshore	233,020	6,980	233,020	6,980	233,020	6,980	233,020	6,980	233,020	6,980
Total	292,802	307,198	292,802	307,198	233,020	366,980	304,944	295,056	591,716	8,284
3. Annual	590,596	509,404	473,762	626,238	381,209	718,791	602,738	497,262	889,509	210,491
	6%		-15%		-31%		9%		60%	

Table 5.1 Estimated pollock catches inside and outside of the CVOA under each sector allocation and CVOA alternative. 1996 sector distributions were used for all projections, except for the B-season, offshore, No CVOA (2 methods were used).

Pollock TAC assumed to be 1.1 million mt; A:B season split assumed to be 45%:55%.

CVOA Alternative

	Status Quo		No Offshore		No Offshore, No MS		No CVOA 1991 Used for Offshore, B		No CVOA 1996 MS Used for Offshore B	
	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA
Sector Allocation Alternative 3(A): 70% Offshore Catcher Processors, 5% True Motherships, 25% Inshore										
1. A-season										
Offshore C/P	163,567	186,433	-	350,000	-	350,000	163,567	186,433	163,567	186,433
True MS	16,385	8,615	16,385	8,615	-	25,000	16,385	8,615	16,385	8,615
Inshore	92,618	32,382	92,618	32,382	92,618	32,382	92,618	32,382	92,618	32,382
Total	272,571	227,429	109,004	390,996	92,618	407,382	272,571	227,429	272,571	227,429
2. B-Season										
Offshore C/P	-	420,000	-	420,000	-	420,000	16,999	403,001	418,479	1,521
True MS	29,891	109	29,891	109	-	30,000	29,891	109	29,891	109
Inshore	145,637	4,363	145,637	4,363	145,637	4,363	145,637	4,363	145,637	4,363
Total	175,529	424,471	175,529	424,471	145,637	454,363	192,527	407,473	594,008	5,992
3. Annual	448,099	651,901	284,532	815,468	238,256	861,744	465,098	634,902	866,578	233,422
% change	-19%		-49%		-57%		-16%		56%	
Sector Allocation Alternative 3(B): 60% Offshore Catcher Processors, 10% True Motherships, 30% Inshore										
1. A-season										
Offshore C/P	140,200	159,800	-	300,000	-	300,000	140,200	159,800	140,200	159,800
True MS	32,771	17,229	32,771	17,229	-	50,000	32,771	17,229	32,771	17,229
Inshore	111,142	38,858	111,142	38,858	111,142	38,858	111,142	38,858	111,142	38,858
Total	284,113	215,887	143,913	356,087	111,142	388,858	284,113	215,887	284,113	215,887
2. B-Season										
Offshore C/P	-	360,000	-	360,000	-	360,000	14,570	345,430	358,696	1,304
True MS	59,783	217	59,783	217	-	60,000	59,783	217	59,783	217
Inshore	174,765	5,235	174,765	5,235	174,765	5,235	174,765	5,235	174,765	5,235
Total	234,548	365,452	234,548	365,452	174,765	425,235	249,118	350,882	593,244	6,756
3. Annual	518,660	581,340	378,460	721,540	285,907	814,093	533,231	566,769	877,357	222,643
	-6%		-32%		-48%		-4%		58%	

Status Quo Sector Allocation Alternative 2: 55% Offshore Catcher Processors, 10% True Motherships, 35% Inshore

Table 5.1 Estimated pollock catches inside and outside of the CVOA under each sector allocation and CVOA alternative. 1996 sector distributions were used for all projections, except for the B-season, offshore, No CVOA (2 methods were used).

Pollock TAC assumed to be 1.1 million mt; A:B season split assumed to be 45%:55%.

CVOA Alternative

	Status Quo		No Offshore		No Offshore, No MS		No CVOA 1991 Used for Offshore, B		No CVOA 1996 MS Used for Offshore B	
	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA	Inside CVOA	Outside CVOA
Sector Allocation Alternative 3(D): 40% Offshore Catcher Processors, 15% True Motherships, 45% Inshore										
1. A-season										
Offshore C/P	93,467	106,533	-	200,000	-	200,000	93,467	106,533	93,467	106,533
True MS	49,156	25,844	49,156	25,844	-	75,000	49,156	25,844	49,156	25,844
Inshore	166,713	58,287	166,713	58,287	166,713	58,287	166,713	58,287	166,713	58,287
Total	309,336	190,664	215,869	284,131	166,713	333,287	309,336	190,664	309,336	190,664
2. B-Season										
Offshore C/P	-	240,000	-	240,000	-	240,000	9,713	230,287	239,131	869
True MS	89,674	326	89,674	326	-	90,000	89,674	326	89,674	326
Inshore	262,147	7,853	262,147	7,853	262,147	7,853	262,147	7,853	262,147	7,853
Total	351,821	248,179	351,821	248,179	262,147	337,853	361,535	238,465	590,952	9,048
3. Annual	661,157	438,843	567,690	532,310	428,860	671,140	670,870	429,130	900,288	199,712
	19%		2%		-23%		21%		62%	

Two projections were calculated under a no CVOA scenario. In this case the CVOA would be revoked, and catcher processors would no longer be restricted to fishing outside of the CVOA during the B-season. The first projection used the 1991 catcher processor catch distribution, inside and outside the CVOA during the B-season, to estimate catcher processor effort inside the CVOA. Results from that projection indicated that catch inside the CVOA would increase by 2% to 567,984 mt. The other projection used the inside and outside catch rates for catcher vessels delivering to "true" motherships during the 1996 B-season. In this case the catch rates inside the CVOA increased by 59% to 883,433 mt. The use of these two methods basically represent the expected bounds of catch that would occur if the there were no restrictions on who could fish inside the CVOA. This also illustrates the variability, and therefore uncertainty with which we are able to predict.

5.3.2 Alternative 3(A): 70% Offshore Catcher Processors, 5% "True" Motherships, 25% Inshore

Under the current CVOA definition this alternative would result in 19% less pollock being harvested from inside the CVOA. Catcher processors would still be restricted from fishing inside the CVOA during the B-season, but they would be granted 70% of the available BS/AI pollock TAC. The reduction results from the vessels that are allowed to fish inside the CVOA during the "B" being allocated less pollock. If the offshore catcher processors were excluded from the CVOA during both the A and B-seasons the harvest inside the CVOA is projected to drop 49% to 284,532 mt. Restricting both the catcher processors and the "true" motherships would reduce the harvest by 57% to 238,256 mt.

The two projections under the no CVOA alternative result in a 16% reduction and 56% increase, respectively. This once again points out the difference in the amount of fish harvested by catcher processors inside the CVOA during the 1991 B-season, and the catcher vessels delivering to "true" motherships during the 1996 B-season.

5.3.3 Alternative 3(B): 60% Offshore Catcher Processors, 10% "True" Motherships, 30% Inshore

Alternative 3(B) allocates 5% more of the BS/AI TAC to catcher processor, and reduces the allocation inshore by the same amount. If the CVOA is not altered the projected harvests from inside the CVOA would decrease by 6% from the status quo levels. Excluding catcher processors from fishing in the CVOA during both the A and B-seasons would reduce the catch inside by 48%. Both these reductions are smaller than under alternative 3(A) simply because catcher processors are allocated less pollock.

Dropping the CVOA regulations altogether would result in a 4% decrease in pollock catch inside the current boundaries, using the 1991 catcher processor rates. However, if the 1996 "true" mothership rates were used in the projection, the catch inside the CVOA would increase 58%. All of the difference in these two projections is the result of the 1991 rate being about 96% outside the CVOA and the 1996 rate being about 99% inside the CVOA.

5.3.4 Alternative 3(C): 50% Offshore Catcher Processors, 10% "True" Motherships, 40% Inshore

Alternative 3(C) allocates 5% more of the BS/AI TAC to the Inshore sector and 5% less to catcher processors. The allocation to the "true" mothership sector remains the same as the status quo. This allocation, in conjunction with the various CVOA alternatives tend to increase the harvest of pollock inside the CVOA. The only options that reduce the catch inside are those that exclude the catcher processors (15% decrease) and catcher processors and "true" motherships (31% decrease) from operating within the CVOA. The status quo CVOA option results in a projected 6% increase in catch inside. The two estimates of no CVOA result in an estimated 9% increase (1991 catcher processor rates) and a 60% increase (1996 "true" mothership rates)

5.3.5 Alternative 3(D): 40% Offshore Catcher Processors, 15% "True" Motherships, 45% Inshore

This alternative results in higher catches inside the CVOA in all but one case. When both the catcher processors and "true" motherships are excluded from operating in the CVOA during both the A and B-seasons the catch inside decreases by 23%. If only the catcher processors were excluded during both seasons, the catch inside the CVOA is projected to increase by 2%. Catches under the status quo CVOA are predicted to increase by 19% under this TAC allocation. With no CVOA, the catch inside the current CVOA boundaries are expected to increase between 21% and 62%. A 62% increase means that over 900,00 mt would be harvested from the CVOA.

5.3.6 Alternative 6: Council's Preferred Alternative (61% Offshore and 39% Inshore)

The Council's preferred alternative shifts more pollock inshore where it can be harvested inside the CVOA during the B-season. However, the Council also restricted the catcher vessels delivering to the offshore sector from operating inside the CVOA during the B-season. This measure was taken to increase the stability in the offshore sector. Information provided in chapter three of this document shows that the "true" mothership sector has increased their share of the offshore quota between 1991 and 1996. This measure was viewed as a way to keep the amount of pollock processed by the "true" motherships and catcher processors in the offshore sector relatively stabile. It was not viewed as a Stellar sea lion issue.

Some members of the Council were concerned that the "true" mothership sector's processing had increased over the years considered in this study. Because of this increase, the Council concluded that neither the catcher vessels delivering to "true" motherships nor offshore catcher processor operations should be allowed to harvest pollock inside the CVOA during the B-season. This change will force all vessels harvesting pollock from the offshore quota to compete in the same areas during both the A and B-seasons.

The Council also indicated that they plan to address the issue of Stellar sea lions in a more comprehensive fashion outside of the I/O3 context, as soon as adequate information is developed. That being said, the result of this action also reduces the maximum amount of the BS/AI pollock TAC that can be harvested from the CVOA to about 66% (not including CDQ harvests). This is well below the 72.5% that is currently allowed.

5.3.7 Comparison of Roe Recovery Rates

In April 1998, after reviewing the initial draft of this document, the Council requested staff to explore the possibility of comparing roe recovery rates inside and outside the CVOA. Consultation with NMFS biologists and managers indicates that this cannot be done with any confidence in the validity of such comparisons. The reasons are summarized as follows: (1) for at-sea processors, weekly processor reports have product weight and calculated catch based on PRRs. Using the blend data or the observer data catch weight as the denominator will be confounded by timing mismatches between these data sets which could skew comparisons; (2) for inshore vessels, fish tickets provide estimates of catch by ADF&G area, but matching catch from inside/outside with only that roe recovered from inside/outside will be very difficult, if not impossible; (3) for both sectors, the number of 'clean' weeks (where a vessel fished inside/outside for the entire week) is small, and tended to be near the end of the 'A' season - differences in roe maturity as the season progresses would further confound any such comparisons.

5.4 CVOA Summary and Conclusions

The CVOA boundaries used in this analysis were 163°W to 168°W south of 56°N and north of the Alaskan peninsula and the Aleutian Islands. This area represents the CVOA before the western boundary was moved from 168°W to 167°30'W in 1995. Consequently the data used to represent the CVOA in 1996 are from an area slightly larger than the actual CVOA that year.

During 1991 and 1994 over 96% of the observed EBS pollock catch, during the A-season was harvested inside the CVOA. In 1996 each sector harvested between 46-75% of their A-season pollock from inside the CVOA. One possible explanation for this shift in effort is that the ice edge was over 120 nautical miles further north in mid-March of 1996, when compared to 1991 and 1994.

The CPUE was between 67-107% greater inside the CVOA during the 1991 and 1994 A-seasons. In 1996 the trend reversed and CPUE was 48-122% greater outside the CVOA depending on the sector. Firm conclusions should not be drawn from these data because of the small sample sizes outside the CVOA during 1991 and 1994, and the changes in the location of the ice edge.

Pollock were generally larger and more uniform in size inside the CVOA during the 1991, 1994 and 1996 A-seasons. This was most evident in 1996 when pollock were on average 4-6 cm smaller and 0.2 kg lighter outside the CVOA.

Pollock catch by catcher vessels during the B-season increased from about 84% in 1991 to 100% in 1996. Catcher processors harvested about 96% of their B-season pollock outside the CVOA during 1991. That was the last year they were allowed to fish inside the CVOA during the B-season. Since that time, 100% of the catcher processor harvest has taken place outside the CVOA.

CPUE was greater outside the CVOA for each year 1991, 1994, and 1996. However, the pollock that were harvested tended to be larger and of more uniform size inside the CVOA. This is also reflected in the pollock population estimates. The number of pollock inside the CVOA ranged from 18.7 $\times 10^9$ in 1994 to 7.7 $\times 10^9$, but only 2.1 and 9.2% of those pollock were less than 40 cm, respectively. Outside the CVOA numbers of pollock were much greater, but so was the percent of pollock less than 40 cm.

The general conclusions drawn from this analysis are that:

- Increased pollock allocations to the offshore sector leads to less pollock catch in the CVOA relative to the status quo;
- During the A-season, excluding the offshore sectors (CVOA alternative 1), and offshore and "true" mothership sectors (CVOA alternative 2) from the CVOA yields *reductions* in A-season CVOA pollock catches;
- During the A-season, no combination of allocation alternative or CVOA alternative leads to *increases* in A-season CVOA pollock catch greater than 6%;
- Predicting B-season removals from the CVOA under the No CVOA alternative is highly speculative regardless of the allocation alternative, and depend considerably on how the offshore fleet is distributed.
- In the B-season and for CVOA alternatives 1, 2, and status quo, *reductions* in CVOA pollock catches are predicted for those sector allocation alternatives that *increase* the offshore sector's allocation (except for the combination of sector alternative 3(C) and CVOA alternative 2);

Fritz, L. W., and R. C. Ferrero. In press. Options in Steller sea lion recovery and groundfish fishery management. Journal of Nature and Wildlife Conservation.

Fritz, L. W., R. C. Ferrero, and R. J. Berg. 1995. The threatened status of Steller sea lions, *Eumetopias jubatus*, under the Endangered Species Act: effects on Alaska groundfish fisheries management. Marine Fisheries Review. 57(2): 14-27.

Wespestad, V. G., J. N. Ianelli, L. Fritz, T. Honkalehto, N. Williamson, and G. Walters. 1997. Bering Sea-Aleutian Islands walleye pollock assessment for 1998. *In* Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Regions as Projected for 1998. North Pacific Fisheries Management Council, P.O. Box 103136, Anchorage, AK.

6.0 ENVIRONMENTAL ASSESSMENT

6.1 NEPA Requirements

An Environmental Assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will significantly impact the human environment. An Environmental Impact Study (EIS) must be prepared if the proposed action may reasonably be expected to: (1) jeopardize the productive capability of the target resource species or any related stocks that may be affected by the action; (2) allow substantial damage to the ocean and coastal habitats; (3) have a substantial adverse impact on public health or safety; (4) affect adversely an endangered or threatened species or a marine mammal population; or (5) result in cumulative effects that could have a substantial adverse effect on the target resource species or any related stocks that may be affected by the action. An EA is sufficient as the environmental assessment document if the action is found to have no significant impact (FONSI) on the human environment.

6.2 General Discussion

The original SEIS prepared for Amendment 18/23 addressed overall biological impacts, impacts to the human environment, and marine mammal implications of the proposed actions. The action currently contemplated is a continuation of the existing allocations, or altered allocation percentages, for a specified time period. Potential impacts relative to NEPA are expected to be consistent with those previously predicted. Nothing in the examination of the current fisheries leads the analysts to any differing conclusions, with respect to environmental impacts. Total removals of the pollock and Pacific cod resources are controlled by the setting of total allowable catches (TAC), and their monitoring has been enhanced recently to guard against overruns. Allocations between industry sectors will not change total removals from the stocks, and may provide an extra margin of safety against overruns by further partitioning the TACs.

Prohibited species catch (PSC) such as crab, herring, and halibut are controlled as necessary and appropriate by extensive management measures in the BS/AI and in the GOA, including closed areas, PSC quotas, bycatch disincentive programs, and authorizations to the NMFS Regional Director to limit bycatch and close areas. Bycatch rates of all prohibited species are very low in the directed BS/AI pollock fisheries, for all sectors involved, though bycatch of salmon remains an issue for the mid-water pollock fisheries. Measures to control the bycatch of salmon have been implemented by the Council since approval of the original inshore/offshore allocations and are currently under review by the Council. The Council's preferred alternative is not anticipated to change PSC or biological impacts on bycatch species, though there may be changes in fishing patterns that will need to be monitored by the Council.

Marine mammals have direct and indirect interactions with commercial fisheries. Direct interactions include shooting, harassment, disturbance, and entanglement in fishing gear or gear debris. Indirect effects include commercial fisheries related reductions in prey species for marine mammals. The Council's preferred alternative is not expected to measurably increase the direct impacts on marine mammals. Though the Council decision to allocate pollock and Pacific cod between inshore and offshore users could increase vessel traffic to and around coastal communities, the Council and NMFS have established protective buffer zones around major sea lion rookeries and walrus haul outs to minimize disturbance. Shooting and harassment also are banned. Should future problems be identified, establishment of traffic lanes or other measures could be implemented to reduce these interactions. Evidence from previous analyses suggests that the creation of the CVOA, which excludes offshore processing vessels from the area for the pollock B season, likely suppressed harvest rates and total removals of pollock from critical habitat areas, compared to what would have occurred in the absence of the CVOA.

Trophic interactions and the potential for fisheries to degrade the prey available to marine mammals are currently issues of great concern. There are no data available that give conclusive evidence that the pollock fisheries are negatively impacting sea lion populations. Studies of sea lion pups in 1991 show that they generally appear healthy and without signs of anemia or malnutrition. The Council's preferred alternative for to the inshore/offshore preemption problem will not change how harvest quotas are set for the pollock resource. The quotas will continue to be set taking into account a variety of factors including the potential for impacts on marine mammal populations. These considerations, used in combination with existing restrictions on fishing operations such as buffer zones and restrictions on the amount of pollock that may be taken by quarter and area, will provide protection for sea lion populations. Section 7 consultations by NMFS during consideration of the original Amendments 18/23 or Amendments 38/40 concluded that the groundfish fisheries are unlikely to jeopardize the continued existence and recovery of any endangered or threatened species under the jurisdiction of NMFS. However, catch patterns may be impacted by changes currently proposed for the CVOA, which may in turn hold implications for Steller sea lion considerations. These are discussed below.

6.3 Overview of Steller Sea Lion Considerations

The Council's list of alternatives specifically requests the identification and examination of potential 'ecological' implications to the proposed reapportionment of TAC among the several sectors. Most of this type of consideration relates to pollock fishing patterns in the CVOA, and more specifically to the potential impacts to sea lions of existing or future CVOA catch patterns. NMFS has several concurrent initiatives under way with regard to Steller sea lion issues, with the net result being a broad consideration of current management measures, aside from the specific implications of the I/O3 allocation issue. Nevertheless, this EA specifically addresses the sea lion implications of the current inshore/offshore alternatives and options. NMFS Protected Resources Management Division (PRMD) and National Marine Mammal Laboratory scientists have reviewed the preceding analyses with the intent of attempting to identify for the Council any alternatives or suboptions which hold adverse (or positive) implications for Steller sea lions.

While this assessment may not provide definitive guidance in terms of an 'optimal allocation', it is intended to at least address the alternatives in a general fashion, and be able to flag any alternatives that appear to be unreasonable choices in terms of Steller sea lion implications; i.e., for which we are unable to make a Finding of No Significant Impact (FONSI). In April 1998, NMFS issued guidance to the Council that, whatever alternative/options are chosen, they should not result in a 'proportional' increase in pollock removals from the CVOA (which overlaps considerably with the critical habitat area for sea lions). Clarification of the baseline for defining 'proportional' has been provided by NMFS, and is explained in the following sections. Now that a Council decision has been made, a more formal 'Section 7 Consultation' will occur relative to the specific alternative chosen.

Implications of I/O3 attributable impacts, e.g., impacts on Steller sea lions caused by lesser or greater fishing activity in the CVOA, would ideally be addressed in a comprehensive impact analysis. Such ecological impacts could result in "losses" to some individuals and/or groups, some of which might be expressed in the form of nonmarket impacts. These are largely beyond our current capability to measure, but may be referenced in the analysis, if appropriate. Ecological, or 'ecosystem', impacts beyond Steller sea lion issues are even more difficult to project, and are likely beyond the scope of the analysts' ability to predict.

6.4 Effects of the CVOA and Gulf of Alaska Allocation Alternatives on Marine Mammals

Natural histories of marine mammals inhabiting the Bering Sea and neighboring North Pacific Ocean waters were summarized in the analyses for Amendments 18/23 and 38/40; by reference, those entire summaries are incorporated here. Since the 1995 analysis for amendments 38/40, new research information has become available on some marine mammals (Steller sea lions, harbor seals, northern fur seals, and killer whales) that frequent the CVOA and/or Gulf of Alaska (GOA). That new information is summarized below. After those updates, the question of fishery impacts within the CVOA and in the GOA is addressed.

6.4.1 Steller sea lion life history

Movements and distribution: Steller sea lions are found predominately from shore to the edge of the continental shelf, but are not uncommon in waters several thousand meters deep. During the breeding season (summer), adult Steller sea lions (ages 4+) are generally located near shore and near rookeries. Juveniles (1-3 year olds) are less tied to the rookeries during summer, but are often found at nearby haulouts. After the breeding season, sea lions may disperse widely, such that rookeries that were populated in the summer may be vacated in winter. In the Bering Sea, sea lions have been most often sighted over shelf waters from Unimak Pass northward and near the Aleutian Islands. On the shelf, sightings are clustered in the southeastern Bering Sea (including the CVOA). The sighting data, however, has not been standardized by effort and cannot by itself be used to determine relative importance of certain areas to Steller sea lions. Nevertheless, population distribution prior to the decline and more recent telemetry data indicate that the southeastern Bering Sea shelf is an important foraging area for sea lions. This information led to the designation of the Eastern Bering Sea foraging area as critical habitat.

Diet and Foraging: In 13 studies summarized by NMFS (1995), walleye pollock ranked first in importance as a prey item for Steller sea lions in 11 studies, and second in the remaining two. Other prey consumed off Alaska were Pacific cod, Atka mackerel, salmon, octopus, squid, Pacific herring, capelin, sand lance, flatfishes, and sculpins. Most of the prey are schooling fish, many of which are commercially exploited. Juvenile sea lions tend to eat smaller fish than adults. Consequently, the overlap in the size distribution of their food with commercial fisheries may be less than that of adults.

Sea lion pups (less than 1 year old) are more restricted than adults in their foraging range, both vertically and horizontally (Merrick and Loughlin 1997). By their sixth month (January), pups were able to range more than 300 km in a trip, but most of their trips offshore were brief (< 1 day), and most of their dives were shallow (<10 m) and short (< 1 min). In summer, adult females with pups foraged close to shore (usually < 20 km) and to shallow depths (most < 30 m), while in winter, they ranged much farther (some > 500 km offshore) and dove to greater depths (often > 250 m).

Evidence obtained from scats (feces) collected on rookeries in the GOA and Aleutian Islands region indicate that pollock and Atka mackerel are important prey items for Steller sea lions, but the evidence also indicates that diet diversity may be as important as particular prey type. Merrick et al. (1997) examined scats from sites throughout the region, developed indices of prey diversity based on those scats, and then correlated the observed diversity to population trends at those sites. The results indicated that population trends worsened as diet diversity decreased.

The value of roe-bearing versus non-roe-bearing pollock: The relative value of any prey depends on at least three factors. First, the nutritional characteristics of the prey tissues (in terms of caloric and nutritional content) must determine, in part, the relative value of the prey. Different species of prey, and prey of the same species but different age, size, or physiological condition have different nutritional content. Presumably, pollock have greater nutritional value, both in terms of calories and nutrients, when they are bearing roe. Therefore, it is reasonable to expect that consumption of roe-bearing pollock may be an advantage to sea lions.

Second, the relative value of a prey type must also depend on the energetic costs of capturing, consuming, and digesting the prey. It is likely that the aggregation of roe-bearing pollock leads to a reduction in sea lion energetic costs associated with foraging. The aggregation of roe-bearing pollock appears to be relatively predictable in, for example, Shelikof Strait or the southeastern Bering Sea, which supports the idea that these are important foraging areas for sea lions.

Third, the relative value of prey depends, in part, on the nutritional needs of the predator. Roe-bearing pollock are available at the end of the winter season when sea lions are likely to be in their worst condition. The added nutritional value of roe-bearing pollock may be essential for sea lions, particularly reproductive females, to regain good condition. Roe-bearing pollock may also be a particular benefit to young sea lions, with less developed foraging skills and relatively greater nutritional demands for growth and thermoregulation.

These arguments, which are more theoretical than scientifically demonstrated, all suggest that the availability of roe-bearing pollock may be of particular benefit to Steller sea lions. However, the argument that pollock may provide better prey when they are roe-bearing does not lessen the potential value of pollock during the remainder of the year. Sea lions eat pollock throughout the year. Therefore, our best information suggests that pollock are an important prey throughout the year, but that pollock in roe-bearing condition may provide a particular advantage to sea lions for the reasons listed above.

Critical life history stages and critical seasons: Steller sea lions, like other pinnipeds, probably face their most critical transition during the post weaning phase. The strategy for most pinnipeds involves a period of nursing when the pup gains relatively large amounts of weight (i.e., increasing three- or four-fold or more) to provide a large energy store to sustain the pup after weaning and as it learns to forage on its own. The length of time of the nursing period varies considerably for different pinnipeds, from days to months or even several years, depending on a number of factors such as climate, environmental conditions, location of birth, vulnerability of the adult female to predators, annual reproductive rate, and so on. The development of essential and sufficient foraging skills may also take months or years.

For Steller sea lions, births peak in early June and virtually all births in a year have occurred by the end of that month. For at least the next four months, pups nurse and gain considerable weight. Weaning may be abrupt (i.e., the pup is abandoned and all suckling stops) or may occur over a prolonged period (that is, the pup continues to nurse in spite of its physical development and the development of foraging skills, and the resulting energy demands placed on the adult female). The process of weaning for Steller sea lions is poorly understood due to the often inaccessible locations where births occur, the highly variable length of the nursing period, and the fact that many (if not most) pups are weaned in their first winter. Pups may wean as early as four months of age, and most pups have probably been weaned by the next birthing season, if not sooner (York et al. 1996). Some pups may nurse longer, which makes the most sense if the adult female is not pregnant or does not give birth and therefore may have more energy to direct to her pup.

Due to the chronology of pupping, nursing, and weaning, many pups may be weaned in the winter months; i.e., October through March or April. Therefore, many pups may face the critical transition to independence during a period when environmental conditions may be the most harsh; sea surface conditions worsen, prey availability decreases, and winter weather conditions increase energy requirements to thermoregulate (Merrick and Loughlin 1997). A precise or quantitative description of the increased energy costs associated with winter months is not possible at this time, but the period from October to March or April is likely the most critical period of the year for pups and juveniles.

The reproductive cycle of Steller sea lions may also result in stress to adult females during the winter period. Parturient females may lose considerable weight and condition during the nursing period, when they may also be pregnant. Delayed implantation probably reduces the metabolic demands of pregnancy during the period when the female is nursing, but implantation must occur sometime during winter months when, again, environmental conditions are most harsh. Merrick and Loughlin (1997) found that adult females studied in winter months did not increase their overall foraging effort compared to adult females studied in summer months. This may be because they reduce their energy demands when they wean their pups. But it is also likely that sea lions do not maintain a steady body condition throughout the year, but rather experience periods of relatively good condition and other periods when their condition may be poorer. Perez and Mooney (1986) estimated that metabolic demands may be 60% greater for lactating versus non-lactating female fur seals, so lactation may reduce considerably the condition of an adult female.

If condition varies throughout the year, and winter imposes increased demands that may lead to a decline in body condition, then the remainder of the year may also be important in that it provides an essential period for sea lions to recover and achieve good condition prior to the next winter. Therefore, while it is important to recognize that sea lions may be most vulnerable to harsh winter conditions, their ability to withstand those conditions may depend, in part, on the availability of prey during the rest of the year. Winter is probably the most demanding period, but other times of the year are also important.

Listing status: Steller sea lions were listed as threatened under the Endangered Species Act by emergency rule in April 1990 after a significant (-64%) decline in their population size in Alaska between the mid 1960s (or possibly earlier) through 1989. From 1989 to 1994, the decline continued (another 24%), with most losses in southwest Alaska (western and central GOA, Bering Sea, and Aleutian Islands). The status review completed by NMFS in 1995 was part of the process of considering a reclassification of their listing to endangered. In 1997, the species was split into two populations (to the east and west of 144°W longitude); the status of the eastern stock was left as threatened, while the western stock was reclassified as endangered.

Population viability: Population viability analyses (Merrick and York 1994) predict that the western stock will be reduced to very low levels (< 10 animals) within 100 years if 1985-94 trends persist. Times to extinction were consistent when the population model used aggregate counts on rookeries from the Kenai Peninsula to Kiska Island (63 years to extinction), or individual trends for each of the 26 rookeries in the area (95 years). If trends from 1989-94 were used, neither type model (aggregate versus individual rookery) predicted extinction of the western population, but the decline would continue and could result in as few as 3,000 adult females within 20 years, at which time individual rookeries would disappear. The results of this modeling exercise, combined with continued declines in pups counts, prompted the Recovery Team to recommend a change in listing status for the western population.

Counts were conducted in 1996 from SE Alaska through Attu Island in the western Aleutian Islands. Between 1994 and 1996, the overall count at trend sites decreased by 7.8% (nonpups). In the Aleutian Islands region, these counts were up by 1.1%, and in the eastern Aleutian Islands the count was up by 6.6%. However, the Kenai-to-Kiska trend decreased by 4.6%.

In 1997, counts were conducted from Kenai Peninsula through the eastern Aleutian Islands to determine if trends observed from 1994 to 1996 continued. In the eastern Aleutian Islands, the counts were down by 4.9% at all 40 sites counted, and 13.2% at the ten trend sites. Thus, the most recent counts indicate that the decline is continuing.

Management Actions Taken by NMFS and NPFMC: The record of specific Steller sea lion conservation management actions taken by NMFS and the NPFMC since the 1990 listing includes:

- Creation of 3-nautical-mile (nmi) radius no-entry buffer zones around all sea lion rookeries west of 150° W longitude (April 1990);

- Prohibition of shooting at or near sea lions and reductions in the number of sea lions that could be killed incidental to commercial fishing (April 1990);

- Spatial allocations, and conditions on temporal allocations of pollock TAC in the GOA (June 1991);

- Creation of year-round 10-nmi radius trawl fishery exclusion zones around all rookeries west of 150°W longitude, and 20-nmi radius trawl fishery exclusion zones around 6 rookeries in the eastern Aleutian Islands during the BS/AI pollock A-season (June 1991, January 1992, and January 1993);

- Publication of a final recovery plan for the species written by the recovery team for NMFS (December 1992);

- Designation of critical habitat under the ESA in April 1993 (58 FR 17181). Specific areas designated as critical habitat were (1) all rookeries and major haul outs (where greater than 200 sea lions had been counted, but where few pups are present and little breeding takes place), including a) a zone 3,000 feet (914 m) landward and seaward from each site east of 144°W longitude (including those in Alaska, Washington, Oregon and California); and b) a zone 3,000 feet (914 m) landward and 20 nmi (36.5 km) seaward of each site (36 rookeries and 79 haul outs) west of 144°W longitude where the population had declined more precipitously and where the former center of abundance of the species was located; and 2) three aquatic foraging regions within the core of the species' range;

- Splitting of the species into eastern and western populations and changing of the listing status of the western population to endangered (May 1997); and

- Protection of forage fish from directed fishing (April 1998).

The rationale behind each management action was outlined in each Federal Register notice announcing the action. The shooting prohibition, reduction in incidental take mortality and creation of no-entry zones around rookeries were enacted to limit potential for direct human-related mortality, and had only minor impact on groundfish fisheries in the BS/AI and GOA. Spatial-temporal allocations of pollock TAC in the GOA, and creation of trawl-exclusion zones around rookeries were promulgated as part of the ESA Section 7 consultation for the 1991 GOA pollock TAC specifications. In that document, NMFS reviewed and presented data which showed that (1) pollock is a major component of the sea lion diet; (2) sea lions collected near Kodiak Island in the 1980s were lighter, had smaller girths and thinner blubber layers than sea lions from the same area collected in the 1970s; and (3) the pollock fishery had become increasingly concentrated in time and in areas thought to be important to sea lions. NMFS concluded that the spatial and temporal compression of the pollock fishery in the 1980s in both the GOA and BS/AI could have created localized depletions of Steller sea lion prey, which in turn could have contributed to or exacerbated the decline of the sea lion population (5 June 1991). Much of the area in which the pollock fisheries (and other groundfish trawl fisheries; e.g., Atka mackerel and Pacific cod) became spatially compressed is designated as critical habitat for Steller sea lions (Fritz 1993abc). Estimated removals of pollock from Steller sea lion critical habitat in the BS/AI region have increased from between 250,000-300,000 mt from 1981-1986 (between 20-30% of total BS/AI pollock landings) to between 410,000-870,000 mt in 1987-96 (35-69% of total landings). Much of this increase in pollock landings from critical habitat came from the eastern Bering Sea foraging area, which overlaps considerably with the CVOA. The species was split into two stocks based largely on genetics information (Bickham et al. 1996). Finally, certain forage fish were removed from the "other" category of the BS/AI-FMP and protected from directed fisheries, to ensure that these potential prey for marine mammals and other predators were not depleted.

Pacific harbor seals

Harbor seals are found in all coastal areas of the GOA and are widely distributed in nearshore habitats of the Bering Sea (Pitcher, 1980a; Calkins, 1986; Frost and Lowry 1986). They are generally thought of as a coastal, non-migratory species, although individuals are occasionally observed as far as 100 km offshore (Pitcher, 1980a).

Only limited information is available on the diet of harbor seals in Alaska. Pitcher (1980a; b) reported that the harbor seal diet in the GOA was composed of at least 27 species of fish, as well as cephalopods (both octopi and squids) and shrimp in 269 stomachs analyzed. The seven principal prey were (in order of frequency of occurrence): pollock (21%), octopus (17%), capelin (9%), herring (6%), Pacific cod (6%), flatfishes (5%), and eulachon (5%). There were some significant regional differences in the harbor seal diet throughout the GOA. Octopus, capelin and Pacific cod were more important components of the diet in the Kodiak area, while pollock was the principal prey in the Prince William Sound area. Fewer data are available on harbor seal food habits in the Bering Sea (16 stomachs analyzed by Lowry et al., 1986 from animals collected in Bristol Bay). Herring and capelin were the principal components of the diet of harbor seals in Bristol Bay.

Little information is available on the size composition of fish in the diet of harbor seals compared with Steller sea lions and northern fur seals. Pitcher (1981) found that harbor seals collected from the same area and during the same period as Steller sea lions consumed smaller pollock (mean length of pollock ingested by harbor seals = 19.2 cm; for Steller sea lions, 29.8 cm). This suggests a low overlap in body size between pollock harvested by the fishery and those ingested by harbor seals.

Recent trends in abundance vary markedly for different harbor seal populations in Alaska and the North Pacific. The central and western GOA stock may have decreased recently by as much as 90% (Pitcher 1990) since the 1970s. Populations in other portions of the range may be more stable (southeast Alaska) or increasing (British Columbia; Olesiak et al. 1990). The decline in harbor seals in the central and western GOA has not been explained.

The Bering Sea stock of harbor seals was surveyed in 1991 (Bristol Bay and the northern side of the Alaskan Peninsula), 1994 (the Aleutian Islands), and 1995 (northern side of the Alaskan Peninsula and Bristol Bay/Togiak NWR). The total mean count for 1991 survey was 9,324 seals, with 797 from Bristol Bay and 8,527 from the north side of the Alaskan peninsula (Loughlin 1992). The sum of the mean counts from the 1994 Aleutian survey was 2,056 (NMFS unpublished), yielding a total mean count for all three areas of 11,380. The 1995 counts were 7,785 (cv = 0.044) for the northern side of the Alaskan Peninsula, and 955 (cv = 0.071) for Bristol Bay. These numbers indicate a decline of harbor seals in this area of about 40% since the 1970s.

Northern fur seals

The northern fur seal is a migratory species, returning to the Bering Sea (both Pribilof Islands and Bogoslof Island) in summer to breed. For the remainder of the year, fur seals are distributed throughout the North Pacific Ocean. From May to December, seals forage in and transit through the CVOA and, during August and September, this region is particularly important for pregnant and lactating females, juveniles and departing adult males. Recent studies of fur seal pup migration indicate that newly weaned migrating pups move through and may reside in the CVOA during the period from November to February (Ragen et al. 1995).

The most recent estimate for the number of northern fur seals in the North Pacific Ocean is approximately 1,000,000, down approximately 20% from the 1.25 million estimated in 1974, and perhaps as much as 60% from the numbers observed in the early and mid 1950s. Since a short period of apparent increase in the early 1970s, counts declined sharply in the late 1970s and then began to stabilize in the 1980s. Northern fur seals are listed as depleted under the MMPA because the population has declined to less than 50% of the estimated size in the 1950s. The St. George population, which is closest to the CVOA, declined until approximately 1990 and stayed at about the same level until 1996, when it showed a moderate increase. The larger St. Paul Island population has been stable since 1980.

Important known sources of mortality over the past four decades include direct killing and entanglement in marine debris. From 1956 to 1974, over 300,000 adult females were killed in land-based and pelagic harvests. Many of those females had nursing pups, which also must of succumbed from starvation. The killing of these animals accounts for a large portion of the decline observed in northern fur seals after the mid 1950s (York and Hartley 1981). When the harvest was ended, the population appeared to start a recovery in the early and mid 1970s, but then declined further into the 1980s and eventually reached a period of apparent stability at a much reduced level. One possible (partial) explanation for the continued decline in the late 1970s and 1980s is mortality from entanglement in marine debris associated with commercial fishing (Fowler 1985; Fowler et al. 1994). Entanglement monitoring programs conducted on the Pribilof Islands throughout the 1980s and 1990s have found that trawl netting is a significant component of entanglement debris found on northern fur seals (Fowler et al. 1994). While harvests of females and entanglement in fishing gear have contributed to the decline in the size of the population since the 1950s, there is also evidence that the carrying capacity of the North Pacific and Bering Sea for fur seals changed substantially in that period (NMFS 1993). The apparent change in carrying capacity may reflect a natural oceanographic phenomenon, or the impact of intense fishing, or both.

The diet of the northern fur seal in the GOA and the Bering Sea has been studied at least since the mid 1950s and has been summarized by Kajimura (1984) and Perez and Bigg (1986). In 1,800 stomachs from fur seals collected in the Bering Sea from 1960-1974, pollock was a principle prey species, but it occurred in less than 25% of the samples (Kajimura 1984, Perez and Bigg 1986). In contrast Sinclair et al. (1996) found that juvenile walleye pollock were present in approximately 80% of fecal and gastrointestinal samples obtained from the Bering Sea between 1981 and 1990.

In the GOA, data exist for the months of February-July, and indicate a varied diet composed primarily of herring, Pacific sand lance, capelin, squid and pollock. In the Bering Sea, data exist for the months of June-October, and also reveal a varied diet of small schooling fish and squid. Pollock composed a larger percentage of the diet in the Bering Sea (35% of diet volume) than in the GOA (5%) and Atka mackerel comprised between 10-20% of the diet in the Bering Sea during June. Foraging occurs to depths up to 200 m over both shelf and pelagic waters (Kajimura 1984; Loughlin et al. 1987; Gentry et al. 1986; Goebel et al. 1991).

The data for northern fur seals, although obtained primarily from females, suggest that they ingest smaller fish than Steller sea lions. Perez and Bigg (1986) reported that fur seals collected in the North Pacific Ocean ingested primarily 1-2 year-old pollock (total range of 4-40 cm; n = 1,721 pollock from 71 stomachs). Sinclair et al. (1994) reported that juvenile pollock (especially 0- and 1-year-old fish) are the principle prey of lactating fur seals. In addition, the relative strength of pollock year classes is reflected in the fur seal diet, so that pollock from strong year classes show up with markedly higher frequency as the year class ages (Sinclair et al. 1994). The largest fish consumed by northern fur seals in the collections of Perez and Bigg (1986) (n > 3,000 fish) was a 41-cm salmon. Pollock and Atka mackerel fisheries primarily catch fish (target species) larger than 30 and 35 cm, respectively (Hollowed et al. 1991; Lowe 1991; Wespested and Dawson 1991). Consequently, the overlap between fisheries takes and the preferred fish sizes of northern fur seals may be low, a conclusion also reached by Swartzman and Haar (1983).

Killer Whales

One of the most common marine mammal/fishery interactions in the Bering Sea is between longline fishing vessels (particularly those targeting on sablefish or Greenland turbot) and killer whales. While this proposal does not deal with longline vessels, it should be noted that the area where interactions are most frequent is a triangular-shaped area from Unimak Pass to the Pribilof Islands to Seguam Pass, much of which also overlaps with the CVOA (Yano and Dahlheim 1995.) The shelf edge from Unimak Pass to the Pribilof Islands also has a preponderance of the killer whale sightings in the platform of opportunity sighting data, particularly in May-December, but the preponderance may simply reflect the distribution of sighting effort. Interactions between killer whales and trawlers have not been as frequent as with longliners in the area. Killer whale populations off Alaska are thought to be stable, and they probably number in the many hundreds of animals, not in the many thousands. This estimate is based on sighting information and surveys conducted in the 1980s, and replicate surveys conducted in 1992 and 1993 by NMFS.

6.4.2 Interactions between the Pollock Fishery and Marine Mammals within the CVOA

Walleye pollock comprises the largest portion of groundfish occurring in the Bering Sea. Pollock is consumed by marine fishes (including cannibalistic pollock), human fisheries, marine birds, and marine mammals. The availability of pollock to these consumers depends on the size structure of pollock populations, their areal and temporal distributions, and the areal and temporal distribution of the consumers. The amount of pollock taken by each consumer type must vary annually, but Livingston (1993) estimated that marine fishes consumed the largest portion (principally ages 0-1), followed by human fisheries (age 3+), marine birds (ages 0-1), and marine mammals (ages 1+).

The amount of pollock taken by fisheries is determined by a complex stock assessment and TAC-setting process that uses the best available commercial and scientific information on both the fish stocks and the fishery. TAC-setting is done conservatively, in recognition of the fact that maintenance of a healthy ecosystem requires allowance of unfished biomass sufficient to support other consumers (e.g., marine birds and mammals). In addition to the conservative TAC-setting process, areal and time closures have been imposed to disperse fishing effort and prevent competition between various sectors of the fishery. The CVOA and associated allocation regimen was originally established as a mechanism for limiting competition between inshore vessels and offshore factory trawlers. These dispersion measures also benefit other marine consumers by preventing localized depletions of prey.

The CVOA encompasses waters known to be important for Steller sea lions and northern fur seals, and likely to be important (at least in part) for harbor seals. Given the current understanding of foraging patterns by these marine mammals, it is not possible to demonstrate, with certainty, that these species do or do not compete with fisheries for pollock. However, the potential for competition could be exacerbated given the recent (1994 to 1997) 81% decline in the summer CVOA pollock biomass estimate, and the recent (also 1994 to 1997) tripling in summer pollock harvest rates by the fishery in the CVOA.

The CVOA overlaps considerably with the eastern Bering Sea foraging area designated as part of Steller sea lion critical habitat in 1993. The overlap is not total and management's primary concern is with the effect of the fishery within areas designated as critical habitat. Nevertheless, in the absence of fishery management measures that distinguish between these two areas, the effects of fishing activities within the CVOA may be indistinguishable from those within Steller sea lion critical habit (the eastern Bering Sea foraging area). Because of the extensive degree of overlap (Fig. 5.11), pollock catches from the CVOA and Steller sea lion critical habitat are closely correlated in both the A- and B-seasons (Figs. 6.1 and 6.2; Table 6.1; Fritz 1993c).

Table 6.1. Observed catches of pollock (in mt) and percent of seasonal observed pollock caught in the Catcher Vessel Operational Area (CVOA) and in Steller sea lion critical habitat. There is considerable overlap in CVOA and critical habitat; therefore, much of the observed catch in each area is the same. Observed percent distribution was used to estimate total catches in each area (Est. Catch).

		A-Season			B-Season			Annual		
Year	Area	Observed	Percent	Est. Catch	Observed	Percent	Est. Catch	Observed	Percent	Est. Catch
1992	CVOA	155,572	47%	229,325	226,411	46%	334,525	381,983	46%	563,850
	Critical Habitat	173,283	53%	255,433	243,927	50%	360,405	417,210	51%	615,838
	Total for Season			485,274			727,911			1,213,185
1993	CVOA	180,488	49%	307,023	224,369	50%	381,217	404,857	50%	688,241
	Critical Habitat	204,285	56%	347,504	236,192	53%	401,305	440,477	54%	748,809
	Total for Season			622,680			761,053			1,383,733
1994	CVOA	324,363	91%	582,431	190,221	43%	334,976	514,584	64%	917,407
	Critical Habitat	302,936	85%	543,956	208,482	47%	367,133	511,418	64%	911,089
	Total for Season			639,943			782,152			1,422,095
1995	CVOA	358,657	93%	553,076	215,566	49%	359,593	574,223	70%	912,669
	Critical Habitat	345,113	89%	532,190	213,450	49%	356,063	558,563	68%	888,253
	Total for Season			597,238			729,957			1,327,195
1996	CVOA	193,001	57%	315,298	188,978	49%	329,690	381,979	53%	644,988
	Critical Habitat	187,663	56%	306,578	189,131	49%	329,957	376,794	52%	636,534
	Total for Season			549,828			672,012			1,221,840
1997	CVOA	235,359	77%	396,850	125,327	36%	224,054	360,686	55%	620,904
	Critical Habitat	228,024	75%	384,482	125,405	36%	224,194	353,429	54%	608,676
	Total for Season			512,230			626,058			1,138,288

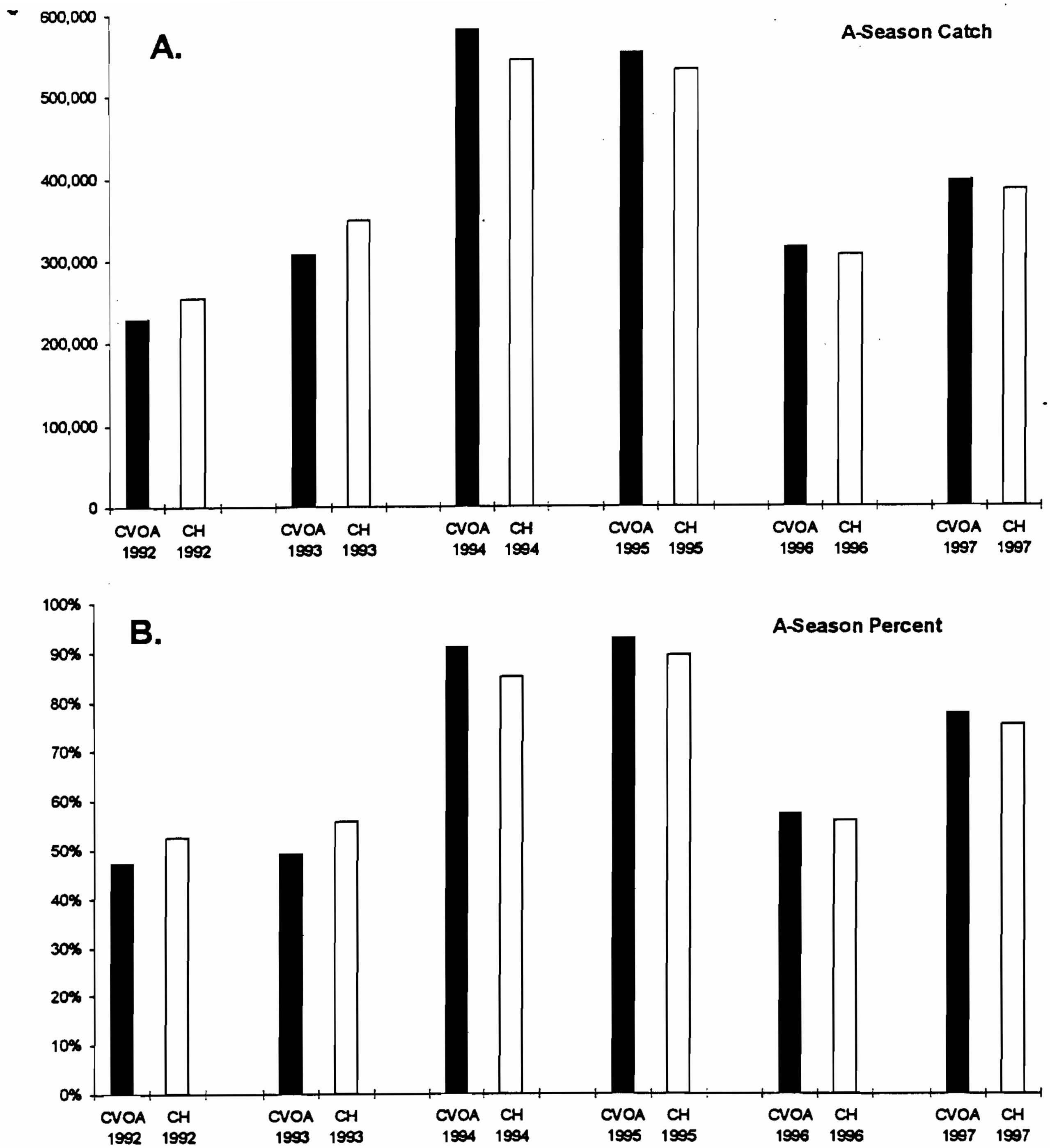

Figure 6.1 A-season catches (A; in mt) of pollock in the BS/AI in 1992-97 in the Catcher Vessel Operational Area (CVOA) and in Critical Habitat (CH) for the Steller sea lion. Percent of total A-season BS/AI pollock catch is shown in B.

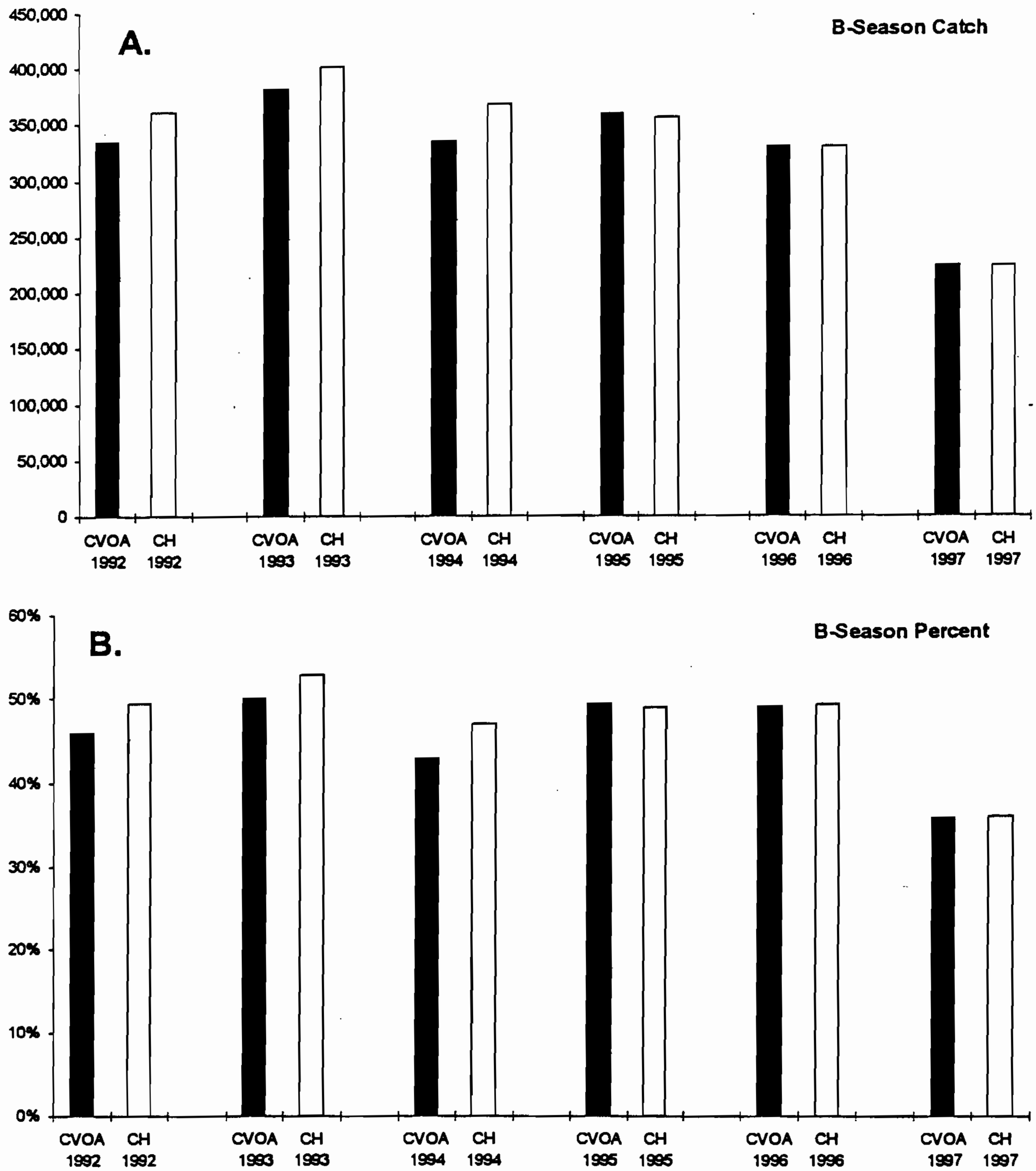

Figure 6.2 B-season catches (A; in mt) of pollock in the BS/AI in 1992-97 in the Catcher Vessel Operational Area (CVOA) and in Critical Habitat (CH) for the Steller sea lion. Percent of total B-season BS/AI pollock catch is shown in B.

Fritz (1993c) compiled pollock catches from critical habitat in the first quarter from 1977-1992. Pollock removals from critical habitat during the first part of the year increased from negligible levels in the late 1970s to over half a million mt in the mid 1990s. Pollock removals from critical habitat were less than 50,000 mt annually during the first quarters of 1977-1985, but varied from 1986-1991 (i.e., 75,000 mt in 1989 to almost 450,000 mt in 1987). While A-season pollock catch from both the CVOA and critical habitat increased from about 240,000 mt in 1992 to 320,000 mt in 1993, the percent of total A-season BS/AI catches from those areas remained at about 50%. In 1994 and 1995, A-season pollock removals from the two areas increased to between 530,000 and 580,000 mt, or about 85-93% of the total A-season removals in those years. Areas outside of the CVOA and critical habitat were used by the A-season fishery in 1996 and 1997, resulting in decreases in both magnitude and percent removals compared with 1994 and 1995. However, approximately 75% (almost 400,000 mt) of the A-season pollock were removed from the CVOA or critical habitat in 1997.

During the B season, pollock removals from the CVOA and critical habitat ranged between 330,000-400,000 mt from 1992-1996, which represented approximately 50% of the B-season catch each year (Fig. 6.2). B-season catches from the CVOA and critical habitat dropped to about 220,000 mt in 1997, about one-third of the B-season BS/AI pollock landings.

About 10-30% of total annual pollock catch came from the CVOA or critical habitat from 1977-86. This percent reached 50% in 1992-93, increased further to 65-70% in 1994-95, and then decreased to just over 50% in 1996-97 (Figure 6.3).

6.4.3 Effects of Sector Allocation and the CVOA alternatives on marine mammals

The various sector allocation and CVOA alternatives could affect pollock removals from the CVOA in the following manner. First, increases in the inshore sector's allocation will likely lead to greater pollock removals from the CVOA and critical habitat. Second, exclusion of various fishing sectors from the CVOA during the A-season will likely decrease pollock removals from the CVOA and critical habitat. The exclusion of the offshore sector from the CVOA in the A season would likely result in the greatest reduction in pollock removals. Third, under the No CVOA alternative, B-season pollock catch from the CVOA is difficult to predict and depends on the scenario to distribute offshore effort during the season. If both the offshore vessels and "true" motherships are excluded, then CVOA B-season catch of pollock will likely be reduced.

Increases in pollock catch outside the CVOA would tend to increase catches of small, young pollock (< 40 cm in length). Growth of pollock is slower to the north and west along the outer shelf in the eastern Bering Sea (Wespestad et al. 1997). Therefore, while more smaller pollock may be caught, many of these would be in the same yearclass as those caught to the southeast in the CVOA. Also, age 1-3 pollock tend to be distributed more to the northwest than to the southeast in the Eastern Bering Sea, and actions which would increase effort in these areas would lead to greater removals of juvenile pollock. However, selectivity of age 1 and 2 pollock by the fishery is very low (5% or less; Wespestad et al. 1997). On the average, pollock fisheries in the eastern Bering Sea have caught only about 2% of the 2-year-old pollock each year (Fritz 1996). Therefore, while increases in effort north and west of the Pribilof Islands (outside of Steller sea lion critical habitat) would lead to higher catches of young pollock, it is not expected that this would significantly affect either the yearclass size of pre-recruit pollock or the availability of pollock to sea lions.

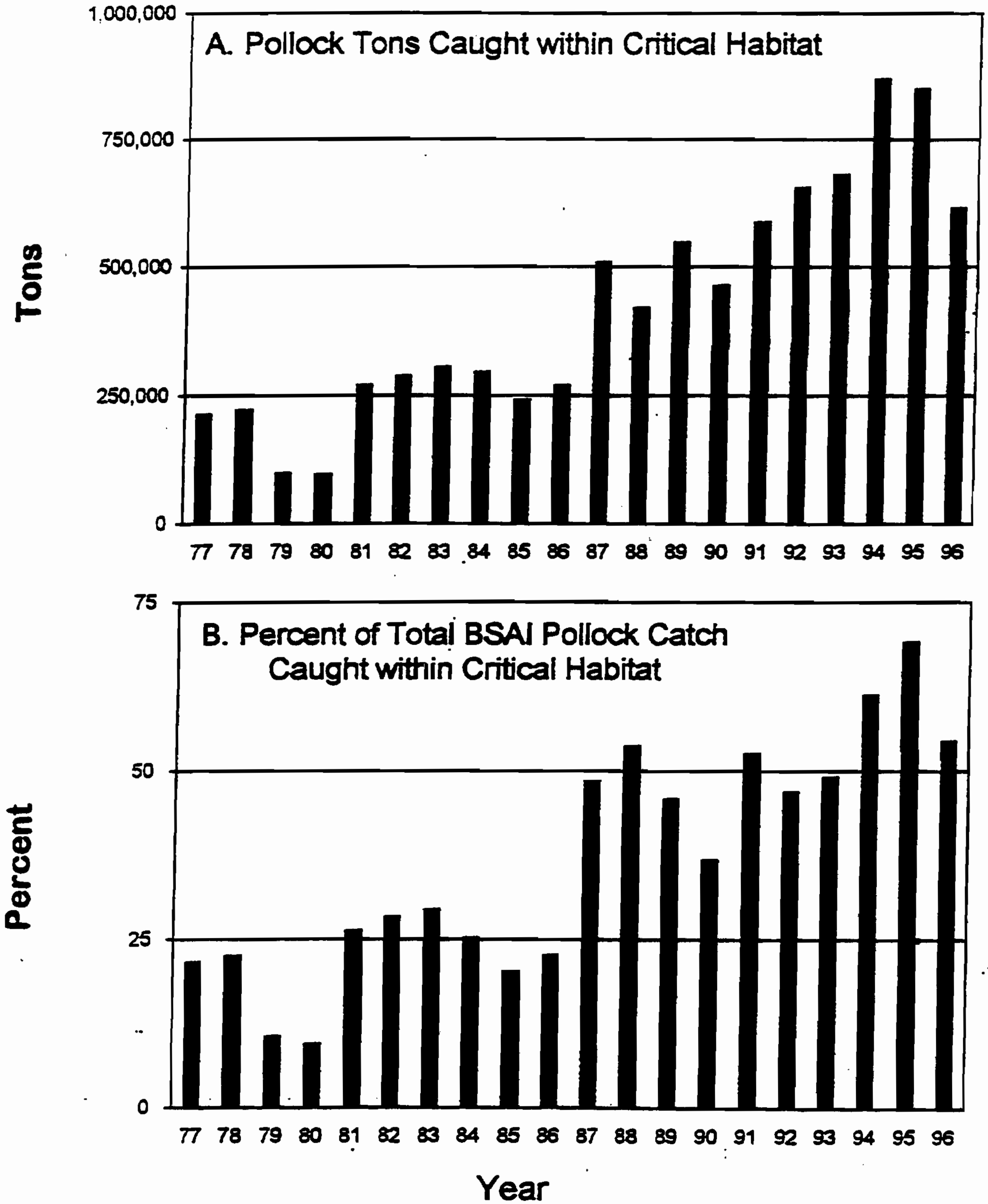

Figure 6.3 Pollock fishery effort within Steller sea lion critical habitat in the Bering Sea/Aleutian Islands region.

The chosen combination of sector allocation and CVOA alternatives should not increase the potential for competition between the fishery and Steller sea lions. Certain combinations under consideration could result in a larger proportion of the pollock TAC being removed from the CVOA and, therefore, from Steller sea lion critical habitat. In turn, this could only increase the potential for detrimental competition. The guideline suggested to prevent such an increase is that the chosen combination not increase (relative to the status quo) the proportion of the total annual TAC that could be taken from the CVOA (and overlapping critical habitat). Under the status quo, the proportion that could be taken from the CVOA (maximum) is determined on the basis of 1) A:B season apportionments, 2) inshore:offshore:"true" mothership allocations, 3) allowance for all CDQ fishing in the CVOA, 4) allowance for all "true" mothership fishing in the CVOA during the B season, and 5) the assumption that no more than 9% of the offshore allocation during the B season could be taken by catcher vessels in the CVOA.

6.4.4 Maintaining Current Levels of CVOA Pollock Removals

Because of marine mammal concerns, NMFS has advised the Council that they cannot support any Inshore/offshore alternatives that proportionally increase pollock harvests from the CVOA. NMFS has also provide guidance on the percentage of catch that they have determined to be the baseline, and therefore should not be exceeded under an Inshore/offshore allocation.

The bottom right hand corner of Table 6.1 shows how NMFS determined that 72.5% of the BS/AI pollock harvest could have been taken from the CVOA during 1996/97. That percentage was calculated using the following assumptions:

1. The inshore, "true" mothership, and catcher processor sectors processed 35%, 10%, and 55% of the BS/AI TAC, respectively, in 1996.

2. Nine percent of the pollock processed by catcher processors was harvested by catcher vessels, and all the catcher vessel's catch could be harvested inside the CVOA.

3. All of the pollock harvested by catcher processors during the B-season was taken outside the CVOA, and all the catcher processors catch in the A-season <u>could be</u> taken inside the CVOA.

4. All harvests by catcher vessels delivering to the inshore and "true" mothership sectors, in both the A-season and the B-season, could be taken from the CVOA.

5. The pollock TAC was split for a 45% harvest in the A-season and a 55% harvest during the B-season.

Using 72.5% as the maximum harvest allowed from the CVOA, it is possible to run different scenarios to determine if they exceed that level. Table 6.2 provides an example that shows the harvest percentage allowed in the CVOA if the Inshore sector's allocation was increased to 40% and the catcher processors allocation was decreased to 50%. The bottom right hand corner of that table shows the increased allocation Inshore would result in 75% of the TAC being allowed to be taken from the CVOA. This exceeds the maximum allowed by 2.5%. Therefore if this basic allocation alternative were selected, additional measures to reduce catch in the CVOA would need to be implemented. Several methods could be employed to keep the maximum percentage under 72.5%. For example, certain sizes of catcher vessels could be required to fish outside the CVOA at given times of the year. The catcher vessels delivering to certain processing sectors could be required to fish outside the CVOA. The A-season and B-season splits could be altered. Finally, a percentage of the catcher processor harvest in the A-season could be reserved for outside the CVOA only.

Changing the basic allocation so that 5% more pollock was issued to the catcher processor sector, and 5% less to the Inshore sector, would result in 70% of the TAC harvest being allowed inside the CVOA. This is under the 72.5% baseline so no additional measures would not be required. In fact, because only the catcher processor sector is currently restricted from operating inside the CVOA, any increase in their allocation would be acceptable in terms of staying under the 72.5% inside the CVOA (so long as the A-season and B-season splits are not changed).

Table 6.2 Percent of Pollock Harvest Allowed in the CVOA: Based on 100% of Non-CDQ Allocation

	Inshore	True MS	CPs	Total
Overall Allocation	35.0%	10.0%	55.0%	100.0%
Allocation to Catcher Vessels <125' LOA	42.0%	98.0%	9.0%	n/a
Allocation to Catcher Vessels 125-155' LOA	38.5%	1.0%	0.0%	n/a
Allocation to Catcher Vessels >155' LOA	19.5%	1.0%	0.0%	n/a
A-season %	45%	45%	45%	45%
B-season %	55%	55%	55%	55%
A-season: % of CP Catch Allowed In CVOA	n/a	n/a	100%	
A-season: % of <125' CV Catch Allowed In CVOA	100%	100%	100%	
A-season: % of 125'-155' CV Catch Allowed In CVOA	100%	100%	100%	
A-season: % of >155' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of CP Catch Allowed In CVOA	n/a	n/a	0%	
B-season: % of <125' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of 125'-155' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of >155' CV Catch Allowed In CVOA	100%	100%	100%	
Total % Catch Allowed in CVOA During the A-season	15.8%	4.5%	24.8%	45.0%
Total % Catch Allowed in CVOA During the B-season	19.3%	5.5%	2.7%	27.5%
Total % Catch Allowed in the CVOA	35.0%	10.0%	27.5%	72.5%

Table 6.3 Percent of Pollock Harvest Allowed in the CVOA: Based on 100% of Non-CDQ Allocation

	Inshore	True MS	CPs	Total
Overall Allocation	40.0%	10.0%	50.0%	100.0%
Allocation to Catcher Vessels <125' LOA	42.0%	98.0%	9.0%	n/a
Allocation to Catcher Vessels 125-155' LOA	38.5%	1.0%	0.0%	n/a
Allocation to Catcher Vessels >155' LOA	19.5%	1.0%	0.0%	n/a
A-season %	45%	45%	45%	45%
B-season %	55%	55%	55%	55%
A-season: % of CP Catch Allowed In CVOA	n/a	n/a	100%	
A-season: % of <125' CV Catch Allowed In CVOA	100%	100%	100%	
A-season: % of 125'-155' CV Catch Allowed In CVOA	100%	100%	100%	
A-season: % of >155' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of CP Catch Allowed In CVOA	n/a	n/a	0%	
B-season: % of <125' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of 125'-155' CV Catch Allowed In CVOA	100%	100%	100%	
B-season: % of >155' CV Catch Allowed In CVOA	100%	100%	100%	
Total % Catch Allowed in CVOA During the A-season	18.0%	4.5%	22.5%	45.0%
Total % Catch Allowed in CVOA During the B-season	22.0%	5.5%	2.5%	30.0%
Total % Catch Allowed in the CVOA	40.0%	10.0%	25.0%	75.0%

Table 6.3 shows that increasing the Inshore allocation by 5%, and decreasing the catcher processor allocation by 5% allows 75% of the BS/AI pollock TAC to come from the CVOA. Some management measures that could be used to reduce that percentage were mentioned above. Now specific examples will be discussed that would bring the total catch allowed in the CVOA down to an acceptable level. First, if only 85% the catcher processor harvest was allowed inside the CVOA during the A-season it would reduce the CVOA percentage to 71.9%. This would be considered an acceptable level. Another option would be to restrict catcher vessels greater than 155' LOA delivering inshore from fishing inside the CVOA during the B-season. Excluding those catcher vessels and the catcher processors during the B-season would result in 70.8%. Yet another option would be to restrict catcher vessels delivering to "true" motherships to harvesting a maximum of 50% of their B-season allocation from the CVOA. This would reduce the maximum amount that could be taken to 72.2%. Finally the last option that will be discussed is the option to change the A-season and B-season splits. If the split were changed to 40% during the A-season and 60% during the B-season the resulting maximum harvest from the CVOA would be 72.7% (again, assuming a 5% increase in the overall inshore allocation). This is slightly over the 72.5% maximum that NMFS would support.

There are many other allocation combinations that the Council may wish to consider, and several measures could be used to keep CVOA harvests within an acceptable range. The examples provided above are only a small subset of those possible, and are not intended to be the only options that may be considered.

The limits imposed by this guideline are not intended to provide an advantage or disadvantage for any of the fishing sectors involved in the allocation discussion. The sole intent of this guideline is to ensure that the final allocation scheme does not result in increased potential for competition between the fishery and the Steller sea lion. Because of the uncertainty involved in assessing that competition, this guideline may or may not be sufficient, and additional management measures may be necessary in the future to ensure the recovery and conservation of the Steller sea lion.

6.4.5 The Council's Preferred Alternative

The Council's preferred alternative will keep the maximum removals from the CVOA under the 72.5% calculated as the status quo. Allocating 4% more of the pollock TAC inshore was mitigated by forcing all offshore operations out of the CVOA during the B-season. The new estimate of maximum removals from the CVOA during the B-season is 66.5%.

It is important to note that the Council opted to restrict all of the offshore sector from operating inside the CVOA during the B-season for fairness reasons within the offshore sector, and not marine mammal issues. Several members of the Council felt that the Stellar sea lion issue was too complex to treat under I/O3. A separate comprehensive analysis of the actions required to protect Stellar sea lions was requested by the Council. NMFS, in conjunction with the Stellar sea lion recovery team, will work over the summer and fall to prepare a paper for the Council to review. Then with a better understanding of the problem and a wider range of alternative solutions, appropriate actions can be taken by the Council to help protect Stellar sea lions.

6.4.6 Effects of Allocation Alternatives in the GOA

The alternatives under consideration for inshore/offshore allocation of pollock and Pacific cod in the GOA involve (1) a continuation of the current allocation scheme, or (2) a discontinuation of that scheme and a return to a fishery open to participation by both the inshore and offshore sectors. The current allocation scheme does not allow offshore vessels to target pollock or Pacific cod in the Gulf, but does allow 10% of the pollock allocation for bycatch by offshore vessels.

With respect to the GOA pollock fishery, the distinctions between these two vessels types is related to (1) the rate at which the TAC is taken, and (2) the areas fished by the inshore versus offshore vessels. In the few years that offshore vessels fished in the Gulf, they fished a large portion of the TAC in a matter of weeks, ending the fishing season abruptly, and leaving the inshore vessels with no opportunity to continue the fishery. This rapid removal of the TAC lead to the current allocation scheme that preclude the offshore sector from the fishery.

With respect to Steller sea lions or other marine mammals in the Gulf, the effects of continuing the current allocation scheme versus an open fishery with offshore participation are somewhat uncertain. Presumably, participation by the offshore fleet would increase the probability of fishery-induced localized depletions due to the rapid and extensive removal of pollock. Such localized depletions have been considered as a threat to other marine consumers as they reduce foraging success and increase the energetic costs associated with finding sufficient prey.

On the other hand, inshore vessels may, on average, focus on pollock concentrations closer to shore and, therefore, of potentially greater benefit to pinnipeds such as the Steller sea lion and harbor seal. These pinnipeds may then be required to expend more energy and travel greater distances from shore to find sufficient prey. The additional energetic costs may be particularly important for young animals with a smaller foraging range and for mature adult females either pregnant or nursing or both. The offshore sector has not fished for pollock or Pacific cod in the GOA for a sufficient period of time to predict how their distribution might vary from the inshore sector, but the distribution of both would likely to be determined by the distribution of prey.

The distribution of the fishery has largely been delimited by the 200 m isobath from Portlock Bank (west of Kodiak Island) to south of Umnak Island. The smaller shelf in the GOA effectively keeps the fishery closer to shore and to rookeries and haulout sites of Steller sea lions and harbor seals. Large aggregations of spawning pollock were discovered in Shelikof Strait and those aggregations were fished heavily in winter months (Jan-Apr) from 1982 to 1986.

Estimated pollock biomass in the GOA near or less than one million tons until the late 1970s, increased sharply to over 2.5 million tons in the early 1980s, dropped to less than 1.5 million tons in the mid 1980s, and then declined to less than 1 million tons by the mid 1990s. The estimated harvest rate of Gulf pollock also increased significantly from less than 10% to nearly 18% in 1984 and 1985.

Counts of Steller sea lions in the central GOA (Kenai Peninsula to northeast of Shumagin Islands) declined have declined severely during the period of this fishery. In 1976, counts of sea lions in this region totaled 24,678. By 1985, the count total dropped to 19,002, and then plummeted to 8,552 in 1989. The most recent count (1997) was 3,352, indicating a total decline of 86% since 1976. About 42% of this decline occurred between 1985 and 1989, after the fishery had focused intense effort on the winter spawning aggregations of pollock in Shelikof Strait.

In the western GOA (Shumagin Islands to the eastern end of Umnak Island), the decline has also been severe. Counts in this region totaled 8,311 in 1976, dropped to 6,275 in 1985, dropped sharply to 3,800 in 1989, and were 3,633 in 1997. The total decline was 56% from 1976 to 1997, and 30% occurred between 1985 and 1989.

The concern about competition between the GOA pollock fishery and the endangered western population of Steller sea lions is largely founded on (1) the primary importance of pollock in virtually all studies of feeding habits of the Steller sea lion, (2) the apparent coincidence of the extensive Shelikof Strait fishery with the most severe period of decline of Steller sea lions in the region, and (3) the fact that, in general, extensive amounts of pollock are removed from areas (such as Shelikof Strait) that are designated as critical habitat for the Steller sea lion.

Pollock removals, both in mt and as a percentage of total GOA pollock landings, from Steller sea lion critical habitat in the GOA from 1977-96 are shown in Figure 6.4. The magnitude and percent of pollock removals from critical habitat increased from negligible levels in 1977 to over 200,000 mt in 1984-85, which represented between 75-80% of the GOA pollock landings. As the total catch for pollock in the GOA declined after 1985, so did the magnitude of removals from critical habitat, to between 40,000 and 85,000 mt from 1986-96. However, the percent of total GOA pollock landings from critical habitat did not decline along with the magnitude, and has remained between 55-90% from 1986-96.

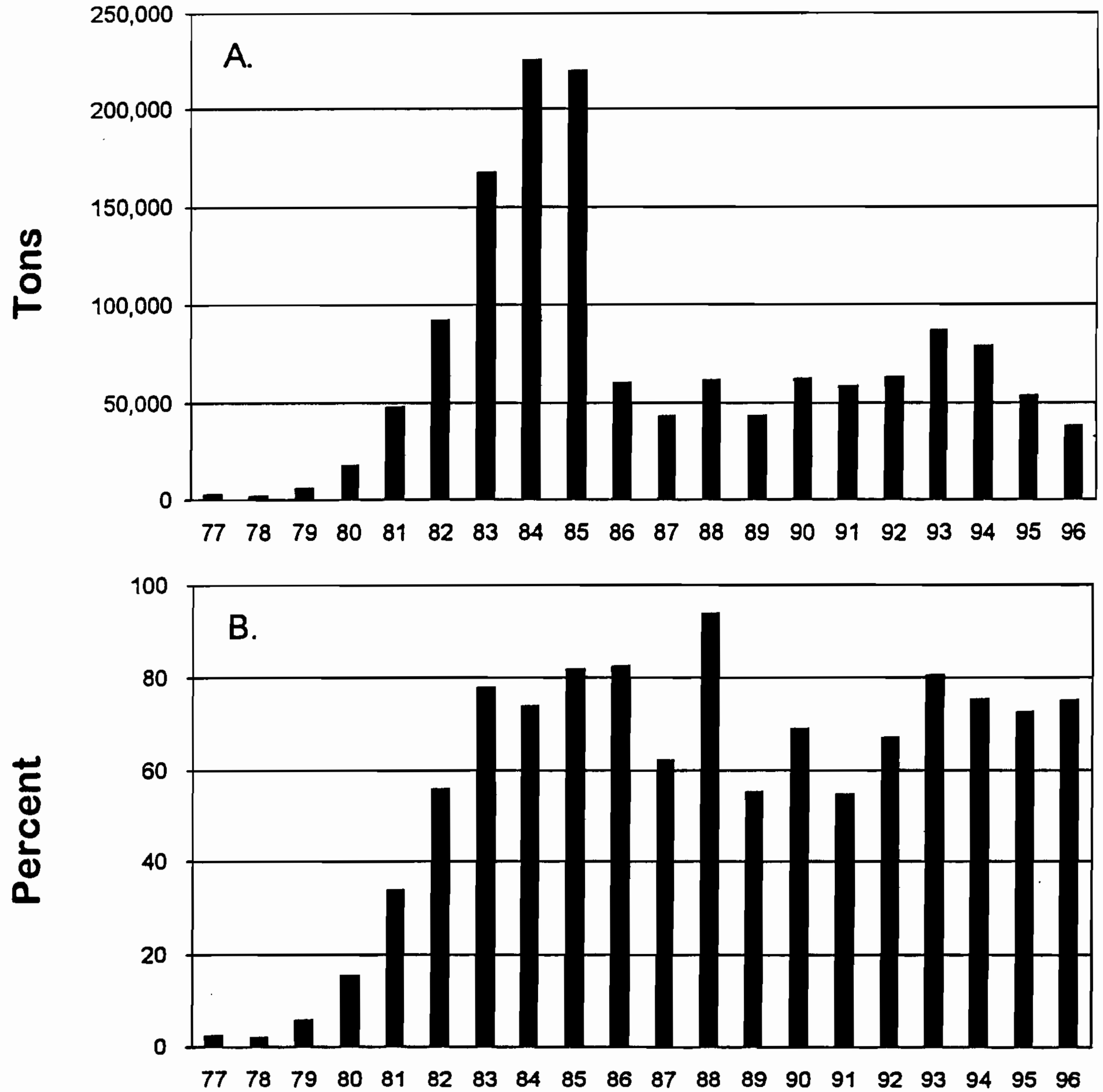

Figure 6.4 Catch of pollock in critical habitat of the Steller sea lion in the Gulf of Alaska. A. Tons of pollock caught in critical habitat. B. Percent of annual catch removed from critical habitat.

6.5 Discharge of Fish Processing Waste

During the Council discussions of reauthorizing the provisions of amendments 18 and 23, and during recent discussions of further extending the inshore/offshore allocations, members of the public expressed concern that continuation of those provisions might lead to continued or increased degradation of the marine environment from fish processing wastes disposed into the bay(s). Although past and current disposal of fish processing wastes into Unalaska Bay, and other areas, have 'degraded' some local benthic environments, those discharges are controlled under permits issued and monitored by the U.S. Environmental Protection Agency (Environmental Protection Agency, 1995 and 1998).

According to a letter to the Council from the Alaska Department of Environmental Conservation [Burden, 1995], there has been confusion about the listing of South Unalaska and Akutan Bays as "impaired" water bodies. The DEC states that these water bodies were listed as such for several years, but that agencies and processors have been working through the permitting process and a management regime known as "Total Maximum Daily Load" (TMDL), to control discharges and manage effluents into these water bodies.

The TMDL process, according to the Environmental Protection Agency [Harper, 1995 and 1998], sets limits on the amount of "pollutants" that may be discharged on any given day by individual processors. If these TMDLs are not exceeded, then the agencies believe the water bodies will maintain or improve their levels of quality. The EPA noted that the overall amount of fish or shellfish coming into a facility was not the issue so much as the amount discharged on a daily basis.

The amount of waste disposed into the marine environment (of Unalaska Bay and other marine areas receiving fish processing wastes) and the impacts of those discharges are not entirely dependent on the percentages of the walleye pollock and Pacific cod harvests allocated to the inshore processing component. Instead, they are related to the amount of fish (of all species) processed, the amount of processing waste that must be disposed of, how much of the total that will be disposed of in the marine environment, and the way it is disposed of in the marine environment. For example, while current alternatives allow for increased share of processing by the inshore plants, the overall pollock TACs have declined, such that an increased percentage share will result in similar amounts of pollock being processed in 1999 as were processed in the mid-1990's by these same plants. The same is true for the overboard disposal of harvest discards and fish processing wastes from vessels in the offshore component.

Given the above comments from State and Federal authorities, and noting the basic conclusion of previous analyses regarding the daily maximum throughput of inshore plants, i.e. the amount of fish processed daily is not expected to change significantly regardless of the Inshore/offshore allocation, it is unlikely that reauthorization of these amendments will have a negative impact on the water quality in these areas. Nevertheless the Council requested clarification of the EPA's current position on discharge waste. The following section contains further discussion of this issue from the EPA perspective and includes tables which summarize the 1997 discharges for the major inshore processing plants.

6.6 EPA and Seafood Processing Discharges

6.6.1 Seafood processing pollutants

The pollution from seafood processing comes from two sources: the solid seafood wastes and the wastewater from the butchering process, surimi process, canning process, and fish meal process. In addition wastewater also included disinfectants and detergents used in wash down water and non-process wastewaters include noncontact cooling water, refrigeration condensate, water used to transfer product, live tank water, and boiler water. These wastewaters contain pollutants such as total suspended solids, oil and grease, biochemical oxygen demand, and settleable solids.

6.6.2 Discharge control measures

EPA issues permits which regulate the amount of pollutants allowed to be discharged to waters of the U.S. There are two types of permits:

> **General permits** authorize discharges from facilities that grind the seafood wastes to 0.5 inch before discharging and covers shore-based facilities and vessels operating near-shore and at sea. Most of these facilities are seasonal and relatively small processors. The general permit does not cover seafood processors that produce surimi and fish meal or discharge to water quality limited water bodies or are in protected areas, such as wildlife refuges, national parks, or endangered/threatened species habitats. Any waste accumulation over 0.5 inch or thicker on the seafloor cannot exceed one acre
>
> **Individual permits** are issued to processors processing seafood into product as well as producing surimi and fish meal and/or are discharging to identified water quality limited water bodies. These processors are usually the very large facilities located in Dutch Harbor and Akutan Harbor as well as several other areas including Kodiak. Vessels operating within 1 mile of shore (near shore) and producing fish meal and/or surimi are also covered under individual permits.

6.6.3 Individual permit requirements

Individual permits may require sampling and monitoring of the discharge as well as the water body where the discharges occur. Southeast Unalaska Bay, Captains Bay, and Akutan Harbor are three water bodies that have been identified as impaired by seafood wastes accumulating on the seafloor and having a discharge high in biochemical oxygen demand (BOD). Past monitoring of the water bodies found that in late summer when the water column is more likely to be stratified, the apparently naturally occurring low dissolved oxygen of the water was further impacted by the discharge of pollutants from the seafood processors in Captains Bay, Dutch Harbor, and Akutan Harbor.

6.6.4 Pollutant explanation

Dissolved oxygen (DO) levels in natural and wastewaters depend on the physical, chemical, and biochemical activities in the water body. The analysis for DO is a key test in water pollution and waste treatment process control. The control of (BOD) in a discharge is one way of assuring that the water body can absorb the pollutant without depressing the dissolved oxygen.

Dissolved oxygen concentration in ambient waters is a measure of the health of the water body and for the protection of aquatic life. Low DO concentrations are known to stress the water body and cause adverse effects to the range of aquatic species that form the food chain from insects to cold water fish.

6.6.5 Water quality limited water bodies

When a water body is identified as water quality limited, EPA and the State are required to implement a total maximum daily load plan which identifies the degree of pollution control needed to attain and maintain compliance with water quality standards and assigns allowable wasteload allocation to the contributing point sources. The TMDL and wasteload allocations are calculated by modeling the water body.

The Captains Bay, Dutch Harbor, and Akutan Harbor facilities all have stringent BOD limitations in their permits for the months of August through October. During this late summer period, each permittee is required to do extensive monitoring DO, temperature, salinity, and density which is the only means of assessing the efficacy of the permit limitations to control the impacts of the BOD discharge on ambient levels of dissolved oxygen in the receiving water.

While the statistics of how much BOD is discharged from these facilities appears to be extremely high, the stringent limitations are expected to improve the health and quality of the receiving water. These facilities have installed extensive and expensive treatment processes to assure that the discharge is in compliance with permit limitations. In addition the fish meal facilities are required to recycle as much as possible the stickwater (a high BOD pollutant load from the production of fish meal) back into the fish meal to reduce the discharge of this particular waste stream.

6.6.6 Vessels operating at sea

For the vessels that process seafood, produce surimi, and recycle seafood wastes into fish meal, there are no specific limitations. They are allowed to discharge solid wastes ground to 0.5 inch, are not required to recycle the stickwater, or to reduce pollutant loading on the receiving waters in any way. Also, the vessels are not required to do any monitoring, sampling, or analyses of the discharge nor monitoring of the ambient water quality of the receiving water.

6.7 Summary

A final version, and Finding of No Significant Impact (FONSI), will depend on the Council's selection of a 'Preferred Alternative'. This section will be completed following a Council decision, and prior to review by the Secretary of Commerce.

______________________________ ____________________

Assistant Administrator for Fisheries Date

TABLE 6.4

Westward
BOD lbs discharged

Limit: July-Oct	(Days)	Total lbs	58000 lbs monthly aver	90000 lbs daily maximum	Production finfish raw surimi/bottomfish	finfish finished surimi/bottomfish	crab raw	crab finished
1997								
Dec	(6)	36,305	6,051	10,350	0 / 113,631	0 / 51,134	62,238	36,068
Nov	(16)	70,970	4,436	9,107	0 / 761,272	0 / 384,650	1,075,363	691,283
Oct	(30)	1,056,531	35,218	73,300	28,923,462/ 1,311,039	7,383,068/ 691,427	538,860	322,900
Sep	(30)	1,330,658	44,355	73,584	45,645,377/ 188,385	11,479,380 / 156,818	643,575	408,680
Aug	(27)	88,241	3,268	21,692	364,151/ 589,520	85,140 / 496,410	20,642	11,230
July	(27)	56,915	2,108	9,608	0 / 1,996,827	0 / 1,865,442	0	0
June	(30)	383,576	12,786	72,258	2,568,279/ 1,668,260	500,676/ 1,111,875	78,032	45,305
May	(31)	467,220	20,314	47,171	1,245,094/ 2,763,477	403,216/ 2,763,477	130,564	77,249
Apr	(29)	547,027	18,863	25,037	0 / 8,068,799	0 / 3,376,561	71,669	42,976
Mar	(29)	728,833	25,132	57,112	13,466,149/ 2,556,154	2,956,888/ 1,150,269	3,906,505	2,515,416
Feb	(28)	949,432	109,975	212,970	44,445,017/ 938,997	11,260,480/ 412,856	4,942,481	2,139,205
Jan	(14)	1,238,629	88,474	140,112	20,973,119/ 0	5,054,544/ 0	27,626	16,409
1996								
Dec		0	0	0	0	0	0	0
Nov	(13)	133,606	10,277	18,331	0 / 87,025	0 / 39,286	1,357,381	861,994
Oct	(19)	891,828	33,031	59,840	28,625,818/ 583,919	7,403,396/ 284,709	546,135	311,322
Sep	(27)	1,012,264	34,906	55,565	44,445,017/ 453,373	11,260,480/ 367,032	434,135	263,286
Aug	(14)	105,646	4,402	8,999	0 / 737,588	0 / 504,490	83,866	48,770
July	(21)	48,912	2,717	7,981	0 / 1,187,175	0 / 746,791	292,059	169,848
June	(18)	210,657	9,159	18,508	482,154 / 2,341,555	122,936/ 1,202,315	268,972	156,522
May	(27)	947,468	33,838	77,454	1,236,426 / 3,480,150	426,404/ 1,604,416	402,587	232.383
April	(27)	566,052	20,216	25,020	0 / 7,014,604	0 / 3,225,330	347,967	202,867
March	(30)	3,299,763	109,922	143,615	22,607,215/ 4,817,265	22,607,215/ 2,346,595	1,031,437	647,917
Feb	(29)	1,696,200	58,490	116,360	39,739,299/ 759,850	10,035,344/ 247,038	2,562,220	1,614,536
Jan	(8)	335,093	41,887	121,897	13,052,686/ 224,091	3,186,920/ 152,546	69,979	41,116

Table 6.5

Trident Akutan

BOD lbs discharged Limit: May-Oct (eff. May)	(Days)	Total lbs	129,000 lbs monthly avr.	206,000 lbs daily max.	Production finfish raw pollock/bottomfish	finfish finished pollock/bottomfish	crab raw	crab finished
1997								
Dec		36**						
Nov		35**						
Oct	(18)	1,095,383	60,582	202,091	45,697,827/ 315,093	16,999,642/ 118,790	0	0
Sept	(28)	2,029,732	72,072	192,854	66,380,081/ 225,548	24,134,819/ 149,366	116,519	75,488
Aug	(9)	453,641	50,306	106,665	7,486,070/ 186,684	2,549,209/ 59,583	0	0
July	(8)	54**			0 0	0 0	0	
June	(17)	45**			0 / 954,095	0 / 318,986	0	0
May	(23)	103**			0 / 3,662,464	0 / 1,414,154	0	0
Apr	(30)	360**			0 / 19,975,174	0 / 6,796,734	0	0
Mar	(30)	5,817,397	191,383	375,133	1,907,535/ 13,959,515	724,021/ 5,266,352	1,814,353	1,198,229
Feb	(27)	4,372,043	161,422	224,729	53,232,514/ 13,267,701	18,921,874/ 5,001,923	430,603	281,619
Jan	(11)	2,299,837	208,667	211,169	24,659,106/ 2,323,783	8,525,886/ 867,066	0	0
1996								
Dec		14**						
Nov		62**						
Oct	(23)	1,280,081	104,345	267,519*	47,829,956 / 759,563	13,021,666/ 318,083	75,352	42,633
Sep	(29)	1,754,056	188,029*	243,608*	72,531,667/ 460,549	17,129,531/ 242,089	107,168	67,595
Aug	(6)	179,017	10,807	82,124	6,814,238/ 17,194	1,522,735/ 17,171	0	0
July		83**			0	0	0	0
June		166**			0	0	0	0
May	(10)	3,099	1,963	2,734	0 / 1,616,176	0 / 322,913	30,234	16,259
Apr	(28)	20,974	5,220	9,241	0 / 11,543,062	0 / 2,308,420	32,406	17,095
Mar	(31)	1,722,028	128,327	275,495	17,202,026 /11,227,986	3,048,382/ 3,583,999	19,557	11,698
Feb	(29)	2,891,576	173,674	304,018	55,891,631 / 6,325,790	13,724,010/ 2,238,638	893,305	509,274
Jan	(11)	462,336	151,974	210,602	21,083,093/ 2,558,826	4,960,851/ 740,044	0	0

* permit limits challenged

**sanitary only

Table 6.6

UniSea

BOD lbs discharged Limit: July-Oct	(Days)	Total lbs	185,000 lbs monthly aver	297,000lbs daily max	Production finfish raw surimi/bottomfish	finfish finished surimi/bottomfish	crab raw	crab finished
1997								
Dec	(4)	Report not required						
Nov	(19)	Report not required						
Oct	(19)	n/a	120,826	194,240				
Sep	(29)	n/a	125,762	187,103				
Aug	(28)	n/a	8,498	11,198				
July	(21)	Report not required						
June	(21)	Report not required						
May		Report not required						
Ap		Report not required						
Mar	(27)	n/a	16,887	28,182				
Feb	(28)	n/a	166,095	296,170				
Jan	(28)	n/a	100,163	292,359				
1996								
Dec	(4)	Report not required						
Nov	(19)	Report not required						
Oct	(26)	2,607,809	120,826	194,240	42,647,451/ 1,021,850	9,751,392/ 492,752	1,335,168	807,408
Sept	(30)	2,996,694	125,886	187,224	71,573,953/ 389,798	16,249,527/ 305,645	139,615	81,540
Aug	(22)	39,366	7,506	11,233	0 / 1,078,562	0 / 582,297	54,915	32,250
July	(21)	Report not required						
June	(21)	Report not required						
May		Report not required						
Apr	(28)	5,003	n/a	n/a	50,473 / n/a	2,049/ n/a	12,850	7,967
Mar	(31)	40,325	n/a	n/a	19,676,404/ 8,718,691	4,288,182/ 5,895,750	533,953	402,740
Feb	(29)	88,728	n/a	n/a	70,020,968/ 1,327,353	16,793,571/ n/a	568,204	313,620
Jan	(9)	81,742	n/a	n/a	21,313,715/ 489,110	4,705,870/ n/a		

Table 6.7

Alyeska Seafoods

BOD lbs discharged Limit: July-Oct	(Days)	Total lbs	90,000 lbs monthly aver	144,000 lbs daily max	Production finfish raw pollock/bottomfish	finfish finished pollock/bottomfish	crab raw	crab finished
1997								
Dec	Report not required							
Nov	Report not required							
Oct	(23)	634,523	20,468	99,687	18,098,548/ 1,268,802	n/a	n/a	n/a
Sep	(25)	547,180	29,747	63,132	30,142,875/22,670,046	n/a	n/a	n/a
Aug	no production							
July	Report not required							
June	Report not required							
May	Report not required							
Apr	Report not required							
Mar	(24)	483,250	15,600	70,600	3,796,870/ 527,499 [3,055,263 yellowfin]	n/a	1,307.374	n/a
Feb	(27)	1,401,391	50,050	84,957	34,650,783/ 204,376	n/a	2,267,834	n/a
Jan	(11)	429,916	14,331	54,480	15,770,682/ 228,523	n/a	n/a	n/a
1996								
Dec	(6)	Report not required						
Nov	(21)	Report not required						
Oct	(27)	718,484	23,953	73,658	14,357,662/ 1,915,257	11,538,364/ 1,037,453	330,146	205,667
Sept	(24)	722,451			22,786,378/ 189,408		395,699	130,103
Aug	(15)	3,851			0 / 612,817	0 /	148,766	
July	(15)	Report not required						
June	(23)	Report not required						
May	(31)	675,681	21,796	44,452	0 / 3,459,457	0 / 1,812,682	162,768	96,560
Apr	(26)	608,812	20,291	38,604	0 / 8,257,042	0 / 3,104,571	91,810	54,400
Mar	(29)	714,014	41,311	44,357	9,380,833/ 4,553,673	2,121,944 / 2,490.406	925,832	605,089
Feb	(25)	2,064,584	67,530	72,291	26,553,622/ 914,398	6,479,084/ 469,949	1,435,189	951,674
Jan	(15)	896,761	n/a	n/a	9,111,061/ 448,946	2,289,610/ 229,859	72,446	43,208

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7.0 REGULATORY IMPACT REVIEW SUMMARY (E.O. 12866 considerations)

7.1 Regulatory Impact Review

Executive Order 12866, "Regulatory Planning and Review," was signed on September 30, 1993, and established guidelines for promulgating and reviewing regulations. While the executive order covers a wide variety of regulatory policy considerations, the benefits and costs of regulatory actions are a prominent concern. Section 1 of the order deals with the regulatory philosophy and principles that are to guide agency development of regulations. The regulatory philosophy stresses that, in deciding whether and how to regulate, agencies should assess all costs and benefits of all regulatory alternatives. In choosing among regulatory approaches, the philosophy is to choose those approaches that maximize net benefits to society.

The regulatory principles in E.O. 12866 emphasize careful identification of the problem to be addressed. The agency is to identify and assess alternatives to direct regulation, including economic incentives, such as user fees or marketable permits, to encourage the desired behavior. When an agency determines that a regulation is the best available method of achieving the regulatory objective, it shall design its regulations in the most cost-effective manner to achieve the regulatory objective. Each agency shall assess both the costs and benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Each agency shall base its decisions on the best reasonably obtainable scientific, technical, economic, and other information concerning the need for, and consequences of, the intended regulation.

The National Marine Fisheries Service (NMFS) requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions that either implement a new Fishery Management Plan (FMP) or significantly amend an existing plan or regulations. The RIR is part of the process of preparing and reviewing FMPs and provides a comprehensive review of the changes in net economic benefits to society associated with proposed regulatory actions. The analysis also provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems. The purpose of the analysis is to ensure that the regulatory agency systematically and comprehensively considers all available alternatives so that public welfare can be enhanced in the most efficient and cost-effective way. The RIR addresses many of the items in the regulatory philosophy and principle of E.O. 12866.

E.O. 12866 requires that the Office of Management and Budget (OMB) review proposed regulatory programs that are considered to be significant. A "significant" regulatory action is one that is likely to:

1. Have an annual effect on the economy of $100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities.

2. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency.

3. Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof, or

4. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

A regulatory program is "economically significant" if it is likely to result in the effects described in item (1) above. The RIR is designed to provide information to determine whether the proposed regulation is likely to be "economically significant."

7.2 Summary of Impacts

Several alternatives which reallocate pollock between industry sectors are considered in this analysis. Overall, there are relatively small differences in total gross revenues when comparing the alternatives against the status quo allocation. Changes in gross revenue, at the first wholesale level, are listed for each major industry sector and alternative in Table 7.1. Additional information, at the sub-sector level is provided in Chapters 3 and 4.

Table 7.1 First Wholesale Gross Revenue ($ millions) Changes Compared to the Status Quo (Alternative 2).

Alternatives	Inshore	True MS	C/Ps	Total
2: 35% Inshore, 10% True MS, 55% C/Ps	0.0	0.0	0.0	0.0
3(A): 25% Inshore, 5% True MS, 70% C/Ps	-60.3	-26.8	81.3	-5.8
3(B): 30% Inshore, 10% True MS, 60% C/Ps	-30.1	0.0	27.1	-3.0
3(C): 40% Inshore, 10% True MS, 50% C/Ps	30.1	0.0	-27.1	3.0
3(D): 45% Inshore, 15% True MS, 40% C/Ps	60.3	26.8	-81.3	5.8

Table 7.1 shows that under the most extreme allocation changes the Inshore sector could loose (or gain) $60.3 million, "true" motherships $26.8 million, and catcher processors $81.3 million. However, in total the gross revenue changes are much smaller. The industry as a whole is projected to gain $5.8 million under alternative 3(D) and loose $5.8 million under 3(A). These two alternatives represented the largest shifts in TAC as well as gross revenue.

Table 7.1 also shows that our method of estimating changes are linear. For example, increasing the Inshore sector's allocation by 5% of the BS/AI TAC (after deducting the 7.5% CDQ setaside) results in a $30.1 million increase in gross revenues. Increasing their allocation by 10% doubles their change in gross revenue to $60.3 million. These linear changes also occur in the product mix and exvessel gross revenue calculations. To show these changes Table 7.2 was developed. It reports the changes in exvessel gross revenue, first wholesale gross revenue, and the products produced if a sector was allocated 5% more of the BS/AI pollock TAC (again, as adjusted for CDQs). If they were allocated 5% less, then the numbers presented in Table 7.2 would be negative. If the allocation change was a 10% increase the numbers in Table 7.2 would be multiplied by two, and so on.

Using Table 7.2 the reader could calculate the gross revenue and product changes from the status quo for any alternative. For example, if one wanted to estimate the change in total surimi production under alternative 3(B), one would know that 5% less fish go to the Inshore sector and 5% more pollock go to the catcher processors. So, 9,179 mt less surimi would be produced inshore, "true" mothership suirimi production would not change, and 5,149 mt more would be produced by catcher processors. Therefore, Alternative 3(B) results in 4,030 mt less surimi production overall.

Table 7.2 Changes resulting from a 5% BS/AI Pollock TAC Increase on each industry sector

	Inshore	"True" Mothership	Catcher Processor
Raw Fish (mt)	50,875	50,875	50,875
Catcher Vessel Gr. Rev. (exvessel, $ millions)[1]	9.5	8.3	0.8
Gross Revenue (1st Wholesale, $ millions)	30.1	26.8	27.1
Surimi (mt)	9,179	9,910	5,149
Minced (mt)	338	-	698
Fillet/Block and IQF (mt)	1,187	-	536
Deep Skin Fillet (mt)	957	-	2,241
Meal (mt)	3,585	2,260	1,094
Oil (mt)	1,095	159	31
Roe (mt)	568	484	653

[1]Only the catch delivered by catcher vessels is included for catcher processors

Note: A 5% TAC decrease will result in numbers of equal magnitude but with a negative sign

The differences in total gross revenue between alternatives indicate that the industry sectors do not receive the same value from each ton of raw pollock. However, because the differences in total gross revenue are relatively small, the revenues generated per ton of raw pollock between sectors are fairly close. Our findings indicate that the Inshore sector generated $592/mt, "true" motherships $526/mt, and catcher processors $532/mt during the 1996 fishery. These gross revenue estimates may not be directly comparable, since NMFS estimates total catch differently for shoreplants and at-sea processors. Shorebased plants weigh their fish on scales and report that weight to NMFS. NMFS currently uses volumetric measures and density factors or PRRs and product weights to back-calculate round weight on most at-sea processors. The difference between the actual weight and the estimated weight using these methods is not known. Since these round weight estimates were used to calculate utilization rates, which feed into the gross revenue calculations, any errors in the total weight estimates are carried through to the gross revenue estimates.

7.3 Net Benefit Considerations

Throughout the recent discussions regarding the I/O3 issue, we have stressed our inability to conduct a quantitative cost/benefit analysis. Cost information, including fixed and variable operating cost statistics, is a crucial element of an effective net benefit analysis. Cost data for the BS/AI and GOA groundfish harvesting and processing sectors are not currently available to the analysts. Therefore, it will not be possible to complete a quantitative cost/benefit examination of the I/O3 proposal, nor to derive comparative net benefit conclusions about the several competing alternatives and sub-options. This fact has been recognized, and reinforced, by the Council's Scientific and Statistical Committee.

Changes in net benefits to the nation cannot be determined with a gross revenue analysis or by comparing utilization rates between industry sectors. Therefore, we are unable to ascertain if overall changes in net national benefits are positive or negative. Given the small changes in gross revenues associated with the alternatives, it is not likely that overall net benefits to the Nation would change significantly, particularly if costs of production are assumed to be similar across sectors. However, without cost information for each sector, the magnitude and direction of change cannot be determined with certainty. What we are able to say is that some product forms are more likely to stay in the U.S. economy after the first wholesale than other product, and would continue to add to the net national benefit calculation. For example, all or most all of the domestic deep-skin fillet production is sold to the US market, and offshore catcher processors produced about 77% of the pollock deep-skin fillets in 1996. Two major buyers purchased most of this product, and in most cases it was ultimately consumed within the US. Because this product form tends to stay in the US economy longer, surpluses would be added to the net benefit calculation all the way through to the final consumer. Products such as surimi and roe generally leave the US economy after the first wholesale level. These products are produced by all industry sectors, but "true" motherships and inshore processors have traditionally relied more heavily on surimi than catcher processors. Once a product, like surimi or roe, leaves the US economy, consumer and producer surpluses are no longer counted[18] in a formal net benefit analysis. Therefore, if deep-skin fillets and surimi generated equal surpluses at the first wholesale level, it is likely that deep-skin fillets would result in greater net benefits when estimated through the economy to the final consumer level.

This analysis assumed that product prices and the mix of products will be constant within industry sectors and independent of any allocation alternative. Assuming away any relationship between the quantity of a product produced and the prices buyers of that product are willing to pay, allowed the analysts to make the gross revenue estimates in this analysis. However, the elasticity of demand is a critical determinate in the estimation of consumer and producer surplus. Before reliable net benefit analyses can be conducted for the pollock fishery, additional work needs to be undertaken at the most basic levels. Collecting the data necessary to estimate demand curves for the pollock markets, is the first step. Then models could be developed to rigorously study net benefits to the nation from various segments of industry.

As was stated earlier, the total change in gross revenue at the first wholesale level is projected to be $2.4 million annually, when the Council's preferred alternative is compared to the status quo. Given this relatively small overall change in first wholesale revenue, it is unlikely that the net benefits to the US economy would decrease by $100 million annually once costs were included in the calculation. Therefore, the Council's preferred alternative would not be expected to constitute a 'significant' action under E.O. 12866, recognizing that there are distributional economic impacts among the competing sectors within the pollock industry.

7.4 Consistency with the Problem Statement and other Issues Raised

The Council's Problem Statement references several issues which are critical to the context of the current decision on the inshore/offshore allocations. Other issues have been raised during Council discussions. To the extent possible, these issues are addressed in the following discussion.

7.4.1 Utilization Rates

Chapter 3.5 provided a discussion of Product Recovery Rates (PRRs), which are the assumed recovery rates used by NMFS (in addition to other information), to back calculate total catch. That Chapter also discussed overall utilization rates (the ratio of total product produced to raw fish input), and compared the progress in utilization rates by the different processing sectors over time. That information clearly illustrates a significantly higher utilization rate by the inshore sector, when compared to the offshore sector, and significant improvement in those rates between 1991 and 1996. The offshore sector has increased from around 17% overall in 1991 to around 20% overall in 1996, while the "true" mothership sector increased from about 19% in 1991 to 25% in 1996. The inshore sector has steadily increased over time from around 23% in 1991 to 30% in 1994, and up to about 34% in 1996 (aggregate rate across surimi and non-surimi operations).

Previous discussions of utilization rates have raised the issue of 'comparability' of rates across the different sectors, primarily due to differences in how the underlying catch is estimated for each sector. For example,

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[18] Personal communication with Dan Cohen, Mark Millikin, and Richard Raulerson 10/30/97.

because 'total catch' estimates are derived differently for the respective sectors (e.g., 'blend' estimates vs. weighed catch reported on fish tickets), differences in apparent utilization rates could be attributable to differences in data sources, as opposed to actual performance. Nevertheless, this is the best information available to the analysts and it is the same information upon which we base in-season management of the fisheries, including overall TAC attainment. Because the Council has highlighted this as an important consideration in the management of the pollock fisheries, additional information is provided on the use of utilization rates in previous analyses/decisions and the current iteration. Lastly, a discussion of utilization rates as they relate to economic benefits is provided.

7.4.1.1 Utilization Rates (PRRs) in I/O 1

When the inshore/offshore allocations were first analyzed in 1991 and 1992, assumed PRRs were an important variable in the analyses. At that time PRRs were the primary basis for catch estimation for both sectors; as such, these assumed PRRs were critical in estimating both the existing catch shares of each sector and the total product (and therefore revenues) associated with alternative allocation percentages. Surimi PRRs were particularly at issue with that being the major primary product for both sectors. A range of PRRs was considered in the analyses, using both NMFS assumed (published) rates and rates compiled from the OMB survey conducted at that time. The Monte Carlo simulation model used in the final analysis (NMFS and Council staff) allowed consideration of a variety of assumed PRRs (as well as prices and other variables) to arrive at model conclusions regarding net profits (benefits) from the fishery under various allocation alternatives. This allowed the analysts to test the sensitivity of the results to marginal changes in assumed PRRs. Ultimately the assumed PRRs for primary products ended up being very similar for both sectors, with a slightly higher rate assumed for the inshore sector (18% vs 20% for surimi, for example).

As would be expected, changes in the PRRs relative to baseline assumptions resulted in changes in the projected net benefits from the fishery - to the extent higher recovery rates were assumed for the inshore sector, the projected overall net losses of the proposed allocation would be reduced. To the extent higher prices were assumed for the offshore sector, net losses from the proposed allocation would be greater, all else equal, and so forth. In the context of that analysis, the issue of utilization rate was considered jointly with a variety of other factors, including prices and costs of production. To quote from the analysis, "The net economic losses associated with diverting offshore pollock production to shorebased operations stem from the capability, at least now, of the offshore sector to convert the resource into higher valued product at lower relative costs. This advantage in efficiency is adequate to more than compensate for the fact that offshore production has a somewhat lower resource utilization rate (i.e., higher discards and lower recovery rates) than production by inshore plants..."

With respect to the review process by the Secretary of Commerce, the Council's original allocation alternative was partially rejected by the SOC based on overall net benefit (loss) considerations, with a resubmitted amendment being subsequently approved (at the 65/35 allocation). In the letters to the Council Dr. Knauss noted that PRRs were a subject of debate and that industry comments showed disagreement with the assumptions in the analyses. The letters also noted the importance of utilization rates in the decision process, saying that, "preventing preemption by one fleet over another, safeguarding capital investments, protecting coastal communities that are dependent on a local fleet, and encouraging fuller utilization of harvested fish are desirable objectives that are provided for under the Magnuson Act". A number of comments received from the public and the industry during the Secretarial review period focused on the issue of overall utilization and discards. It is fair to say that utilization rates were a critical consideration in the original inshore/offshore allocations, and were taken into account in the analyses.

7.4.1.2 Utilization Rates in I/O 2

In 1995 an analysis was prepared to extend the provisions of the original allocations, for both the GOA and the BS/AI, for an additional three years. (see general summary in Chapter 1). Amendments 38/40 also extended the BS/AI pollock CDQ program for an additional three years. At that time the Council considered only two alternatives - allow the allocations to expire or continue them at the current percentages of 65% offshore and 35% inshore. During the second iteration the context of the inshore/offshore issue was very different from the original iteration, and very different from the current iteration. In 1995 the Council was deeply involved in the Comprehensive Rationalization Program planning and development, including a license limitation program for the groundfish and crab fisheries, and initial development of an IFQ program for the BS/AI pollock fisheries. Stability within and across industry sectors was of primary importance at that time and was reflected in the Council's Problem Statement for I/O 2. Ultimately the Council voted unanimously (one abstention) to extend the allocations for three years, and there was little disagreement or contention within the industry.

The ease with which the Council made this decision was based, in part, on the analysis for I/O 2 which not only supported the decision based on stability considerations, but illustrated that net losses to the Nation from the allocations were likely overstated in the original analysis. While that analysis did not contain any formal assessments of net benefits per se, it did re-examine several of the primary parameters and assumptions that went into the original analyses, and projected gross revenues from the fishery for the two alternatives under consideration (including the existing 65/35 split).

Fundamental to the findings of the I/O 2 analysis were the relative changes in utilization rates experienced by the two sectors. For example, 1994 prices for fish products were lower for both sectors in the I/O 2 analysis when compared to 1992 prices, and therefore gross revenues per mt of product, and gross revenues per mt of raw fish, were lower for both sectors; however, while gross revenues per mt of product overall were 32.6% lower for the offshore sector, they were only 11.3% lower for the inshore sector ($384.85 per mt of catch for the offshore sector vs $433.36 per mt of catch for the inshore sector in 1994). The primary reason for the difference lies in the differential utilization rates of raw fish for each sector - 18.11% overall for the offshore sector in 1994 compared to 30.36% overall for the inshore sector.

In summary, the higher product yield from each fish processed allowed the inshore sector to realize more revenues from each fish processed. While these findings did not take cost of operations into account (and therefore cannot be viewed as indicative of 'net' revenue impacts in an absolute sense), they do illustrate that economic losses originally projected in I/O 1 were likely overstated.

7.4.1.3 Utilization Rates in I/O 3

In the current analysis we have not attempted to reassess net benefits from the alternatives, primarily due to the lack of current cost data necessary to conduct such an assessment. Gross revenue implications are assessed, and these are based on a combination of factors including fish prices for product forms, by sector, and overall utilization rates of raw fish to product. The utilization rates realized by each sector in 1996 are intrinsic within these gross revenue calculations. Sectoral differences in gross revenue per mt of fish depends partly on differential fish prices, but primarily upon differential utilization rates.

7.4.1.4 Implications and Caveats Regarding Economic Benefits

Relative utilization rates by sector are undoubtedly an important consideration for the Council, the public, and the Secretary in arriving at a decision on the inshore/offshore alternatives. This may be due to general policy preference, recognizing the recent nation-wide emphasis on waste reduction both at a public level and generally contained in the provisions of the Magnuson-Stevens Act. As noted previously, care should be exercised however not to equate higher utilization rates with higher economic benefits from the fisheries. Higher utilization rates, in and of themselves, do not necessarily imply that higher economic benefits are being derived from the fishery. It is not true that more total output - at any price - is necessarily better than less total output. If it costs $1.00 to produce $0.10 worth of additional output, society has wasted $0.90 in the process.

The utilization debate could lead to the erroneous conclusion that the highest utilization rate produces the highest value (in a highest and best use sense). If this were true, then all fish should be marketed in-the-round (i.e., 100% utilization, with no 'waste' ... but also no value-added processing applied). Or, as expressed in the original (I/O 1) analysis, it would be preferable to process all cattle into ground beef, as opposed to production of trimmed steaks and other cuts which may be of significantly higher value, but lower yield. This, of course, is not a rational conclusion from an economic perspective. A strict equating of 'utilization rates' with 'economic efficiency' is, therefore, inappropriate. Consideration of the products produced, and their relative value and market destination, should also be considered. Finally, costs of production are an important, but currently absent, variable in such an assessment.

Regarding the assertion, in public testimony and in Council discussions, that "... inshore operations produce more 'human-grade' food output than do offshore operators, per unit raw pollock input", that is assessed by comparing raw input to food-grade output, by sector and/or sub-sector, from Weekly Production Reports, for pollock target fisheries (as is done in Chapter 4). Attempts to assess the assertion about 'human-grade' product is confounded by the issues raised above regarding PRRs, their 'appropriate' use, their variability over time and between operations, etc. There still do not exist high quality, reliable data on firm-by-firm PRRs, which would be important in differentiating relative production performance, i.e., "who produced .... more food-grade product per fish?" It would also beg the question, "was that additional production cost effective?" Assessing the proposition that offshore operators produce higher value products is likewise constrained by the absence of comprehensive product 'grade/quality' data and extremely limited associated price information.

Regarding the assertion that the Magnuson-Stevens Act mandates management measures to achieve higher utilization, NOAA General Counsel has provided the following legal opinion (electronic mail correspondence, February 1998):

> "There is no mandate in the Magnuson-Stevens Act to give preference to one sector over another based on a higher utilization rate. The Council must analyze the economic costs of greater utilization. While the Council may choose to allocate a higher percentage of fish to either sector (depending on the record), it cannot justify a higher percentage on the basis that the Magnuson-Stevens Act mandates utilization."

Notwithstanding this advice from NOAA GC, and the preceding cautionary notes regarding economic benefits, the Council was informed that they may consider overall utilization rates as part of their decision criteria. In the preceding analysis (Chapter 4) it is clear that the inshore sector achieves a higher utilization rate and produces more product/fish (food grade included) than the offshore sector. This higher yield from the fishery is also reflected in at least one economic index - the higher gross revenues per mt of raw fish achieved by the inshore sector, noting that costs of production are absent from the analysis.

7.4.2 National Standard 4--Excessive Shares Issue

During previous Council discussions the issue of "excessive shares" has been raised, and reference to shares of pollock harvest and processing is contained in the Council's I/O3 Problem Statement. It has been suggested that the current Magnuson-Stevens Act contains specific guidance relative to this issue. National Standard 4, which has long been in place within the Act, states that:

"Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such an allocation shall be (A) fair and equitable to all such fishermen, (B) reasonably calculated to promote conservation; and, (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges."

7.4.2.1 NMFS National Standard 4 Guidelines

NMFS has established regulatory guidelines for interpreting the National Standards of the Magnuson-Stevens Act. These National Standard Guidelines were recently updated in a final rule published on May 1, 1998 (63 FR 24212). The revised guidelines for National Standard 4 are set out at 50 CFR 600.325 and are repeated below:

§ 600.325 National Standard 4--Allocations.

(a) Standard 4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be:

(1) Fair and equitable to all such fishermen.

(2) Reasonably calculated to promote conservation.

(3) Carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

(b) Discrimination among residents of different states. An FMP may not differentiate among U.S. citizens, nationals, resident aliens, or corporations on the basis of their state of residence. An FMP may not incorporate or rely on a state statute or regulation that discriminates against residents of another state. Conservation and management measures that have different effects on persons in various geographic locations are permissible if they satisfy the other guidelines under Standard 4. Examples of these precepts are:

(1) An FMP that restricted fishing in the EEZ to those holding a permit from state X would violate Standard 4 if state X issued permits only to its own citizens.

(2) An FMP that closed a spawning ground might disadvantage fishermen living in the state closest to it, because they would have to travel farther to an open area, but the closure could be justified under Standard 4 as a conservation measure with no discriminatory intent.

(c) Allocation of fishing privileges. An FMP may contain management measures that allocate fishing privileges if such measures are necessary or helpful in furthering legitimate objectives or in achieving the OY, and if the measures conform with paragraphs (c)(3)(i) through (c)(3)(iii) of this section.

1. Definition. An "allocation" or "assignment" of fishing privileges is a direct and deliberate distribution of the opportunity to participate in a fishery among identifiable, discrete user groups or individuals. Any management measure (or lack of management) has incidental allocative effects, but only those measures that result in direct distributions of fishing privileges will be judged against the allocation requirements of Standard 4. Adoption of an FMP that merely perpetuates existing fishing *practices may result in an allocation, if those practices directly distribute the opportunity to participate in the fishery. Allocations of fishing privileges include, for example, per-vessel catch limits, quotas by vessel class and gear type, different quotas or fishing seasons for recreational and commercial fishermen, assignment of ocean areas to different gear users, and limitation of permits to a certain number of vessels or fishermen.*

2. Analysis of allocations. Each FMP should contain a description and analysis of the allocations existing in the fishery and of those made in the FMP. The effects of eliminating an existing allocation system should be examined. Allocation schemes considered, but rejected by the Council, should be included in the discussion. The analysis should relate the recommended allocations to the FMP's objectives and OY specification, and discuss the factors listed in paragraph (c)(3) of this section.

3. Factors in making allocations. An allocation of fishing privileges must be fair and equitable, must be reasonably calculated to promote conservation, and must avoid excessive shares. These tests are explained in paragraphs (c)(3)(i) through (c)(3)(iii) of this section:

(i) Fairness and equity. (A) An allocation of fishing privileges should be rationally connected to the achievement of OY or with the furtherance of a legitimate FMP objective. Inherent in an allocation is the advantaging of one group to the detriment of another. The motive for making a particular allocation should be justified in terms of the objectives of the FMP; otherwise, the disadvantaged user groups or individuals would suffer without cause. For instance, an FMP objective to preserve the economic status quo cannot be achieved by excluding a group of long-time participants in the fishery. On the other hand, there is a rational connection between an objective of harvesting shrimp at their maximum size and closing a nursery area to trawling.

(B) An allocation of fishing privileges may impose a hardship on one group if it is outweighed by the total benefits received by another group or groups. An allocation need not preserve the status quo in the fishery to qualify as "fair and equitable," if a restructuring of fishing privileges would maximize overall benefits. The Council should make an initial estimate of the relative benefits and hardships imposed by the allocation, and compare its consequences with those of alternative allocation schemes, including the status quo. Where relevant, judicial guidance and government policy concerning the rights of treaty Indians and aboriginal Americans must be considered in determining whether an allocation is fair and equitable.

(ii) Promotion of conservation. Numerous methods of allocating fishing privileges are considered "conservation and management" measures under section 303 of the Magnuson-Stevens Act. An allocation scheme may promote conservation by encouraging a rational, more easily managed use of the resource. Or, it may promote conservation (in the sense of wise use) by optimizing the yield in terms of size, value, market mix, price, or economic or social benefit of the product. To the extent that rebuilding plans or other conservation and management measures that reduce the overall harvest in a fishery are necessary, any harvest restrictions or recovery benefits must be allocated fairly and equitably among the commercial, recreational, and charter fishing sectors of the fishery.

(iii) Avoidance of excessive shares. An allocation scheme must be designed to deter any person or other entity from acquiring an excessive share of fishing privileges, and to avoid creating conditions fostering inordinate control, by buyers or sellers, that would not otherwise exist.

(iv) Other factors. In designing an allocation scheme, a Council should consider other factors relevant to the FMP's objectives. Examples are economic and social consequences of the scheme,

food production, consumer interest, dependence on the fishery by present participants and coastal communities, efficiency of various types of gear used in the fishery, transferability of effort to and impact on other fisheries, opportunity for new participants to enter the fishery, and enhancement of opportunities for recreational fishing.

7.4.2.2 Analysis of National Standard 4 Relative to Inshore/offshore

Any inshore/offshore allocation alternative adopted by the Council must be consistent with all National Standards, including National Standard 4. To determine, however, whether the inshore/offshore alternatives under consideration raise National Standard 4 issues, it is useful to examine each aspect of National Standard 4 individually. Several terms in National Standard 4 must be defined and understood with respect to I/O3 including: "*allocate*," "*assign*,", "*fishing privilege*," and "*excessive share*."

Allocate or assign. As noted in the National Standard 4 guidelines cited above, NMFS has determined that an "allocation" or "assignment" of fishing privileges is a direct and deliberate distribution of the opportunity to participate in a fishery among identifiable, discrete user groups or individuals. Any management measure (or lack of management) has incidental allocative effects, but only those measures that result in direct distributions of fishing privileges will be judged against the allocation requirements of Standard 4. The intent of inshore/offshore is to allocate a certain percentage of the pollock TAC (currently 35% in the BS/AI and 100% in the GOA) to vessels delivering to processors defined as "inshore." The remaining TAC is allocated to vessels delivering to all other processors that do not fit the definition of "inshore." While the intent of inshore/offshore is clearly allocative, it is less clear whether the inshore/offshore allocation results in direct distribution of "fishing privileges."

Fishing privileges. Strictly speaking, only four categories of fishing privileges are distributed or assigned in the groundfish fisheries of the North Pacific: (1) Federal fisheries permits, (2) Federal processor permits, (3) groundfish moratorium permits, and (4) IFQ permits. Any individual may apply for and receive a Federal fisheries permit or Federal processor permit under the current management regime. Federal fisheries permits are required for all vessels over 5 net tons that operate as catcher vessels, catcher processors, "true" motherships, tenders or support vessels in the groundfish fisheries of the EEZ off Alaska, or receive groundfish caught in the EEZ off Alaska. Federal processor permits are required for all shore plants and inshore sector floating processors. Since both Federal fisheries permits and Federal processor permits are free and available to any person who applies for one, an infinite number of Federal fisheries and Federal processor permits are theoretically available, and it is, therefore impossible for any U.S. fisherman to acquire an excessive share of such privileges. Only fishermen who have had their Federal fishing privileges revoked as part of a civil administrative proceeding are denied Federal fisheries or processor permits. Such a distribution of such fishing privileges to anyone who applies can be considered "fair and equitable."

However, while all vessels operating in the groundfish fisheries of the EEZ off Alaska must obtain Federal fisheries permits, owners of vessels over 32 ft LOA in the BS/AI and 26 ft LOA in the GOA wishing to harvest groundfish must also obtain groundfish moratorium permits to harvest non-IFQ species and IFQ permits to harvest halibut and sablefish. Clearly, both moratorium permits and IFQ permits are "fishing privileges" under National Standard 4 and are allocated or assigned to individual U.S. fishermen. Since both types of permits are limited in number and assigned based on past participation in specific fisheries, the distribution of such privileges must be fair and equitable and carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges". With respect to IFQ permits, the Council has dealt with the issue of excessive shares directly, by establishing a system of ownership caps.

With respect to the vessel moratorium program, no limits were placed on the number or type of permits that may be acquired by any particular individual or corporation. However, the moratorium program is temporary and is scheduled to be replaced by LLP. In the design of LLP, the Council did take into account the issue of excessive shares, at least with respect to the future acquisition of shares. Under LLP, there are no limits on the number of licenses that can be assigned to an individual or corporation during the initial distribution of licenses. However, no individual or corporation may subsequently acquire more than 10 groundfish licenses or 5 crab licenses if they were not "grandfathered" into the program based on their initial qualifying.

While Federal fisheries permits, groundfish moratorium permits and IFQ permits clearly constitute "fishing privileges" under National Standard 4, it is less clear whether inshore and offshore TAC allocations also represent "fishing privileges" under National Standard 4. The I/O3 analysis has demonstrated that a great deal of fluidity exists between fishermen and vessels participating in the inshore and offshore components of the industry. Under the current inshore/offshore allocation, individual catcher vessels are free to deliver to either sector or both sectors during any fishing year. Indeed, the Council's alternative of a set-aside for catcher vessels under 125 underscores the potential mobility of the catcher vessel fleet. Furthermore, offshore catcher processors and "true" motherships are free to operate as inshore processors if they choose to process groundfish in a fixed geographic location during the fishing year. They may also choose to catch and deliver fish to the inshore sector as demonstrated by the example of one offshore factory trawler that has recently converted to an inshore catcher vessel. Since fishermen are free to move between sectors, inshore/offshore does not assign "fishing privileges" to various U.S. fishermen, but rather, simply determines the percentage of the TAC that may caught for delivery to different processing sectors. Once a particular inshore or offshore TAC is reached, fishermen need not stop fishing, they simply need to shift their delivery destination to the processing sector that remains open.

Excessive shares. National Standard 4 requires that allocations or assignments of "fishing privileges" be carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges. NMFS has interpreted this aspect of National Standard 4 as applying primarily to limited access programs. In other words, those programs that actually restrict fishing privileges and assign them to individual fishermen. I/O3 would not allocate fishing privileges to particular individuals, corporations, or other entities, and does not create actual fishing privileges that can be acquired by any entity. Competition for the pollock resource under inshore/offshore is no different from the competition for any other groundfish species in the North Pacific for which an inshore/offshore allocation split does not exist. During the development of I/O3 alternatives, substantial discussion has centered on the percentage of the pollock TAC that particular entities have been able to harvest in a given year. However, as is pointed out above, the relevant fishing privileges in the BS/AI and GOA pollock fishery are groundfish moratorium permits and not the TAC itself. If the Council is concerned with the dominance of particular entities in the pollock fishery of the BS/AI it may be more appropriate to examine the programs that directly allocate and assign fishing privileges in the North Pacific, the groundfish moratorium and LLP, rather than inshore/offshore TAC allocations which, at best, have an indirect relationship to the harvest percentages taken by such entities.

The NMFS National Standard guidelines state that "an allocation scheme must be designed to deter any person or other entity from acquiring an excessive share of fishing privileges, and to avoid creating conditions fostering inordinate control, by buyers or sellers, that would not otherwise exist." In other words, the fact that a particular entity may harvest a significant portion of a particular TAC does not necessarily mean that the allocation scheme that governs the fishery is inconsistent with National Standard 4. To be inconsistent with National Standard 4, the allocation scheme itself must either (1) allocate or allow direct control of an excessive share of fishing privileges (e.g. permits, licenses, IFQ) by a particular entity; or, (2) create conditions that foster inordinate control of the market that would not otherwise exist in the absence of the allocation scheme. For an I/O3 alternative to fall under the National Standard 4 prohibition on excessive shares of fishing privileges, the alternative would have to allocate fishing privileges directly to individual entities, or create conditions that foster inordinate market control that would not otherwise exist in the absence of the allocation. Of the alternatives under consideration, only the alternatives establishing a "true" mothership allocation to vessels that have processed pollock but have never caught pollock in the U.S. EEZ would create the conditions under which a particular entity could acquire an excessive share of fishing privileges. Under this "true" mothership alternative only a limited number of vessels would qualify to process pollock under this allocation and one entity could acquire all "true" motherships, effectively controlling 100% of the "true" mothership allocation.

The fact that one particular entity may have inordinate market control under an I/O3 alternative does not mean that alternative is inconsistent with National Standard 4 unless that market control is created by I/O3 and would not otherwise exist in the absence of I/O3. Market control in a particular fishery does not in and of itself mean that the fishery is in violation of National Standard 4. If this were the case, the Council would have to examine all of the fisheries in its jurisdiction and take steps to limit the acquisition of market control in every fishery. In other words, for a particular I/O3 alternative to be found in violation of the National Standard 4 guidelines on "excessive shares" the alternative would have to foster excessive market control by a particular entity that would not otherwise exist in the absence of an inshore/offshore allocation.

To underscore these points, NOAA General Counsel has offered the following advice relative to this issue (electronic mail correspondence, February 1998):

> "National Standard 4 applies to the inshore/offshore allocation. The Council is allocating fishing privileges among U.S. fishermen (it allocates TAC among vessels delivering to the inshore and offshore sectors of the industry) and so the allocation must be fair and equitable and reasonably calculated to promote conservation. However, it is not an allocation of fishing privileges to specific fishermen or entities and does not limit anyone's participation in the fishery; it only further limits the overall amount of fish that can be harvested by each sector. Since it does not allocate or assign fishing privileges to any particular individual or entity, no individual or entity can acquire and 'excessive share' of such privileges. If the Council wants to monitor the amount of an individual fisherman's or entity's actual harvest, they can do so under an IFQ or other similar program."

Relative share may nevertheless be an issue of concern to the Council even if a particular I/O3 alternative is found to be consistent with National Standard 4. Confidentiality requirements at section 402(b) of the Magnuson-Stevens Act prohibit the release of catch information that illustrates the relative shares of harvest and processing of BS/AI pollock on a company-specific level. Nevertheless, certain information of this type has been provided to the Council previously in public testimony (September 1997 meeting), or is generally known through industry publications or other sources.

7.4.3 Concentration/Outmigration of Capital, Transfer Pricing, and Market Control

The issue of capital concentration/outmigration is specifically raised in the Council's Problem Statement and is at least related to the issue above, in the sense that relative share of the fishery might correspond to capital concentration. This is further related to the overall issue of industrial organization, which in turn is associated with a variety of other issues raised in public testimony and/or Council discussions (printed document submitted by Council member Pereyra). These include: market opportunity; market control; vertical integration, transfer pricing; foreign ownership of harvest and processing capacity; and, the general economic health of each sector as a whole since the original allocations were made in 1992.

While much of the information compiled in this document relates to these issues, there is no focused analysis which specifically addresses each of these issues, or which attempts to relate these issues specifically to the alternatives under consideration. For example, we do not have specific information on the current capital structure, the evolution of capital structure over the past several years, or the potential future capital structure of the pollock industry or of specific companies. Such information is either unavailable or would require an inordinate amount of available staff time to research. At the April 1998 meeting, the Council heard public testimony which again raised the issue of vertical integration, as it relates to transfer pricing and overall, global market control. At that time the Council requested that additional information on these issues be provided in the document, recognizing the limitations on the analysts' ability to quantify such information. A qualitative discussion is provided below.

Transfer Pricing

Transfer pricing is a business management strategy, undertaken by a vertically integrated firm which operates in multiple political jurisdictions (e.g., countries). Simply stated, through wholly internal mechanisms, operating 'revenues' and 'costs' are shifted among the firm's operations to strategically manipulate the apparent 'profitability' of a given plant, so as to avoid tax obligations. That is, a company, say, owned and headquartered in Japan, with production operations in the U.S., Japan, and Korea, for example, could employ internal management and bookkeeping strategies which made the operating costs of its facility(ies) in a relatively high-tax location appear greater than revenues (i.e., they show an operating loss and thus incur no income tax obligation). At the same time, this vertically integrated firm could reflect operating profits [including any generated by the plant(s) located in high-tax locations] in its plant(s) located in relatively lower-tax jurisdictions. In this way, the parent firm avoids some or all of its tax obligations for earnings attributable to its operation(s) in higher-taxed locations, while simultaneously increasing the aggregate profits of the vertically integrated parent firm.

This practice is illegal under U.S. law. There is no evidence available to the analysts that indicates any firm participating in the BS/AI groundfish fisheries has employed transfer pricing practices. If such evidence did exist, the U.S. Internal Revenue Service or the U.S. Department of Justice would, presumably, take appropriate action against such a firm.

Market Control

Economic theory confirms that, all else equal, the competitive marketplace works to bring willing buyers and willing suppliers together and, through this process, establishes a 'fair' market clearing price for the exchange. Competition depends, among other things, upon the presence of sufficient numbers of participants on both sides of the market to assure all exchanges are, indeed, made by 'willing' demanders or suppliers. That is, neither side is able to induce the other to enter into an exchange that is not seen to be in each trader's best interest. As fewer and fewer participants (either buyers or sellers) are present in a market, the potential for market control, distortion, and/or failure increases. Such market failures diminish the aggregate 'benefit' deriving from the trade.

As the number of independent operators in any sector of the BS/AI groundfish fishery (e.g., catcher vessels, "true" motherships, C/Ps, plants) declines, the benefits of the competitive market are reduced. Ownership consolidation and/or operational control within sectors, as well as management actions which narrow or dictate operator's market options in the fishery, increase the probability that market distorting pricing practices will emerge. For example, if the number of, say, pollock processors is very small, and/or the ability of independent catcher boats to deliver their catch to whomever they choose is restricted, processors may be in a position to exercise some degree of market control (i.e., capture some of the 'rents' that would have otherwise gone to the catcher boat, by reducing the price paid for raw catch). Further, if one or more of those processors is vertically integrated (e.g., controlling capacity to harvest, process, re-process, and/or market) and represents a significant share of the effective capacity within these sectors, such firms may exercise a degree of market control which could be 'price distorting'. That is, such a firm could be a 'price setter', essentially establishing the effective price for the rest of the market (perhaps at several different stages of the market, e.g., exvessel, wholesale, retail).

All others wishing to sell into that market would be 'price takers', accepting the established price or exiting the market.

The above examples demonstrate a form of 'market failure'. To the extent that they are present in the BS/AI groundfish fisheries (particularly those which target pollock), they reduce the overall benefit to the Nation which could otherwise have been realized from the harvesting, processing, and marketing of this important U.S. fishery resource. Actions proposed under I/O3 could result in further consolidation of capacity and control within the subsectors identified in the analysis. This would be expected to further reduce the degree of competition in this fishery and increase the likelihood of distorting market failures. Quantification of these impacts, however, cannot be provided, given the available data.

7.4.4 Relationship to overall CRP

In September the Council requested that this issue be discussed in the analysis. The first inshore/offshore decision process in 1992 was the impetus for the Council to embark on a Comprehensive Rationalization Planning process, labeled CRP, which included examination of a variety of traditional and limited entry management tools. This process began in 1993 and eventually led the Council to focus on an IFQ program for the groundfish and crab fisheries, with some effort directed at a more simple license limitation program. In 1994 the focus was shifted to license limitation and resulted in the June 1995 Council decision for the LLP for groundfish and crab fisheries. This coincided with approval of Amendments 38/40 which extended the inshore/offshore allocations through 1998.

At that same meeting, the Council also initiated the next major step in the CRP process - development of an IFQ program for the BS/AI pollock fisheries. After initial analyses for that program in late 1995 and early 1996, the project was put on hold due primarily to the Congressional moratorium on IFQ program approval and implementation through October 2001. Refinements to the LLP are currently being considered by the Council as further steps in the CRP process.

The place of I/O3 in the overall CRP process depends somewhat on the ultimate direction of the CRP process. A continuation of some allocation, whether it be the existing allocation or some variation, appears critical to the CRP process regardless of its ultimate direction. This is particularly true for the GOA, where existing programs, including inshore/offshore allocation and the LLP, may be the final steps in the CRP process. If an IFQ program is envisioned as the ultimate CRP goal, then it is likely that the current decision on these allocations will set the stage for eventual allocations, at least in terms of the percentages by major industry sector for the BS/AI. Processor allocations (the two-pie system discussed in previous IFQ development), in addition to harvest vessel allocations, will also be a consideration in any future IFQ program and could be affected by resolution of the inshore/offshore percentages in the I/O3 decision process.

The actual percentages allocated to each sector, whether that be the existing 65/35 or some other percentages, would not appear to directly affect any eventual IFQ program development, though it would obviously have significant implications relative to distribution of those IFQs across harvesting and processing operations. Basic program design, implementation issues, and monitoring issues would be similar regardless of the inshore/offshore sector allocations. If CRP does not include an IFQ program, then the resolution of I/O3 has equally significant implications, perhaps more so, because the allocations themselves, coupled with other management programs like LLP, would be a fundamental part of defining the playing field for future prosecution of the fisheries. With any IFQ program at least 4-5 years away, due to the Congressional moratorium, continuation of some type of inshore/offshore allocation would appear to be a necessary step in the overall CRP process.

7.4.5 American Fisheries Act

The American Fisheries Act has been proposed in Congress by Senator Ted Stevens which would, among other things, require a 75% U.S. ownership for fishing vessels to remain active in the EEZ. Other provisions would phase out large vessels regardless of ownership. While a specific analysis of this proposed legislation is beyond the scope of this project, there are implications to the I/O3 consideration. If approved, this bill could result in a significant capacity reduction (by the disqualification of several vessels involved in the pollock fisheries), or at least the re-structuring of the ownership of those vessels. It is still unclear when this issue will be resolved. However, the Council was aware of the issue and its potential impact on the inshore and offshore sectors prior to the selecting their preferred alternative.

Initial examination of Coast Guard records shows that 15 vessels, which currently target pollock off Alaska, do not fit the 75% ownership requirement proposed by the bill. Attachment 7.4.5 contains information provided by the Coast Guard regarding these vessels, though the accuracy of some of that information has been questioned, for at least two of the vessels identified. At this time it is the best information that we have. The only additional information we can provide in this document is the total pollock catch for these 15 vessels in 1996, which was 243,662 mt, or 21% of the total pollock target catch for 1996 (and 32% of the offshore total).

U.S. Department of Transportation
United States Coast Guard

Commander
Seventeenth Coast Guard District

P.O. Box 25517
Juneau, AK 99802-5517
Staff Symbol: (mpo)
Phone: 907 463-2247
FAX: 907 463-2216

ATTACHMENT 7.4.5

16701
JAN 20 1998

Dr. Clarence Pautzke
Executive Director
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501-2252

RECEIVED
JAN 2 2 1998
N.P.F.M.C

Dear Dr. Pautzke,

Back in October you asked me to query the Coast Guard data base regarding ownership and rebuild information for fishing vessels greater than 165 feet operating in Alaska. My staff faxed a copy of the results, Enclosure (1), to Mr. Darryl Brannan.

At the December meeting Dr. Pereyra indicated on Enclosure (2) mistakes in the information for several vessels. Although we queried our data base a second time, we got the same information as we did in our first query, indicating a potential problem with our data base. This could have occurred for several reasons:

a. Incorrect information provided to the CG by vessel owners;
b. Vessel data changes/updates not reported by owners to the CG;
c. Correct information mis-entered by CG data clerks.

The Coast Guard does not routinely verify vessel documentation information; vessel owners are required by law to provide correct information to the Coast Guard and keep it updated.

With regard to the task at hand, I recommend your staff use the information we have provided and identify the Coast Guard as the source. As your analysis document goes through the public review process, individual vessel owners can then work directly with the National Vessel Documentation Center at 1-800-799-8362 to correct and update information for their vessels. I think this is about the best we can do, and hope it meets your needs.

Sincerely,

J. V. O'Shea

J. V. O'SHEA
Captain, U. S. Coast Guard
By direction of the Commander

Encl: (1) Vessel List
(2) Vessel List as annotated by Dr. Pereyra

Copy: Dr. Walter Pereyra, Arctic Storm, Inc.
Ms. Kristine Norosz, Icicle Seafoods

Factory Trawlers/Trawlers Targetting Alaska Pollock

Vsl Name	CG #	ADF&G	Reg. Len	LOA	GRT	HP	75%	Yr Built	Last Rebuild
	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(COD)	(COD)
Alaska Juris	569276	54693	200.8	223	1213	3600	Y	1975	
Alaska Ocean	637856	60407	344	376	4555	6250	N	1981	Abroad
Alaska Victory	569752	61083	205.7	227	1215	5800	Y	1975	Abroad
Alaska Voyager	536484	51926	203.5	214	1245	4000	Y	1971	
Alaskan Rose	529154	55466	116	131	380	1300	Y	1970	
American Enterprise	594803	54836	191.7	210	1537	3000	Y	1978	
American Empress	942347	57623	280.6	306.4	2493	8254	Y	1974	Abroad
American Dynasty	951307	59378	240.7	272	3659	8000	Y	1974	Abroad
American Triumph	646737	60660	251.7	285	4294	7939	Y	1961	
American No. 1	610654	36202	143.2	160.2	560	2250	Y	1979	
Arctic Fjord	940866	57450	253.5	272	3369	6060	N	1974	
Arctic Storm	903511	54886	314.3	334	4068	6000	N	1942	Abroad
Bountiful	593404	34053	150.5	155	1032	*	Y	1978	
Browns Point	587440	55511	179.7	190	947	2700	Y	1977	
Christina Ann	653045	54852	177.4	204	831	5050	N	1982	
Constellation	640364	*	150.2	*	194	2250	Y	1981	
Elizabeth Ann	534721	54637	196.1	220	1478	3300	N	1971	Abroad
Endurance	592206	57201	239.1	277	2117	5300	N	1978	
Harvester Enterprise	584902	55183	170.2	188	1203	1800	Y	1977	
Highland Light	577044	56974	244	270	1533	5750	Y	1976	
Island Enterprise	610290	59503	273.8	304	2766	3950	Y	1979	
Katie Ann	518441	55301	267.4	296	1593	4497	N	1969	
Kodiak Enterprise	579450	59170	253.2	275	1584	5830	Y	1977	
Legacy	664882	*	117.2	132	194	1240	Y	1983	
Northern Glacier	663457	48075	175.6	201	1109	3000	Y	1983	
Northern Eagle	506694	56618	310.5	341	4437	6590	Y	1966	Abroad
Northern Jaeger	521069	60202	308.4	*	3732	6322	N	1969	
Northern Hawk	643771	60795	310.1	341	3582	8790	Y	1981	
Ocean Peace	677399	55767	199.5	*	1144	2250	N	1984	
Ocean Rover	552100	56987	223	*	4345	7080	N	1973	Abroad

ENCLOSURE (1)

Factory Trawlers/Trawlers Targetting Alaska Pollock

Vsl Name	CG #	ADF&G	Reg. Len	LOA	GRT	HP	75%	Yr Built	Last Rebuild
	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(COD)	(COD)
Pacific Explorer	942592	57629	213.7	236	1389	4000	Y	1982	
Pacific Glacier	933627	56991	253.5	276	2241	6600	Y	1974	
Pacific Navigator	592204	54859	195	*	1097	3600	Y	1978	Abroad
Pacific Scout	934772	57438	213.7	236	1389	4000	Y	1982	
Rebecca Ann	592205	56197	200.2	217	1166	3300	Y	1978	Abroad
Rebecca Irene	697637	*	115.3	140	191	1800	Y	1981	
Seafisher	575587	56964	211.4	230	1453	3000	N	1976	Abroad
Seattle Enterprise	904767	56789	247	270.1	1519	3900	Y	1973	
Starbound	944658	57621	205.8	240	1533	5000	Y	1989	
U.S. Intrepid	604439	54392	173.2	185	1027	4800	Y	1979	
Victoria Ann	592207	56196	192.5	217	1112	3360	N	1978	Abroad
Former U.S. Vessels, Now Foreign Flagged									
Claymore Sea	L7391288		244		3072	*	N	1974	Abroad
Heather Sea	L7391317		264.4	292	3200	*	N	1975	Abroad
Saga Sea	L7390416		271		4848	*	N	1974	Abroad

Legend

(COD) *Information copied from CG Certificate of Documentation
(F/V. . .) *Information copied from 4th Edition of Fishing Vessels of the United States
CG # CG official documentation number
ADF&G State number
Reg Len - Registered Length
LOA Length Overall
GRT - Gross Registered Tonnage
HP - Horsepower
75% - 75% U.S. Ownership
Yr. Built Year Built
Last Rebuild Location of last rebuild
***** - Information unavailable

Factory Trawlers/Trawlers Targetting Alaska Pollock

Vsl Name	CG #	ADF&G	Reg. Len	LOA	GRT	HP	75%	Yr Built	Last Rebuild
	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(COD)	(COD)
Alaska Juris	569276	54693	200.8	223	1213	3600	Y	1975	
Alaska Ocean	637856	60407	344	376	4555	6260	N	1981	Abroad
Alaska.Victory	569752	61083	205.7	227	1215	5800	Y	1975	Abroad
Alaska Voyager	536484	51926	203.5	214	1245	4000	Y	1971	
Alaskan Rose	529154	56466	116	131	380	1300	Y	1970	
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Bountiful	593404	34053	150.5	155	1032	*	Y	1978	
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Constellation	640364	*	150.2	*	194	2250	Y	1981	
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Endurance	592206	57201	239.1	277	2117	5300	N	1978	
Harvester Enterprise	584902	55183	170.2	188	1203	1800	Y	1977	
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Northern Glacier	663457	48075	175.6	201	1109	3000	Y	1983	
Northern Eagle	506694	56618	310.5	341	4437	6590	Y ?	1966	Abroad
Northern Jaeger	521069	60202	308.4	*	3732	6322	N	1969	ABROAD
Northern Hawk	643771	60795	310.1	341	3582	8790	Y ?	1981	ABROAD
Ocean Peace	677399	55767	199.6	*	1144	2250	N	1984	
Ocean Rover	552100	56987	223	*	4345	7080	N	1973	Abroad

NOTE MISTAKES

NOTE

ENCLOSURE 2

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258 (August 26, 1998, 1:00 pm)

Factory Trawlers/Trawlers Targetting Alaska Pollock

Vsl Name	CG #	ADF&G	Reg. Len	LOA	GRT	HP	75%	Yr Built	Last Rebuild	
	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(F/V. . .)	(COD)	(COD)	(COD)	
Pacific Explorer	942592	57629	213.7	236	1389	4000	Y	1982		
Pacific Glacier	933627	56991	253.5	276	2241	6600	Y	1974	ABROAD	NOTE
Pacific Navigator	592204	54859	195	*	1097	3600	Y	1978	Abroad	
Pacific Scout	934772	57438	213.7	236	1389	4000	Y	1982		
Rebecca Ann	592205	58197	200.2	217	1166	3300	Y	1978	Abroad	
Rebecca Irene	697637	*	115.3	140	191	1800	Y	1981		
Seafisher	575587	56964	211.4	230	1463	3000	N	1976	Abroad	
Seattle Enterprise	904767	56789	247	270.1	1519	3900	Y	1973		
Starbound	944658	57621	205.8	240	1533	5000	Y	1989		
U.S. Intrepid	604439	54392	173.2	185	1027	4800	Y	1979		
Victoria Ann	592207	56198	192.5	217	1112	3360	N	1978	Abroad	
Former U.S. Vessels, Now Foreign Flagged										
Claymore Sea	L7391288		244		3072	*	N	1974	Abroad	
Heather Sea	L7391317		264.4	282	3200	*	N	1975	Abroad	
Saga Sea	L7390416		271		4848	*	N	1974	Abroad	

Legend

(COD) *Information copied from CG Certificate of Documentation
(F/V. . .) *Information copied from 4th Edition of Fishing Vessels of the United States
CG # CG official documentation number
ADF&G State number
Reg Len - Registered Length
LOA Length Overall
GRT - Gross Registered Tonnage
HP - Horsepower
75% - 75% U.S. Ownership
Yr. Built Year Built
Last Rebuild Location of last rebuild
* - I Information unavailable

8.0 CONSISTENCY WITH OTHER APPLICABLE LAWS

Findings for the following sections are based upon the 'Preferred Alternative' selected by the Council. While earlier drafts of this document attempted to cover the range of alternatives being considered, a more focused treatment is presented here, now that a preferred alternative has been chosen.

8.1 Consistency with National Standards

Below are the 10 National Standards as contained in the Magnuson-Stevens Act (Act), and a brief discussion of the consistency of the proposed alternatives with those National Standards, where applicable.

National Standard 1 - Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery

Pollock fisheries will be managed as they currently are, regardless of the specific allocations between sectors, to achieve the TAC without overfishing. Pollock stocks in the BS/AI are not currently in danger of overfishing and are considered stable. Overall yield in terms of pollock catch will be unaffected by the allocations. In terms of achieving 'optimum yield' from the fishery, the Act defines 'optimum', with respect to yield from the fishery, as the amount of fish which:

(A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems;
(B) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and,
(C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery.

Increased allocations to the inshore sector, based on utilization rates documented in this analysis, would increase the total amount of food production; however, this is offset at least to some degree by the fact that the offshore sector produces relatively greater amounts of product for the U.S. market (primarily deep skin fillet products). Overall benefits to the Nation may be affected by these trade-offs, though our ability to quantify those effects, particularly for changes in the BS/AI allocation, is quite limited. While distributional impacts across fishing industry sectors are certainly implied by the alternatives, overall net benefits to the Nation would not be expected to change to an identifiable degree.

National Standard 2 - Conservation and management measures shall be based upon the best scientific information available.

Information in this analysis represents the most current, comprehensive set of information available to the Council, recognizing that some information (such as operational costs) are unavailable. The Council's preferred alternative was selected based on information that appears to be consistent with this standard.

National Standard 3- To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The Council's preferred alternative appears to be consistent with this standard.

National Standard 4 - Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be (A) fair and equitable to all such fishermen, (B) reasonably calculated to promote conservation, and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

Allocation percentages being considered are based on industry sectors, and where catch is delivered for processing. Nothing in the alternatives considers residency as a criteria for the Council's decision. Residents of various states, including Alaska and the Pacific Northwest, participate in each of the major sectors affected by these allocations. Within each sector, no further allocations are made to individual fishermen, nor or discriminations made among fishermen based on residency or any other criteria. Allocations are made based on industry sectors, and do not result in 'the acquisition' of any particular share of the privilege to any individual entity (See Chapter 7.4.2 for further discussions of the excessive share issue).

National Standard 5 - Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources, except that no such measure shall have economic allocation as its sole purpose.

The wording of this standard was changed in the recent Magnuson-Stevens Act authorization, to 'consider', rather than 'promote' efficiency. Efficiency in the context of this change refers to economic efficiency, and the reason for the change, essentially, is to de-emphasize to some degree the importance of economics relative to other considerations (Senate Report of the Committee on Commerce, Science, and Transportation on S. 39, The Sustainable Fisheries Act, 1996). As discussed in Chapters 4 and 7, efficiency in utilization can be viewed in the context of absolute rates of utilization, but should take into account product prices, production costs, and market issues in determining overall 'efficiency'. The analysis presents information relative to these perspectives on utilization and economic efficiency, but does not point to a preferred alternative in terms of this standard. National Standard 5 recognizes the importance of various other issues in addition to economic efficiency.

National Standard 6 - Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The Council's preferred alternative appears to be consistent with this standard.

National Standard 7 - Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The Council's preferred alternative appears to be consistent with this standard.

National Standard 8 - Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

Appendices II and III to this document contain information regarding potential social and community impacts from the alternatives. Appendix II is focused on the major pollock industry sectors, the linkages between those sectors and major fishing communities in both Alaska and the Pacific Northwest, and the possible impacts to those communities from a change in the sector allocations. That analysis determines that the No Action alternative (allowing the allocations to expire) would most likely result in negative community impacts, particularly to community stability in Alaskan communities such as Dutch Harbor, King Cove, Sand Point, and Akutan which are significantly involved in pollock processing. Changes in the allocations between sectors are more difficult to quantify in terms of impacts, due to significant involvement of all major sectors in those communities. For example, Dutch Harbor is home to major inshore processing plants, as well as home to significant infrastructure and support services for the harvesting and catcher/processor (offshore) fleets. Both major sectors contribute significantly to the community's overall economy.

Appendix III is specifically focused on linkages and impacts between the pollock industry sectors and the Community Development Quota (CDQ) program. While that analysis does not address specific CDQ community-level impacts, it does contain detailed information on the linkages to the CDQ organizations, and possible impacts to those groups, from which inferences may be drawn with regard to community-level impacts. Both Appendix II and Appendix III were commissioned by the Council to provide information to the decision makers relative to National Standard 8.

<u>National Standard 9 -Conservation and management measures shall, to the extent practicable, (A) minimize bycatch, and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.</u>

Chapter 3 presented information on historical bycatch patterns in the pollock target fisheries, while Chapter 4 contains projections of bycatch of various PSC species associated with the alternatives. In summary, bycatch rates in the pollock fisheries are very low overall, perhaps the lowest of any major fishery in the world, and these rates are very similar across the major sectors involved with slight variations among PSC species, by pollock fishing sector. For example in 1996, the inshore sector had lower bycatch rates for halibut, herring, and crab, while the offshore sector shows lower bycatch rates for chinook salmon, indicating a trade-off between PSC species in terms of the alternatives. Increased fishing opportunity for one sector (and increased bycatch by that sector) would be offset by decreased fishing opportunity for the other sector (and decreased bycatch by that sector). Given the low bycatch rates for all species in the pollock fisheries, the Council's preferred alternative would appear to be consistent with this standard, catch and bycatch mortality would remain largely unaffected overall.

<u>National Standard 10 - Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.</u>

The Council's preferred alternative appears to be consistent with this standard. Nothing within the actual allocation percentages would change the way in which fisheries are managed nor would they change safety requirements for fishing vessels. However, the Council's preferred alternative does exclude catcher vessels delivering to the offshore sector from operating inside the CVOA during the B-season. Excluding offshore catcher vessels from the CVOA during this time of the year should not have a significant impact on vessel safety. The weather is usually better in the Bering Sea during the fall months (compared to the winter A-season fishery). But should the weather turn bad during the B-season, the smaller catcher vessels delivering offshore will likely need to run further when seeking shelter.

8.2 Section 303(a)(9) - Fisheries Impact Statement (Spillover Impacts)

This section of the Magnuson-Stevens Act requires that any management measure submitted by the Council take into account potential impacts on the participants in the fisheries, as well as participants in adjacent fisheries. Potential impacts to other fisheries could result from a change in the inshore/offshore allocations, as vessels which may be disadvantaged by a lower pollock allocation move into other fisheries to attempt to make up lost revenues. The SSC and Council requested that staff provide information to shed light on the extent to which this may occur. The following section compiles information which may provide insights into potential 'spillover' effects.

8.2.1 Operational Capacity/Capability

The first step in assessing the capacity and capability of the BS/AI pollock target fishing sectors is to tabulate the operations which constitute each element of that industry. The first measure enumerates the 'unique'[19] operations in each of the four primary sectors of interest, for 'pollock target fisheries', in the base-year (i.e., 1996).

Catcher/Processors -37
Catcher boats -119
"True" motherships - 3
Inshore -10

Catcher/Processors

When the sectors are further subdivided (on the bases cited above), the following results emerge. The composition of the 1996 pollock target C/P fleet may be described on the basis of vessel length over all (LOA) and net tons. The data reveal that eight C/Ps are greater than 300' LOA; 14 are between 230' and 300' LOA; and 15 are less than 230' LOA.

On the basis of net tons, the smallest category of C/Ps (i.e., less than 500 net tons) included five vessels; 11 vessels were registered in the 500-999 net ton category; 14 were in the 1,000-2,000 net ton class; and seven were greater than 2,000 net tons.

Catcher boats

The catcher boat sub-sector was enumerated on the basis of vessel length over all (LOA) and horsepower. Given the relatively limited data available on fleet physical-plant, these two measures (for which relatively complete data are available) were judged to be indicative of fishing capacity for the catcher boat sector. LOA measurements suggest that there are 92 catcher boat operations in the less than 125' category; in the 125' to 155' category the count is 18 vessels; and nine in the greater than 155' LOA class. There are 31 boats with greater than 1,500 hp; 32 with 1,000 hp to 1,500 hp; and, 46 in the less than 1,000 hp class.[20]

"True" Motherships

The three "true" motherships identified in the base-year sector enumeration were sufficiently different in size and configuration that no useful categorization on the basis of physical characteristics seems appropriate.

Inshore plants

As for the inshore sector, no systematic capacity, configuration, or size data are available to the analysts with which to categorize this sector, except to note that three of the inshore processing plants are actually onboard vessels, although these vessels are permanently moored (i.e., they are effectively immobile, fixed facilities).

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[19] The 'unique' total assures no double-counting of operations, e.g., a vessel which participated in more than a single operational mode during a given fishing year would be counted only once. Note that judgements about participation are confined to 'pollock target' fisheries.

[20] Two boats appear without horsepower listings in these data, for each of 1994 and 1996. Only a single vessel was so listed in 1991.

Estimating the probable response of any given element of the domestic pollock fishery (much less that of any individual operations) to a significant change in allocated share of the TAC is difficult. This is so, at least in part, because the ability to accommodate a significant increase in total share of the pollock TAC would be substantially dependent upon the existing effective production capacity and latent potential in the affected sectors, at least in the short run. Likewise, the probable adjustment to a significant decrease in TAC-share would be highly dependent upon the nature, relative cost efficiency, profitability, and operational flexibility of existing capacity in the affected component of the industry.

Empirical data on capacity within sectors of the domestic pollock industry now are very limited. As a result, so too is our ability to quantify probable industry response to other than marginal changes in TAC-share.

The data which are available pertain more appropriately to capability. One way to distinguish the difference between these two measures is that capacity is a quantitative measure of the effective production potential and/or limits of an operation or sector, while capability is a simple presence or absence indicator of the ability to produce a given output form. Beyond tabulating the presence or absence of a particular production ability within a sector or sub-sector (e.g., surimi capability), the analysis will not be able to quantitatively address the issue of capacity investment and disinvestment, by sector, in response to alternative non-marginal changes in TAC allocations.

8.2.2 Entry and Exit Patterns

The subject of entry/exit patterns does not readily lend itself to examination of a single year's data, since very often, given the way catch and participation are tracked in BS/AI groundfish fisheries, it is only by comparing one year's records to the next that patterns emerge. Therefore, this section examines a series of years, rather than focusing on the base-year, in an effort to discern relevant patterns. Data on participant's entry into, and exit from, BS/AI pollock target fisheries are incomplete. No reliable data, for example, on 'inshore' processing participant's are available for inclusion. However, entry/exit patterns for "true" mothership operations, C/Ps, and catcher boats in these fisheries can be characterized, in general terms.

The data on the C/P sector, on the other hand, suggests a relatively active pattern of movement into and out of these pollock target fisheries, as well as between sub-sector categories. Table 8.1 describes the vessel count and percent of sub-fleet of each C/P sub-sector on the basis of duration-of-participation in the BS/AI pollock target fishery. For example, if one compares the three operational modes (i.e., surimi, surimi & fillet, and non-surimi), this table reveals that, of the current fleet, two surimi operations have been continuously active in this fishery and mode over the six year period 1991-1996, while eight surimi & fillet vessels, and 15 non-surimi vessels meet this criterion. On the other end of the spectrum, one operation in the current C/P fleet in the surimi sub-sector and two in the surimi & fillet mode operated only a single year of the six in this fishery. Eighteen vessels in the non-surimi sub-sector recorded only a single year's activity over this period.

Table 8.2 permits one to track the pattern of exit and entry from year-to-year, by C/P operational sub-sector. Taking the surimi category for 1991, as an example, six vessels operated in this mode, in this year. At the end of the year, one operator had exited (representing just under 17% of the sub-fleet by number). In 1992, three vessels entered this sub-sector, resulting in a total of eight surimi operations that year in the BS/AI pollock target fishery. By year's end, four vessels had exited the sub-sector. The three entrants represented a change of 38% in the sub-fleet, in that year, while the four that exited reduced the sub-sector by 50%. The balance of the table can be interpreted in the same manner.

For the catcher boat sector (which includes operations delivering at-sea and/or inshore), these data similarly present a clear pattern of active movement into and out of the pollock target fisheries, over the period of analysis. Table 8.3 describes the size and share of the fleet (by vessel count and percent of sub-fleet) of each catcher boat length category, on the basis of duration-of-participation in the BS/AI pollock target fishery. For example, if one compares the three LOA-groups, this table reveals that of the current fleet, 42 operations less than 125' have been continuously active in this fishery over the six year period 1991-1996, while only four vessels each, in the 125'-155' and >155' categories meet this criterion.

At the lower end of the range, 35 operations in the 1996 catcher boat fleet in the <125' sub-sector, 12 in the 125'-155' LOA category, and two operations in the >155' group, fished only a single year of the six, in this fishery.

Table 8.4 presents exit and entry patterns from year-to-year, by catcher boat LOA sub-sector. Taking the <125' category for 1991, for example, 70 vessels operated in this year. At the end of the year, six boats had exited (representing just over 8.5% of the vessels in this sub-fleet). In 1992, 26 vessels entered this sub-sector, resulting in a total of 90 operations in the <125' class, that year, in the BS/AI pollock target fishery (representing 29% of the 1992 fleet in this vessel category). By year's end in 1992, 19 vessels in this class had exited the fishery, which reduced the sub-sector by 21%. The remainder of Table 8.4 can be interpreted in the same manner.

In Tables 8.1 through 8.4, exit numbers indicate that a vessel operated in a processing mode or *'LOA'* vessel category in the indicated year, but did not operate in that category in the next year. The source data for these entry-exit profiles are from ADF&G fish tickets, Norpac files, and the Alaska Region blend files.

While, due to the way targets are assigned in the blend data, it was neither possible to track where entrants were coming from, nor where those exiting operations were going to, it is highly probably that most simply shifted effort between pollock target fisheries and other groundfish fisheries in the BS/AI (and perhaps to a lesser extent GOA).

Table 8.1 Number of Catcher/Processors, by Years of Participation, in a Processor Category in the BS/AI Pollock Target Fishery (1991-96)

	Vessel Count	Percent of Vessels	Cumulative Vessel Count	Cumulative % of Vessels
Surimi				
6 years	2	15%	2	15%
5 years	3	23%	5	38%
4 years	2	15%	7	54%
3 years	2	15%	9	69%
2 years	3	23%	12	92%
1 year	1	8%	13	100%
Surimi & Fillet				
6 years	8	47%	8	47%
4 years	3	18%	11	65%
3 years	2	12%	13	76%
2 years	2	12%	15	88%
1 year	2	12%	17	100%
Non-surimi				
6 years	15	31%	15	31%
5 years	3	6%	18	37%
4 years	3	6%	21	43%
3 years	7	14%	28	57%
2 years	3	6%	31	63%
1 year	18	37%	49	100%

Table 8.2 Entry and Exit of Catcher/Processors by Processor Category, BS/AI Pollock Target Fishery

	Vessel Count	Vessel Entries	Vessel Exits	Percent Entry	Percent Exit
Surimi					
1991	6	.	1	.	17%
1992	8	3	4	38%	50%
1993	5	1	0	20%	0%
1994	9	4	1	44%	11%
1995	11	3	3	27%	27%
1996	9	1	.	11%	.
Surimi & Fillet					
1991	15	.	3	.	20%
1992	12	0	1	0%	8%
1993	15	4	4	27%	27%
1994	11	0	3	0%	27%
1995	10	2	2	20%	20%
1996	9	1	.	11%	.
Non surimi					
1991	33	.	10	.	30%
1992	29	6	6	21%	21%
1993	30	7	8	23%	27%
1994	24	2	5	8%	21%
1995	25	6	6	24%	24%
1996	21	2	.	10%	.

Table 8.3 Number of Catcher Boats, by Years of Participation in the BS/AI Pollock Target Fishery (by LOA category - 1991-96)

	Vessel Count	Percent of Vessels	Cumulative Vessel Count	Cumulative % of Vessels
<125'				
6 years	42	32%	42	32%
5 years	18	14%	60	45%
4 years	13	10%	73	55%
3 years	13	10%	86	65%
2 years	11	8%	97	73%
1 year	35	27%	132	100%
125'- 155'				
6 years	4	15%	4	15%
5 years	2	8%	6	23%
4 years	4	15%	10	38%
3 years	1	4%	11	42%
2 years	3	12%	14	54%
1 year	12	46%	26	100%
>155'				
6 years	4	25%	4	25%
5 years	2	13%	6	38%
4 years	3	19%	9	56%
3 years	1	6%	10	63%
2 years	4	25%	14	88%
1 year	2	13%	16	100%

Table 8.4 Entry and Exit of Catcher Boats by LOA Category in the BS/AI Pollock Target Fishery

	Vessel Count	Vessel Entries	Vessel Exits	Percent Entry	Percent Exit
<125'					
1991	70	.	6	.	9%
1992	90	26	19	29%	21%
1993	83	12	23	14%	28%
1994	67	7	3	10%	4%
1995	92	28	15	30%	16%
1996	88	11	.	13%	.
125'- 155'					
1991	6	.	0	.	0%
1992	10	4	2	40%	20%
1993	11	3	1	27%	9%
1994	14	4	5	29%	36%
1995	10	1	0	10%	0%
1996	20	10	.	50%	.
>155'					
1991	7	.	0	.	0%
1992	13	6	4	46%	31%
1993	9	0	1	0%	11%
1994	10	2	2	20%	20%
1995	11	3	3	27%	27%
1996	9	1	.	11%	.

8.2.3 Alternative Fishing Options for BS/AI Pollock Target Operations

One consideration in assessing the probable impact of the range of proposed changes in pollock TAC share, by sector, is the alternatives or options available to potentially displaced or idled capacity. For example, some of the inshore processing operations have diverse production patterns which include processing of both other groundfish and non-groundfish species. This may reveal the existence of opportunities for these operations to shift effort into other fisheries, should the Council choose to apportion TAC away from this sector, under I/O3. Likewise, some at-sea processors (both C/Ps and true MS) have participated in target fisheries other than pollock, suggesting opportunities which they may exploit, if the Council allocates TAC away from their respective sectors.

This line of reasoning has two direct implications for I/O3. First, to the extent that opportunities exist which may allow an operator to, at least in part, recoup losses attributable to a sectoral reallocation of pollock TAC, the adverse economic impact of the proposed action would be reduced.[21] The second implication extends logically from the first. That is, to the extent that displaced capacity/effort in the BS/AI pollock target fisheries is employed (in whole or in part) in an alternative fishing activity (offsetting some of its losses in pollock-related earnings), it will simultaneously compete with existing participants in the alternative fishery. This suggests that the impacts imposed by any of the pollock TAC reapportionment alternatives under consideration will likely extend beyond the BS/AI pollock target fisheries, and those operations currently involved in them.

One possible indicator of the existence of such opportunities, for any given operation, may be found in the record of participation in alternative target fisheries and areas/regions, during recent fishing years. When catch and production records, by individual operation, by sector, are consulted, a profile of historical activity can be constructed. However, the ability to predict with certainty how any individual operation may actually respond to a given change in sector TAC-share is very limited. Indeed, to borrow liberally from a well-known standard disclaimer, "... past performance is no guarantee of future results." Changes in (among other factors) an individual operation's physical plant, its ownership or management, or technology, domestic and world markets, and governing regulations, may impact the ability of an operator to shift effort into another fishery or area in the future, even though they may have exercised that option at some time in the past. Furthermore, the following statistics summarize only catch and production activity. These numbers do not purport to measure revenue from, nor economic dependence upon, a given target fishery. They are simply indicative of historic fishing patterns, which might reveal capabilities within a given operation to participate in alternative target fisheries.

With these caveats clearly in mind, if one assumes that past activity is indicative of the range of potential opportunities available to displaced or idled capacity in the pollock target fisheries of the BS/AI, the following conclusions emerge.

Inshore Processors

A review of Alaska fishticket and NMFS blend data for this sector of the pollock target fishery suggests that all of the inshore processors have historically been active in a range of target fisheries. Of the eight operations listed as inshore under I/O3, all were significantly involved in the processing of target Pacific cod. Indeed, for some operations and in some years target Pacific cod was actually a greater percentage of their total groundfish activity than was target pollock. Five of the eight processed target yellowfin sole over this period. Activity in the target fisheries for sablefish, other flatfish, rock sole, and turbot was also recorded by one or more of these operations. Six processed significant amounts of halibut. According to Alaska State Fishticket files, all eight recorded

[21] It would almost certainly not be eliminated, however, since if the earnings potential from the alternative fishery were greater than or equal to that of the pollock fishery, we would have observed this operator undertaking this activity voluntarily.

production of herring. For five operations crab was an important output. Finally, six processed significant quantities of salmon, and a seventh processed a smaller amount. These data seem to suggest that the inshore processing sector is relatively diversified among both alternative groundfish and non-groundfish species. However, in 1996, for example, pollock accounted for over 80% of the total pounds processed for four of eight inshore operators; between 60% and 75% for three others; and just 25% for the final operation.

"True" Motherships

Reviewing NMFS blend records, for the historical period 1991 through 1996 (inclusive), for the "true" mothership category, the participation record indicates that six vessels participated in BS/AI pollock target fisheries. During the years 1991, 1994, and 1996 only three "true" mothership participated in the BS/AI pollock fisheries. These same three vessels participated in each year. During 1991, all three were substantially dependent upon pollock (i.e., none participated in any other BS/AI target fishery in that year). All were, however, active participants in the Washington/Oregon/California [W/O/C] whiting target fishery). In 1992, the same three vessels were active in BS/AI pollock fisheries and, again, were substantially dependent. Their activity levels in the whiting fishery were significantly lower in 1992 than in 1991. Three other "true" motherships also recorded pollock target landings in the BS/AI in 1992, although the amounts were very much smaller than those of the primary three operations. Of this latter group of "true" mothership operations, one reportedly also participated in sablefish and Pacific cod target fisheries, one recorded production from Pacific cod and arrowtooth and yellowfin sole fisheries, and one was active in Pacific cod, rock sole, yellowfin sole, rockfish and Atka mackerel targets.

In 1993, only the three primary "true" mothership operations were present in BS/AI pollock target fisheries and, again, all were dependent on pollock. One recorded 100% of its fishing activity in the BS/AI pollock target fishery, the other two were well over 80%, with whiting accounting for the balance. In 1994, all three of these same MS operations reported approximately 70% of their total activity in BS/AI pollock, with the balance in the W/O/C whiting target. In 1995, all three primary "true" motherships were again present and exhibited the same operational pattern as in 1994, with a split between BS/AI pollock and W/O/C/ whiting targets, although one recorded 2% of its total activity in Pacific cod, and one recorded 4% in the yellowfin sole target fishery. In addition, one of the other "true" mothership operators, active in the BS/AI pollock target fishery only in 1992, re-entered this fishery in 1995. The extent of its pollock activity was very limited, however, both in total tonnage and percent of total fishing activity. Indeed, output from the BS/AI pollock target fishery represented only approximately 1% of this operations total fishing activity, with Pacific cod, rock sole, and yellowfin sole targets accounting for most of its production. In 1996, the three primary "true" mothership operations were again the sole representatives of this sector and, as previously observed, nearly all of their activity was accounted for in BS/AI pollock and W/O/C whiting targets (two recorded roughly 2% of total activity in BS/AI Pacific cod targets in this year).

Catcher/Processors

The picture, with respect to C/Ps, is far more complex. For the following discussion, these C/P operations may be usefully sub-divided into four categories, based upon output mix as reported in the NMFS blend files, for the BS/AI pollock target fishery. These include, 1) surimi-only, 2) surimi & fillets, 3) fillets-only, and 4) neither surimi nor fillets, i.e., presumably H&G.

Surimi-only C/Ps. Over the period 1991 through 1996 (inclusive), there were thirteen surimi-only C/Ps active in the BS/AI pollock target fisheries. In any given year, only a subset of this total actually participated in the pollock target fisheries. For example, in 1991, just six surimi-only C/P operations were active. Among these, three divided their fishing activity exclusively between Alaska pollock and the whiting target fishery off W/O/C (i.e., no other targets were identified), two were substantially dependent upon pollock (i.e., 91% and 81%, respectively) but did target other Alaska groundfish, and one was only marginally dependent on BS/AI pollock target fishing (reportedly, 28%). For this latter operation, the majority of its total fishing/processing activity in this year was associated with flatfish targets (yellowfin, rock sole, and other flatfish in that order), although rockfish accounted for roughly 10%, as well. For the two other C/Ps, not exclusively dependent on pollock and whiting in this year, the activity mix was diverse, including small shares of Pacific cod, rock sole, turbot, rockfish, and Atka mackerel. Only one vessel recorded more than a single-digit percentage dependence on a species other than pollock, and that was a 10% share attributable to the yellowfin sole target.

In 1992, eight surimi-only C/Ps were active in the BS/AI pollock target fisheries. Six were virtually exclusively dependent upon pollock target activity in the EEZ off Alaska, although they also fished whiting off W/O/C[22]; one was active in two other targets (11% of total in the whiting fishery, 13% in the yellowfin sole target), and one was significantly diversified (29% in yellowfin sole, 8% in Atka mackerel, <1% each in Pacific cod and rockfish, although the latter two records may be an aberration attributable to the way targets are assigned).

In 1993, just five surimi-only C/Ps were active. Two of these were 100% dependent on BS/AI pollock target fisheries. One other targeted only pollock and whiting (84% and 16%, respectively). Two were more diversified, targeting pollock for approximately two-thirds of their total catch; targeting yellowfin sole and (in one case) whiting, and recording lesser participation in Pacific cod, rock sole, Atka mackerel, and other flatfish targets.

In 1994, nine operations in this category were reported. Of these, two were virtually 100% dependent upon the BS/AI pollock target fisheries. Three had significant production from yellowfin; three from rock sole targets; while four reported between 26% and 41% of their total fishing catch derived from the whiting target. In addition, Pacific cod made up a small percentage of the target catch for three vessels, and one had significant catches in the Atka mackerel target fishery.

Eleven C/Ps of this category were active in pollock targets in the BS/AI in 1995. Three were virtually 100% dependent. Four others fished only pollock or whiting targets in this year. The yellowfin target was important for four operations. Rock sole and Atka mackerel were present in only very small numbers, then for only three different operations.

In 1996, nine surimi-only C/Ps were present in the BS/AI pollock target fisheries. Seven were substantially involved in the W/O/C whiting fishery. Atka mackerel, rock sole and yellowfin sole target fisheries were the only others represented.

For surimi-only C/Ps, over this period, the majority were heavily dependent upon the BS/AI pollock target fisheries. W/O/C whiting was the principal alternative fishery exploited by these operations. The pattern of participation among vessels less dependent on target pollock seems to indicate that yellowfin sole, then rock sole, and other flatfish, and for one vessel Atka mackerel, have been the primary opportunities for diversification within this operational category.

Surimi & fillet C/Ps. Over the period 1991 through 1996, a total of 17 different vessels participated in pollock target fisheries, reporting production of surimi and fillets from their pollock catch. There were very few examples of these operations participating in a significant way in alternative target fisheries in the EEZ off Alaska. The notable exceptions were (for a single year in each case), one vessel which did approximately 80% of it total

[22] One of these boats reportedly did 1% in arrowtooth and 2% in yellowfin. Another did 4% in yellowfin. However, these records may be anomalies attributable to the way targets are identified in the blend algorithm.

fishing activity in the Pacific cod target and the remained in pollock[23]; one boat that reported 37% of its activity in the Atka mackerel target fishery, 3% in yellowfin sole, and the remainder in pollock targets; and two operations with catches accounting for approximately 25% of their total fishing activity from the yellowfin target, and the rest from pollock.

The balance of the BS/AI activity of the remaining operations in this sector, over the six years reviewed, was very heavily concentrated on pollock targets. Indeed, there was reportedly relatively minor participation in a very narrow range of other targets, accounting in most instances for single digit percentages. These included Pacific cod, yellowfin sole, rockfish, and Atka mackerel.

Over the period, virtually all had some target activity in the W/O/C whiting fishery. The pattern of participation was variable, with some fishing whiting consistently over the period and others targeting whiting for only one or two seasons.

Fillet C/Ps. This group of pollock target vessels is substantially more numerous, over the period 1991 through 1996. A total of twenty-seven different operations were reported to have targeted pollock in the BS/AI, and produced fillets (but not surimi) over these years. At the extremes, 14 operations participated in the pollock target fisheries in the BS/AI all six years, while four were active only in one of the six years.

The range of diversity within this sub-sector is considerable, making summarization difficult. However, in general, when these operations are ranked on the basis of total tons of pollock harvested, the vessels with the greatest quantities of pollock were those with the highest percentage of their participation in pollock targets. Furthermore, there seems to be a pattern over the latter three years of this six year period which suggests that the degree of (relative) dependency of these specific boats has increased, as a percent of total fishing activity.

For those operators which are more widely diversified, i.e., had a smaller percent of their total catch represented in a pollock target fishery, the range of other targets reported was much more varied, than those observed in the other sub-sectors. While it is difficult to generalize, these operations reportedly participated in a range of targets which included both BS/AI and GOA fisheries. As with the earlier sub-sectors, Pacific cod, yellowfin sole, rockfish, and Atka mackerel were all represented, often as relatively significant percentages of total catch. In addition, however, arrowtooth, deep-flats, rex sole, turbot, rock sole, and other groundfish were present in the target mix. Only five boats from this sub-sector recorded any activity in the W/O/C whiting fishery over the six years examined.

While one may not conclude that any individual operation in this sub-sector is "less economically dependent" on BS/AI pollock target fisheries than participants in the other sub-sectors described above, the aggregate level of diversity observed within this sub-group does suggest that many of these boats have the capability to exploit a number of different stocks, and that they have historically been active across a range of targets, over the course of each season, and over the six year period examined. Why this is so, is not known.

Neither fillets nor surimi C/Ps. When the NMFS blend data were queried as to BS/AI pollock target participation over this period, a total of seventeen different operators were identified as having been pollock target operations, but having produced neither fillets nor surimi. In most cases the quantities of pollock catch were relatively small, participation in pollock fisheries was spotty, and relative activity in pollock as a percent of total fishing activity was also small. These operations may be H&G boats which, for a given week of operation, were targeted pollock within the blend algorithm. Most of these boats reported a range of participation much like those of the fillet-only C/Ps, including both BS/AI and GOA target fisheries. In any case, most of these operations were not

[23] This boat was present only one year in the pollock target fishery, over this period.

consistently, nor substantially involved in BS/AI pollock target fisheries over this period. They are cited here only for completeness.

The analysts intend to further examine the probable entry/exit response in the BS/AI pollock fisheries, based upon several limiting assumptions. Since cost data (and therefore profitability/viability measures) are unavailable at this time, this would be largely hypothetical. The profiles prepared for the Council strongly suggest that one result of I/O1 (and perhaps I/O2) has been a realignment within several of the sectors, e.g., C/Ps have exhibited a marked decline in numbers and somewhat of a shift in size, while catcher vessels exhibited sharp growth in overall numbers (although smaller vessels seem to have faired less well than larger ones). The likely response of each sector, in terms of capacity displacement (or for that matter, investment in new capacity) could be a meaningful consideration in an impact analysis of TAC reapportionment.

A quantitative assessment of the likely entry - exit (i.e., investment - disinvestment) patterns for each sector is beyond our capabilities, given the data (or lack thereof) on cost structure, profitability, operational diversification, etc.

8.2.4 Summary of 1997 Fishing Activities by Sector

Understanding the flow of fishing effort in the BS/AI groundfish fisheries throughout the year is important when talking about potential spillover impacts. To help the reader visualize these flows, five tables are presented in this section. These tables represent the inshore, "true" mothership, surimi catcher processor, fillet catcher processor, and head and gut industry sectors discussed earlier.

Table 8.5 shows the BS/AI catch delivered to the inshore pollock processors in 1997. These data are broken down by BS/AI target fishery, as assigned using the Blend algorithm, and report the total catch of all species in that target fishery during the week. The Inshore table indicates that most of the catch is assigned to the midwater pollock target with much smaller amounts in the Pacific cod fishery, during the weeks in January and February. When the pollock fishery closes in March, the catcher vessels shift more effort into the Pacific cod fishery and enter the yellowfin sole fishery. This general pattern continues until these fisheries are closed around the first of May. There is little activity again until the pollock B-season opens in September, and no activity reported after the B-season closed in October.

The three "true" motherships were taking deliveries of pollock harvested in the midwater fishery during both the A and B seasons (Table 8.6). After the pollock A-season closed, some effort moved into the Pacific cod fishery until early April. From April until the start of the B-season there was no activity in the BS/AI groundfish fishery.

Catcher processors in the Surimi (Table 8.7), sectors focused solely on the pollock fisheries when they were open. After the A-season closed, some of the vessels switched their attention to the Atka Mackerel fishery while others went into yellowfin sole. Lesser amounts of catch were reported in the Pacific cod and other flatfish fisheries. All of the Surimi C/P effort had left the Atka mackerel fishery by April 19, and only small amounts of catch were taken in the yellowfin, rockfish, and Pacific cod fisheries after that date. From the middle of June until the beginning of September no BS/AI groundfish fishing activity was reported for this sector. Once the pollock B-season opened, this sector focused on that fishery for five weeks. After the B-season closed, a small amount of catch was reported in the yellowfin fishery.

Vessels in the pollock fillet fleet (Table 8.8) participated in the bottom and midwater pollock target fisheries during the A-season. Catches in the Pacific cod target fishery during the A-season were small and sporadic. After the pollock A-season closed these vessels' catch was greatest in the Pacific cod target fishery. However, some members of this fleet made harvests in the yellowfin sole target through the middle of June. From the middle of June until the pollock B-season opened there were small amounts of catch reported in the Pacific cod, flathead sole, rock sole, and yellowfin sole targets. This fleet targeted only pollock during the B-season. Catches were consistently in the 10,000 to 25,000 mt range per week in the midwater target, and 1,000 to 5,000 mt in the bottom target fishery. By the second week in October, only participation in the yellowfin sole fishery was reported.

The Head and Gut fleet operated in several target fisheries throughout 1997 (Table 8.9). They began the year fishing in the Atka mackerel, rock sole, and Pacific cod. When the rock sole roe fishery reached its peak, during mid February, effort switched from the Atka mackerel target fishery into rock sole. This additional effort then moved back into Atka mackerel after the peak of the rock sole roe fishery. Effort in the Atka mackerel fishery then remained fairly constant until the fishery closed in April. After the Atka mackerel fishery closed, those vessels appeared to move into the yellowfin sole target fishery. Yellowfin sole remained the primary target of the fleet until it closed, due to reaching the halibut cap, around the middle of June. Target fisheries for the Head and Gut fleet during July included flathead sole, rock sole, and turbot. Between the middle of August and the end of November most of the catch was in the yellowfin sole target fishery.

Tables 8.10-8.14 report the number of processors that operated in a target fishery by week. These are basically sister tables to Tables 8.5-8.9 discussed above.

Table 8.5 Catch Delivered to Inshore Pollock Processors By Bering Sea and Aleutian Islands Target Fisheries

Week	The Range of Metric Tons of Catch by Target Fishery			
	Bottom Pollock	Pacific Cod	Midwater Pollock	Yellowfin Sole
01/25/97	-	710	27,231	-
02/01/97	-	1,061	35,967	-
02/08/97	-	2,308	39,960	-
02/15/97	cf	2,264	33,119	-
02/22/97	cf	2,847	30,753	-
03/01/97	cf	7,739	4,665	-
03/08/97	-	6,757	3,109	-
03/15/97	-	5,630	cf	cf
03/22/97	-	4,689	cf	cf
03/29/97	-	7,708	-	cf
04/05/97	-	4,848	-	cf
04/12/97	-	5,934	-	cf
04/19/97	-	7,826	-	cf
04/26/97	-	4,825	-	cf
05/03/97	-	2,623	-	cf
05/10/97	-	-	-	-
05/17/97	-	-	-	cf
05/24/97	-	-	-	cf
05/31/97	-	-	cf	-
06/07/97	-	-	-	-
06/14/97	-	-	-	-
06/21/97	-	-	-	-
06/28/97	-	-	-	-
07/05/97	-	-	-	-
07/12/97	-	-	-	-
07/19/97	-	-	-	-
07/26/97	-	-	-	-
08/02/97	-	-	-	-
08/09/97	-	-	-	-
08/16/97	-	-	-	-
08/23/97	-	-	cf	-
08/30/97	-	-	-	-
09/06/97	cf	-	19,049	-
09/13/97	-	-	30,540	-
09/20/97	cf	-	21,392	-
09/27/97	cf	-	15,986	-
10/04/97	cf	-	26,900	-
10/11/97	cf	-	32,064	-
10/18/97	cf	cf	26,604	-
10/25/97	-	-	-	-
11/01/97	-	-	-	-
11/08/97	-	-	-	-
11/15/97	-	-	-	-
11/22/97	-	-	-	-
11/29/97	-	-	-	-
12/06/97	-	-	-	-
12/13/97	-	-	-	-
12/20/97	-	-	-	-
12/27/97	-	-	-	-
Total	5,208	68,229	347,339	20,579

Source: National Marine Fisheries Service 1997 Blend Data

Note: cf indicates that less than three vessels (plants) participated in the fishery

Table 8.6 Catch Delivered to True Motherships by Bering Sea and Aleutian Islands Target Fisheries

Week	The Range of Catch (mt) by Target Fishery		
	Bottom Pollock	Pacific Cod	Midwater Pollock
01/25/97	-	-	-
02/01/97	101	-	13,763
02/08/97	-	-	14,332
02/15/97	-	-	16,661
02/22/97	-	-	11,123
03/01/97	-	cf	cf
03/08/97	-	cf	-
03/15/97	-	cf	-
03/22/97	-	cf	-
03/29/97	-	cf	-
04/05/97	-	cf	-
04/12/97	-	-	-
04/19/97	-	-	-
04/26/97	-	-	-
05/03/97	-	-	-
05/10/97	-	-	-
05/17/97	-	-	-
05/24/97	-	-	-
05/31/97	-	-	-
06/07/97	-	-	-
06/14/97	-	-	-
06/21/97	-	-	-
06/28/97	-	-	-
07/05/97	-	-	-
07/12/97	-	-	-
07/19/97	-	-	-
07/26/97	-	-	-
08/02/97	-	-	-
08/09/97	-	-	-
08/16/97	-	-	-
08/23/97	-	-	-
08/30/97	-	-	-
09/06/97	-	-	8,449
09/13/97	-	-	10,686
09/20/97	-	-	10,675
09/27/97	-	-	11,267
10/04/97	-	-	12,624
10/11/97	-	-	cf
10/18/97	-	-	-
10/25/97	-	-	-
11/01/97	-	-	-
11/08/97	-	-	-
11/15/97	-	-	-
11/22/97	-	-	-
11/29/97	-	-	-
12/06/97	-	-	-
12/13/97	-	-	-
12/20/97	-	-	-
12/27/97	-	-	-
Grand Total	101	cf[1]	109,875

Source: National Marine Fisheries Service 1997 Blend Data

[1] Only one "True Mothership" participated in the Pacific cod fishery during 1997

Note: cf indicates that less than three vessels (plants) participated in the fishery that week and the data are confidential

Table 8.7 Pollock Surimi and Surimi & Fillet C/P Fleet's Catch by Bering Sea and Aleutian Islands Target Fisheries (CDQ Harvests are Excluded)

Week	The Range of Catch (mt) by Target Fishery						
	Atka Mackerel	Bottom Pollock	Pacific Cod	Other Flatfish	Midwater Pollock	Rockfish	Yellowfin Sole
01/25/97	-	-	-	-	2,906	-	-
02/01/97	-	2,519	-	-	41,535	-	-
02/08/97	-	4,701	-	-	41,447	-	-
02/15/97	-	3,441	-	-	43,005	-	-
02/22/97	-	6,460	-	-	24,899	-	-
03/01/97	cf.	cf.	-	-	4,625	-	cf.
03/08/97	4,955	-	-	-	-	-	2,901
03/15/97	3,193	-	cf.	cf.	1,901	-	5,433
03/22/97	cf.	cf.	-	cf.	cf.	-	2,906
03/29/97	cf.	-	cf.	-	-	-	cf.
04/05/97	-	-	-	-	-	-	4,454
04/12/97	cf.	-	-	-	-	-	2,251
04/19/97	cf.	-	-	-	-	-	cf.
04/26/97	-	-	-	-	-	-	cf.
05/03/97	-	-	cf.	-	-	-	cf.
05/10/97	-	-	cf.	-	-	cf.	cf.
05/17/97	-	-	-	-	-	-	cf.
05/24/97	-	-	-	-	-	-	cf.
05/31/97	-	-	-	-	-	-	cf.
06/07/97	-	-	-	-	-	-	cf.
06/14/97	-	-	-	-	-	-	cf.
06/21/97	-	-	-	-	-	-	-
06/28/97	-	-	-	-	-	-	-
07/05/97	-	-	-	-	-	-	-
07/12/97	-	-	-	-	-	-	-
07/19/97	-	-	-	-	-	-	-
07/26/97	-	-	-	-	-	-	-
08/02/97	-	-	-	-	-	-	-
08/09/97	-	-	-	-	-	-	-
08/16/97	-	-	-	-	-	-	-
08/23/97	-	-	-	-	-	-	-
08/30/97	-	-	-	-	-	-	-
09/06/97	-	cf.	-	-	26,496	-	-
09/13/97	-	-	-	-	54,325	-	-
09/20/97	-	-	-	-	26,854	-	-
09/27/97	-	-	-	-	48,129	-	-
10/04/97	-	-	-	-	35,997	-	-
10/11/97	-	-	-	-	-	-	cf.
10/18/97	-	-	-	-	-	-	cf.
10/25/97	-	-	-	-	-	-	cf.
11/01/97	-	-	-	-	-	-	cf.
11/08/97	-	-	-	-	-	-	cf.
11/15/97	-	-	-	-	-	-	cf.
11/22/97	-	-	-	-	-	-	cf.
11/29/97	-	-	-	-	-	-	cf.
12/06/97	-	-	-	-	-	-	cf.
12/13/97	-	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-	-
Total	13,011	22,216	993	cf.	353,011	cf.	32,577

Source: National Marine Fisheries Service 1997 Blend Data

Note: cf indicates that less than three vessels (plants) participated in the fishery that week and the data are confidential

Table 8.8 Pollock Fillet C/P Fleet's Catch by Bering Sea and Aleutian Islands Target Fisheries (CDQ Harvests were Excluded)

Week	The Range of Catch (mt) by Target Fishery					
	Bottom Pollock	Pacific Cod	Flathead Sole	Midwater Pollock	Rock Sole	Yellowfin Sole
01/25/97	-	cf	-	cf	-	-
02/01/97	2,205	cf	-	21,989	-	-
02/08/97	-	cf	-	21,931	-	-
02/15/97	1,445	cf	-	22,332	-	-
02/22/97	3,429	148	-	12,564	-	cf
03/01/97	-	2,176	-	873	-	cf
03/08/97	-	1,794	-	-	-	cf
03/15/97	cf	4,858	-	cf	cf	cf
03/22/97	cf	7,231	-	-	-	1,590
03/29/97	-	7,247	-	cf	-	-
04/05/97	-	3,496	-	-	-	cf
04/12/97	-	1,851	-	-	-	cf
04/19/97	-	1,452	-	-	-	1,390
04/26/97	-	cf	-	-	-	cf
05/03/97	-	-	cf	-	-	cf
05/10/97	-	cf	-	-	cf	-
05/17/97	-	-	-	-	-	cf
05/24/97	-	-	-	-	-	cf
05/31/97	-	-	-	-	-	cf
06/07/97	-	-	-	-	-	cf
06/14/97	-	-	-	-	-	cf
06/21/97	-	-	-	-	cf	cf
06/28/97	-	-	-	-	-	-
07/05/97	-	-	cf	-	cf	-
07/12/97	-	-	cf	-	cf	-
07/19/97	-	-	cf	-	cf	-
07/26/97	-	-	cf	-	cf	-
08/02/97	-	-	-	-	-	-
08/09/97	-	cf	-	-	-	-
08/16/97	-	cf	-	-	-	260
08/23/97	-	-	-	-	cf	1,523
08/30/97	-	-	cf	-	cf	cf
09/06/97	3,270	-	cf	6,861	-	cf
09/13/97	2,624	-	-	15,041	cf	cf
09/20/97	cf	-	-	11,515	-	cf
09/27/97	-	-	-	18,519	-	cf
10/04/97	cf	-	-	14,349	-	cf
10/11/97	-	-	-	-	-	cf
10/18/97	-	-	-	-	-	cf
10/25/97	-	-	-	-	-	cf
11/01/97	-	-	-	-	-	cf
11/08/97	-	-	-	-	-	cf
11/15/97	-	-	-	-	cf	cf
11/22/97	-	-	-	-	-	cf
11/29/97	-	-	-	-	-	cf
12/06/97	-	-	-	-	-	-
12/13/97	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-
Total	16,218	30,900	688	147,010	1,971	17,633

Source: National Marine Fisheries Service 1997 Blend Data

Note: cf indicates that less than three vessels (plants) participated in the fishery that week and the data are confidential.

Table 8.9 H&G Fleet's Catch by Bering Sea and Aleutian Islands Target Fisheries

Week	Metric Tons of Catch by Target Fishery											
	Atka Mackerel	Bottom Pollock	Pacific Cod	Other Flatfish	Rockfish	Flathead Sole	Other Groundfish	Midwater Pollock	Rock Sole	Turbot	Arrowtooth	Yellowfin Sole
01/25/97	6,749	-	cf	-	-	-	-	-	6,858	-	-	-
02/01/97	6,387	-	3,374	-	-	-	-	-	4,150	-	-	-
02/08/97	3,603	cf	3,888	-	-	-	-	-	6,764	-	-	-
02/15/97	cf	cf	2,301	-	-	-	-	-	11,715	-	-	-
02/22/97	cf	cf	3,363	-	1,117	-	-	-	8,681	-	-	cf
03/01/97	1,701	-	2,154	-	3,267	cf	-	-	1,304	-	-	2,294
03/08/97	5,701	-	1,210	-	729	cf	-	-	cf	-	-	1,894
03/15/97	5,643	-	cf	-	cf	cf	-	-	cf	-	-	4,084
03/22/97	5,992	-	536	-	cf	-	-	-	-	-	-	4,007
03/29/97	3,076	-	2,504	-	1,377	cf	-	-	cf	-	-	cf
04/05/97	4,776	-	495	-	cf	2,674	-	-	-	-	-	-
04/12/97	6,387	-	cf	-	-	2,747	-	-	-	-	-	cf
04/19/97	5,081	-	cf	-	cf	-	-	-	-	-	-	4,866
04/26/97	1,937	-	-	-	-	cf	-	-	cf	-	-	3,613
05/03/97	-	-	1,914	-	-	cf	cf	-	cf	-	-	2,823
05/10/97	-	cf	1,849	-	cf	cf	-	-	cf	-	cf	1,284
05/17/97	-	-	-	-	-	cf	-	-	cf	-	-	7,695
05/24/97	-	-	cf	-	-	-	-	-	cf	-	-	6,125
05/31/97	-	-	-	-	-	-	-	-	cf	-	-	4,793
06/07/97	-	-	-	-	-	-	-	-	cf	-	-	6,680
06/14/97	-	-	-	cf	-	-	-	-	1,612	-	-	5,658
06/21/97	-	-	839	cf	-	-	-	-	779	-	cf	934
06/28/97	-	-	171	-	-	-	-	-	-	-	-	-
07/05/97	-	-	cf	-	-	1,561	-	-	cf	268	-	-
07/12/97	-	-	-	-	-	2,771	-	-	448	255	-	-
07/19/97	-	-	-	-	-	2,669	-	-	2,994	348	-	-
07/26/97	-	-	69	-	-	3,487	-	-	3,578	256	cf	-
08/02/97	-	cf	778	cf	-	-	-	-	-	-	-	-
08/09/97	-	-	cf	-	-	-	-	-	-	-	-	-
08/16/97	-	-	cf	cf	-	cf	-	-	132	-	-	2,885
08/23/97	-	-	-	cf	-	cf	-	-	923	-	-	12,949
08/30/97	-	-	-	cf	-	cf	-	-	1,283	-	-	7,710
09/06/97	-	cf	-	443	-	cf	-	cf	cf	-	-	11,599
09/13/97	-	cf	-	cf	-	cf	-	1,110	cf	-	-	8,559
09/20/97	-	-	-	-	-	-	-	cf	-	-	-	8,855
09/27/97	-	-	-	-	-	cf	-	cf	-	-	-	8,211
10/04/97	-	cf	cf	-	-	cf	-	-	-	-	-	8,322
10/11/97	-	-	-	-	-	-	-	-	-	-	-	8,848
10/18/97	-	-	-	-	-	cf	-	-	-	-	-	6,277
10/25/97	-	-	-	-	-	-	-	-	-	-	-	7,061
11/01/97	-	-	-	-	-	-	-	-	-	-	-	6,062
11/08/97	-	-	-	-	-	-	-	-	-	-	-	4,996
11/15/97	-	-	-	-	-	-	-	-	cf	-	-	4,617
11/22/97	-	-	-	-	-	-	-	-	-	-	-	3,396
11/29/97	-	-	-	-	-	-	-	-	-	-	-	836
12/06/97	-	-	-	-	-	-	-	-	-	-	-	cf
12/13/97	-	-	-	-	-	-	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-	-	-	-	-	-	-
Total	59,368	2,112	28,599	1,848	10,753	18,982	cf	2,549	55,852	1,126	135	169,283

Source: National Marine Fisheries Service 1997 Blend Data

Note: cf indicates that less than three vessels (plants) participated in the fishery that week and the data are confidential

Table 8.10 1997 Pollock Inshore Processors Deliveries from Bering Sea and Aleutian Islands Target Fisheries

Week	Number of Plants Listed in NMFS Blend Data as Participating in the Target Fishery			
	Bottom Pollock	Pacific Cod	Midwater Pollock	Yellowfin Sole
01/25/97	-	3	6	-
02/01/97	-	3	8	-
02/08/97	-	4	8	-
02/15/97	1	3	8	-
02/22/97	1	4	8	-
03/01/97	2	5	4	-
03/08/97	-	6	3	-
03/15/97	-	6	1	2
03/22/97	-	5	1	2
03/29/97	-	6	-	1
04/05/97	-	5	-	1
04/12/97	-	7	-	2
04/19/97	-	6	-	2
04/26/97	-	4	-	2
05/03/97	-	5	-	2
05/10/97	-	-	-	-
05/17/97	-	-	-	1
05/24/97	-	-	-	1
05/31/97	-	-	1	-
06/07/97	-	-	-	-
06/14/97	-	-	-	-
06/21/97	-	-	-	-
06/28/97	-	-	-	-
07/05/97	-	-	-	-
07/12/97	-	-	-	-
07/19/97	-	-	-	-
07/26/97	-	-	-	-
08/02/97	-	-	-	-
08/09/97	-	-	-	-
08/16/97	-	-	-	-
08/23/97	-	-	1	-
08/30/97	-	-	3	-
09/06/97	1	-	6	-
09/13/97	-	-	7	-
09/20/97	1	-	6	-
09/27/97	2	-	7	-
10/04/97	1	-	8	-
10/11/97	2	-	8	-
10/18/97	1	1	8	-
10/25/97	-	-	-	-
11/01/97	-	-	-	-
11/08/97	-	-	-	-
11/15/97	-	-	-	-
11/22/97	-	-	-	-
11/29/97	-	-	-	-
12/06/97	-	-	-	-
12/13/97	-	-	-	-
12/20/97	-	-	-	-
12/27/97	-	-	-	-
Total	12	73	102	16

Source: National Marine Fisheries Service 1997 Blend Data

Table 8.11 1997 True Mothership Vessel's Processing by Bering Sea and Aleutian Islands Target Fishery

Week	Number of Vessels Listed in NMFS Blend Data as Participating in the Target Fishery		
	Bottom Pollock	Pacific Cod	Midwater Pollock
01/25/97	-	-	-
02/01/97	1	-	3
02/08/97	-	-	3
02/15/97	-	-	3
02/22/97	-	-	3
03/01/97	-	1	1
03/08/97	-	1	-
03/15/97	-	1	-
03/22/97	-	1	-
03/29/97	-	1	-
04/05/97	-	1	-
04/12/97	-	-	-
04/19/97	-	-	-
04/26/97	-	-	-
05/03/97	-	-	-
05/10/97	-	-	-
05/17/97	-	-	-
05/24/97	-	-	-
05/31/97	-	-	-
06/07/97	-	-	-
06/14/97	-	-	-
06/21/97	-	-	-
06/28/97	-	-	-
07/05/97	-	-	-
07/12/97	-	-	-
07/19/97	-	-	-
07/26/97	-	-	-
08/02/97	-	-	-
08/09/97	-	-	-
08/16/97	-	-	-
08/23/97	-	-	-
08/30/97	-	-	-
09/06/97	-	-	3
09/13/97	-	-	3
09/20/97	-	-	3
09/27/97	-	-	3
10/04/97	-	-	3
10/11/97	-	-	1
10/18/97	-	-	-
10/25/97	-	-	-
11/01/97	-	-	-
11/08/97	-	-	-
11/15/97	-	-	-
11/22/97	-	-	-
11/29/97	-	-	-
12/06/97	-	-	-
12/13/97	-	-	-
12/20/97	-	-	-
12/27/97	-	-	-
Total	1	6	29

Source: National Marine Fisheries Service 1997 Blend Data

Table 8.12 1997 Pollock Surimi and Surimi & Fillet C/P Fleet's Catch by Bering Sea and Aleutian Islands Target Fishery (CDQ Harvests are Excluded)

Week	Number of Vessels Listed in NMFS Blend Data as Participating in the Target Fishery						
	Atka Mackerel	Bottom Pollock	Pacific Cod	Other Flatfish	Midwater Pollock	Rockfish	Yellowfin Sole
01/25/97	-	-	-	-	3	-	-
02/01/97	-	3	-	-	16	-	-
02/08/97	-	3	-	-	15	-	-
02/15/97	-	3	-	-	16	-	-
02/22/97	-	5	-	-	14	-	-
03/01/97	2	1	-	-	13	-	1
03/08/97	4	-	-	-	-	-	3
03/15/97	4	-	1	1	3	-	4
03/22/97	2	1	-	1	2	-	4
03/29/97	1	-	2	-	-	-	1
04/05/97	-	-	-	-	-	-	3
04/12/97	1	-	-	-	-	-	3
04/19/97	1	-	-	-	-	-	2
04/26/97	-	-	-	-	-	-	2
05/03/97	-	-	1	-	-	-	1
05/10/97	-	-	1	-	-	1	1
05/17/97	-	-	-	-	-	-	1
05/24/97	-	-	-	-	-	-	1
05/31/97	-	-	-	-	-	-	1
06/07/97	-	-	-	-	-	-	1
06/14/97	-	-	-	-	-	-	1
06/21/97	-	-	-	-	-	-	-
06/28/97	-	-	-	-	-	-	-
07/05/97	-	-	-	-	-	-	-
07/12/97	-	-	-	-	-	-	-
07/19/97	-	-	-	-	-	-	-
07/26/97	-	-	-	-	-	-	-
08/02/97	-	-	-	-	-	-	-
08/09/97	-	-	-	-	-	-	-
08/16/97	-	-	-	-	-	-	-
08/23/97	-	-	-	-	-	-	-
08/30/97	-	-	-	-	-	-	-
09/06/97	-	2	-	-	15	-	-
09/13/97	-	-	-	-	16	-	-
09/20/97	-	-	-	-	16	-	-
09/27/97	-	-	-	-	16	-	-
10/04/97	-	-	-	-	16	-	-
10/11/97	-	-	-	-	-	-	1
10/18/97	-	-	-	-	-	-	1
10/25/97	-	-	-	-	-	-	1
11/01/97	-	-	-	-	-	-	1
11/08/97	-	-	-	-	-	-	1
11/15/97	-	-	-	-	-	-	1
11/22/97	-	-	-	-	-	-	1
11/29/97	-	-	-	-	-	-	1
12/06/97	-	-	-	-	-	-	1
12/13/97	-	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-	-
Total	15	18	5	2	161	1	39

Source: National Marine Fisheries Service 1997 Blend Data

Table 8.13 1997 Pollock Fillet CP Vessel's Catch by Bering Sea and Aleutian Islands Target Fishery (no CDQ)

Week	Number of Vessels Listed in NMFS Blend Data as Participating in the Target Fishery					
	Bottom Pollock	Pacific Cod	Flathead Sole	Midwater Pollock	Rock Sole	Yellowfin Sole
01/25/97	-	1	-	1	-	-
02/01/97	4	2	-	11	-	-
02/08/97	-	2	-	12	-	-
02/15/97	4	1	-	12	-	-
02/22/97	4	3	-	9	-	1
03/01/97	-	7	-	3	-	1
03/08/97	-	9	-	-	-	1
03/15/97	1	9	-	2	1	1
03/22/97	2	9	-	-	-	3
03/29/97	-	12	-	1	-	-
04/05/97	-	8	-	-	-	2
04/12/97	-	4	-	-	-	2
04/19/97	-	3	-	-	-	3
04/26/97	-	2	-	-	-	2
05/03/97	-	-	1	-	-	2
05/10/97	-	1	-	-	2	-
05/17/97	-	-	-	-	-	2
05/24/97	-	-	-	-	-	2
05/31/97	-	-	-	-	-	2
06/07/97	-	-	-	-	-	2
06/14/97	-	-	-	-	-	2
06/21/97	-	-	-	-	1	1
06/28/97	-	-	-	-	-	-
07/05/97	-	-	1	-	1	-
07/12/97	-	-	1	-	1	-
07/19/97	-	-	2	-	1	-
07/26/97	-	-	2	-	1	-
08/02/97	-	-	-	-	-	-
08/09/97	-	1	-	-	-	-
08/16/97	-	1	-	-	-	3
08/23/97	-	-	-	-	1	3
08/30/97	-	-	1	-	1	1
09/06/97	5	-	1	11	-	1
09/13/97	6	-	-	11	1	1
09/20/97	1	-	-	11	-	1
09/27/97	-	-	-	12	-	1
10/04/97	1	-	-	11	-	1
10/11/97	-	-	-	-	-	2
10/18/97	-	-	-	-	-	2
10/25/97	-	-	-	-	-	2
11/01/97	-	-	-	-	-	2
11/08/97	-	-	-	-	-	2
11/15/97	-	-	-	-	1	1
11/22/97	-	-	-	-	-	2
11/29/97	-	-	-	-	-	1
12/06/97	-	-	-	-	-	-
12/13/97	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-
Grand Total	28	75	9	107	12	55

Source: National Marine Fisheries Service 1997 Blend Data

Table 8.14 1997 H&G Fleet Vessel Count by Bering Sea and Aleutian Islands Target Fishery

Week	Number of Vessels Listed in NMFS Blend Data as Participating in the Target Fishery											
	Atka Mackerel	Bottom Pollock	Pacific Cod	Other Flatfish	Rockfish	Flathead Sole	Other Groundfish	Midwater Pollock	Rock Sole	Turbot	Arrowtooth	Yellowfin Sole
01/25/97	8	-	2	-	-	-	-	-	15	-	-	-
02/01/97	8	-	8	-	-	-	-	-	9	-	-	-
02/08/97	8	1	7	-	-	-	-	-	17	-	-	-
02/15/97	1	1	4	-	-	-	-	-	17	-	-	-
02/22/97	1	1	10	-	4	-	-	-	16	-	-	2
03/01/97	5	-	5	-	7	1	-	-	5	-	-	7
03/08/97	8	-	5	-	3	2	-	-	2	-	-	7
03/15/97	7	-	2	-	1	1	-	-	2	-	-	9
03/22/97	7	-	4	-	2	-	-	-	-	-	-	10
03/29/97	6	-	12	-	3	1	-	-	1	-	-	1
04/05/97	7	-	3	-	2	7	-	-	-	-	-	-
04/12/97	8	-	1	-	-	9	-	-	-	-	-	2
04/19/97	7	-	2	-	2	-	-	-	-	-	-	11
04/26/97	7	-	-	-	-	1	-	-	1	-	-	17
05/03/97	-	-	16	-	-	2	1	-	1	-	-	15
05/10/97	-	1	14	-	1	2	-	-	2	-	2	14
05/17/97	-	-	-	-	-	2	-	-	1	-	-	16
05/24/97	-	-	1	-	-	-	-	-	1	-	-	16
05/31/97	-	-	-	-	-	-	-	-	2	-	-	13
06/07/97	-	-	-	-	-	-	-	-	1	-	-	14
06/14/97	-	-	-	1	-	-	-	-	3	-	-	12
06/21/97	-	-	5	1	-	-	-	-	5	-	1	8
06/28/97	-	-	3	-	-	-	-	-	-	-	-	-
07/05/97	-	-	1	-	-	7	-	-	1	4	-	-
07/12/97	-	-	-	-	-	9	-	-	3	3	-	-
07/19/97	-	-	-	-	-	12	-	-	7	5	-	-
07/26/97	-	-	3	-	-	12	-	-	8	3	1	-
08/02/97	-	1	4	1	-	-	-	-	-	-	-	-
08/09/97	-	-	2	-	-	-	-	-	-	-	-	-
08/16/97	-	-	1	1	-	1	-	-	3	-	-	19
08/23/97	-	-	-	1	-	2	-	-	5	-	-	23
08/30/97	-	-	-	2	-	2	-	-	5	-	-	19
09/06/97	-	1	-	3	-	2	-	1	1	-	-	22
09/13/97	-	1	-	1	-	2	-	3	1	-	-	23
09/20/97	-	-	-	-	-	-	-	2	-	-	-	22
09/27/97	-	-	-	-	-	1	-	1	-	-	-	22
10/04/97	-	1	1	-	-	1	-	-	-	-	-	19
10/11/97	-	-	-	-	-	-	-	-	-	-	-	18
10/18/97	-	-	-	-	-	1	-	-	-	-	-	15
10/25/97	-	-	-	-	-	-	-	-	-	-	-	14
11/01/97	-	-	-	-	-	-	-	-	-	-	-	14
11/08/97	-	-	-	-	-	-	-	-	-	-	-	13
11/15/97	-	-	-	-	-	-	-	-	1	-	-	11
11/22/97	-	-	-	-	-	-	-	-	-	-	-	9
11/29/97	-	-	-	-	-	-	-	-	-	-	-	4
12/06/97	-	-	-	-	-	-	-	-	-	-	-	1
12/13/97	-	-	-	-	-	-	-	-	-	-	-	-
12/20/97	-	-	-	-	-	-	-	-	-	-	-	-
12/27/97	-	-	-	-	-	-	-	-	-	-	-	-
Total	88	8	116	11	25	80	1	7	136	15	4	442

Source: National Marine Fisheries Service 1997 Blend Data

8.2.4 Prices for Various (non-pollock) Species

Table 8.15 shows the first wholesale prices (FOB Alaska) for products made from various groundfish species during 1996. Prices for pollock were discussed in Chapter 3 and are not presented again here. The purpose of providing these prices is to give the reader an idea of the first wholesale value of other species. This information may be useful if the reader wishes to determine the approximate quantity of other species that would be required to make up lost revenue in the pollock target fishery, if the I/O3 allocation percentages change. Due to the uncertainty surrounding which fisheries vessels might enter in the future, it is left to the reader to use their own judgements about effort flows when making these calculations. The reader should also be aware that some product categories included here are quite broad. For example, the definition of yellowfin kirimi used here could simply be headed and tailed, or a higher valued cut of the prime flesh. These cuts would likely sell in different markets for different prices.

Table 8.15 First Wholesale Quantity, Value, and Price for 1996

	Quantity (1,000 mt)	Value (millions $)	$ / Ton
Pacific cod			
Whole fish	8.1	$ 8.7	$ 1,074
H&G	57.7	$ 98.2	$ 1,702
Salted/split	10.8	$ 23.6	$ 2,185
Fillets	19.3	$ 71.8	$ 3,720
Other products	17.0	$ 22.3	$ 1,312
All products	113.0	$ 224.7	$ 1,988
Sablefish			
H&G	10.7	$ 96.6	$ 9,028
Other products	0.1	$ 0.3	$ 3,000
All products	10.8	$ 96.9	$ 8,972
Other Flatfish			
Wholefish	0.9	$ 1.2	$ 1,304
H&G	9.6	$ 19.9	$ 2,075
H&G w/roe	1.4	$ 4.9	$ 3,539
Other products	0.3	$ 0.2	$ 721
All products	12.2	$26.3	$ 2,144
Rock sole			
Whole fish	0.8	$ 0.55	$ 656
H&G	2.7	$ 3.1	$ 1,141
H&G w/roe	6.3	$ 24.7	$ 3,908
All Products	10.1	$ 28.5	$ 2,840

Table 8.15 continued			
Yellowfin sole			
Whole fish	27.7	$ 15.7	$ 566
H&G	13.1	$ 10.4	$ 789
Kirimi	14.1	$ 21.9	$1,549
Other products	2.3	$ 0.5	$ 212
All Products	57.2	$ 48.4	$ 846
Rockfish			
Wholefish	2.5	$ 2.5	$ 1,000
H&G	11.5	$ 20.4	$ 1,774
Other products	1.0	$ 3.4	$ 3,400
All products	15.0	$ 26.2	$ 1,747
Atka mackerel			
Whole fish	16.7	$ 15.1	$ 904
H&G	38.8	$ 52.9	$ 1,363
Other products	0.8	$ 0.8	$ 1,000
All products	54.6	$ 68.7	$ 1,218

Source: Economic Status of the Groundfish Fisheries Off Alaska, 1996 (Table 31, pp 64-65, November 21, 1997.
Quantity data were derived from the 1996 National Marine Fisheries Weekly Production Reports.
Value data were derived from the 1996 ADF&G Commercial Operator Annual Reports.

8.2.5 Summary of Spillover Considerations

Potential preemption of H&G fisheries

It would be extremely speculative to try and predict how vessels might react to a change in the pollock allocations, and whether and to what extent vessels would attempt to make up lost revenues in other fisheries. However, it is clear from the preceding information that many vessels, including large capacity catcher/processors as well as smaller catcher vessels, do have the capability to do so, and have exhibited entry and exit patterns over time among fisheries. Entry/exit patterns have occurred over the past few years in the absence of any change in pollock allocations, and could be due simply to a decreasing pollock TAC overall. While it is difficult to isolate the reasons for business decisions regarding trade-offs among various fisheries, it is apparent that a change in the pollock allocations, combined with generally decreasing TACs, could induce vessels typically concentrated on pollock to enter alternative fisheries, at the 'expense' of existing participants in those fisheries.

The information in the preceding section illustrates that while many of the 'surimi' catcher/processors are heavily concentrated on pollock and whiting, other species, particularly yellowfin sole, have comprised a portion of their annual round of fishing activity. Several of the 'fillet' catcher/processors have also exhibited a mix of fisheries in their annual fishing round. When examining the 1997 fishing activities by sector (Tables 8.5 through 8.14), it is apparent that the majority of effort expended on non-pollock fisheries by these catcher/processors occurred after the close of the pollock fishery, but when alternative fisheries such as yellowfin sole were still open. With a reduced pollock quota available, it is possible that these vessels would move into these alternative fisheries earlier, and take more of the available TAC (or more of the available PSC allocated to those fisheries) than they otherwise would. This scenario assumes a reduce pollock TAC available to those catcher/processors. If catcher vessels realized a reduced TAC, it is possible that they would concentrate more activity on these alternative fisheries as well.

Wholesale price information for processed product of non-pollock species is presented in the preceding section (Table 8.15) in order to derive insights as to the 'replacement' value of these species for lost pollock opportunities. For comparison, we derived a weighted average for pollock products (using the 1996 production and value information), which comes to about $1900 per mt of product. When comparing against the values in Table 8.15, we see that the value for pollock is very similar to that for Pacific cod and other flatfish ($1988/mt and $2144/mt respectively), is less than the value of rock sole ($2840/mt), and is more than twice the value of yellowfin sole products ($846/mt). It is also higher than Atka mackerel which comes in at $1218/mt of product. These latter two species, yellowfin sole and Atka mackerel, are of primary concern to the H&G factory trawl fleet (public comment from Groundfish Forum, April 1998).

In very simplistic terms, this information is indicative of the amounts of harvest of these two species which would be required to make up for revenues lost in the pollock fisheries. Notwithstanding different product recovery rates for these species, the information suggests that for every metric ton of pollock 'lost' in a reallocation, a little over 2 mt of yellowfin sole harvest, or 1.5 mt of Atka mackerel harvest, would be required to make up for that 'lost' pollock. To further illustrate this effect, let's assume an *example* of a 2% loss of pollock share (2 percentage points) by the offshore sector, which would be about 20,000 mt (based on current TAC levels). To make up for that would require anywhere from 30,000 mt of Atka mackerel to 45,000 mt of yellowfin sole, or some combination of these and other species. These numbers represent a significant portion of an already fully utilized groundfish quota.

In public comment submitted by the Groundfish Forum in April 1998, a similar comparison is performed, based on gross revenues per ton of raw fish. This exercise projected a ton of pollock to be worth $624 (1997 prices) and examined the impacts of a major reallocation away from the offshore sector (and presented arguments as to why the inshore sector vessels would be far less likely to make significant incursions into the 'H&G' fisheries). The Groundfish Forum analysis examined Alternative 3D, which was estimated to result in a loss of 148,000 mt of pollock. That analysis estimates that the value per mt of raw fish is $480 for yellowfin sole and $582 for Atka mackerel, such that the total value of this fishery (in this estimation) is roughly equivalent to 90% of the 'lost' pollock revenues in this example.

It is highly unlikely, due to timing of seasons and other factors, that the offshore fleet would be able to recoup all of that loss in the yellowfin sole and Atka mackerel fisheries. The question is to what extent they would do so, and how that would impact the viability of the current H&G fleet. It is incumbent upon the decision-making process to recognize the potential impacts to these non-pollock fisheries.

<u>Other spillover considerations</u>

During public testimony in April 1998, another type of 'spillover' effect was identified, this one relating to processor sector impacts. The example identified by Gulf of Alaska based processors (primarily involved in fisheries other than pollock) was that a reallocation of pollock to the inshore sector would benefit a small group of inshore processors, thereby possibly creating competitive advantages for that group with regard to processing of other species, such as salmon. While no mitigating measures were proposed, it was suggested that this issue be recognized and that possible impacts of this nature be tracked and examined in a future analysis.

8.2.6 Potential Mitigating Measures

There are management measures outside of the current I/O3 package that could be considered by the Council, in the event a change in the pollock allocations is made and the Council feels it is necessary to afford some protection to the existing H&G fleet. For example, the Council has previously developed 'stand-down' provisions, relative to both A and B pollock seasons, to mitigate crossover, fair start and preemption issues among fisheries similar, additional management measures could be developed to address the potential spillover impacts between these fisheries. Stand-down provisions previously have been developed and implemented in relatively short time frames, suggesting the possibility that these could be developed in time for the 1999 fishing seasons, if initiated by the Council in June of 1998.

Other potential measures have previously been identified, such as species endorsements in the Council's LLP, though that specific option has already been considered and rejected by the Council. It is not an option that could be implemented for 1999 in any event, since the LLP will not be implemented until the year 2000.

8.3 Section 303(b)(6) - Limited Entry Considerations

Under Section 303 (b)(6) of the Magnuson Act, the Council and SOC are required to take into account the following factors when developing a limited access system: (A) present participation in the fisheries, (B) historical fishing practices in, and dependence on, the fisheries, (C) the economics of the fisheries, (D) the capability of fishing vessels used in the fisheries to engage in other fisheries, (E) the cultural and social framework of the fisheries, and (F) any other relevant considerations.

Chapter 4 provided a discussion of the "true" mothership alternatives, including the issue of creating an allocation specifically to those operators who "have processed, but never caught" pollock in the BS/AI. This would essentially create a closed class of operations, perhaps limited to only the three existing "true" mothership processors, and perhaps four others who fit the definition above, even though other vessels may have operated in a mothership mode at some point in time, but would not qualify because they have also caught their own fish at some point in time. NOAA GC has opined that this would constitute a limited entry program and would be subject to the provisions of the Act under section 303(b)(6).

This document contains information relevant to all of the factors listed under Section 303(b)(6), including participation patterns, ability to participate in other fisheries, and socio-cultural framework of the fisheries. Limited information is also contained regarding economics of the fisheries and dependence on those fisheries by the participants. Whether that information is sufficient to create a limited entry program for "true" motherships can only be determined by the decision makers (Council and Secretary of Commerce). It is true that the harvest sector, including catcher/processors in the offshore sector, are protected from entry of additional capacity by the Council's license limitation program (LLP), scheduled to take effect in the year 2000. Neither the "true" mothership category nor the inshore plants have any such limited entry protection.

Based on catch and processing data, there are seven operations which "have processed but never caught" pollock between 1991 and 1997, including the three existing "true" mothership operations. No catcher/processors have operated in a "true" mothership capacity over an entire year during this period, though several have taken over-the-side deliveries (i.e., operated in a mothership mode) in addition to catching their own fish. Under the current definition these vessels would be precluded from accessing the "true" mothership allocation. If the Council determines that this definition is to be used, and thereby create a limited entry program for "true" motherships, there are additional issues which will need to be further developed. For example, provisions for transferability of permits, replacement of lost vessels, and other operational restrictions would be necessary.

In April 1998, when the Council reviewed the initial analysis, they added alternatives which would address the "true" mothership allocations by requiring vessels to declare, either each year or for the entire duration of the allocation, which category in which they would operate. This alternative would be similar to the current situation and would eliminate the limited access aspects of creating a "true" mothership allocation, while largely accomplishing the same goal.

When the Council selected their preferred alternative, they opted to leave the "true" motherships in the offshore sector. Because "true" motherships will remain part of the offshore sector, along with the catcher processors, the limited entry concerns discussed above are mooted.

8.4 Regulatory Flexibility Act (IRFA)

The Regulatory Flexibility Act (RFA) first enacted in 1980 was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a federal regulation. Major goals of the RFA are: (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action.

On March 29, 1996, President Clinton signed the Small Business Regulatory Enforcement Fairness Act. Among other things, the new law amended the RFA to allow judicial review of an agency's compliance with the RFA. The 1996 amendments also updated the requirements for a final regulatory flexibility analysis, including a description of the steps an agency must take to minimize the significant economic impact on small entities. Finally, the 1996 amendments expanded the authority of the Chief Counsel for Advocacy of the Small Business Administration (SBA) to file *amicus* briefs in court proceedings involving an agency's violation of the RFA.

8.4.1 Requirement to Prepare an IRFA

If a proposed rule is expected to have a significant economic impact on a substantial number of small entities, an initial regulatory flexibility analysis must be prepared. The central focus of the IRFA should be on the economic impacts of a regulation on small entities and on the alternatives that might minimize the impacts and still accomplish the statutory objectives. The level of detail and sophistication of the analysis should reflect the significance of the impact on small entities. Under 5 U.S.C., Section 603(b) of the RFA, each IRFA is required to address:

- A description of the reasons why action by the agency is being considered;
- A succinct statement of the objectives of, and the legal basis for, the proposed rule;
- A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate);
- A description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;

- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule;

- A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the Magnuson-Stevens Act and any other applicable statutes and that would minimize any significant economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as:

  1. The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;

  2. The clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;

  3. The use of performance rather than design standards;

  4. An exemption from coverage of the rule, or any part thereof, for such small entities.

8.4.2 What is a Small Entity?

The RFA recognizes and defines three kinds of small entities: (1) small businesses, (2) small non-profit organizations, and (3) and small government jurisdictions.

Small businesses. Section 601(3) of the RFA defines a 'small business' as having the same meaning as 'small business concern' which is defined under Section 3 of the Small Business Act. 'Small business' or 'small business concern' includes any firm that is independently owned and operated and not dominate in its field of operation. The SBA has further defined a "small business concern" as one "organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor...A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the form is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture."

The SBA has established size criteria for all major industry sectors in the US including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of $ 3 million for all its affiliated operations worldwide. A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or less persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the $3 million criterion for fish harvesting operations. Finally a wholesale business servicing the fishing industry is a small businesses if it employs 100 or less persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide.

The SBA has established "principles of affiliation" to determine whether a business concern is "independently owned and operated." In general, business concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern's size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805 are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when (1) A person is an affiliate of a concern if the person owns or controls, or has the power to control 50% or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock, or (2) If two or more persons each owns, controls or has the power to control less than 50% of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors or general partners controls the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor and subcontractor are treated as joint venturers if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

Small organizations. The RFA defines "small organizations" as any nonprofit enterprise that is independently owned and operated and is not dominant in its field.

Small governmental jurisdictions. The RFA defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with populations of less than 50,000.

8.4.3 What is a Substantial Number of Small Entities?

In determining the scope, or 'universe', of the entities to be considered in making a significance determination, NMFS generally includes only those entities, both large and small, that can reasonably be expected to be directly or indirectly affected by the proposed action. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (e.g., user group, gear type, geographic area), that segment would be considered the universe for the purpose of this criterion. NMFS then determines what number of these directly or indirectly affected entities are small entities. NMFS generally considers that the 'substantial number' criterion has been reached when more than 20% of those small entities affected by the proposed action are likely to be significantly impacted by the proposed action. This percentage is calculated by dividing the number of small entities impacted by the action by the total number of small entities within the universe. The 20% criterion represents a general guide; there may be instances when, in order to satisfy the intent of the RFA, an IRFA should be prepared even though fewer than 20% of the small entities are significantly impacted.

8.4.4 What is a Significant Economic Impact?

NMFS has determined that an economic impact is significant for the purposes of the RFA if a regulation is likely to result in:

- more than a 5% decrease in annual gross revenues,
- annual compliance costs (e.g., annualized capital, operating, reporting) that increase total costs of production by more than 5%,
- compliance costs as a percent of sales that are 10 or more percent higher for small entities than compliance costs for large entities,
- capital costs of compliance that represent a significant portion of capital available to small entities, considering internal cash flow and external financing capabilities, or
- the regulation is likely to result in 2 or more percent of the small entities affected being forced to cease business operations.

Note that these criteria all deal with adverse or negative economic impacts. NMFS and certain other Federal agencies interpret the RFA as requiring the preparation of an IRFA only for proposed actions expected to have significant adverse economic impacts on a substantial number of small entities over the short, middle, or long term. Most regulatory actions are designed to have net benefits over the long term; however, such actions are not shielded from the RFA's requirement to prepare an IRFA if significant adverse economic impacts on a substantial number of small entities are expected in the short or longer term. Thus, if any action has short-term significant adverse impacts on a substantial number of small entities, even though it will benefit small entities in the long term, an IRFA must be prepared.

8.4.5 Small Entities in the BSAI Pollock Fishery

The BS/AI pollock sector industry profiles prepared for the Council's June 1997 meeting and contained in Appendix 1 identify: (1) the number of operations, by size, capacity, mode of processing, and product form; (2) catch, bycatch, discards, and utilization; (3) relative "operational dependence" deriving from BS/AI pollock fisheries; (4) product mix and output quantities of pollock; (5) price, by product form and markets; (6) employment patterns; (7) linkages to CDQ apportionments; and (8) ownership interests and patterns.

To identify the number and type of business concerns participating in the BS/AI pollock fishery that meet the definition "small entities", the operations described in Appendix 1 must be measured against the size and affiliation standards outlined in section 8.4.2. While available data on ownership and affiliation patterns in the BS/AI pollock fishery are not sufficiently detailed to discern whether each individual business concern meets the definition of "small entity," data available in the sector profiles do allow some general conclusions on the number of small entities in each industry component. These general conclusions are displayed in Table 8.16 for the base year 1996.

Table 8.16 Estimated numbers and types of small entities participating in the BS/AI pollock fishery in 1996

Industry component or type of entity	*Small*	*Large*	*Total*
Inshore sector			
Inshore processors	0	8	8
Catcher-boats < 125' LOA	37	15	52
Catcher-boats ≥ 125' LOA	2	15	17
Offshore sector			
"True" motherships	0	3	3
Catcher-processors	0	31	31
Catcher-boats < 125' LOA	21	5	26
Catcher-boats ≥ 125' LOA	2	0	2
Vessels delivering to both sectors			
Catcher-boats < 125' LOA	1	13	14
Catcher-boats ≥ 125' LOA	0	8	8
Small organizations (CDQ groups)	6	0	6
Government jurisdictions (cities)	60	1	61

Inshore processors. Four of the 8 inshore processors operating in the BS/AI pollock fishery are either wholly owned subsidiaries or close affiliates of Japanese multi-national corporations. Due to their affiliation with large foreign entities with more than 500 employees worldwide, none of these processors is a small entity. Of the remaining 4 inshore processors, 3 are owned by US companies that employ more than 500 persons in all their affiliated operations, and therefore cannot be considered small entities. The remaining inshore processor has been identified as closely affiliated with its 5 delivering catcher-boats and the gross annual receipts of the affiliated entities taken together (the processor and its 5 affiliated catcher-boats) exceed the $3 million criterion for fish harvesting operations. Therefore, none of the inshore processors in the BS/AI pollock fishery appear to meet the criteria for small entities.

Inshore catcher-boats. The sector profiles provided in Appendix 1 identify 119 catcher-boats altogether: 69 operate in the inshore sector exclusively, 28 operate in the offshore sector exclusively, and 22 operate in both sectors. Of the 91 catcher boats that operate exclusively or partly in the inshore sector, the ownership data in the sector profiles identify 26 vessels owned in whole or part by inshore processors. These 26 vessels may be considered to be affiliated with their respective inshore processor owners and cannot therefore be considered small entities because none of the inshore processors in the BS/AI pollock fishery themselves are small entities. An additional 5 catcher boats have been identified as closely affiliated with an inshore floating processor and these 5 catcher boats taken together with their affiliated processor exceed the $3 million criterion for fish harvesting operations and are therefore not believed to be small entities. Furthermore, an additional 20 catcher-boats have ownership affiliations with other catcher-boats or catcher processors. The gross annual receipts of each of these groups of affiliated catcher boats is believed to exceed the $3 million criterion for small entities when all their fisheries earnings are taken as a whole. The remaining 40 catcher boats operating exclusively or partly in the inshore sector are believed to qualify as small entities.

Offshore catcher-boats. Twenty eight catcher boats operate in the offshore sector exclusively and 22 operate in both sectors for a total of 50 offshore catcher boats. Of these, 13 have ownership affiliations with large inshore or offshore processors and, therefore, do not meet the $3 million criterion for small entities. An additional 13 catcher-boats have ownership affiliations with other vessels or operations that taken together with their affiliated entities are believed to exceed the $3 million gross receipts criterion for small entities when all their fisheries earnings are taken as a whole. The remaining 24 catcher boats operating exclusively or partly in the offshore sector are believed to qualify as small entities.

"True" motherships. Three "true" motherships operate in the offshore sector. All 3 "true" motherships have ownership or business affiliations with large Japanese-owned processing companies, and are further affiliated with some of their delivering catcher boats. Taken together with their affiliated entities, none of the "true" motherships are believed to meet the criteria for small entities.

Offshore processors. To qualify as a small entity, a catcher processor must be independently owned and operated, have no more than 49% foreign ownership, and have gross annual receipts of less than $3 million. None of the offshore catcher processors operating in the BS/AI pollock fishery appear to meet the criteria for small entities.

Small organizations. The 6 CDQ groups participating in the BSAI pollock fishery are the only small organizations that have been identified as directly affected by the inshore/offshore alternatives under consideration. Impacts to these small organizations are analyzed in detail in Appendix 3.

Small governmental jurisdictions. The governmental jurisdictions with direct involvement in the BS/AI pollock fishery are described in detail in Appendix 2. In Appendix 3, 56 CDQ communities and 4 Alaska non-CDQ communities (Unalaska, Sand Point, King Cove, and Kodiak) are identified as small governmental jurisdictions with direct involvement in the BSAI pollock fishery. The remaining government jurisdiction with direct involvement in the BS/AI pollock fishery, Seattle, does not qualify as a small governmental jurisdiction.

8.4.6 Impacts of the Preferred Alternative on Small Entities

The Council's preferred alternative

After reviewing the alternatives analyzed in earlier drafts of this document, the Council selected their preferred alternative. This alternative would shift 4% of the BS/AI pollock TAC from the offshore sector to the inshore sector relative to the current allocation. The result would be that 39% of the BSAI pollock would be allocated inshore and 61% offshore after subtraction of the 7.5% CDQ reserve. No separate allocation to "true" motherships was included in this alternative. Instead, the true motherships will remain within the offshore sector.

In addition to the basic allocation split, the Council created a set-aside for BS/AI catcher-boats less than 125' LOA delivering to processors in the inshore sector. These small catcher-boats were allocated 2.5% of the combined BS/AI pollock TAC after subtraction of the 7.5% CDQ reserve. Harvest of the set-aside will take place before the Bering Sea pollock B-season, starting on or about August 25. Any overages or underages resulting from the set-aside fishery will be subtracted from/added to the inshore Bering Sea open access B-season quota.

The rules and regulations pertaining to the CVOA will remain the same, except that during the B-season, harvesting operations allowed inside the CVOA will be restricted to catcher boats delivering to the inshore sector. Under the current regulations, catcher boats delivering to any sector are allowed to operate inside the CVOA during both the A and B-seasons. The new regulations will restrict catcher-boats delivering to offshore processors (including motherships) from fishing inside the CVOA during the pollock B-season. Catcher processors will continue to be restricted from harvesting pollock inside the CVOA during the B-season.

As identified above, the only small entities that participate directly in the BS/AI pollock fishery are independent catcher boats, CDQ groups, and coastal communities. The impacts of the alternatives on coastal communities and CDQ groups are examined in detail in Appendices 2 and 3. The impacts of the Council's preferred alternative on independent catcher boats are examined below.

Impacts of the preferred alternative on independent catcher boats.

As identified in the Table 8.1.6, the only small businesses that participate directly in the BS/AI pollock fishery are independent catcher boats. All other business entities (catcher processors, motherships, shoreside processors, and processor-affiliated catcher boats) participating directly in the BS/AI pollock fishery are considered large entities. Independent catcher boats participate in both the inshore and offshore sectors of the BS/AI pollock fishery. Of the 50 independent catcher-boats estimated to be small entities, 46 are under 125' and 4 are 125' or larger. The estimated number of catcher boats that participated in the 1996 pollock fishery by sector, vessel size and small or large entity status are displayed in the following table:

Table 8.17 Estimated number of catcher boats that participated in the 1996 BS/AI pollock fishery by sector, vessel size and small or large entity status.

Catcher-boat size and sector	***Small entities***		***Large entities***	
	< 125'	***≥ 125'***	***< 125'***	***≥ 125'***
Inshore sector	37	2	15	15
Offshore sector	21	2	5	0
Both sectors	1	0	13	8
Total	59	4	33	23

63 56

The Council's preferred alternative will present three types of impacts on independent catcher boats. First, the allocation shift itself will impact catcher-boats participating in both sectors. Second, the small vessel set-aside fishery will have impacts on catcher boats of all sizes. Finally, the exclusion of offshore catcher boats from the CVOA will impact catcher boats delivering to the offshore sector. Each of these impacts is addressed separately below.

Impacts of the allocation shift on season lengths. Because information on gross and net revenues for individual catcher boats is not available, it is impossible to make quantitative predictions about the impacts of the Council's preferred alternative on net revenues. However, using data from 1997, the most recent full year for which data are available, it is possible to estimate how BS/AI pollock fishing season lengths would have been affected under the Council's preferred alternative.

Table 8.18. Estimated changes in BS/AI pollock inshore and offshore season lengths under the Council's preferred alternative using 1997 TAC amounts and season lengths.

	A-season	B-season	< 125' set-aside fishery	Total
1997 TAC	**470,363**	**574,887**	--	**1,045,250**
1997 inshore allocation (35%)	164,627	201,210		365,837
1997 inshore fishing days	**30**	**47**		**77**
1997 catch/day in mt	5,488	4,281		4,751
1997 offshore allocation (65%)	305,736	373,677		679,413
1997 offshore fishing days	**25**	**31**		**56**
1997 catch/day in mt	12,229	12,054		12,132
Projected changes in numbers of fishing days under the Council's preferred alternative				
Inshore allocation (39%)	183,442	198,075	26,131	407,648
Inshore fishing days	33	46	6	85
Difference from status quo	**+3**	**-1**	**+6**	**+8**
Percent change from status quo	**8.3%**	**-2.2%**	--	**8.6%**
Offshore allocation (61%)	286,921	350,681		637.603
Offshore fishing days	23	29		52
Difference from status quo	**-2**	**-2**		**-4**
Percent change	**-8.0%**	**-6.5%**		**-7.1%**

Table 8.18 displays the estimated differences in the number of fishing days for the various inshore and offshore seasons if the Council's preferred alternative had been in place in 1997. As shown in Table 8.17, 59 of the 63 catcher boat small entities that participated in the BS/AI pollock fishery in 1996 are under 125'. Of the 4 catcher boat small entities longer than 125', two are in the inshore sector and two are in the offshore sector. Clearly, the

set-aside fishery for catcher vessels under 125' will be available to the great majority of catcher boat small entities.

Impacts of the preferred alternative on catcher-boats over 125'. If the Council's preferred alternative had been in place during 1997, inshore catcher-boats over 125' would have gained an additional 3 fishing days during the A-season and would have lost one fishing day during the B-season for a net-gain of 2 fishing days. Two small entities fall into this category. Offshore catcher-boats over 125' would have lost 2 fishing days during both the A and B-seasons for a net loss of 4 fishing days or 7.1 percent compared to the actual 1997 fishery. Two small entities fall into this category. Because the catchability of pollock in the BS/AI is generally greater during the A-season, and fishermen generally receive a roe bonus, the value of a fishing day during the A-season may be marginally greater than the value of a fishing day during B-season. Because existing regulations specify that openings and closures in all groundfish fisheries must occur at 12:00 noon Alaska local time, the BS/AI pollock TACs are not managed down to the last mt of pollock. Rather, the closures are rounded up or down to the nearest whole day which accounts for the differences in percentages displayed in Table 8.18.

Impacts of the preferred alternative on catcher-boats under 125'. If the Council's preferred alternative had been in place during 1997, inshore catcher-boats under 125' would have gained an additional 3 fishing days during the A-season, would have lost 1 fishing day during the B-season and would have gained 6 fishing days during the set-aside fishery for a net gain of 8 fishing days. Thirty-seven small entities fall into this category. All of these small entities will benefit from the Council's preferred alternative. Offshore catcher boats under 125' would have lost 2 fishing days during both the A and B-seasons and would have gained approximately 5 fishing days during the set-aside fishery assuming they were able to secure inshore markets for a net gain of 1 fishing day. Twenty-one small entities fall into this category. Because offshore catcher boats will be excluded from the CVOA during the B-season beginning September 1, these catcher boats will lose at least one fishing day transiting to waters outside the CVOA prior to the start of the B-season and, therefore, will not be able to take advantage of the entire 6-day set-aside fishery.

Estimating the effects of the under 125' set-aside fishery on small entities. A set-aside fishery for catcher-boats under 125' has never been attempted before in Alaska. Consequently, it is difficult to project the costs and benefits of such a fishery on small entities. Anecdotal information from inshore processors indicates that all of the inshore processors in the BS/AI intend to participate in this fishery and that they intend to operate their plants at full capacity. This suggests that the 21 offshore catcher-boats under 125' may be able to secure inshore markets for this 6-day fishery. Although offshore catcher-boats may not be able to participate in the entire 6-day fishery if they intend to be in position to begin fishing for their offshore processors outside the CVOA beginning September 1.

Inshore processors have also stated that they are contemplating using catcher-boats over 125' as tenders to ferry pollock from the fishing grounds to the plants. The use of tenders would enable the under 125' vessels to fish non-stop during the 6-day opening, although they would receive a lower price for fish transferred to large catcher boats at sea than for fish delivered to the plant. At this point, it is impossible to project net revenues to the under 125' catcher-boat fleet as a result of this set-aside fishery because the prices inshore processors are willing to pay for these fish is unknown. Because the any unharvested quota from this fishery will be added to the inshore B-season, inshore processors have little incentive to bargain or insure that the entire set-aside quota is taken. Any fish not caught during the set-aside fishery by catcher-boats under 125' will become immediately available to the larger catcher boat fleet on September 1. Because most of the larger inshore catcher boats are owned by or affiliated with inshore processors, underharvest of the set-aside fishery may actually benefit the inshore processing sector.

Impacts of the exclusion of offshore catcher-boats from the CVOA. An additional element of the Council's preferred alternative is the exclusion of offshore catcher boats from the CVOA during the B-season. This exclusion will impact offshore catcher boats delivering to motherships much more than catcher boats delivering to factory trawlers. All three true motherships have a history of operating within the CVOA during the B-season. Because codends cannot be towed through the water on the surface for significant distances without damaging the pollock, motherships must operate within relatively close proximity to their catcher boats. For this reason, it is not practical for catcher boats delivering to factory trawlers to catch fish within the CVOA and deliver to a factory trawler operating outside the CVOA unless both vessels are operating very close to the boundary of the CVOA. During public testimony, representatives for catcher-boats delivering to motherships expressed concerns about vessel safety if they are required to fish outside the CVOA during the B-season. The extent to which these concerns are justified is difficult to evaluate. The US Coast Guard has indicated that no statistics exist to suggest that fishing outside the CVOA is more dangerous than fishing inside the CVOA. Indeed, crab and longline vessels of similar size frequently fish in remote parts of the Bering Sea throughout the worst winter months. Nevertheless, excluding offshore catcher-boats from the CVOA will force these vessels to operate further offshore during the B-season which may have some unquantifiable impact on vessel safety.

Other small business entities affected indirectly. Support industries are identified in Appendix II, while small independently owned vessels in other fisheries that might encounter spillover effects from significant reallocation alternatives are discussed in Chapter 8.2. Based on the information available, the preferred alternative is not expected to significantly impact a substantial number of these entities.

Small organizations. Impacts to CDQ communities are covered in the "Analysis of Inshore/Offshore Impacts on the CDQ program" contained in Appendix III.

Small governmental jurisdictions. Impacts to small governmental jurisdictions are examined in Appendices II and III.

8.4.7 Final Regulatory Flexibility Analysis (FRFA)

When an agency issues any final rule, it must either prepare an FRFA or certify that the rule will not have a significant economic impact on a substantial number of small entities. The FRFA must discuss the comments received, the alternatives considered and the rationale for the final rule. Each FRFA must contain:

- A succinct statement of the need for, and objectives of, the rule;
- A summary of significant issues raised by the public comments in response to the IRFA, the agency's response to those comments, and a statement of any changes made to the rule as a result of the comments;
- A description and estimate of the number of small entities to which the rule will apply, or an explanation of why no such estimate is available;
- A description of the reporting, recordkeeping, or other compliance requirements of the rule; and
- A description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency that affect the impact on small entities was rejected.

The last item is the most notable change in the requirements for a FRFA under the 1996 amendments to the RFA. Previously, an agency had only to describe each significant alternative it had considered that could minimize the significant economic impact of the rule and provide a statement why each had been rejected. Under the 1996 amendments, an agency must provide an explanation of why it rejected significant alternatives to the chosen course that merely affect the economic impact of the rulemaking on small entities. Further, an agency must describe the steps it has taken to minimize the significant economic impact of the alternative it has chosen, including factual, legal, and policy reasons explaining why the agency selected the preferred alterative.

The FRFA will be completed by NMFS after opportunity for public comment on the proposed rule and IRFA.

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APPENDIX I

BSAI POLLOCK SECTOR PROFILES

CONTENTS

PROFILE DESCRIPTION

and information on

NUMBER OF OPERATIONS, BY SIZE, CAPACITY, MODE OF PROCESSING AND PRODUCT FORM

At its June 1997 meeting, in Kodiak Alaska, the Council requested that "sector profiles" be developed in support of the proposed "Inshore/Offshore Three" (I/O-3) management action. The following descriptive profiles characterize the catch performance, characteristics, and composition of the several "sectors" of the BSAI pollock fishery.

The decision to confine the "profiles" to the BSAI fishery was made principally for two reasons. The first was based upon time and resource limitations (i.e., the Council required completion of the profile in advance of their September 1997 meeting). The second pertained to the respective size of the fisheries involved, the complexity of the sectors, and (apparent) relative controversy surrounding consideration of I/O-3 in each of the management areas (BSAI and GOA).[1]

The Profile Dimensions

The "sector profiles" are composed of eight elements. These include:

- **The number of operations, by size, capacity, mode of processing and product-form;**
- **Catch, bycatch, discards, and utilization (including sector catch-share and PSCs);**
- **Relative "operational dependence" (i.e., 'gross revenue' share) deriving from I/O-3 fisheries;**
- **Product mix and output quantities, of pollock;**
- **Price, by product-form and markets (domestic vs. Non-domestic); (updated information in main document)**
- **Employment patterns (especially in the 'processing' sector);**
- **Linkages to CDQ apportionments; (updated information in Appendix 3)**
- **Ownership interests and patterns (e.g., percent foreign ownership);**

The Sources, Sectors, and Setting

The following 'profiles' rely exclusively on secondary data sources and, with few exceptions, present comparable data for three fishing years, i.e., 1991, 1994, and 1996. The choice of these particular years was made because, fishing year 1991 was 'pre-original I/O' and the first year for which NMFS "blend" data were available.[2] Nineteen-ninety four was selected as representative of a fishing year *"with I/O"* management regulations in-place. Finally, 1996 is the latest year for which complete catch data are available for these target fisheries.

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[1] Because, under the original allocation scheme, 100% of the pollock and 90% of the P.cod resource was reserved for the "inshore" sector in the GOA, considerations of further allocation of these two species in the Gulf is not apparently a priority issue in I/O-3.

[2] Actually, 'blend' data did not begin to be used for management until 1992, but a 'blend'-file was created for 1991, using what has become the 'blend' methodology. The I-O regulations were not implemented until the 'B'-season of 1992, making that year's data-set a mix of pre- and post- I-O performance. Furthermore, the 1993 'blend' file reportedly has some data 'inconsistencies' which make its use less desirable than 1991, for this application.

Only operations participating in *'pollock target'* fisheries in the BSAI, as defined in regulation, are included in these 'sector profiles'.

The 'sectors' under consideration include, 1) Catcher/Processors, 2) 'True' Motherships[3], 3) Inshore Processors, and 4) Catcher Boats [delivering either inshore or at-sea]. For three of the four 'sectors', a further division, into 'sub-sectors' was made on the following basis:[4]

* Catcher/Processors (C/Ps) were divided by 'Surimi', 'Non-surimi', and 'Surimi-fillet' production capabilities;

* Inshore Processors were divided into 'Surimi' and 'Non-surimi' capability[5];

* Catcher boats were classified as: <125'; 125' to 155'; and >155';

Physical Sector Profiles

Figure A.1 depicts the 'unique' number of operations in each of the four primary sectors of interest, when taken in the aggregate, for 'pollock target fisheries', in each of the base-profile years (i.e., 1991, 1994, and 1996). What this figure suggests is that, while the 'number' of motherships and inshore operations remained (relatively) stable over the period, the 'number' of catcher/processors *declined* by over 30% and the 'number' of catcher boats *increased* by more than 40%.

When the sectors are further subdivided (on the bases cited above), the following results emerge. In figures A.2 and A.3, respectively, the composition of the C/P fleet is examined on the basis of 'vessel length over all' (LOA) and 'net tons'. The LOA profile reveals that the reduction in C/Ps (cited in figure one) was largely due to declines in the number of vessels under 230' participating in pollock target fisheries. While these data indicate a decline of two vessels in the 230'-300' class (or a change of 12.5%), between 1991 and 1996, 15 of 30 vessels under 230' exited the target fishery over the same period.

When viewed on the basis of 'net tons', the smallest category of C/Ps (i.e.,<500 net tons) showed the largest *decline* over the period (more than 72%). Smaller *declines* were also registered in the 500-999 net ton and >2000 net ton categories. Only in the 1000-2000 ton class were *increases* registered (up just under 17%).

Figures A.4 and A.5 profile the 'catcher boat' sub-sector, on the basis of 'vessel length over all' (LOA) and 'horsepower', respectively. Given the relatively limited data available on fleet physical-plant, these two measures (for which relatively complete data are available) were judged to be indicative of 'capacity' for the catcher boat sector. LOA measurements suggest that the number of catcher boat operations, over this period, was up over 25% among the <125' category; up over 233% in the 125' to 155' category; and up about 28% (although, by just

[3] A 'true' mothership, in this instance, is defined as a vessel which processed, but never caught, pollock in a 'pollock-target' fishery the BSAI EEZ.

[4] Because only three 'true' motherships were identified as participating in these fisheries, in these years, no further sub-division was possible, given confidentiality requirements. NMFS records indicate that all produced some pollock surimi during the years under examination.

[5] The 'inshore' sector includes both onshore plants and inshore floating processors which operated only within Alaska waters. Because of the small number of operations within this sector, especially if differentiated by geographic location, no further sub-division was made in the reported profiles (unless specifically noted).

2 vessels) in the >155' class. On the basis of 'horsepower', all three categories were up significantly, over the years profiled, ranging from just over 22% in the <1500 hp class, 54% in the 1000 hp to 1500 hp category, to just under 58% in the >1500 hp class.[6]

Data with which to characterize changes in 'capacity' for the inshore sector, over the period being profiled, are not currently available. These data could be (and probably should be) obtained during the 'I/O-3' analytical phase, should the Council choose to proceed to that stage.

Catch Trends and Sector Shares

Figure A.6 depicts catch estimates of 'pollock' and 'total groundfish' in the pollock target fisheries of the BSAI, for 1991 through 1996. Although the 1991 catch data have been criticized as possibly being slightly inflated, when taken as a whole, the catch trend seems to be consistently downward, over the period.

Figure A.7 presents sector catch (in metric tons), by processor-type, for the three profiled years. What this figure reveals is a marked *decline* in the total catch of pollock, made by the C/P sector, between 1991 and 1996 [roughly a 36% reduction]; a *'bump-up'* in tons of catch for the inshore sector between 1991 and 1994, then a return to 1991 catch levels in 1996; and a *decline* in total pollock catch for motherships over the period, with the most pronounced loss coming between 1991 and 1994 [just under 23% decline] and a recovery of about one-third the loss in tonnage between 1994 and 1996 [a net reduction of 14.7% over the entire period].

Figures A.8, A.9, and A.10 present the catch-shares of *pollock* in BSAI pollock-target fisheries, for the C/P sector, for the three profiled years, respectively. Each then portrays the distribution of C/P catch-share among the sub-sector components, *'surimi'*, *'non-surimi'*, and *'surimi-fillet'*.[7]

Figures A.11, A.12, and A.13 present equivalent *pollock* catch-share measures, for the inshore sector. Due to confidentiality considerations, it was only possible to report the distribution of the inshore pollock catch between the more aggregated *'surimi'* and *'non-surimi'* operational categories.[8]

With reference to the distribution of total groundfish catch among vessels delivering to inshore processors, figure A.14 indicates the apparent shift in *'percent of total catch-share'* from boats *under 125' LOA*, to the class in the *125' to 155' LOA* range, over this period. The segment of this fleet *over 155'* increased its percentage share between 1991 and 1994, then returned to its '1991-level' in 1996. These data represent deliveries of total groundfish catch from BSAI pollock target fisheries only.

---

[6] Two boats appear without horsepower listings in these data, for each of 1994 and 1996. Only a single vessel was so listed in 1991.

[7] The distinction among these three production 'categories' is based upon reported product output for the fishing year. If an operation produced 'surimi', but not 'fillets', it is counted in the ***surimi*** category. If it did not produce 'surimi', it is counted in the ***non-surimi*** category. If it produced 'surimi' and 'fillets', it is counted in the ***surimi-fillet*** category.

[8] Likewise, for the mothership sector, which contains only three operations during the period under examination, confidentiality constrains preclude further detailing of catch-share and distribution.

BSAI POLLOCK

Inshore/Offshore

Sector Profiles

INDUSTRY SECTORS

*** Catcher/Processors**

*** Motherships**

*** Inshore Processors**

*** Catcher boats**

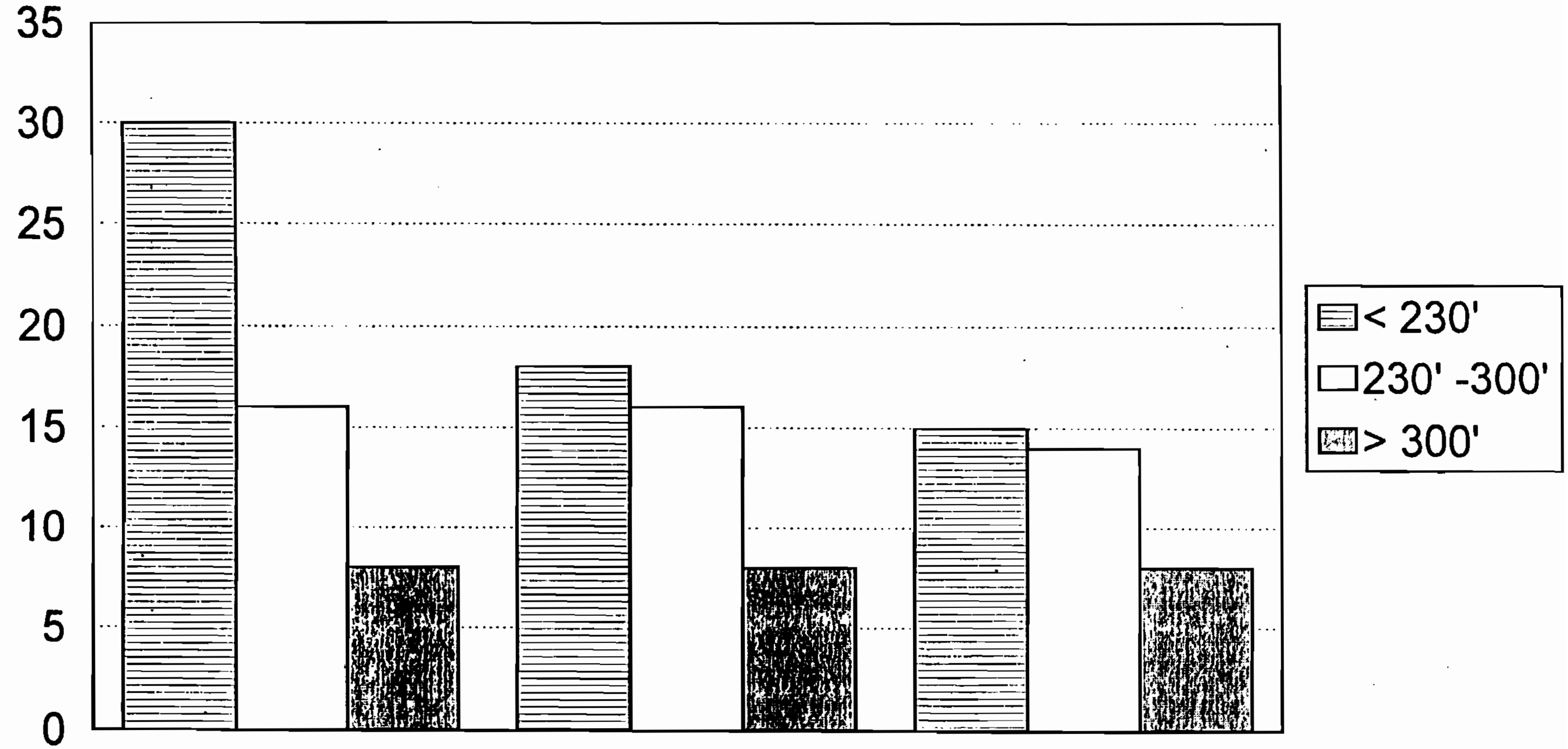
Operation Count by Sector

	1991	1994	1996
MS	3	3	3
Inshore	11	9	10
C/P	54	43	37
Catcher Boats	84	91	118

Figure A.1

C/P Fleet Composition

[Numbers By Vessel Length Category]

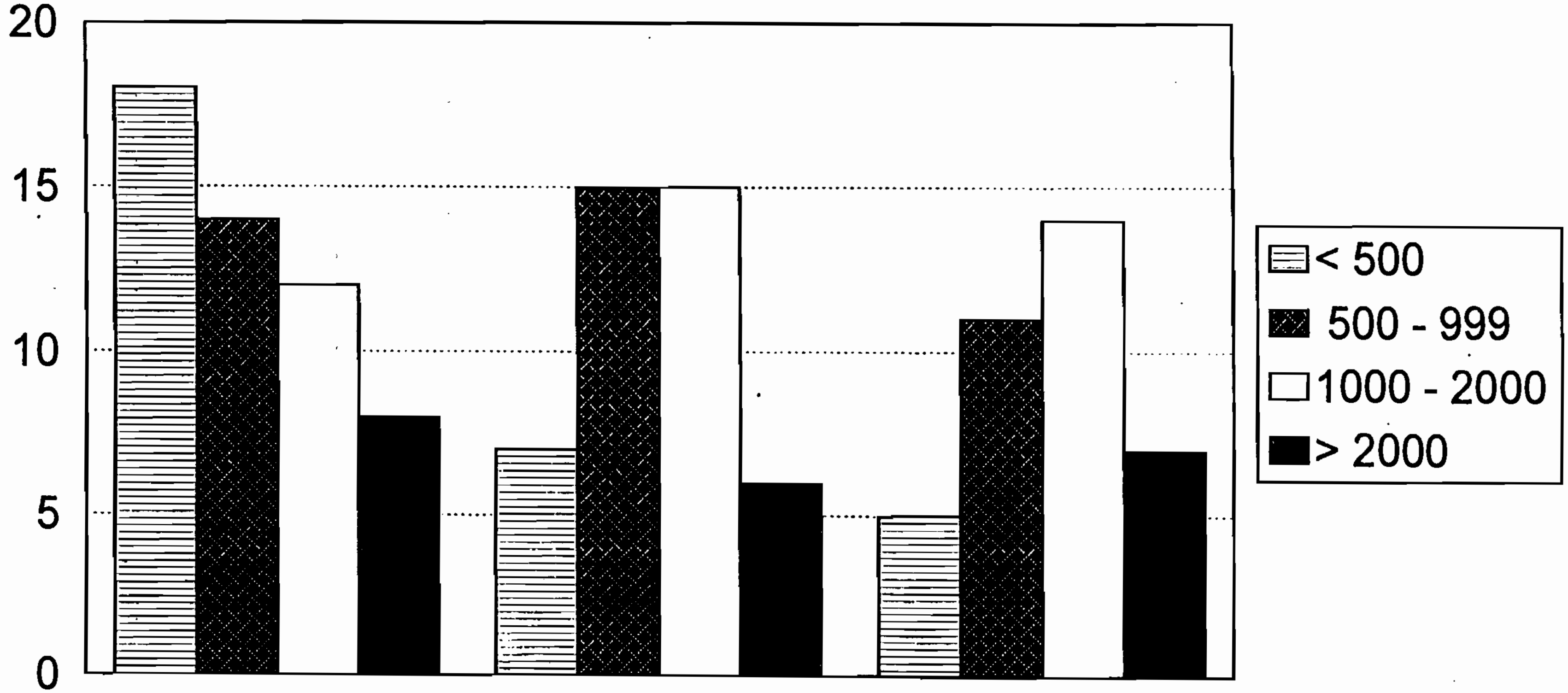


	1991	1994	1996
< 230'	30	18	15
230' -300'	16	16	14
> 300'	8	8	8

Figure A.2

C/P Fleet Composition

[Numbers By Net Ton Category]

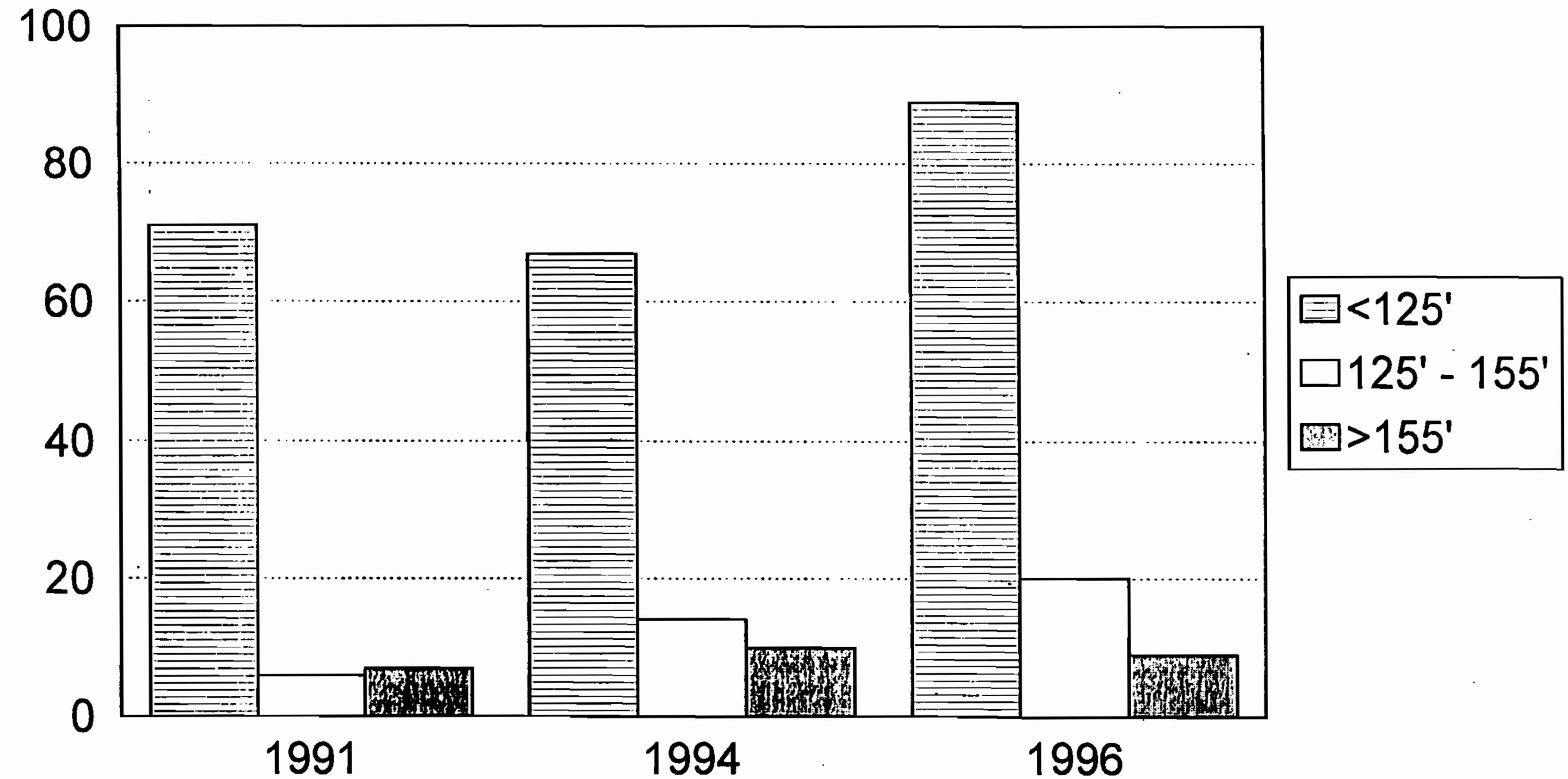


	1991	1994	1996
< 500	18	7	5
500 - 999	14	15	11
1000 - 2000	12	15	14
> 2000	8	6	7

Figure A.3

Catcher Boat Fleet Composition

[Numbers By Vessel Length Category]



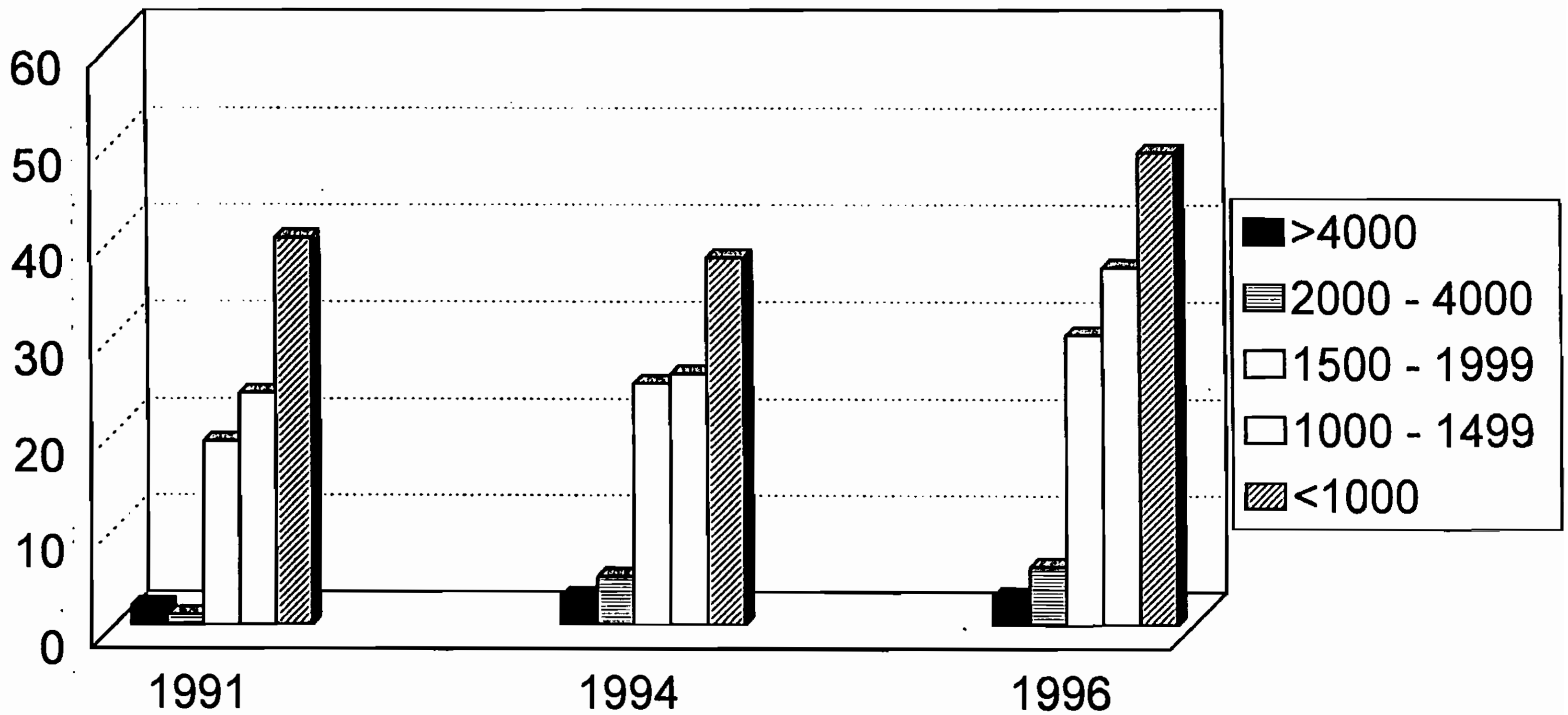
	1991	1994	1996
<125'	71	67	89
125' - 155'	6	14	20
>155'	7	10	9

Count reflects 'unique' operations, at-sea or inshore.

Figure A.4

Catcher Boat Fleet Composition

[Number By Horsepower Catergory]



	1991	1994	1996
>4000	2	3	3
2000 - 4000	1	5	6
1500 - 1999	19	25	30
1000 - 1499	24	26	37
<1000	40	38	49

Count is of 'unique' vessels. One vessel in 1991, two each in 1994 and 1996 were of 'unknown' horsepower.

Figure A.5

Catch Trends and Sector Shares

BSAI Pollock Target Fisheries

Estimated Round Weight Catch.

BSAI Pollock Target Fisheries

[metric tons]

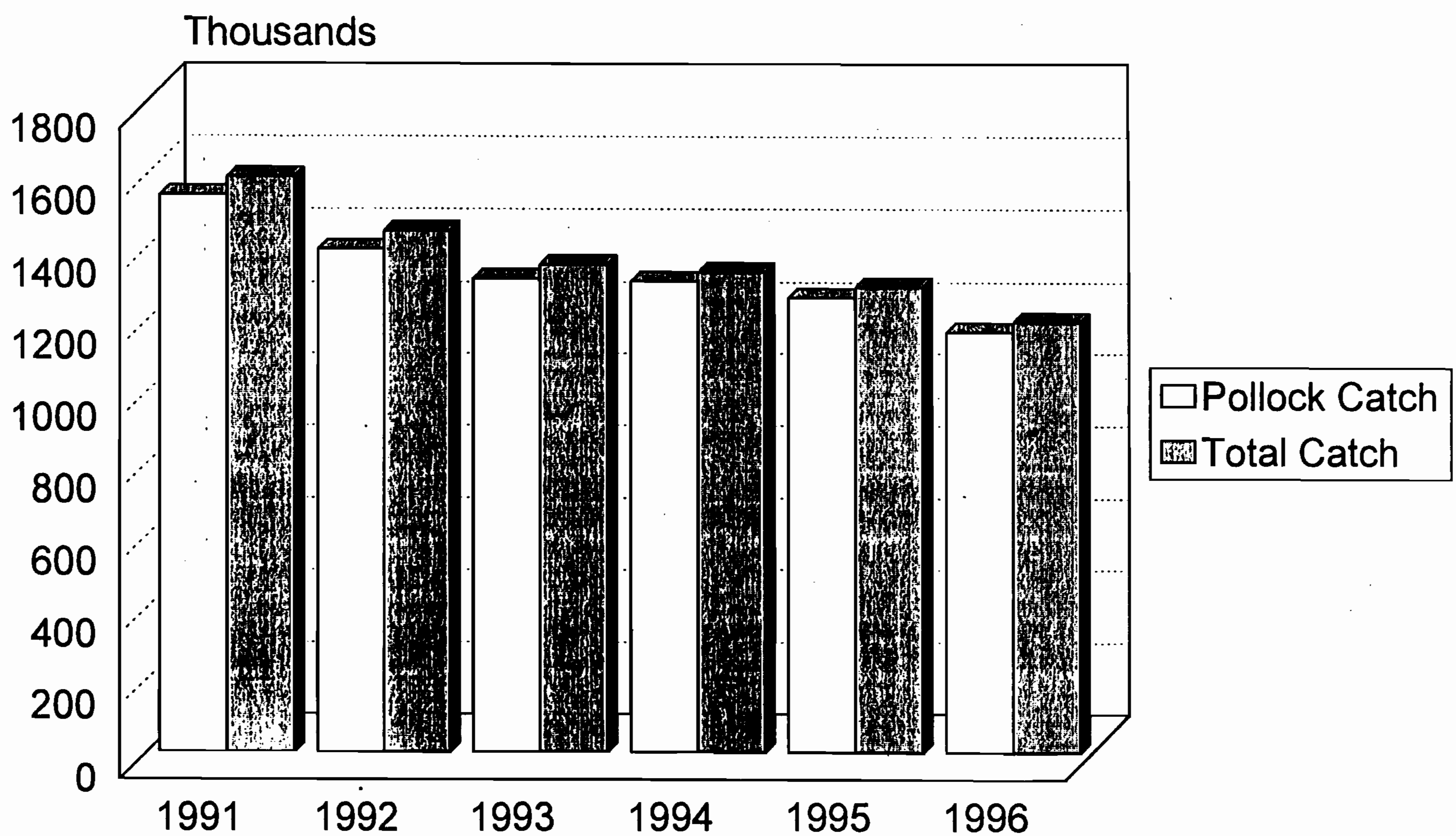
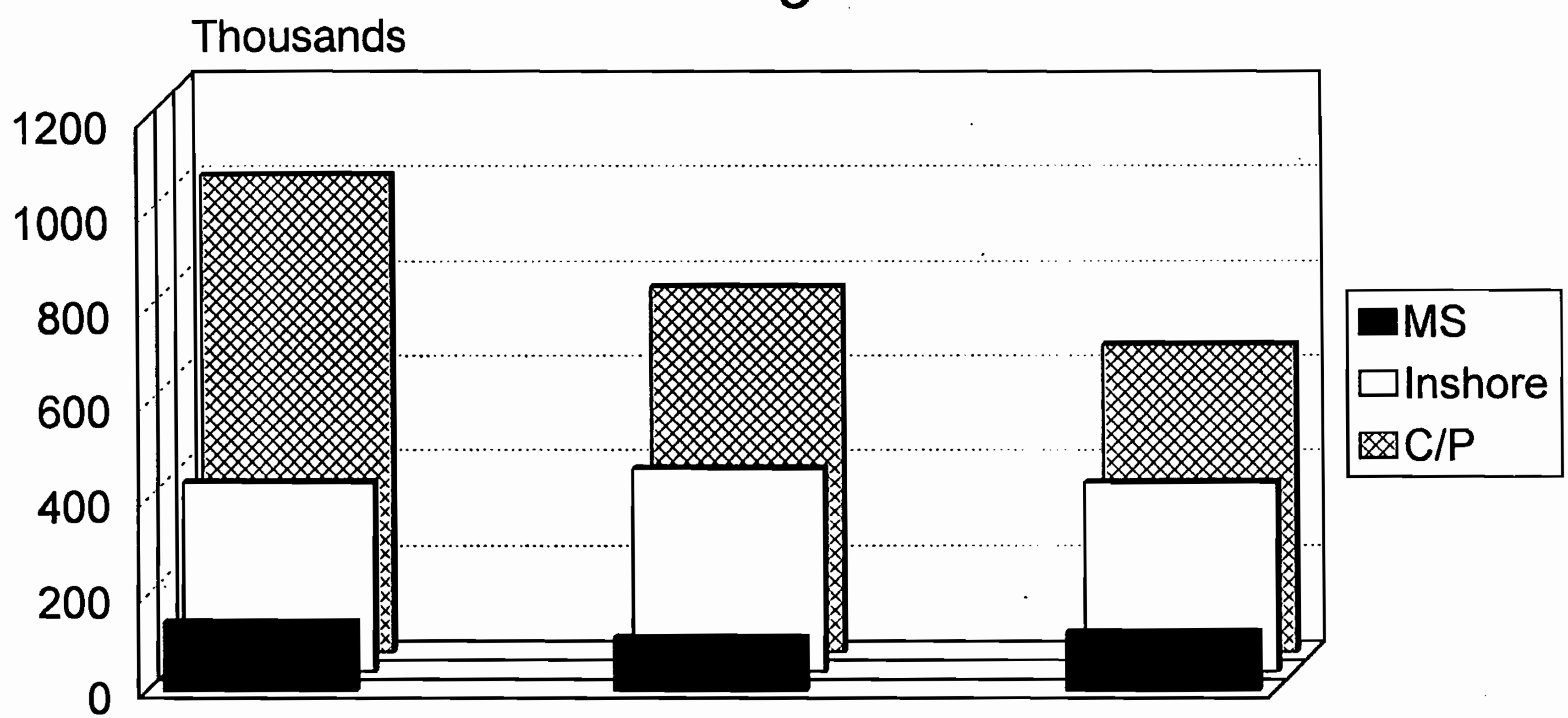


Figure A.6

Sector Catch Estimates

BSAI Pollock Target Fisheries



(mt)	1991 - Pollock	1994 - Pollock	1996 - Pollock
MS	142.96	110.8	121.96
Inshore	395.4	423.9	395.6
C/P	1003.3	768.7	646.1

NOTE: Total groundfish catch in these sectors mirrors pollock catch in these years

Figure A.7

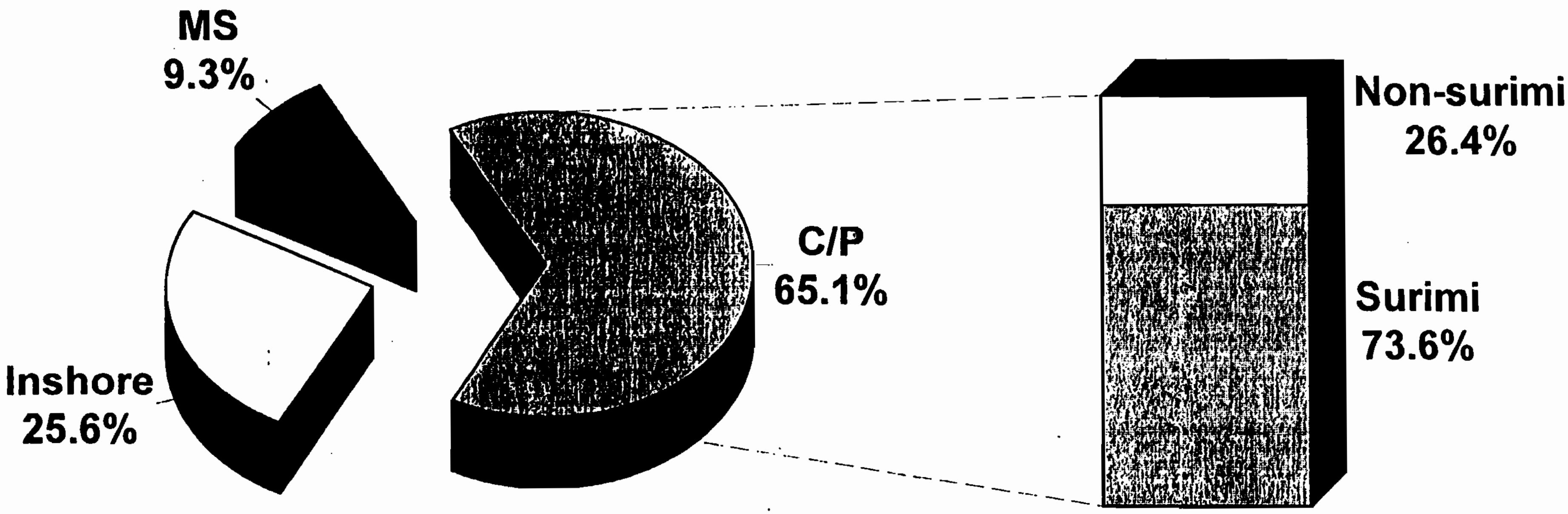
SECTOR COMPONENTS

BSAI Pollock Target Fisheries

- C/P - "Surimi" or "Non-surimi"
- "True" Motherships
- Inshore - "Surimi" or "Non-surimi"
- Catcher boats - <125'; 125' to 155'; >155'

1991 Pollock Production

C/P sub-sector share

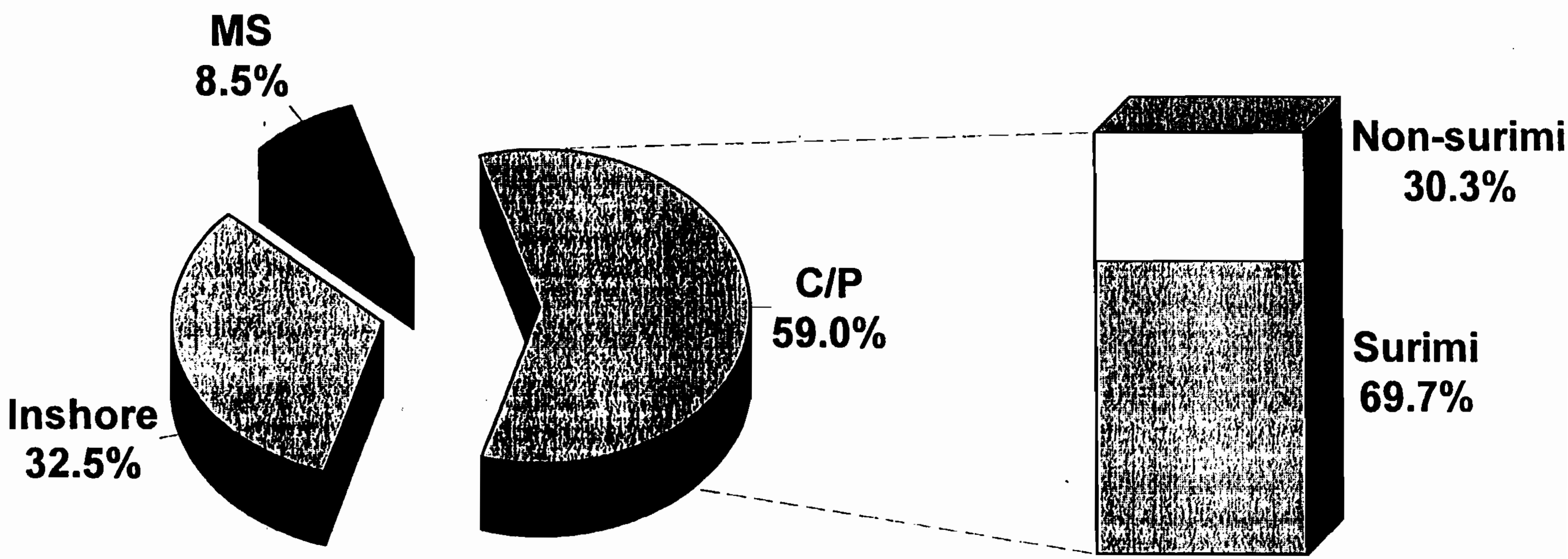


Note: the 'surimi' category is further divisible into 'surimi-only' and 'surimi & fillet' operations. Approximately 78% of pollock catch going to 'surimi' C/Ps was processed by 'surimi & fillet' capable operations, in 1991.

Figure A.8

1994 Pollock Production

C/P sub-sector share

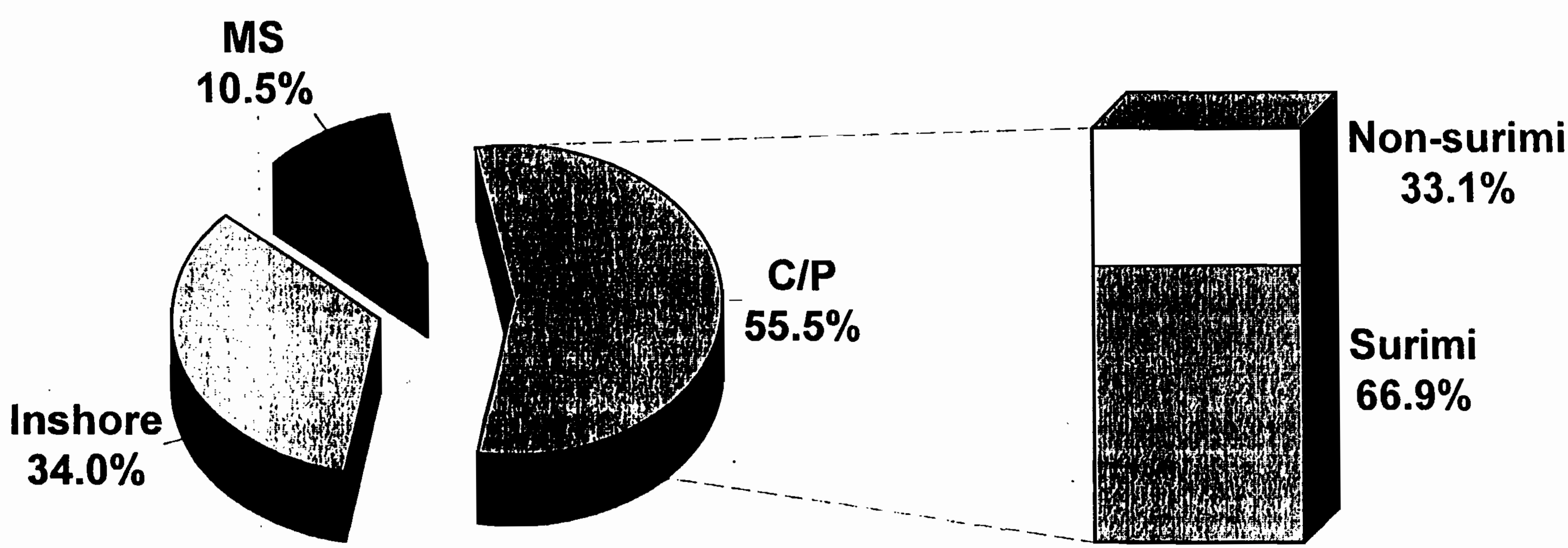


Note: the 'surimi' category is further divisible into 'surimi-only' and 'surimi & fillet' operations. Approximately 65% of pollock catch going to 'surimi' C/Ps was processed by 'surimi & fillet' operations, in 1994.

Figure A.9

1996 Pollock Production

C/P sub-sector share

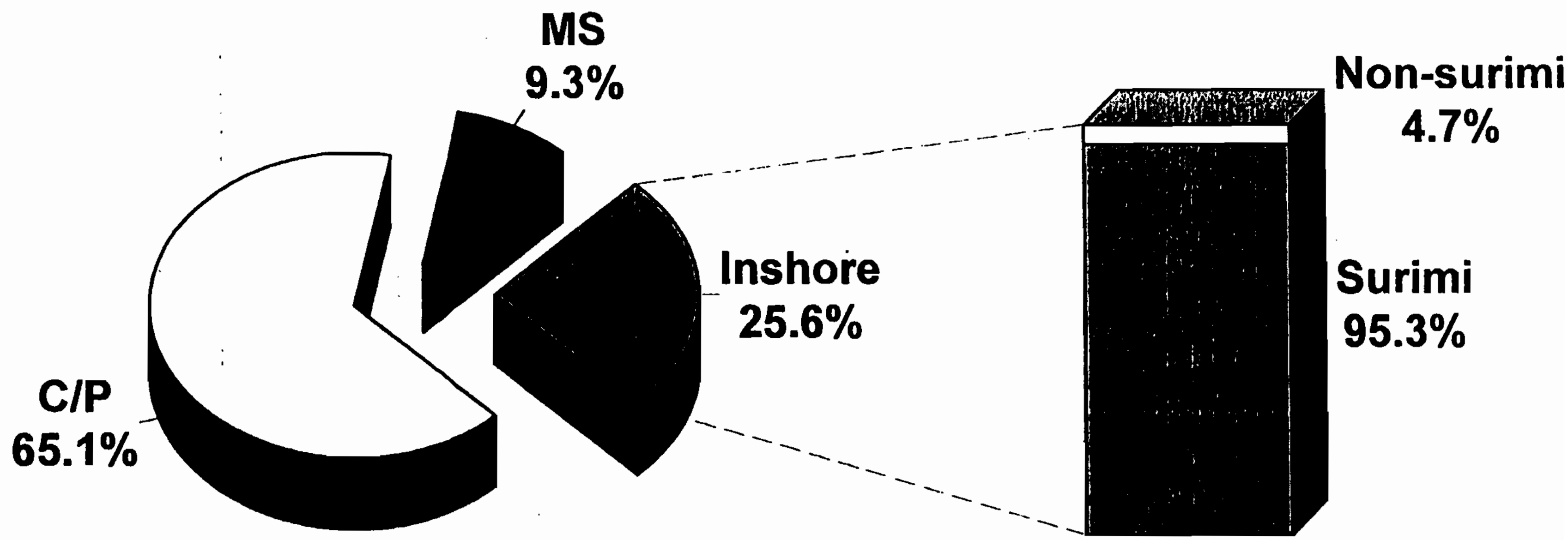


Note: the 'surimi' category is further divisible into 'surimi-only' and 'surimi & fillet' operations. Approximately 53% of pollock catch going to 'surimi' C/Ps was processed by 'surimi & fillet' capable operations, in 1996.

Figure A.10

1991 Pollock Production

Inshore sub-sector share

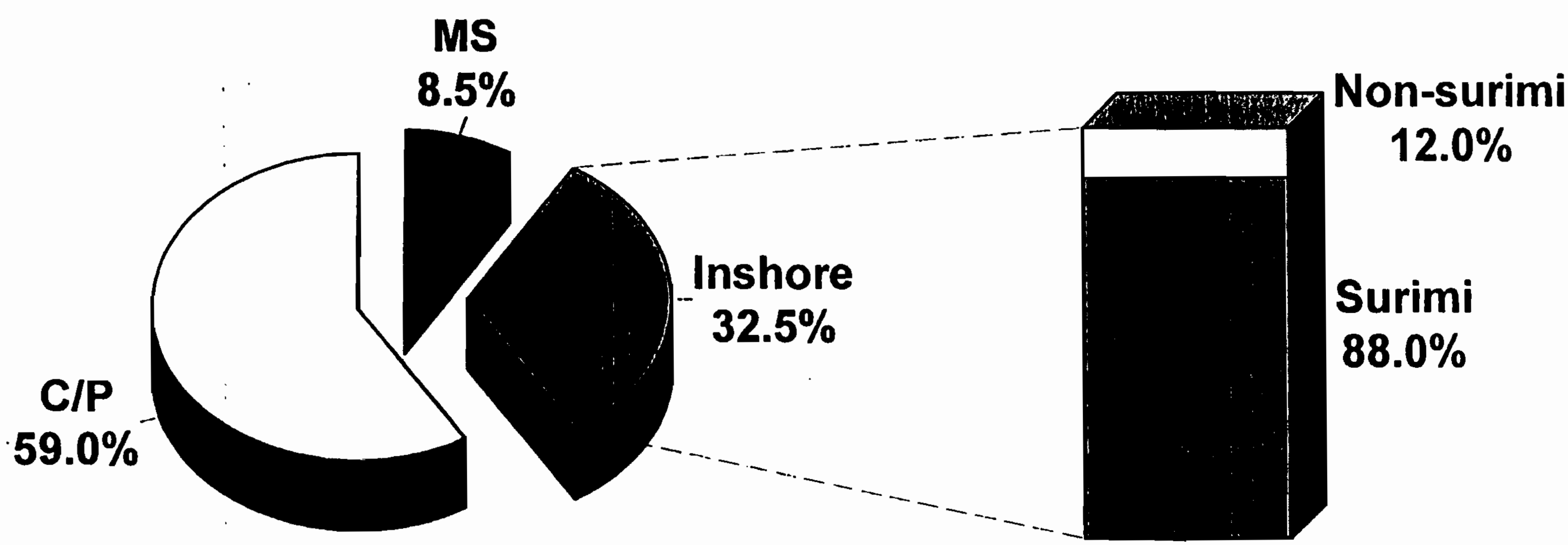


Note: 'confidentiality' constraints preclude reporting data on the further division of pollock catch, delivered to 'surimi' inshore processors, by 'surimi-only' and 'surimi & fillet' operation catégories.

Figure A.11

1994 Pollock Production

Inshore sub-sector share

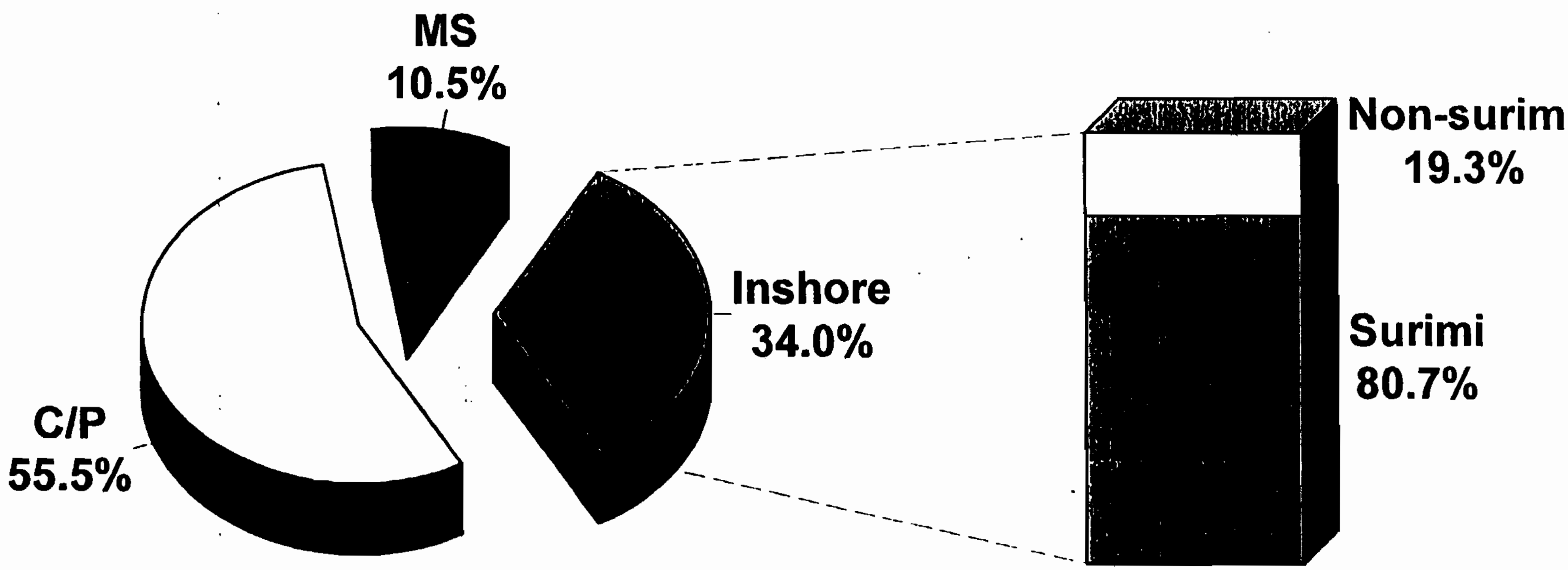


Note: 'confidentiality' constraints preclude reporting data on the further division of pollock catch, delivered to 'surimi' inshore processors, by 'surimi-only' and 'surimi & fillet' operation categories.

Figure A.12

1996 Pollock Production

Inshore sub-sector shares



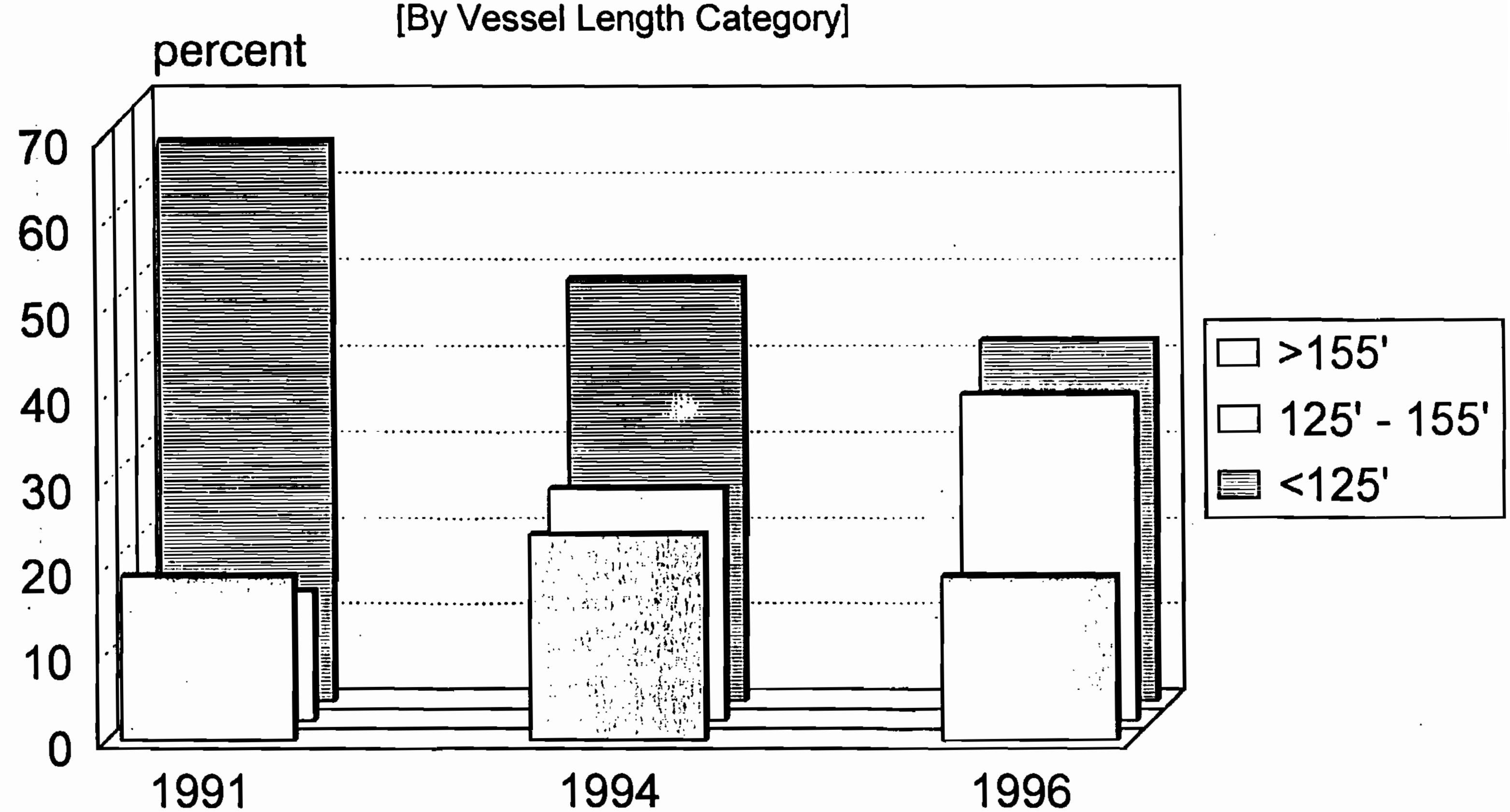
Note: 'confidentiality' constraints preclude reporting data on the further division of pollock catch, delivered to 'surimi' inshore processors, by 'surimi-only' and 'surimi & fillet' operation categories.

Figure A.13

Distribution of Total Groundfish Catch

By Catcher Boats Delivering Inshore

[By Vessel Length Category]



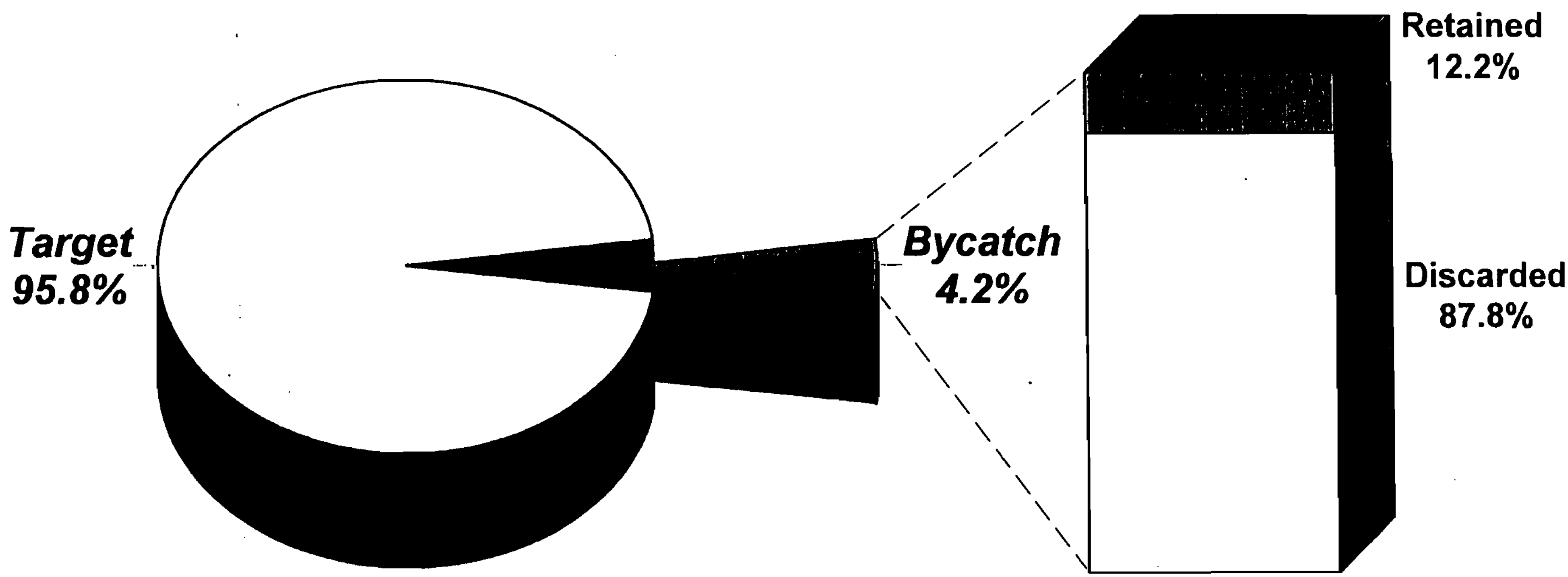
	1991	1994	1996
>155'	19	24	19
125' - 155'	15	27	38
<125'	65	49	42

Source: ADF&G Fish Tickets.

Figure A.14

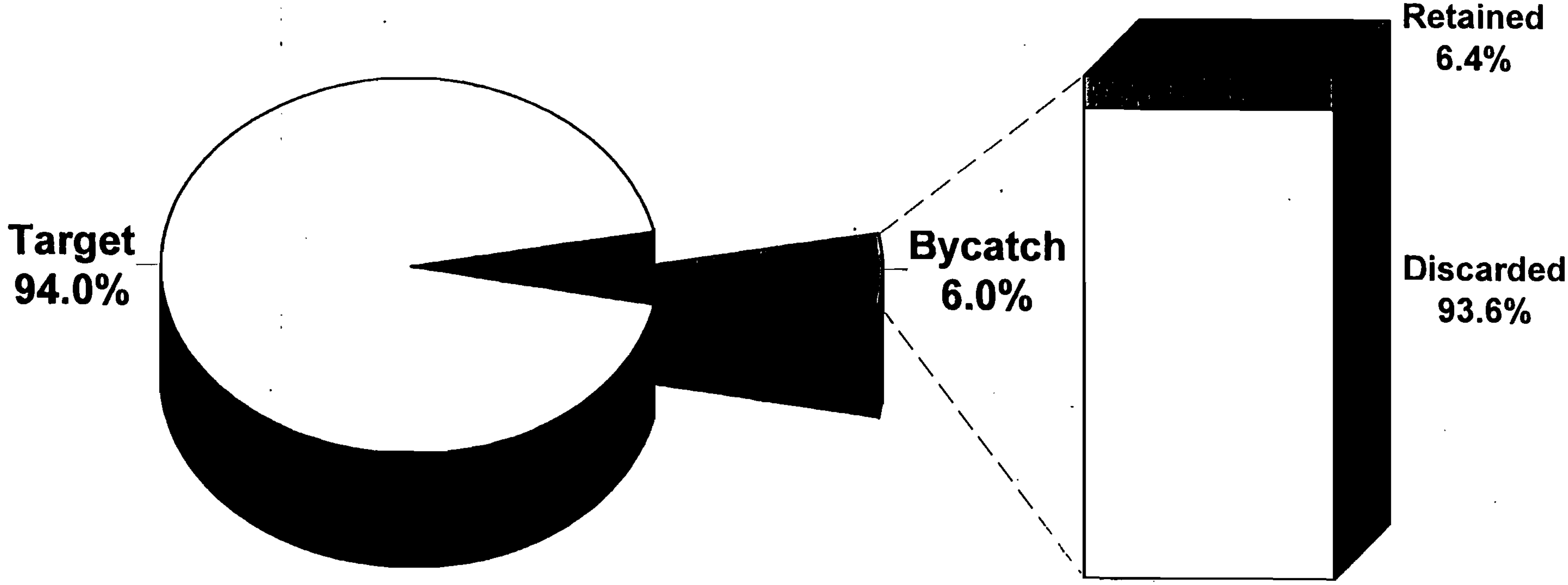
1991 Pollock Catch: 'Target' & 'Bycatch'

(All BSAI Groundfish Targets)



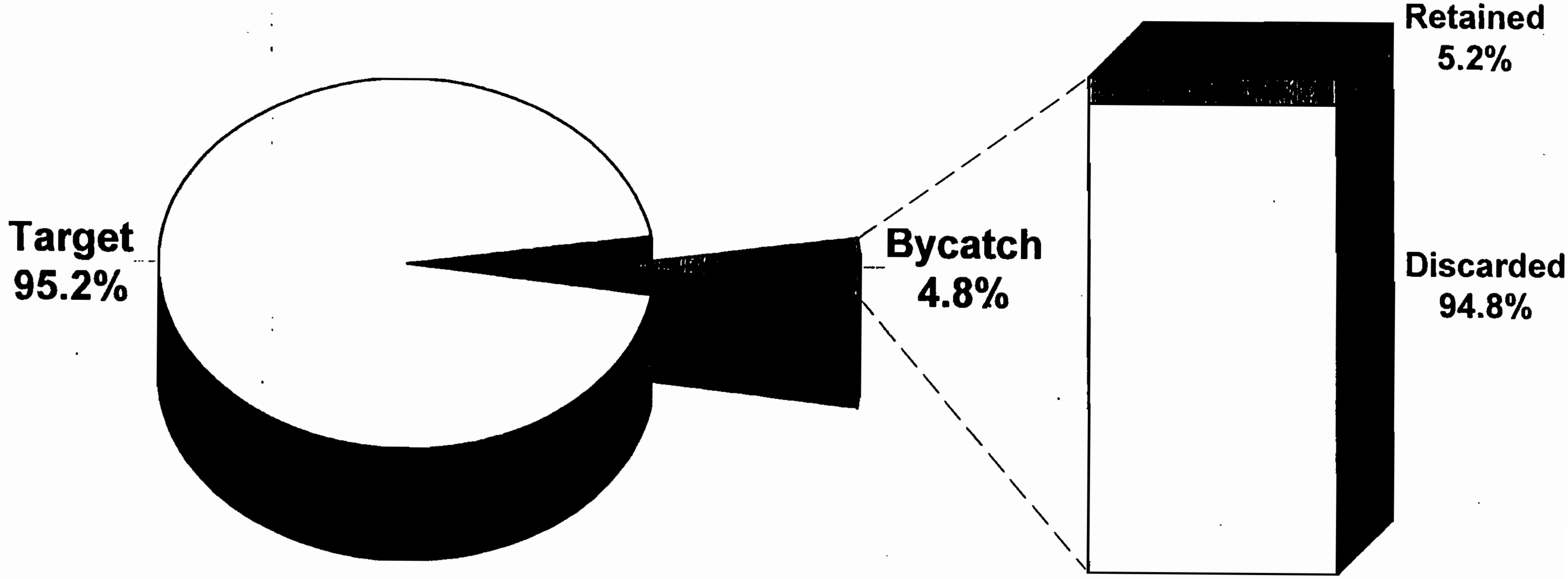
1994 Pollock Catch: 'Target' & 'Bycatch'

(All BSAI Groundfish Targets)



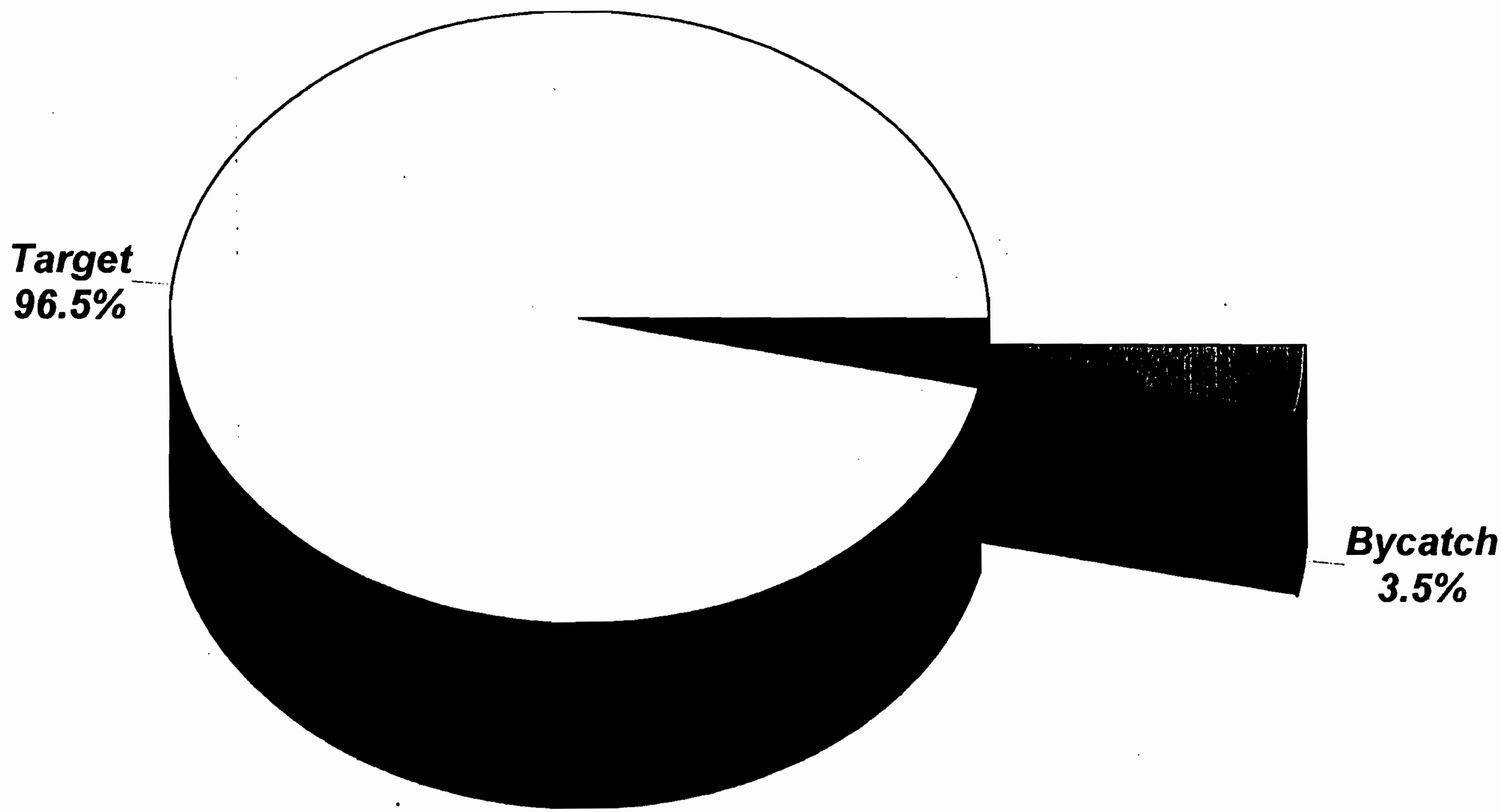
1996 Pollock Catch: 'Target' & 'Bycatch'

(All BSAI Groundfish Targets)



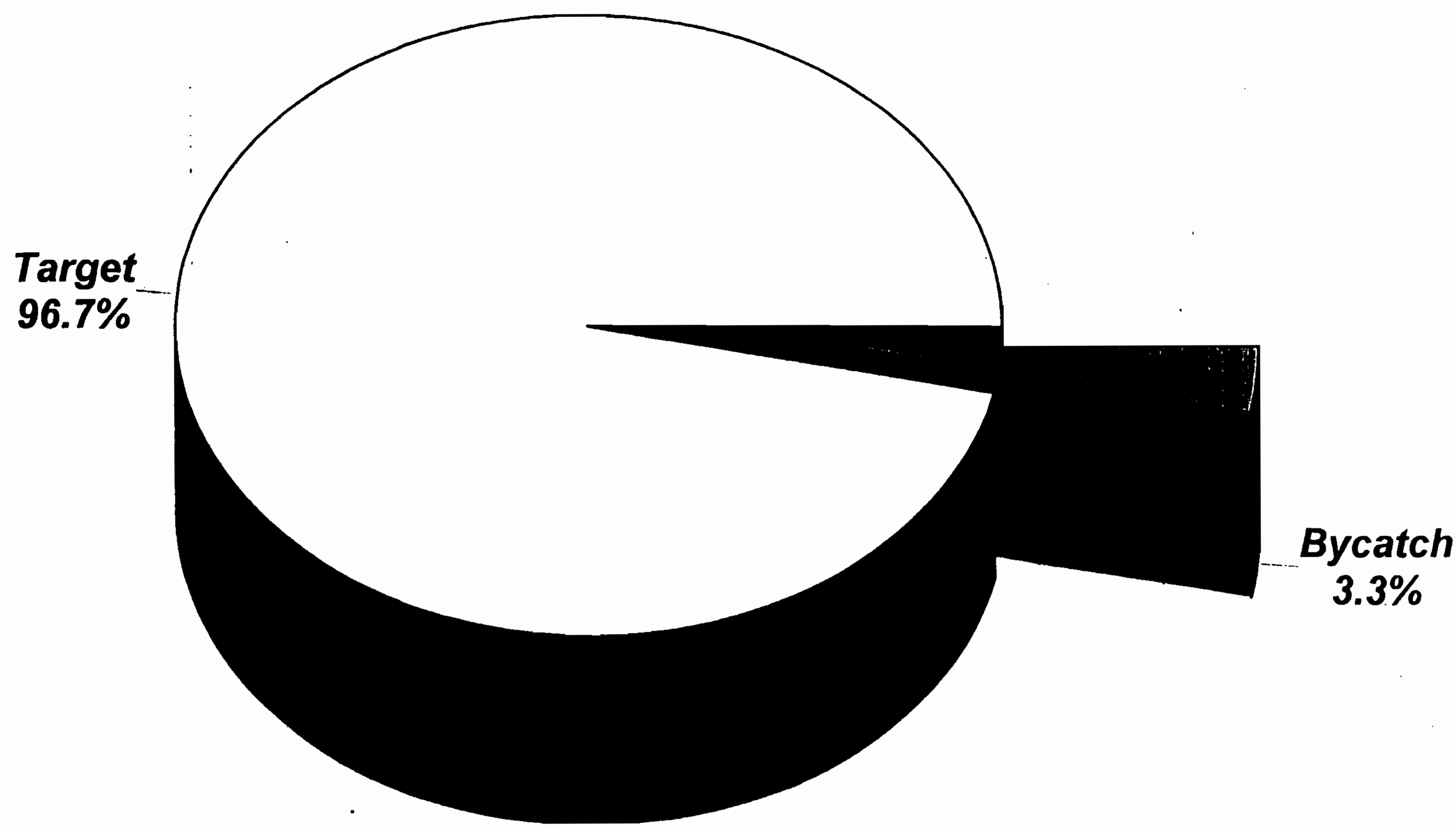
1991 Inshore Pollock Catch

('Target' & 'Bycatch' Totals - All BSAI Groundfish Fisheries)



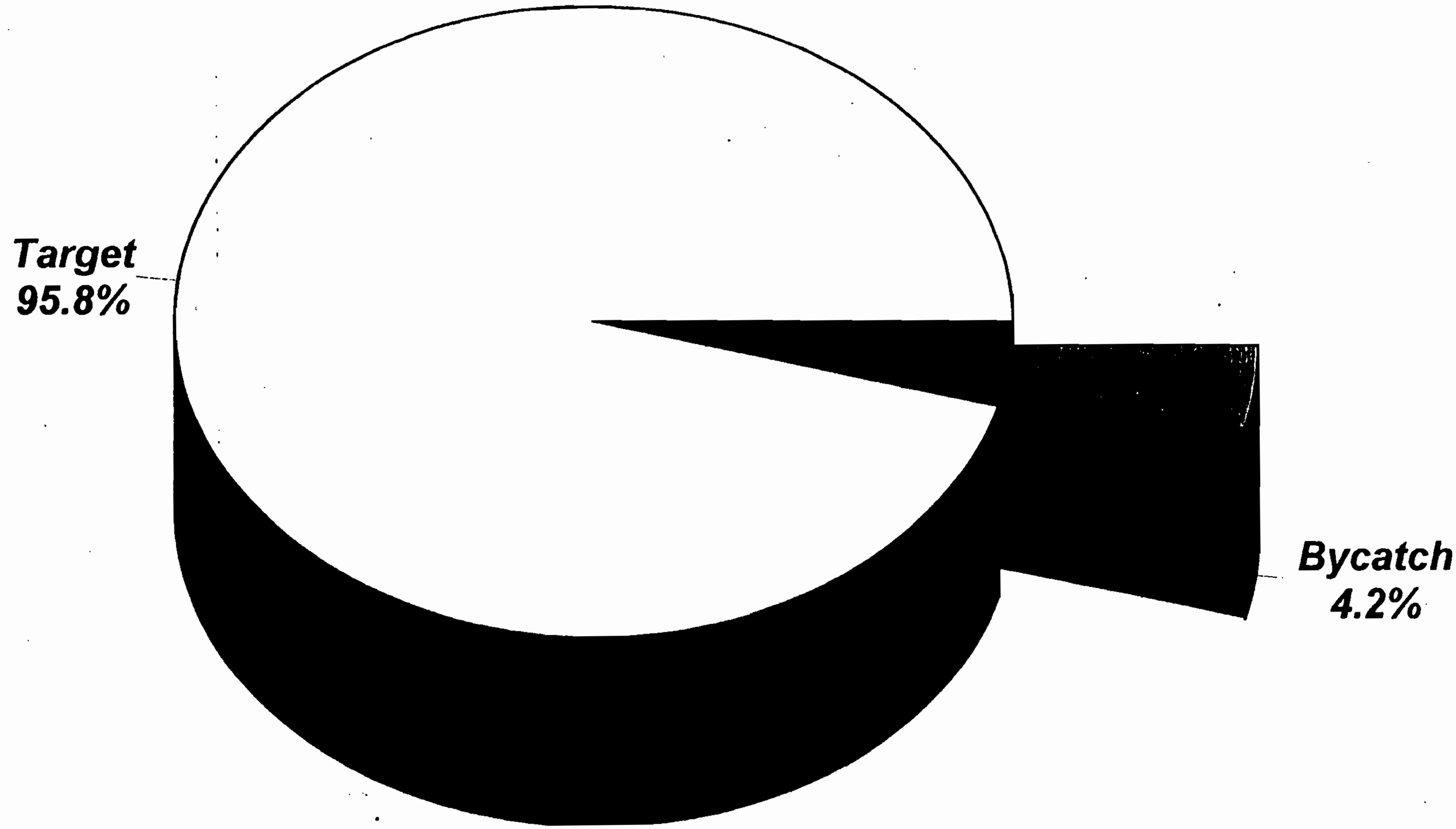
1994 Inshore Pollock Catch

('Target' & 'Bycatch' Totals - All BSAI Groundfish Fisheries)



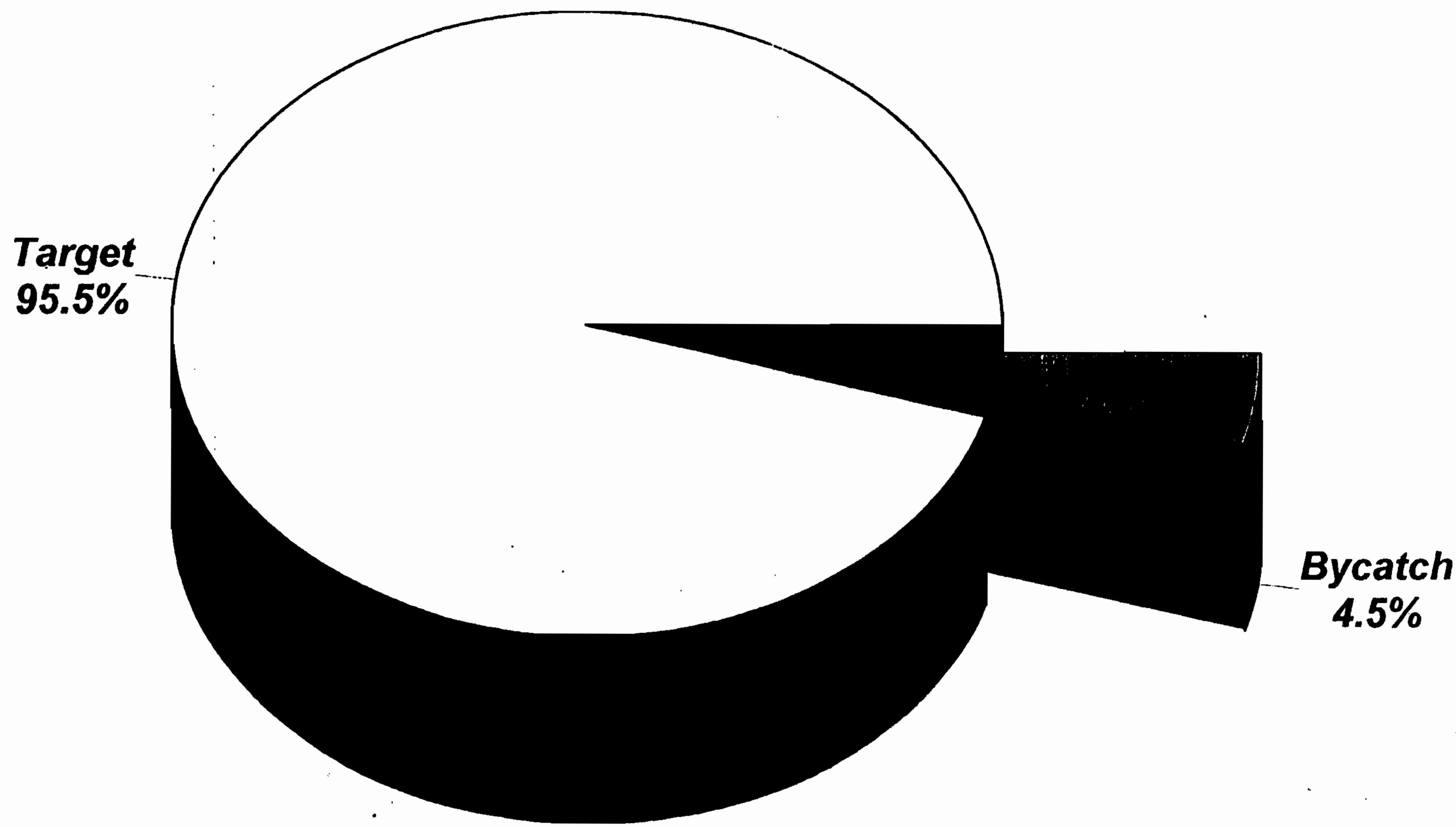
1996 Inshore Pollock Catch

('Target' & 'Bycatch' Totals - All BSAI Groundfish Fisheries)



1991 Offshore Pollock Catch

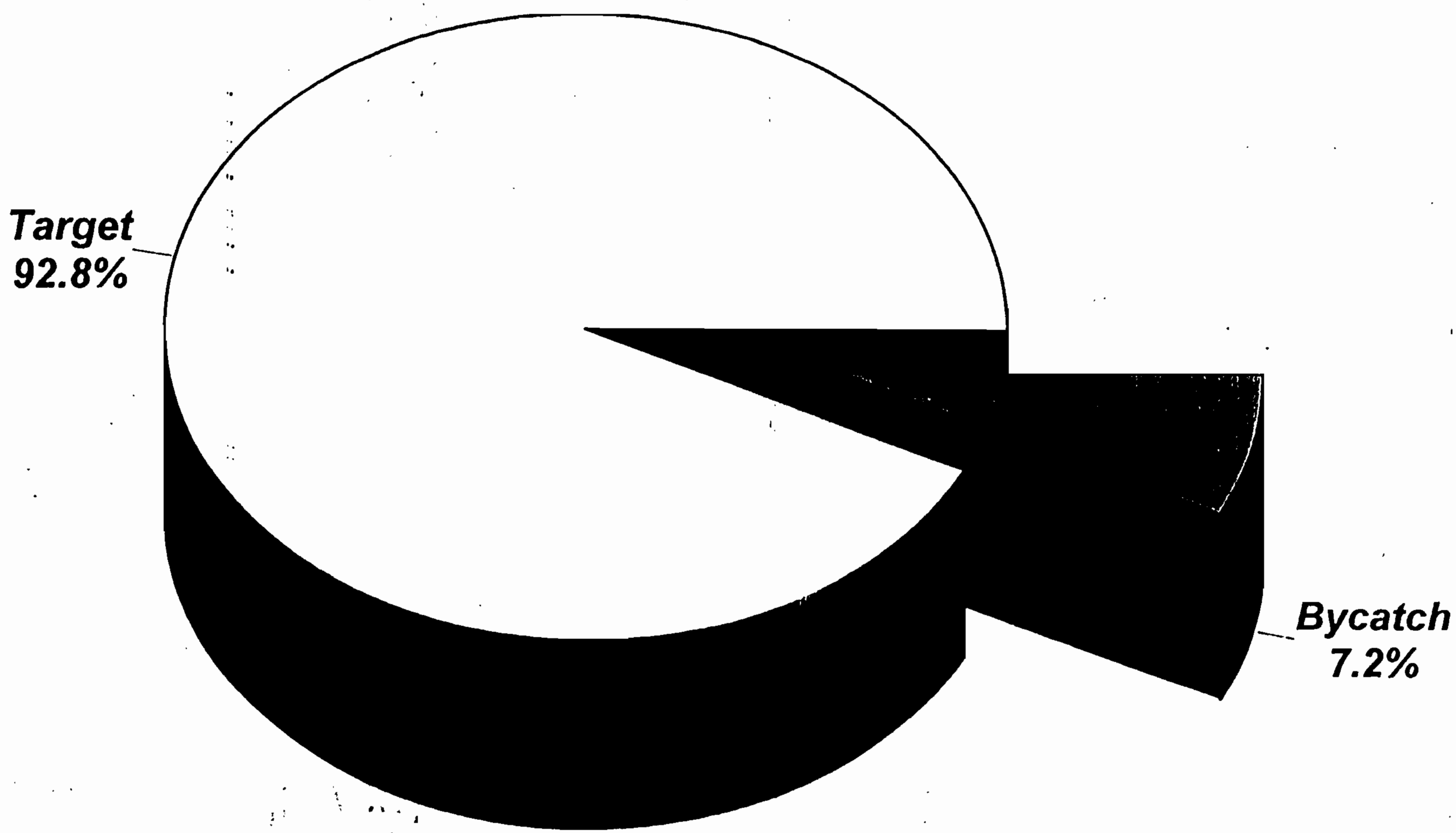
('Target' & 'Bycatch' Totals - All BSAI Groundfish Fisheries)



[Offshore Sector Includes C/Ps and Motherships]

1994 Offshore Pollock Catch

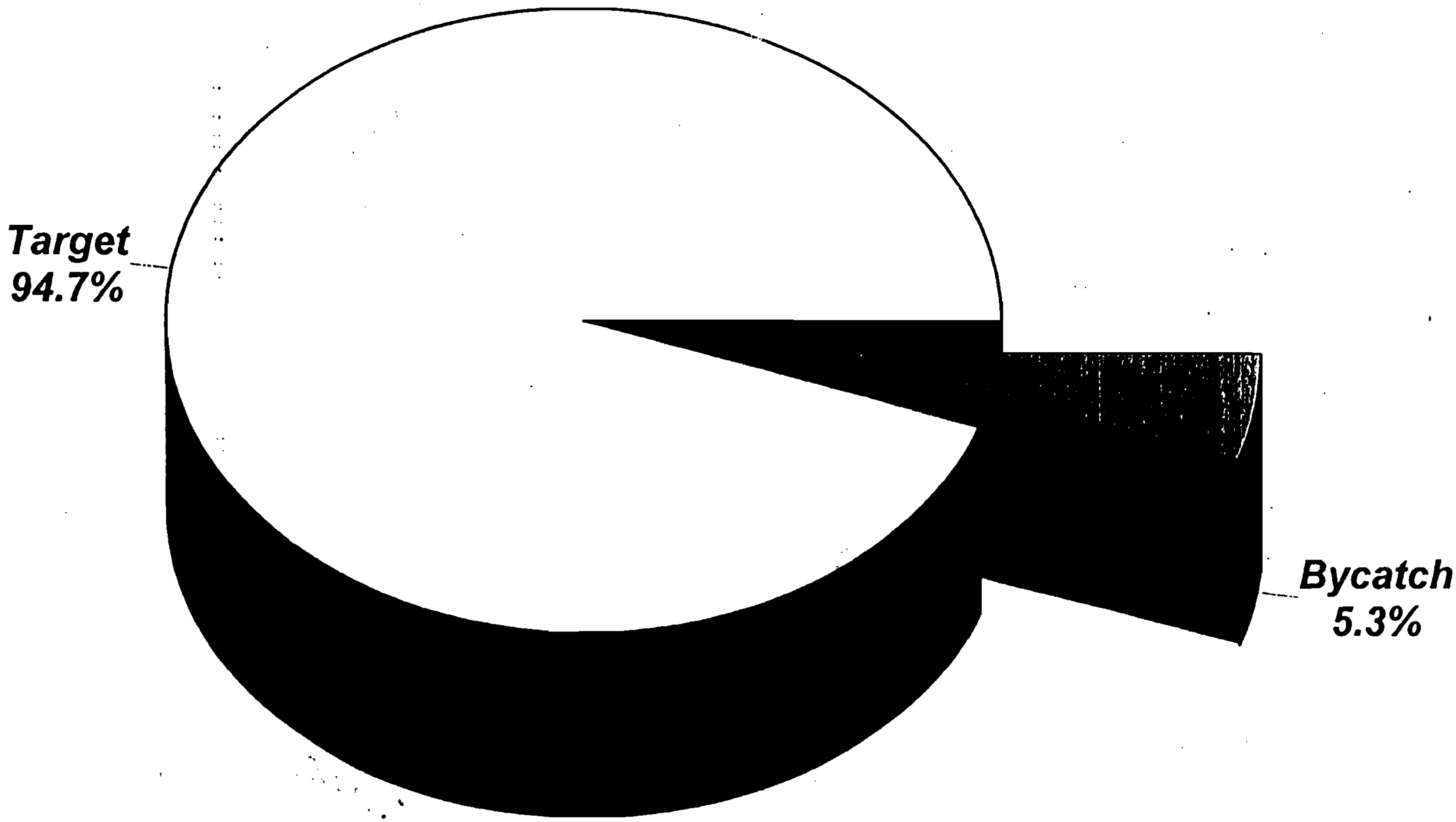
('Target' & 'Bycatch' Totals - All BSAI Groundfish Fisheries)



[Offshore Sector Includes C/Ps and Motherships]

1996 Offshore Pollock Catch

('Target' & 'Bycatch' Totals - All BSAI Groundfish Fisheries)



[Offshore Sector Includes C/Ps and Motherships]

CATCH, BYCATCH, DISCARDS AND UTILIZATION
(Including sector catch-share and PSCs)

Groundfish Catch, Bycatch, and Discards Performance Profiles

Tables B.1.1 through B.2.3 summarize catch, bycatch, and discard data (from NMFS 'blend' estimates for 1991, 1994, and 1996) for the several processing sectors in the BSAI target pollock fisheries. While several patterns may be discerned from these data, one is that the BSAI pollock target fisheries tend to be *'highly species-selective'*. Pollock consistently accounted for well over 90% (and in several cases, nearly 100%) of the total groundfish catch in these fisheries.

Indeed, P.cod appears to be the only other groundfish species of consequence (at least in terms of quantity) in the catch of these target fisheries, and then (with just two exception in 1991[9]) never comprising more than 2% of the total groundfish catch of any of the sectors under examination.

Another conclusion, suggested by these data, is that these target fisheries (taken individually or as a whole) have, in general, *increased* their utilization of pollock, over time. The largest "improvements" have been made by those segments of the industry which traditionally recorded the largest discard rates. This is likely the case because these operations had the greatest room for improvement, while those with traditionally low rates were already intensively utilizing their pollock catch.

Finally, as the following tables demonstrate, while the *'discard rates'* for some sectors and some species appear to be very high, it would be inappropriate to place great significance on these discard estimates. This is so for two principal reasons. First, as just noted, the quantities of non-pollock bycatch in any of these BSAI pollock fishing sector are exceedingly small, relative to total catch. Therefore, the fact that the *'discard rate'* may be high means very little in terms of either attributable biological or economic impacts.[10]

The second reason for urging caution in interpreting these numbers is associated with the limitation on the agency's ability to precisely monitor the disposition of bycatch, once it enters a processing plant. Nonetheless, the reported estimates represent the *'best available information'* on bycatch discards, by fishery and operating mode.[11]

Estimation of *'discards'* in the groundfish fisheries of the BSAI (and GOA) is problematic, given the complexities associated with monitoring and tracking the disposition of catch in these fisheries. Groundfish discards are 'estimated' in a variety of ways, which may vary from operation-type to operation-type. The estimates reported in the following tables are derived from the NMFS 'blend' files. The 'blend' is, itself, derived from two different data sources (industry submissions and NMFS-certified observer reports).

When *industry* data are selected within the 'blend' algorithm, the discard estimates are effectively 'self-reported', i.e., they reflect the information on discard quantities and species-composition, supplied by the operation, itself.

When *observer* data are selected by the 'blend' process, the discard data are *'approximations'* derived by the observer. However, their ability to approximate discards is limited by the demands of their primary sampling and catch monitoring duties, as well as the limitations imposed by the physical environment within which they work.

[9] The 1991 exceptions were 'non-surimi' C/Ps and 'surimi' inshore processors.

[10] For example, in 1996, the 'non-surimi' C/P sector recorded a *'100% discard rate'* for Atka mackerel. However, Atka mackerel represented just 1 ton of the total 222,649 mt catch in this sub-sector.

[11] For a more comprehensive treatment of this issue, refer to the discussion of bycatch and discards in the 'BSAI Improved Retention/Improved Utilization' FMP Amendment analysis, September 15, 1996.

Again, this suggests that care be taken to avoid reading too much significance into relatively small differences in these *'discard rate'* estimates.

Table B.1.1 Catch and Discards of Groundfish in the BSAI Pollock Target Fishery, Non-surimi Catcher/Processors [1991, 1994, 1996].

	Catch metric tons	Species percent of catch	Discards metric tons	Species percent of discards	Discard rate
1991					
Pollock	265,249	93.2%	31,875	72.3%	12.0%
Pacific cod	9,172	3.2%	3,154	7.2%	34.4%
Sablefish	5	<.1%	1	<.1%	32.4%
Turbot	65	<.1%	64	.1%	98.2%
Rock sole	1,901	.7%	1,302	3.0%	68.5%
Yellowfin	230	.1%	228	.5%	98.8%
Arrowtooth	2,801	1.0%	2,753	6.2%	98.3%
Flat other	2,555	.9%	2,436	5.5%	95.3%
Rockfish	229	.1%	121	.3%	52.7%
Atka mack	410	.1%	201	.5%	49.0%
Oth/unk	1,977	.7%	1,943	4.4%	98.3%
Groundfish total	284,594	100.0%	44,078	100.0%	15.5%
1994					
Pollock	233,005	95.7%	10,434	56.4%	4.5%
Pacific cod	4,759	2.0%	3,145	17.0%	66.1%
Turbot	19	<.1%	19	.1%	100.0%
Rock sole	2,273	.9%	1,856	10.0%	81.7%
Yellowfin	877	.4%	629	3.4%	71.7%
Flathead	209	.1%	194	1.1%	93.0%
Arrowtooth	830	.3%	830	4.5%	99.9%
Flat other	858	.4%	745	4.0%	86.9%
Rockfish	51	<.1%	51	.3%	100.0%
Oth/unk	600	.2%	598	3.2%	99.6%
Groundfish total	243,481	100.0%	18,501	100.0%	7.6%
1996					
Pollock	213,756	96.0%	5,268	42.7%	2.5%
Pacific cod	4,076	1.8%	3,497	28.4%	85.8%
Turbot	6	<.1%	6	<.1%	100.0%
Rock sole	1,035	.5%	812	6.6%	78.5%
Yellowfin	1,205	.5%	906	7.3%	75.2%
Flathead	1,504	.7%	914	7.4%	60.8%
Arrowtooth	395	.2%	375	3.0%	94.8%
Flat other	184	.1%	115	.9%	62.7%
Rockfish	18	<.1%	16	.1%	84.7%
Atka mack	1	<.1%	1	<.1%	100.0%
Oth/unk	470	.2%	425	3.4%	90.3%
Groundfish total	222,649	100.0%	12,334	100.0%	5.5%

Source: NMFS Alaska Region blend. 'Non-surimi' designation denotes catch processed by processors which did not report making pollock surimi in that year.

Table B.1.2 Catch and Discards of Groundfish in the BSAI Pollock Target Fishery, Non-surimi Inshore Processing [1991, 1994, 1996].

	Catch metric tons	Species percent of catch	Discards metric tons	Species percent of discards	Discard rate
1991					
Pollock	18,750	97.7%	413	86.9%	2.2%
Pacific cod	118	.6%	12	2.5%	10.2%
Turbot	2	<.1%	2	.4%	85.9%
Rock sole	4	<.1%	<1	<.1%	1.1%
Arrowtooth	17	.1%	1	.1%	4.1%
Flat other	57	.3%	11	2.3%	18.9%
Rockfish	187	1.0%	24	5.0%	12.6%
Oth/unk	58	.3%	13	2.8%	22.8%
Groundfish total	19,193	100.0%	476	100.0%	2.5%
1994					
Pollock	50,951	99.3%	514	85.4%	1.0%
Pacific cod	304	.6%	72	12.0%	23.8%
Turbot	2	<.1%	1	.2%	53.3%
Rock sole	9	<.1%	1	.1%	5.4%
Arrowtooth	9	<.1%	2	.4%	24.2%
Flat other	25	<.1%	5	.8%	20.5%
Rockfish	11	<.1%	2	.3%	16.9%
Oth/unk	22	<.1%	4	.7%	19.6%
Groundfish total	51,334	100.0%	601	100.0%	1.2%
1996					
Pollock	76,254	97.7%	845	38.8%	1.1%
Pacific cod	1,225	1.6%	841	38.6%	68.7%
Rock sole	64	.1%	61	2.8%	96.2%
Yellowfin	7	<.1%	4	.2%	59.3%
Flathead	67	.1%	58	2.7%	86.9%
Arrowtooth	98	.1%	97	4.5%	98.9%
Flat other	58	.1%	57	2.6%	99.0%
Rockfish	48	.1%	38	1.7%	77.7%
Atka mack	149	.2%	115	5.3%	77.6%
Oth/unk	63	.1%	63	2.9%	99.9%
Groundfish total	78,032	100.0%	2,180	100.0%	2.8%

Source: NMFS Alaska Region blend. 'Non-surimi' designation denotes catch processed by processors which did not report making pollock surimi in that year.

Table B.2.1 Catch and Discards of Groundfish in the BSAI Pollock Target Fishery, Surimi Catcher/Processors [1991, 1994, 1996].

	Catch metric tons	Species percent of catch	Discards metric tons	Species percent of discards	Discard rate
1991					
Pollock	738,069	97.7%	42,429	78.9%	5.7%
Pacific cod	7,875	1.0%	3,895	7.2%	49.5%
Sablefish	19	<.1%	12	<.1%	62.2%
Turbot	137	<.1%	123	.2%	90.2%
Rock sole	679	.1%	548	1.0%	80.8%
Yellowfin	599	.1%	591	1.1%	98.6%
Arrowtooth	2,719	.4%	1,775	3.3%	65.3%
Flat other	2,454	.3%	2,150	4.0%	87.6%
Rockfish	166	<.1%	80	.1%	47.9%
Atka mack	149	<.1%	1	<.1%	.6%
Oth/unk	2,453	.3%	2,185	4.1%	89.1%
Groundfish total	755,319	100.0%	53,788	100.0%	7.1%
1994					
Pollock	535,669	98.5%	11,148	63.5%	2.1%
Pacific cod	4,793	.9%	3,513	20.0%	73.3%
Turbot	13	<.1%	12	.1%	99.8%
Rock sole	542	.1%	386	2.2%	71.2%
Yellowfin	171	<.1%	154	.9%	90.1%
Flathead	246	<.1%	246	1.4%	99.9%
Arrowtooth	981	.2%	920	5.2%	93.8%
Flat other	957	.2%	575	3.3%	60.0%
Rockfish	79	<.1%	73	.4%	93.4%
Atka mack	3	<.1%	1	<.1%	29.1%
Oth/unk	530	.1%	514	2.9%	97.1%
Groundfish total	543,983	100.0%	17,543	100.0%	3.2%
1996					
Pollock	432,308	97.9%	11,553	60.8%	2.7%
Pacific cod	4,384	1.0%	3,494	18.4%	79.7%
Turbot	31	<.1%	29	.2%	95.9%
Rock sole	790	.2%	590	3.1%	74.7%
Yellowfin	691	.2%	580	3.1%	83.9%
Flathead	885	.2%	757	4.0%	85.5%
Arrowtooth	651	.1%	594	3.1%	91.2%
Flat other	208	<.1%	75	.4%	36.2%
Rockfish	64	<.1%	52	.3%	80.3%
Atka mack	200	<.1%	200	1.1%	100.0%
Oth/unk	1,381	.3%	1,061	5.6%	76.8%
Groundfish total	441,594	100.0%	18,986	100.0%	4.3%

Source: NMFS Alaska Region blend. 'Surimi' designation denotes catch processed by processors which reported making any amount of pollock surimi in that year.

Table B.2.2 Catch and Discards of Groundfish in the BSAI Pollock Target Fishery, Surimi Mothership Processing [1991, 1994, 1996].

	Catch metric tons	Species percent of catch	Discards metric tons	Species percent of discards	Discard rate
1991					
Pollock	142,956	99.4%	2,768	84.5%	1.9%
Pacific cod	617	.4%	340	10.4%	55.2%
Rock sole	9	<.1%	4	.1%	44.7%
Arrowtooth	68	<.1%	32	1.0%	47.0%
Flat other	66	<.1%	51	1.5%	77.2%
Rockfish	2	<.1%	2	<.1%	100.0%
Oth/unk	78	.1%	78	2.4%	100.0%
Groundfish total	143,795	100.0%	3,275	100.0%	2.3%
1994					
Pollock	113,077	98.7%	2,262	64.2%	2.0%
Pacific cod	1,139	1.0%	1,000	28.4%	87.9%
Turbot	3	<.1%	3	.1%	99.6%
Rock sole	91	.1%	91	2.6%	100.0%
Yellowfin	8	<.1%	8	.2%	100.0%
Arrowtooth	26	<.1%	26	.7%	100.0%
Flat other	144	.1%	76	2.1%	52.5%
Rockfish	3	<.1%	3	.1%	100.0%
Oth/unk	62	.1%	55	1.6%	87.9%
Groundfish total	114,554	100.0%	3,524	100.0%	3.1%
1996					
Pollock	121,959	97.8%	430	13.6%	.4%
Pacific cod	1,991	1.6%	1,966	62.0%	98.7%
Turbot	1	<.1%	1	<.1%	100.0%
Rock sole	77	.1%	77	2.4%	100.0%
Yellowfin	5	<.1%	5	.2%	100.0%
Flathead	226	.2%	226	7.1%	100.0%
Arrowtooth	268	.2%	268	8.4%	100.0%
Flat other	67	.1%	67	2.1%	100.0%
Rockfish	40	<.1%	39	1.2%	99.3%
Oth/unk	91	.1%	91	2.9%	100.0%
Groundfish total	124,724	100.0%	3,171	100.0%	2.5%

Source: NMFS Alaska Region blend. 'Surimi' designation denotes catch processed by processors which reported making any amount of pollock surimi in that year.

Table B.2.3 Catch and Discards of Groundfish in the BSAI Pollock Target Fishery, Surimi Inshore Processing [1991, 1994, 1996].

	Catch metric tons	Species percent of catch	Discards metric tons	Species percent of discards	Discard rate
1991					
Pollock	376,671	96.8%	3,068	50.8%	.8%
Pacific cod	9,331	2.4%	480	7.9%	5.1%
Sablefish	4	<.1%	4	.1%	98.7%
Turbot	62	<.1%	61	1.0%	98.5%
Rock sole	82	<.1%	81	1.3%	99.4%
Yellowfin	40	<.1%	39	.7%	99.5%
Arrowtooth	1,614	.4%	1,593	26.4%	98.7%
Flat other	831	.2%	333	5.5%	40.1%
Rockfish	138	<.1%	130	2.1%	93.9%
Atka mack	11	<.1%	11	.2%	100.0%
Oth/unk	457	.1%	238	3.9%	52.0%
Groundfish total	389,240	100.0%	6,037	100.0%	1.6%
1994					
Pollock	372,961	98.9%	3,807	84.1%	1.0%
Pacific cod	3,051	.8%	453	10.0%	14.8%
Sablefish	1	<.1%	<1	<.1%	39.7%
Turbot	23	<.1%	23	.5%	98.9%
Rock sole	11	<.1%	1	<.1%	13.1%
Yellowfin	19	<.1%	1	<.1%	5.1%
Flathead	156	<.1%	15	.3%	9.7%
Arrowtooth	146	<.1%	30	.7%	20.6%
Flat other	327	.1%	57	1.3%	17.4%
Rockfish	64	<.1%	36	.8%	56.4%
Atka mack	35	<.1%	31	.7%	89.9%
Oth/unk	215	.1%	73	1.6%	34.1%
Groundfish total	377,009	100.0%	4,528	100.0%	1.2%
1996					
Pollock	319,307	98.1%	3,233	69.5%	1.0%
Pacific cod	3,569	1.1%	267	5.7%	7.5%
Sablefish	3	<.1%	<1	<.1%	6.7%
Turbot	19	<.1%	7	.1%	36.0%
Rock sole	82	<.1%	36	.8%	44.5%
Yellowfin	11	<.1%	3	.1%	29.5%
Flathead	530	.2%	312	6.7%	59.0%
Arrowtooth	445	.1%	290	6.2%	65.2%
Flat other	497	.2%	146	3.1%	29.5%
Rockfish	196	.1%	59	1.3%	30.1%
Atka mack	34	<.1%	22	.5%	63.0%
Oth/unk	669	.2%	273	5.9%	40.7%
Groundfish total	325,362	100.0%	4,649	100.0%	1.4%

Source--NMFS Alaska Region blend. 'Surimi' designation denotes catch processed by processors which reported making any amount of pollock surimi in that year.

Prohibited Species Bycatch Performance Profiles

Tables C.1.1 and C.1.2 summarize the available PSC bycatch performance data, by processing mode and sub-sector. The first table presents the bycatch statistics in terms of 'metric tons' or 'numbers of animals' per ton of groundfish catch, for 1991, 1994, and 1996. The second table converts these estimates into *PSC bycatch rates*, expressed in terms of 'tons of PSC-bycatch' per ton-of-groundfish-catch, or 'numbers of PSC animals' per ton-of-groundfish-catch.

The tables are self-explanatory, revealing the variability over-time, among sectors and operational modes. Comparisons between the two tables also suggest that, in some instances, relatively large absolute numbers (either tons or animals) of PSCs may actually be associated with relatively small *'rates'* of bycatch, due to the total volumes of groundfish catch recorded by a given sector. This further suggests that these two aspects of PSC-bycatch performance be assessed in combination in order to evaluate relative sector (and/or sub-sector) impacts.

Table C.1.1 BSAI Pollock Target Fishery Prohibited Species Bycatch, by Processing Mode

[Metric tons or number]

	Halibut mort.	Herring	Red king crab	Other k.crab	Bairdi	Other Tanner	Chinook	Other salmon
	t	t	1,000s	1,000s	1,000s	1,000s	1,000s	1,000s
Catcher/Processor								
Non-surimi								
1991	297.3	28.8	1.0	8.9	465.4	1,506.6	3.0	4.9
1994	359.0	229.0	39.5	.8	258.3	624.4	4.8	10.0
1996	125.6	49.5	4.9	.0	20.1	20.5	6.1	4.2
Surimi								
1991	427.5	275.3	.3	19.6	315.0	2,670.3	15.8	2.7
1994	349.6	389.9	3.2	.5	110.9	251.6	16.6	21.7
1996	129.9	720.6	1.0	.1	62.0	24.5	14.4	35.3
Motherships								
Surimi								
1991	22.8	44.8	.0	.0	5.7	1.4	7.9	.6
1994	4.0	119.6	.0	.0	.0	11.7	2.0	29.3
1996	20.5	30.7	.0	.0	.1	.2	8.8	18.6
Inshore								
Non-surimi								
1991	59.3	2,335.3	.1	.2	75.6	42.4	1.5	1.1
1994	8.1	150.5	.1	.0	1.1	1.8	1.3	3.0
1996	11.0	186.5	.0	.0	.8	3.3	4.3	4.8
Surimi								
1991	270.7	461.7	2.3	2.3	179.2	140.3	11.4	18.4
1994	41.8	732.0	.0	.0	3.8	5.7	9.0	28.7
1996	33.7	254.3	.1	.1	6.5	15.0	22.0	14.5

Source: NMFS Alaska Region blend. 'Surimi' designation denotes catch processed by processors which reported making any amount of pollock surimi in that year, otherwise the operation is designated 'non-surimi'.

Table C.1.2 BSAI Pollock Target Fishery Prohibited Species Bycatch Rates, by Processing Mode

[Metric tons/ton or number/ton]

	Halibut mort.	Herring	Red king crab	Other k.crab	Bairdi	Other Tanner	Chinook	Other salmon
	t/t	t/t	No./t	No./t	No./t	No./t	No./t	No./t
Catcher/Processor								
Non-surimi								
1991	.001	.000	.004	.031	1.635	5.294	.010	.017
1994	.001	.001	.162	.003	1.061	2.564	.020	.041
1996	.00059	.00023	.02290	.00012	.09400	.09600	.02700	.01950
Surimi								
1991	.001	.000	.000	.026	.417	3.535	.021	.004
1994	.001	.001	.006	.001	.204	.462	.030	.040
1996	.00030	.00167	.00220	.00015	.14300	.05660	.03300	.08170
Motherships								
Surimi								
1991	.000	.000	.000	.000	.040	.010	.055	.004
1994	.000	.001	.000	.000	.000	.102	.017	.255
1996	.00017	.00025	.00000	.00000	.00060	.00170	.07100	.15250
Inshore								
Non-surimi								
1991	.002	.068	.003	.005	2.188	1.227	.044	.030
1994	.000	.003	.001	.000	.021	.034	.026	.059
1996	.00014	.00245	.00000	.00000	.01050	.04300	.05560	.06300
Surimi								
1991	.001	.001	.006	.006	.479	.375	.030	.049
1994	.000	.002	.000	.000	.010	.015	.024	.076
1996	.00011	.00080	.00021	.00038	.002048	.04690	.06770	.04550

Source: NMFS Alaska Region blend. 'Surimi' designation denotes catch processed by processors which reported making any amount of pollock surimi in that year, otherwise the operation is designated 'non-surimi'.

RELATIVE "OPERATIONAL DEPENDENCE"

Relative Dependence on BSAI Pollock Fisheries

A summary of the plants and vessels that processed
pollock in the Bering Sea or Aleutian Islands
pollock target fisheries in 1991, 1994, or 1996

Harvesters and processors of Bering Sea or Aleutian-Island (BSAI) pollock often rely on other species to fill out their annual fishing cycle. Opportunities that exist, other than pollock, include a suite of fisheries off Alaska's coast for both shorebased processors and catcher processors, and the whiting fishery off the coasts of California, Oregon, and Washington for the catcher processor fleet and true motherships. The fisheries off Alaska's coast include other groundfish, salmon (processing, tendering, or harvesting), shellfish (crab), herring, shrimp, halibut, and miscellaneous finfish.

Several data sources were used to estimate each firm's revenue by species group. Information on the shorebased processors came from the Commercial Operators Annual Reports (COAR) which are maintained by the Alaska Department of Fish and Game (ADF&G). The COAR data set was also used for the at-sea processors when it was reported. NORPAC, PacFin, Urner Berry, and the Fishery Market News Report were used to estimate total revenues from the whiting fishery. Finally, weekly production reports, Urner Berry, and the Fishery Market News Report were used for the Alaska groundfish fisheries when a firm was not included in ADF&G's COAR data set.

By regulation, the State of Alaska collects fisheries production data from seafood processors in Alaska. These COAR must be submitted by all Alaskan operations, and are also collected and processed for businesses who operate only in the Alaskan EEZ (and submit COAR data on a voluntary basis). COAR reports include data on volume and (gross) value by species, product type, and catch/production by area, as well as other information. Detailed information submitted on the COAR data are held confidential by the Alaska Department of Fish and Game.

The data on COAR reports, like Alaska catch reports (on ADF&G fish tickets), are linked to processor demographic information through the ADF&G Intent to Operate file (ITO). The ITO database, maintained jointly by ADF&G and the Alaska Department of Revenue, is the State's primary source of fisheries business demographic information (names and addresses). Each processing entity (business) in Alaska is assigned a unique identification number (renewed annually) which may be used to identify processors on COAR and fish ticket documents. For shoreside processors in Alaska, the ITO can be used to identify the port of operation of a given processor. While there may be difficulties assigning a unique port to businesses who operate in several communities in Alaska, (if they do not submit separate ITO applications for each community), no problems of this sort were apparent in this inshore / offshore data compilation.

For this exercise, COAR data was selected by year (91, 94, and 96), and linked to the ITO to determine the port of operation. Gross value of operation by major fishery groups was computed as a percentage for each processor. Fishery groups were defined by aggregating detailed species identified on the COAR into one of the following nine categories: pollock, other groundfish, halibut, crab, shrimp, miscellaneous shellfish, salmon, herring, and miscellaneous finfish. An additional field was calculated for each processor, indicating if the operation processed pollock during the year (as represented by a pollock entry on its COAR).

Council staff reviewed the data by year, port, and individual processor, and selected those processors relevant to the inshore / offshore issue. Because we were advised that the release of firm-specific data would likely violate State confidentiality laws, the data were aggregated into the four relevant sectors: Inshore, True Motherships, Fillet Catcher Processors, and Surimi Catcher Processors.

Table 1 reports the relative dependence of Inshore processors (including floating processors) on the pollock resource. The Table lists the percent of the firms wholesale revenue that was derived from each species group for the years 1991, 1994, and 1996. Table 1 indicates that the inshore processing sector annually received between 54% and 67% of their wholesale revenue from pollock. Pollock was the most important source of revenues for all the plants in this category every year. Shellfish (crab) was second in terms of generating revenue for these plants in 1991 and 1994. Revenues from shellfish dropped to 16% for the inshore sector in 1996, and that year the Other Groundfish species group took over second place. In both 1991 and 1994, Other Groundfish were third in terms of generating revenue. None of the other species groups included in the Table ever accounted for more than 3% of the firms total revenue. (Note: The Inshore sector in this Table are only those plants, in the Dutch Harbor/Akutan area and the inshore floating processors which are significant operators in pollock processing.)

Table 1 also reports similar information for the at-sea processors. Within the offshore component of the fleet, the Surimi CP and the True Mothership classes were highly dependent on the pollock resource. They received over 85% of their revenues from pollock each year. Both the Surimi CP and True Mothership classes also rely on Pacific whiting for part of their seasonal fishing rounds. No other class participated in that fishery. The Fillet CP class has exhibited a trend to rely more on pollock and less on Other Groundfish over time. These are the two dominant sources of revenue for that sector of the fleet.

Table 1 Contribution of Each Species Group to the Processor's Total Annual Wholesale Value

Class	Year	Pollock	Ground fish	Halibut	Shell fish	Shrimp	Other Shellfish	Salmon	Herring	Misc. Finfish	Pacific Whiting
Fillet CP	1991	49%	51%	0%	0%	0%	0%	0%	0%	0%	0%
Fillet CP	1994	58%	41%	0%	0%	0%	0%	1%	0%	0%	0%
Fillet CP	1996	74%	26%	0%	0%	0%	0%	0%	0%	0%	0%
Surimi CP	1991	90%	5%	0%	0%	0%	0%	0%	0%	0%	5%
Surimi CP	1994	88%	4%	0%	0%	0%	0%	1%	0%	0%	7%
Surimi CP	1996	85%	3%	0%	0%	0%	0%	4%	0%	0%	7%
True M'ship	1991	85%	0%	0%	0%	0%	0%	0%	0%	0%	15%
True M'ship	1994	88%	4%	0%	0%	0%	0%	1%	0%	0%	7%
True M'ship	1996	87%	1%	0%	0%	0%	0%	0%	0%	0%	12%
Inshore	1991	54%	20%	1%	24%	0%	0%	0%	0%	0%	0%
Inshore	1994	67%	9%	1%	20%	0%	0%	3%	1%	0%	0%
Inshore	1996	65%	17%	1%	16%	0%	0%	0%	1%	0%	0%

Sources: ADF&G COAR Dataset, NMFS AKR Weekly Production Reports, NORPAC Observer Data, PacFin, Fishery Market News Report, and Urner Berry Wholesale Price Data.

Table 2 reports the percentage of ex-vessel revenue generated by each species group. Three separate size classes were defined for the catcher vessel fleet. Vessels less than 125' length overall (LOA) comprised the smallest class. Vessels from 125' through 155' LOA were grouped to form a mid-sized class. Finally, the largest class consisted of catcher vessels over 155' LOA.

Catch reported in the ADF&G Fishticket, NORPAC, and PacFIN data bases were used to determine the catch of each species. That catch was then priced using PacFIN, ADF&G Commercial Operator Annual Reports (COAR), and ADF&G fishtickets. The resulting values were then used to compare the relative contribution of each species to the catcher vessel's total annual revenues. Those calculations indicate that pollock always accounted for the greatest percentage of revenue. Other groundfish species accounted for the next highest revenue in all cases. The catcher vessels less than 125' LOA earned a higher percentage of their revenue from Pacific whiting than either the larger vessel classes.

Table 2 Contribution of each species group to the catcher vessel's annual ex-vessel value

Size Class	Year	Pollock	Ground fish	Halibut	Shell fish	Shrimp	Other Shellfish	Salmon	Herring	Misc. Finfish	Pacific Whiting
<125'	1991	54%	30%	2%	10%	0%	0%	0%	0%	1%	3%
<125'	1994	71%	19%	1%	8%	0%	0%	0%	0%	0%	2%
<125'	1996	70%	21%	1%	2%	0%	0%	0%	0%	0%	6%
125-155'	1991	62%	33%	0%	5%	0%	0%	0%	0%	1%	0%
125-155'	1994	91%	7%	0%	1%	0%	0%	0%	0%	0%	0%
125-155'	1996	95%	5%	0%	0%	0%	0%	0%	0%	0%	0%
>155'	1991	70%	21%	0%	8%	0%	0%	0%	0%	0%	0%
>155'	1994	86%	7%	0%	7%	0%	0%	0%	0%	0%	0%
≥155'	1996	88%	11%	0%	1%	0%	0%	0%	0%	0%	1%

Data Sources: Ex-vessel prices for finfish were taken from PacFIN and Fishtickets,
and shellfish prices from Westward region shellfish reports and the COAR data set.
Catch data were derived from the ADF&G Fishticket, Norpac, and PacFIN data bases

TAB 4

PRODUCT MIX AND OUTPUT QUANTITIES OF POLLOCK

Pollock Products

A Summary of the Products Made from Target
and CDQ Pollock by Processing Sector

April 3, 1998

The National Marine Fisheries Service collects information on the products produced by processors of Alaskan groundfish. These data include both processors whose plants are land based and those that process at-sea. Various product forms are reported in these annual data sets, and as the types of products change over time the data reflects those changes. A good example of a change that has taken place since 1991 would be the addition of the "Deep Skin Fillet" class. In 1991 this class of fillet was not reported to the National Marine Fisheries Service, but as of 1996 this was the predominant type of fillet being produced.

For this analysis, seven of the major product forms produced from pollock are reported (Table 1). Other products are also made from pollock but in small amounts. Those products are not included in this document. The fillet/block and IQF group is comprised almost entirely of product 23 (fillets skinless\boneless). Other fillets, with skin or bone left in, were produced, but totaled less than 400 metric tons in 1994 and 1996.

Table 1. List of Product Forms

Product	National Marine Fisheries Service Code(s)
Surimi	30
Minced	31
Fillet/block and	20,21,22,23
Deep Skin Fillet	24
Meal	32
Oil	33
Roe	14

Only Bering Sea and Aleutian Islands pollock caught during the pollock target fishery, and CDQ pollock, when possible, have been included in this report. To include only target pollock, some assumptions had to be made for the shoreside component of the industry. Weekly Production Reports for shoreside plants are reported Bering Sea wide for each week and not by National Marine Fisheries Service zone. Also, the product reports from the National Marine Fisheries Service do not include calculated target information or CDQ breakouts. To exclude non-target pollock, only pollock that was processed while the pollock target fishery was open and the week following the closure is reported in this analysis. It is possible that some target pollock was processed after that but the amounts are likely small.

Product derived from targeted pollock during the years 1991, 1994, 1996, and 1997 are reported in Tables 2 through 5 of this chapter. Table 2 reports the products made during 1996. The top section of Table 2 lists the products produced during the pollock target fishery. Below that section is the pollock products produced during the pollock CDQ fishery. Note that it is not possible to determine which products were produced when CDQs were delivered shoreside.

Table 2 includes three basic sections as you move across the page. The first section is the Inshore/Offshore class. This is the class that has been used throughout this document. Catcher processors are divided into fillet catcher processors and surimi catcher processors. The division is made based on the processor's ability to produce surimi. If a processor did not produce surimi in a year they were placed in the fillet class. Column two is the National Marine Fisheries Service processor designation. This field is included in the Weekly Production Report data set. It is used to identify the three basic processing modes, which are shorebased, motherships, and catcher processors. Because catcher processors can act as motherships during a year both the class and designation have been included. This allows the reader to separate production of catcher processors when they catch their own fish and when they process deliveries from catcher vessels. The third section is the product forms that were discussed earlier.

More metric tons of surimi were produced in 1991, 1994, and 1996 than any other product. This was true for every class that had the capability to make surimi. Fillets were second in terms of production with almost 40,000 mt of deep skin fillets and almost 20,000 mt of fillet/blocks and IQF during 1996. Both the fillet catcher processors and the surimi catcher processors were major fillet producers. Fish meal was produced by every class except the fillet catcher processors. The shoreside processors produced almost twice as much meal as the surimi catcher processor fleet. Over 13,000 mt of roe was produced during the 1996 A-season. Surimi catcher processors have consistently been the largest producers of roe over the three years in this study.

Table 2. Pollock Products Processed During 1996

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Fillet - CP	Self Caught	-	6,567	3,971	15,832	-	-	1,574
	A Catcher Vessel	-	1,271	933	2,290	-	-	167
Fillet - Catcher Processor Total		-	7,837	4,904	18,122	-	-	1,741
Surimi - CP	Self Caught	50,755	14	1,104	6,426	10,940	344	5,157
	A Catcher Vessel	7,183	-	26	666	1,372	-	448
Surimi - Catcher Processor Total		57,938	14	1,131	7,092	12,312	344	5,605
Catcher Processor Total		**57,938**	**7,851**	**6,035**	**25,214**	**12,312**	**344**	**7,346**
Shoreside Total[1]		**71,349**	**2,626**	**9,229**	**7,442**	**27,864**	**8,514**	**4,417**
True Mothership Total		**21,992**	**-**	**-**	**-**	**5,016**	**353**	**1,075**
Grand Total		**151,279**	**10,478**	**15,263**	**32,657**	**45,192**	**9,211**	**12,838**
Fillet - CP	CDQ	-	3,220	3,359	2,802	-	-	364
Surimi - CP	CDQ	4,203	10	158	1,081	356	0	506
Mothership	CDQ	1,369	-	-	-	278	-	288
Shoreside	CDQ	n/a[2]	n/a	n/a	n/a	n/a	n/a	n/a

1/ The Northern Victor and Arctic Enterprise have been included in the Shoreside class and designation in years they participated.

2 / The n/a indicates the information cannot be broken out using National Marine Fisheries Service WPR data

Source: National Marine Fisheries Service AKR Weekly Production Reports for 1996

Table 3. Pollock Products Processed During 1994

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Fillet - CP	Self Caught	-	9,303	17,625	11,953	395	-	1,824
	A Catcher Vessel	-	146	168	207	-	-	7
Fillet - Catcher Processor Total		-	9,448	17,793	12,160	395	-	1,830
Surimi - CP	Self Caught	68,586	100	3,183	6,024	14,238	441	4,653
	A Catcher Vessel	4,087	-	294	543	1,017	-	240
Surimi - Catcher Processor Total		72,672	100	3,477	6,567	15,255	441	4,893
Catcher Processor Total		**72,672**	**9,548**	**21,270**	**18,727**	**15,650**	**441**	**6,723**
Shoreside Total[1]		**79,678**	**119**	**3,927**	**330**	**30,054**	**7,672**	**2,950**
True Mothership Total		**18,595**	**-**	**-**	**-**	**5,378**	**-**	**885**
Grand Total		**170,944**	**9,667**	**25,198**	**19,057**	**51,082**	**8,113**	**10,558**
Fillet CP	CDQ	-	4,048	3,499	4,163	4,048	-	412
Surimi CP	CDQ	6,388	84	288	1,382	84	1,361	552
Mothership	CDQ	906	-	-	-	-	191	100
Shoreside	CDQ	n/a[2]	n/a	n/a	n/a	n/a	n/a	n/a

1/ The Northern Victor and Arctic Enterprise have been included in the Shoreside class and designation in years they participated.

2/ The n/a indicates the information cannot be broken out using National Marine Fisheries Service WPR data.

Source: National Marine Fisheries Service AKR Weekly Production Reports for 1994

Table 4. Pollock Products Processed During 1991

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Fillet - CP	Self Caught	-	3,442	28,460	n/a[2]	789	31	3,099
	A Catcher Vessel	-	-	-	-	-	-	-
Fillet - Catcher Processor Total		-	3,442	28,460	n/a	789	31	3,099
Surimi - CP	Self Caught	68,391	2,791	25,584	n/a	24,992	65	13,881
	A Catcher Vessel	102	-	26	n/a	-	-	-
Surimi - Catcher Processor Total		68,492	2,791	25,610	n/a	24,992	65	13,881
Catcher Processor Total		**68,492**	**6,233**	**54,070**	**n/a**	**25,781**	**96**	**16,980**
Shoreside Total[1]		**45,044**	**2,688**	**10,955**	**n/a**	**22,428**	**4,222**	**2,811**
True Mothership Total		**18,234**	**126**	**4**	**n/a**	**6,707**	**-**	**1,535**
Grand Total		**131,771**	**9,047**	**65,029**	**n/a**	**54,916**	**4,318**	**21,326**

1/ The Northern Victor and Arctic Enterprise have been included in the Shoreside class and designation in years they participated.

2/ n/a indicates the information cannot be broken out using National Marine Fisheries Service WPR data

Source: National Marine Fisheries Service AKR Weekly Production Reports for 1991

Table 5. Pollock Products Processed During 1997

Inshore/Offshore Class	Who Caught the Fish	Surimi	Minced	Fillet/Block and IQF	Deep Skin Fillet	Meal	Oil	Roe
Fillet - CP	Self Caught	-	5,028	2,164	14,612	-	-	2,379
	Catcher Vessels	-	726	102	1,999	-	-	349
Fillet - CP Total		-	5,754	2,266	16,611	-	-	2,728
Surimi - CP	Self Caught	52,515	150	115	2,405	8,342	-	6,099
	Catcher Vessels	4,254	-	-	2	261	-	257
Surimi - CP Total		56,770	150	115	2,406	8,603	-	6,356
Catcher Processor Total		**56,770**	**5,904**	**2,381**	**19,017**	**8,603**	**-**	**9,084**
Inshore Total*		**66,531**	**1,686**	**5,959**	**6,317**	**28,957**	**8,730**	**5,326**
True Mothership Total		**18,475**	**-**	**-**	**-**	**4,116**	**-**	**1,401**
Grand Total		**141,776**	**7,590**	**8,340**	**25,334**	**41,676**	**8,730**	**15,811**
Fillet - CP	CDQ Fishery	-	1,540	551	2,241	-	-	442
Surimi - CP	CDQ Fishery	6,755	-	10	1,215	692	-	700
True Mothership	CDQ Fishery	2,075	-	-	-	344	-	204
Inshore	CDQ Fishery	n/a**	n/a	n/a	n/a	n/a	n/a	n/a

* The Northern Victor and Arctic Enterprise are included in the Shoreside class in years they participated.
**na indicates the information cannot be broken out from National Marine Fisheries Service WPR data.
Source: National Marine Fisheries Service AKR Weekly Production Reports for 1997.

TAB 5

THIS SECTION BEEN MOVED TO THE MAIN DOCUMENT
TO SECTION 3.8.1

PRICE, BY PRODUCT FORM AND MARKETS

Pollock Markets

A Summary of Pollock Product Markets and
Wholesale Prices in the Years 1991, 1994, and 1996

TAB 6

EMPLOYMENT PATTERNS

Onshore Processing Plants

Monthly employment data is provided to the Alaska Department of Labor by each employer when they file their quarterly unemployment insurance tax forms. They ask the employer to count the number of employees receiving a paycheck for the pay period that includes the 12th day of each month. The employment data therefore represents the number of people receiving a paycheck, and does not necessarily reflect the number of positions within the company. Both employee turnover and part-time employment elevate these employment tallies to a level above what would be considered full-time equivalent positions within the company.

Employers also report their total quarterly wages on the tax form, and this becomes the basis of the wage data that the Department of Labor has provided. An individual employer's wage data is considered confidential information and cannot be released by this department without the consent of the employer. The department reports cumulative annual wages for all employers by industry and by census area in its annual Employment and Earnings Summary Report. Still, some restrictions apply, and the department will not publish information if it believes that a single employer's payroll could be estimated by a competitor.

The department requests that employers with multiple work sites report employment and payrolls by work site. Worksite information is provided voluntarily. When a firm agrees to provide it, employment and quarterly payroll data are collected by worksite and geographically coded at the census subarea level, or in the case of ship-based operations is assigned a designation of "marine." When a firm does not provide work site specific data, that employer's total employment and payroll is assigned to the census area where it employs the largest number of employees. Please be aware that, Alyeska Seafoods, Northern Victor Partnership, Westward Seafoods, and the current owner of Arctic Fisheries (Tyson Seafoods) DO NOT provide employment data for their various work sites. For this reason, the employment figures reported in the spreadsheet for these companies do not represent employment for the specific geographic areas you requested, but rather are these firms' statewide total employment.

As for the occupational breakouts, this information is also collected on a quarterly basis. It is not directly comparable to the monthly employment data since these figures include all persons who have worked for the employer at any time during the quarter. In this case, employee turnover and changes in employment levels becomes more problematic than in the monthly employment data. Employers are asked to provide the location and occupation for all workers who received pay during the quarter, but not all provide such information. When work location and occupation information are provided to us, that information is included in the employer database. In cases where the employer does not provide location and/or occupation information, their employees are recorded as having either an unknown location, unknown occupation, or both. If an employer is unable to provide location or occupation information for a number of employees, then the reported worksite and occupational counts might not reflect reality.

In summary, keep the following in mind while reviewing the tables:

> **monthly employment numbers** include statewide employment data for those firms which would not provide breakouts for individual plants;
>
> the reported **quarterly wage data** is for all companies involved in seafood processing in a census area, regardless of their product, and includes wages from other areas if an employer refused to provide plant specific information and had the majority of their employment in that census area;

the occupational employment data may not reflect the complete picture if an employer was not able to provide location and occupation data for all of its employees, and the information represents all employees that worked for the employer at any time during the quarter.

The information the Department has been able to provide so far gives only an overview of the current employment situation in the region. By combining certain data sources and performing a more in-depth analysis, additional information could be provided. The following list is an example of the types of information the Department could provide:

percentage of a firm's workforce that was from the local area;
percentage of wages paid to Alaska residents vs. nonresidents;
average number of quarters worked by an employee for each firm;
average number of employers an employee worked for during any time period;
employee's usage of unemployment insurance;
earnings for the major occupational groups employed in the industry;
the number of newly-hired employees (based upon whether an employee had worked for that particular employer at some time in the past);
and the number of employees who had worked in prior quarters but no longer worked for the employer, an indication of job turnover.

Charges for performing such an analysis are based upon the personal services costs, data processing charges, and an allocation for overhead costs that we incur. To give an example, if the Department were to use information from voter registration records, Permanent Fund recipient files, the Occupational Database and the unemployment insurance claim records, we would incur charges from other agencies for supplying us with data as well as incurring mainframe computer charges to process the data into a form suitable for analysis. A typical, "medium scale" project might take 6 to 7 weeks of a labor economist's time, and possibly 4 to 5 weeks of a statistical technician's time. In this case, we would be looking at a cost of approximately $20,000 to $25,000.

Table EM.1 through EM.3 report the number of resident and nonresident (residency refers to whether employees are Alaska residents) employees by firm and quarter, for the years 1996, 1994, and 1991, respectively. As discussed above, this information is a sum of the number of unique social security numbers on the pay roll during the quarter. If there were employees that left the company and were replaced during the quarter, the number of jobs would tend to be over-estimated. These Tables include all employees of the company. Therefore, if species other than pollock were processed during the quarter those employees would also be included in the tables.

This data is unable to differentiate between employees engaged in pollock processing specifically, as opposed to other species, and there is undoubtedly overlap involved across species and processing activities. Nevertheless, some inferences might be drawn by examining the seasonal (quarterly) employment fluctuations which correspond to the pollock 'A' and 'B' seasons, though these also overlap with crab fisheries, other groundfish fisheries, and salmon fisheries to varying degrees. Across all seasons and all years in the Tables, the data show a majority of the labor force as non-resident - about 85% to 90% as a weighted average across all inshore processors in 1996. The percentage of non-resident employees has generally increased from 1991 to 1996.

Table EM.4 lists the number of employees that were issued a pay check for the pay period that included the 12th day of the month. It is likely that this information more closely approximates the total number of jobs that are available at each plant.

Table EM.5 provides the same basic employment information, though further broken down by general job categories.

Table EM.1 Quarterly Employment by Processor for 1996, Broken out by Residence of Employees

Employer Name	Area	1st Qtr.			2nd Qtr.			3rd Qtr.			4th Qtr.		
		Residence		%	Residence		%	Residence		%	Residence		%
		AK	Other	Other	AK	Other	Other	AK	Other	Other	AK	Other	Other
Unisea.	Aleutians West	226	825	78%	217	603	74%	207	457	69%	201	563	74%
Unisea	**All Boroughs**	**228**	**945**	**81%**	**224**	**753**	**77%**	**208**	**531**	**72%**	**201**	**564**	**74%**
Peter Pan Seafoods	King Cove	.	.	.	153	549	78%	149	506	77%	107	247	70%
Peter Pan Seafoods	**All Boroughs**	**162**	**400**	**71%**	**209**	**852**	**80%**	**237**	**966**	**80%**	**121**	**259**	**68%**
Alyeska Seafoods	Aleutians West	130	259	67%	113	151	57%	127	207	62%	113	126	53%
Alyeska Seafoods	**All Boroughs**	**134**	**265**	**66%**	**113**	**152**	**57%**	**127**	**208**	**62%**	**113**	**126**	**53%**
Trident Seafoods	Aleutians East	110	1,346	92%	81	901	92%	80	838	91%	76	779	91%
Trident Seafoods	**All Boroughs**	**124**	**1,911**	**94%**	**120**	**1,688**	**93%**	**129**	**2,035**	**94%**	**88**	**958**	**92%**
Arctic Fisheries	**Marine**	.	.	.	.	.	.	.	.	.	.	.	.
Westward Seafood	Unknown	1	1	50%	0	3	100%	65	278	81%	.	.	.
Westward Seafood	Aleutians West	90	444	83%	55	306	85%	.	.	.	65	292	82%
Westward Seafood	**All Boroughs**	**91**	**445**	**83%**	**55**	**309**	**85%**	**65**	**278**	**81%**	**65**	**292**	**82%**
Northern Victor	Aleutians West	2	219	99%	2	256	99%	1	195	99%	1	222	100%
Northern Victor	**All Boroughs**	**2**	**219**	**99%**	**2**	**265**	**99%**	**1**	**195**	**99%**	**1**	**222**	**100%**

Source: State of Alaska Department of Labor Occupational Data Base

Table EM.2 Quarterly Employment by Processor for 1994

Employer Name	Area	1st Qtr.			2nd Qtr.			3rd Qtr.			4th Qtr.		
		Residence		%	Residence		%	Residence		%	Residence		%
		AK	Other	Other	AK	Other	Other	AK	Other	Other	AK	Other	Other
Unisea	Aleutians West	190	934	83%	167	445	73%	162	426	72%	154	442	74%
Unisea	**All Boroughs**	**191**	**1,065**	**85%**	**168**	**533**	**76%**	**163**	**495**	**75%**	**154**	**443**	**74%**
Peter Pan Seafoods	King Cove	110	317	74%	122	487	80%	133	470	78%	.	.	.
Peter Pan Seafoods	**All Boroughs**	**149**	**421**	**74%**	**176**	**647**	**79%**	**234**	**952**	**80%**	**123**	**352**	**74%**
Alyeska Seafoods	Aleutians West	125	254	67%	121	229	65%	110	166	60%	107	163	60%
Alyeska Seafoods	**All Boroughs**	**125**	**254**	**67%**	**121**	**229**	**65%**	**110**	**166**	**60%**	**107**	**163**	**60%**
Trident Seafoods	Aleutians East	88	1,041	92%	82	807	91%	64	783	92%	73	702	91%
Trident Seafoods	**All Boroughs**	**104**	**1,585**	**94%**	**133**	**1,398**	**91%**	**119**	**1,868**	**94%**	**92**	**968**	**91%**
Arctic Fisheries	**Marine**	**23**	**172**	**88%**	**22**	**250**	**92%**	**17**	**235**	**93%**	**14**	**156**	**92%**
Westward Seafood	Unknown	2	5	71%	0	1	100%	0	1	100%	59	261	82%
Westward Seafood	Aleutians West	73	454	86%	63	187	75%	69	276	80%	.	.	.
Westward Seafood	**All Boroughs**	**75**	**460**	**86%**	**63**	**188**	**75%**	**69**	**277**	**80%**	**59**	**261**	**82%**
Northern Victor	Aleutians West	3	194	98%	4	294	99%	1	243	100%	1	206	100%
Northern Victor	**All Boroughs**	**3**	**195**	**98%**	**4**	**295**	**99%**	**1**	**244**	**100%**	**1**	**206**	**100%**

Source: State of Alaska Department of Labor Occupational Data Base

Table EM.3 Quarterly Employment by Processor for 1991

Employer Name	Area	1st Qtr. Residence AK	1st Qtr. Residence Other	1st Qtr. % Other	2nd Qtr. Residence AK	2nd Qtr. Residence Other	2nd Qtr. % Other	3rd Qtr. Residence AK	3rd Qtr. Residence Other	3rd Qtr. % Other	4th Qtr. Residence AK	4th Qtr. Residence Other	4th Qtr. % Other
Unisea	Aleutians West	0	0	.	204	679	77%	197	722	79%	196	885	82%
Unisea	**All Boroughs**	**223**	**847**	**79%**	**218**	**799**	**79%**	**212**	**833**	**80%**	**197**	**896**	**82%**
Alyeska Seafoods	Aleutians West	129	343	73%	124	290	70%	107	205	66%	104	195	65%
Alyeska Seafoods	**All Boroughs**	**129**	**344**	**73%**	**124**	**291**	**70%**	**107**	**206**	**66%**	**104**	**195**	**65%**
Peter Pan Seafoods	King Cove	57	105	65%	1	119	99%	1	113	99%	1	47	98%
Peter Pan Seafoods	**All Boroughs**	**114**	**291**	**72%**	**217**	**685**	**76%**	**232**	**893**	**79%**	**97**	**293**	**75%**
Trident Seafoods	Aleutians East	130	816	86%	125	930	88%	113	780	87%	68	441	87%
Trident Seafoods	**All Boroughs**	**148**	**1,294**	**90%**	**188**	**1,636**	**90%**	**172**	**1,544**	**90%**	**93**	**832**	**90%**
Arctic Fisheries	**Marine**	**22**	**148**	**87%**	**23**	**164**	**88%**	**25**	**178**	**88%**	**22**	**174**	**89%**
Westward Seafood	Unknown	40	61	60%	1	4	80%	1	1	50%	62	180	74%
Westward Seafood	Aleutians West	.	.	.	.	.	.	75	259	78%	.	.	.
Westward Seafood	**All Boroughs**	**40**	**61**	**60%**	**80**	**282**	**78%**	**76**	**260**	**77%**	**62**	**180**	**74%**
Northern Victor	Aleutians West	18	222	93%	6	295	98%	2	232	99%	1	96	99%
Northern Victor	**All Boroughs**	**18**	**224**	**93%**	**6**	**300**	**98%**	**2**	**234**	**99%**	**1**	**96**	**99%**

Source: State of Alaska Department of Labor Occupational Data Base

Table EM.4 Monthly employment for inshore processors

Name	Port	1996											
		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Alyeska Seafoods	Dutch Harbor	301	416	411	382	265	213	214	160	253	253	240	141
Peter Pan Seafoods, Inc.	King Cove	513	510	485	340	366	419	413	229	289	308	217	127
Trident Seafoods Corp.	Akutan	192	857	870	929	744	755	730	803	518	363	253	264
Trident Seafoods Corp.	Sand Point	48	215	218	233	186	189	183	201	130	91	64	67
Unisea, Inc.	Dutch Harbor	776	796	775	751	531	288	281	327	545	555	472	325
Northern Victor	Dutch Harbor	31	206	208	212	220	150	46	143	183	211	189	119
Westward Seafoods, Inc.	Dutch Harbor	504	526	509	358	354	355	320	317	323	246	199	152

Source: Alaska Department of Labor Current Employment Survey

Table EM.5 Summary of Employment by Job Type

Area	Job Description	1991				1994				1996			
		1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
Aleutians East Borough	Cannery Workers	330	424	353	84	1,393	1,223	1,167	668	1,371	900	777	769
	Mgmt. & Supervisors	26	49	53	25	23	57	52	21	17	50	53	33
	Misc. Jobs	977	1,163	1,002	552	142	224	231	86	68	726	680	383
	Unknown	13	7	7	3	1	1	2	-	-	-	64	6
Aleutians East Borough Total		1,346	1,643	1,415	664	1,559	1,505	1,452	775	1,456	1,676	1,574	1,191
Aleutians West Census Area	Cannery Workers	1,306	1,159	802	965	1,236	862	697	679	1,791	1,241	783	1,012
	Mgmt. & Supervisors	121	85	148	62	70	72	68	64	78	74	66	73
	Misc. Jobs	362	372	866	424	375	320	333	302	387	382	329	433
	Unknown	1	1	5	27	547	256	357	29	14	15	18	58
	Manual Jobs, NEC	-	-	-	-	2	2	1	1	1	-	-	-
Aleutians West Census Total		1,790	1,617	1,821	1,478	2,230	1,512	1,456	1,075	2,271	1,712	1,196	1,576
Marine	Cannery Workers	181	306	283	201	1,154	653	774	396	652	691	637	124
	Mgmt. & Supervisors	8	16	17	9	20	8	7	7	3	3	3	2
	Misc. Jobs	7	108	155	21	39	21	18	14	21	18	15	10
	Unknown	-	-	-	-	1	339	-	-	-	6	-	3
	Manual Jobs, NEC	451	623	539	352	-	2	-	-	-	1	1	-
Marine Total		647	1,053	994	583	1,214	1,023	799	417	676	719	656	139
Unknown Area	Cannery Workers	-	-	-	1	3	-	-	2	461	-	5	1
	Mgmt. & Supervisors	-	-	-	-	1	-	-	-	18	1	1	3
	Misc. Jobs	-	-	-	-	1	5	5	-	88	1	-	-
	Unknown	1	-	1	472	7	1	1	796	1	3	347	31
Unknown Area Total		1	-	1	473	12	6	6	798	568	5	353	35
Grand Total		3,784	4,313	4,231	3,198	5,015	4,046	3,713	3,065	4,971	4,112	3,779	2,941

Source: State of Alaska Department of Labor Occupational Data Base

NOTE TO REVIEWER OF THIS SECTION:

The following memo, from the Washington State Employment Department to Council staff, represents an initial attempt to describe fisheries and fish processing employment related to the at-sea fleet operation in the BSAI pollock fisheries. The level of detail, primarily due to Washington state confidentially restrictions, is not comparable to the preceding section of describing Alaska shore plant employment. We expect to have comparable information, at least for 1996 fisheries, for Council review at the April 1998 meeting.

August 29, 1997

To: Darrell Brannan, North Pacific Fishery Management Council

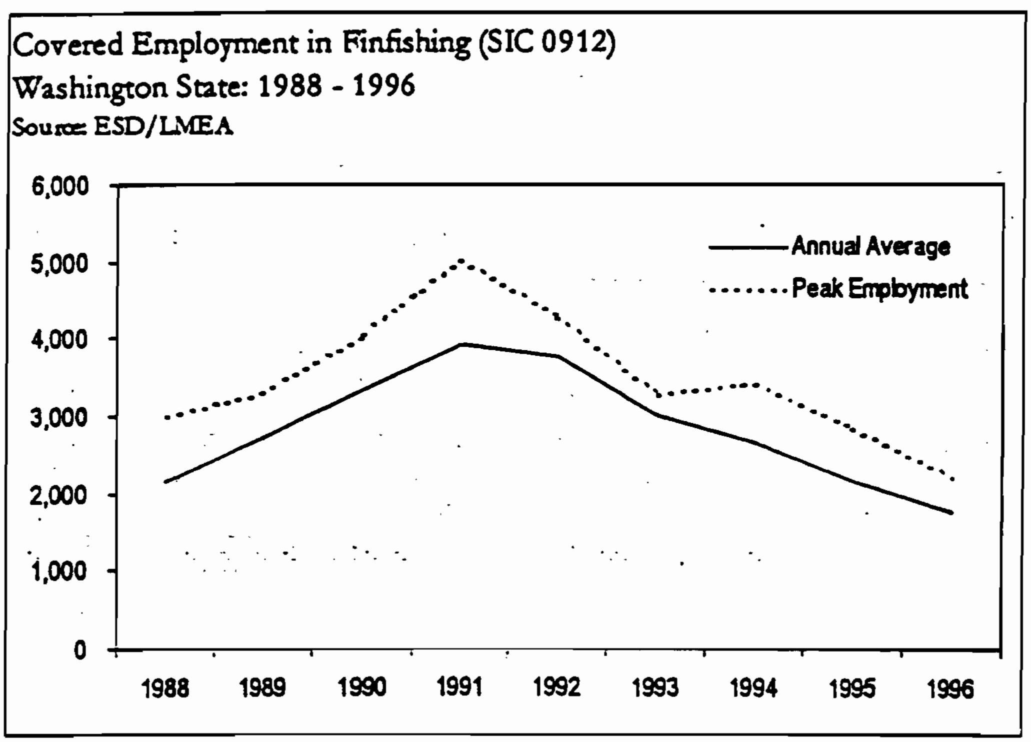
From: Robert Wm. Baker, Washington State Employment Security Department

Subject: Fishing Information

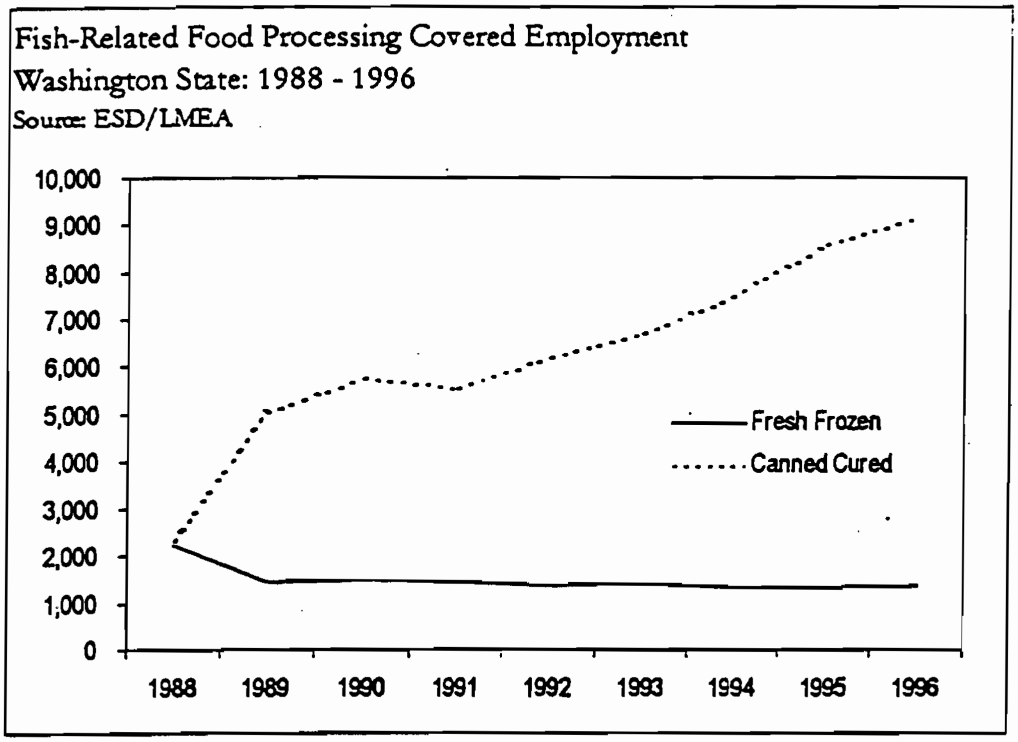
The employment and wage information on fishing and fishing-related activities comes from two specific programs administered by the Labor Market and Economic Analysis branch of the Washington State Employment Security Department. The first informational source is the Covered Employment and Wage information based on the quarterly tax reports collected by the agency. The next data source is the Occupational Profiles from our Occupational Employment Statistics program; this data is based on a sample survey of 40,000 firms over a three-year cycle. The result of this is that our data points do not exactly match your needs. Our profiles cover 1989, 1992 and 1995 for the fishing and food processing industries.

Employment Trends

According to our covered employment and wage information, employment trends in the fin-fishing industry have been decidedly cyclical and obviously trending down. This data can represent a multitude of fishing operations however. It is likely that it covers both large and small vessels. The number of units or establishments has remained relatively stable, whereas the employment has a more apparent downward trend. This employment pattern is more related to the cutback in salmon fishing activity in Washington marine waters.



The regional nature of the employment cutbacks in fishing is apparent once processing related activities are examined. The canned and cured seafood operations, which are more dependent on the local catch, have exhibited the same employment patterns as fin fishing. But fresh and frozen packaged fish has shown a markedly positive employment trend. It is this industry data that represents the on and offshore processing, particularly from the Gulf of Alaska.



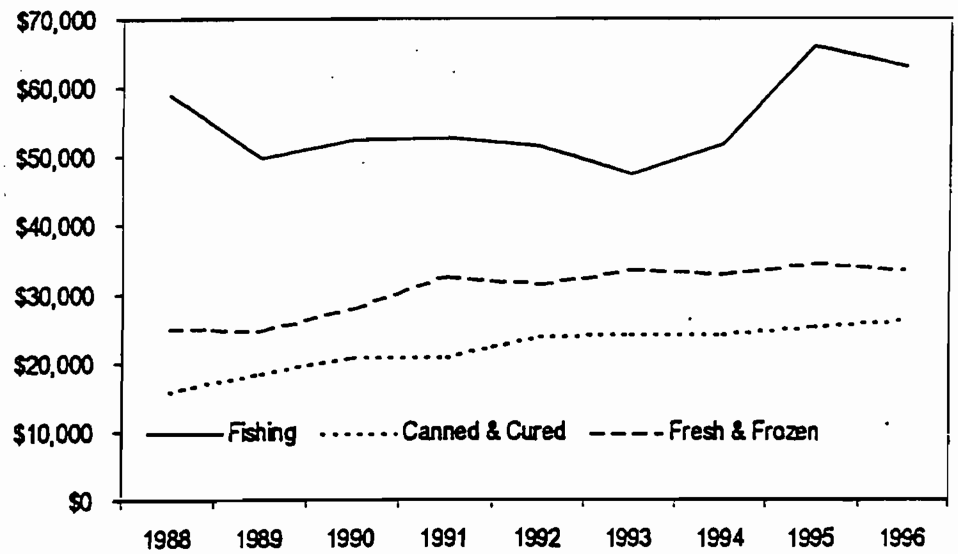
Fresh and frozen packaged fish employment has grown fourfold in the last business cycle. The annual employment data and the peak month data concur in trend. The actual peak month can change from year to year, but the magnitude of that peak is consistent.

This basic data does not differentiate between full- and part-time workers. Within the administrative data, however there are clues as to such status though not at the occupational level. Tax reports do report average hours per quarter. Deconstructing this data into full- and part-time components is difficult because of the nature of the fishing and processing industries – a large but transitory work force, and shifting seasons from year to year.

Wage Trends

Average covered wages in the fishing and fishing related processing sectors has been quite variable, particularly in fishing. Realize that all these monetary measures are in current dollars, and would need to be deflated to discount inflation. Were these figures adjusted for inflation, both fin fishing, and fresh and frozen packaged fish, though well above average, would likely show a flat-to-down wage pattern. Canned and cured seafood annual wages, on the other hand, would likely show a modest up trend. The difference in wages is the apparent scarcity of local product, as represented by the canned and cured seafood sector, as compared to the relative abundance of product as represented by the fresh and frozen packaged fish sector.

Annual Covered Wages in Fishing and Fishing-Related Food Processing in Washington State: 1988 - 1996
Source: ESD/LMEA



Occupational Trends

The most obvious development in the occupational profile of commercial fishing has been the downsizing between 1992 and 1995. In this period, the distribution of occupations within the commercial fishing sector exhibited some particular shifts. There is a greater concentration of agriculture, forestry, fishing occupations at the apparent expense of production related jobs, possibly the impact of improved production methods, greater levels of capital investment, or automation. There have also been greater than average cutbacks on the use of clerical and service related workers. This tends to confirm aggregate long terms in use of clerical and administrative support workers whose share has been waning. It also is not unusual on the service side as many of these functions are now contracted out. The greater than average decline in share of captains, water vessel may also be a clue as to the economic effects of fewer but larger vessels.

The occupational profile of the food processing side of the coin has exhibited some shifts, but not near to the degree as commercial fishing. This is likely due to the upward trend in employment that is invariably easier to accommodate in personnel functions. There is a decidedly downward trend in the share of managerial and administrative occupations; in 1989, this grouping represented 6.9 percent of the total employment in the industry, by 1995 that share had declined to 5.6 percent. Sales and clerical support occupations, while growing in number, have declined in percent share as well. Contrast that to the increase in both absolute and percentage terms for production related jobs.

It should be noted that the occupational profile for food processing is for SIC 209. While over 80 percent of workers in this sector are involved in the processing of fish (SICs 2091 and 2092), there may be some occupational concentrations in the residual industry sectors that are not applicable to fish processing.

Fishing and Food Processing Occupations in Washington State
For Select Years
Source: ESD,LMEA

Occupation	1995	1992	1989
Total Commercial Fishing (sic 091)	2,830	4,810	3,647
Managerial and Administrative	110	160	31
Professional/Paraprofessional and Technical	90	130	50
Technicians & Technologists (incl. food tech)	40	20	20
Sales and related	20	40	N/A
Clerical & Administrative Support	80	180	127
Service	40	100	70
Agriculture, Forestry and Fishing	1,760	2,300	1,720
Fishers, hunters, trappers, (including deckhands)	1,130	2,080	1,596
Production, Construction, Operators, Maint. and Material Handling	790	1,900	1,649
Captains, Water Vessel	70	160	147
Total Misc. Food and Kindred Products (sic 209)	12,130	9,800	8,113
Managerial and Administrative	680	660	560
Professional/Paraprofessional and Technical	410	260	271
Technicians & Technologists (incl. food tech)	20	20	33
Sales and related	290	180	243
Clerical & Administrative Support	990	970	771
Service	410	360	155
Agriculture, Forestry and Fishing	490	260	385
Production, Construction, Operators, Maint. and Material Handling	8,860	7,110	5,728
Precision food workers	220	210	42
Operators and tenders	860	760	608
Other hand workers	4,300	3,400	3,353

COVERED EMPLOYMENT AND WAGES

Finfishing, and Fishing-related Food Processing

Source: ESD

	1988	1989	1990	1991	1992	1993	1994	1995	1996
Finfish: (SIC 0912)									
Employer Units	609	598	639	679	681	707	737	697	699
Annual Average Employment	2,140	2,725	3,329	3,908	3,742	3,008	2,634	2,139	1,757
Peak Month	Oct.	Oct.	Aug.	Aug.	Aug.	Sept.	Aug.	Aug.	Aug.
Peak Employment	2,989	3,286	4,030	5,007	4,279	3,254	3,407	2,853	2,211
Average Wage	$58,940	$49,763	$52,393	$52,543	$51,548	$47,267	$51,903	$65,787	$62,990
Canned & cured seafoods: (SIC 2091)									
Employer Units	56	36	41	38	38	37	39	47	'52
Annual Average Employment	2,235	1,460	1,513	1,478	1,359	1,398	1,351	1,330	1,387
Peak Month	Sept.	Aug.	Aug.	Aug.	Dec.	Aug.	Nov.	July	July
Peak Employment	2,580	1,800	1,736	1,668	1,474	1,514	1,465	1,419	1,512
Average Wage	$15,852	$18,593	$20,736	$20,841	$23,865	$24,044	$24,239	$25,193	$26,245
Fresh & frozen packaged fish: (SIC 2092)									
Employer Units	83	124	137	147	170	162	174	176	155
Annual Average Employment	2,307	5,011	5,750	5,556	6,174	6,694	7,459	8,565	9,144
Peak Month	Oct.	Aug.	Sept.	Oct.	Oct.	Feb.	Oct.	Oct.	Apr.
Peak Employment	2,601	5,894	6,200	6,657	6,426	7,065	7,748	9,668	10,104
Average Wage	$25,061	$24,610	$27,795	$32,566	$31,429	$33,666	$33,040	$34,458	$33,472

Source: ESD Employment and Payrolls

Fishing and Food Processing Occupations in Washington State
For Select Years
Source: ESD,LMEA

Occupation	1995	1992	1989	Distribution 1995	Distribution 1992	Distribution 1989
Total Commercial Fishing (sic 091)	2,830	4,810	3,647	100.0%	100.0%	100.0%
Managerial and Administrative	110	160	31	3.9%	3.3%	0.9%
Professional/Paraprofessional and Technical	90	130	50	3.2%	2.7%	1.4%
Technicians & Technologists (incl food tech)	40	20	20	1.4%	0.4%	0.5%
Sales and related	20	40	na	0.7%	0.8%	na
Clerical & Administrative Support	80	180	127	2.8%	3.7%	3.5%
Service	40	100	70	1.4%	2.1%	1.9%
Agriculture, Forestry and Fishing	1,760	2,300	1,720	62.2%	47.8%	47.2%
Fishers, hunters, trappers, (including deckhands)	1,130	2,080	1,596	39.9%	43.2%	43.8%
Production, Construction, Operators, Maintenance and Material Handling	790	1,900	1,649	27.9%	39.5%	45.2%
Captains, Water Vessel	70	160	147	2.5%	3.3%	4.0%
Total Misc. Food and Kindred Products (sic 209)	12,130	9,800	8,113	100.0%	100.0%	100.0%
Managerial and Administrative	680	660	560	5.6%	6.7%	6.9%
Professional/Paraprofessional and Technical	410	260	271	3.4%	2.7%	3.3%
Technicians & Technologists (incl food tech)	20	20	33	0.2%	0.2%	0.4%
Sales and related	290	180	243	2.4%	1.8%	3.0%
Clerical & Administrative Support	990	970	771	8.2%	9.9%	9.5%
Service	410	360	155	3.4%	3.7%	1.9%
Agriculture, Forestry and Fishing	490	260	385	4.0%	2.7%	4.7%
Production, Construction, Operators, Maintenance and Material Handling	8,860	7,110	5,728	73.0%	72.6%	70.6%
Precision food workers	220	210	42	1.8%	2.1%	0.5%
Operators and tenders	860	760	608	7.1%	7.8%	7.5%
Other hand workers	4,300	3,400	3,353	35.4%	34.7%	41.3%

Updated Employment Information
for At-sea Sector (& onshore sector)

To supplement the employment information in the Sector Profiles (Appendix 1, Tab 6) for the I/O3 analysis, the following is attached:

(1) Employment by companies represented by At-sea Processors Association (APA) for 1996 and 1997.

(2) Summary of annual employment by firm for the Inshore sector.

(3) Summary of Inshore and Offshore employees residing in Alaska by zip code.

(4) Data submittal letter from APA describing the information (for at-sea) and how it was developed.

Verification of Residency of Workers Reported as Alaska Residents by APA

		AK Residents	Non-AK Res.	% Non-AK
1996	**SSNs Supplied by APA**	**182**	**2,742**	**93.8%**
	Employment Opportunities in APA Report	177	2,747	93.9%
	SSN matches with PFD	150	2,774	94.9%
	SSN matches as AK licensed drivers	166	2,758	94.3%
	SSN matches as AK registered voters	109	2,815	96.3%
	SSN matches with PFD or drivers license	174	2,750	94.0%
1997	**SSNs Supplied by APA**	**392**	**3,722**	**90.5%**
	Employment Opportunities in APA Report	366	3,748	91.1%
	SSN matches with PFD	293	3,821	92.9%
	SSN matches as AK licensed drivers	330	3,784	92.0%
	SSN matches as AK registered voters	179	3,935	95.6%
	SSN matches with PFD or drivers license	355	3,759	91.4%

Source: APA supplied SSNs verified using Alaska Department of Labor Residence data bases

Employment Reported by the At-sea Processors Association

APA Reported Information		AK Residents	Non-AK Res.	% Non-AK
Employment Opportunities	1996	177	2,747	93.9
	1977	366	3,748	91.1%
FTE Employment	1996	78	1,764	95.8%
	1997	196	3,056	94.0%

Source: APA Report to the NPFMC

Note: Only members of APA are included in these offshore employment counts

Table Showing Annual Inshore Resident and Nonresident Employment[1]

	Total Workers	Resident Workers	Nonresident Workers	% Nonresident Workers
1996	5,687	837	4,850	85.3
1997	5,908	809	5,099	86.3

[1]Resident and Nonresident Workers for Selected Seafood Processing Firms and Locations
Alyeska Seafoods (Aleutians West), NN Victor Partnership (Aleutians West), Peter Pan Seafoods (Aleutians East), Unisea (Aleutians West), Tyson Seafoods (Aleutians), Unisea (Aleutians West), Westward Seafoods (Aleutians East and Other Locations) in Alaska 1996/1997, using unduplicated SSN's by year

Source: Alaska Department of Labor, Research and Analysis

DRAFT

Table of Resident and Nonresident Workers for Selected Inshore Pollock Processing Firms[1]

Year	Employer Name	Area Name	Total Workers	Resident Workers	Nonresident Workers	% Nonresident Workers
1996	ALYESKA SEAFOODS INC	Aleutians West	409	138	271	66.3
1996	NN VICTOR PARTNERSHIP	Aleutians West	438	2	436	99.5
1996	PETER PAN SEAFOODS INC	Aleutians East	844	190	654	77.5
1996	TRIDENT SEAFOODS CORP	Aleutians East	1,760	116	1,644	93.4
1996	TYSON SEAFOOD GROUP INC	Floater	362	38	324	89.5
1996	UNISEA INC	Aleutians West	1,289	241	1,048	81.3
1996	WESTWARD SEAFOOD INC	Aleutians West	827	117	510	81.3
Total			5,729	842	4,887	85.3
1997	ALYESKA SEAFOODS INC	Aleutians West	364	111	253	69.5
1997	NN VICTOR PARTNERSHIP	Aleutians West	445	2	443	99.6
1997	PETER PAN SEAFOODS INC	Aleutians East	907	186	721	79.5
1997	TRIDENT SEAFOODS CORP	Aleutians East	1,778	119	1,659	93.3
1997	TYSON SEAFOOD GROUP INC	Floater	267	39	228	85.4
1997	UNISEA INC	Aleutians West	1,487	229	1,258	84.6
1997	WESTWARD SEAFOOD INC	Aleutians West	705	131	574	81.4
Total			5,953	817	5,136	86.3

[1]Resident and Nonresident Workers for Selected Seafood Processing Firms and Locations
and Total Resident and Nonresident Earnings for the Group of Selected Firms by Year-Alaska 1996/1997
Unduplicated Worker Count by Empoyer and Area

Source: Alaska Department of Labor, Research and Analysis

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TABLE OF RESIDENCY OF EMPLOYEE'S HIRED BY ONSHORE COMPANIES 1996

EMPLOYEE RESIDENCE	COUNT	EMPLOYEE RESIDENCE	COUNT	EMPLOYEE RESIDENCE	COUNT
Dutch Harbor	275	Kotlik	3	Scammon Bay	1
Anchorage	193	Mekoryuk	3	Talkeetna	1
Unalaska	121	Soldotna	3	Anderson	1
Sand Point	56	Juneau	2	Tuntutuliak	1
King Cove	54	Skagway	2	Barrow	1
St. Paul Island	28	Chevak	2	Cantwell	1
Akutan	23	Kipnik	2	Haines	1
Kodiak	21	Nikiski	2	Ketchikan	1
False Pass	9	Quinhagak	2	Togiak	1
Bethal	9	Sheldon Point	2	North Pole	1
Fairbanks	9	Iliamna	1	Sutton	1
Cordova	5	Alakanuk	1	Ninilchik	1
Wasilla	5	Dillingham	1	Toksook Bay	1
Palmer	4	Girdwood	1	Petersburg	1
Mountain Village	4	Kasilof	1		
Chefornak	4	Cold Bay	1		
Eagle River	3	Elemendorf AFB	1		
Egegik	3	Hooper Bay	1		
Homer	3	King Salmon	1		
Kenai	3	Napakiak	1		

TABLE OF RESIDENCY OF EMPLOYEE'S HIRED BY ONSHORE COMPANIES 1997

EMPLOYEE RESIDENCE	COUNT	EMPLOYEE RESIDENCE	COUNT	EMPLOYEE RESIDENCE	COUNT
Dutch Harbor	226	Kenai	3	Elemendorf AFB	1
Anchorage	187	Mountain Village	3	Girdwood	1
Unalaska	116	Palmer	3	Glenallen	1
Sand Point	53	Dillingham	2	Goodnews Bay	1
King Cove	46	Holy Cross	2	Iliamna	1
Kodiak	41	Kipnik	2	Kasilof	1
St. Paul Island	41	Nikiski	2	Kwethluk	1
Akutan	23	New Stuyahok	2	Napakiak	1
Juneau	9	Pilot Station	2	Ninilchik	1
Alakanuk	6	Seward	2	Quinhagak	1
Fairbanks	6	Togiak	2	Shageluk	1
False Pass	6	Toksook Bay	2	Nightmute	1
Ketchikan	5	Tuntutuliak	2	Minto	1
Wasilla	5	Tunanak	2	Haines	1
Petersburg	5	Nulato	2	Sitka	1
Cordova	4	Anderson	1	Skagway	1
Mekoryuk	4	Cold Bay	1	Thorne Bay	1
Soldotna	4	Emmonak	1	Ward Cove	1
Bethal	3	Hughes	1		
Homer	3	Eagle River	1		

TABLE OF RESIDENCY OF EMPLOYEE'S HIRED BY THE A.P.A. FLEET 1996

EMPLOYEE RESIDENCE	COUNT	EMPLOYEE RESIDENCE	COUNT	EMPLOYEE RESIDENCE	COUNT
Anchorage	30	Alakanuk	2	King Salmon	1
Dillingham	21	Aleknagik	2	Kodiak	1
Togiak	14	Pilot Point	2	Valdez	1
Manokotak	9	Wasilla	2	Two Rivers	1
Shaktoolik	9	Saint Micheal	2	Koyuk	1
Stebbins	9	Unalaska	2	Wales	1
Emmonak	6	Wasilla	2		
Kotlik	4	Dutch Harbor	2		
Spenard	4	Brevig Mission	2		
Bethal	3	Fairbanks	2		
Egegik	3	Akutan	1		
Homer	3	Eagle River	1		
Unalakleet	3	False Pass	1		
Elim	3	Girdwood	1		
Gambell	3	Iliamna	1		
Nome	3	Kenai	1		

TABLE OF RESIDENCY OF EMPLOYEE'S HIRED BY THE A.P.A. FLEET 1997

EMPLOYEE RESIDENCE	COUNT	EMPLOYEE RESIDENCE	COUNT	EMPLOYEE RESIDENCE	COUNT
Anchorage	66	Wasilla	3	Levelock	1
Dillingham	36	Unalakeet	3	Mekoryuk	1
Emmonak	22	Elim	3	Naknek	1
Togiak	15	Aleknagik	2	Pilot Point	1
Kotlik	12	Clarks Point	2	Pilot Station	1
Alakanuk	10	Hooper Bay	2	South Naknek	1
Manokotak	8	Kwethluk	2	Valdez	1
New Stuyahok	7	Ninilchik	2	Gambell	1
Stebbins	7	Soldotna	2	Nenana	1
Bethal	6	Seward	2	Tok	1
Fairbanks	6	Sheldon Point	2	Douglas	1
Iliamna	5	Unalaska	2	Haines	1
Kodiak	5	Nome	2	Petersburg	1
Unalaska	5	Juneau	1	Sitka	1
Dutch Harbor	5	Atka	1	Ketchikan	1
Koyuk	5	Chevak	1	Ward Cove	1
Homer	4	Eagle River	1		
Moutain Village	4	Eek	1		
Napakiak	4	Egegik	1		
Palmer	4	False Pass	1		
Soldotna	4	Goodnews Bay	1		
Shaktoolik	4	Kenai	1		

AT-SEA PROCESSORS ASSOCIATION

Partners for Healthy Fisheries

April 15, 1998

To: Darrell Brannan, North Pacific Fishery Management Council

SENT VIA FAX

From: Ed Richardson

Re: APA employment impacts for 1996 and 1997

Attached please find summary tables for APA employment impacts for 1996 and 1997. As the table headings indicate, the statistics refer to employment opportunities. That is to say, APA companies, within the course of operating the vessels listed below during 1996 and 1997, provided the tabled numbers of employment opportunities (i.e., jobs). What is important to note is that, for the case where an APA company provided a job for an individual during the pollock A season, and a second APA company provided a job for the same individual, say, during the pollock B season, this individual would have received two employment opportunities (jobs). Because not all APA member companies provided SSNs to identify individual employees, it was not possible to refine the employment estimates to the point where a total number of unique individuals could be counted. However, from what I understand about how plant employment is indicated shoreside, i.e., that is it done by counting the work force at a standard point in time each quarter, it would appear that the shoreside employment estimates also do not measure employment impacts on the basis of unique individuals.

In compiling the tables, residency was based on the address that employees supplied to APA member companies and the job category indicates the task for which the employee was hired. The pay and benefits amounts include direct (gross) wages as well as company matching contributions to retirement plans and the purchase of health insurance coverage for those instances where these benefits are provided. The APA job categories included with the tables include generally the following tasks:

1. Administration
   Shore-based company management, human resource, and accounting services
   some vessel-based processing plant management services

2. Fishing
   Vessel captain and navigation services, fish master, fishing-gear operations crew
   deck winch operation

3. Processing
   Processing plant labor services, product quality control, packaging and storage,
   plant equipment maintenance and repair

4. Engineering
   Repair and maintenance of vessel propulsion and electrical systems and
   systems to support plant and hotel operations (e.g., freshwater production)

5. Hotel and Galley
   Hotel operations services - cooking, cleaning, laundry, provisioning, and storage

Obviously, the size of APA member company operations and labor service requirements changes as business opportunities change. As the tables indicate, the number of employment opportunities provided by APA member companies increased by about a third during 1996-1997, moving to just over 4,100 opportunities during 1997 from just under 3,000 opportunities during 1996. In large part, these increased opportunities resulted because APA member companies operated more vessels in the BSAI pollock fishery during 1997 than during 1996. The lists of vessels that APA member companies operated during 1996 and 1997 are provided below. However, it should be noted here that during 1996 the vessels

SEATTLE 4039 21st Avenue West Suite 400 Seattle, WA 98199 Tel: (206) 285-5139 Fax: (206) 285-1841 www.atsea.org
ALASKA P.O. Box 920021 Dutch Harbor, AK 99692 Tel: (907) 581-5880 Fax: (907) 581-5880

CP Northern Jaeger, CP Northern Hawk, and CP Northern Eagle were operated by member American Seafoods Company only during November and December of 1996, after the vessels had stopped fishing for the year. For this reason, the 1996 APA data includes only a small quantity of labor services to support ship-yard work on these three vessels.

1996	1997
Alaska Ocean	Alaska Ocean
American Empress	American Empress
American Dynasty	American Dynasty
American Triumph	American Triumph
Arctic Storm	Arctic Storm
Arctic Fjord	Arctic Fjord
Endurance	Endurance
Northern Glacier	Northern Glacier
Ocean Rover	Ocean Rover
Pacific Glacier	Pacific Glacier
Highland Light	Highland Light
Starbound	Starbound
Pacific Scout	Pacific Scout
Pacific Explorer	Pacific Explorer
Pacific Navigator	Pacific Navigator
Northern Eagle (late year shipyard only)+	Northern Eagle
Northern Hawk (late year shipyard only)+	Northern Hawk
Northern Jaeger (late year shipyard only)+	Northern Jaeger
	Rebecca Ann
	Victoria Ann
	Christina Ann
	Elizabeth Ann
	Katie Ann

Please call if you have questions or require additional information.

Sincerely,

Edward J. Richardson

cc: Jeff Hadland, Alaska Department of Labor
Mike Downs, Impact Assessment
Mike Galginaitis, Impact Assessment

+ Vessel fished the 1996 A and B-seasons while owned by Ocean Trawl, Inc.

APA Companies — Summary of 1997 Employment Impacts.

Employment Opportunities	Gross Pay and Benefits	FTE Years of Employment [a]
4,114	$108,013,602	3,252

Pay and Benefits by State

	Employment Opportunities	Gross Pay and Benefits ($)	FTE Years of Employment
Alaska	366	4,720,743	196
Washington	2,663	76,254,686	2,180
Oregon	151	3,292,628	111
Idaho	51	1,658,172	48
Montana	28	652,514	20
California	338	7,455,701	272
Other	517	13,979,158	426

Pay and Benefits by Job Category

	Employment Opportunities	Pay and Benefits ($)		Employment (FTE Years)	
		Total	Median	Total	Median
Administration	390	17,018,555	32,425	358	0.94
Fishing	290	17,894,068	50,718	314	1.02
Processing	2,919	57,872,709	12,890	2,138	0.59
Engineering	347	11,034,621	15,816	294	0.73
Hotel and Galley	168	4,193,647	19,752	147	0.78

[a] One full-time equivalent (FTE) year of employment is calculated as 240 eight-hour work days.

APA Companies — Summary of 1996 Employment Impacts (Alt).

Employment Opportunities	Gross Pay and Benefits	FTE Years of Employment [a]
2,924	$72,591,825	1,841

Pay and Benefits by State

	Employment Opportunities	Gross Pay and Benefits ($)	FTE Years of Employment
Alaska	177	2,140,853	77.5
Washington	1,958	52,652,553	1,296.0
Oregon	109	2,674,243	69.9
Idaho	43	1,214,044	29.9
Montana	27	516,623	17.4
California	257	4,340,637	136.9
Other	353	9,052,872	213.6

Pay and Benefits by Job Category [b]

	Employment Opportunities	Pay and Benefits ($)		Employment (FTE Years)	
		Total	Median	Total	Median
Administration	163	7,487,199	33,324	119.8	1.01
Fishing	206	12,677,129	58,715	157.0	0.95
Processing	2,144	37,556,059	13,858	1,244.3	0.56
Engineering	281	11,132,897	28,787	218.1	0.96
Hotel and Galley	130	3,738,541	27,740	101.7	1.04

[a] One full-time equivalent (FTE) year of employment is calculated as 240 eight-hour work days.

[b] Includes 1,417 employment opportunities with job category unknown allocated in proportion to those opportunities with known job category.

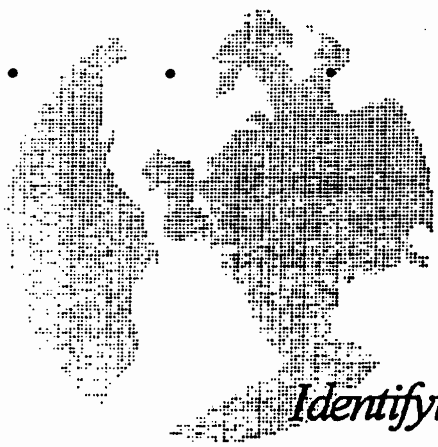
TAB 7

LINKAGES TO CDQ APPORTIONMENTS

(an expanded, undated analysis is contained as
Appendix III to the document)

CDQ Program
Department of Community &
Regional Affairs
POB 112100
Juneau, Alaska 99811

Inshore / Offshore Allocations and the Pollock CDQ Program



Identifying linkages which exist in the current Pollock CDQ Program

CDQ Pollock in the Inshore/Offshore Analysis

Identifying the linkages between each sector in the current Pollock CDQ Program

INTRODUCTION

The Community Development Quota (CDQ) program was implemented in December 1992, as part of the first Inshore/Offshore amendments. After five years of operation, the program has had a tremendous impact on the ability of the residents of western Alaska to participate in the fisheries located in their backyard, the Bering Sea/Aleutian Islands.

The intent of this report is to provide the North Pacific Fisheries Management Council with information which may be relevant when analyzing the effect of the various alternative allocation percentages for the extension of the Inshore/Offshore program.

The CDQ program to date has allowed for greater involvement in the industry by both individuals from western Alaska and the six CDQ groups which were formed to participate in the program. The data represented in this report comes from the quarterly and annual reports submitted to the State of Alaska by the CDQ groups, as well as the annual audits which are required by the State of Alaska through program oversight responsibilities. These reports and audits provide information regarding their financial performance, ability to meet the milestones and objectives as defined in their Community Development Plans (CDP), and reports to management on improving internal controls and management practices.

The relevant performance indicators as related to the CDQ Program and the inshore/offshore allocations involve both economic and social indicators as can be determined from the available data. This report will focus on the number of inshore & offshore participants in the CDQ program, both in the existing pollock program, as well as the anticipated industry participants in the expanded multi-species CDQ program. In addition, this report includes the revenues received in the form of royalties, the number of people and/or positions, wages, and the percentage of the CDQ allocation utilized by the different sectors. Qualitative data, based on the relationships between the CDQ groups and the different sectors will be examined as well.

INDUSTRY PARTICIPANTS

The harvesting/processing partners involved in the pollock CDQ Program have not changed substantially over the past five years. Industry partners work with the CDQ groups and develop an agreement in which they agree to work together to maximize the opportunity to utilize CDQ in a manner which enhances and maximizes its value to both the CDQ group and the harvesting/processing partner. The following table represents the CDQ groups, industry partners, and CDQ allocation over the past three pollock Community Development Plan application cycles.

CDQ Group	Allocation 1992/93	1994/95	1996/98	Pollock Industry Partner
Aleutian Pribilof Island Community Development Association	18%	18%	16%	Trident Seafoods & Starbound Partnership
Bristol Bay Economic Development Corporation	20%	20%	20%	Oceantrawl, Inc. (92-95) Arctic Storm (96-98)
Central Bering Sea Fishermen's Association	10%	8%	4%	American Seafoods
Coastal Villages Fishing Cooperative Coastal Villages Region Fund (co-applicant)	27%	27%	18% 7%	Golden Age Fisheries Westward Seafoods (96-98)
Norton Sound Economic Development Corporation	20%	20%	22%	Glacier Fish Company
Yukon Delta Fisheries Development Association	5%	7%	13%	Golden Alaska Seafoods

As indicated in the above table, there are currently two inshore and six offshore partners. The allocation received by APICDA is normally split 50/50 (indicated in their CDP) between the two partners however this can change dependent on current market conditions. The Coastal Village's 1996/98 pollock quota allocation was divided between Golden Age (offshore) and Westward Seafoods (inshore). This effectively results in approximately 15% of the total 7.5% CDQ reserve being harvested/processed by the inshore sector.

Therefore, the inshore sector's current allocation of 35% of the TAC is increased by an additional 13,038mt. and the offshore 65% is increased by an additional 73,886mt, based on the 1997 pollock CDQ reserve. (Approximate figures) As indicated previously, the amount of inshore participation has increased in the 1996/98 CDQ cycle.

The amount of royalties received by the CDQ groups in exchange for the use of the CDQ is approximately $82.2 million over the past five years (92-96) for an average of $16.4 million per year. Of the total amount ($82.2), it is estimated that royalties of $8.7 million are from the inshore sector.

CDQ GROUP INVESTMENTS

Another factor to consider when analyzing the participation of the CDQ groups in the different sectors is to look at where they are placing their investment funds. The development of inshore processing facilities in the CDQ communities is limited by access to the resource and the economics involved in increased transportation and overhead costs. In addition, developing the local human resources to participate in the venture requires a substantial dedication of time and money. Their inshore processing operations are limited to small halibut, sablefish and crab processing facilities and a value added salmon facility. Currently, two of the CDQ groups have invested in factory trawler operations, two have invested in catcher vessels, and another has a plan amendment pending for investment in a factory trawler company. The CDQ groups have not invested in existing inshore pollock operations at this time.

While it is difficult to determine the impacts on the CDQ group's investments and royalty agreements which the various allocation alternatives propose, it can be assumed that a reduction in the amount of pollock which is available for harvest would have an impact on the earnings from investments in factory trawler operations. Whether the participating factory trawlers would pay more for access to the resource, or would not be able to pay as large a royalty payment is for their analysis. The same assumption can be applied towards the inshore sector. TAC levels for pollock will be a factor in the analysis as well.

CDQ EMPLOYMENT & TRAINING

The amount of employment, training, and wages received from the inshore/offshore sectors from 1992 through the second quarter 1997 is difficult to quantify precisely. A separation of this information is not required in the annual and quarterly reports. The estimated employment in the pollock CDQ program for 1992 - 1997 (2nd quarter) is 5,400 positions, earning approximately $22,753,785 in wages. Training statistics indicate a total of 2,807 people trained in a variety of capacities with training expenditures of $4,515,000 however this information is not broken down by fisheries and/or sectors.

When questioned, four of the six CDQ groups indicated they had residents employed in the onshore sector at some point in the past five years. The total estimate to date is approximately 35 individuals, with the majority of that occurring in the past two years. Information regarding the participation of CDQ residents in onshore support jobs is not available, although it is a factor of onshore employment opportunities.

An estimate of the average gross "A" season wages earned by CDQ residents in the offshore sector is $8,206 per trip with three trips per quarter for an average $24,618 per quarter. The average CDQ resident earnings in the onshore sector "A" season is approximately $2,200 per quarter. The pollock "B" season wages average approximately $9,428 per quarter in the offshore sector and approximately $2,700 per quarter with the onshore sector.[1] These wages can fluctuate significantly over a few years in both sectors and should be considered a snap-shot in time only.

There appears to be a substantial wage differential between each sector, with greater earning opportunities to CDQ residents in the offshore sector. The wages paid in the inshore plants are often barely above minimum wage however overtime opportunities are available. Often, residents of a community where a plant is located do not participate in the employment opportunities these plants provide due to the high cost of living in rural Alaska. Many consider the wages unable to meet their needs and prefer to find employment elsewhere. Therefore, a large part of the inshore plant's workforce is imported from other communities, states, or nations.

It is important to consider the environmental factors when analyzing the employment information. Often, residents from a CDQ community will prefer to work together on a factory trawler operation. This lessens the feeling of cultural isolation and enables them to finish the entire trip with the support of others from their community, or neighboring communities. Also, the zero tolerance policy which prohibits the possession and use of alcohol and/or drugs on factory trawlers increases their chance of completing the trip with all their earnings. However do not construe this to mean that instances of abuse do not occur.

The inshore processing facilities are for the large part in Dutch Harbor where there are plenty of opportunities to spend their earnings. Most of the participating CDQ communities are considered "dry villages". This means that a ban exists on the importation and consumption of alcohol in these communities. When a person from a dry community travels to a community to work in an onshore plant where there are external social opportunities, they

[1] These numbers are based on information provided by a factory trawler company & onshore pollock processor who participate in the CDQ program. The above information is based on two years of A season data, and one year of B season. This information is intended as an estimate only. A full analysis may be required in a future report.

may choose to relieve the stress of a new environment, long hours and hard work. The result may be either less money to take home, or a shortened stay in the workplace. However, there are some people who prefer the onshore environment as opposed to being at sea for extended periods of time.

The CDQ groups are continuing to address these problems through alcohol and drug abuse rehabilitation programs. In addition, the CDQ groups are beginning to send people to work in a team environment in both the onshore and offshore sectors.

MULTI-SPECIES CDQ PROGRAM

The CDQ Program was expanded to include crab and all other groundfish not currently covered in an existing CDQ program. This expansion is mandated in the Magnuson-Stevens Act which states "The North Pacific Council and the Secretary shall establish a western Alaska community development quota program under which a percentage of the total allowable catch of any Bering Sea fishery is allocated to the program."

The Secretary of Commerce will decide on the FMP amendments which authorize the multi-species CDQ program by September 12. Proposed regulations for the multi-species CDQ program are currently in the proposed rule stage and available for public comment through September 29. The State of Alaska has solicited and received Community Development Plan applications for the expanded program. The initial review and recommended allocations have been done and the final review and recommended allocation process is expected to be complete prior to the September 1997, NPFMC meeting.

The expanded multi-species CDQ program allocations does not include pollock. However, the CDQ groups have formed associations with industry partners from both sectors to harvest the other groundfish and crab. The groundfish proposals indicate processing may occur in both sectors, however the crab processing will only occur at inshore facilities.

The following table indicates the CDQ applicant and their proposed partners in the 1998 - 2000 multi-species CDQ program. As stated above, the Community Development Plans are not considered final until the Secretary of Commerce gives approval.

The CDQ groups have identified the following harvesting/processing partners in their multi-species CDPs:

CDQ Applicant	Harvesting / Processing Partner					
APICDA	Trident Seafoods & Starbound / PO[2],YF,FF,CR	Prowler - Ocean Prowler/ PC,SA,TU	Cascade Fishing/AM	APICDA JV/ SA,TU,HA	Atka Pride Seafoods/ HA,SA	
BBEDC	Alaska Leader Fisheries/ SA,TU,HA	North Pacific Fishing/ AM,YF,FF	Kaldestad Management/ CR	Icicle Seafoods/ CR		
CBSFA	American Seafoods/ PO,AM,FF,PC,FF,YF	Jubilee Fisheries/ AM,FF,PC,SA,TU	Scandies Rose/ CR	Icicle Seafoods/ CR	Zolotoi Partnership/ CR	
CVRF	Tyson Seafoods/ AM,FF	Westward Seafoods/ PO,PC,HA,SA	Kokopelli Fisheries/ SA,HA	Icicle Seafoods/ CR	Silver Spray/ CR	
NSEDC	Norton Sound Fish Company/SA,PC,TU, HA	Baranof/Courageous/ SA,PC,TU,HA	American Seafoods/ YF	Icicle Seafoods/ CR	Ocean Peace/ AM,FF	Norton Sound Seafood Products/ CR
YDFDA	Peter Pan Seafoods/ HA,SA,TU	Yukon Delta Fisheries/ HA,SA,TU	Kodiak Fish Company/ FF, AM	Icicle Seafoods/ CR	Pathfinder/ PC	Fanning Fisheries/ CR

KEY - PO = POLLOCK, HA = HALIBUT, SA=SABLEFISH, TU = TURBOT, FF = FLATFISH, AM = ATKA MACKEREL, CR = CRAB, PC = PACIFIC COD, YF = YELLOWFIN SOLE

APICDA = Aleutian Pribilof Island Community Development Association
BBEDC = Bristol Bay Economic Development Corporation
CBSFA = Central Bering Sea Fishermen's Association
CVRF = Coastal Villages Region Fund
NSEDC = Norton Sound Economic Development Corporation
YDFDA = Yukon Delta Fisheries Development Association

[2] PO indicates these are existing pollock partners who participate in the current CDQ Program.

OWNERSHIP INFORMATION

There are 168 vessels or plants which participated in the 1996 pollock Bering Sea and Aleutian Islands fishery. Of the 168 vessels or plants there are 22 catcher-boats which operated in both inshore and offshore sectors (there are 118 different catcher-boats altogether). The count of the inshore plants (eight) does not include the International Seafoods of Kodiak inshore plant or one inshore catcher processor which harvested small amounts of pollock in 1996. In the inshore sector there are 99 vessels or plants, and in the offshore sector there are 88 vessels (one vessel has multi-country affiliation and is subtracted from 89).

Three foreign countries, Japan, Norway, and South Korea have some degree of foreign-affiliation in plants, catcher vessels or processors as follows:

Country of Ownership	Inshore Plants (#)	Inshore Catcher-Vessels	Offshore Catcher-Processors	Offshore Catcher-Vessels	Offshore True Motherships
Japan	4	11 [4]	1 [3]	3 [4]	1
Norway	0	0	18	2	0
South Korea	0	3 [2]	3 [3]	3 [2]	1
Fully US	4 [1]	77	16	41 [5]	1
Total	8	91	37	49	3

1/ Including two anchored processors in Dutch Harbor.
2/ Includes two vessels with inconclusive parent-company affiliation of South Korea.
3/ Has a vessel with multi-country affiliation.
4/ A vessel was Lost at Sea since 1996.
5/ Includes a vessel with inconclusive partial UK affiliation.

Inshore Sector Processing Plants: Parent-companies that are affiliated with Japan account for 4 of the 8 total plants of the inshore sector, or 50%. There aren't any plants in the inshore sector where the parent company is from Norway or South Korea. The remaining four plants, 50% of the inshore sector, are fully US owned.

Catcher-Boats Overall: There are 118 catcher-boats altogether: 91 in the inshore sector and 49 in the offshore sector. When added this makes 140 vessels, and subtracting 22 for those that operated in both sectors again equals 118 different catcher-vessels. Ownership of catcher-boats by parent companies of Japan account for 14 or about 12%. A little less than 2% of the catcher-boats have ownership by parent companies foreign-affiliated in Norway. There are two to six vessels where the parent company is from South Korea (four of these vessels are inconclusively of South Korea), or less than 5%. The remaining 95 catcher-boats are fully US owned (which includes one vessel with some inconclusive UK affiliation), or about 81%.

Offshore Catcher Processors: Parent-companies that are affiliated with Japan account for one of the 37 catcher processors in the offshore sector, or about 2%. Norway-affiliation includes 18 vessels or about 49%. South Korea includes two to three vessels (because some vessels have ownership by a parent companies of Japan as well as South Korea), or about 5%. There remains 16 catcher processors in the offshore sector which are fully US owned, or 46% of the total.

True Motherships: There are three true motherships operating in the offshore sector. One is fully-affiliated with Japan (33% of the total), one is 10% affiliated with South Korea and 90% US or about 3% of the total, and one is fully US. Ownership by US companies accounts for 63% of the total of offshore motherships.

Table 1. Ownership by Sector in the 1996 Bering Sea and Aleutian Islands Pollock Fishery with Name, Data-Source and Summary Conclusions.

Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Inshore Plants			
Alyeska Seafoods (Dutch Harbor)	x	x*	50% Maruha (Japan), 43% Wards Cove Packing (US), 6% Marubeni (Japan), 1% Western Alaska (Japan).
Peter Pan Seafoods (King Cove)	x	x*	100% Nichiro (Japan).
Trident Seafoods (Akutan,Sand Pt)		x*	100% US (11% ConAgra, 89% Non-ConAgra).
UniSea (Dutch Harbor)	x	x*	100% Nippon Suisan Kaisha (Japan).
Westward Seafoods (Dutch Harbor)	x	x*	100% Maruha (Japan).
Inshore Anchored Processors			
Arctic Enterprise		x	100% Tyson Seafood Group (US).
Northern Victor	x	x*	100% Northern Victor Partnership (US).
Inshore Catcher Vessels			
Alaska Dawn		x*	100% Alaska Dawn (US).
Aldebaran		x*	100% Trident (US).
Alsea		x	100% Alsea Fisheries-Rondys (US).
Alyeska		x*	25% Nippon Suisan Kaisha (Japan). Sold 1997.
American Beauty **		x*	100% Golden Alaska Seafoods-Nichiro (Japan).
American Eagle		x*	100% THW Enterprises (US).
Anita J		x	100% Anita J Fisheries (US).
Arctic 1 **		x	100% Tyson Seafood Group (US).
Arctic 3 **		x	100% Tyson Seafood Group (US).
Arctic 4 **		x	100% Tyson Seafood Group (US).
Arctic 6 **		x	100% Tyson Seafood Group (US).
Arctic Wind		x*	100% Alaskan Pride Partnership (US).
Arcturus		x*	100% Trident (US).
Argosy		x	100% Rondys-Futura Fisheries (US).

* The company confirmed or revised its ownership information, and therefore ownership conclusions are based on the information provided by the company. ** Operated in both inshore and offshore sectors.

Sector and Plant or Vessel Name	Data-Source: Alaska Report	Data-Source: Lexis-Nexis	Ownership Conclusions
Inshore Catcher Vessels (continued)			
Auriga		x*	100% Alyeska Ocean (US).
Aurora		x*	100% Alyeska Ocean (US).
Caitlin Ann		x	100% JR Partners (US).
Caravelle		x*	100% Caravelle-Dakota Management (US).
Carefree		x	100% F/V Carefree (US).
Cape Kiwanda		x	100% F/V Cape Kiwanda (US).
Celtic		x	100% F/V Celtic (US).
Chelsea K		x*	100% Ocean Dynasty LP (US).
Collier Brothers		x	100% F/V Collier Brothers (US).
Columbia		x *	100% Trident (US).
Commodore **		x*	100% Commodore Partnership (US).
Defender		x*	49% Nippon Suisan Kaisha (Japan), 51% (US).
Destination		x*	20% Western Alaska Fisheries (Japan), 51% Wards Cove Packing (US), 29% Austneberg Fisheries (US).
Dominator		x*	100% Trident (US).
Dona Liliana **		x*	100% Dona Fisheries (US).
Dona Martita		x*	100% Dona Fisheries (US).
Dona Paulita		x*	100% Dona Fisheries (US).
Elizabeth F		x	100% Elizabeth F (US).
Endurance		x	100% Endurance (US).
Exodus		x*	100% Exodus Partners (US). Sold 1998.
Flying Cloud		x*	100% Trident (US).
Golden Dawn		x*	100% Golden Dawn LLC (US).
Golden Pisces		x	100% Golden Pisces (US).
Gold Rush		x*	100% Gold Rush LP (US).
Great Pacific		x*	49% Western Alaska Fisheries (Japan), 51% Dall Head (US).

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Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Inshore Catcher Vessels (continued)			
Gun-Mar		x	100% Margun Fisheries (US).
Half Moon Bay		x	100% Steuart Fisheries (US).
Hazel Lorraine I **		x	100% JR Partners (US).
Hickory Wind		x	100% Hickory Wind (US).
Lady Joanne		x	100% Lady Joanne (US).
Leslie Lee **		x*	100% Leslie Lee (US).
Lisa Melinda		x	100% Lisa Melinda Fisheries (US).
Majesty **		x*	100% Trident (US).
Marathon		x	100% Marathon Fisheries (US).
Marcy J		x*	100% Marcy J (US).
Miss Berdie		x	100% Miss Berdie (US).
Morning Star		x*	75% Morning Star LP (US), 25% Alyeska Seafoods (see Inshore Plants).
Ms Amy		x	100% F/V Maranatha (US).
Nordic Star		x	100% Nordic Star Fisheries-Nordtek (US).
Ocean Enterprise **		x	100% Tyson Seafood Group (US).
Ocean Hope 1 **		x	inconclusive.US Marine Corporation(So. Korea).
Ocean Hope 3 **		x	inconclusive.US Marine Corporation(So. Korea).
Oceanic **		x	100% Oceanic Partners (US).
Pacific Alliance **		x*	66% Maruha (Japan), 44% US.Lost at sea 1997.
Pacific Enterprise **		x	100% Tyson Seafood Group (US).
Pacific Knight		x*	100% Westward Seafoods-Maruha (Japan).
Pacific Monarch **		x*	100% AAS Finance LLC (US).
Pacific Prince **		x	100% JR Partners (US).
Pacific Ram		x	100% Pacific Ram Enterprises-Blue Sea Fisheries (US).
Pacific Viking		x*	100% Trident (US).

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Sector and Plant or Vessel Name	Data-Source: Alaska Report	Data-Source: Lexis-Nexis	Ownership Conclusions
Inshore Catcher Vessels (continued)			
Pegasus		x	100% Cape Lookout-North Sea (US).
Peggy Jo		x*	100% F/V Peggy Jo (US).
Perseverance		x	100% Marcon Fisheries (US).
Persistence		x	100% Marcon Fisheries (US).
Poseidon		x*	100% Poseidon Partnership (US).
Predator		x	100% Marcon Fisheries (US).
Progress		x	100% Wards Cove Packing (US).
Raven		x	100% Yaquina Trawlers (US).
Rosella		x	100% F/V Rosella (US).
Royal American		x	100% Haweco (US).
Royal Atlantic		x*	100% Royal Atlantic LP (US).
Sea Storm **		x	50% Oyang (So.Korea), 50% Arctic Storm (US).
Seadawn		x*	100% FY Fisheries (US).
Seawolf		x*	75% Duke Point LP (US), 25% Western Alaska Fisheries-Maruha (Japan).
Seeker		x*	100% F/V Seeker (US).
Starfish		x	100% Aleutian Spray-Starfish Group (US).
Starlite		x	100% Aleutian Spray-Starfish Group (US).
Starward **		x	100% Aleutian Spray-Starfish Group (US).
Storm Petrel		x*	100% Storm Petrel Partnership (US).
Sunset Bay		x	100% Steuart Fisheries (US).
Topaz		x*	100%. F/V Topaz (US).
Traveler **		x	100% Leslie Lee (US).
Viking		x	100% Westward Seafoods-Maruha (Japan).
Viking Explorer		x*	100% Trident (US).
Walter N		x	100% Elizabeth F (US).
Western Dawn **		x	100% Western Dawn LLC (US).

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Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Inshore Catcher Vessels (continued)			
Westward I		x*	49.5% Western Alaska Fisheries-Maruha (Japan), 50.5% Horizon Trawlers (US).
Offshore Catcher Processors			
Alaska Ocean		x	100% Alaska Ocean Seafoods (US).
Alaska Victory		x*	100% Fishing Co. of AK-Alaska Victory (US).
Alaska Voyager		x*	100% Fishing Co. of AK-Alaska Voyager (US).
American Dynasty	x	x	100%. RGI US Seafoods-Aker RGI (Norway).
American Empress	x	x*	100%. RGI US Seafoods-Aker RGI (Norway).
American Enterprise		x	100% Tyson Seafood Group (US).
American No. 1		x	100% North Pacific Fishing (US).
American Triumph		x*	100%. RGI US Seafoods-Aker RGI (Norway).
Arctic Fjord		x*	100% ProFish International (US).
Arctic Storm	x	x*	50% Oyang Fisheries (So.Korea), 50%(US).
Browns Point		x	100% Imarpiqamiut Partnership-Signature Seafoods-Golden Age Fisheries (US).
Christina Ann (Aleutian Speedwell)		x*	100% RGI US Seafoods-Aker RGI (Norway).
Claymore Sea	x	x*	100%. New Pollock LP-Emerald Resource Mgt. (Norway). RF.
Elizabeth Ann (Snowking)		x*	100% RGI US Seafoods-Aker RGI (Norway).
Endurance	x	x	100% Daerim Corporation (South Korea).
Harvester Enterprise		x	100% Tyson Seafood Group (US).
Heather Sea	x	x*	100%. New Pollock LP-Emerald Resource Mgt. (Norway). RF.
Highland Light		x*	100% Highland Light Seafoods LLC (US).
Island Enterprise		x	100% Tyson Seafood Group (US).
Kodiak Enterprise		x	100% Tyson Seafood Group (US).
Northern Eagle	x	x*	100%. RGI US Seafoods-Aker RGI (Norway).
Northern Glacier	x	x*	100% Glacier Fish Company (US).

* The company confirmed or revised its ownership information, and therefore ownership conclusions are based on the information provided by the company. ** Operated in both inshore and offshore sectors.

Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Offshore Catcher Processors (continued)			
Northern Hawk	x	x*	100%. RGI US Seafoods-Aker RGI (Norway).
Northern Jaeger	x	x*	20%. RGI US Seafoods (Norway), 80% Jaeger Investment (US).
Ocean Peace	x	x*	40% Il Heung (So. Korea); 9% Happy World (Japan). 51% (US).
Ocean Rover		x*	100% American Seafoods-Norway Seafoods-Aker RGI (Norway).
Pacific Explorer	x	x*	100% ASC Alaska-RGI US Seafoods-Aker RGI (Norway).
Pacific Glacier	x	x*	100% Glacier Fish Company (US).
Pacific Navigator		x*	100% ASC Alaska-RGI US Seafoods-Aker RGI (Norway).
Pacific Scout	x	x*	100% ASC Alaska-RGI US Seafoods-Aker RGI (Norway).
Rebecca Ann (Royal King)	x	x*	100% Bering Sea Development Corp-RGI US Seafoods-Aker RGI (Norway).
Royal Sea (Katie Ann)		x*	100% Bering Sea Development Corp-RGI US Seafoods-Aker RGI (Norway).
Saga Sea	x	x*	100%. New Pollock LP-Emerald Resource Mgt. (Norway). RF.
Seattle Enterprise		x	100% Tyson Seafood Group (US).
Seafisher		x	100% Cascade Fishing (US).
Starbound		x	100% Aleutian Spray Fisheries-Starbound (US).
Victoria Ann (Valiant)		x*	100% RGI US Seafoods-Aker RGI (Norway).
Offshore Catcher Vessels			
AJ		x*	51% Saga Seafoods LP (US), 49% (Norway).
Aleutian Challenger		x*	100% Meddar Corporation (US).
Amber Dawn		x*	100% Amber Dawn Fisheries (US).
American Beauty **		x	100% Peter Pan Seafoods-Nichiro (Japan).

* The company confirmed or revised its ownership information, and therefore ownership conclusions are based on the information provided by the company. ** Operated in both inshore and offshore sectors.

Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Offshore Catcher Vessels (continued)			
American Challenger		x	100% American Seafoods-Aker RGI (Norway).
American Enterprise		x	100% Tyson Seafood Group (US).
Arctic 1 **		x	100% Tyson Seafood Group (US).
Arctic 3**		x	100% Tyson Seafood Group (US).
Arctic 4 **		x	100% Tyson Seafood Group (US).
Arctic 6 **		x	100% Tyson Seafood Group (US).
California Horizon		x*	100% Kydaka Corporation (US).
Commodore **		x*	100% Commodore Partnership (US).
Dona Liliana **		x*	100% Dona Fisheries (US).
Excalibur II		x*	100% Excalibur II LLC (US).
Fierce Sea		x	100% Fierce Sea LLC-Lucky Star (US).
Forum Star		x	inconclusive. Forum Star (US, UK).
Golden Pride (now Blue Fox)		x*	100% Pacific Draggers (US).
Hazel Lorraine		x	100% JR Partners (US).
Hazel Lorraine I **		x	100% JR Partners (US).
Leslie Lee **		x*	100% F/V Leslie Lee (US).
Majesty **		x*	100% Trident (US).
Mar-Gun		x	100% Margun Fisheries (US).
Margaret Lyn		x	100% F/V Margaret Lyn (US).
Mark I		x*	100% Mark I (US).
Misty Dawn		x*	100% Katahdin (US).
Muir Milach		x*	100% Muir Milach (US).
Nordic Fury		x	100% Fury Group (US).
Neahkahnie		x	100% Neahkahnie Fisheries (US).
Ocean Enterprise **		x	100% Tyson Seafood Group (US).
Ocean Harvester		x	100% Royal Atlantic LLC (US).
Ocean Hope 1 **		x	inconclusive. US Marine Corporation(So.Korea).

* The company confirmed or revised its ownership information, and therefore ownership conclusions are based on the information provided by the company. ** Operated in both inshore and offshore sectors.

Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Offshore Catcher Vessels (continued)			
Ocean Hope 3 **		x	inconclusive. US Marine Corporation(So.Korea).
Ocean Leader		x*	100% Golden Alaska Seafoods-Nichiro (Japan).
Oceanic **		x	100% F/V Oceanic Fisheries (US).
Pacific Alliance **		x*	66% Maruha (Japan). Lost at sea 1997.
Pacific Challenger		x*	100% Pacific Challenger-Chetna (US).
Pacific Enterprise **		x	100% Tyson Seafood Group (US).
Pacific Monarch **		x*	100% AAS-Finance LLC (US).
Pacific Fury		x	100% Fury Group (US).
Pacific Prince **		x	100% JR Partners (US).
Papado II		x*	100% Popado (US).
Sea Storm **		x*	50% Oyang Fisheries (So.Korea), 50% (US).
Sharon Lorraine		x	100% JR Partners (US).
Starward **		x	100% Aleutian Spray Fisheries-Starfish Group (US).
Tracy Anne		*	100% Tracy Anne (US).
Traveler **		x*	100% F/V Leslie Lee (US).
U-Rascal		x	100% Kodiak Island Charters (US).
Vanguard		x*	100% Futura Fisheries (US).
Vesteraalen		x*	100% Vesteraalen LLC (US).
Western Dawn **		x	100% Western Dawn LLC (US).
True Motherships			
Golden Alaska	x	x*	100% Peter Pan Seafoods-Nichiro (Japan).
Excellence	x	x*	100% Alaska Joint Venture Seafoods (US).
Ocean Phoenix		x	90% Phoenix Processor LP (US), 10% Dongwong Industries (So. Korea).

* The company confirmed or revised its ownership information, and therefore ownership conclusions are based on the information provided by the company. ** Operated in both inshore and offshore sectors.

APPENDIX II

INSHORE/OFFSHORE-3 SOCIOECONOMIC DESCRIPTION AND SOCIAL IMPACT ASSESSMENT

North Pacific Fishery Management Council
Anchorage, Alaska

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July 15, 1998

Summary of Changes to Social Impact Assessment Document Changes from May 6, 1998 Public Review Document (as presented at the June, 1998 NPFMC meetings) and the July 15, 1998 Secretarial Review Document		
Section	Page(s)	Changes from Public Review (May 6, 1998) SIA Document
1.4.6	18	Footnote #1 added to clarify reason for variation of pollock volume statistics between this SIA document and the main document.
2.3.2	84-85	Table MOTH-2, which appeared on page 85 of the May 6, 1998 document was deleted from the July 15, 1998 document. Text added on page 84 of the July 15, 1998 document discussing the data that had appeared in the table.

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1.0 INTRODUCTION AND OVERVIEW

The goal of this work is to provide sufficient socioeconomic description of existing and historical conditions, along with a general-level social impact assessment, to support the North Pacific Fishery Management Council's consideration of eliminating, retaining, or modifying the present Inshore/Offshore allocative split of the groundfish fisheries in federal waters off of Alaska. More specifically, the analysis focuses on the socioeconomic and social impacts on a community/ regional basis as well as on a fishery sector basis.

1.1 ORGANIZATION OF THE DOCUMENT

The document is organized in the following manner:

- This overview section: (1) lays out the relationship of this effort to earlier social impact assessment (SIA) work conducted for the North Pacific Fishery Management Council (NPFMC) and National Standard 8 regarding fishing communities; (2) provides a set of simplifying assumptions that were used to guide the work; (3) provides a brief discussion of the methodology used in preparing this document; (4) provides an general treatment of trends of change and a preliminary SIA discussion of trends of change; and (5) summarizes general SIA issues.

- The following four sections describe, on a sector by sector basis, the 'engagement' and 'dependence' upon the Bering Sea pollock fishery by the major sectors involved with the fishery itself, as defined by the (simplified) I/O-3 allocative alternative framework. These are: (1) the inshore processing sector; (2) the catcher-processor sector; (3) the mothership sector; and (4) the catcher vessel sector.

- After the sector descriptions, the next two major sections provide a look at: (1) Alaska; and (2) Pacific Northwest community 'engagement' and 'dependence' upon the Bering Sea pollock fishery, specifically with respect to interactions with industry sectors. Alaska communities are further differentiated into: (a) Unalaska/Dutch Harbor; (b) Akutan; and (c) Sand Point and King Cove. The Pacific Northwest discussion focuses on the community of Seattle and the greater Seattle metropolitan area, for reasons developed in that section.

- Following these discussions, a brief overview of Community Development Quota (CDQ) issues is provided. It is important to clearly state that this document does not provide an SIA for CDQ groups or communities – that work was undertaken simultaneously by another entity. These issues are included in this document only to assist the reader in comparing or contrasting CDQ and SIA issues.

- Finally, this document concludes with a summary outline of SIA issues by (simplified) allocative alternative, which provides an at-a-glance summary of the issues developed in detail in the main body of this document.

1.2 RELATIONSHIP TO EARLIER WORK AND NATIONAL STANDARD 8

This socioeconomic description and social impact assessment explicitly builds upon two earlier efforts undertaken by Impact Assessment, Inc. (IAI) for the NPFMC. These are: (1) work associated with the first inshore/offshore analysis (1991); and, (2) work associated with proposed regulatory changes in groundfish and crab fisheries (1994-1995). These works are incorporated by reference, and are not recapitulated in this document. By way of background, these two efforts were quite different in their structure, which is discussed below. Since these earlier works were produced, however, the context of social impact assessment with relation to conservation and management measures has changed somewhat through National Standard 8 under the Magnuson-Stevens Act Provisions; National Standards and Guidelines (Fed. Reg. Vol. 62, No. 149, 41907-41920). This is briefly discussed below.

1.2.1 Earlier SIA Work for the NPFMC

The work undertaken for the first inshore/offshore analysis (I/O 1) in 1991 focused on geographically based descriptions, and the geographic distribution of impacts, particularly on the community level, and not so much on internal distribution of impacts within industry sectors. This effort first produced a set of detailed community profiles which provided a community context for the fishery. Following that work, a description of the social environment and consequences of alternatives document was produced which looked at how likely consequences would play out in the various profiled communities.

The work associated with the groundfish and crab fisheries in 1994-1995 was quite different, looking at the structure of participation in the fisheries themselves, by describing the fishing industry on a sector by sector basis. That is, this work began with the task of constructing a set of sector profiles and basic description of existing conditions. The first document produced for this work included the sector descriptions and a preliminary social impact assessment. This was followed with a supplemental social impact assessment, or "bridging document" that examined more closely the potential social impacts associated with more narrowly defined license limitation options, primarily in terms of the differential distribution of impacts among sectors. The thrust of this analysis, then, was directed toward shifts among and between sectors, rather than at how impacts would likely play out in any particular community.

Taken together, the community frame of reference from I/O 1 and the sector frame of reference from the 1994-95 work, provide a great deal of background information that is useful for the current work. This effort is on a much smaller scale that either of the two previous studies, but is perhaps more ambitious. It is directed, to a degree, at updating the relevant information for directly involved communities and sectors, and at linking the two so that potential general level social impacts of I/O 3 may be understood both on a sector and geographic basis.

1.2.2 National Standard 8

National Standard 8 is part of a set of guidelines intended as an aid to decision making and, along with the other standard guidelines, will apply to all Fishery Management Plans and implementing regulations, existing and future. Specifically, National Standard 8 notes that:

> Conservation and management measures shall, consistent with the conservation requirements of the Magnuson-Stevens Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to: (1) Provided for the sustained participation of such communities; and, (2) To the extent practicable, minimize adverse economic impacts on such communities. (41917)

It should be clearly noted that the stated that the standard "does not constitute a basis for allocation resources to a specific fishing community nor for providing preferential treatment based on residence in a fishing community." It further defined ' fishing community' as:

> a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities. A fishing community is a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops).

'Sustained participation' is defined to mean continued access to the fishery within the constraints of the condition of the resource. In the case of Bering Sea pollock, recreational or subsistence fishing would appear not applicable to the fishery being regulated. Sustained participation is clearly at issue, given that I/O-1 was specifically crafted to address the 'preemption' issue (i.e., the threat to 'sustained participation' of Alaskan coastal communities or, more specifically, inshore sector participants with ties to those communities).

Consistent with National Standard 8, this document first identifies affected fishing communities (both on a 'physical community' and 'industry sector-community link' basis) and then describes and assesses their differing nature and magnitude of dependence on and engagement in the Bering Sea pollock fishery. Each sector and geographic area treatment allows the reader to understand the likely affects of various allocative alternatives discussed, and a section at the end of this document summarizes each major alternative's likely effect on the sustained participation of these fishing communities in the fishery, and identifies those alternatives that would minimize adverse impacts on these fishing communities. (It should be clearly borne in mind, however, that a number of simplifying assumptions are a part of the analysis herein, as described in the following section, and, due to these real-world constraints, we cannot discuss all of the possible or even probable impacts likely to arise from management action, such as impacts on other fisheries in which various Bering Sea pollock sector participants also engage.)

1.3 SIMPLIFYING ASSUMPTIONS

The issues encompassed by I/O 3 are many and complex. Further, the geographic 'footprint' of potential impacts is very large indeed. In order to make this work practical, a number of simplifying assumptions were made at the time the scope of work was designed by the NPFMC. It is important to note these assumptions early on. While any simplifying assumptions limit the ultimate utility of the product, there is clearly a balance to be struck between what could be done with unlimited time and resources and what can be done given real world constraints. This being the case, the general simplifying assumptions may be stated as follows:

- Focus on the Bering Sea-Aleutian Islands Fishery

The Inshore/Offshore amendment covers both the Bering Sea-Aleutian Islands (BSAI) and Gulf of Alaska (GOA) fisheries. At the time of this work, the Inshore/Offshore allocation issue is a far less contentious issue in the GOA than in the Bering Sea. It was agreed to essentially exclude the GOA fishery from the socioeconomic/SIA analysis, and to concentrate on a single area fishery (BSAI). This serves to simplify the analysis by allowing concentration on a single species – pollock (i.e., Inshore/Offshore covers pollock and Pacific cod in the GOA, but only pollock in the BSAI). To the extent that GOA-based processors and harvesters (and other sectors) participate in the BSAI pollock fishery, that portion of their operations can potentially be discussed. It should also be noted that the 'GOA Problem Statement' is far less complex than the analogous statement for the BSAI.

- Focus on Sector Participation in the Pollock Fishery and Simplify the Problem of Interactive Fisheries Issues

During the Sector Profiles/Supplemental SIA process, IAI described the dynamic interactions between fisheries across sectors. Recognizing that changes in the management of any one fishery necessarily influences decisions about participation in other fisheries for various sectors, it was seen as important to understand and characterize how the sectors involved in the groundfish and crab fisheries were involved in other fisheries, and what sort of factors influenced their varying degrees of participation. This is clearly fundamentally important data to the Council, given its overall management mandates. On the other hand, developing (or even updating) this type of information requires an intensive effort over a broad geographic reach. The Council staff has been discussing the development of a tool, a comprehensive data base, that would have assisted in this task, but this is not available at this time. Without such a comprehensive data base, interactive fisheries effects are beyond the scope of this project. Therefore the socioeconomic/SIA analysis for

Inshore/Offshore-3 focuses on participation, by sector, in the pollock fishery itself. The implications of this focus are that the range of impacts to other fisheries (and to participants in other fisheries) resulting from an Inshore/Offshore reallocation will not be addressed, except perhaps in a very qualitative way at a high level of generality.

- Employ a Tiered Approach to Community Linkages Through Focused Updating of Community Profiles

The socioeconomic/SIA analysis approach to Inshore/Offshore-3 encompasses both sector and community based impacts, at least on a general level. As already noted, the sector analysis will be focused on the BSAI pollock fishery. For Inshore/Offshore I, the socioeconomic/SIA analysis relied to a large degree on well-developed, broad-based community profiles to provide a context for the understanding of community based impacts. For Inshore/Offshore-3, it will not be possible to update those now six-year-old profiles across the board, nor, given exclusion of the GOA from the analysis, would it be desirable to do so. Instead, the socioeconomic/SIA analysis focuses on updating those specific aspects of community profile information necessary to understand and analyze the role of the BSAI pollock fishery in those communities. This has resulted in a 'tiered' approach to community characterization, where depth and detail of characterization corresponds to the number of levels of relationship between the fishery and the community.

- Rely on DCRA Analysis of CDQ Reallocation Impacts Analysis

The Community Development Quota (CDQ) program was implemented as part of the first Inshore/Offshore amendments, but was not tied to either Inshore or Offshore components. As it has evolved, however, CDQs are not 'Inshore/Offshore neutral.' That is, the CDQ organizations and communities have come to partner much more heavily with Offshore entities such that, at present, only 15% or so of the total 7.5% overall CDQ reserve is being harvested/processed by the inshore sector. A reallocation in Inshore/Offshore quotas could have impacts with respect to the role of CDQs for inshore and offshore partners, as well as to the CDQ groups and communities themselves. This could expand the socioeconomic/SIA effort greatly, especially since CDQ program now encompasses all BSAI fisheries (not just pollock). The decisions by the Council to restrict this SIA to pollock and to 'decouple' CDQs from Inshore/Offshore has greatly simplified the SIA task. Further, CDQ impact analysis is being independently performed for the Council by the Alaska Department of Community and Regional Affairs (DCRA), although this analysis was not available at the time this document was produced.

- Narrow the Range of Alternatives Analyzed

The Council has come up with numerous reallocation alternatives, in addition to expiration and status quo ('rollover') options. As a simplifying assumption, it was assumed that there would be diminishing returns on performing analysis on a broad range of options and therefore only a limited number of options will be examined. These options will encompass the status quo and the 'extremes' of change, so as to accentuate differential effects and to enable discussion regarding trends and directions of effects.

- Omit Analysis of Foreign Ownership Issue

For the purposes of the socioeconomic/SIA analysis, the question of the implications of degree of foreign ownership in the various sectors was not considered. The relative effective contribution of earnings (to communities, to the nation at large) on capital versus earnings from labor, and the international nature of capital and corporate ownership, are not presently well described or understood. Independently developing and verifying such data, and then assessing the ramifications of those data, were tasks well beyond the scope of this effort.

1.4 METHODOLOGY

In this section, an overview of the methodology used in the socioeconomic description/SIA is provided. This includes individual sections giving a general description of the work, laying out specific research goals and tasks, and stating information goals and objectives. Subsequent subsections describe the type of documentary and ethnographic research utilized, and discuss sampling, special issues, and field data processing and initial analysis in relation to field data.

1.4.1 General Description of Work

The work performed was designed include socioeconomic description and social impact assessment of various Inshore/Offshore allocative alternatives of the BSAI pollock fishery sufficient to enable the NPFMC to use the results of this effort in their decision-making process regarding the Inshore/Offshore 3 amendment to the FMP. This work consisted of the following community/region and sector based analysis:

- *Community Profile Updates*. Focused community profiles were prepared for the relevant participating communities that have direct ties to the BSAI pollock fishery. Based on our preliminary examination of the data, these communities included Unalaska/Dutch Harbor in the BSAI region itself. (Akutan was also profiled, but as an adjunct to the Unalaska/Dutch Harbor effort, given the ties between the two locales.) Sand Point and King Cove were also profiled, but to a lesser extent, based on a preliminary examination of the data provided by the Council. Seattle was characterized in several different ways. First, sector descriptions for those sectors based out of Seattle were adequately developed to allow an understanding and analysis of the role and significance of Seattle-based operations in the overall BSAI pollock fishery. In this regard, bounded 'subcommunities' or groups of fishery participants within Seattle corresponding to sectors were characterized, at least on a general level, to the extent feasible. Second, while it is recognized that the Seattle metropolitan area cannot be characterized with as fine grained detail as smaller communities, sufficient information for appropriate data domains for King County were developed to allow for a balanced treatment of the greater Seattle area and the smaller Alaska communities. Additional Pacific Northwest and Alaska communities were descriptively linked to the BSAI pollock fishery through an analysis of participation in the fishery via vessel homeporting (or vessel/facility ownership) information, but were not profiled as such.

- *Sector Profiles*. Limited sector profiles for the relevant participating BSAI pollock fishery sectors were provided. These sectors were consistent with the sector definitions used by Council staff in other analyses of the Inshore/Offshore 3 amendment and, to the extent feasible, with those used in earlier SIA work for the Council.

- *Sector-Community Linkages*. The links between the sectors and communities were described to understand, to the extent possible given the data limitations, the dynamic between changes to sectors and impacts to communities. Specifically, information on the domains of interaction between sectors and communities was developed. For example, for shoreplants in the BSAI, there is a multi-level range of interactions with communities (that vary from community to community), based on the 'social enclave' nature of some plants, point of hire and retention of workforce, growth (or lack of growth) of support sectors in the communities, and proportion of local/municipal revenues attributable to such plants, among others. Similarly, there is a range of interactions with, and revenues from, the offshore sectors in the various communities, varying degrees of infrastructure development attributable to offshore sectors, and so on. While the focus of this research is not revenue or expenditure oriented (per the study design, this SIA effort relied on Council staff analysis for those types of information, where they are appropriate and available), we did include qualitative discussions of these issues based on information derived from sector contacts. This was especially important for Seattle, where service and supply linkages are clearly important, but are buried in the "noise" within the aggregated information available.

- *Sector-Employment Linkages*. Information on the employment characteristics of each of the sectors was developed, and the likely direct employment effects of each of the general alternatives on the specified participating sectors were discussed. To the extent feasible, information on the location of support sector employment, and the links of impacts to support sector employment by sector and by alternative, were described and analyzed for Seattle and Unalaska. Locational data was obtained from primary sector participants, and supplemented with secondary data, as available. Only limited information on employment alternatives available to potentially displaced workers was developed, as employees were not, for the most part, directly contacted (though data derived for the 1994 SIA were available and, based on entity interviews, were still representative of general sector trends). Interviews with fishing entity supervisors or personnel department staff did provide some general information in this regard.

- *Revenue Flow/Economic Analysis*. Though this was not a main thrust of our work, we have incorporated some relevant information on revenue flow found in the economic analysis performed by NPFMC staff into our work. This information was broken out by major sector, and the revenue flow roughly attributed to communities (based on homeport, ownership location, or facilities location, as appropriate). We did not do independent revenue flow analysis.

- *Field Data Collection.* Field data collection to ensure descriptive adequacy (and currency of information) was required. Due to resource limitations, and the likely potential disproportionate effects upon Unalaska/Dutch Harbor and Seattle, field visits were confined to those communities (along with a brief field visit to Akutan to supplement earlier field work in that community). Seattle was and is an especially challenging field site. Contacts in other communities were made by phone or other means; Sand Point and King Cove governmental and industry representatives were contacted in Anchorage and/or Seattle.

1.4.2 Specific Research Tasks

The research generally followed the steps outlined below. In practice, of course, a number of different tasks took place simultaneously.

- *Preliminary Data Analysis.* NPFMC staff provided IAI with relevant sector and location data throughout the project. This included homeport data, harvest data, and other relevant data by sector/location. These data were used initially to help focus the research effort, including facilitating the specification of field sites.

- *Formulate Study Plan, including a Field Plan.* Following a preliminary examination of the current fishery data, an overall study plan, with emphasis upon the field plan for collecting additional sector/community information, was be prepared. This document in effect incorporates that document, as modified by actual events.

- *Summarize Relevant Existing Information.* Prior to the collection of field data, existing information relevant to the socioeconomic/SIA tasks were summarized. Important sources for this information will included the 1991 community profiles and accompanying SIA and the 1994 Sector Profiles and Supplemental SIA (and supporting materials) prepared by IAI for earlier NPFMC groundfish management tasks. These materials, along with other relevant sources, were summarized to develop preliminary pre-field community and sector profiles, to identify information gaps, and to guide field interviews and research.

- *Conduct Field Visits to Collect Required Information.* Field site visits were made to Seattle (Downs and Galginaitis) and Unalaska/Dutch Harbor-Akutan (Downs). Other in-person contacts were made in Anchorage.

- *Incorporate Additional Staff Analysis.* The socioeconomic/SIA analysis effort incorporated and discussed Council staff analysis in several related areas,. This task was actually a constant throughout the project, since time constraints were so tight on both NPFMC staff as well as our team members.

- *Incorporate DCRA Analysis of CDQ Issues*. It was intended that DCRA analysis of CDQ issues would be incorporated into the socioeconomic/SIA analysis at a very general level, if the DCRA report was available in time to do so. This was, in fact, not possible within the time constraints of the availability of DCRA's analysis. It was also not possible within the short time allotted for revisions between the NPFMC's April meeting and the release of this report to integrate the two studies.

- *Prepare Report*. Primary data and secondary data were analyzed, and a comprehensive final report prepared. The final report included focused community and sector profiles and potential impacts analysis. The main body of the draft report was prepared by April 2, 1998. Supplemental revisions were required during the period just prior to the April NPFMC meetings, and two revised sections, incorporated into this document, were provided at those meetings.

- *NPFMC Meeting and Consultation*. Meetings and consultations with the NPFMC and staff were required over the course of the contract, and results were presented at the April NPFMC meeting. Questions and suggestions were received at the SSC, the AP, and the Council meeting itself. To the extent feasible within very tight time constraints, this document has been modified and expanded to address the questions and suggestions received. The research will also be presented at the June 1998 NPFMC meeting.

1.4.3 Information Goals and Objectives

The overview discussion above summarizes the overall information goals of this project. Our charge was to update the characterization of the industry sectors participating in the Bering Sea pollock fishery, as well as the socioeconomic context of those communities of which these industry sectors are a part (whether through residence of participants, socioeconomic links, or other relationships). Industry sectors were characterized through the summation of existing information (provided by NPFMC staff, industry sources, community sources, and various government sources) and, more to the point for this discussion, field contacts with industry participants and other community residents and officials. This effort was a continuation of past NPFMC efforts and built upon the existing industry and community profiles developed for earlier regulatory decisions. Contacts with industry participants were given priority, given the research constraints and resource limitations.

Methods used were similar to those used by the researchers for past NPFMC projects. General community contacts were renewed (and, where necessary, established) with key community officials, in order to gain access to and collect planning documents and other contextual information. This was confined for the most part to that information required to update the existing community profile for the specific communities identified as primary field sites.

Industry participant contacts were a primary means through which existing industry sector profiles were updated. Our main method was to talk with a sample of industry participants from each of the sectors identified as important components of the Bering Sea pollock fishery -- shoreside processors (fixed location plants as well as inshore floating processors), offshore catcher-processors, and catcher vessels (which may deliver onshore, offshore, or both). As in previous projects, our conversations were guided by a research protocol so that we could collect comparable information from those people we talk with, without submitting them to the time requirements of a more formal and inflexible survey instrument. The time horizons for this project were too short to allow for the development of a formal survey instrument which would have been subject to a lengthy review process by the Office of Management and Budget, because of the Federal funding of the project. Again, as in previous projects, employment and labor participation were addressed primarily through direct industry sector contacts, although it was also part of the community profile discussion. Most specific employment information was developed as part of the field interview process (and follow-up data requests from industry associations and individual entities).

Preliminary examples of the protocols used in the field are provided in an appendix to this document, and were derived from those used in our work in support of the NPFMC's Groundfish License Limitation analysis (1994). As with previous projects for the Council, these were subject to internal team review and modification following initial field contacts, but they represent the main topical or information issue areas about which relatively consistent information needed to be developed for the purposes of this project.

Implementation of this study generally followed the standards for ethnographic work and the methods of Rapid Ethnographic Assessment Procedures as outlined by the NPS in the *Cultural Resource Management Guideline*, Release 4 (National Park Service 1994) and the NOAA Guidelines and Principals for Social Impact Assessment. Implementation of this study used multiple data collection techniques, discussed below in terms of documentary research and ethnographic research. Separate discussions are also devoted to sampling and other special considerations.

1.4.4 Documentary Research

Because of the unique circumstances of this project, much of the previous literature and other documentary sources had already been compiled in previous work. Since the action to be taken was a continuation of a previous action, and the analysis built upon that for this earlier action (and parallel actions already underway by Council staff), the research required was more in the way of an update and supplementation than a complete new construction. Thus there was no need for a literature review as such.

An essential part of the project was the incorporation of NPFMC staff provided information and data sets into our sector/community descriptions and effects analysis. This information included vessel characteristics and pollock harvest statistics for all participants in the Bering Sea pollock fishery for 1991, 1994, and 1996, as well as similar information for all processors of Bering Sea pollock for the same years. We processed this information using dBase III+ and Paradox. Because of changing definitions and a tighter problem definition, there was a need to rework some of the earlier sector analysis (for license limitation) so that it could be compared in a reasonable (although not necessarily direct) way.

To update the community profiles, and to adequately document localization of fishery-related activities in Seattle, we did need to collect and integrate recent secondary information of a socioeconomic descriptive and general planning nature. This was, for the most part, the extent of our effort in this area and was accomplished primarily through contacts with key community officials and planning employees (and the collection of planning documents).

1.4.5 Ethnographic Research

Most of our primary research effort was be devoted to field work. In this section we discuss each of the methods used, the sort of information recovered through each method, and (briefly) the use that information has had for the project. The ethnographic methods utilized are based on traditional anthropological and social science methods to investigate the nature and meaning of public values, attitudes, and beliefs. These methods are exemplified in the traditional ethnographic approaches of anthropologists such as Lowie (1969), Kroeber (1952), Geertz (1983), and Malinowski (1950) while at the same time informed by some of the most recent work about cultural schemas that function as " information packages" about a domain of cultural knowledge (D'Andrade and Strauss 1992). For example, a cultural schema about natural resources would examine how people conceptualize and categorize the characteristics of their natural environment or specific features within that environment such as a National Forest (IAI 1993). A cultural schema is a concept that can be applied to systematically investigate how people understand one area of cultural knowledge by focusing on the characteristics of and connections among elements within that knowledge area (Strauss 1992).

These schema and context data were collected through primarily open-ended, key informant interviews with persons representing different sector/community interest groups. The procedures for selection of these informants is discussed below. A set of interview protocols was constructed prior to field work, based on similar previous work, and reviewed with NPFMC staff. As noted earlier, the protocols specified a set of topics to cover, but not a standard set of questions that were asked of each person interviewed. Rather the specific questions asked, and the order in which topics were covered, were likely to be different depending on the process of each interview. The use of the protocol insures that there was consistent converge of the topics of research interest. Also, keeping in mind that a good portion of the field effort was directed toward updating information already in hand (and often collected from the same individuals or entities contacted for previous study efforts), for many interviews only a subset of protocol topics were pursued after some general questions were asked regarding relevant changes since the last set of interviews. Our experience has been that if the interviewee is discussing topics of interest that it is generally more efficient overall to allow him or her to guide the discussion rather than to impose the more artificial structure of direct questions. A more inflexible, formally structured, interview often produces much less direct information and very little interpretative context. The successful use of protocol interviewing of course depends upon the judgement of the interviewer, but is a technique with which we have much experience. Even with a "standard" protocol, not all interviews/contacts were guided by them to the same extent. We briefly discuss several of these special interview situations below.

"Standard Protocol" Interviews

The most common interview situation will be one where the researcher is talking with an individual about his or her participation in the Bering Sea pollock fishery, often in a group context for larger corporate fishery entities. The interview will be guided by the use of a protocol which specifies certain areas of interest and topics to be covered.

Key Person Interviews

Most of the initial interviews completed were 'key person' interviews. Key person interviews are conducted with people who hold central positions in public or private community organizations, or are key participants in the activity of main interest. These types of interviews are only semi-structured because the interviewees involved usually have busy schedules and time constraints. Although semi-structured interviews maintain the same open-ended quality of informal interviews, the structure of the interviews are determined by the researcher. Semi-structured interviews are usually employed in situations in which the researcher only has one chance to interview an informant. All interviews were be recorded in narrative form, primarily by written notes. Upon review of the data, follow-up interviews or contacts were sometimes arranged to clarify or obtain further information.

Group Meetings

There were many occasions when we had meetings of the researcher(s) with a number of people at the same time. These were not always predictable. Often the person with whom the meeting had been arranged would have asked one or more additional employees to attend, to provide information as well as to keep them informed of our role in the NPFMC's research and decision-making process. There were other occasions when a number of fishery participants would talk with us as a group, either because they all happened to be in the same place and/or because they (or we) did not have the time or flexibility to talk individually. In our experience, local people can be interested in such group meetings for a number of reasons -- to find out from the researcher what he or she is doing, to communicate to the researcher some specific sorts of information, or to make themselves available to the researcher for whatever he or she wants to know. The last can thus, in essence, be a group interview (or a 'focus group'), and can be guided by the same sort of protocol utilized in the individual interviews. Note taking and recording in such a situation can be challenging, however, as the discussion moves between individuals and the researcher and between other people present. Pragmatically, the researcher typically allows those who 'arranged' the meeting to initially structure the information flow, before moving on to a more general discussion of other topics of interest to the research and specific areas of inquiry, as shaped by the initial interaction.

Participant Observation

Participant observations are among the standard methodologies used in anthropological research. While this is a method that is best suited to longer term work, it may nonetheless be applied on a limited basis in shorter term fieldwork. This approach requires that the researcher establish a rapport with individuals in research communities and to engage this community and its members so that there is minimal disruption of the usual flow of everyday activity. The researcher's task is to observe activities, events, and ways of living in order to understand these from an "insider's perspective." Insight is further gained by participating in the events and activities. Participant observation is a strategy that facilitates data collection in the field (both qualitative and quantitative), reduces problems of reactivity by community members, and provides researchers with an understanding of different community processes. This technique is valuable even in limited, focused efforts when there is an opportunity to engage some portion of a community about a focused topic as well as interact with individuals outside of the interview context per se. This process was facilitated by the individual researchers' previous experience. In addition to having many years of formal research experience in general, Mike Downs has been doing ethnographic research in Unalaska/Dutch Harbor (and, to a much lesser degree, Akutan) since 1982; Michael Galginaitis began working on Southwest Alaska region projects in 1985. Both Downs and Galginaitis have both worked in the communities relevant to the present work on NPFMC projects since 1990.

Nonreactive Observations

Nonreactive observations are sometimes referred to as "unobtrusive" measures, and refer to a research approach that does not require the participation of an informant. Unobtrusive observations typically have little no impact on what is being studied, and include all methods for studying behavior and context in which informants do not actively participate. One of this technique's main concerns is to avoid sensitizing informants to issues that are important to the researcher. Thus, researchers do not ask informants direct questions about individual behavior or community patterns of behavior. Instead, they conduct systematic observations that measure behaviors of interest in a less direct form. As an example, researchers may count vessels at various private docks or public moorage locations to gain insight into patterns of use during fishing seasons that may then be followed up on during interviews. Such measures sometimes provide insight and information that is often unobtainable through other techniques when informants are aware of the researcher or subject matter of interest, particularly where a strong potential for biasing answers exists. Nonreactive observations are especially useful when weighing conflicting information from different informants. Again, given the limited scope of the field research for this project, these techniques were of limited utility, but were employed to a degree.

Informal "Unstructured" Interviews

Informal interviews are often considered to be a form of participant observation. However, an unstructured interview differs from a conversation held during participant observations. While participant observation implies letting a 'cultural consultant' define the form and content of conversations, informal interviews are clearly interviews. That is, when the researcher meets with informants, he or she has a clear plan in mind concerning conversational topics, but does not have a specific set of questions that should be asked. Although the researcher establishes the general direction of the conversation, he or she maintains little control over the direction or topicality of informant's responses. The objective of this type of interviewing is to allow the informant to speak freely and at his or her own pace. These types of interviews are often useful in conjunction with more formal interviews when more than one informant is present.

1.4.6 Sampling

Obtaining a randomly selected and statistically representative sample was not the goal of this study. Rather, for this type of study data are needed from a non-random but systematically selected sample. The intention of this study is to identify knowledgeable "industry experts" and key fishery participants who can identify relationships and associations (both historic and current) between themselves and other fishery participants.

Overview

Given that a specific type of information is desired, and this information is not randomly distributed within the group, efficient gathering of these data required a well defined, targeted approach. Such targeted sampling approaches include quota sampling, purposive sampling, and "snowball" or network sampling. These methods are systematic approaches to the identification of appropriate interviewees. Each is briefly described below.

Snowball sampling may be used as an entre for research with members of various interest and stakeholder groups as a means to identify the full range of groups that are similar to or different from the point of entre. Like most other research of this type, initial field data collection among any particular group identified will almost always begins with informant networking. Networking is a process whereby the researcher requests several key informants to identify others who would be suitable to interview. The process begins with the researcher contacting and interviewing a person who holds a formal status in the group, such as an association executive director, or the like. The informants are apprized of the research project during the interviews, and if they are confident that the researcher will not violate group interests and values, they will usually refer the researcher to other knowledgeable individuals. This sampling technique provides an effective means of building an adequate sampling frame in short order, particularly in a small population where people are likely to be in contact with one another and when the research is focused to the point where the type of information desired is held by a relatively few individuals. Snowball sampling is also a useful tool when studying small, bounded, or difficult to locate populations. In this case, we started with the various industry and/or sector associations and worked outward in addition to recontacting individuals known from previous research.

Quota sampling can be used to a degree to assure adequate coverage of geographical areas, interest groups, and stakeholders. In quota sampling the researcher decides on the categories of interest before the research begins. The sample is selected from those predetermined categories and then a targeted number of individuals are interviewed from each category. That is, the researcher constructs a matrix describing all of the characteristics of information to be obtained. A relative proportion is assigned to each cell in the matrix, and data is collected from persons who possess the characteristics of a given cell. Of all the nonprobability sampling techniques, quota sampling closest to approximating a true random sample. In addition, it guarantees that all the research categories of interest will be represented in the study. In most instances, it is possible to indicate some sort of estimate or evaluation, since this sort of sample represents the population from which it is drawn. Under extremely good conditions, quota sampling results in a stratified random sample, but in most cases it is not possible to determine if members of all categories have had an equal chance of selection. For the purposes of this research, the relatively small number of interviews conducted in any one location, and the focus of such interviews on "key" people and sector/industry experts, would not result in any sort of random sample in any event, however, the research did benefit from well defined categories for the beginning 'matrix' so this did not prove to be a significant difficulty.

Purposive or "Judgement" sampling refers to the selection of a sample based on what the researcher believes will yield the most comprehensive understanding of the subject under study. This sampling technique is similar to quota sampling in that the researcher selects his or her target categories of inquiry based on the objectives of the research. However, for this type of sample there is no overall sampling design that dictates how many respondents from each category are needed for the study. Purposive samples are often used when a researcher wants to select only a few cases for intensive study, when conducting life history research, or when engaging in qualitative research on special populations. The potential problems of defining and enumerating the sampling universe exist for this method as well. This type of sampling, in practical terms, means keeping the design flexible so that, in the words of National Standard 8, "the analysis does not have to contain an exhaustive listing of all communities [or, by extension subcommunities or subsectors] that might fit the definition [of fishing communities]; a judgement can be made as to which are primarily affected" (Fed Reg 1997:41918). Purposive sampling allows for reasoned judgement in adjusting interview targeting strategies once the fieldwork is underway, information begins to be developed, and salient issues begin to become apparent.

Selection of SIA Interview Sample

Use of formal interview instruments that would require OMB approval was precluded by the short time horizon and amount of resources available for the work. Further, it was recognized that representative samples in a statistical sense (at least for some sectors) would not be achievable. A complete characterization of the population before sampling was infeasible (such description was, after all, one of the intended goals of the research), and the random selection (and contact) of interviewees impractical. Given these limitations, the sampling strategy was guided by a statistical description based on historical fishery participation data provided by the NPFMC staff, with special emphasis on the most recently available information (1996). Based on this categorization, and in view of the amount of other information already available and a judgement as to the extent of change in different sectors of the fishery since the construction of the last sector profile, target goals for the adequate description of each sector and a discussion of the dynamics of change in that sector were established. The basic sector descriptive information and these target goals, with the number of actual contacts made, are presented in Table Int-1.

The information goal of interviews conducted for this research was to characterize sector operations as individual entities and aggregate that information to facilitate sector dynamics, particularly with respect to community linkages. To the extent that crew and employment dynamics could also be documented, such information was elicited, but interviews were conducted with operators and managers rather than crew and line employees. Again, this was an explicit decision made in the initial definition of the research problem by the NPFMC staff, in recognition of time and resource limits, to concentrate on the providing the type of information most likely to be needed for the Council to make an informed and reasoned decision on I/O-3.

No attempt was made to contact past fishery participants who were not active in the fishery in 1996. For sectors with a small number of participants it was judged necessary to contact as high a proportion of category members as possible, within the constraints of the project. This was most pressing in the processing sectors. All pollock mothership operations were contacted, and five of seven shore plant operations (the entity processing Bering Sea pollock in Kodiak was not targeted, and direct contact with the Sand Point plant was never established, although that operation was discussed with its management in Seattle, and community linkage information was developed through contacts in Anchorage). One of the three floating processors was contacted, but since one of those not contacted was not a large processor, this represented approximately half of the floating processor entities.

For catcher processors, sampling was more problematic due to the variation in operational size within this sector. Fourteen business entities operated 39 vessels, but one company essentially comprised 40 percent of the sector, in terms of vessel numbers. Only the two largest companies operated both surimi and fillet catcher processors (although others could produce multiple products on the same vessel -- essentially the definition of a surimi catcher processor for I/O-3). We wished to adequately document the sector both in terms of business entities as well as individual vessels. Thus, the two largest companies had to be included in our sample. Clearly, in the case of our information from these companies, vessel-specific information obtained from managers was of a more general nature than that obtained from companies with fewer vessels. We contacted five of the fourteen (36 percent) of the business entities in this sector, operating 26 of 39 (67 percent) of the active catcher processors. Table Int-2 indicates that this sample over represents surimi operations relative to fillet operations, but both are still well represented, not only in terms of entity numbers but also in terms of percentage of sector pollock production

Table Int-1 Numbers of Economic Enterprises Participating in the Bering Sea Pollock Fishery, 1996 with Inshore/Offshore Social Impact Analysis Interview Sample Description						
Inshore/Offshore Category (and Subcategory)		1996 Entities		Entity Contacts		Notes
				Goal	Actual	
Catcher Vessel delivering	Inshore Only	76	117	17	12[1]	Plus interviews with shore plant fleet managers, association manager and officers
	Offshore Only	24		10	6[1]	Five mothership catcher vessels plus two CP delivery catcher vessel operations (3 vessels); plus interviews with mothership managers and catcher processor operations managers
	Both	17		13	4[1]	Apparently more of an artificial category, or at least one very difficult to characterize (and locate)
Processor	Shore-based	7		6	5	No direct contact with Sand Point shore plant; did talk with corporate contacts in Seattle.
	Floating Inshore	3		3	1	Only two entities of real pertinence; contacted corporate owner of one.
	Mothership	3		3	3	
Catcher/ Processor	Fillet	19		10	9	Majority from one owner, and detailed operational information not obtained for each vessel
	Surimi	20		11	18	Majority from one owner, and detailed operational information not obtained for each vessel
CDQ Group Contacts		7		3	2	Contacts in the course of other fieldwork

[1]Includes only individual vessel interviews. See Table Int-3 and test for "fleet" sample information.
Note: Contacts in Seattle and Unalaska for more general community information not enumerated in this table, as they are more difficult to characterize in tabular form. Selected contacts in other communities were made by phone.

Source: NPFMC-supplied data files. These files required manipulation to prevent double-counting of economic entities. Any economic entity which harvested or processed any amount of Bering Sea pollock was counted. This affected mainly the catcher vessels categories and may have "inflated" their numbers somewhat. In some cases information was lacking to adequately identify a harvest data record with a vessel, so that a slight undercount is possible.

Table Int-2 Processing Entity Interview Sample						
Sector	Count of Entities		Pollock Production[1]		Sample %	
	Total	Sample	Total	Sample	Entities	Pollock Production
Shore Plants	7	5	347,458	318,006	71%	92%
Floating Processors	3	1	70,513	****	33%	****
Motherships	3	3	121,623	121,623	100%	100%
Fillet Catcher Processors[1]	19	9	162,804	106,263	47%	65%
Surimi Catcher Processors[1]	20	17	468,244	399,685	85%	85%
[1]See text for qualifications.						

Catcher vessels were a much more difficult challenge, partly because of the larger number of individual entities and the variation among them, as well as the wider geographical distribution of these entities. As with the catcher processor sector, some business entities operated more than one vessel, and in those cases information obtained about individual vessel operations was less detailed than for other entity interviews. These two types if interviews are differentiated in Table Int-3 as "fleet" and "individual" components of the sample. The first is the more general, collective, sort of information and the second is more detailed and specific to individual vessel operations. The first also includes information obtained through interviews with shore plant operators about the fleet delivering to them (whether the plant had an interest in those vessels or not) as well as vessel associations.

For our initial characterization of the catcher vessel sector we used three categories, based on where vessels delivered pollock -- onshore, offshore, or both. We had complete information by vessel for onshore deliveries, but very incomplete information for offshore delivery by catcher vessel. Thus, any vessel with any amount of offshore delivery was classified as an offshore vessel or a "both" vessel. Based on mothership interview information, we can distinguish mothership catcher vessels from other (catcher processor) catcher vessels. If pressed, we can assign most of the "both" vessels to either onshore or offshore, based on the partial information we have. Four appear to be offshore catcher vessels delivering to catcher processors (their onshore deliveries are minimal for 1996). Eight appear to be onshore catcher vessels, although this is not a firm conclusion since offshore

[1] It should be noted that the volume data in this SIA appendix vary somewhat from the pollock volumes by sector as shown in the main document. This is a result of the SIA numbers being based on a data set provided by the NPFMC that was, in turn, based on 'fish ticket' data. The main document, on the other hand, uses 'blended' data. Both data sets are internally consistent, and the analysis is not compromised by this disjunction. It does mean, however, that caution must be taken when making direct, quantitative comparisons of pollock volume figures between this section and the main document.

delivery information is incomplete. For three vessels, pollock deliveries onshore and offshore appeared to be about equal in 1996 -- but again, offshore delivery information is potentially incomplete and thus these vessels may be more offshore than onshore. They did deliver more than 500 tons to each sector. As an aside, only three onshore vessels enumerated in the tables above delivered less than 500 tons of pollock in 1996.

Table Int-3
Catcher Vessel Interview Sample by Delivery Categorization

Catcher Vessel Delivery		"Main" Categorization				"Derived" Characterization			
		Total	Sample			Total	Sample		
			Fleet	Indiv	% of total		Fleet	Indiv	% of total
Inshore Entities		76	18	12	39%	84	19	15	40%
			30				34		
Inshore Pollock Delivery Volume		381,414	124,850	115,611	63%	414,623	126,864	137,764	64%
			240,461				264,628		
Offshore Entities	Mothership	17	4	4	47%	17	4	4	47%
			8				8		
	Catcher Processor	9	0	2	22%	13	1	3	31%
			2				4		
Both (Entities)		15	2	4	40%	3	0	0	0%
			6				0		

See text for discussion of definitions. "Individual" sample is composed of vessels the specific operations of which were discussed with a skipper or owner. "Fleet" sample is composed of vessels for which only selected operational aspects were discussed with a fleet or corporate manager.

Our interview sample of catcher vessels does over represent vessels which harvest more rather than less pollock. Of the "top 20" onshore pollock catcher vessels in 1996, our sample includes 18 of the 20 entities (10 "individual" and 8 "fleet"). Of the "second 20" the sample contains 11 of the 20 entities (3 "individual" and 8 "fleet"). For offshore catcher vessels, we cannot rank vessels by total harvest. For the mothership catcher vessels, we talked to all three mothership operations, and so talked with the entire sector in terms of fleet management from the mothership perspective. We also talked with eight mothership catcher vessels on an individual operation or catcher vessel "fleet" basis. Thus this component of the fleet was also well represented in our sample. Catcher vessels delivering to catcher processors are perhaps the most sparse part of our sample, but still consists of 4 of 13 entities (or 31 percent of the total). An additional vessel could be included in our sample, as part of this component of the catcher vessel sample, except that it does not appear in the NPFMC data base as delivering pollock in 1991, 1994, or 1996 -- although the operator states that it has made these type of deliveries in the past and is doing so in the present.

Table Int-4 simply presents our interview sample in terms of catcher vessel length classification. It indicates again that the sample is fairly representative in a gross sort of way, and is adequate for the collection of the type of operational/qualitative or linkage information that was sought. In a more intensive study, more small onshore catcher vessels would have been interviewed individually, and more intensive efforts to contact the three vessels delivering both onshore and offshore would have been made.

Table Int-4
Catcher Vessel Interview Sample by Delivery Classification and Length Classification

Catcher Vessel Delivery Category by Length Category		Sample Numbers		Non-Sample Numbers	Total
		fleet	individual		
CV Inshore	L	1	3	4	8
	M	8	7	1	16
	S	10	5	45	60
CV Offshore	M	0	1	3	4
	S	1	2	6	9
CV Mothership	S	4	4	9	17
CV Delivering Both	S	0	0	3	3
TOTALS		24	22	71	117

See text for discussion of definitions. "Individual" sample is composed of vessels the specific operations of which were discussed with a skipper or owner. "Fleet" sample is composed of vessels for which only selected operational aspects were discussed with a fleet or corporate manager.

In addition, field workers in Seattle and Unalaska contacted a number of other people not directly involved in the Bering Sea pollock fishery. The purpose of these contacts was to develop more general information about the linkages between the community and the Bering Sea pollock fishery and/or to develop contextual community background information. There is no simple way to enumerate these contacts. Some were in essence "negative contacts" which revealed the lack of directly applicable information (especially for Seattle and the measurement of the Bering Sea pollock fishery to its economy and social organization). Although these consumed project resources and may not appear to have directly contributed to the research, they were actually quite useful in directing effort away from such lines of inquiry and into other, potentially more fruitful, ones.

1.4.7 Special Issues

There are four interrelated concerns that must be addressed for the successful interpretation of the research. Our discussions will necessarily be brief, not because the issues are unimportant, but because in the final analysis each is dependent on the degree of participation of the industry participants in the research and their general reaction to the project. These topics are industry participation, confidentiality, informed consent, and self-interest. The order is not accidental. All are interconnected, with the latter three being perhaps more complex than the first two.

Industry Participation

The ability to carry out this project depended to a large extent on the active involvement of industry participants. The active participation of industry or sector associations, whether directly involved in inshore/offshore issues (such as the At-Sea Processors Association and the North Pacific Seafood Coalition), or neutral on the issue, but involved as a sector (such as the United Catcher Boats) were critical to the success of this study. Given the real-world constraints associated with this project, we approached this industry organizations early in the study and asked for their assistance in providing aggregated data from their membership. These groups also facilitated contact with member and non-member entities alike.

Confidentiality

The tasks required for the specified scope of work impose substantial challenges in the area of guaranteeing confidentiality for those research participants who desire this protection. Any ethnographic field work in small communities requires that the form of publicly disseminated products be carefully designed and written so that the privacy of individuals are protected. When this is combined with potential financial and operational confidential information concerns, these considerations are even more accentuated. A verbal process of informed consent for research participants, combined with the coding of field notes and a restrained use of information identifying individuals in public reports, is usually adequate to handle these problems. This project will be less problematic in these regards than it could have been because of the clear awareness most industry participants have in these areas, and their familiarity with the Council analysis and decision-making process.

Informed Consent

Informed consent is a very difficult subject, because if everyone were truly "fully informed" of all of the more remote potential consequences of their participation, this would be an extraordinarily extensive discourse, and few would be likely to participate in whatever they are being asked to do. Most social science is conducted within ethical guidelines and with verbal, or even implied, informed consent obtained. Verbal informed consent, though a disclosure of the research goals and process, as well as contractor and sponsor information, and a question of whether or not the individual wished to speak with us was obtained for all interviews. (Notes made about public behavior were not subject to such informed consent.)

Self-Interest

It must be recognized that most of the information, other than that derived from data sets obtained from NPFMC staff, is from parties with a vested interest in the final decision of the NPFMC. As such, all can contain potential sources of bias. This is not an unusual situation, however, and truly "objective" information about any human endeavor is extremely rare. The object is not to eliminate self-interested information from this research, but rather to recognize the potential distortions which self-interest may introduce and to adjust for them. Needless to say, this is not an exact process. Where industry provided data is utilized, it is so noted so that the reviewer can draw his or her own judgements regarding the utility of the data. Further, industry sectors have provided data to the Council independent of this study effort, and have accompanied these data with cross-referencing or 'audit' information that allows the reviewer to understand additional context information.

1.4.8 Field Data Processing and Initial Analysis

As noted, the data obtained in the field were written in field notes during and after interviews. All data files produced by field workers were named in a systematic way which identifies the field site, the researcher, and the date on which the data were recorded. This data recording process has been a standard practice for IAI. This system allows for the quick organization and selection of files, and serves as a rough indicator of how much data has been collected.

One key issue that arises when formulating a data management system is that of defining the units to be managed. Clearly, individual "facts," even if they are identifiable, would be far too numerous to manage. Our system was much more pragmatic and dealt only with logical data units as they are collected. A single data unit may be a document collected from an office, a set of related observations made on one day, notes from an informal interview, or a completed key person interview. As these data units were processed, the different issues that the electronic file contained were extracted and recombined with other data to produce the study products. The fundamental organizational unit, however, are the data units that were collected in the field based on the decisions of field workers. Ultimately (post-field) data were indexed to allow for data sorts by geographic and topical area of reference to enable the required analysis.

1.5 BERING SEA POLLOCK SECTORS: TRENDS OF CHANGE AND PRELIMINARY SIA

Our selection of study communities and industry sectors was based on a preliminary analysis of information provided by the Council staff, previous experience developed in working on similar projects for the Council, and a keen awareness 'real world' constraints imposed by available time and existing resources, modified somewhat by our actual field information collection activities. The tables in this section, summarizing general level sector participation information and trends of change will provide the framework for the general descriptive and SIA discussion.

As in past projects we have undertaken for the NPFMC, the data we are working with has some inherent uncertainties. The "homeport" and similar geographical identification fields is one major area of fuzzy information. The extent to which this information actually represents the operational base of the economic entity is not always clear. Thus, identification of number of operations with any community in the discussion below is only normative at best. For sectors with relatively few participants (shore plants, motherships, floating processors, and, to some extent, catcher processors) we were able to field verify or correct this information and achieve an overall perspective of sector-community linkages. This was not possible for sectors with relatively numerous participants (catcher vessels).

For the tables in this section, each "Inshore/Offshore Category" will be discussed in their terms which make the most sense -- year by year, as a time series across years, or even in comparison with another I/O category. Our goal is to hit the highlights of the relevant trends or issues. More detailed discussion of each sector appear in the profiles that follow this introductory section. The discussion for some sector cells will be necessarily general, as reported harvest and processing numbers cannot be specified for cells with small numbers of operations (due to confidentiality constraints), or such information may simply be unavailable. Table Int-5 presents a summary enumeration of harvesting and processing operations by year for 1991, 1994, and 1996, and is a table that will be relevant to all sector discussions.

Table Int-5
Numbers of Economic Enterprises Participating in the Bering Sea Pollock Fishery, Categorized in Terms of Activity and Inshore/Offshore Processing, for 1991, 1994, and 1996

Inshore/Offshore Category (and Subcategory)		Year 1991		Year 1994		Year 1996	
Catcher Vessel delivering	Onshore Only	64	83	58	92	76	117
	Offshore Only	16		16		24	
	Both	3		18		17	
Processor	Shore-based	7		7		7	
	Floating Inshore	4		2		3	
	Mothership	3		3		3	
Catcher/Processor	Fillet	30		20		19	
	Surimi	24		24		20	

Source: NPFMC-supplied data files. These files required manipulation to prevent double-counting of economic entities. Any economic entity which harvested or processed any amount of Bering Sea pollock was counted. This affected mainly the catcher vessels categories and may have "inflated" their numbers somewhat. In some cases information was lacking to adequately identify a harvest data record with a vessel, so that a slight undercount is possible.

The various sector levels of participation over the years may be characterized as follows:

(1) ***Shore-based processors.*** Shore-based processing of Bering Sea pollock is centered in Dutch Harbor and Akutan. Seven shore-based plants processed some amount of Bering Sea pollock in each of the years considered (1991, 1994, 1996), but only four of those plants did so in all three years. These were the three plants in Dutch Harbor and the one in Akutan. They accounted for about 90 percent of all Bering Sea pollock shore-based processing (which was significantly less in 1996 than in 1991). Plants in Sand Point and King Cove have also processed Bering Sea pollock as a regular part of plant operations in recent years (1994 and 1996 of the years considered), but at roughly an order of magnitude less than the Dutch Harbor/Akutan totals (approximately 10 percent of the total). Dutch Harbor/Akutan Bering Sea pollock totals have been decreasing in recent years, while Sand Point/King Cove have been increasing, but the absolute difference is still quite large. Kodiak shore-based processors operated at a level similar to this in 1991, but have progressively processed less since then and a relatively insignificant amount in 1996, and the specific Kodiak plant processing Bering Sea pollock differed in each of the years considered.

(2) ***Floating inshore processors.*** The number of enterprises operating as floating processors in inshore waters has varied from year-to-year (average of 3), but the level of effort (amount of Bering Sea pollock) has increased steadily since 1991. The weight of Bering Sea pollock processed by floating processors in 1996 was over twice that so processed in 1991, and was equivalent to the throughput of a good-sized shore plant. All floating inshore processors with a significant amount of pollock product are apparently managed and operated out of Seattle.

(3) ***Motherships.*** Level of effort from enterprises in this sector-cell has been consistent, both in terms of number of enterprises and in weight of pollock processed, although weight processed in 1991 was above that processed in either 1994 or 1996. The major operations are operated out of Seattle.

(4) ***Fillet catcher-processor vessels.*** This sector shrank significantly after Inshore/Offshore I, from 30 vessels in 1991 to 20 in 1994, but has been reasonably stable since, with 19 vessels in 1996. The weight of pollock processed in 1996 was actually greater than in previous years. Of the vessels active in 1994 and 1996, over 75 percent are based in or operated out of Seattle. Vessels in some way tied to Juneau on paper also account for a significant (perhaps 15 percent) of this sector's pollock.

(5) ***Surimi catcher-processor vessels.*** This sector-cell has been fairly stable in terms of number of operations since 1991 (24 vessels in 1991 and 1994, 20 in 1996), but has experienced a significant decrease in the weight of Bering Sea pollock it has processed since 1991. Of the twenty vessels active in 1996, sixteen (80 percent) are from Seattle, with three others homeported on paper in Homer. The "Homer" vessels are currently managed and operated out of Seattle.

(7) ***Catcher Vessels delivering Onshore only.*** The numbers of vessels have varied from year-to-year, but the level of effort as measured by weight of Bering Sea pollock delivered has remained fairly consistent. Small boats (less than 125 feet) predominate, but medium (125 to 155 feet) and

large (155 feet and longer) vessels also participate. In 1996, of 77 vessels which delivered Bering Sea pollock onshore only, 56 were small, 14 were medium, and 7 were large. Seattle or the Seattle area was given as the homeport for the great majority of the large and medium vessels. For small vessels, roughly a third have Seattle as a homeport, somewhat less than a fourth have Newport as a homeport, a tenth are homeported in Juneau, and another tenth in Kodiak. Seattle is clearly a key community of interest here, but operations in other localities are also significant and will be discussed below in the more extended sector description.

(8) ***Catcher Vessels delivering Offshore only.*** Harvest information for this sector is not available. For 1991 and 1994 the number of vessels was the same (16 each year), but increase by over 50 percent in 1996 (25 vessels). Small boats (less than 125 feet long) dominate, with only two being larger. Close to 60 percent of the active 1996 boats homeport in Seattle, with the remainder attributed to a wide range of communities (no more than 2 boats in any one other place). Seattle is again clearly a key community of interest.

(9) ***Catcher Vessels delivering both Onshore and Offshore.*** This category was quite small in 1991 (3 vessels), but was relatively stable in numbers from 1994 to 1996 (18 and 16 vessels respectively). Total delivery statistics are not available. Only four vessels were in this category in both 1994 and 1996 (one for both 1991 and 1996). Thus most have been in this category for only one year of record. Most (50 percent) are small boats homeported in Seattle. Several other boats may be homeported in the Seattle area, and Juneau, Unalaska, and Newport each have two or three vessels associated with them. This is a sector category that is not well documented in existing information, and may well be more of a descriptive and analytical construction than a truly separate category.[2] This will be further discussed in the more detailed sector description.

Tables Int-6a and Int-6b enumerate and display all processor I/O-3 categories by year and some measure of ownership or managerial control. Table Int-6a uses the reported address of the vessel/operation owner as the indicator of the likely community of orientation for primary socioeconomic effects. Table Int-6b uses reported homeport, which at least for some vessels in the past has been an indicator more of operational or logistical factors than of ownership. For these tables, ownership and homeport correspond to each other very closely, so that the two tables are quite similar. Ownership and homeport are both heavily concentrated in Washington state, and more specifically in Seattle and the Seattle area. Tables Int-7a and Int-7b are in the same format, but instead of counting the number of operations, the amount of Bering Sea pollock processed is summed. Even without converting the numbers to percentages, it is clear that Washington shore plants and surimi catcher processors produce the bulk of the product, which is expected from the numbers in Tables Int-6a and Int-6b.

[2] Note: At the April 1998 NPFMC meetings in Anchorage, a question arose at the AP whether or not the "both" category could be further subdivided using a threshold or "filter" level to characterize those vessels who had delivered to both inshore and offshore as 'primarily inshore' or 'primarily offshore' or otherwise indicate the relative participation in the inshore and offshore sectors. The data available at the time of the draft document would not allow such a characterization, and these data were not available in a form that would allow the differentiation of these data prior to the release of this document, except in a very rough way (see discussion of sample).

Table Int-6a Number of Processors by Year and State of Ownership						
Year	Ownership State	Inshore/Offshore Category				
		Fillet CP	Surimi CP	Mothership	Floater	Shore Plant
1991	Alaska	4	3	1	0	0
	Maine	1	0	0	0	0
	Rhode Island	1	0	0	0	0
	Washington	24	21	2	4	7
1994	Alaska	4	3	1	0	0
	Maine	1	0	0	0	0
	Washington	15	21	2	2	7
1996	Alaska	3	0	1	1	0
	Maine	1	0	0	0	0
	Washington	15	20	2	2	7
Source: Electronic data file provided by the NPFMC						

Table Int-6b Number of Processors by Year and Homeport State of Processor						
Year	Homeport_S	Inshore/Offshore Category				
		Fillet CP	Surimi CP	Mothership	Floater	Shore Plant
1991	Alaska	4	3	1	Not Specified	7
	Massachusetts	1	0	0		0
	Oregon	1	0	0		0
	Washington	24	21	2		0
1994	Alaska	2	3	1	Not Specified	7
	Maine	1	0	0		0
	Washington	17	21	2		0
1996	Alaska	3	3	1	Not Specified	7
	Maine	1	0	0		0
	Washington	15	17	2		0
Source: Electronic data file provided by the NPFMC						

Table Int-7a
Processors Pollock Production by Year and Ownership State of Processor

Year	Ownership State	Inshore/Offshore Category				
		Fillet CP	Surimi CP	Mothership	Floater	Shore Plant
1991	Alaska	2141	109881	140807		
	Maine	***				
	Rhode Island	***				
	Washington	135572	703015		34295	412159
1994	Alaska	51392	107753	110815	***	
	Maine	***				
	Washington	80381	511800			409058
1996	Alaska	33232		121623	70513	
	Maine	***				
	Washington	129433	468244			347458

Source: Electronic data file provided by the NPFMC

Table Int-7b
Processors Pollock Production by Year and Homeport State of Processor

Year	Homeport_S	Inshore/Offshore Category				
		Fillet CP	Surimi CP	Mothership	Floater	Shore Plant
1991	Alaska	2141	109881	140807	Not Specified	412159
	Massachusetts	***				
	Oregon	***				
	Washington	135279	703015			
1994	Alaska	51122	107753	110815	Not Specified	409058
	Maine					
	Washington	80997	511800			
1996	Alaska	33232	80329	121623	Not Specified	347458
	Maine	***				
	Washington	129433	387915			

Source: Electronic data final provided by the NPFMC

Table Int-8 is a measure of how dependent each I/O-3 category of processor is on Bering Sea pollock by expressing the amount of Bering Sea pollock they process as a percentage of all Bering Sea fish that they process. The higher the percentage, the more dependent on it they are. An ownership measure is also used in this table, but as for prior tables homeport and vessel state are for the most part redundant.

Table Int-9 is another sort of dependency measure, based on the percentage of an operation's annual wholesale value of production contributed by each species. Both dependency tables demonstrate the extent to which all industry sectors are dependent upon Bering Sea pollock. In terms of weight of product processed from Bering Sea resources, the degree of dependence has been remarkably similar for the period 1991-1996. Surimi catcher processors, motherships, and inshore facilities produced 80 percent or more of their total Bering Sea derived product from Bering Sea pollock. Fillet catcher processors are also highly dependent on Bering Sea pollock. In terms of raw material, pollock comprised 50 to 60 percent of their total Bering Sea input. In terms of annual wholesale value, those sectors with the most dependence upon Bering Sea pollock in 1991 maintained that dependence through 1996, while other sectors increased their economic dependence upon pollock. That is, surimi catcher processors and motherships derive 85 to 90 percent of their revenue stream from Bering Sea pollock, and have since 1991. Fillet catcher process derived 49 percent of their product wholesale value from Bering Sea pollock in 1991, but this increased to 74 percent in 1996. Similarly, inshore processing facilities derived 54 percent of their product wholesale value from Bering Sea pollock in 1991, but 65 percent in 1996.

This pattern makes sense in a straight forward way. The most specialized processors, those most dependent upon a single product form (surimi), were and are those most dependent upon pollock as a raw material. Those processors with a wider range of product options were and are less dependent upon pollock, but clearly rely on it as the single most important component of their raw material mix. Also, the dynamics of the market have either forced or induced these processors to place more emphasis and reliance on pollock.

The information summarized in Table Int-10a is presented here for two reasons. First, it provides an overview of historical (1991, 1994, 1996) sector and subsector harvest and processing of Bering Sea pollock. This information is relatively self explanatory at this point and will be further referenced in specific sector discussions. Second, it can be used in combination with Table Int-11 to draw attention to the nature of the quantitative information on pollock harvest and processing available for various sectors. This information is derived from various and different sources for the different sectors, and do not necessarily result in directly comparable information. For instance, although catcher vessel harvest delivered to onshore processors (Table Int-11) should equal the amount of pollock that onshore plants report processing (Table Int-10a), the actual correspondence in the information currently available is only approximate (reported catcher vessel harvest tends to be higher than reported processing). This underscores that no number should be taken as an "absolute" value, and that trends, relative values, and other relations are better measures through which to evaluate potential effects of any proposed changes.

Table Int-8

"Dependency" Table -- Bering Sea Pollock as a Percentage (by weight) of Total Bering Sea Product

by owner management residence	1991			1994			1996		
	Total	Pollock	% Pollock	Total	Pollock	% Pollock	Total	Pollock	% Pollock
FCP VState									
Alaska	19158	2141	11%	89693	51392	57%	59618	33232	56%
Washington	239622	135572	57%	161078	80381	50%	212840	129433	61%
FCPHPST									
Alaska	19158	2141	11%	71231[a]	51122[a]	72%	59618	33232	56%
Washington	233046	135279	58%	187436	80997	43%	212840	129433	61%
SCP VState									
Alaska	117053	109881	94%	109659	107753	98%			
Washington	740284	703015	95%	555271	511800	92%	514106	468244	91%
SCP HPState									
Alaska	117053	109881	94%	109659	107753	98%	104972	80329	77%
Washington	740284	703015	95%	555271	511800	92%	409134	387915	95%
Mothership[a]	141150	140807	100%	112364	110815	99%	123301	121623	99%
Floater[a]	67644	34295	51%	63514	49004	77%	87876	70513	80%
Shore Plant[b]	463075	412159	89%	465183	409058	88%	435234	347458	80%

[a]Ownership and management in Washington, operates in Bering Sea for pollock.
[b]Ownership and administration in Washington, physically located in Alaska.

Table Int-9 "Dependency" Table -- Percentage Contribution of Selected Species Group to the Processor's Total Annual Wholesale Value					
Inshore/Offshore Class	Year	Pollock	Other Groundfish	Pacific Whiting	Other
Fillet CP	1991	49	51	0	0
Fillet CP	1994	58	41	0	1
Fillet CP	1996	74	26	0	0
Surimi CP	1991	90	5	5	0
Surimi CP	1994	88	4	7	1
Surimi CP	1996	85	3	7	4
Mothership	1991	85	0	15	0
Mothership	1994	88	4	7	1
Mothership	1996	87	1	12	0
Shore Plant	1991	54	21	0	24[a]
Shore Plant	1994	67	10	0	24[a]
Shore Plant	1996	65	18	0	18[a]
[a]Primarily shellfish Source: BSAI Pollock Sector Profiles, NPFMC staff, 09/02/97					

In Table Int-10a, the percentage in each cell expresses that cells value in terms of the comparable 1991 production value. This allows some relative observations within and between sectors to be made. While the onshore sector as a whole, and shore plants in particular, experienced declines in production from 1991 to 1996, floating inshore processors had large relative increases (although their pollock processing in absolute numbers was still relatively small). Similarly in the offshore sector, which also had an overall decline in production from 1991 to 1996, surimi catcher processors had a much steeper decline than did motherships, and fillet catcher processors actually increased their level of production. This is at least one indicator that during this period of time mothership operations were able to successfully compete on some level with surimi catcher processors.

Table Int-10a
Total Bering Sea Pollock Processed, by Sector and Subsector
Metric Tons (Percentage of 1991 Production)

Year	Inshore		Offshore		
	Shore Plants	Floating Processors	Motherships	Surimi CPs	Fillet CPs
1991	412159 (100%)	34295 (100%)	140807 (100%)	812896 (100%)	138959 (100%)
				951855 (100%)	
	446454 (100%)		1092662 (100%)		
	1539116 (100%)				
1994	***	***	110815 (79%)	619553 (76%)	132119 (96%)
				751672 (79%)	
	458062 (103%)		862487 (79%)		
	1320549 (86%)				
1996	347458 (84%)	70513 (206%)	121623 (86%)	468244 (58%)	162804 (117%)
				631048 (66%)	
	417971 (94%)		752671 (69%)		
	1170642 (76%)				

Source: Based on electronic processor file provided by the NPFMC
*** Suppressed due to confidentiality

Table Int-10b presents the same information in a somewhat different way. In this table the percentage expresses that I/O-3 category's pollock production level for that year as a percentage of the total pollock processing production for that year. This allows one to make the observation that although shore plants as a sector did lose production relative to their 1991 processing levels, they did maintain their relative percentage of the overall pollock production for each year. That is, they maintained their level of competitiveness in the race for fish. Also, floating processors clearly increased their share of pollock significantly. Motherships held their own or gained a bit, relative to other sectors. Fillet catcher processors also gained a larger relative share of the processing whole, while surimi catcher processors had their share of the yearly pollock production eroded. These two tables in conjunction summarize the dynamics of sector catch history from 1991 to 1996.

Table Int-10b
Total Bering Sea Pollock Processed, by Sector and Subsector
Metric Tons (Percentage of Yearly Total Production)

Year	Inshore		Offshore		
	Shore Plants	Floating Processors	Motherships	Surimi CPs	Fillet CPs
1991	412159 (27%)	34295 (2%)	140807 (9%)	812896 (53%)	138959 (9%)
	446454 (29%)			951855 (62%)	
			1092662 (71%)		
	1539116 (100%)				
1994	***	***	110815 (8%)	619553 (47%)	132119 (10%)
	458062 (35%)			751672 (57%)	
			862487 (65%)		
	1320549 (100%)				
1996	347458 (30%)	70513 (6%)	121623 (10%)	468244 (40%)	162804 (14%)
	417971 (36%)			631048 (54%)	
			752671 (64%)		
	1170642 (100%)				

Source: Based on electronic processor file provided by the NPFMC

Table Int-11
Total Bering Sea Pollock Harvest by Catcher Vessels Delivering Onshore, by Vessel Length Category

1991			1994			1996		
S	M	L	S	M	L	S	M	L
226243	136205	88371	243926	169553	113544	250104	151190	81270
450819			527023			482564		

Source: Based on electronic catcher vessel file provided by the NPFMC

Table Int-12 also allows one to make some interesting observations. It displays the amount of pollock processed by each I/O-3 category of processor for 1996, by the mode of harvest of that pollock (that is, self caught or catcher vessel caught). It is the only information we have on the aggregate amount pollock harvested by catcher vessels and delivered to offshore processors (other than for motherships). Motherships and shore plants of course obtain 100 percent of their pollock from catcher vessels. In Olympic fisheries, surimi catcher processors bought 11 percent of their fish from catcher vessels, and fillet catcher processors bought 17 percent. In CDQ fisheries catcher processors essentially did not use *any* catcher vessels to harvest pollock. While this may be stating the obvious, this is a clear indication that it is the race for fish that provides the incentive for speed and capital stuffing and, given the choice of a non-Olympic fishery context, that operators will operate in different ways. This in turn would have create reward structures for other current fishery participants that are quite different from those of the present.

<table>
<tr><th colspan="8">Table Int-12
Open Access, CDQ, and Total Bering Sea Pollock Processed in 1996,
by Sector and Subsector, by Mode of Harvest</th></tr>
<tr><th rowspan="3">Fishery Component or Comparison</th><th colspan="7">I/O Class</th></tr>
<tr><th rowspan="2">Inshore</th><th rowspan="2">Mothership</th><th colspan="2">Fillet CP - harvest by</th><th colspan="2">Surimi CP - harvest by</th><th rowspan="2">Total</th></tr>
<tr><th>Self</th><th>CV</th><th>Self</th><th>CV</th></tr>
<tr><td>Open Access</td><td>384946</td><td>112906</td><td>103572</td><td>14024</td><td>405626</td><td>49232</td><td>1070306</td></tr>
<tr><td>CDQ</td><td>10512</td><td>9053</td><td>21869</td><td>0</td><td>51225</td><td>115</td><td>92774</td></tr>
<tr><td>Total Harvest</td><td>395458</td><td>121959</td><td>125441</td><td>14024</td><td>456851</td><td>49347</td><td>1163080</td></tr>
<tr><td rowspan="3">CDQ as % of Total Catch</td><td rowspan="3">3%</td><td rowspan="3">7%</td><td>17%</td><td>0%</td><td>11%</td><td>0%</td><td>8%</td></tr>
<tr><td colspan="2">16%</td><td colspan="2">10%</td><td rowspan="2"></td></tr>
<tr><td colspan="4">11%</td></tr>
<tr><td colspan="8">CV harvest as % of</td></tr>
<tr><td>non-CDQ</td><td>100%</td><td>100%</td><td colspan="2">12%</td><td colspan="2">11%</td><td>52%</td></tr>
<tr><td>CDQ</td><td>100%</td><td>100%</td><td colspan="2">0%</td><td colspan="2">0%</td><td>21%</td></tr>
<tr><td>Total</td><td>100%</td><td>100%</td><td colspan="2">10%</td><td colspan="2">10%</td><td>50%</td></tr>
<tr><td colspan="8">Source: Aggregated information provided by the NPFMC, 1998.</td></tr>
</table>

1.6 GENERAL SIA ISSUES

There were a number of general issues or themes that emerged during the study process that will be elaborated in the body of this document. In particular, there are several issues or trends that have emerged since the previous SIA work for the Council. These will be briefly noted here. In addition, we will bullet out potential social impact effects of concern.

- There is a marked difference between participating coastal communities with respect to the role of the pollock fishery in the communities.

  - Unalaska is a major participant in the fishery with a strong presence of both the inshore and offshore sectors. The relative benefits to the community of the two different sectors is a matter of considerable debate, but clearly Unalaska is in a unique position with respect to the degree to which it has benefitted from both sectors. The flip side of this is that Unalaska, while benefitting the most from both sectors, is also the community that is featuring the most divisive debate on the inshore/offshore issue. Unalaska's direct participation is based on its proximity to the fishing grounds.

  - Seattle is also a major participant in the fishery with a strong presence of both the inshore and offshore sectors. The relative benefits to the community of the two can be debated, but clearly the offshore presence is more visible than is the onshore participation, which at times seems to be represented by management and administration as much as by physical product. As with Unalaska, Seattle interests are bitterly divided on the inshore/offshore issue. Seattle's participation is based in part on history and ownership, and on a central administrative and financial role. Seattle and the region also have a number of secondary processing plants.

  - Unalaska, Akutan, King Cove, and Sand Point all have shore plants that participate in the fishery, but the nature of the participation, and of the articulation of the operations with the communities vary. King Cove and Sand Point are more alike than they are like the other communities. Both have resident fleets, and shore plants in both communities take deliveries of pollock from non-resident vessels. Neither is a CDQ community. Akutan has a large shore plant in the community, but the village of Akutan has retained an identity distinct from the shore plant that is quite different from the plant-community relationships found in nearby Unalaska. Akutan is also a CDQ community, which Unalaska is not, though some Unalaska residents benefit from CDQ programs.

- Western Alaska communities have become involved with the fishery primarily through the CDQ program, as opposed to having shore plants in the communities or direct participation of a resident fleet. This means that the fishery articulates with the community in ways substantially different than in other involved Alaska communities.

- Inshore/Offshore management has served to stabilize the fishery between the overarching inshore and offshore sectors, but internal sector dynamics have not been in equilibrium. I/O, designed in part to be a stop-gap measure to avoid potential sector preemption and to avoid the detrimental social impacts resulting from such preemption, has for the most part achieved that goal. It has not, nor was it anticipated to, maintain stable fishery sectors.

  - Within the offshore sector, there has been a great deal of instability on the individual entity level. That is, there has been a great deal of ownership change of entities within the sector, accompanied by considerable consolidation within the sector. This has created a wide range of variance among sector participants, increasing the likelihood that the effects (positive or negative) of any change in the current system will be differently shared by sector participants. Further changes in the pollock quota allocation may well exacerbate these internal sector dynamics, leading to further consolidation.

  - Within the inshore sector, particularly for the shoreplants proper, there has been a degree of stability in terms of ownership of individual enterprises not seen in the offshore sector. This has been at a time of decreasing value of product, of decreased access to the fish resource, and increased internal competition.

  - In a sense, trying to make sector social impact assessments is an attempt to talk about the financial and overall vitality of individual corporations, some of whom have adapted better to the current set of conditions that others. This returns to the issue of internal variability within any given sector and subsector, and the potential effects that allocating additional quota toward or away from that sector or subsector would have.

  - At some fundamental level, the relationships between industry subsectors have changed while I/O has been in place. One of the more striking differences between sector relations between I/O 1 and I/O 3 is the relationship of the shore processors to their catcher fleets. Although individual operations vary, for the sector as a whole there is much more commonality of ownership or control of catcher vessels by processors than previously. Vertical integration (economic entities owning interests in more than one pollock industry sector or subsector) seems to have increased. (Reasons given for acquiring a increased degree of control varied from operation to operation, and the range included such diverse factors as simply trying to retain steady access to a predictable volume of fish for processing, to making strategic positioning acquisitions of catch history in anticipation of a future harvest history based management system, such as ITQs.) A social impact assessment may be of most utility if expressed in terms of whether allocation readjustments would accelerate or counter observed ongoing dynamics within sectors.

- While sectors may be reasonably well-defined and "stable" in terms of each other for Bering Sea pollock, participation in other fisheries cross-cuts these sectors in a number of ways. Aside from vertical integration, several economic entities have interests in more than on sector. Some economic entities that are competitors in the Bering Sea pollock fishery are cooperative in other fisheries, or vice versa (for instance, catcher vessels that deliver pollock to motherships may be contracted to delivery cod to catcher processors). The actual effects of a change in inshore/offshore pollock allocation could potentially be more profound because of these "peripheral" connections than due to the more "direct" changes in the pollock fishery itself. The "simple" tabulation of positive and negative effects becomes very complex, because so much of the information about individual entity participation in other fisheries and the "co-dependence" of fishing participants from different sectors is lacking.

- The creation of a separate mothership sector is not seen, in and of itself, as detrimental to the interests of either the onshore or offshore sector. Although there were exceptions, individual entities in both sectors thought that having motherships a separate category would not negatively impact their operations, so long as a motherships allocation was based on their past pollock processing history, so that other sectors did not experience a quota decrease because of this. The relative stability of the mothership subsector in terms of percentage of TAC processed ans the similarity in mode of operations for individual entities (variation in scale of operations rather than business or product mix differences) may be one of the reasons this appears to be one of the less contentious aspects of I/O.

  On the other hand, it is imperative that if motherships are recategorized as inshore or made into a separate category that it be done in a way which preserves the factors of stability which have apparently existed since I/O-1, or at least the recognition that such factors may be changed by a reclassification of motherships. Those entities most likely to be motivated to attempt to operate as motherships which are not already doing so are catcher processors and floating processors. Floating processors at present operate in fixed locations within protected state waters. As long as catcher processors have fished off the same quota as motherships, they have not been motivated to emulate the mothership mode of operation. If the mothership quota is separated from that of catcher processors, however, less efficient catcher processors may be tempted to compete for a portion of the mothership (or inshore) quota as a mothership rather than a portion of the catcher processor quota as a catcher processor. Multi-vessel operators may be more tempted by this possibility than smaller companies. Mothership operations have exhibited the greatest degree of stability in the offshore sector since I/O-1, and it would be ironic if I/O-3 were to disrupt this pattern.

- There a number of issues associated with the regulatory or decision-making process that may potentially foster, or are currently contributing to, various social impacts in the Bering Sea pollock communities. These cannot be dealt within this work, but include:

  - The inshore/offshore allocation process itself, particularly the reallocation debate, has had negative social impacts. That is, the issue has been a divisive one, requiring the devotion of considerable resources by both inshore and offshore sectors to the issue. Further, the issue has polarized the fishing industry, and the divisiveness has had an impact on support service sector businesses, particularly in Unalaska/Dutch Harbor.

  - Individual enterprises have been making business and strategic decisions based on the inshore/offshore environment (as well as other regulatory regimes that are currently in place and/or hedging their bets in regard to future regulatory regimes that can be reasonably foreseen).

  - Alaska hire issues have come to the forefront as a result of inshore/offshore issues. Under the inshore/offshore reallocation environment, individual entities are making more concerted and targeted efforts to hire more Alaskans than was the case in the past. In some cases this has become confounded with issues concerning the CDQ program and economic and community development in western Alaska.

  - CDQs have become closely associated with the offshore sector. Although inshore/offshore "neutral" at their creation, they are clearly more closely tied at present to the offshore than onshore sector (six offshore CDQ partners, two onshore CDQ partners), although in some cases inshore and offshore CDQ partners are cooperating.

  - Foreign ownership is the subject of much debate among the different sectors. Ownership patterns were not addressed in this document, but it was clear that there has been a consolidation of control in both onshore and offshore sectors, and that cooperative relationships, if not ownership relationships, have developed between foreign and domestic owners to effectively achieve a degree of consolidation of control of the fishery that was not seen at the time of earlier SIA work.

- There is a also a bundle of issues centered around catcher vessels that may or may not be related to I/O. They may be more reflective of the overall dynamics of the fishing industry, and include:

    - Decline in number of independent boats
    - Difficulty in obtaining and keeping markets
    - Increasing vertical integration -- processor ownership, long-term contracts
    - Decreased crew opportunities -- reduced crew size, demise of replacement crew, lack of turnover
    - Catcher vessels becoming integrated with processing sectors

There is a range of allocative alternatives that is being considered -- expiration of the I/O program, a rollover of the current I/O management regime, or a shift of pollock allocation inshore or offshore. These considerations are not taking place within the context of a stable fishery. Changes are occurring to the fishery as whole as well as within each of the component sectors. A consideration of social impacts must take into account these current dynamics. In the following summary section at the end of this document, we portray the relevant allocative alternatives in relationship to the existing structure and some of the identified trends of the fishery.

In the next major section, descriptive information is provided on a sector-by-sector basis. This is followed by a section that provides information on sector and community links on a region/community basis.

2.0 PARTICIPATING SECTORS ENGAGED IN THE BERING SEA POLLOCK FISHERY

This section provides a detailed description and assessment of the various sectors engaged in and dependent upon the Bering Sea pollock fishery. These are: (1) the inshore processing sector; (2) the catcher-processor sector; (3) the mothership sector; and (4) the catcher vessel sector. At present, only the inshore processing sector is consistent with current and (most) proposed future management structures. At present, the offshore sector is comprised of both catcher-processors and motherships. These are discussed separately in this section as one of the several allocative alternative options of I/O-3 is separating motherships from catcher-processors to form a new (third) major sector (i.e., motherships in addition to 'inshore' and 'offshore/catcher-processors'). Finally, catcher vessels, while not an inshore/offshore category unto themselves, are nevertheless truly dependent upon and engaged in the Bering Sea pollock fishery such that I/O-3 decision making may differentially impact their sustained participation in the fishery and, further, their ties to specific communities that are Bering Sea fishing communities clearly warrant their inclusion in this analysis. Each of these sectors discussed in turn in this section.

2.1 BERING SEA POLLOCK INSHORE PROCESSING SECTOR

The inshore processing sector includes two physically different types of entities – onshore processing plants and floating processors. Further, there is differentiation within the onshore processing plants with respect to the centrality of Bering Sea pollock to their overall operations, and this coincides with geographic distribution of the plants.

2.1.1 Overview

There are four large onshore plants in the Unalaska/Dutch Harbor-Akutan area for which Bering Sea pollock is a mainstay in terms of overall processing operations. At present (1996 base year and in 1998), there are two plants in the Gulf of Alaska region that also process Bering Sea pollock, and these are located in Sand Point and King Cove. These plants are not discussed separately in this sector description, except on a general level, due to data confidentiality restrictions. They are discussed in qualitative terms in the community profiles section with respect to their relationship to their 'host' communities.

The following table presents summary processing information for shoreplants for the relevant years. As can be seen, pollock makes up the vast majority of the total groundfish processed. Information on cod is also presented, to show the relative level of volume pollock to cod, and then to all groundfish species combined.

Table SP1 Inshore Sector: Shoreplant Subsector Bering Sea Pollock Processing Volumes Unalaska, Akutan, King Cove, and Sand Point			
Year	Pollock	Pacific cod	Total Groundfish Retained (all species)
1991	387,104	29,113	424,175
1994	396,216	46,575	450,035
1996	345,399	74,711	427,864

As shown in the summary table, overall the volume of pollock processed by shoreplants increased between 1991 and 1994, then declined from 1994 to 1996. There are several trends noticeable in the individual plant data that are not apparent in the summary data. For shoreplants as a sector, pollock declined by somewhat over 10% over the three years, but this was not the case for all plants. There are two trends of change that are obvious, based on a geographic distribution between King Cove-Sand Point plants on the one hand, and Unalaska-Akutan plants on the other. No pollock was reported as processed in the King Cove-Sand Point plants in 1991, and there are increases for each of the plants from 1994 to 1996. These plants are mixed in their relative volumes of pollock and Pacific cod – for one plant pollock volume exceeds Pacific cod volume for both years, and for the other plant the pattern is reversed. For Unalaska/Dutch Harbor-Akutan plants, for all operations, pollock volume is orders of magnitude higher than cod volume – a much higher percentage difference than is seen in the King Cove-Sand Point plant where pollock exceeds cod. For Unalaska/Dutch Harbor-Akutan plants, the trend of change over the years varies from entity to entity (and it is important to remember that one of the larger plants was not yet fully operational during 1991). For two of the plants, volume of pollock is highest for 1991, and decreased in 1994 and again in 1996. For the other two plants, the pattern is mixed – for one plant 1994 represents the highest of the three years and for the other 1994 represents a valley between the highest year of 1991 and a rebound (but lower peak) in 1996. In sum, for none of the four plants was 1996 the highest year of pollock production. Declines over peak years range from approximately 10% to approximately 40%, depending on the operation. It is also significant to note the relative scale in the King Cove-Sand Point versus Unalaska/Dutch Harbor-Akutan plants has changed. Whereas no pollock was processed in King Cove-Sand Point in 1991, by 1996, the difference in volume between the highest producing of the King Cove-Sand Point plants and the lowest producing of the Unalaska/Dutch Harbor-Akutan plants was smaller than the range of sizes internal to the Unalaska/Dutch Harbor-Akutan plants – both in terms of absolute volume and relative volume differences.

The floating processor subsector has also changed over the years covered in this study. The following table presents groundfish summary data for the subsector, illustrating the relative roles of pollock and cod to the overall volume of groundfish processed.

Table SP-2 Inshore Sector: Floating Processor Subsector Bering Sea Pollock Processing Volumes			
Year	Pollock	Pacific cod	Total Groundfish Retained (all species)
1991	34,295	20,890	67,644
1994	***	***	***
1996	70,513	11,865	87,876
Note: specific data are omitted from display for 1994 because of confidentiality issues.			

There are two trends readily apparent in the summary data that differentiate this subsector from the shoreplants. First, pollock has increased over this time frame, opposite of the shoreplant sector as a whole. Second, the volume of Pacific cod is decreasing, again opposite of the trend for shoreplants.

Several trends are also apparent in the individual floating processor data that are not apparent in the aggregated data. First, the number of entities has changed over the years. For 1991, there were four entities in this category. In 1994, there were only two, and in 1996, there were three. There are two operations that have reported for each of the three reporting years. A second trend is that the trajectory of change for the floating processors is different from the shoreplants that are in the same sector. For entities reporting across the relevant years, 1991 is not the peak year, unlike several of the Unalaska/Dutch Harbor-Akutan plants. For relevant entities, the 1996 volume is more than double the volume of pollock processed in 1991. With this increase has come a shift in the relative size of operations across subsectors. While as a subsector, the floating processors processed approximately 20% of the volume of pollock processed by the shoreplant subsector, by 1996, the highest volume floating processor had surpassed the volume of pollock processed by the lowest volume Unalaska/Dutch Harbor-Akutan shoreplant. This change is especially striking when one considers that in 1991, the volume processed by this floating processor was less than 30% of the volume of the same shoreplant.

2.1.2 Floating Processors

Floating processors are discussed to a lesser extent in this profile than are shoreplants because of the relative volume of the floaters versus the onshore operations, and due to the different nature of their articulation with local communities, and thus implications for social impact analysis. What is important to keep in mind, from a social impact analysis perspective, is that: (a) floating processors are included in the definition of inshore processors; (b) floating processors have potentially quite different relationships with communities than onshore plants; and (c) the relative amounts of pollock being processed by onshore plants and floating processors has been changing.

It may be argued that all inshore processing operations are, to a degree, industrial-enclave like in their nature. Following this line of reasoning, while there may be a continuum – some plants are more self contained or 'enclave-like' than others – floaters would simply represent one extreme end of this continuum (i.e., they are physically isolated from communities). While this may be true to an extent, there are some ways in which the degree of difference between floaters and onshore plants is so large that it does not make sense to think of them on the same continuum. For example, while at some plants in Unalaska there may be little day-to-day interaction between processing line workers and community residents who are not involved in the seafood industry, the plants still are intertwined in the local economy in complex ways (including property tax, fish tax, sales tax, and other types of municipal revenues along with expenditures associated with workers, etc.). For a floating processor anchored in Beaver Inlet on Unalaska Island, on the other hand, the relationship to the community of Unalaska is very different. Being outside of the municipal boundaries, there is no local taxation, and, though the operation may be supported to a degree out of Unalaska (with the community acting as a logistics base), the nature of the interaction between the economic entity and the community is very different – both in terms of revenues to the community and socioeconomic/social ties to the community. With this in mind, it is important to retain the fact that inshore allocations do not end up on a one-for-one basis being delivered to and processed in local communities. That is, for each unit of fish allocated inshore, a certain percentage of that fish does not end up being processed by shoreplants in communities. This percentage pollock processed inshore but not in communities is not insignificant, and has increased over the years encompassed by this study.

Employment data for floating processors cannot be discussed in the same way as can employment data for shoreplants. This is for two primary reasons. First, confidentiality considerations preclude discussion of 1994 because of only two entities reporting during that year. Second, data from one of the larger operations known to be operating in 1996 is missing from the data set, rendering the remaining data unusable. What can be discussed, however, is the scale of employment seen for the floating processors in comparison to the shoreplants. For the years in which data are available, employment at the larger floater processor operations ranged from approximately 190 to 225 average positions per quarter (keeping in mind that employment data presented here are subject to the same restrictions noted in the employment section of the shoreplant discussion -- they are useful as relative indicators, not as enumerations of individual employees). This makes them smaller that the smallest of the Unalaska/Dutch Harbor-Akutan shoreplants, with the largest floating processors accounting for roughly 75% as much employment as the plants with the fewest employees. It should be noted, however, that in terms of the relationship of employment to volume of pollock processed, employment does not vary directly with volume. That is, for floating processors, the dramatic jump seen in volume processed has not been accompanied by a proportional jump in the number of employees. (Similarly, where there have been sharp declines in the volume of pollock produced at various shoreplants, there has not been a proportional decline in employment.) In terms of the proportion of Alaska resident employees, for the years data are available, Alaska resident employees ranged between less than 1% to approximately 12% of the floating processor workforce, depending upon the individual entity.

2.1.3 Shore Plants

Shore-based processing of Bering Sea pollock is centered in Unalaska/Dutch Harbor and Akutan. Seven shore-based plants processed some amount of Bering Sea pollock in each of the years considered (1991, 1994, 1996), but only four of those plants did so in all three years. These were the three plants in Unalaska/Dutch Harbor and the one in Akutan. They accounted for about 90 percent of all Bering Sea pollock shore-based processing (which was significantly less in 1996 than in 1991).

Plants in Sand Point and King Cove have also processed Bering Sea pollock as a regular part of plant operations in recent years (1994 and 1996 of the years considered), but at roughly an order of magnitude less than the Unalaska/Dutch Harbor/Akutan totals (approximately 10 percent of the total). Unalaska/Dutch Harbor-Akutan Bering Sea pollock totals have been decreasing in recent years, while Sand Point/King Cove have been increasing, but the absolute difference is still quite large.

Kodiak shore-based processors operated at a level similar to the Sand Point/King Cove plants in 1991, but have processed progressively less since then. By 1996, the amount of Bering Sea pollock processed in Kodiak was relatively insignificant. Another illustration of the 'marginal' position (in geographic and volume terms) of Kodiak with respect to Bering Sea pollock processing is seen in the fact that the specific Kodiak plant processing Bering Sea pollock differed in each of the years considered. This being the case, and coupled with the difficulty introduced by confidentiality restrictions in discussing a single operation, the Kodiak operation(s) will not be discussed further. That is, in social impact assessment terms, Kodiak processors are not likely feel significant social impacts from changes in its shoreplant operations as a result of the potential alternative allocative shifts being contemplated for Bering Sea pollock.

Given the centrality of the Unalaska/Dutch Harbor-Akutan plants, these operations are updated in some detail in this sector profile. The King Cove and Sand Point operations are problematic for detailed discussion, based on data confidentiality restrictions. These plants are discussed in more qualitative terms, however, in the community description section of this document.

Unalaska/Dutch Harbor - Akutan Based Operations

The shoreplants covered in this section, consistent with the assumptions that are guiding this report, are those plants, and only those plants, that processed Bering Sea pollock for the years in question. This is important to keep in mind for the purposes of understanding community linkages, and the role of shore processing in these communities. For example, there are other shoreplants (and seasonally present floating processors) located in Unalaska/Dutch Harbor that are a part of that community but that do not process pollock. Those plants are not included in this sector profile, so one must not generalize from this profile to the impact of all shore processing in the community. The plants that do process pollock are the larger operations in the community, to be sure, but they are still a subset of the overall shore processing that takes place within the community.

Like other sector profiles, this description is a composite of information derived from individual economic entities; it is not a intended as a profile of individual entities, nor a profile of a hypothetical "normative" operation. The Bering Sea shoreside processing sector is represented by facilities in a number of communities, but operations have become concentrated in the Unalaska/Dutch Harbor-Akutan area. These neighboring communities are home to more Bering Sea shoreside operations than all other locations combined; additionally, they are home to all of the large-scale pollock operations in the region.

This sector varies internally in a number of different ways, including the fact that various processors have different foci of species utilized. Variation in species and products is related quite closely to plant size. The larger plants are multi-species oriented, and each has a surimi operation within it. How central pollock processing has become to the large operations is evident in the contrast in volume between crab and groundfish processing totals in general, and the role of pollock in particular. Although detailed comparisons across species were not made in this update, which focuses exclusively on pollock operations, data from a 1994 study indicated that among the Unalaska/Dutch Harbor-Akutan plants, pollock accounts for 95% of the volume groundfish processed, and groundfish as a whole accounts for 90% of the combined groundfish and crab total volume (IAI 1994).

The present concentration of shore processing in the Unalaska/Dutch-Akutan area can be traced to the King crab boom of the late 1970s and early 1980s. In Unalaska, for example, there were two small processors in the early 1960s; by 1983 there were seven processors in the community, the two largest of which each had the capacity to run 1,000,000 pounds of crab per day and employed between 500 and 600 processing workers during the peak seasons. With the decline of crab landings, a number of processors diversified in varying degrees into groundfish, with a particular emphasis on surimi. Surimi operations did not immediately follow the big King crab years; the first surimi operation in Unalaska/Dutch Harbor opened in 1986. For a period, this species expansion and added focus on surimi changed formerly seasonal processing operations into year round operations. Subsequently, the shorted pollock seasons have fostered a return to seasonal operations.

History of Facilities and Operations

The history of facilities and operations varies widely by individual economic entity. Included in the largest operations are entities that trace their roots back to the early crab era and plants that have become operational as late as 1991.

One of the larger entities occupies a facility that, when built in the early 1960s, was the first shore processor within the city limits of Unalaska. This facility has seen several ownership changes over time. With changing times and changing owners, the plant has undergone several types of modifications. At the other end of the historical spectrum, another of the larger entities did not come on line until 1991. It is being operated by its original owner, and it was built more-or-less for the current mix of species and products that the plant is running.[3] Yet another large entity began local operations on a barge in the mid-1970s and expanded shoreside, taking over facilities that were previously owned by other entities as well as building new facilities. One plant built in the early 1980s has focused on groundfish from the beginning, but has varied its products over time.

Facilities also vary in their spatial relationship to their communities. Some facilities are essentially stand-alone complexes removed from residential and even other commercial areas; others are located in mixed land use areas. The plant in Akutan may be thought of at one end of a continuum in being perhaps the 'most distinct' from its host community, while the plants in Unalaska vary in their spatial relationship to other business and residential areas. In this sense, day-to-day interactions between sector employees and other community residents vary from entity to entity. In Unalaska at least, this tends to be a matter of degree only, however, as each plant is largely or totally self-contained with respect to the co-location of work and residential facilities for the vast majority of the work force, and workers from the plant farthest away from the 'main' area(s) of town do come into the community and use recreational facilities, etc. The degree or nature of 'involvement' with the community tends to be related to specific employment categories particular plants, which are themselves, as a generality, correlated with longevity or length of residence in the community. For example, although there are individual exceptions, 'middle management' and 'upper management' positions tend to be occupied by individuals who have been with their company and located in Unalaska/Dutch Harbor for an extended period of time; these individuals tend to be more involved with community affairs than processing line workers who, as a category, have a much higher job turnover rate (and shorter average length of stay in the community).

Diversification in terms of other regional ventures and extra-regional operations varies widely between Bering Sea shore processors. For example, one of the major processors owns a range of local enterprises that are not directly fisheries related, including food and beverage and lodging establishments. Some entities have shore processing facilities in more than one location inside and/or outside of the region; some have degrees of common ownership interests with other shore and/or non-shore processing entities. Among the entities that have multiple ownership interests, coordination between facilities (i.e., the degree to which the individual facilities are operated as independent entities) varies widely. At least one of the larger entities closely coordinates catch and production between facilities in the Bering Sea/Aleutian Islands area and Gulf of Alaska, such that the distinction between those two areas as separate units of analysis is blurred. Detailed documentation and analysis of these inter-sector and inter-regional ties was beyond the scope of this research. They are, however, clearly important to understanding the overall dynamics of the pollock industry as a whole, and the likely impacts of proposed resource management changes. The general nature of the inter-regional ties for pollock shore processing itself are discussed in the Sand Point/King Cove section of the community discussion.

[3]This facility was constructed on an existing (but non-seafood) industrial site and did incorporate some existing structures into its current operation.

Patterns of domestic and foreign ownership also vary by type of operation and influence the relationship between processing sector, and even catching and processing sector, components. For example, the ability to have common ownership of shoreplants and catcher fleet is influenced by the degree of foreign ownership of the shoreplant. (Similarly, floating processors must be 75% U.S. owned if they are to engage in coastal trade; this caps the degree of ownership interest a foreign shoreplant owner can have in these types of operations.) Again, however, degree of common ownership does not always equate to degree of cooperation or even 'control'; some entities with a smaller degree of common ownership coordinate efforts more closely than others with a larger degree of common ownership interests. As noted in the discussion of the catcher vessel sector, one of the most striking changes in the overall industry in the past few years is the ownership relationship or, more accurately, the common control relationship between shoreplants and their catcher fleets. That is, shoreplants have come to effectively have an ownership interest in their fleets in a way that is very different from that seen in the early years of the developing pollock industry. This dynamic is discussed in more detail in the section on catcher vessels.

Processing Volumes

Historically, the larger facilities that include surimi among their products were typically run as if they were two separate operations: a seafood plant and a surimi plant. These "plants" utilize different technology and, depending on the individual entity, have had more-or-less separate managerial and production work forces. (This degree of separation has become less apparent at most plants over time, as several factors have influenced the coordination of work between plant areas.) While the "surimi side" utilizes pollock as its input, a typical "seafood" side will use a wide variety of species, depending on market conditions, existing equipment, catcher fleet success, and the perceived desirability of diversification. Again, however, this report does not address the relative production of pollock to other species.

While major construction has slowed since an active expansion period in the late 1980s-early 1990s (a period which encompassed the construction and opening of one of the major pollock plants), more subtle increases in processing capacity have continued. Some of these have been based upon changes in the plant itself, some have come from repositioning the B Season, and some have come from changes in personnel scheduling and management (and a natural learning curve associated with a 'maturing' business). In addition to increasing overall capacity, there has been an increase in recovery rate over time, although exact recovery rates are typically held close to the vest. The magnitude of this increase, and how consistent it is across individual processors, is unknown.

Daily volume capacity varies by plant. Production figures are a function of not only capacity (and, of course, supply), but also of desired end product. Processing capacity also varies by season. One superintendent noted that at his plant there is approximately a 25% increase in daily capacity from the A Season to the B Season, based on the 'processability' of the fish.

Aggregated production data for shoreplants are presented in the introductory section of this sector description. To give an idea of the range of plant sizes, in terms of volume, in 1996 the volume of pollock processed at the lowest volume plant in Unalaska/Dutch Harbor-Akutan was somewhat less than 40% of the volume produced at the highest volume plant for that same year.

Processing Annual Cycle

Increases and decreases of activity at individual plants are, of course, a function of season openings and closing for the various species processed. For the years 1986 through 1989, Bering Sea DAP pollock seasons began on January 1 and lasted through December 31 of each year. This was a time of dramatic increase in shoreside pollock landings, and shoreside plants were expanding in conjunction with the growing landings. Pollock processing operations differed significantly from the other species then being processed at the plants, due to its year round nature. Processing became less seasonal, and this strongly influenced all areas of operations, including labor force requirements and the nature of employment. Following this time, the "annual cycle" began to change dramatically. In 1990, the pollock opening was on January 1, but the season closed for the year on June 30, giving a total of 180 open days. All pollock processing was necessarily concentrated in the first half of the year. This had a number of impacts that varied somewhat in their specifics by individual operation. One thing that changed for all multi-species operations was distinct shift in the work force requirements of coordinating pollock and non-pollock species production.

In 1991, split seasons ("A" and "B" Season) for pollock were introduced, which resulted in a bimodal distribution of processing effort that has continued to present (although days per season has not remained constant). As noted in earlier studies, capacity increases have occurred during the time of declining seasons; ironically, over a period of time when it was considered a truism that there was overcapitalization of processing (and harvesting) capacity in the fishery in general, the perception of the management of at least some of the larger shore processors was and is that further capitalization has been required to simply maintain market share.

Employment

The following table presents comparative information on the number of employees in the shoreplant sector for Bering Sea pollock shoreplants over the years shown. It should be noted that these data are intended for comparative purposes only, and do not reflect actual positions (see note at bottom of table).

Table SP-3 Employment Information: Bering Sea Pollock Shoreplants Average Number of Employees per Quarter			
	1991	1994	1996
Total Employees	2,692	2,649	2,925
Note: Data presented herein are derived from the sum of quarterly data for the year, divided by four to arrive at an average number of persons employed per quarter			

What these data show is that total employment is approximately 9% higher in 1996 than it was in 1991 for the overall sector. It is important to note that this increase has occurred despite a decline of approximately 10% in volume of pollock processed by this subsector over the same period. It should also be noted that these aggregated data do not portray the complexity seen at the individual entity level. For one of the entities, employment has declined slightly over this period; for other entities employment is up, but the magnitude of increase differs from entity to entity.

Annual Fluctuation

At each of the Bering Sea shoreplants, employment fluctuates markedly by season and by the type of product being run, even within the same species. These fluctuations do not influence all components within the work force of any particular plant, however. For each plant, there is typically a core of administrative, management, and maintenance staff that is more-or-less constant year round, and at least a few production workers are required during otherwise "down" periods to handle processing odds and ends. Other processing components require a steady number of persons to function at all, relatively independent of volume fluctuations. For example, fish meal plant components may be automated to the point where they require a fixed number of persons to operate, regardless of the volume run through the plant.

Employment peaks have changed dramatically during the 1990s. This change is most apparent in the larger operations, and results from the changing timing of the pollock processing season(s). As a result of the shorter seasons, there are fewer workers on an annual basis than in previous years, even in those cases where peak employment has remained at or near the same levels. The peaks may be as high, but they do not last as long as in the past.

For all of the plants, A Season features the highest employment figures of any given year, and A Season overlaps with the processing of other species as well at all of the plants. Given the way plants organize their workforces, 'pollock jobs' are less separable from 'seafood jobs' than in years past, due to increased integration of operational crews, although this varies from plant to plant.

There is a considerable range in the number of workers present at the individual plants, with the largest of the plants reporting during 1998 interviews that approximately 1,000 total workers were on site during the peak time that coincides with A Season and the concurrent processing of other species. This figure includes total company workers, including those not directly tied to seafood processing. Two other plants peak at between 600 and 700 workers, with the smallest peaking at around 400 workers. All of the plants noted that during the slowest parts of the year (when processing was still taking place to any degree at all) they employed a 'core staff' that is approximately 25% of their peak A Season workforce.

The decline of total workers from the peak to the 'valley' does not occur all at once, and varies from operation to operation, depending on the species processed and products produced. Some variation is introduced by level of participation in the Aleutians season. Several other species are processed after A Season closes, and production winds down to the summer months, before increasing again for B Season. At all operations the B Season workforce is smaller than the A Season workforce, in part because of the roe processing that occurs during A Season. The size of the workforce 'spike' during B Season relative to A Season/multi-species processing varies from plant to plant, ranging as low as 50% to a high of over 80% of the annual peak, depending on a number of variables. Following B Season, the workforce again declines, but does not normally reach the summertime low, due to continued processing of other species.

The following table provides employment figures, by quarter, for the entire Bering Sea pollock shoreplant sector. The same caveat applies to this table as to the others that use quarterly employment figures, that is, quarterly employment cannot be summed for a yearly total because there is no provision to control for double counting between quarters.

Table SP-4
Quarterly Employment Figures, 1996
Bering Sea Pollock Shoreplant Sector

	Q1 1996	Q2 1996	Q3 1996	Q4 1996
Total Employees	3,430	3,129	2,571	2,569

Table SP-5 provides a look at annual fluctuation for workers at the inshore processors on a monthly basis for 1996. These figures are derived from Alaska Department of Labor Current Employment Survey, as reported in Table EM.4, page 82, of "Tab 6" of the NPFMC April 1998 I/O-3 document. It should be noted that the numbers in this table represent the number of employees who were issued a paycheck on the 12^{th} day of the month listed. It does not differentiate between pollock related employees and others, nor between job classifications. Again, the reader is reminded that the only plants listed are those that run pollock as part of their operations, so this does not represent total processing employment in the communities listed.

Table SP-5 Monthly Employment, Bering Sea Pollock Shoreplants, 1996												
Shoreplant	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Unalaska												
Unalaska #1	301	416	411	382	265	213	214	160	253	253	240	141
Unalaska #2	776	796	775	751	531	288	281	327	545	555	472	325
Unalaska #3	504	526	509	358	354	355	320	317	323	246	199	152
Total Unalaska	1581	1738	1695	1491	1150	856	815	804	1121	1054	911	618
Aleutians East Bor.												
Akutan	192	857	870	929	744	755	730	803	518	363	253	264
Sand Point	48	215	218	233	186	189	183	201	130	91	64	67
King Cove	513	510	485	340	366	419	413	229	289	308	217	127
Total AEB	753	1582	1573	1502	1296	1363	1326	1233	937	762	534	458

Worker Residence/Point of Hire

It is important to note at the outset of this discussion that worker 'residence' is not a straightforward issue for the shoreplant sector. This is due, in part, to the fact that definitions of 'residence' vary from source to source, with different individuals and different groups having varying perspectives on who is a 'resident' of particular communities. For example, one of the extreme definitions of residency was given by a long term resident of one of the communities – he felt that unless you were planning to be buried in the local graveyard, you were not truly a local resident. In communities that have historically seen a great deal of short term employment, such definitions are not trivial. This definitional issue of also of considerable importance to various agencies and enterprises for political and fiscal/economic purposes, as it has an impact such diverse issues as determining revenues to communities that are derived from intergovernmental transfers, to the political alignment of entities for the purposes of resource management issues, such as the inshore/offshore debate at hand. With this cautionary note, it is now useful to discuss residence in terms of relative length of stay in a community, the ties between residence and employment, and the historical patterns of residence.

Place of employee residence by state and/or point of hire by state was obtained from three of the larger shoreplants during the 1994 study. Differentiation of residential patterns at the level of regions, within individual states, or by community is problematic, given the varying records kept (or released) by the individual entities. Not only does level of detail vary, but interpretation of the data and/or comparability of the data between entities is not straightforward. For example, a significant number of employees at one of the entities listed the worksite community as their residential address;

few employees of another entity with a work force known to be similar did so. It is unknown whether this is a function of the way the data were gathered, differences in perception on the part of employees within the two work forces, or some unknown variable. For the entity that released records by point of hire included in this table, the entity had at least one or more points of hire in each of the states listed, and it is assumed that this bears a relatively strong correlation to residential patterns. How this influences resulting data (as opposed to actual residential patterns of employees) when compared to companies with fewer hire sites is unknown. Given these known limitations of the data, Table SP-6 should be used for a general comparison only.

Table SP-6
Bering Sea/Aleutian Islands Shore Processors' Employee Residence Listing, 1994

State	Percent of Work force
California	41%
Washington	40%
Alaska	8%
Oregon	7%
Other	4%
Total	100%

Notes: represents peak work force for two processors and off-peak for another.
Source: processor personnel records.

The following table presents percentage data of Alaska resident employees by entity for all Bering Sea pollock shoreplants for the years 1991, 1994, and 1996. These data show that while there are fluctuations between individual entities, for the sector as a whole, the percentage of Alaska residents working in shoreplants has remained stable for these three years. There is also wide variability between entities. For example, in 1996, for one of the entities, roughly two of every five employees was an Alaska resident, while for another of the entities, less than one in ten employees was an Alaska resident.

Table SP-7 Alaska Residents as Percentage of Total Workforce, Bering Sea Shoreplants: 1991, 1994, and 1996 by Individual Entity and Sector Total						
Entity	1991		1994		1996	
	Alaska Resident	Non-AK Resident	Alaska Resident	Non-AK Resident	Alaska Resident	Non-AK Resident
A	19%	81%	8%	92%	8%	92%
B	24%	76%	22%	78%	24%	76%
C	22%	78%	18%	72%	17%	83%
D	21%	79%	23%	77%	26%	74%
E	31%	69%	36%	64%	39%	61%
Total Sector	20%	80%	19%	81%	20%	80%
Source: Data derived from NPFMC provided figures for quarterly employment. Quarterly employment figures per year were summed and then percentages derived from summed figures.						

Another data set provided by the Alaska Department of Labor, Research and Analysis (included in the NPFMC Updated Employment Information supplement dated April 17, 1998 as part of the I/O-3 EA/RIR/IRFA) showed that for the Bering Sea inshore sector in 1996, there were a total of 5,687 total workers, of whom 85.3% were non-residents; for 1997, this figure was 5,908 total workers, of whom 86.3% were non-residents. This is a different data set than used in the above table, but the figures are quite close, with the differences likely attributable, at least in part, to the inclusion of floating processors, which as a subsector appear to have a lower percentage of resident workers than do the shoreplants themselves (two of the larger firms reported in the same NPFMC provided ADOL data summary show 89.5% and 99.5% non-resident workers for 1996 and 85.4% and 99.6% non-resident workers in 1997).

The NPFMC Updated Employment Information supplement dated April 17, 1998 also provided a table of residency of employees hired by onshore companies in 1996 and 1997 for Alaska residents. For 1996, Unalaska/Dutch Harbor[4] was the leading community, with 396 residents, followed by Anchorage with 193. Sand Point, King Cove, St. Paul Island, Akutan, and Kodiak had 56, 54, 28, 23, and 21 residents employed respectively. No other community had ten or more employees listed. False Pass, Bethel, and Fairbanks each had 9 employees – no other communities had more than 5 listed. Cordova and Wasilla had 5 each, and Palmer, Mountain Village, and Chefornak had 4 each. Seven different communities had 3 employees, seven other communities had 2 employees each, and

[4] 'Unalaska' and 'Dutch Harbor' are listed as two separate 'places' in this database, as the data are organized by postal zip code and 'Unalaska' (99685) and 'Dutch Harbor' (99692) have unique zip codes. As discussed in the text, however, both are encompassed by the City of Unalaska and, for the sake of clarity, are combined in this discussion.

a total of 24 communities were listed as the home of one employee each. For 1997, again Unalaska/Dutch Harbor was the leading community by resident, with 342 residents as employees. Anchorage was again second, with 187 employees. Sand Point, King Cove, Kodiak, and Saint Paul Island had 53, 46, 41, 41, and 23 residents employed respectively. No other communities had 10 or more residents employed in the onshore sector. Juneau had 9 residents employed, and Alakanuk, Fairbanks, and False Pass each had 6 residents employed. Ketchikan, Wasilla, and Petersburg had 5 employees each, and Cordova, Mekoryuk, and Soldotna each had 4 residents employed. Five different communities had 3 employees each, 12 communities had 2 employees each, and a total of 23 communities had one resident each employed in the onshore sector. (An interesting point of contrast to the offshore sector is that while Unalaska/Dutch Harbor is the leading place of residency for onshore workers, no residents of Unalaska/Dutch Harbor are reported as working for the APA fleet, although Anchorage, as with the onshore sector, features prominently in the hiring composition of Alaskans [it is the #1 place of residency for the APA fleet Alaska residents]. There is also obviously more concentrated employment in Alaska for the onshore sector -- for example, in 1996, excluding Anchorage [and counting Unalaska/Dutch Harbor as one community] there were 6 Alaska communities for the onshore sector that each had more employees than the community with the most APA fleet hires; for 1997 [again excluding Anchorage and counting Unalaska/Dutch Harbor as a single community], there were 5 communities that had more onshore employees than the community with the largest number of APA fleet employees. Indeed, the total number of residents of the state of Alaska listed in this data set for the APA fleet in 1996 (159) is fewer than the onshore employees listed as for either Unalaska/Dutch Harbor or Anchorage; for 1997, the total for Alaska state residents for the APA fleet (298) surpasses Anchorage hires for the onshore sector, but not Unalaska/Dutch Harbor hires as a single community.)

"Point of hire" as a concept varies significantly from one entity to the next. For example, for one entity, there are technically only two "points of hire" for all employees -- Seattle and Anchorage. Although multiple interview sites are used to contact potential employees, the company provides transportation to the worksite only from these two locations, not from the interview sites. For another entity, the point of hire for all workers is technically Seattle, although this company does hire at least a few long-term Bering Sea community residents. Points of hire have changed somewhat over the past few years, as nearly all sectors involved in the Bering Sea pollock fishery have sought to increase Alaska resident hires. As shown in the table above, there have been mixed results in this effort among shoreplant owners (and some companies have concentrated on Alaska hires more than others).

Historically, very few individuals who grew up in the communities of the region work at the shoreplants.[5] There are a number of individuals who work at the plants, however, who have been

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[5] Reasons for low 'local entry' employment, particularly in processing positions, are varied. Many revolve around the fact that processing positions tend to involve long hours for relatively low pay compared with other local employment opportunities (which, combined with the high local cost of living [and the fact that group housing is not a draw for individuals who already have homes in the community], make entry level seafood employment unattractive). Similarly, few processing-level workers from elsewhere tend to move into the local job market outside of the seafood industry, for a variety of reasons.

residents of the communities for long periods of time and who are active or even central in a variety of community affairs, including political leadership. These individuals tend to be relatively few in number in relation to the total work force, and tend to occupy management positions with the various companies, although there are exceptions to this generalization. In other words, management personnel of the plants tend to be local residents, but local residents outside of the seafood industry do not become managers; people from the community tend not to take entry level positions, and managers typically are promoted from within. This is the paradox of community 'residency' analysis for seafood processing workers, and specifically for management staff where the issue is a complex one.

Changes in perception of shoreplant employee residence have taken place over the past several years. During those years when the shoreplants were operating on a year-round basis, employees were more likely to consider the shoreplant community as their community of residence. This represented a marked change from the previous pattern of seasonal (only) employment, where workers (other than management) nearly universally considered the Bering Sea communities a worksite only. According to facility managers, this trend has reversed with the shorter seasons, at least for the processing work force. As noted below, however, there are components of the work force that are year round in nature, such that for those individuals the worksite community is more likely to be considered the community of residence. Particularly in Unalaska/Dutch Harbor, permanent employees (management, maintenance, technical) think of the community as their place of residence rather than merely a place of employment. These employees normally develop cross-cutting ties to the community, typically leaving for annual vacations rather than leaving the Bering Sea communities permanently after a brief employment period.

Type of Employment Contract

Employment contracts at the Bering Sea shore processors have changed during the span of years encompassed by the inshore/offshore era. Historically, six-month contracts with a specified hourly wage were the norm during the King crab boom days, and this pattern continued until there was significant plant diversification into groundfish. During those years when pollock processing took place on a year round basis, several of the plants did away with the specified period contract system and hired workers on an hourly wage basis for an indefinite period of time, with incentives provided for longevity. With advent of short pollock seasons, however, hiring practices have come to more closely resemble the term contract basis, in general form if not in contract particulars.

One of the plants describes its employees as being on a "seasonal" contract basis whereby they are now hired for a particular processing season, rather than for a fixed amount of time. This type of contract allows for flexibility due to unknown dates of season closures that will result in a sharply reduced need for processing workers. At another entity, workers are hired on a 1,500 hour contract but, according to management staff, the current short seasons dictate layoffs before 1,500 hours can be reached for most processing employees. One of the entities utilizes a straight six-month contract for its processors, similar to conditions prior to groundfish diversification.

Typically, hourly processing and maintenance workers receive wage increases based on cumulative length of service. At the large plants, the large majority of processing workers are contract employees who work the particular season for which they are hired and then leave the facility and community to return (or not) for the next large processing season. According to senior staff at one of the entities, it is becoming increasingly difficult to get experienced re-hires, due to the shorter and shorter seasons.

Beyond changes in types of contracts, job responsibilities have changed over the years. According to the staff of one entity, because of seasonal fluctuations in the level of activity at the various company facilities, management of the various and formerly semi-autonomous facility components has been totally integrated. With this structure, workers within one area of operations may receive temporary assignment to another area of operation. For example, if a particular crab species processing season only lasts four to five days, new workers are not hired for this operation, but are merely assigned from other duties.

Employee Turnover/Longevity

Employee retention or turnover has been changing at the Bering Sea shoreplants in the past several years, according to entity managers and personnel directors. The situation remains rather complex, as turnover varies between entities and within entities among job categories and operational areas assigned.

Rate of retention/return varies from entity to entity. According to 1998 interviews, rehire rates at all plants are higher for B Season than A Season, due to the fact that B Season requires fewer employees. At one plant the figure was put at greater than 90% for the B Season, and around 65-70% for the A Season. During the 1994 SIA study, the personnel director at another plant estimated that the overall the rate of return for employees is approximately 78% for both the surimi and seafood processors, and that an additional 4% or so were "old" returnees, i.e., people that worked for the company previously, but not the immediate past season. During 1994, retention among pollock/surimi workers varied by season. At one of the plants, it was estimated that there was a rate of return of approximately 40-45% for the "A Season" but for the "B Season" in 1993, 100% of the workers were rehires (i.e., they were a subset of the processors who had worked the previous "A Season"). Other entities report rates of return for "A Season" employees up to 75%. Only one of the entities reported no significant difference in rate of return between the "A" and "B" seasons, putting the overall figure at approximately 60%.

Retention/return also varies by job category. As noted earlier, each of the entities have a core group of employees (approximately one-quarter of the total peak workforce at each entity) that remain through the activity peaks and valleys. For one of the entities, date of hire data were available for 120 employees in the non-peak work force for 1994. Among those workers, 12% had been with the company for one year, 28% had been employed for two to three years, 34% for between four and six years, and 27% for seven or more years.

At each of the entities, there is a cadre of employees who have been steady workers for the company over a long period of time. Further, management positions at nearly all of the shore processors are occupied by long-time residents of the community or the region. Individuals who have worked for more than one company and have gained ten to twenty years experience in their shoreplant community and/or the region are not uncommon. Individual owners and -- in the case of "permanently" moored floating processors -- even the physical plants themselves may come and go, but individuals in upper level management positions tend to remain in the business and in the area.

Employee Housing

All Bering Sea shoreside processors provide housing services for employees. There are a number of different housing configurations that vary from entity to entity to accommodate both long-term steady employees and seasonal influxes of large numbers of employees.

Several of the entities have added housing in the past few years, and improved the quality of housing offered. Facilities range from free standing houses (for senior management) to bunkhouses with multiple occupancy rooms; individual entities vary in their housing inventory mix. One of the processor's housing inventory includes some free-standing dwellings and numerous apartments for various management levels employees, with the majority of housing consisting of various two- and three-person per room bunkhouse facilities. Housing at another entity consists almost entirely of double occupancy rooms in large bunkhouse type buildings. Another entity features "apartment style" units for processing employees, with configurations and occupancy varying by job category. Foreman housing is self contained, with cooking and laundry facilities, and there are both one and two bedroom units. Leads have units that each have a bedroom, bathroom, and living room; some are single occupancy and some are double. Processors have one or two persons per unit in the offseason and four per unit at the peak. While it would appear that shorter seasons would alleviate some of the historically high demand for housing at the processors, housing capacity is not a function of average but, rather, peak employment needs.

Employee Demographics

Individual entities vary in the detail of the demographic information they keep or release regarding their work force. In spite of the unavailability of some data, it is apparent that there has been a shift in demographics over recent years. Age composition of the work force is one dimension that has apparently changed in the past few years, with the work force getting somewhat older. In the 1994 SIA work, one personnel manager stated that the "over 30 years of age" category in particular has grown as a percentage of the work force in recent years. Age information provided by one of the processors is represented in Table SP-8.

Work force sex ratio was obtained from two of the processing entities in 1994. Consistent with historical trends, both work forces are predominantly male. At one of the plants the work force was 75% male and 25% female; at the other it was 81% male and 19% female.

Table SP-8 [Unnamed] Bering Sea Shoreplant Work force Age Structure, Spring 1994	
Age Range	Percent of Work force
Age 16-25	17%
Age 26-40	54%
Age 41-55	22%
Age 56-65	6%
Age 66+	<1%
Total	1

Ethnic composition of work force has changed somewhat over the years. Traditionally, a significant number of processing jobs have been held by members of several different ethnic groups. Detailed ethnicity listing was obtained from two of the shoreplants in 1994. Those data were combined, and are displayed in Table SP-9. Interview data from 1998 suggest that this type of distribution within the workforce is still typical.

Table SP-9 Bering Sea Shoreplant* Work force Ethnicity, 1994	
Race/Ethnicity	Percent of Work force
Asian/Pacific Islander	46%
Hispanic	29%
White	19%
Black	4%
Native American	1%
Total Specified	100%
*Information obtained from two shoreplants only.	

Range of Job Categories

There are a broad range of job categories at each of the Bering Sea shoreplants. One of the entities provided information on the work force structure using the general categories listed in Table SP-10.

Table SP-10
[Unnamed] Bering Sea Shoreplant Work force Departmental Structure:
Summary Categories, Spring 1994

Department	Percent of Work force
Administration*	3%
Production**	84%
Other***	13%
Total	100%

* Management and Administrative Staff
**Seafood Production, Surimi Production, and Van Loading
***Engineering, Environmental Compliance, Safety/Security, and Housing/Food Service

Patterns of management structure were developed in the 1994 SIA and appear to have remained consistent since that time. That is, with the dramatic shortening of the pollock seasons that accompanied the start of the inshore/offshore era, several of the plants have reduced their management level employees, both in upper management and middle management positions. Among the positions eliminated were a number of plant manager and assistant plant manager positions as operations were consolidated between surimi and seafood portions of the business, with the effect that now overall top level management is in direct contact with production supervisors. Upper and second level management (and often foreman-level) have come to consider themselves permanent residents of the shoreplant communities, at least in Unalaska-Dutch Harbor. At least one of the entities actively encourages employees with families to come to the community to further stabilize the work force.

Experience of the "upper middle" management of plants, such as production supervision and management, varied by entity, but typically these workers had degrees from four-year colleges or universities, supervisory and/or management experience in other fields, and worked their way up through the hierarchy of the organization that presently employs them, which is more often than not the only organization they have worked for within the seafood industry. In at least one case, an individual has worked their way up from an entry position on the processing line itself.

"Upper middle" management positions have been cut substantially in recent years, accompanying reorganization efforts resulting from the shortening of the fishing seasons, particularly the pollock seasons. "Downsizing" varied in its scope from entity to entity. Whereas in the relatively recent past plants would typically run virtually independent operations for surimi and (other) seafood, this is no longer the standard. In consolidating operational components, companies have tended to not only reduce the overall work force, they have changed the organizational structure reducing the ratio of managers to production personnel and often cut at least one "layer" of positions between top management and line workers. The eliminated layer has been "upper middle" management, and has included the former top supervisors of the individual operational components. The extreme reported case among the Bering Sea shoreplants involving cutting over two-thirds of the positions at this level.

Following reduction in numbers in recent years, these types of positions appear to be fairly stable with regard to turnover. Persons in this category tend to treat at least Unalaska-Dutch Harbor as their long-term community of residence, and have brought families to the community with them. One ventured the opinion that having family in the community is a key to long term job satisfaction as "Dutch Harbor [can be] brutal if you don't have someone here." Workers at this level are year round rather than seasonal employees, typically leaving the worksite for several weeks to two months per year as vacation during the slow seasons. According to one individual, the draw of this type of employment is that "you can hit it hard while you are here [often working 18 hour days] and play hard while you are away."

Foreman and lead positions, typically first line supervisors to line workers (or analogous positions in other departments), vary in somewhat in their particulars from plant to plant, with foremen having greater spans of responsibility. Whereas lead positions tend to be a function of the number of shifts and operational components in production at any one time (and have apparently been changing in direct proportion to changes in the general production work force), foreman or other "middle middle" management positions in at least some plants have been cut disproportionately with downsizing, similar to the changes seen with "upper middle" management.

Foremen and managers of a similar level tend to have worked in skilled trades or supervisory positions in other industries in positions with responsibilities similar to those they hold in their current jobs; some have college degrees (and at least one interviewee had a graduate degree). Foremen tend to be among those core workers who stay at the plants year round, whereas leads tend to spend more time away since seasonal reductions. According to one foreman, over his eight year's experience "four to five months per year of work has been lost" as a result of seasons becoming shorter; however, this same individual also noted that he still works 48 to 50 weeks per year. Whereas plant time has been lost, he and others of his job category are typically needed even during non-production times.

The processing line workers in the Bering Sea shoreplants are a highly diversified group in many respects, including both demographic characteristics and experience within the industry. Although they are not high paying jobs by most standards, processing line jobs are seen as highly desirable by many workers, and are used as the basic source of income for many extended families. Line workers vary widely in their previous experience. It is not uncommon for individuals originally from overseas to have a wide range of employment backgrounds, including some professional backgrounds, but be unable to apply those skills in the United States.

The vast majority of the processing workers interviewed during the 1994 study heard about the job by word of mouth through friends or relatives, giving kinship a primary role in the recruitment process (or, more precisely, that part of the recruitment process prior to the interview stage). Workplace relations are at least partially an outgrowth of prior existing friendship, kinship, and community of origin relationships for a significant number of workers. As plants are relatively self-contained in their operations, this web of relationships tends to be reinforced on the job site. Among workers interviewed, those who had relatives or friends (whom they knew before working at the shoreplant) also working at that particular shoreplant or in the industry outnumbered those who did not by more than three to one.

Given that line work is not steady on an annual basis, processing workers do a variety of things during the slow times, including returning to their home communities. Some of those workers from overseas return to their country of origin for two to three months per year. More typically, processing workers have family in the Pacific Northwest or California, and stay there during the offseasons.

There is a significant amount of movement of workers between facilities within the shoreplant sector and a lesser amount between shore and offshore processing sectors, based on limited interview data. Some of the larger shoreplants are considered to have better working conditions and/or living conditions compared to the smaller plants, and a few workers report having worked at smaller local plants as an entre to the area until an opening came up at one of the larger plants. Some workers also move between the larger operations due to perceived differences between the companies. Some shoreplant workers also have had experience on at-sea processors, and in one interview the person stated she began work at a shoreplant when the ship that originally employed went into bankruptcy. Another stated she left a catcher-processor because of better shoreside conditions: "Things [services] are free here. You just work, eat, and sleep."

Movement of workers between entities within the shore sector tends to take place between seasons rather than during an individual season. It is easier to switch employers prior to the beginning of the "A Season" given the lower rates of return for that opening compared with those for other seasons. Among those interviewed, workers with experience at more than one processing entity were about twice as common as those with experience at only one entity; generally, those who had worked for more than one company had several years experience in the industry, while those with their original processing employer tended to have less than three years experience. Again, there were notable exceptions to this generalization, and the number of persons interviewed was small, but these data are suggestive.

Employee Wages

Detailed wage information by specific type of position was provided by one shoreplant entity during the 1998 study effort, so wage specific ranges by type of position cannot be discussed due to confidentiality restrictions. (Another entity did provide compensation information on an aggregated hourly and salaried basis, and those are discussed below.) Relative information may be gleaned from the 1994 SIA study, when specific and comparable information was obtained from three entities. Pay per position varies somewhat between processors. In 1994, wages for processors ranged from $5.00 to $6.20 per hour, depending on cumulative hours. Leads and forklift operators ranged from $6.77 per hour to $7.20 per hour. Laundry and janitorial position rates typically fell between processors and leads; kitchen position wages were approximately equal with processor wages, or slightly higher. Some types of engineer positions along with tally, quality control, administrator, clerk, and accounting positions fell within the lead/forklift operator wage range. Skilled labor positions, such as maintenance engineers, carpenters, mechanics, and so on, earned in the range of $9.00 to $15.00 per hour, depending on the specific job and individual experience. Again, these are 1994 figures, and should be used only to give a sense of the relative pay of the different types of hourly wage positions. Increases in pay have been made across all positions in the subsequent years (with higher percentage increases apparently occurring in the lower pay categories). Shoreplant workers normally receive a range of services from employers while at the worksite. In addition to hourly wages, processing workers typically receive airfare from Seattle or Anchorage (provided they fulfill a contract) and room and board at the shore facilities.

For the 1998 data that were obtained, few specifics can be discussed because data are not available from enough entities to aggregate the information to avoid confidentiality problems. A number of points, however, may be discussed qualitatively or in general terms. One entity provided a breakout of total wages for hourly and salaried employees, by month, for 1990 and 1997. These data are illustrative in that they provide a sense of scale of the relationship between salaried and hourly employees, and how this varies over the course of a year. For example, as one would expect, in general, salary wages are relatively flat throughout the year, as these positions are steady employment relatively independent of processing volume fluctuations. The exception to this generalization is found in the practice of paying bonuses and travel allowance at two points during the year. In 1997 these were in the months of July and November (and there was also a December 1997 based bonus that was paid in January 1998). Again, confidentiality considerations preclude discussion of specific figures, but bonus and travel allowances increased salary income roughly on the order of 40-50% over the prior month's compensation for relevant months. In 1990, spikes in salaried worker earnings appear in the months of June and December. Hourly wages show a very different pattern during the year. For 1997, there were sharp peaks in wages in the months of February and September, and pronounced valleys in the months of June, August, and December (with a one-month peak in July). The 1990 data show a somewhat different pattern. There is a noticeable peak in February, and a slowdown during the summer, but the secondary peaks occur in September and December. What is most striking, however, in comparing the 1990 with the 1997 pattern is the relative difference between the peaks and valleys in the different years. For example, in 1997, the June 'valley' represented wages equaling approximately 20% of the hourly wages paid in the February 1997 'peak.' In contrast, the 1990 June 'valley' represented approximately 48% of the hourly wages paid in the February 1990 peak. Simultaneously, total payroll was down between 1990 and 1997. In other words, with the shortening of the pollock seasons and the drop in volume processed, overall hourly wages fell (despite increases in pay per hour) and the 'peaks and valleys' of the hourly employees at the operation became greatly accentuated. Salaried wages were up between 1990 and 1997 for the operation as a whole, reflecting the fact that salaried type of work needs to be accomplished at a plant relatively independent of fluctuations in processing volume, and the fact that wages have increased over the period. One can see this in the fact, for example that salaried wages for the month of February 1997 were approximately 12% of the hourly wage total for the same month; in contrast, for the month of June 1997, salaried wages were approximately 62% of the hourly wage total. (December 1997 proportion of salaried wages was even higher in relation to hourly wages [approximately 72%], but bonus figures for the month were not available – but these would push the numbers even closer together.)

The following table (Table SP-11) displays wage information relative to residency information for one shoreplant in the Unalaska/Dutch Harbor-Akutan area. Of particular note is the high proportion of total wages paid to Alaska residents in relationship to their proportion of the overall workforce. This makes intuitive sense, given a working knowledge of the structure of employment at shoreplants. Most entry level positions (typically processor positions) are disproportionately filled by non-Alaska residents, and these positions are at the low end of the wage scale. As persons stay with their employer in Alaska, two things happen. First, with longevity comes wage increases within particular positions and/or promotion to better paying jobs within the workforce. Second, as people stay in Alaska working at the plants, they may become Alaska residents. Even given this understanding, the proportion of wages paid to Alaska residents compared to their representation in the workforce is still striking. As the type of detailed breakout information required to construct this table was only provided by one entity, it is not known how representative this proportion of residents to proportion of wages is to the sector as a whole. It should be noted, however, that in a separate data set provided by the NPFMC (which shows a good correspondence of percentage Alaska employees with the individual entity provided data) that this particular entity is at neither end of the continuum for percentage of Alaska employees. Given this information, and a general knowledge of the structure of the industry, it would appear to be a reasonable conclusion that Alaska residents are disproportionately highly compensated within the inshore sector in relationship to overall representation in the workforce. Another way of say this is that Alaska resident jobs are "worth more" than non-resident jobs or that Alaska resident jobs bring in more income than non-resident jobs, on average.

Table SP-11 Employment Summary, One Bering Sea Pollock Shoreplant Percentage of Alaska Resident Employees and Percent of Total Wages Paid to Alaska Residents, 1990-1998		
Year	% Alaskan Employees	% of Total Wages AK Residents
1990	29.08%	45.73%
1991	24.07%	44.68%
1992	19.40%	42.43%
1993	20.27%	43.07%
1994	22.74%	43.90%
1995	31.40%	45.88%
1996	22.69%	48.27%
1997	16.37%	33.19%
1998*	19.96%*	29.58%*

*1998 Figures are for 01/01/98 through 02/21/98 only.
Source: Constructed from confidential employment figures, specific [unnamed] Unalaska/Dutch Harbor-Akutan shoreplant.

Table SP-12 provides a relative comparison by state of residence of employee for the inshore sector. These data are derived from personnel records at two different shore plants.

Table SP-12 Proportion of Total Compensation by State of Residence of Employee, Two Plants, Inshore Sector, 1996			
Employee State Of Residence	% of Total Wages and Benefits	% of FTEs (1920 hours/FTE)	Indexed Wage/FTE
Alaska	31.4	29.4	1.07
Washington	37.3	33.4	1.12
Other	31.3	37.1	0.84
Total	100.0	99.9	1.0

Based on information from only two shoreplant entities, thus compensation numbers cannot be released and direct comparisons with the offshore sector is not possible. Confidence in the "representativeness" of these data would be increased by adding information from other entities. Note: "state of residence" is likely NOT to coincide with ADOL derived residency data. The data in this table are based on personnel record mailing addresses, which may or may not correspond to legal residence (e.g., an Alaska resident employee may have a Washington address in their personnel file, and would thus be counted as an Alaska resident in the ADOL database and a Washington resident in this table).

Table SP-13 provides a breakout by job category of wages and benefits and FTEs by major job category for two inshore plants for 1996. This table displays the relative size of the production other categories and the relative rates of compensation per FTE for the major job categories.

Table SP-13 Relative Compensation by Job Classification, Two Plants, Inshore Sector, 1996			
Job Category	% of Total Wages and Benefits	% of Total FTEs (1920 hours/year)	Indexed Wage/FTE
Administrative	19.9	11.7	1.7
Production	53.2	68.6	0.8
Engineering	18.5	12.1	1.5
Hotel & Galley	8.4	7.5	1.1
Total	100.0	99.9	1.0
Based on information from only two shoreplant entities, thus compensation numbers cannot be released and direct comparisons with the offshore sector is not possible. Confidence in the "representativeness" of these data would be increased by adding information from other entities. Note: see "state of residence" caveat, Table SP-12.			

Table SP-14 presents more data that allows a comparison of wages received per employee by state. Of note here is that Alaska resident employees receive approximately twice the wages of Washington employees (and residents of 'other' states), and that Alaska employees work more hours than do residents of other states. As Table SP-12 shows, a 'Washington FTE' is worth more at an Alaska shoreplant than is an 'Alaska FTE' (within the limits of the data, as noted in the table), but Alaska residents work enough more hours, as shown in Table SP-14, that 'Alaska jobs' are worth more than 'Washington jobs' in Alaska shoreplants (again, within the noted limits of the data).

Table SP-14 Relative Individual Employee Characteristics by State of Residence of Employee, Two Plants, Inshore Sector			
Employee State Of Residence	% of Total Different Employees	Index of Wages Received per Employee (Average of Total = 1)	Index of FTE Actually Worked per Employee (Average of Total = 1)
Alaska	17.4	1.8	1.7
Washington	39.8	0.9	0.8
Other	42.8	0.7	0.9
Total	100.0	1.0	1.0
Based on information from only two shoreplants. Thus compensation numbers cannot be released and direct comparisons with the offshore sector is not possible. Confidence in the "representativeness" of these data would be increased by adding information from other entities. Note: see "state of residence" caveat, Table SP-12.			

Catcher Fleet Relationships

The Unalaska/Dutch Harbor-Akutan plants vary in the size of their delivering fleets, from a low of 7 vessels delivering pollock to one plant on a regular basis, to a high of 20 vessels delivering pollock on a regular basis to another plant. (Fleet characteristics of catcher vessels are discussed in the catcher vessel sector profile in this document.) Given the needs of processors to maintain optimal production levels, and the degradation of fish quality with time in the catcher vessels holds, the delivery rotation is carefully scheduled for each plant. This is not to say that schedules are optimal for the catcher fleet, from their perspective. Indeed, it was a common remark during interviews with vessel skippers that shoreplants tend to be 'overboated' for the A Season – where the catching capacity of the fleet exceeds the processing capacity of the plant such that the effort of the catcher vessels is limited by the delivery rotation openings at the plant. Such 'overboating' for A Season is deemed necessary to supply a market for all of the vessels that are needed by the plants during the 'scratchier' fishing during the B Season.

One of the fundamental changes that has taken place in the shoreplant sector over the span of years that encompass the inshore/offshore era is the change in the relationship of the shoreplants to their catcher fleet. While individual entities have varied in their approach to this relationship, as a generality the shoreplants have a much higher degree of ownership or management control of delivering vessels than was the case in even the recent past. (Note: to be technically accurate, in some instances the vessels are not owned by the shoreplant entity itself but, rather, by a related or cooperating corporate entity. In this way, ownership issues that could prove problematic, including the degree of foreign ownership restrictions on catcher vessels, are addressed. The main analytic point of the issue at hand, however, is not the formal structure of ownership so much as it is management control of the vessels. This is a fundamental change in the industry.)

As of 1998, only one of the Unalaska/Dutch Harbor-Akutan shoreplants had not pursued the ownership of catcher vessels. In interviews, it was stated by the management of this company that they were not interested in being vessel owners. For other entities, the circumstances and timing of acquiring ownership interest in catcher vessels has varied from entity to entity. One of the firms has had an ownership interest in a number of their delivery vessels for many years, and used to be unique in that type of relationship. Today, all plants, with a single exception, own and/or effectively control part of their delivering fleet. Based on interview data gathered from the on-site superintendent or manager of each of the shoreplants, ownership/control of the fleet, as a proportion of the delivering fleet varies between entities. Expressed as a percentage figure, at the low end of the range, one processor owns/controls all or part of 45% of the vessels in its delivering fleet. At the other end of the range, one of the processors owns/controls all or part of 86% of its delivering fleet.

Reasons given for the move to catcher vessel ownership varied from entity to entity. In some cases, the move was made to secure a stable source of fish for the plant. In other cases, the ownership of vessels was being pursued by plant owners at least in part as a strategic move to obtain catch history for the company (or a related company) in anticipation of a catch history based management system for pollock (such as an ITQ system). That is, shoreplant owners did not want to be caught in a relatively disadvantageous position with respect to catcher vessels (and potentially the offshore sector) were there to be a move toward a catch history based management system.

The ownership/control of vessels by the shoreplants has had several ramifications for the catcher fleet. While there was already reduced flexibility to participate in other fisheries on the part of catcher vessels with specialization geared toward improving their vessels as pollock trawl boats, the move toward corporate ownership of vessels has further reduced the options for independent vessel owners as 'the market' for their catch has been reduced. In actual practice, there was not a great deal of fluidity in recent years of boats moving between plants during seasons, without respect to ownership per se, as both vessel owners and plant operators desired a stable market/supply for pollock. In that limited sense, increasing ownership/control by plants and related entities has not brought about a fundamental shift in patterns of deliveries during seasons. During interviews, however, independent vessel owners did express concerns that they were in a somewhat precarious position should the management structure of the fishery change. If, for example, the methods of management were changed to reduce the 'race for fish,' in the case of some plants, the needs of the plant may be more able to be supplied exclusively or nearly exclusively by company owned or managed vessels. In one specific example given, if the need for 'overboating' by plants during the A Season were eliminated, it would seem logical that the relationships with independent vessels would be severed before relationships with vessels that were partially or wholly owned by the plants or related entities.

The continuing vertical integration of the inshore sector, as seen through common management of effort from the catching of the fish, through the processing stages, and to market is perhaps a natural evolution of a maturing pollock fishery. On the other hand, it has potentially profound consequences for the differential distribution of impacts (within and between subsectors of the CV fleet, as well as on a geographic basis) were there to be a significant allocative shift in pollock quota.

One of the specific operational changes that has occurred with the shift in ownership patterns is the 'effective homeport' of vessels have changed. Vessels owned or controlled by Alaska-based processors are more likely to tie up in the shoreplant community between seasons to save expenses and to have minor repair work done during down time. (This varies, however, between processors, based on the physical characteristics of the shoreplant site. For one of the processors, none of the company owned/controlled boats ties up in Unalaska/Dutch Harbor during the offseason, because the plant dock facilities are not sheltered well enough from swells to protect the vessels during storm conditions.)

2.2 BERING SEA POLLOCK CATCHER-PROCESSOR SECTOR

Catcher-Processors (CPs) will be discussed as a group, although they are only one component of the offshore sector as it is currently defined. If motherships are split out from catcher-processors (either as part of the inshore sector or as a category of their own), then the offshore sector is reduced to catcher processors. It is thus necessary to describe and analyze catcher processors separately from motherships.

2.2.1 Overview of Sector Structure

The detail of the 1994 SIA sector profile for catcher processors will not be reproduced here. Most of the background historical information should be familiar to readers of this document, and can be referred to if desired. This prior effort also had a broader charge and considered all groundfish fisheries, as well as incorporating information on vessel participation in other fisheries. This document concentrates upon the Bering Sea pollock fishery, although other fishery information is included as it is available and where it is useful to do so.

As used in this document, a Surimi Catcher-Processor (SCP) is a catcher processor which is capable of producing surimi. It may also produce fillets and/or mince, and fishmeal. A Fillet Catcher-Processor (FCP) produces fillets, but cannot produce surimi. Prior tables have summarized the most salient aspects of the sector's historical dynamics. FCPs declined from 30 in 1991 to 20 in 1994 to 19 in 1996. SCPs numbered 24 in 1991 and 1994, but declined to 20 in 1996. In addition, three of the 1996 SCPs are currently fishing in foreign waters, although they still hold American licenses. In terms of pounds of Bering Sea pollock processed, SCPs as a subsector in 1996 only processed about 58 percent of the amount it processed in 1991. This appears to have been due to the relatively stable number of vessels, inshore/offshore allocations and definitions, slightly declining Bering Sea TACs and pollock catches, and a decrease in the value of surimi in relation to fillets. The production of FCPs as a sector in this same period of time increased modestly -- 1996 production was 117 percent of the 1991 production. This appears to be due to the reduced number of FCP vessels, countering the reduced overall pollock harvests, and perhaps the relative value of fillets compared to surimi.

Ownership in the sector has shrunk and consolidated even more since 1994 than it had during the 1991-1994 analytic period of the license limitation sector profile. At least five companies have gone bankrupt and ceased operations since 1994. Most vessels have been acquired by other operations, although as mentioned previously, one FCP and 4 SCPs that operated in 1991 did not in 1996. As displayed in Table CP-1, the 39 vessels of the 1996 fishery are currently (1998) operated by 14 owner-companies. Eighteen of these vessels are operated by one company (three outside of Alaskan waters since 1996), and five by another. Four other companies operate two vessels each, and all other operations own only one vessel. Only the two largest companies operate both SCPs and FCPs, although some smaller operations can produce both surimi and fillets on the same vessel.

Table CP-1
Catcher Processors Active in the Bering Sea Pollock Fishery in 1996, With 1998 Ownership

Vessel	Length	I/O-3 Category	Notes	Owner in 1998
1	386	SCP		A
2	239	SCP		B
3	240	SCP		C
4	285	SCP		
5	280	SCP		
6	272	SCP		
7	224	SCP		
8	214	FCP		
9	213	FCP		
10	195	FCP		
11	341	SCP		
12	341	SCP		
13	336	SCP		D
14	296	FCP		
15	220	FCP		
16	218	FCP		
17	217	FCP		
18	204	FCP		
19	304	SCP	fishing in foreign waters 1997-98	
20	292	SCP	fishing in foreign waters 1997-98	
21	244	SCP	fishing in foreign waters 1997-98	
22	334	SCP		E
23	272	SCP		
24	276	SCP		F
25	201	SCP		
26	270	FCP		G
27	166	FCP		H
28	206	FCP		I
29	204	FCP		
30	190	FCP		J
31	140	FCP		
32	160	FCP		K
33	151	FCP		L
34	199	FCP		M
35	273	SCP		
36	270	SCP		
37	262	SCP		N
38	210	FCP		
39	188	FCP		

Shaded companies were those which provided aggregated employment and compensation information for 1996 and 1997 through APA, with the following qualifications for entity D:

1996 sample: vessels 4-13 only, and only shipyard employment for vessels 11-13

1997 sample: vessels 4-18

Source: NPFMC electronic data file, At-Sea Processing Association

The issue of foreign ownership will not be developed here. Ownership will be discussed only in terms of the which hold and manage these vessels, in relation to the actual locations of these activities (fishing, offload, hiring, management and administration). All such companies are based in the Pacific Northwest (PNW), primarily in Seattle. One multi-vessel company bases its vessels in Tacoma. Almost all regular vessel maintenance takes place in Seattle or PNW shipyards, although the largest catcher processor operator has used the Ketchikan shipyard to drydock several of its vessels, and temporary or emergency work has been done in various Alaskan ports. Operating expenditures are made in Alaska, and are significant (e.g., fuel sales out of Unalaska/Dutch Harbor), but the bulk of regular expenditures and outfitting expenses are made in Seattle and the Pacific Northwest region.

2.2.2 Personnel and Employment

Much of the following material is drawn from the previous sector profile (IAI 1994), supplemented by interview information and aggregated industry-supplied employment/ compensation data. Use of earlier profile information is problematic in that it included not only SCPs and FCPs, but also head and gut catcher processors. Thus, an allowance for these operations must be made in interpreting the information from this earlier analysis.

According to industry figures, in the recent past the catcher processor fleet employed about 7,600 "full time equivalent" (FTE) personnel allocated to both at-sea and shore-based positions (AFTA 1993:2-1). These data indicate that total number of at-sea positions aboard the catcher processor fleet equaled 7,271 FTEs (about 96 percent of total sector employment), aboard 58 vessels (or about 125 FTEs per vessel). This sample clearly included more than the pollock catcher processor fleet. Since these data were compiled (1993), several companies have ceased operation with their vessels being acquired by others, other companies have tied up some vessels, and in some instances operations and the size of crew have changed. Interviews conducted for the groundfish license limitation analysis SIA collected estimates of company employment from catcher processor operators (IAI 1994). Again, this sample included more than pollock catcher processors, but excluding non-pollock catcher processors from this data to the extent possible, 17 companies operated 28 vessels with approximately 4235 employees, or about 151 employees per vessel (or adjusting for administrative employees, 145 employees actually on an "average" vessel).

Past (1994) interviews indicated that the number of crew aboard pollock catcher processors ranged in size from about 60 to 287, most typically 85 to 140. The number of crew varies by vessel type, fishing seasons, products produced, company philosophies, and other operational considerations. Generally, vessels that produce both surimi and fillets have the largest crew followed by those vessels that are primarily surimi producers. Vessels that produce only fillets usually have fewer crew than surimi vessels. The fish-processing or "factory" crew usually account for the majority of persons on all catcher processors. As Table CP-2 (Crew Composition) indicates, processing jobs account for between 55% and almost 75% of all positions among these example crews.

Table CP-2 Example Crew Composition for Vessels by Length and Product Production Type					
Category	Fillet 200-250'	Surimi 250-300'	Surimi 250-300'	Surimi & Fillets 250-300	Surimi >300'
Captain/Master	1	1	1	1	1
First Mate/Mate	2	1	1	3	2
Chief Engineer	1	1	1	1	1
Asst. Engineer	2	1	2	1	3
Electrician	0	1	1	4	1
Oilers	0	4	1		2
Boatswain	2	1	2	2	2
Deck Hand	2	7	4	2	6
Galley	4	3	5	5	6
Factory Manager	1	1	1	1	1
Factory Engineers	2	2	4	2	4
Foreman/Asst.	2	2	2	2	2
Q.C. Tech.	2	2	2	2	2
Surimi Tech.	0	7	0	8	2
Processors	38	41	66	98	50
TOTAL	59	75	93	132	85
Processor %	64.41%	54.67%	70.97%	74.24%	58.82%
Source: IAI 1994					

Crew positions have differing statuses and receive differential compensation. The wheelhouse (captain, first mate, mate), engineering, deck, and factory manager/foreman are the most highly compensated positions. Factory technicians who can repair the processing machinery are also especially valued, since these machines are a key to the overall ability of a vessel to produce products and thereby generate income. In the past, fish processing crew positions had a lower status. However, there is an emerging preference for stable factory employees and a recognition of their overall contribution to the profitability of vessel operations, especially as seasons shorten and experienced crew seek out options that are favorable to their own employment and financial goals. The overall effect of these circumstances appears to be an increase in competition for experienced workers and an awareness of the value of retaining productive crew.

Table CP-3 Catcher Processor Sector Contribution to Employment, Washington and Other States 1996				
State of Residence	Employment Opportunities	Gross Pay & Benefits	FTE Years of Employment	Pay per FTE Year
Alaska	177	$2,140,853	77.5	$27,623.91
Washington	1958	$52,652,553	1296	$40,626.97
Oregon	109	$2,674,243	69.9	$38,258.13
Idaho	43	$1,214,044	29.9	$40,603.48
Montana	27	$516,623	17.4	$29,690.98
California	257	$4,340,637	136.9	$31,706.63
other	353	$9,052,872	213.6	$42,382.36
TOTAL	2924	$72,591,825	1841.2	$39,426.37
per vessel (15)	195	$4,839,455	123	
AS PERCENTAGES				
Alaska	6%	3%	4%	
Washington	67%	73%	70%	
Oregon	4%	4%	4%	
Idaho	1%	2%	2%	
Montana	1%	1%	1%	
California	9%	6%	7%	
other	12%	12%	12%	
TOTAL	100%	100%	100%	
Source: APA provided information				

Tables CP-3 and CP-4 summarize employment and compensation information obtained from the At-Sea Processors Association for its member firms for 1996 and 1997. The 1996 sample consisted of essentially 11 surimi catcher processors and 4 fillet catcher processors. The 15 vessels represented 38 percent of the fleet (55 percent of surimi CPs and 21 percent of fillet CPs), but 57 percent of total fleet production (63 percent of SCP production, 37 percent of FCP production). The 1997 sample consisted of 14 surimi catcher processors and 9 fillet catcher processors, or 59 percent of the fleet (70 percent of SCPs and 47 percent of FCPs). The 1997 sample represented 78 percent of the sector's total production (81 percent of SCP production and 72 percent of FCP production). This sample thus may under represent smaller firms and smaller fillet catcher processors, but is reasonably representative of the sector as a whole, especially in terms of production.

Table CP-4 Catcher Processor Sector Contribution to Employment, Washington and Other States, 1997				
State of Residence	Employment Opportunities	Gross Pay & Benefits	FTE Years of Employment	Pay per FTE Year
Alaska	366	$4,720,743	196	$24,085.42
Washington	2663	$76,254,686	2180	$34,979.21
Oregon	151	$3,292,628	111	$29,663.32
Idaho	51	$1,658,172	48	$34,545.25
Montana	28	$652,514	20	$32,625.70
California	338	$7,455,701	272	$27,410.67
other	517	$13,979,158	426	$32,814.92
TOTAL	4114	$108,013,602	3253	$33,204.30
per vessel (23)	179	$4,696,244	141	
AS PERCENTAGES				
Alaska	9%	4%	6%	
Washington	65%	71%	67%	
Oregon	4%	3%	3%	
Idaho	1%	2%	1%	
Montana	1%	1%	1%	
California	8%	7%	8%	
other	13%	13%	13%	
TOTAL	100%	100%	100%	
Source: APA provided information				

FTE years per vessel is at best a rough indication of work force, but is a reasonable approximation. With a reduction for administrative (non-vessel) hours (estimated from Tables CP-5 and CP-6), the adjusted FTE approximations for 1996 and 1997 would be 119 and 125 respectively. This is consistent with past statistical data as well as interview information.

The NPFMC Updated Employment Information supplement dated April 17, 1998 also provided a table of residency of employees hired by the APA fleet in 1996 and 1997 for Alaska residents. For

1996, Anchorage was the leading community, with 30 residents, followed by Dillingham with 21, and Togiak with 14. No other community had ten or more employees listed. Manokotak, Shaktoolik, and Stebbins each had 9 employees, and Emmonak had 6 residents listed as employees – no other communities had more than 5 listed. Kotlik and Spenard each had 4 employees. Seven different communities had 3 employees, ten other communities had 2 employees each, and a total of 12 communities were listed as the home of one employee each. For 1997, again Anchorage was the leading community by resident, with 66 residents listed as employees of the APA fleet. Dillingham, Emmonak, Togiak, Kotlik, and Alakanuk had 36, 22, 15, 12, and 10 residents employed respectively. No other community had ten or more employees listed. Manokotak had 8 employees, New Stuyahok and Stebbins each had 7 residents employed, and Bethel and Fairbanks each had 5 employees listed – no other communities had five or more employees listed. Homer, Mountain Village, Napakiak, Palmer, Soldotna, and Shaktoolik each had 4 residents working as employees of the APA fleet. Three different communities had 3 employees, ten different communities had 2 employees each, and a total of 25 communities were listed as the home of one employee each. (An interesting point of contrast to the onshore sector while the APA fleet has no Unalaska/Dutch Harbor residents employed, it is the leading place of residency for onshore workers with 396 and 342 workers in the years 1996 and 1997, respectively. Anchorage also figures prominently in the onshore sector employment place of residency, with 193 and 187 workers employed in the two years respectively.) These data show that Alaska resident hires for the APA fleet went from a total of 159 in 1996 to a total of 298 in 1997.

Table CP-5: Pay and Benefits by Job Category, 1996

Job Category	Employment Opportunities	Employment (FTE Years)			Pay and Benefits ($)		
		Total	Median	Average	Total	Median	FTE Year
Administration	163	120	1.01	0.7362	7487199	33324	62393.325
Fishing	206	157	0.95	0.76214	12677129	58715	80746.04459
Processing	2144	1244	0.56	0.58022	37556059	13858	30189.75804
Engineering	281	218	0.96	0.7758	11132897	28787	51068.33486
Hotel and Galley	130	102	1.04	0.78462	3738541	27740	36652.36275

NOTES:
One full-time equivalent (FTE) year of employment is calculated as 240 eight-hour days (1980 hours).
Table includes 1,417 employment opportunities with job category unknown allocated in proportion to those opportunities with known category.
Source: APA 1998 (Industry-provided data)

Table CP-6: Pay and Benefits by Job Category, 1997							
Job Category	Employment Opportunities	Employment (FTE Years)			Pay and Benefits ($)		
		Total	Median	Average	Total	Median	FTE Year
Administration	390	358	0.94	0.91795	17018555	32425	47537.86313
Fishing	290	314	1.02	1.08276	17894068	50718	56987.47771
Processing	2919	2138	0.59	0.73244	57872709	12890	27068.61974
Engineering	347	294	0.73	0.84726	11034621	15816	37532.72449
Hotel and Galley	168	147	0.78	0.875	4193647	19752	28528.21088

NOTES:
One full-time equivalent (FTE) year of employment is calculated as 240 eight-hour days (1980 hours).
Source: APA 1998 (Industry-provided data)

Data provided by AFTA for an earlier study broke down job categories in somewhat different terms. These data, from 1994, are presented in Table CP-7.

Table CP-7
Salary Range by Position: Seattle Catcher Processor Fleet (1994)

Position	Range (dollars per year)
Processors	24,000 - 35,000
Factory Foreman	96,000 - 128,000
Stewards/Chefs	56,000 - 80,000
Deck Hand	44,000 - 90,000
Mate	55,000 - 117,000
Engineer	>100,000
Captain	100,000 - 200,000

Vessel Operations Crew

Vessel operations positions have a reasonably strict division of labor which may have all or a subset of the following categories: captain, first mate, chief engineer, assistant engineers, mechanics, electricians, boatswain and other deck hands, galley staff, and housekeeping personnel. The "Crew Composition" table lists example crews for vessels of different types and sizes. As this table clearly indicates, regardless of size, the number of wheelhouse positions on most vessels is about the same. The number of engineering staff may vary according to the complexity and size of the engines and other mechanical characteristics of a vessel. The number of deckhands varies according to the size of nets used and the type of groundfishery pursued. Factory engineers are limited to those vessels with fillet or other processing machinery, and surimi technicians are obviously limited to those vessels that produce that product. The number of processors varies by the nature and amount of the on board processing machinery, vessel size, and type of fishery. For example, in the table, the surimi vessel that has 66 processors does not produce a fillet product which is produced by the vessel with 98 processors. Fillets require the flipping and inspection for parasites and bones that is not required in the surimi-only operation, consequently there are more crew on this vessel.

Some vessels have employed a "fishing captain" who was responsible for all fishing activities, but this appears to be a declining practice. A "night captain" or night "fish master" may be used on some vessels. The captain is responsible for operation of the vessel as well as finding and catching fish. The mate acts as the captain's assistant and may perform purser functions, and other on-board management tasks such as dealing with personnel issues. The chief engineer is responsible for maintaining all machinery on-board with the exception of fish processing machinery. The engineering staff may also contain a licensed first and second assistant as well as oilers, wipers, and electricians. "Factory engineers" are responsible for the maintenance of filleting and surimi machinery. They work independently of the chief engineer and usually report to the factory manager. The boatswain and deck hands handle the gear for catching fish. Boatswains usually operate the hydraulic equipment on deck and may also be responsible for overall deck operations and safety. Two or more deck hands will be responsible for deploying and retrieving the trawl nets. Galley staff consists of stewards and cooks, with stewards performing the routine galley work and the cooks or chefs having responsibility for meal preparation. Some vessels also have housekeeping staff who wash clothes for crew and otherwise attend to the cleanliness of the vessel.

Factory Operations Crew

Factory operations crew are responsible for the processing of fish. They are usually the most numerous category of crew on board catcher processors. The factory crew is composed of management and processing staff. A factory manager and factory foreman perform the on-board management functions for fish processing. The factory manager has responsibility for the overall operation of the factory, while the factory-foreman is responsible for the supervision of staff engaged in fish processing. The composition of fish-processing factory staff varies according to the products produced.

On surimi and fillet vessels there are fish sorters as well as machine operators, usually one feeding fish into a machine and one to two others who ensure the fish feed through and emerge from the machinery. In fillet operations there may be inspectors and "flippers" as previously described. A "scooper" layers the fillets into trays and puts these into a basket. Packers then pack the baskets into pans which are loaded into freezers by "loaders." Surimi machinery is usually operated by specialized "technicians." One to several quality control personnel perform special tests on surimi to ensure product composition and quality. Quality control staff may report directly to the factory manager or sometimes the factory foreman. Factory engineers are responsible for the machinery in the factory, including the filleting and surimi machinery. The technicians who operate this filleting machinery are among the most highly skilled and well-compensated staff in the factory. One to four or more such technicians and two regular mechanics may be in the factory.

Crew Demography, Recruitment, and Compensation

The demographic composition of the catcher processor fleet can only be accurately described with survey or other census data. Our discussion will be based primarily upon aggregated information obtained from APA (summarized in Tables CP-3 though CP-6 above, nature of the sample also discussed above), combined with information from interviews with human resources personnel, managers, and owners about the overall demographic trends of this fleet[6].

Crew members are hired primarily from communities in the western United States and, according to the companies, increasingly include individuals displaced from the logging industry in Washington, Oregon, and California. In terms of the APA sample, Washington residents far outnumbered all other employees, filling 67 percent of job opportunities, 70 percent of FTE years of employment, and receiving 73 percent of the total gross pay and benefits. For 1997 these percentages (and the pattern) were similar at 65, 67, and 71 respectively. For 1996, Alaskan residents occupied only 6 percent of the sample catcher processor employment opportunities, 4 percent of the total FTE years of employment, and received 3 percent of gross pay and benefits. Figures for 1997 are similar, though higher, at 9 percent, 6 percent, and 4 percent respectively. Note that these figures would indicate that Washington residents tend to work for longer periods of time than do Alaskan residents (Washington FTEs are higher than job opportunities, whereas it is the reverse for Alaskan residents), and pay per FTE year is highest for Washington residents and lowest for Alaskan residents for both years.

Interview information indicates that males represent about 75-90% of the crew and the most common ages are between 20 and 35, although there is a trend toward older employees. Some companies have as high as 25% females whereas others have less than 5%. About 60-70% are single and in the aggregate whites outnumber most other ethnic groups. On some, but not all, vessels

[6]The draft of this SIA used descriptive employment information from a sector profile produced in 1994 for the analysis of the potential effects of license limitation in the Bering Sea groundfish and crab fisheries. This information was quite divergent from that obtained from APA in 1998 for the pollock catcher processor fleet. The probable reasons for this are various. First, the "catcher processor sector" was defined much more broadly in 1994 than for I/O-3, including all groundfish trawl catcher processors in the Bering Sea and Gulf of Alaska, rather than just those for Pollock in the Bering Sea. Thus more smaller, potentially Alaska-based (and cod-oriented) vessels were included in the 1994 sector definition. Expressed in a different way, the I/O-3 sector definition is a subset of that used in the 1994 analysis, and includes only the larger and most "Seattle-oriented" vessels in that sample. Second, the 1994 information was obtained through field interviews with human resource specialists, managers, or owners of industry entities who were asked for their best estimates of the residential composition of their work forces. As such, these estimates would be "body counts" with no measure of service length or compensation attached to them (and thus tend to over represent Alaskan residents, who tend to work for shorter periods of time than do non-Alaskan residents). Thus there is no way to compare the 1994 employment information to FTE or other standardized employment measures. Third, the 1998 data encompass only APA members, so their may be some different sampling issues arising out of member and non-member firms, however, it is clear that the 1998 APA provided data is the best available data for use for the task at hand.

Asians, Pacific Islanders, Hispanics, and African-Americans dominate the processor jobs. On those vessels with strong minority representation among processors, there is an increasing trend for Hispanics to be employed in these positions.

Most of the crew are recruited by consulting with connections within the industry or other word-of-mouth means. There is some limited advertising for processing positions among the larger companies in the fleet. There are also placement agencies that specialize in marine employment and some of the deckhand, engineer, and other wheelhouse positions may be hired from such sources. In the past, processing crew were acquired by various means, including gathering labor from any available source, but that practice has waned. CDQ group residents have become an increasingly important source of employees (discussed briefly in a separate section below) and other recruiting in Alaska has increased. Job fairs are conducted in conjunction with NPFMC and other fishing-related meetings, and at least one catcher processing company has an Anchorage employment office.

In general, captains, chief engineers and other management level personnel are hired directly by the vessel owners. The captains are responsible for hiring deck hands and other key on-board personnel. Factory managers or supervisors usually hire the factory foremen and the processing staff are hired by the shore-based personnel office of the ownership or management companies. Interview data collected for this study indicate that hires from walk-ins to the company offices are not uncommon among individuals seeking processing or deck hand positions, but a referral from an existing employee is a decided advantage in securing a position. Family connections account for some hiring. There is a tendency to seek balance in the hiring of family members and friends among processing crew while at the same time building a crew based on recommendations and reputation within the industry.

In the recent past the turnover rates among crew has ranged from about 20% to 60% per year, with the processing crew accounting for the majority of turnover. There are indications that the average turnover rate is closer to the lower end of this range than the upper end, although on smaller vessels with fewer crew, higher turnover rates have occurred. It was not uncommon for some turnover to occur from trip-to-trip, but once processing crew made it past one trip, they more often than not repeat as crew for several trips or longer. In general, turnover among deckhands and wheelhouse crew appears to be much less than the crew overall. These tend to be more stable positions, especially among the wheelhouse crew of chief engineer, captain, and factory managers/supervisors. It also appears that some of the companies that have been engaged in this fishery have a relatively stable core of key crew. For example, one such company representative noted, 'More than fifty percent of our crew has been with us over seven years and all of the officers have been with us since we started fishing.' Although a survey of such crew would be required to demonstrate this as a trend, informants from several of the larger companies in the fleet noted a tendency for lower turnover among wheelhouse crew. Several smaller companies claimed little or no overall turnover.

With progressively shorter fishing seasons, two seemingly contradictory points of view about turnover were expressed. One point of view is that crew desire to maintain their positions in order to receive the income they expect. In the recent past, a crew might stay on a vessel only for the profitable pollock "A" season and not fish the less profitable "B" season. They would usually be able to find a crew position on the same or another vessel for the next pollock "A" season. Now, there is a tendency to perceive that holding on to their current positions is necessary in order to maintain income levels and future income potential. The second and apparently contrasting point of view is expressed by vessel owners who observed that with shorter seasons, crew are seeking positions in which there is more of an income potential. As vessels spend less and less time fishing, crew seek other options for income, and if these options are found before another trip, then turnover increases.

Most crew sign-on a trip-by-trip basis. The vessel income for each fishing trip is the basis for compensation. There is no one universal method of compensating crew within the catcher processor fleet, but most methods are based on the idea of crew shares per trip. Some companies use a percentage of the net or gross value of the catch that is allocated as shares among the crew. Other companies allocate a percentage of the gross or net value of the catch (in the range of 25-30%) for the crew and then each person is allocated a percentage depending upon position and longevity. Some companies pay their crew based on a per case of product basis. In some instances, key positions such as captains and chief engineers are guaranteed a salary that represents the bottom of the range of what they can get paid. Other companies also offer minimum daily guarantees for all crew. However, regardless of the details of the compensation approaches, they are based on the idea that participants in the fishing trip share in its rewards or failures.

The career path and length of time in the industry is variable by position. Captains, mates, and engineers are licensed positions and these persons are usually career-oriented with a history in the industry. Boatswain and deckhand positions require specialized knowledge to conduct the fishing operations on these vessels, and consequently they tend to be filled by persons with deck experience rather than completely unskilled and inexperienced workers. There are some deckhands who move in and out of the industry looking for short term employment, but the trend seems more towards those whose steady work is life on deck. Some of these individuals aspire to wheelhouse positions, and see their time on deck as a rung on the ladder to these positions. These aspirations are founded in the examples of owners and captains who have been life-long fishermen that have worked their way up from deckhand to wheelhouse and then to the owners' office. There is also sentiment that deckhand positions are not usually life-long jobs. Processing jobs have a limited career path since there are relatively few factory foreman and factory manager jobs available. Yet, the level of compensation for some individuals with modest educations results in an increasing tendency for longer-term processing crew throughout the industry. On some vessels there are "combi" positions in which the person works both in the factory as well as on deck. These are more desirable jobs since they offer an opportunity for diversity in work as well as more career path options. Increasingly, there is a tendency for a more "professional" crew in all positions within the catcher processor fleet.

The interview data also indicate that personnel in this industry generally do not have employment other than their work on catcher processors. Crew schedules are usually either one or two months on and one or two months off. "Off" time is recreational or family time. Indeed, one of the incentives and values of working in the catcher processor fleet is the time off between fishing trips. According to interview data, this time off is a meaningful part of the motivation to work in this industry. As one informant noted, "There are three important questions you need to ask when you are looking for a job. One is how much money will I make? what do you fish for?, and how much town time do I get?" The level of the compensation within the industry has allowed "town time" to be used for recreational activities, being with family members, or otherwise engaging in non-work activities. There is some information to suggest that shore time is used to work other jobs. For example, one deckhand noted that he has his own fishing boat in Oregon and when he is not fishing in the catcher processor fleet, he fishes for himself. The extent of alternative employment industry-wide could not be ascertained from the interview data collected for this study. However, informants indicate that time off is highly valued among crew within this fleet as a necessary break in routine from the stress and hard work while at sea. It also appears that the catcher processor work force is relatively geographically dispersed (when away from the work site) and with rather general skills that would certainly be transferable to other fish processing operations, and a more generally to a number of other industrial contexts.

2.2.3 Overview of General Operations

The seasonal round of SCPs is different from that of FCPs, primarily due to the product specialization of the former. While our collection of information on other fisheries which Bering Sea pollock operation participated in (and depended on) was necessarily very limited, it was clear that many if not most surimi catcher processors produced primarily surimi, and are confined at present to pollock and whiting as potential sources of raw material. Thus the Bering Sea pollock fishery and the west coast whiting fishery represent their potential scope of operations, and both fisheries require licenses based on past participation. FCPs, on the other hand, have more options in terms of potential alternative or supplemental species to pollock, but do have some operational constraints (economic scale, bycatch issues). Tables *5a and *5b demonstrate these points, but also indicate that FCPs have also become more dependent upon the pollock fishery.

There has been an increased tendency for catcher processors to take at-sea delivery of pollock (and cod, although again this was not a focus of investigation) from catcher vessels. Information on such at-sea deliveries is not available at the individual vessel level at present, but is for sectors (and subsectors) as a whole for 1996. Such at-sea deliveries to catcher processors are assumed to have been minimal in 1991. Information for 1994 was not developed for this document. For 1996, 9.8 percent of total catcher processor production was from fish purchased from catcher vessels. By subsector, the numbers are about 10 percent for FCPs and 9.75 percent for SCPs (based on electronic data provided by the NPFMC). During our interviews, those catcher processor operators who used catcher vessels as a regular part of their operations tended to estimate that they obtained approximately 10 percent, or a little more, of their pollock in this way (and a greater percentage of their cod).

Reasons for a catcher processor to use a CV to supplement its own harvesting operations are fairly easy to understand. Maximum catcher processor processing capability tends to exceed maximum catcher processor harvesting capability during "average" conditions, and especially during the "B" season when fish tend to be more dispersed. In the race for fish, the marginal costs of purchasing fish to maximize return from the factory plant has appeared to be a good investment. Not all catcher processors use Catcher vessels, but most seem to. Catcher vessels also can "scout" for fish for the catcher processor, and serve other support needs (running parts and people to and from port, for instance) so that the catcher processor can maximize the time it spends on the fishing grounds. The scale of the total fishing operations influences the perceived need to use a CV to aid catcher processor operations. The largest company, with 18 vessels (15 in American waters), owns one CV and contracts with several others, but does not maintain a 1:1 ratio of supplemental CV to catcher processor, as do most smaller companies which use supplemental delivery catcher vessels. They rationalize this by the large part of the sector harvest capacity which their catcher processors represent. Of the fish caught be a supplemental CV, about 40 to 50 percent represents fish that one of their catcher processors would have harvested in any event. Thus the added benefit of the CV's fish to their overall operations is less than for operators with fewer catcher processors. Other catcher processor operators do own catcher vessels, but few or none seem to have acquired these catcher vessels with the intent to use them in conjunction with catcher processor operations. No catcher processor operators expressed a desire or need to acquire CV ownership for this purpose.

Community Development Quota (CDQ) pollock are quite important for catcher processor operations in at least two respects. First, as Table Int-12 indicates, they represent 11 percent of that sector's total catch (16 percent for FCPs, 10 percent for SCPs). Secondly, CDQ pollock allow those operations which possess them to "fire up" their plants prior to the open access fishery and thus ensure that they are operating at maximum efficiency when the open access fishery starts. This was cited in our interviews as a competitive advantage both by those who had CDQ contracts and those who did not. The CDQ quota also allows operations owning such rights to time the harvest of at least that portion of their production at a time when they judge the quality of the resource to be highest, in a manner that allows them to extract the most value from it. As opposed to their practice in the 1996 open access pollock fishery, catcher processors used catcher vessels to harvest CDQ pollock only to a very limited extent. We did not collect information on the pattern of use of catcher vessels by catcher processors in the 1997 and 1998 pollock CDQ fisheries in our interviews.

Most catcher processors operate primarily as independent operations, or in conjunction with one other vessel that is part of the same company. Only two companies operate more than two catcher processors, but one of these represents nearly half of the sector's capacity. This company does explicitly manage its fleet so as to maximize the return to the company, rather than to its individual vessels. For instance, at present it has three vessels in Russian waters, even though they have permits for the American fishery (but they are managed under a separate corporate entity, although the owners are the same). This mode of operation has the potential to raise problems with crew retention, who are paid a crew share based on the performance of the individual boat on which they work. This was not raised as an explicit issue, other than to admit that this was a possibility and that the company did attempt to provide opportunities for all of its employees to earn a reasonable living.

In conjunction with this to some extent, fillet catcher processor operators especially are trying to develop additional fisheries in which they can participate. These opportunities are of course limited, especially in relation to the catcher processor capacity available, but the two main potential areas discussed were salmon and cod. Neither has been very lucrative in the past, but both could provide additional fishing time for the catcher processor and crew, as well as provide opportunities for catcher vessels to develop markets with catcher processors. We were not able to develop this topic to any great extent, but several catcher processor companies also linked these potential developments to their participation in CDQ partnerships.

One point consistently stressed about the catcher processor sector was the past instability, as evidenced by the exit of vessels from the sector and especially by the consolidation of the sector into a smaller number of companies. While the sector is relatively stable at present, in comparison to the recent past, the continued possibility of a pollock allocation shift continues to affect the financial operations of catcher processor companies. Loans for competitive upgrades or other acquisitions are difficult if not impossible to obtain. One operating officer/owner stated that he had to pledge his personal credit to obtain such a loan. Surimi catcher processors especially have experienced a decline in the amount of pollock they process, both in absolute terms as well as in terms of a percentage of the total pollock harvest. A reduction in the quota to which they have access, given the past history of change in the sector, may well result in further sector consolidation. The Stevens bill is another source of concern and reason for continued instability in the sector, but cannot be addressed here.

One alternative that does not formally reduce pollock allocations, but would affect the "quota pool" to which catcher processors have access, is the idea to split motherships apart from catcher processors, either as a separate category or as part of the onshore sector. The net result of this on catcher processors is not obvious. Motherships have apparently maintained their harvest share in relationship to catcher processors (and perhaps increased it, depending on the fishing conditions of any given year), so such a split would appear to be neutral or slightly positive for the catcher processor sector as a whole. The primary concern on the catcher processor side was that if motherships were split off that they not be allocated a quota larger than their historical share.

2.3 BERING SEA POLLOCK MOTHERSHIPS

This section profiles the groundfish mothership operations currently active (in 1996 as the baseline year, but in 1998 as well) in the Bering Sea pollock fishery. This profile is constructed from aggregated data from the NPFMC about motherships, as well as vessel-specific information and comments from sector participants gathered during face-to-face individual interviews. Interviews were conducted, wherever possible, with a combination of company owners or other key administrators, vessel operators, and personnel administrators. Our sample includes all groundfish mothership operations currently active in the North Pacific groundfishery. As for other sector profiles, this description is a composite of information derived from individual economic entities; it is not a intended as a profile of individual entities, nor a profile of a hypothetical "normative" operation.

2.3.1 Overview

A mothership is a relatively large vessel that does not fish itself, but rather acts as a mobile processor. The inshore/offshore definition of "true mothership" for Bering Sea pollock is "a vessel that has processed, but never caught, pollock in a 'pollock target' fishery in the BSAI EEZ" (NPFMC Newsletter, 10/08/97). Motherships buy fish or crab from a fleet of catcher vessels (CVs). The ownership or contractual relationship of these catcher vessels to the mothership varies. catcher vessels may be owned by the mothership corporation, independent, or be members of a cooperative which itself owns the mothership. catcher vessels may have formal or informal contracts with the mothership. Groundfish motherships in the North Pacific range from 280 feet to 635 feet in length. Groundfish motherships are equipped to operate in relatively heavy seas, but depend on relatively small catcher vessels to fish for them, and so are only productive during "small boat" fishing weather. The catcher vessels off-load their catch to the mothership for processing, and the mothership, in turn, offloads the finished product to "trampers" (cargo vessels) for transport to foreign or domestic markets. At times, especially at the end of a season, the mothership itself may make a delivery of product rather than transfer product to another vessel for shipment.

All three Bering Sea pollock motherships have been fishery participants since JV days in one form or another. All have operated in essentially their present forms since at least 1991, and are owned and operated out of Seattle. All produce surimi as a primary product, as well as pollock roe and fish meal. In 1994, two of these vessels could produce 100 tons of surimi a day, and the other 200 tons. None have experienced much success with cod fillets in the past, and only one operation expressed any possible interest in fillet product in the future. All are highly specialized in terms of making, and marketing, surimi.

Motherships are currently part of the "offshore" sector in terms of inshore/offshore allocation regulations. Although they currently process less pollock than they did in 1991 and express concerns about their ability to compete with catcher-processors (CPs), they have apparently been able to do so at least in the recent past. In 1994, both motherships and catcher processors processed 79 percent of the Bering Sea pollock that they had in 1991. In 1996, catcher processors processed only 66 percent of what they had in 1991, while motherships processed 86 percent of their 1991 total. One factor mentioned by both catcher processor and mothership operators is that mothership catcher vessels can fish within the CVOA, whereas catcher processors cannot during B Season. Also commonly mentioned was the relatively good fishing weather in the past several years (bad weather would tend to penalize the harvesting ability of the catcher vessels delivering to the motherships, while catcher processors could still fish effectively). One mothership participates in a CDQ partnership, but so do five catcher processor operations. There is no doubt that CDQ participation is a competitive advantage for any one operation over another, but is not necessarily a determining factor for success within or between sector operations (catcher processor, mothership).

Dependency Tables Int-8 and Int-9 above indicate that motherships are heavily dependent on pollock, as would be expected from the characteristics of mothership operations displayed in Table MOTH-1. Hake, or Pacific whiting, is the other significant species and, even though it accounts for much less of mothership volume and cash flow than pollock, it is still quite significant. While the catcher vessels delivering to motherships all have long histories in the Bering Sea pollock fishery, each mothership catcher vessel fleet is also designed to ensure access to the hake fishery. The hake fishery is limited entry, so that the mothership catcher vessels must have the required permits. In addition, there is a tribal hake fishery, and one of the motherships gains access to this fishery through two vessels which are owned and operated by tribal members.

Table MOTH-1
Mothership Sector Vessel Characteristics

Vessel	Length	CVs			Species used	Employment[a]		
		Owned	Independent			Mothership	Office	CVs
			Alaska	Pacific NW				
A	280	2	2	1	pollock hake	77-120	5	25-32
B	367	0	1	5	pollock hake	100-140	9	30-38
C	635	0	0	8[b]	pollock hake	190-221	11	40-50

Products -- all entities produce surimi, pollock roe, and fishmeal. Fillets have been attempted in the past by various operations with various species, but to all intents and purposes all are now specialized surimi and roe operations.

[a]Estimates by mothership managers.
[b]Seven vessels are members of a cooperative owning the mothership, one is independent.
Source: IAI 1994; 1998 interviews

2.3.2 Personnel and Employment

Detailed characteristics of mothership employees were not available. Rough estimates from interviews with individual mothership managers are included in Table MOTH-1 above. More systematic information aggregated for the three motherships, compiled by the industry, was provided to the researchers and the NPFMC following the April, 1998 meetings as requested by the researchers. Unfortunately, it was not possible in the time between receipt of these figures and the release of the public review draft to ensure that these data were compiled in a means methodologically consistent with the employment data for other sectors. That is, these data were not audited (as in the case of the catcher processor employment data), nor aggregated from individual entity data by the researchers or derived from a governmental database (as was the case for the other sectors portrayed in this document). This being the case, it was decided not to include these figures in this document. The numbers that industry provided were consistent with those in Table MOTH-1 and, based on a knowledge of the sector itself, are without a doubt more accurate. Given the interpretive restrictions that result from the methodology of their compilation, however, these figures are not included in the main body of this document, though it is the understanding of the researchers that they will be available to the interested reader of this document in the public comment section. The composition of the work force in terms of state of residence was not available.

Mothership employees are reported to come form "all over" and, other than for the CDQ participant, no special attempts were reported by any of the operations to specifically recruit Alaskans as a target or goal (although some recruiting has taken place in Alaska). Even the CDQ participant operation indicates that most of its employees are non-Alaskans, again due to lack of turnover and its long history of participation in the fishery, based out of Seattle.

Overall turnover was reported to be low, and job satisfaction high. The one mothership which participates in a CDQ partnership reserves 20 entry level positions for CDQ community residents, and has no trouble filling them. The rate of return to these positions is not yet clear, since this is a fairly new undertaking, but experienced workers do seem to return for later trips. In addition, some of these experienced workers have advanced to other positions, "freeing" an entry level position for another CDQ community resident. This CDQ group also places members with the other motherships, some catcher processors, and even with shore plants (although relatively few, and relatively unsuccessfully -- see brief CDQ discussion below). Of note here is that the CDQ group must place these people elsewhere because turnover on their partner's mothership is so low that positions for them do not exist on that vessel. Since they prefer work, reportedly, on motherships, this could be indirect measure that turnover on other motherships is relatively low as well.

2.3.3 Mothership Operations and Sector Dynamics

Mothership operations have perhaps been the most stable of the Bering Sea pollock fishery sectors since 1991, although this may be partially an artifact of the three years used for the time series data. The number of operations for these three years (but not necessarily the years in between) has remained the same, processing approximately the same (or somewhat higher) percentage of the overall pollock harvest, although there has been a decrease in the absolute value of the poundage of pollock processed annually. The number of catcher vessels delivering to the motherships is approximately the same as in 1991. A substantial number of the catcher vessels themselves are the same, although some operations have had more changes in that respect than others. Mothership catcher vessel operations are in some ways highly variable by operation, and in others are similar. For the most part these operations are discussed in the catcher vessel sector description.

Mothership operations could be affected by the proposed actions in two ways -- by a change in the size of the pollock allocation for which they fish, or by a change in their classification as "offshore" operations. The effects of the first are fairly simple to evaluate. Motherships currently process about 10 percent of the total Bering Sea pollock harvest. Any shift of TAC allocation away from motherships that would provide a significant positive benefit to some other sector could be fatal for one or more mothership operations. As they currently operate, all of the motherships claim that they are essentially breaking even. Catcher vessels are apparently providing an adequate income for their owners, skippers, and crews -- but this is an expense for the processing mothership. One of the motherships is partially vertically integrated with its catcher vessels, but has no plans to increase the extent of this vertical integration. One mothership demonstrates a "negative vertical integration" in that the catcher vessel owners are shareholders in a cooperative that owns the mothership, a reverse of the type of vertical integration pattern seen between processing and catcher vessel entities for shoreplants.

At present, motherships share a Bering Sea pollock allocation with catcher processors as part of the offshore sector. Since the implementation of inshore/offshore, motherships as a 'subsector' have been able to compete with catcher processors and in essence maintain "their share" of the pollock resource. If motherships were to remain a component of the offshore sector, with a reduced allocation, it would be expected that motherships would continue to compete with catcher processors and thus would experience about 15 percent of whatever the overall offshore allocation decrease was (catcher processors experiencing the other 85 percent -- in the event of an allocation shift to offshore, motherships would experience about 15 percent of the gain). Thus a shift of 5 percent of the pollock TAC away from the offshore sector would represent a change for motherships from 10 percent of the TAC to 9.25 percent of the TAC, and a potential loss of 7.5 percent of its pollock gross revenues, which is its main revenue stream. Catcher vessels may be able to absorb the "lost" deliveries that this would represent, in terms of lower vessel earnings, but the mothership may not be able to do so.

Motherships operators have also expressed a fear that, if push came to shove, or if weather and fishing conditions do not continue to be as favorable as in the past, that they may not be able to continue to compete successfully with the catcher processor sector. Motherships cannot increase their level of effort. That is one reason the mothership sector has been relatively stable. Their factories are limited by the space they have available, and the number of catcher vessels they take deliveries from is limited by their factories. Mothership operators also point out that, while they share some of the operating characteristics of catcher processors, their overall mode of operation is closer to that of shore plants. They are mobile, like catcher processors, but must buy all their fish from catcher vessels who deliver to them, like shore plants. Further, in bad fishing weather or in years when the fish are found only in deeper waters, motherships are at a disadvantage in relation to catcher processors. The relatively small catcher vessels which deliver to motherships cannot fish in the sort of rough weather that catcher processors can, and are not as effective fishing deeper waters. One operator worried that one season of bad weather could wipe the mothership sector out. Thus, the alternatives that mothership operators tended to talk about the most were those which moved their operations to the inshore sector (along with a quota allocation that represented at least their historical pollock share, using the same logic as above) or the establishment of a separate mothership category with its own quota allocation (again representing at least its historical pollock share).

Mothership operators think that they would be able to adequately compete with shore plants, if they were made part of the inshore sector and were thus fishing on the same quota. Mothership operators believe that they share the same sort of cost structure as a shore plant, and their delivery fleets operate in much the same way. Most mothership operators initially expressed no strong preferences for a separate mothership sector or for motherships to be part of the inshore sector, but most eventually expressed a somewhat stronger preference for a separate mothership sector. This seemed to be based not only on the differential effects that the two alternatives would potentially have on mothership operations themselves, but also on their potential differential effects on other sectors, due to motherships possessing different operating characteristics form both catcher processors and shore plants. As part of the inshore sector, motherships would of course share in any gain (or loss) of quota share by that sector, and felt confident that they could compete with shore plants. They felt that to prevent any future conflicts due to perceived shifts in percentages of total pollock harvested due to different operational structures that they should be split apart from both catcher processors and shore plants. As a separate sector they would be guaranteed a certain total amount of pollock and could potentially establish some sort of cooperative on the model of the Pacific whiting fishery, although they admit the conditions are not quite the same because of the number of catcher vessels involved.

The one concern that was most commonly expressed was that if motherships were moved from the offshore sector, either to the inshore sector or their own category, then some provision would need to be made to protect existing motherships from new entrants. They pointed out that all other operators in the fishery were protected by a moratorium and limited entry, but that at present any catcher processor can declare itself a mothership. As long as catcher processors and motherships are fishing on the same quota there has been little incentive to do this. If motherships obtain their own quota, or are placed with shore plants, there may be some incentive for some catcher processors to "switch" sectors and try to operate as motherships. Thus, mothership operators would want a fairly rigid definition of mothership -- not so much to preclude other mothership operations entering the fishery, so much as to close the "loophole" which allows catcher processors a flexibility that no other operator in the fishery possesses. This was also perceived as a potential problem, perhaps even a more severe problem, if motherships were recategorized as "inshore" along with catcher processors. This would potentially open up a larger "slice of quota" to attract additional mothership operators.

Perhaps because of the apparent stability of the mothership sector since 1991, there appears to be little objection to the establishment of a separate mothership sector, at least as a hypothetical construct, as long as the quota assigned to such a category did not come at the expense of some other sector. That is, the quota assigned should reflect the "historical percentage" of the Bering Sea pollock fishery processed by motherships. Since that is the minimum that mothership operators would want, and the maximum that other sector participants are likely to allow, the only remaining question would be on how to determine the proper percentage. Most people seemed to agree on an approximate value of 10 percent (reflecting the 1996 season).

Potential effects of any proposed changes (both positive and negative) upon mothership operations are most likely to be expressed in Seattle, where these operations are based. The full extent of these effects would be difficult to predict. The effects on the operation as a whole would be to shorten the period of processing by various amounts of time, up to an extreme case where the operation would cease to operate altogether. Because of the competitive nature of the fishery, it is assumed that motherships will continue to operate at full capacity, as long as they continue to operate at all. That is, a mothership would not reduce its labor force and catcher fleet to scale down operations if its access to pollock quota were restricted -- it would essentially experience a shortened season. Bering Sea pollock would still be an Olympic system. Thus, a mothership's labor force would be faced with reduced earning potential, but approximately the same number of people would be employed. If the worst were to happen and a mothership were to cease to operate, it does not appear likely that it would return to the fishery with new operators. In this case, some people would be at least temporarily displaced. While motherships reportedly have fairly stable labor forces, the skills this labor force possesses would make it reasonably possible for them to find alternative employment in the fishing industry, should they so choose. Because of the close coordination of one of the mothership with its pollock CDQ partner, any changes in this mothership's operations would also likely affect its CDQ partner, at least in the short term. However, the CDQ arrangement is renegotiated or rebid every three years, and new partnerships can be formed.

2.4 BERING SEA POLLOCK CATCHER VESSELS

While catcher vessels (CVs) are not an Inshore/Offshore sector in the allocative sense, they are an industry sector which will be potentially substantially affected by whatever decision is made for I/O-3. Some CVs, as noted in previous sections, are owned and/or controlled by other inshore or offshore processing related entities, and some are independent operations. In terms of deliveries, some catcher vessels deliver offshore exclusively, some deliver onshore exclusively, and some deliver to both[7] primary sectors. This section will deal, at least in general terms, with vessels in all three 'subsector' categories.

2.4.1 Overview

As for other sectors, the previous sector description document (IAI 1994) was much broader in its discussion than this section will be. That document dealt with 155 trawl and an additional number of miscellaneous vessels participating in fisheries in 1992, as opposed to the 83 (in 1991) to 117 (in 1996) catcher vessels which reported some harvest of Bering Sea pollock. For I/O-3, information was collected and analyzed in terms of three length categories -- less than 125 feet, 125 feet to 155 feet, and greater than 155 feet.

Four trawl categories were used for the 1994 work, but the pollock catcher vessels to be discussed here fell into three of them. TH1 was the code used in 1994 to indicate trawlers greater than 125 feet that may also use pots. They are primarily midwater trawlers with large auxiliary engines, generally with the capability to deliver both onshore and offshore. Owners are typically not Alaskan, vessels require 100 percent observer coverage, and most have three licensed officers on board. This 1994 category is a combination of the I/O-3 two larger size categories. TH2 was the code used in 1994 to indicate trawlers between 90 and 125 feet that may also use pots. They are primarily midwater trawlers with large auxiliary engines, but generally do not have the capacity to deliver large amounts of fish onshore. Owners are typically not Alaskan and vessels require 30 percent observer coverage. This 1994 category consists of the larger vessels in the smallest I/O-3 size category. TH3 was the code used in 1994 to indicate trawlers between 58 and 90 feet that may also fish with longline gear and/or pots. They are more likely to use bottom trawl gear than mid-water trawl gear since they generally lack large auxiliary engines. Ownership is concentrated in Alaska (Kodiak) and the Pacific Northwest. This 1994 category consists of the smaller vessels in the smallest I/O-3 size category.

[7] As noted in the introductory section, the category of catcher vessels that deliver to 'both' inshore and offshore sectors is an analytic construct. At the time of the production of the draft of this document, data were not available to 'filter' the delivery volume data to determine, among the vessels that reported both inshore and offshore deliveries, whether they were 'primarily inshore' or 'primarily offshore' or nearly even in their delivery volumes. This issue arose during the AP session of the April 1998 NPFMC meetings, but the data could not be recast and rerun prior to the release of this document.

The length categories of interest for IO-3 thus crosscut those used for the 1994 document, but our discussion will be able to use both to a degree. Table CV-1 presents size class information on Bering Sea pollock catcher vessels for 1991, 1994, and 1996 by both sets of size categories. Most catcher vessels harvesting Bering Sea pollock fishery from 1991-1996 fell into the 1994 "TH2" category, with significant numbers of vessels (20 to 33) 90 feet or less in length (almost all between 72 and 90 feet) and about an equal number (20 to 28) 125 feet long or longer.

Another potential area of interest for us was to determine if the inshore/offshore processing categorization was paralleled in the harvesting (catcher vessel) sector. This area of inquiry was initially examined through the harvest data files provided to us for analytical purposes through the NPFMC, with Table Int-5 as one summary result (from which the catcher vessel component is reproduced below as Table CV-2). The information available for analysis had certain limitations. The most notable was that the amount of pollock which catcher vessels harvested and delivered offshore (to motherships or other entities) is not readily available (although NPFMC staff provided us with a total sector estimate for 1996, displayed as a component of Table Int-10). Thus, we were able to determine which catcher vessels delivered pollock offshore, but not how much pollock. Such information on the vessel level is confidential in any event, although we were able to use better estimates of onshore delivery to form a rough "ranking" of catcher vessels in terms of weight of onshore delivery of pollock. As could be expected, this was related to such power/capacity factors as overall size, horsepower, and hold capacity. In any event, the incomparability of the quantitative catch information available for catcher vessels forced us to count any vessel which delivered any amount of Bering Sea pollock as a Bering Sea catcher vessel. Thus some vessels which seldom, if ever, actually target pollock may be included.

Table CV-1
Length of Catcher Vessels Reporting Harvest of Bering Sea Pollock--1991, 1994, 1996
By Size Category (License Limitation 1994, Inshore/Offshore 1998)

	Size Category			
I/O-3 Category	S		M	L
1994 SIA Category	TH3	TH2	TH1	
Length (feet)	<91	91-124	125-155	>155
YEAR				
1991	21	42	15	5
1994	20	44	17	11
1996	32	57	20	8

Source: IAI 1994; electronic data file provided by NPFMC

Table CV-2
Numbers of Catcher Vessels Participating in the Bering Sea Pollock Fishery, Categorized in Terms of Inshore/Offshore Activity, for 1991, 1994, and 1996

Catcher Vessel delivering	Year					
	1991		1994		1996	
Inshore Only	64	83	58	92	76	117
Offshore Only	16		16		24	
Both	3		18		17	

Source: NPFMC-supplied data files. These files required manipulation to prevent double-counting of vessels. Any vessel which harvested any amount of Bering Sea pollock was counted. This may have "inflated" their numbers somewhat. In some cases information was lacking to adequately identify a harvest data record with a vessel, so that a slight undercount is also a possibility.

Examining the catcher vessel numbers from year to year, there are several striking changes of note. The number of catcher vessels reporting the harvest of Bering Sea pollock has increased steadily, growing by 11 percent from 1991 to 1994, and by 27 percent from 1994 to 1996. Catcher vessels delivering only to onshore processors numbered 64 in 1991, declined to 58 in 1994, and increased to 76 in 1996. Catcher vessels delivering to offshore processors numbered 19 in 1991, increased to 34 in 1994, and increased further to 41 in 1996. For 1991, 3 of these "offshore catcher vessels" also delivered pollock to onshore processors, increasing to 18 vessels in 1994 and 17 vessels in 1996.

The number of "offshore catcher vessels" in 1991 matches the number reported to deliver to the three mothership operations fairly well (i.e., the number of catcher vessels delivering to other vessels in the offshore sector -- the catcher processors -- would be very small). The three catcher vessels that delivered to both offshore and onshore processors were not documented, but may have made only incidental deliveries to one sector or the other. This is the likely explanation for the change in numbers from 1991 to 1994. Vessels delivering only to onshore processors actually declined, while those delivering to both sectors increased greatly, while dedicated offshore catcher vessels remained at their 1991 levels. This suggests that both catcher processors and catcher vessels were experimenting with offshore delivery in 1994 -- catcher vessels making a supplemental delivery to a catcher processor when their onshore delivery schedules permitted, and catcher processors taking an occasional delivery to maximize their factory throughput. Mothership catcher vessels were more likely than not to deliver pollock only to their offshore processor (especially if the mothership had another fishery in which to utilize the catcher vessels after the pollock season). Other catcher vessels may have fished primarily for catcher processors. Several catcher vessel operators suggested that some of this pattern resulted from the simple fact that in 1991 there was no inshore/offshore split and that all vessels fished the same open access season, whereas in 1994 the offshore season closed earlier than the onshore season. Thus those catcher vessels which had been delivering to offshore processors (and especially catcher processors) could also develop a "windfall" onshore market during the period after offshore had closed and onshore was still open. Thus, it is likely that in 1994 the apparent increase in offshore delivery by catcher vessels was a combination of the growing interest by catcher processors in at-sea delivery from catcher vessels, and the disjunction of the inshore and offshore pollock seasons. It is not clear if overall catcher vessel harvesting effort actually increased in 1994 relative to 1991, since our counts are based on any Bering Sea pollock harvested, and not whether it was a primary fishing activity of that vessel.

The changes from 1994 to 1996 further support this interpretation. More catcher vessels (24) delivered pollock only to offshore processors in 1996. Of these, 14 delivered only to motherships (and 3 other mothership catcher vessels delivered pollock both offshore and onshore), so that about 10 catcher vessels were dedicated to delivery to catcher processors in 1994. An additional 15 catcher vessels probably delivered to both catcher processors and shoreplants. Overall catcher vessel effort was probably increased from earlier years, although again this is uncertain. The length of the Bering Sea seasons was shorter in 1996 than in 1991, but more for the offshore sector than for inshore.

The tables which follow present information on the residency of catcher vessel owner/operators that is known to be redundant. They are included because of the unreliable nature of much of this information in current vessel databases. In one database in which most included vessels had several entries, more than one vessel had entries with different states listed for residency indicators. Still, with those qualifications, residency information was reasonably consistent from one record to another. Table CV-3 is a rough-and-ready table to indicate the degree to which the three indicators of residence of vessel owner/operator tended to agree. As can be seen, the degree of agreement was quite high. The shaded blocks indicate cases of "perfect matches" -- where residence of owner = homeport of vessel = city of vessel. It is clear that most vessels are owned in the Pacific Northwest. It also appears that those boat owners who claim Alaskan residence generally have an Alaskan homeport, whereas owners with a residence of other than Alaska are more variable, although they also have a strong tendency to homeport in their home state. The right side of the table does have more cells filled in than the left, however, and definitely has more "mismatches."

Table CV-3 Reported Homeport by Two Indicators of Residence of Owner of Vessel for Catcher Vessels Delivering Onshore									
Homeport	Vessel State by Resident=Alaska				Vessel State by Resident=Other				Vessel State = Unknown and Resident= Unknown
	AK	CA	OR	WA	AK	CA	OR	WA	UN
1996									
Alaska	15				6	2		2	2
California						2			
Oregon							20	1	1
Washington							1	60	4
UN									
1994									
Alaska	8				5	2		2	3
California						2			
Oregon			1				8	1	
Washington				1	1	2	1	51	4
1991									
Alaska	6				7	2		3	
California						3			
Oregon							10	1	
Washington	2			2			2	45	

NOTE: Shaded blocks are "perfect matches" where residence=homeport=vessel state
Source: Electronic data file provided by the NPFMC

Table CV-4 summarizes the number of catcher vessels by length categories by year in a simpler format than Table CV-1. It clearly indicates that Bering Sea catcher vessels are predominately less than 125 feet in length. The increase in catcher vessel numbers from 1991 to 1994 was almost totally in large and medium sized catcher vessels, the majority of which delivered both to onshore and offshore processors that year. It is likely that these vessels delivered predominately onshore, however. From 1994 to 1996, catcher vessel numbers again increased, but almost totally in the small vessel category, with most of these vessels delivering onshore, but a number delivering offshore (almost certainly to catcher processors), and a few delivering to processors in both sectors.

Table CV-4 Catcher Vessels by Delivery Mode and Length, by Year									
Year (total # of boats)	Delivery Mode by Length Category								
	Small (<125')			Medium (125-155')			Large (>125')		
	ON	OFF	BOTH	ON	OFF	BOTH	ON	OFF	BOTH
1991	44	16	3	15			5		
(83)	63			15			5		
1994	38	16	10	12		5	8		3
(92)	64			17			11		
1996	55	22	12	14	2	4	7		1
(117)	89			20			8		
Source: Electronic data provided by NPFMC									

Tables CV-5a through CV-5c are fairly self-explanatory, demonstrating that the vast majority of vessels participating in the Bering Sea pollock fishery originate in the Pacific Northwest, and especially in Seattle and the greater Seattle area. Again, while this discussion is much more focused than the 1994 SIA trawl catcher vessel sector, the discussion of TH2 and TH3 coded vessels in that document establishes the Pacific Northwest, and more specifically Washington, as the community of orientation (ownership, repair work, crew recruitment). On the other hand, the 1994 document used vessel information which indicated that none of the vessels had a homeport in the Pacific Northwest, whereas the data files provided by the NPFMC for the current analysis indicate that most of the vessels claim to be homeported in the Pacific Northwest. There is no clear explanation for this difference, other than that this is an area of very soft information. Besides Washington, a significant number of vessels as listed from communities in Oregon (Newport, for example), but data were not readily available to pursue the documentation of these number of vessels. When the pollock harvest attributable to each of these collections of vessels is examined, it becomes more obvious that Washington state (and the Seattle area) is the major region of orientation for this sector. Vessels with Washington state ownership, a Washington state homeport, or a Washington state "vessel state" record account for about 75% of the Bering Sea pollock delivered onshore. As might be expected, larger catcher vessels are disproportionately from the Pacific Northwest, and more specifically from Washington state. The 1994 document included the Gulf of Alaska pollock fishery, among others, and included information on many vessels in the 75 foot to 110 or 125 foot range that did not fish the Bering Sea. Oregon vessels also tend to be in the smaller size category.

The 1994 document discusses the seasonal round of trawl vessels as of 1994, and the evolution of the fishery to that point. The discussion there of what are termed TH1 and TH2 vessels is the most pertinent (although some current Bering Sea pollock catcher vessels are also "large TH3" vessels). Few catcher vessels operating in the Bering Sea are less than 80 feet, but the flexibility and economic operating characteristics of vessels in Bering Sea fisheries have apparently resulted in a preference for vessels less than 125 feet in length among newer entrants into the pollock fishery -- or it may be that this is the niche available for those with recently unused licenses.

Table CV-5a
Catcher Vessels by Residence of Vessel Owner
by Delivery Mode and Length of Vessel (1991, 1994, 1996)

Year	Res	Delivery Mode by Length Category								
		Onshore			Offshore			Both		
		S	M	L	S	M	L	S	M	L
1991	Alaska	8			1			1		
	Other	36	15	5	15			2		
1994	Alaska	8			1			1		
	Other	27	9	8	14			9	5	3
	Unknown	3	3		1					
1996	Alaska	8			5			2		
	Other	44	12	7	16	1		10	4	1
	Unknown	3	2		1	1				

Source: Electronic data file provided by NPFMC

Table CV-5b
Catcher Vessels by Homeport State of Vessel
by Delivery Mode and Length of Vessel (1991, 1994, 1996)

Year	Homeport State	Delivery Mode by Length Category								
		Onshore			Offshore			Both		
		S	M	L	S	M	L	S	M	L
1991	Alaska	10	6		1			1		
	California	2			1					
	Oregon	10			1					
	Washington	22	9	5	13			2		
1994	Alaska	11	3		1			3	2	
	California				1			1		
	Oregon	8			2					
	Washington	19	9	8	12			6	3	3
1996	Alaska	15	3		5			2	2	
	California	1			1					
	Oregon	17			3			2		
	Washington	22	·11	7	13	2		8	2	1

Source: Electronic data file provided by NPFMC

Table CV-5c
Catcher Vessels by Vessel State of Vessel
by Delivery Mode and Length of Vessel (1991, 1994, 1996)

Year	Vessel State	Delivery Mode by Length Category								
		Onshore			Offshore			Both		
		S	M	L	S	M	L	S	M	L
1991	Alaska	10	3					2		
	California	2	2		1					
	Oregon	11						1		
	Washington	21	10	5	15					
1994	Alaska	9	1					3	1	
	California		1	1	1			1	2	
	Oregon	9			1					
	Washington	17	7	7	13			6	2	3
	Unknown	3	3		1					
1996	Alaska	13	1		5			2	1	
	California	1			1				2	
	Oregon	16			2			3		
	Washington	22	11	7	13	1		7	1	1
	Unknown	3	2		1	1				

Source: Electronic data file provided by NPFMC

2.4.2 Vessel Operations (Shoreside Catcher Vessels)

Vessel operations are quite similar for many of the vessels represented in interviews which make deliveries to inshore processors. Many of the vessels have undergone a number of changes during their years of operation, including moving between gear types and having structural alteration work done. A number of these vessels began as crabbers, and then were converted either to trawl vessels or to combination trawl and pot boats. For example, one current 148' vessel, set up for bottom and mid-water trawl, was lengthened from 123' and "repowered" at the same time. With the conversion, the vessel had 50% more capacity and horsepower than it did previously. Like a significant number of other vessels in this class, this particular vessel began as a crabber, and with each successive modification has become more narrowly focused on trawling. Other vessels enjoy varying degrees of flexibility in their operations, depending upon their individual configurations. While these vessels were inherently flexible in design at the time of construction the installation of extensive trawl gear makes season to season conversion problematic for some vessels.

Currently, the typical annual cycle for a pollock catcher vessel is to fish the "A" and "B" seasons in the Bering Sea as the primary effort. Vessels do a variety of things during other times of the year, and this varies from vessel to vessel. Some "do some salmon tendering during the summer." Others concentrate on crabbing during the non-pollock seasons, though there is variability here as well, with at least some vessels "stepping out" of pollock fishing during "A Season" to catch opilios. Whether or not this is 'worth it' is reportedly based on a number of different factors, including the specific prices of pollock and opilio and, more importantly, the configuration and capacity of the individual vessel. Put most simply, what is good for the larger trawl vessels is not always good for the smaller vessels when it comes to making diversification decisions between pollock and other species, particularly given that pollock requires a high-volume turnover due to its low price per pound. One skipper noted that while he used to trawl for cod, he has not done that for two years, switching to opilio during that time. Another skipper noted that while they concentrate on pollock, they also fish king and bairdi crab, as well as cod and bycatch, as "fishing whatever it takes to make it is the reality now." Some vessels also participate in fisheries off the Oregon-Washington coast for part of the year. Since the 1994 sector profile, there does appear to have been some specialization, especially with the largest size catcher vessels. These are designed specifically to deliver pollock efficiently to shore plants, but are not as efficient for other fisheries.

It should also be noted that the changes seen in CV ownership patterns also influences the movement of vessels between fisheries. That is, more CVs are now owned by shoreplants than was the case in the past, and decisions on how to fish those vessels take into account the need to both keep the vessel and the plant profitable – but the relative importance of that balance in the decision making has taken on a different aspect with joint ownership/management. During interviews, for example, a number of skippers noted that with common ownership, plant operators may be making more long-range, strategic decisions regarding individual vessel operations than may have been possible when the vessel was owned and operated as an independent boat (with more acute seasonal cash-flow concerns).

Some efforts at diversification among pollock trawl vessels have not been successful, while others are less than desirable but have worked. One vessel that is set up primarily as a pollock boat reported that they "have tried cod in the past, but that did not work out. In general, the bottom trawl is in trouble; there are bycatch problems that are not going to go away . . . We also tried yellowfin sole, but there is a dismal market for that." One skipper noted that for his vessel in particular, "fishing is changing . . . [the] seasons are so much shorter now. Pollock fishing is what would prefer to do . . . [we] wouldn't want to crab if didn't have to. We have fished crab for the last three years. For the six years before that we did not crab." According to one trawler skipper, the increase in crabbing by trawlers has not gone unnoticed by those vessels that specialize in crabbing. He remarked that "crabbers and trawlers are like oil and water."

Typically pollock catcher vessels go to Unalaska/Dutch Harbor for services and small repairs, and to the Pacific Northwest area for maintenance and repair on an annual basis during a lull in the fishing seasons. Increasingly, maintenance schedules are starting to be spaced out, with major work in the Pacific Northwest for some vessels taking place every 18 months or two years now, rather than annually as was common in the past. According to interview data, the change toward more corporate ownership of CVs (linking them to shoreplants) has also influenced the frequency of trips to the Pacific Northwest (PNW), as more off-season light maintenance is performed in conjunction with, and at, the shoreplant facilities.

Table CV-5d
Catcher Vessels Bering Sea Pollock Harvest by Residence of Vessel Owner
by Delivery Mode and Length of Vessel (1991, 1994, 1996)
(% of Yearly Onshore Catcher Vessel Harvest)

Year	Res	Delivery Mode by Length Category								
		Onshore			Offshore			Both -- SEE NOTE		
		S	M	L	S	M	L	S	M	L
1991	Alaska	13177 (4%)						14380[a]		
	Other	157504 (44%)	109332 (31%)	76668 (21%)						
1994	Alaska	18652 (5%)						***		
	Other	133059 (37%)	98130 (28%)	64159 (18%)	Information Not Available			36857	40800	44192
	Unknown	19074 (5%)	23213 (7%)							
1996	Alaska	14706 (4%)						***		
	Other	165344 (43%)	107712 (28%)	73309 (19%)				10161	21324	***
	Unknown	20343[a] (5%)								

NOTE: Delivery information for vessels which delivered both onshore and offshore includes ONLY onshore deliveries, as information for offshore catcher vessel deliveries is not available.
*** Information suppressed due to small number of entities in cell
[a]Cells combined to increase number of entities in cell
Source: Electronic data file provided by NPFMC

Table CV-5e
Catcher Vessels Bering Sea Pollock Harvest by Homeport State of Vessel
by Delivery Mode and Length of Vessel (1991, 1994, 1996)
(% of Yearly Onshore Catcher Vessel Harvest)

Year	Homeport State	Delivery Mode by Length Category								
		Onshore			Offshore			Both -- SEE NOTE		
		S	M	L	S	M	L	S	M	L
1991	Alaska	30100 (8%)	41808 (12%)		Information Not Available			7400		
	California	***								
	Oregon	20548 (6%)								
	Washington	119077 (33%)	67524 (19%)	76668 (22%)				6980		
1994	Alaska	43116 (12%)	32684 (9%)					7138	***	
	California							***		
	Oregon	22251 (6%)								
	Washington	105418 (30%)	88659 (25%)	64159 (18)				26784	22753	44192
1996	Alaska	42503 (11%)	25238 (7%)					***	***	
	California	***								
	Oregon	34726 (9%)						***		
	Washington	105018 (28%)	96490 (26%)	73309 (19%)				9099	***	***

NOTE: Delivery information for vessels which delivered both onshore and offshore includes ONLY onshore deliveries, as information for offshore catcher vessel deliveries is not available.
*** Information suppressed due to small number of entities in cell
*Cells combined to increase number of entities in cell
Source: Electronic data file provided by NPFMC

Table CV-5f
Catcher Vessels Bering Sea Pollock Harvest by Vessel State of Vessel
by Delivery Mode and Length of Vessel (1991, 1994, 1996)

Year	Vessel State	Delivery Mode by Length Category								
		Onshore			Offshore			Both -- SEE NOTE		
		S	M	L	S	M	L	S	M	L
1991	Alaska	26093 (7%)	13177 (4%)					***		
	California	18263[a] (5%)								
	Oregon	22540 (6%)						***		
	Washington	121092 (34%)	78848 (22%)	76668 (22%)						
1994	Alaska	27685 (8%)	***					8565[a]		
	California		***	***				22066[a]		
	Oregon	27812 (8%)			Information Not Available					
	Washington	96214 (28%)	80394 (24%)	64099 (19%)				26784	65518	
	Unknown	19074 (6%)	23213 (7%)							
1996	Alaska	29603 (8%)	***					***	***	
	California	***							***	
	Oregon	33460 (9%)						3076		
	Washington	112857 (31%)	96620 (26%)	73309 (20%)				7085	***	***
	Unknown	20343[a] (6%)								

NOTE: Delivery information for vessels which delivered both onshore and offshore includes ONLY onshore deliveries, as information for offshore catcher vessel deliveries is not available.
*** Information suppressed due to small number of entities in cell
[a]Cells combined to increase number of entities in cell

2.4.3 Vessel Operations (Offshore Catcher Vessels)

There are two sorts of offshore catcher vessels although, of course, they are not necessarily mutual exclusive and can also mix in deliveries to onshore processors. Still, there is a basic distinction between mothership catcher vessels and catcher processor catcher vessels. Mothership catcher vessels tend to deliver only to the mothership, and also tend to participate in as many of the mothership's fisheries (typically "A" and "B" Bering Sea pollock and Pacific whiting) as they can. Not all mothership catcher vessels have permits for all the mothership's fisheries, however, and some mothership catcher vessels will choose to pursue some fisheries of their own choice in the North Pacific rather than go south for Pacific whiting. Most will fish both pollock seasons, and fill in with other fishery activities when the mothership is not active. Some will fish for cod, either for onshore deliver or for catcher processors. Some may crab or tender salmon. As is the case with vessels delivering inshore, individual vessel decisions regarding participation in various fisheries depends on individual vessel characteristics (e.g. flexibility of design, investment in gear, etc.), ownership composition, history of participation in different fisheries, strategic positioning for retention of access to fisheries for the future (i.e., accumulation of catch history), and interests/desires of individual owners, skippers, and crew.

Catcher vessels working with catcher processors are a relatively recent development, and are not universally accepted as a useful innovation or necessary adjunct to catcher processor operations. The primary rationale for their use is to maximize the throughput of the catcher processor's factory, which on a typical catcher processor has tended to exceed the harvesting capability of the catcher processor. Catcher vessels also serve other functions, however. They can scout for fish, and in this way increase the harvesting efficiency of the catcher processor. A catcher vessel can "run errands" for the catcher processor, ferrying parts and people to and from port, and thus maximize the catcher processor's time on the fishing grounds. It is also important to note that the use of catcher vessels varies by 'type' of fishery. As noted elsewhere, no catcher vessels are used by catcher processors for supplemental harvest during the non-open access (i.e., the CDQ) pollock fishery.

There are also times when a catcher processor may take delivery of pollock from catcher vessels on a transient basis, such as when a catcher processor is leaving port from Unalaska/Dutch Harbor (such as after an in-season offload) and is traversing the CVOA (where it cannot fish), it can take on a load of pollock from a catcher vessel and start its factory on the way to the fishing grounds. In this case, the delivery may be from an 'inshore' CV that has the time to make its rotation schedule commitment to the shoreplant, but can supplement its operation with a delivery to a CP.

2.4.4 Ownership and Operations

Ownership patterns of catcher vessels have been changing in the pollock fishery. One trend evident since the 1994 sector profile has been the functional, if not directly ownership-based, vertical integration of catcher vessels into processor operations (shoreplants, catcher processors, motherships). From the vessel skippers or owners interviewed, it would appear that it is not uncommon for the processor or a related or cooperating management entity to have an ownership interest in its catcher vessel delivery fleet, especially for larger vessels. Some vessel owners have taken a less active at-sea role and have instead become more involved in "the business of fishing" as the vessels they own have grown larger and have come to require more logistical and general business support. Some skippers have a partial ownership interest in the vessel. As noted in the Bering Sea inshore processing sector profile, one of the larger shoreplants has historically had a direct ownership interest in a substantial portion of the pollock catcher fleet that delivers to it. In recent years this has become the norm, with all but one of the Unalaska/Dutch Harbor-Akutan onshore processors (or a cooperating/related company) having acquired ownership/management interest in at least a portion of their delivery fleet. (For some processors, the degree of foreign ownership of the company may complicate direct ownership of catcher vessels, hence relationships have developed appropriately structured corporations. In this way processors may effectively assert control over the vessels through relationships with the third party, if not actually own the vessels outright. It should also be noted that minority interest in vessels does not equate to effective control, however, as was pointed out several times during interviews.) This appears to be one adaptation to the intense competition for fish and the need to ensure as predictable a supply of pollock as possible. (Individuals also noted during interviews that such purchasing decisions also take into account the possibility of future changes in pollock management strategies, so that if a ITQ or other system predicated upon catch history were put in place, the processing entities would have access to significant amounts of catch history.)

For independent vessels, contracts with shoreplants for delivery of pollock are common, but the nature of these contracts varies from shoreplant to shoreplant, and may actually only be a mutually understood agreement. The longest contract spoken of in interviews was five years, while others are year-to-year, if not season-to-season, with "escape clauses" in case things go very wrong with the fishery. Longer-term contracts seem to be more common than previously was the case, however, especially for those processors which are not as active in acquiring ownership interests in catcher vessels. Some contracts have provisions in them for the shoreplant (or related company) to essentially have the 'right of first refusal' should the ownership of independent vessels change hands, so as to ensure continued access to the catch capacity the delivering fleet represents.

Shoreplants, and motherships and catcher processors for that matter, schedule the fishing effort of those boats that deliver to them to maximize processing activities and product quality. Thus the controlling variables revolve around (a) not having boats sit idle with fish in the hold or net, while (b) simultaneously providing the plant with a steady stream of fish so as not to have costly processing down time, but (c) not creating a glut in the factory whereby there are too many fish to process before they start to lose quality. While this, for the most part, seems to work as a coordinated, cooperative effort, some interview data suggest that relationships between harvester vessels and shoreplants are not always smooth. While there may be some worries about short weights or other forms of "cheating," more institutionalized sorts of problems are recognized as structural aspects of the fishery. Most processors tend to be "overboated" for the pollock "A" season and relatively "underboated" for the pollock "B" season. The two seasons are generally contracted for together, so that the same catcher fleet is available for both, although pollock tend to be school much more and are caught faster in the "A" season. This means that delivery intervals are generally less optimal for catcher vessels in the "A" season than in the "B" season (i.e., they have the ability to make more deliveries faster than the plant can accept them, so they end up making less deliveries in a given season than they would otherwise be capable of making -- put another way, they have more down time than they would desire when they could be out catching fish that are readily available). Some catcher vessels have taken this as an opportunity to maintain an onshore delivery contract while delivering supplemental loads of pollock to catcher processors during the "A" season. This is less likely to be possible during the "B" season.

Offshore processors differ, at least to some extent, from the onshore sector in regard to this dynamic. Motherships especially seem to take deliver primarily from independent catcher vessels. One motherships owns two of the five (40 percent) vessels in its delivery fleet. The remainder of the mothership delivery fleet (15 of 17, or 88 percent) is independent, as far as we could tell. There has been a large degree of stability in terms of which vessels deliver to motherships, however, which may indicate that "mutual dependence" rather than "independence" may be an appropriate description. While these catcher vessels could seek other markets, they generally assess the market they have as the best possible for their operation, and for the Ocean Phoenix the share-holder catcher vessels have a vested interest in delivering to that mothership. Similarly, motherships could seek other catcher vessels to deliver, but would risk disrupting present operations to do so.

Catcher processors display a pattern of owning a limited number of catcher vessels and hiring others as required. In contrast to mothership catcher vessels, independent catcher vessels delivering to catcher processors stressed that they had to actively develop a market every year. In part, this has been due to the instability of the catcher processor sector. One catcher vessel operator said that although he has essentially fished for the same catcher processors over the years that he has done so for several different companies, and had to negotiate for his services each time. The need of catcher processors for catcher vessel assistance is also much more variable than is that of motherships, since catcher processors harvest most (in some cases all) of the fish that they process. On the other hand, this also allows catcher processors to potentially pay more for the fish that they do buy, making it potentially the most lucrative market for a catcher vessel, and one that is worth pursuing from season to season. This balance of market uncertainty and potential gain makes intuitive sense, although the ability of a catcher vessel to negotiate price is still far from clear in this case.

2.4.5 Crew

Crew compensation is generally on a share basis, based on experience and qualifications, typically with the engineer position getting a somewhat larger share than other deck crew. Crew sizes vary somewhat by vessel, and also vary on an individual vessel based on what is being fished. A typical pollock trawler over 125 feet may carry a crew of five consisting of a captain, one engineer, and two deckhands, plus a cook that is hired by the crew (plus a federal observer on board full-time). Six would also not be unusual, consisting of a skipper, two mates, an engineer, and two crewmen who rotate the cooking tasks. Crews on smaller vessels (to 90 feet) sometimes consisted of as few as four members, but five were more typical. If the vessel fishes crab in addition to pollock, crew may or may not remain the same. A common pattern is to add one or two positions for crabbing, and rotate one or two other positions, although some vessels make no changes. Among those vessels that do change, a common reason given for doing so is that crabbing is more work, and some of the pollock crew are not interested in crabbing. One skipper reported that crew who crab always want to fish for pollock, but not vice versa. The extra man or two hired during crabbing may eventually obtain a full-time crew position on the boat when openings occur, and in this way the seasonal crab position serves as a kind of apprenticeship where the crew can evaluate potential new members.

Interview data suggest that crew composition may be more stable than in the past, but that crew size is also smaller than in the recent past. While crews as a whole were commonly rotated in the past, when fisheries were more lucrative and seasons were longer, there are now only one or two "extra" members of a crew that rotate in and out for different trips. In other words, the number of positions per vessel at any one time may not be down, but there are less crew overall. Whereas in years past a vessel would have two complete crews, none of the vessels contacted during interviews did so today, nor did they report that they had done so for several years. At least some of those interviewed felt that the basic nature of catcher vessel crew dynamics had changed over the years, as people have been in the fishery longer, gotten older, and crew turnover has declined, particularly with the rise in pollock fishing as opposed to crab fishing (and the shortening of the pollock seasons).

Crew is typically from the Pacific Northwest, most frequently from the Seattle area. According to one skipper, crew hires are done from Seattle, where the vessel is "from" rather than in Unalaska/Dutch Harbor where the vessel is (at least nominally) home ported and normally operates because "it works out better that way. Those people that you would find in Dutch Harbor [who are not already committed to a vessel and still available for] hire at the start of the season are 'marginal.'" Working so far from home has both its rewards and drawbacks, according to crew interviews done for the 1994 SIA. The rewards are associated primarily with income and lifestyle, with the drawbacks associated primarily with being away from family and other friends. The perception of these pluses and minuses have changed somewhat with the shortening of the individual seasons, which may mean less lucrative fishing in a greater number of different fisheries instead of more time off.

3.0 ALASKA BERING SEA POLLOCK COMMUNITY LINKS

Essentially, for the purposes of social impact assessment, there are three main categories of communities that have links to inshore and offshore sectors of the Bering Sea pollock fishery. These may be characterized as follows:

- **Communities with well developed socioeconomic ties to both onshore and offshore sectors.** This category is comprised of one community: Unalaska/Dutch Harbor. This community is the number one fishing port in the United States in both in terms of dollar value of catch landed and volume of catch landed, and pollock is a central part of the community's fishery based economy. The community has also seen the development of a significant support service sector in recent years, and this support service sector provides services for a number of sectors engaged in the Bering Sea pollock fishery, including shoreplants, floating processors, catcher vessels, and catcher processors. It is also the shipping hub of the Bering Sea. Because of the central nature of the community to the pollock fishery, the existence of multiple sectors within the community, and a degree of dependence on the fishery not seen in other communities, the community of Unalaska is discussed in a much more comprehensive manner than any of the other Alaskan communities in this document. Indeed, in line with National Standard 8 under the Magnuson-Stevens Act Provisions; National Standard Guidelines, Unalaska is both highly 'dependent' upon and 'engaged' in the fishery. This is particularly true when a sense of scale is applied, and one looks at the importance of the fishery in relation to the overall size of the community, both in economic and social terms.

- **Communities with large shoreplants that are also CDQ communities.** This category is comprised of one community: Akutan. Akutan is quite different from Unalaska in that it is the host community to a single rather than multiple shoreplants, and the 'geo-social' relationship between the plant and the community is of quite a different nature than those found in Unalaska.

- **Communities that are not CDQ communities, have shoreplants that process Bering Sea pollock, but that have no ties to the offshore sector.** These are the communities of King Cove and Sand Point. These communities as a pair also differ from Unalaska and Akutan in that they have historically had a resident fishing fleet that provides product to the local plant.

- **Communities that are CDQ communities and thus have a tie to Bering Sea pollock, but that do not have a physical presence of either the onshore or offshore sector within their community.** There are a number of western Alaska communities that fall under this category. These communities are not discussed in this section, because the inshore/offshore impact issues for those communities are being addressed in another study underway at this time, but CDQ social impact assessment related CDQ issues are raised in a separate discussion within this document.

- **Other Alaska communities with ties to either onshore or offshore sectors.** As discussed in the opening section of this document, there are a number of other Alaska communities that have some tie to the Bering Sea pollock fishery, but that are peripheral to the fishery in relation to the communities mentioned above. These would include Kodiak, were a very small volume of Bering Sea pollock has been processed, and a scattering of other communities that may have ownership or homeport ties to vessels in various sectors. These communities are not treated in this section because shifts in allocation among inshore/offshore sectors are not likely to have significant social impacts in these communities, due to the scale of participation in the fishery (i.e., relative lack of 'dependency' on the fishery).

3.1 UNALASKA/DUTCH HARBOR

Unalaska is in a unique position with respect to the Bering Sea pollock fishery. It is the site of both the most intense onshore and offshore activity. While these two activities differ by nature in the community, and the nature of that difference is the focus of considerable debate, Unalaska is a community whose economy is strongly tied to Bering Sea commercial fisheries in general, and the pollock fishery in particular.

3.1.1 The Community

Unalaska has been variously described as a growing, developing, and maturing community. Whatever descriptor is chosen, during the span of years since the inception of inshore/offshore, Unalaska has seen an impressive amount of community development. The changes that have accompanied this development are both obvious and subtle.

Population

It has always been difficult to ascertain total population figures for Unalaska or, to state it more accurately, it is difficult to interpret and compare the figures given for the population of Unalaska over the years. The contemporary community of Unalaska (and the legal entity of the City of Unalaska) includes a part of Unalaska Island and the entirety of Amaknak Island, a portion of which is commonly known as Dutch Harbor. In this profile we are using the name Unalaska to refer to both Unalaska and Dutch Harbor.[8] Over the years, Unalaska has been a 'less than permanent' home

[8] As noted in the 1991 SIA produced for the NPFMC, "Dutch Harbor" has its own named post office and postal service zip code, the airport serving the community of Unalaska is known as the Dutch Harbor airport (on the site of WWII era Naval Air Station [NAS] Dutch Harbor), and the harbor facility operated by the City of Unalaska is marketed as the "International Port of Dutch Harbor." Because of these and other associations, the portion of the community on Amaknak Island is often referred to as 'Dutch Harbor.' Nevertheless, there is today no separate "community" of Dutch

to many individuals whose length of stay in the community has varied. Some individuals may stay in Unalaska only a fishing season or two; others may stay for many years before moving on. These individuals have been counted in different ways, or not counted at all, in a number of censuses. Caution must therefore be used in interpreting the following table (Table AK-1) which includes total population figures from various sources for the years 1970 through 1997.

Even though the total population of Unalaska has grown, the contemporary community maintains a relatively high transient population. This transient population includes workers at shore processing plants, although this particular population segment is notably less transient as the nature of the business of the shore plants has changed from one characterized by rapid turnover during the King crab processing boom in the late 1970s, though more-or-less year-round processing during the early years of full-scale pollock processing, to the current pattern of marked peaks and valleys coinciding with the pollock seasons, but maintenance of a 'core crew' of year round individuals. (This topic is more fully addressed in the shore plant sector description in this document; the reader is cautioned to keep in mind that the generalizations regarding shore plant employment in this profile apply to 'pollock plants' only unless otherwise noted.)

In addition to the shore-resident (some of whom are short-term residents) population, there are also a number of individuals who may be thought of as a "floating population" associated with the community. These individuals are from fishing fleets, floating processors, catcher/ processors, and freighters that stop at the port of Unalaska for resupply. There are no current estimates of the "floating population," though such a figure was assembled for the year 1990 and is presented in a table (Table AK-2) below. Although not true residents of the community of Unalaska, this "floating population" does have an impact on the community of Unalaska. They are associated with business and revenue generated in and for the city, and with services required of the City. Unalaska is, at least seasonally, where they live and work.

Harbor, as it is fully encompassed by the City of Unalaska. Even the body of water known as Dutch Harbor, from whence the original 'settlement' derived its name, lies completely within the city limits of Unalaska. The existence of the two names Unalaska and Dutch Harbor has proven to be a source of considerable confusion for record keeping and archival research over the years, and this tradition continues to the present: the name Dutch Harbor or simply the nickname "Dutch," is more commonly known and used outside of the community than the official name of Unalaska. The application of the name of Dutch Harbor to the portion of the community on Amaknak Island is a holdover from an early commercial settlement there that was at the time distinct from the contemporaneous residential community of Unalaska. That the present community of Unalaska is physically split between two islands, that these segments were historically socially distinct and, indeed, that they were only relatively recently joined by a bridge, has had many consequences for the community which are discussed elsewhere (Impact Assessment 1983a; Downs 1985). These include residential/industrial utilization patterns and ethnic group interactions, among others. Most of the permanent residents of the community prefer the name Unalaska to be used broadly to include both the Amaknak Island and Unalaska Island portions of the settlement. For the sake of accuracy and clarity, therefore, we include residential and industrial areas on both islands when referring to the community of Unalaska. The differential use of the two names remains an emotional issue for a significant number of residents in the community. Such emotional investment in terminological dichotomies are not unknown elsewhere in Alaska, e.g., the differential use of 'Denali' and 'Mt. McKinley' for the state's (and North America's) highest peak. In the case of the community of Unalaska, the term Unalaska, like Denali, is the term of continuity from the Native Alaskan past; Dutch Harbor, like McKinley, is the term made famous by (primarily non-Native) people from outside the area.

Table AK-1
Unalaska Population
1970-1997

Year	Population	Data Source
1970	342[a]	U.S. Bureau of the Census
1970	475	Jones & Jones, per Surla, 1970
1972	548	Unalaska City Council Census
1973	510	Unalaska City Council Census
1975	417	U.S. Bureau of the Census
1976	510	U.S. Bureau of the Census
1977	725	Alaska Consultants, Inc, 1981
1977	1,971	Tryck, Nyman, and Hayes, 1977
1980	1,322	U.S. Bureau of the Census
1980	1,380[b]	Alaska Department of Labor
1980	1,310	Department of Community and Regional Affairs
1981	1,944[b]	Alaska Department of Labor
1982	1,922[b]	Alaska Department of Labor
1983	1,677[b]	Alaska Department of Labor
1984	1,447[b]	Alaska Department of Labor
1985	1,331	Alaska Department of Labor
1986	1,922	Department of Community and Regional Affairs
1987	1,331	Department of Community and Regional Affairs
1987	1,680	City of Unalaska (a 1997 City source puts the 1987 figure at 1,354)
1988	1,908	City of Unalaska/DCRA
1989	2,265[c]	City of Unalaska/DCRA
1990	3,089	U.S. Bureau of the Census
1991	3,450	City of Unalaska
1992	3,825	City of Unalaska
1993	4,317	City of Unalaska
1994	4,317	City of Unalaska
1995	4,083	City of Unalaska
1996	4,087	City of Unalaska
1997	4,251	City of Unalaska

[a]An example of the difficulty with Unalaska population figures may be seen in this figure. According to a local resident well-versed on the topic, the 1970 census "was done by the census taker from memory, sitting at home, and it was not accurate to any degree" (Impact Assessment 1987:64).
[b]ADOL estimates derived using US Census methodology. Where these figures are the same as those cited by DCRA, ADOL accepted local censuses or estimates (Kevin Waring Associates, 1988:656-7)
[c]The federal revenue sharing population figure was 2,899.

Table AK-2 Estimates of Floating Population Community of Unalaska, 1990			
Vessel Type	Estimated Vessels	Average Crew Size	Floating Population
Trawlers			
Catcher Vessels	110	5	550
Catcher/Processors	60	75	4,500
Floating Processors Only	2	160	
Longline			
Catcher Vessels	100	6	600
Catcher/Processors	20	25	500
Floating Processors Only	16	25	400
Crab			
Catcher Vessels	225	5.5	1,238
Catcher/Processors	25	22	550
Floating Processors Only	13	70	910
Cargo Vessels	350	25	8,750
Total Floating Population			**18,318**

Source: American Trawlers Assoc.; Alaska Crab Coalition; State of Alaska Dept. of Fish and Game; Resource Inventory and Analysis, Volume II, Aleutians West Coastal Resource Service Area, March 1990; The Inshore/Offshore Dispute: Impact of Factory Trawlers on Fisheries in the North Pacific and Proposals to Regulate the Fleet, The North Pacific Seafood Coalition, March 1990; and subsequent consultation with on-site resource Sinclair Wilt, Supervisor, Alyeska Seafoods, Unalaska. (Cited from Professional Growth Systems, Inc. 1990:12).

It should not be assumed that the characterization of Unalaska's "non-transient" population is not without its own difficulties as the nature of the community has changed over the years. Discussion and analytical categorization of the less transient portions of the Unalaska population differ in various publications on the community. In this document, there are some distinctions made between "permanent" residents and"semi-permanent" or "long-term transient" residents of the community. These distinctions are drawn only where they reflect significant differences in viewpoints in, or levels of engagement with, the community.

For the purposes of discussion, "permanent" residents of the community are those individuals for whom Unalaska is their community of orientation, independent of their employment status. "Semi-permanent" or "long-term transient" residents are those individuals for whom Unalaska is now their community of residence, but for whom residency decisions are based virtually exclusively on employment criteria. In other words, a "permanent resident," as that term is used in this document, is an individual who considers Unalaska "home" and is highly unlikely to move from the community due to termination of a particular job. These individuals tend to remain in the community and seek other employment if a specific job ends, and they also typically remain in the community after their retirement from the labor force. A "semi-permanent" or "long-term transient" resident, on the other hand, is an individual who typically has moved to Unalaska for a particular employment opportunity, and is highly likely to leave the community if that specific employment opportunity is terminated for any reason. These individuals may indeed remain in the community for a number of years, but their residency decision making process is predicated on Unalaska being first and foremost a work site. Obviously, the categories "permanent" and "semi-permanent" or "long-term transient" resident are not precise terms, nor do they necessarily correspond to administrative/regulatory decisions about 'official' residency (e.g., whether or not one is classified as an "Alaska resident" employment statistical reporting or taxation purposes) but they are analytically useful where they conform to specific orientations toward the community that serve to shape community politics, development objectives, community perception, and so on.

Ethnicity

Unalaska may be described as a plural or complex community in terms of the ethnic composition of its population. Although Unalaska was traditionally an Aleut community, the ethnic composition has changed with people moving into the community on both a short-term and long-term basis. Not surprisingly, in the latter half of this century, population fluctuations have coincided with periods of resource exploitation and scarcity.[9] For example, the economic and demographic expansion associated with the king crab boom in the late 1970s and early 1980s brought many non-Aleuts to Unalaska, including Euro-North Americans, Filipinos, Vietnamese, Koreans, and Hispanics. The ethnic composition of Unalaska's population for the census years 1970, 1980, and 1990 appears in Table AK-3.

Table AK-3
Ethnic Composition of Population
Unalaska, 1970, 1980 & 1990

Ethnic Group	1970		1980		1990	
	N	%	N	%	N	%
Caucasian	56	31.0%	848	64.1%	1,917	62.1%
African American	0	0.0%	19	1.5%	63	2.0%
Native Alaskan	113	63.4%	200	15.1%	-	-
Aleut	107	60.1%	-	-	223	7.2%
Eskimo	5	2.8%	-	-	5	0.2%
American Indian	1	0.5%	-	-	31	1.0%
Asian/Pacific Islands	-	-	-	-	593	19.2%
Other	9	5.6%	255	19.3%	257	8.3%
Total	178	100%	1,322	100%	3,089	100%

Source: 1970 data, University of Alaska, 1973; 1980 and 1990 data, U.S. Bureau of Census.

[9] The most dramatic population shift of this century, however, was brought about by World War II. The story of the War, and the implications for the Aleut population of Unalaska and the other Aleut communities of Unalaska Island, is too complex and profound for treatment in this limited community profile. It may be fairly stated, however, that the events associated with World War II, including the Aleut evacuation and the consolidation of the outlying villages, forever changed the community and Aleut sociocultural structure.

With the growth of the non-Aleut population, Aleut representation in the political and other public social arenas declined significantly. For example, in the early 1970s, Aleut individuals were in the majority on the city council; by the early 1980s only one city council person was Aleut (IAI 1987:65). If one looks at Aleuts (or Alaska Natives) as a percentage of the total population, the change over the period of 1970 - 1990 is striking. In 1970, Aleut individuals made up slightly over 60% of the total community population (and Alaska Natives accounted for a total of 63% of the population). In 1980, Alaska Natives, including Aleuts, accounted for 15% of the population; by 1990, Aleuts comprised only 7% of the total community population (with Alaska Natives as a whole accounting for 8% of the population). This population shift is largely attributable to fisheries and fisheries related economic development and associated immigration. The fact that there is a "core" Aleut population of the community with a historical continuity to the past also has implications for contemporary fishery management issues. These include the activities of the Unalaska Native Fisherman Association and active local involvement of in the regional CDQ program. While neither of these undertakings exclude non-Aleuts, Aleut individuals are disproportionately actively involved (relative to their overall representation in the community population).

Age and Sex

In the recent past, and particularly with the population growth seen in association with the development of the commercial fishing industry, Unalaska's population has had more men than women. Historically, this has been attributed to the importance of the fishing industry in bringing in transient laborers, most of whom were young males. Table AK-4 portrays the changes in proportion of males and females in the population for the years 1970, 1980, and 1990.

Table AK-4
Population Composition: Age and Sex
Unalaska, 1970, 1980, and 1990

	1970		1980		1990	
	N	%	N	%	N	%
Male	98	55%	858	65%	2,194	71%
Female	80	45%	464	35%	895	29%
Total	178	100%	1,322	100%	3,089	100%
Median Age	26.3 years		26.8 years		30.3 years	

As can be seen in the table, the median age has risen over the years as well. This is commonly attributed to the relative size of the workforce in comparison to resident families. That is, there is quite a large proportion of adult residents included in the census counts who are not raising children in the community, thereby raising the median age. On the other hand, what the median age information does not portray is that older age bracket residents (i.e., those individuals typically past their 'working years') tend to be under represented in Unalaska compared to the general population, as few non-lifetime residents of the community chose to stay in Unalaska in their retirement years.

Another way to look at age information for Unalaska is to look at school enrollments as a ratio of total population. Comparative information for Unalaska and other selected Alaska communities for the FY95 year is presented in the following table (Table AK-5). As can be seen, the ratio for Unalaska shows a very high population to student ratio, compared to the other Alaskan communities listed. For the most recent year data are available for Unalaska (1997), the population to enrollment ratio was 11.17:1. Note that these data are useful for comparative or relative purposes only, as population data and enrollment data are not typically collected at the same time, nor are methodologies necessarily consistent across communities. These data do, however, allow a general look at the population structure in a way that is not often readily apparent with other types of population data.

Table AK-5
Unalaska and Comparative Community School Enrollments: FY 95

City/Borough	Population	Enrollment	Ratio
Anchorage	255,202	45,896	5.56:1
Kodiak	15,481	2,711	5.71:1
Valdez	4,290	903	4.75:1
Unalaska	3,967	356	11.14:1

Source: Unalaska City School District, abstracted from Summary of Alaska's Public School District's Report Cards for the Public School Year 1994-1995.

School district enrollment figures are presented in Table AK-6. This is another indicator of the changing nature of Unalaska's population over the time period portrayed. One can see in the enrollment figures, for example, the enrollment decline that followed the economic decline of the fishing industry in the early 1980s, following the crash of locally important King crab stocks. Enrollments have increased from the late 1980s onward, reflecting two trends, according to school staff. One is the overall growth of the community, and the other is the increase in the number of people who are making Unalaska home for their families.

Table AK-6 Unalaska City School District Enrollment FY 78 - FY 98	
Fiscal Year	School Enrollment
FY 78	133
FY 79	140
FY 80	200
FY 81	186
FY 82	191
FY 83	151
FY 84	140
FY 85	140
FY 86	137
FY 87	159
FY 88	159
FY 89	159
FY 90	225
FY 91	256
FY 92	290
FY 93	330
FY 94	359
FY 95	356
FY 96	353
FY 97	373
FY 98	380 (preliminary figure)
Source: Unalaska City School, 1998	

Housing Types and Population Segments

Household type in Unalaska varies by population segment, although this has changed in recent years. In the early 1990s, it was a truism that virtually all permanent residents lived in single-family dwellings, whereas short-term workers lived in group housing at work sites. This pattern has changed somewhat over the years with the construction of a number of multi-unit complexes not associated with particular employers. It is still the case, however, that processing workers for the seafood plants tend to live in housing at the worksite, and longer-term workers at the shoreplants tend to live in company housing adjacent to worksites. One seafood processor, however, owns multi-family dwellings in what is otherwise primarily a single family residential area, so its workforce tends to be differently distributed geographically than other workforces. Some residents of the community have drawn the distinction, with respect to processing firms, that one is not 'fully' a resident of the community unless one has a private residence in the community (i.e., that the 'test' of 'real' residency is tied to whether or not one lives in company provided housing).. This distinction breaks down, however, when one examines the issue on a detailed level, as a number of companies (and not just seafood firms) provide or subsidize housing for employees in Unalaska both adjacent to and separate from their worksite locations; also, the persons living in such residences may, in fact, stay in the community for considerable lengths of time (outstaying many in 'private' residences) and become centrally involved in community life.

3.1.2 Links to the Pollock Fishery

In the late 1970s and early 1980s the community prospered significantly from the king crab fishery. The crab boom resulted in a dramatic increase in both fishing boats and processors in town. In the mid-seventies there were from 90 to 100 commercial vessels regularly fishing the Bering Sea. By 1979 the number had jumped to between 250 and 280, an increase so dramatic that it was difficult for skippers to find crew members. The king crab fishery subsequently declined precipitously and fishermen and processors alike have had to diversify their businesses in order to survive. One of the avenues of diversification was the pollock fishery, and this fishery has provided an economic mainstay for the community in subsequent years.

The following table (Table AK-7) shows the volume and value of fish landed at Unalaska over the period 1977-1996. This span encompasses the high year of the King crab fishery, and show the decline of the fishery thereafter, and the growth of the pollock fishery. Average value per pound is an artificial figure in that it combines a number of different variables, but it is useful for an overall look at how volume and value have varied over the years (particularly as pollock, a relatively high volume, low value per unit species grew in importance as a component of the community processing base).

The following discussion of the fishing industry is divided into the harvesting and processing sectors, as each has significance for the Unalaska economy and community. A third section provides information on fishing industry support services.

Table AK-7 Volume and Value of Fish Landed at Unalaska, 1977-1996					
Year	Volume		Value		Average Value ($/lb)
	(millions of pounds)	US Ranking	(millions of dollars)	US Ranking	
1977	100.5	-	61.4	-	0.61
1978	125.8	-	99.7	-	0.79
1979	136.8	-	92.7	-	0.68
1980	136.5	3	91.3	10	0.67
1981	73.0	5	57.6	11	0.79
1982	47.0	6	47.8	14	1.02
1983	48.9	9	36.4	15	0.74
1984	46.9	20	20.3	13	0.43
1985	106.3	18	21.3	8	0.20
1986	88.3	9	37.2	10	0.42
1987	128.2	4	62.7	8	0.49
1988	337.3	3	100.9	1	0.30
1989	504.3	2	107.4	1	0.21
1990	509.9	2	126.2	1	0.25
1991	731.7	2	130.6	1	0.18
1992	736.0	1	194.0	1	0.26
1993	793.9	1	161.2	1	0.20
1994	699.6	1	224.1	1	0.32
1995	684.6	1	146.2	1	0.21
1996	579.0	1	118.7	1	0.20

Source: 1980-1996 data from National Marine Fisheries Service data cited in City of Unalaska FY 97 Annual Report (December, 1997). 1977-1979 data from NMFS data as cited in IAI 1991. Average value derived from volume and value data.

Harvesting

The catcher vessel sector description of this report details patterns of geographic distribution of vessels and vessel operations. As noted in that section, one of the trends in recent years has been the dramatic increase in ownership and/or control of harvest vessels by the shoreplants in Unalaska. Prior to this pattern of acquisition, it was accurate to say that no permanent residents of Unalaska were involved in the pollock fishery as vessel owners, nor were any vessels 'home ported' out of Unalaska in the sense of being the community of residence for the skipper and crew. With the changes in ownership patterns have come complexities for the description of the relationship of the harvest fleet to the community. While it is still true to say that no independent fishermen who are permanent residents of the community own pollock harvesting vessels, some pollock harvesting vessels are now owned (partially or wholly) by economic entities based in the community. This change in ownership pattern, while it may have shifted where vessels are homeported or, perhaps more importantly from an economic perspective, spend more of the year, it is still the case that very few, if any, permanent residents of the community work on pollock harvesting vessels.

There is an Unalaska Native Fisherman Association in the community, and that organization has not taken a position on inshore/offshore issues. According to interview data, there are 24 boats in the association, ranging in size from 18' skiffs up to a 68' commercial vessel. None of these vessels participates in the Bering Sea pollock fishery. This association is open to Natives and non-Natives alike, but there is a requirement that members must live in the community eight months per year. Unalaska did not qualify as a CDQ community, but it is an ex-officio member of the Aleutian Pribilof Island Community Development Association (APICDA). This CDQ group is partners with both an onshore and offshore entity, and offers training programs in Unalaska. Though Unalaska is not formally a CDQ community, according to interview data it is in fact where more of APICDA training and other programs are run because of the size of the population it services in the community.

Processing

The shoreplant operations themselves are described in the sector profile for shoreplants. In terms of links to the community, for the purposes of the task at hand, it is important to note that shoreplants have long been a part of the community. That is not to say that relationships between the plants and the community itself have not been without strain at times over the years, but Unalaska is perhaps unique with respect to the communities included in this analysis for the degree of articulation of the plants to the local community. A number of the longer-term residents working at the plants are actively involved in the community, and serve in various elected, appointed, and volunteer capacities with the City of Unalaska and numerous community organizations.

Paradoxically, it has been the case in Unalaska that length of local residency of the workforce employed in seafood processing is inversely related to the vitality of the local industry in general. When the workforce was largest, there were virtually no local hires, particularly of long-term residents. For example, in 1982, at the height of processing capacity for king crab, there were no individuals identified as local residents working in the processing plants. There were a number of reasons cited for that fact at the time, including working conditions, pay rate, and work hours at the seafood plants that were attractive only to temporary transient workers. At that time, workers were hired out of the Pacific Northwest, typically Seattle, and were flown to Unalaska to work on a six-month contract basis. With the downturn in the crab fisheries, companies are no longer able to afford the expenses of a six-month contract system. Some have done away with such contracts and hire workers for an indefinite period of time with incentives for longevity; others hire more out of the Alaska labor pool than in the past. Several other factors influencing local hires in periods of fluctuation should be noted. First, under "boom" conditions there is a range of available employment options for local residents outside of the less appealing processing jobs. Second, when there is a downturn in hires at the local processing plants, virtually all of the workforce at the individual plants consists of returning workers, obviating the need for new hires. Even when six-month contracts were most common, there was always a core of returning workers. Third, setting the lack of long-term resident hires aside, Unalaska is seldom the "point of hire" for processing workers for individuals who are newly arrived to the community. That is to say, people do not come to Unalaska for processing work unless they have already secured a position. It is far too expensive to fly out to the community on the off chance they might gain employment, particularly at relatively low-paying jobs, especially given the fact that there is seldom housing available in the community and that which does come available is relatively expensive. Fourth, it should be noted that a lack of local hire does not apply to all positions with the seafood companies. Management positions at nearly all of the seafood companies (as well as with the major fisheries support sector companies) are occupied by individuals who, if not originally from the community, are at least long-time residents of the community or the region. In a number of ways, the processing industry is a "small circle" in terms of managers, and individuals who have worked for more than one company and have gained ten to twenty years experience in the community and the region are not uncommon. Individual owners and, in the case of "permanently" moored floating processors, even the plants themselves may come and go, but individuals in upper level management positions tend to remain in the business and in the area.

Very few, if any, lifetime residents of the community work at the shoreplants at any one time. There are a number of reasons commonly cited for this, but the most common dynamic involves the high cost of living in the community. Costs are such that it is nearly impossible for a local resident to take an entry level job at one of the plants, and better paying jobs at the plant are typically filled by individuals who have 'worked their way up' within the company. Further, according to interview data, local residents who have tried working at the plants have found that entry level position work schedules are not typically compatible with an active involvement in community and family life outside of the plant.

Fiscal Ties to the Pollock Fishery

Table AK-8 presents general government tax revenues for the City of Unalaska for the fiscal years 1991, 1994, and 1996. Fiscal Year 1997, the most recent year for which complete data are available, is also included. This table gives an idea of the relative proportion of tax revenues attributable to various taxes, including the raw fish tax. This table does not show the peak raw fish tax year of FY 1992, with $3,737,372 received. FYs 1993 and 1995 also exceeded the $3 million mark for raw fish tax.

Table AK-9 shows a detailed breakout of General Fund Revenues closely related to, or derived from, fisheries activities for the past three years. This period includes the Fisheries Resource Landing Tax, which was first received by the City in FY 97. The monies received in FY 97 were for two fiscal years, so caution is urged when considering relative magnitudes within that particular year.

Table AK-8 City of Unalaska, Alaska General Government Tax Revenues by Source (includes general and special revenue funds) FY 1991, 1994, 1996 & 1997							
FY	Personal Property Taxes	Real Property Taxes	Payment in lieu of Taxes	Raw Fish Tax	Sales Tax	Bed Tax	Total
1991	609,903	1,117,299	134,798	2,866,008	7,069,263	–	11,797,271
1994	1,710,248	2,179,836	236,006	2,641,943	4,849,913	87,181	11,705,127
1996	1,447,729	2,449,561	484,085	2,216,766	5,488,254	119,353	12,205,748
1997	1,302,149	2,581,524	484,085	2,651,680	5,126,839	103,088	12,249,365
Source: City of Unalaska, Comprehensive Annual Financial Report, Year Ended June, 1997							

Table AK-9 City of Unalaska: General Fund Revenues			
Revenue Type	FY 95	FY 96	FY 97
Taxes			
Raw Fish Sales Tax	3,340,512	2,212,833	2,641,645
General Sales Tax 2%	3,983,576	3,644,727	3,409,643
Other Taxes	4,575,820	4,406,469	4,390,167
Subtotal, Taxes	11,899,908	10,264,029	10,441,455
Intergovernmental			
Fisheries Business Tax	2,364,847	2,828,570	2,071,914
Fisheries Resource Landing Tax	0	0	5,653,512*
Other Intergovernmental	857,579	942,679	872,743
Subtotal, Intergovernmental	3,222,426	3,771,249	8,598,169
Other			
Charges, Permits & Lic, Misc	2,244,034	1,847,309	2,305,395
Total General Fund Revenues	17,366,368	15,882,587	21,345,019
* Note: this figure represents two years worth of tax, but was received during one year. Source: City of Unalaska.			

One significant new source of general fund revenue for the City is the Fisheries Resource Landing Tax, which originates with offshore sector transfers in the community. As can be seen from the table, the amount of taxes from this source are considerable for the community. One of the events that has colored local perception of the role of those funds in the overall community fiscal picture is the fact that the payment of those taxes was the subject of prolonged litigation. The offshore sector was seen by many as not willing to pay 'their fair share' of taxes that would come back to the City of Unalaska. Though the litigation which delayed receipt of these funds by Unalaska has been dropped, there local residents who still have hard feelings regarding the situation.

Support Services

Unalaska is unique among Alaska coastal communities in the degree to which is provides support services for the Bering Sea pollock fishery. As described in detail in the 1991 SIA community profile, Unalaska serves as an important port for several different aspects of pollock fishery. Support services include a wide range of companies, including such diverse services as accounting and bookkeeping, banking, construction and engineering, diesel sales and service, electrical and electronics services, freight forwarding, hydraulic services, logistical support, marine pilots/tugs, maritime agencies, ship repair, stevedoring, and vehicle rentals, among others. There is no other community in the area with this type of development and capacity to support the various fishery sectors in the Bering Sea.

There is a significant amount of support business in the community that is directly related to the offshore fleet. Catcher processors use warehousing services, and refuel and resupply when they are in the community to do a full or partial offload of product. (Depending on the pace of the fishing, length of the season, capacity of the vessel, and a number of other variables, catcher processors may make a partial offload during the season [to free up capacity for finishing the season], and then do a full offload in Unalaska at the end of the season, or they may make a full offload during the season.) Additionally, catcher processors typically need a range of expediting, freight management, and logistical support services through Unalaska to keep operating in the Bering Sea.

Shipping seafood products is also a major business sector in the community. In addition to the two main shipping lines that serve the community, another type of support service provided in the community for both the inshore and offshore fleet is stevedoring services. While some shoreplants typically do not use stevedores in loading operations across their docks, or the demand is lower for stevedoring because of containerized product, hatch gangs are used for loading product 'over the side' to trampers for shipment from Unalaska. These are relatively high paying jobs, and much valued in the community, though the work is not steady for the bulk of persons engaged in it. What does make this labor opportunity particularly valued is the fact that long-term locals, including lifetime residents, may qualify for, and provide a viable labor pool for, these positions without having to go through minimum-wage type of entry positions first. This is not to say that there are not union and non-union laborers alike who do not come to the community during the busy seasons to take advantage of the opportunities available in the community.

There are also support service providers in Unalaska who support distant inshore operations. For example, a firm that owns one of the floating processors in Beaver Inlet has an office in Unalaska that, among other functions, supports that operation. Similarly, the company that owns and operates the large shoreplant in Akutan has a support office in Unalaska because of the logistical support needs of that plant that cannot be managed directly from Akutan.

3.1.3 Inshore/Offshore as an Issue in Unalaska

Inshore/Offshore allocation issues are the focus of much debate in Unalaska. There is not so much debate regarding which sector is more important to the community but, rather, whether it is in the best interests of the community to take sides in the debate, given the nature of ties to both the inshore and offshore sectors.

One of the several problems that is debated in the community is the relative contribution of each sector to the local economy. As an indication of how complex the issue is, the City of Unalaska tried to do a survey of local businesses to determine how much business derived from either sector. This was soon found to be a hopelessly complex task, given that the nature of the fisheries business does not divide cleanly between inshore and offshore categories. The manager of one local support service business expressed it in the following way – if he does business with a vessel during the crab season, while the vessel is crabbing, but at another time of year the vessel makes deliveries to an onshore operation, should that business be counted as 'attributable' to the inshore sector? Further, there are a number of businesses in the community for whom both the inshore and offshore sectors are vital, and a number these businesses are not willing to disclose information regarding how much volume of their business is associated with one sector or the other, for fear of alienating customers from one or the other by appearing to have 'taken sides.' Interview information would suggest that these fears are justified, at least to a degree, in that there have been cases where individuals and companies changed their patterns of doing business based on the inshore/offshore stance of an individual associated with a business. The Unalaska City Council has also seen heated debate on the issue of whether or not the local government should take a stance on the issue.

In many respects, according to interview data, Unalaska is still a 'small community.' One sentiment expressed by a number of residents is that they were anxious to see the inshore/offshore decision made, so that the community could get on with life. A number of individuals who work for either offshore or inshore related entities noted in interviews that, on the local level, people tend to get along – and in the long run have to – but that there is pressure from the outside that is divisive to a small community. That is, in the community of Unalaska, there are people whose employment may be associated with one sector or another, but they have friends in other sectors with whom they have to get along. A common sentiment, expressed in a number of different ways, was that local residents wished that people would 'leave the politics in Seattle' referring to the fact that the large companies involved in the inshore/offshore process are headquartered in that community, though they may have a large presence in Unalaska. In the words of one person, "people in Unalaska do not want to fight over inshore/offshore. It is like the people in Manassas during the Civil War. They did not choose to be the battle ground. They just woke up one morning, and there it was." Another person expressed the opinion that he was "disappointed that Unalaska has been dragged into this, and local people are saying things that their companies are making them say." While inshore/offshore opinions are even divided on how divisive an issue it is in the community (some say it is very divisive; others say the magnitude of divisiveness is more apparent than real, and attribute opinions that are interpreted as favorable to offshore as being held by 'a vocal few' rather than a substantial minority), it is indisputable that the inshore/offshore debate has itself had a negative social impact in the community, both as a dividing issue (though the degree of divisiveness may be debated) and as a relatively non-productive use of effort and resources. Of course, if either 'side' prevails with a significant shift in quota allocation, clearly the expenditure of time and effort will be deemed to have been worthwhile by those supporting that sector.

3.2 ALEUTIANS EAST BOROUGH

The Aleutians East Borough is both directly and indirectly involved in the Bering Sea pollock fishery. For the borough as a whole, the Bering Sea pollock fishery provides a substantial portion of the local tax base, and there are a number of indirect benefits as well, including participation by some communities in the Bering Sea pollock CDQ program (and the structure and benefits of the CDQ program are discussed in another document prepared for the NPFMC). The borough also has three communities that participate directly in the open access Bering Sea pollock fishery: Akutan, Sand Point, and King Cove. In this section, an overview discussion of the borough is provided, followed by a community level discussion of Akutan and a combined community discussion of Sand Point and King Cove.

3.2.1 Overview

The Aleutians East Borough was incorporated in 1987 and spans over 15,000 square miles of land and water on the lower Alaska Peninsula and eastern Aleutian Islands. There are six communities in the Borough, most established nearly 100 years ago as commercial fishing centers (see Table below). Fishing and seafood processing compose over 70 percent of the employment in the Borough. Fishing occurs in the area almost year round. Large commercial vessels harvest cod, pollock, and crab in the Bering Sea. Local fishermen use smaller vessels and fish local waters for herring, halibut, and the various salmon species in the summer, and Pacific cod and pollock in the winter. They deliver their catches to processing plants in King Cove, Sand Point, Point Moller, various floaters operating in the Borough, and, at times, to Akutan.

Table AK-10 Communities of the Aleutians East Borough		
Community	Population	Form of Government
Akutan	420	2nd Class City
Cold Bay	120	2nd Class City
False Pass	64	2nd Class City
King Cove	773	1st Class City
Nelson Lagoon	90	Unincorporated
Sand Point	870	1st Class City
Other	18	--
TOTAL	2355	--
Source: Aleutians East Borough		

The Borough relies almost exclusively upon fish taxes, deriving about 90 percent of its budget from this source (see table below). The Borough levies a 2 percent fish tax, based on ex-vessel value, on all seafood sold or delivered for processing within Borough boundaries. The Borough also receives half of the fish tax which the state collects. Other sources of funds are payments in-lieu-of-taxes from the federal government, and State revenue sharing and municipal assistance funds. The Borough's operating budget for the last several years has been in the range of $1.3 to $1.6 million, so they have an annual surplus. Any surplus is transferred to one of several funds -- Capital Fund, Permanent Fund, Debt Service Fund, Maintenance Reserve, or the School Fund.

Table AK-11 Aleutians East Borough, Fish Tax Receipts			
Year	Borough tax	Borough Share of State tax	Total
1993	$3,083,981.00	$1,792,032.00	$4,876,013.00
1994	$2,557,486.00	$2,424,754.00	$4,982,240.00
1995	$2,340,656.00	$1,834,574.00	$4,175,230.00
1996	$2,319,479.00	$1,279,272.00	$3,598,751.00
1997	$2,181,984.00	$1,367,815.00	$3,549,799.00
1998 (budget)	$2,200,000.00	$1,163,295.00	$3,363,295.00
Source: Aleutians East Borough			

There are three communities in the Borough that are directly engaged in, or dependent upon, the Bering Sea pollock fishery (excluding, for the purposes of this discussion, the CDQ program which is covered in another analysis). This communities are Akutan, Sand Point, and King Cove. The following sections describe the articulation of these communities with the fishery.

3.2.2 Akutan

The community of Akutan was previously profiled in the 1991 SIA in the Unalaska Social Impact Assessment Addendum (IAI 1991), and the details of that profile will not be recapitulated here. Akutan is the site of one of the larger shoreplant facilities that process Bering Sea pollock, and that operation is grouped with (and described with) the Unalaska/Dutch Harbor shoreplants in the inshore profile in this document, and so will not be revisited here. The purpose of this brief section is to underscore the unique aspects of Akutan with respect to potential social impact assessment issues that could arise out of different inshore/offshore allocative alternatives being considered for Bering Sea pollock.

Politically, Akutan is part of the Aleutians East Borough (AEB). Other communities in the AEB that include shore processing plants are King Cove and Sand Point, which are discussed in a subsequent section. (Unalaska is not a part of an organized borough.)

Akutan is a unique community in terms of its relationship to the Bering Sea pollock fishery. It is the site of one of the largest of the shoreplants in the region, but it is also the site of a village that is geographically and socially distinct from the shoreplant. This 'duality' of structure has had marked consequences for the relationship of Akutan to the Bering Sea pollock fishery.

One example of this may be found in Akutan's status as a CDQ community. Initially (in 1992), Akutan was (along with Unalaska) deemed not eligible for participation in the CDQ program based upon the fact that the community was home to "previously developed harvesting or processing capability sufficient to support substantial groundfish participation in the BSAI . . ." though they met all other qualifying criteria. The Akutan Traditional Council initiated action to show that the community of Akutan, per se, was separate and distinct from the seafood processing plant some distance away from the residential concentration of the community site, that interactions between the community and the plant were of a limited nature, and that the plant was not incorporated in the fabric of the community such that little opportunity existed for Akutan residents to participate meaningfully in the Bering Sea pollock fishery (i.e., it was argued that the plant was essentially an industrial enclave or worksite separate and distinct from the traditional community of Akutan and that few, if any, Akutan residents worked at the plant). With the support of the Aleutian Pribilof Island Community Development Association (APICDA) and others, Akutan was successful in a subsequent attempt to become a CDQ community, and obtained that status in 1996.

This action highlights the fundamentally different nature of Akutan and Unalaska. Akutan, while deriving economic benefits from the presence of a large shoreplant near the community proper, has not articulated large scale commercial fishing activity with the daily life of the community. While

- US Census figures show the Akutan with a population of 589, the Traditional Council considers the "local" resident population of the community to be around 80 persons, with the balance being considered "non-resident employees" of the seafood plant. This definition, obviously, differs from census, state, and electoral definitions of residency, but is reflective of the social reality of Akutan. The residents of the village of Akutan, proper, are almost all Aleut.

Akutan also differs from Unalaska in terms of opportunity to provide a support base for the commercial fishery. There is no boat harbor in the community, nor is there an airport. While there is a 'local' commercial fishery, this is pursued out of open skiff type of vessels, and participation in this type of enterprise has reportedly declined in recent years. (Through the CDQ program, however, at least one group of individuals is pursuing obtaining a commercial fishing vessel, though it would have to be operated out of Unalaska due to the lack of port facilities in Akutan.) The Akutan village corporation does derive economic benefits from the local shoreplant through land leasing arrangements and through sales of goods and services to local seafood plant employees, including check cashing services.

With respect to inshore/offshore allocation related potential social impacts to Akutan, the village is in a unique position. As a CDQ community, Akutan enjoys access to Bering Sea pollock independent of direct participation in the fishery. As home community to a shoreplant, Akutan derives considerable fiscal benefits from inshore operations. As CDQ partners with both inshore and offshore entities, they derive economic benefits from both sectors. According to interviews with local leaders of the city government, the local ANCSA corporation, and the local CDQ organization, there are not likely to be any significant social impacts to Akutan as a result of inshore/offshore allocative alternative decisions, unless the shift were of a magnitude to destabilize the fishery. That is not to say the community leaders, as individuals, have been neutral on the inshore/offshore issue. The community enjoys a good working relationship with the local onshore plant, and those relations have reportedly improved markedly over the last several years. According to interviews at both the plant and in the community, the plant and the community have cooperated to advance each other's position on important issues, and have continue to do so on a non-interference basis. For example, there are a sufficient number of registered voters at the local seafood processor to have an impact on local community politics, but they have not done so, but they have assisted the community in obtaining a stronger voice within the Aleutians East Borough. Similarly, Akutan officials have provided public input on fisheries management issues of interest to the local processor.

In sum, the potential social impact to Akutan as a result of inshore/offshore allocative decisions depends upon how one defines the community of Akutan. If the traditional village of Akutan is the unit of analysis, inshore/offshore alternatives would appear to have little direct impact on the day-to-day lives of individuals in the community, as long as the structure of the sectors stayed roughly the same. On the other hand, if the census/legal definition of Akutan is used, the Akutan is a community more than five times larger than its 'traditional/Aleut' population and, that large margin of difference in population is associated exclusively with the onshore processing operation.

3.2.3 Sand Point and King Cove

Sand Point and King Cove, like Akutan, are a part of the Aleutians East Borough. Whereas Akutan, however, is incorporated as a Second Class City, both Sand Point and King Cove are incorporated as First Class Cities. Like Akutan, both Sand Point and King Cove are home to one shoreplant each that processes Bering Sea pollock. Unlike Akutan, however, neither Sand Point nor King Cove are CDQ communities. Two further differences are key: (a) both Sand Point and King Cove are historically commercial fishing communities that have had processing facilities as part of the community for decades; and (b) both Sand Point and King Cove have resident commercial fishing fleets that deliver to the local seafood processors. With respect to the latter point, Sand Point and King Cove are different from Unalaska. Whereas Unalaska does have vessels owned and operated by 'true' local residents, none of these vessels that would fall into this category deliver pollock to local plants. Sand Point and King Cove resident fleets are involved with pollock, though typically the Bering Sea pollock processed at those plants comes from deliveries from larger boats homeported outside of the community.

The two communities have similar histories with respect to fishing. Sand Point was founded as a trading point and cod fishing station by a San Francisco fishing company in 1898. King Cove was established in 1911 by cannery operators and commercial fishermen, many of whom were Scandinavian immigrants who married local Aleut women. King Cove is located on the south (i.e., Pacific Ocean) side of the Alaska Peninsula, while Sand Point is located on Popof Island in the Shumagin Islands group on the Pacific Ocean side of the Alaska Peninsula. Both communities then share a Gulf of Alaska orientation or GOA/BSAI orientation that the other Bering Sea pollock communities do not.

The following table presents population information for Sand Point and King Cove for the years 1980, 1990, and 1995. These data show that the communities are of a similar scale and, although Sand Point continues to be larger than King Cove, the population difference was less in 1995 than for previous years.

Table AK-12
Sand Point and King Cove Population
1980, 1990, and 1995

Year	Sand Point Residents	King Cove Residents
1980	625	467
1990	878	677
1995	1,022	916

Source: US Census

Historically, both of these communities saw a large influx of non-resident fish tenders, seafood processing workers, fishers, and crewmembers each summer. For the last several decades, both communities were primarily involved in the commercial salmon fisheries of the area, but with the decline of the salmon fishery, plants in both communities have diversified into other species. This has changed the peak employment times at the seafood plants.

Detailed production figures cannot be disclosed for the plants because of confidentiality restrictions. Aggregated data that includes these plants are presented in the inshore processing sector profile, and relative size of the plants is discussed in qualitative terms in that section. The two plants vary in their pollock product mix, with one plant producing only fillets and the other producing both fillets and surimi

One of the plants obtains Bering Sea pollock in coordination with operations owned by the same company and located in one of the Bering Sea communities. This operation is unique among inshore operators for the degree of coordination across regions and for the way Bering Sea pollock processing is managed between regions. For the other plant, GOA pollock is obtained from the local small boat fleet as well as from a small number of outside boats, but BSAI pollock is obtained exclusively from larger capacity non-resident boats. Neither plant shows up in the 1991 BSAI pollock harvest data, but both appear in the 1994 data, and increased in volume from 1994 to 1996.

Another fisheries link between the two communities is that larger transient vessels operating out of King Cove that cannot find adequate moorage will use Sand Point as an alternative harbor (although it is a 156 mile run between the harbors). Sand Point harbor has a much larger moorage capacity than does King Cove, as shown in the following table.

Both Sand Point and King Cove have moorage waiting lists for vessels over 80 feet in length. Sand Point has 21 vessels on its list, and King Cove has 25 vessels on its list (USACE 1998, 1997).

Table AK-13
Permanent Moorage Slips: Sand Point and King Cove

Sand Point		King Cove	
Vessel Size (ft)	Number of Slips	Vessel Size (ft)	Number of Slips
22 - 30	24	28 - 38	42
31 - 40	54	40 - 53	28
41 -50	28	58 - 65	16
51 - 65	38	--	--
Total	144	Total	86

Source: USACE 1998, 1997

In terms of employment, 87% of Sand Point's workforce is employed full time in the commercial fishery; for King Cove this figure is more than 80% (USACE 1998, 1997). In both cases, fishing employment is followed by local government (borough and local) and then by private businesses. Seafood processing ranks after each of these other employers, meaning that the vast majority of the workforce at the shoreplants are not counted as community residents.

In terms of articulation with the community at large, the plants in Sand Point and King Cove are quite different from those in Unalaska/Dutch Harbor or Akutan. As noted, compared to Sand Point and King Cove, the development of commercial seafood processing in Unalaska/Dutch Harbor and Akutan is a relatively recent development (at least in terms of continuity of operations at specific facilities). Both Sand Point and King Cove processors have longstanding relationships with the local catcher fleet which, in turn, is the source of most employment in the community (among permanent residents). This is a sharp contrast to Unalaska. Unalaska is the site of multiple shoreplants, and has a much more 'industrial' fishery than does either Sand Point or King Cove, but this is changing, particularly with respect to Bering Sea pollock, which is not fished with by the local small boat fleet. The boats delivering to these plants are 'Bering Sea' boats, of the same type delivering to the inshore sector elsewhere.

Another major difference between the fishing industry in Unalaska/Dutch Harbor and Sand Point and King Cove is that role of the support sector in the communities. Unalaska has a well developed support service sector, unlike either Sand Point or King Cove. In both Sand Point and King Cove the lone processing plant provides a variety of fleet support services that the plants in Unalaska no longer have to provide with the development of a support sector. (It should be noted, however, that things are changing somewhat in Unalaska, at least for some of the plants, in the way that service is performed because of the changes in CV ownership patterns. At least some of the plants are taking a more proactive role in boat maintenance and work, as the plants are taking a more direct interest in the boats -- this is somewhat of a reversal of the trend away from Unalaska shoreplants away from doing this type of work. As the local support service sector developed, Unalaska shoreplants were more than willing to get out of the fleet support business for independent delivering boats, to the extent feasible while still maintaining optimum delivery schedules.)

In terms of potential social impacts due to inshore/offshore Bering Sea pollock allocation alternatives, Sand Point and King Cove are in a much less ambiguous position than either Unalaska/Dutch Harbor or Akutan. Unlike Unalaska/Dutch Harbor, neither Sand Point nor King Cove have enterprises related to or derive direct revenues from the offshore sector. Unlike Akutan, Sand Point and King Cove are unable to 'hedge their bets' through participation in CDQ fisheries with the offshore sector.

Unlike Unalaska/Dutch Harbor or Akutan, Bering Sea pollock processing volumes have grown since the inception of this undertaking at the Sand Point and King Cove plants (at least for the years for which data are available). This markedly different trend line potentially foreshadows consequences in terms of a differential distribution of impacts in relation to the other communities. In terms of sensitivity, however, the Sand Point and King Cove plants appear to be expanding their Bering Sea pollock volume while other plants are declining, so there is a different dynamic at work for these plants than for those in other communities. This dynamic would appear to be more significant than would a relatively small shift in allocation (either way).

4.0 BERING SEA POLLOCK COMMUNITY LINKS: SEATTLE

"Seattle" as used in this section refers to the greater Seattle area, and is not confined to the port or municipality of Seattle, except where specifically noted. As is clear from a consideration of the individual sector profiles, Seattle, in one way or another, is engaged in all aspects of the Bering Sea pollock fishery. While Seattle itself is quite distant in geographic terms from the harvest area of the fishery, it is the organizational center of the industrial activity which comprises the human components of this fishery. More accurately, specific industry sectors based in and/or linked to Seattle (or, in some cases, specific geographic subareas within Seattle), are "substantially engaged in" or "substantially dependent upon" the Bering Sea pollock fishery.

4.1 OVERVIEW: SEATTLE AND SOCIAL IMPACT ASSESSMENT ISSUES

What makes Seattle an analytic challenge, in terms of a socioeconomic description and a social impact assessment directly related to the Bering Sea pollock fishery, is its scale and diversity. Seattle's relationship to the Bering Sea pollock fishery is a paradox. When examined from a number of different perspectives, Seattle is arguably more involved in the Bering Sea pollock fishery than any other community. One example is the large absolute number of "Seattle" jobs within the Bering Sea pollock fishery compared to all other communities, whether counted in terms of current residence, community of origin, or community of original hire -- setting aside, for the moment, where the jobs are actually located. On the other hand, when examined from a comparative and relativistic perspective, it could be argued that the fishery is less important or vital for Seattle than for the other communities considered. Using the same example, the total number of Bering Sea pollock fishery related jobs in greater Seattle compared to the overall number of jobs in Seattle is quite small, in contrast with the same type of comparison for the much smaller Alaska coastal communities. The sheer size of Seattle dilutes the overall impact of the Bering Sea pollock fishery jobs, whereas in Alaskan communities such jobs are a much greater proportion of the total employment in the community – setting aside, for the moment, the consideration of whether those jobs are filled by 'residents.'

As is also clear from the sector descriptions, while all sectors are tied to Seattle in one way or another, the magnitude and nature of these ties varies considerably between sectors. It is through these ties, and how they are manifested in Seattle, that we will examine the role of the community in the Bering Sea pollock fishery. That is to say, the overall size and complexity of Seattle precludes its comprehensive description and analysis in terms of potential social impact effects of the allocative alternatives for inshore/offshore-3. While it was possible, and desirable for analytic purposes, to include some brief community level description for the Alaska coastal communities in this document so show the relative 'engagement' or 'dependence' on the fishery, for Seattle this type of comparison tends to understate the importance of the Bering Sea pollock fishery for particular sectors or subareas. To avoid losing the importance of the fishery in the 'noise' of the greater Seattle area, the potential reallocation effects will instead be evaluated in terms of Bering Sea pollock fishery industry sectors and their linkages to Seattle.

The precise nature of the relationship between a given sector and the Seattle area varies from sector to sector, and a primary function of this section will be to examine sector specific information in such a way that, in combination with some additional information on the area itself, the potential effects of the allocative alternatives upon Seattle can be estimated. Attention will focus on three main areas for each sector -- employment patterns, expenditure patterns, and concentration or localization in the Seattle area. These discussions will, to a large degree, be qualitative in nature and will vary in terms of detail, as systematic quantitative information was not available at the time of this study. Where quantitative information was provided by individual entities, this information will be incorporated to the extent that confidentiality considerations allow. We will also be able to supplement the discussion of the geographic 'footprint' of the fishery in Seattle through the use of information supplied by the Port of Seattle, as well as information from some earlier planning studies by the City of Seattle relevant to the concentration of fishery related industry within the metropolitan area.

That is, there are (at least) two ways to approach a discussion of the localization of fishing activity in general, and Bering Sea pollock fishery activity in particular, within the Seattle area -- through a focus on port activity and organization, and through a more general historical/geographical (neighborhood or community) focus centered around fishermen, fishing activities, and marine support businesses. The first has the advantage of being well-defined, but is totally industry focused, and fishing-related activities comprise only a small portion of total activity and are not an easily 'isolatable' component using existing information. The second, generally corresponding to the common identification of Ballard and its environs with Seattle's fishing community, would incorporate much more of the overall social organization of fishing activity, but is very difficult to define and characterize within an overall economic and social context as large as Seattle's.

We have compromised in this document by briefly discussing the Port of Seattle in regard to the Bering Sea pollock fishery and a cursory history and characterization of Ballard within the context of greater Seattle. This is followed by a sector-by-sector discussion of linkages to Seattle. This section concludes with a discussion of the issue of providing a perspective from the 'community side' of the links which first overviews the fishery from the community context, and then focuses on fishery related industrial areas.

4.2 THE SEATTLE 'GEOGRAPHY' OF THE BERING SEA POLLOCK FISHERY

In this section, we discuss locational issues with respect to the Seattle area and the Bering Sea pollock fishery. Here we divide the discussion into two components: the Port of Seattle and the community of Ballard. Each provides a different and useful perspective on the Seattle social/socioeconomic ties to the fishery.

4.2.1 The Seattle Geography of the Bering Sea Pollock Fishery: The Port of Seattle

Our use of "Seattle" in a regional way notwithstanding, one of the most obvious possible ways to talk about the localization of the fishing economy in Seattle, and the concentration of potential social impacts of allocative alternatives in the Bering Sera pollock fishery upon Seattle, is in terms of the Port of Seattle. Another would be to attempt to discuss these same topics in terms of the fishing identity of the neighborhood of Ballard. Neither is a straightforward task, but the first is much more possible than the second, given the practical limitations on the availability of data attributable to the Bering Sea pollock fishery specifically. Further, the port is well defined as an institutional entity, whereas Ballard as a community is not. However, it will be possible, because of recent City of Seattle planning efforts for an area called the Ballard Interbay Northend Manufacturing Industrial Center (BINMIC) which essentially combines fisheries-related geographical components of the Port of Seattle and the Ballard neighborhood, to discuss Ballard to some degree.

The Port of Seattle is separate from the Municipality of Seattle, and is an economically self-supporting entity. Besides its direct revenues, it receives 1 percent of the property tax collected in King County, but with a cap on funding not to exceed $33 million a year. In turn, all port revenues are charged a 12.4 percent tax, which is split between the city of Seattle and the state of Washington (in lieu of property tax). The Port's charge is the development of infrastructure that will support local and regional economic activities, especially in cases where the rate of return on investment in that infrastructure may be too low (although still positive) for the private investor. Such development contributes to the overall economy of the region through synergistic and multiplier effects.

The Port of Seattle includes not only marine facilities but the airport as well. The Port publishes various reports on their activities, but most are either too general for our purposes or far too specific. The Marine Division of the port tracks economic activity by general service area -- container terminal, cargo piers and industrial properties, central waterfront piers and property, warehouse and distribution operations, Shishole Bay Marina (recreational moorage), and Fishermen's Terminal Pier and property. None of this information is organized so that expenses and revenues attributable to fishing activity (let alone specific fisheries such as the Bering Sea pollock fishery) can be aggregated and assessed -- although projects now underway will, in the future, provide such information to a greater degree than at present. Given this lack of breakout documentation, most of our information on the nature and magnitude of the importance of the Bering Sea pollock fishery for Port of Seattle came from talks with the Director of Marine Operations for the port.

The port's marine facilities occupy an extensive area, but can generally be characterized as the Ship Canal-Elliott Bay areas. The Director of Marine Operations estimated that Bering Sea related fishing activity generates port revenues of $1,000,000 to $2,000,000 a year. Facilities, and the degree to which they are connected with fishery activities, were identified as follows:

- Fishermen's Terminal (Ship Canal) -- an estimated 10 percent of its revenues (roughly $2,000,000 for all fisheries per year) were judged to result from catcher processor operations, and an additional 10 percent from catcher vessel activity associated with Bering Sea fisheries (not just pollock);

- Pier and Terminal 91 (North Elliott Bay) -- used extensively by catcher processor fleet, and long-term moorage for American Seafoods catcher processor fleet, and provides the bulk of the port's revenue derived from the Bering Sea pollock fishery, through moorage and other fees. This facility also caters to ferries, a tug and barge company, an auto importer, apple exports, and cold storage facilities;

- Central waterfront (mid-Elliott Bay) piers are not so fishery related, although they are sometimes used by larger vessels (Pier 48, Pier 66, Pier 69);

- Pier 25 (East Duwamish Waterway, south Elliott Bay) -- permanent moorage for the Ocean Phoenix mothership, but also used for catcher processor offloading, has cold storage facilities to hold product for transhipping, and a small surimi plant is located there;

- South end in general (Duwamish manufacturing and industrial center) -- has some fisheries related activities (such as cold storage facilities) but is more oriented to cargo operations and other industrial activities.

The summary conclusion is that fishing-related activities take place throughout the port, but are concentrated in the Fishermen's Terminal and Pier 90/91 areas. Of primary importance for fishing activity, and especially for larger vessels, is the availability of suitable moorage. Much of this moorage is supplied by the port (discussed below), in an aggressive response to the demand from the fishing fleet. The initial development of Fishermen's Terminal thirteen years ago was because of the perceived need for more moorage for larger vessels involved in the distant water fisheries. Two years ago an additional $25,000,000 was spent on Fishermen's Terminal work. A substantial portion of Pier 91 has also been rebuilt, with the remainder scheduled to be rebuilt at a cost of an additional $60,000,000.

4.2.2 The Seattle Geography of the Bering Sea Pollock Fishery: The 'Community' of Ballard

Today the term 'Ballard' represents a loosely defined geographical neighborhood of northwest Seattle. There is no geographically standard area for which various sorts of comparable information exists. Nonetheless, the area does have a geographical identity in peoples' minds and, together with Magnolia and Queen Anne, has its own yellow pages telephone directory (published by the Ballard and Magnolia Chambers of Commerce). The following brief section is based predominately on information from the Ballard Chamber of Commerce (1998), Reinartz (1988a, 1988b, 1988c, 1988d), Hennig and Tripp (1988), and McRae (1988).

Fishermen's Terminal on Salmon Bay is recognized as the home of the Pacific fishing fleet, and has been characterized as the West Coast's 'premier homeport.' Fishermen's Terminal (Salmon Bay Terminal) in turn has often been identified with Ballard -- formerly a separate city (incorporated 1890) annexed by Seattle in 1907. Until the construction of the Chittenden Locks and the Lake Washington Ship Canal, opened in 1917, Salmon Bay Terminal was confined to relatively small vessels, but was the focus of a developing fishing fleet. Once the area was platted and incorporated it quickly attracted settlers and industries desiring or dependent upon access to Puget Sound. The timber industry was the first to develop, due to the need to clear land as well as the value of the timber that was available. By the end of the 1890s Ballard was a well established community with the world's largest shingle manufacturing industry, as well as developing boat building and fishing industries. By 1900 Ballard was the largest area of concentrated employment north of San Francisco.

Ballard effectively blocked the expansion of Seattle to the north, and court decisions had given Seattle control over Ballard's fresh water supply, with the result that Ballard became part of Seattle in 1907. At that time the community had 17 shingle mills, 3 banks, 3 saw mills, 3 iron foundries, 3 shipyards, and approximately 300 wholesale and retail establishments. The Scandinavian identity of Ballard developed at or somewhat before this time. In 1910, first and second generation Scandinavian-Americans accounted for 34 percent of Ballard's population, and almost half of Ballard's population was foreign-born. Currently, less than 12 percent of the population is of Scandinavian descent, but the cultural association remains pervasive.

Ballard's economy continued to develop and diversify, but remained fundamentally dependent on natural resources, and especially timber and fishing. In 1930 the *Seattle Weekly News* reported that 200 of the 300 schooners of the North Pacific halibut fleet were homeported in Ballard, demonstrating not only the centrality of Ballard but the long-term importance of distant water fisheries to Seattle fishermen. In 1936 the Port of Seattle built the need for a new wharf at the Salmon Bay terminal, and in 1937 a large net and gear warehouse was scheduled for construction there. The evolution of North Pacific fisheries, and the role of Seattle vessels in that history, will not be traced here as it should be reasonably familiar to readers of this document.

What is important to recognize with respect to the present analysis is that in some ways Ballard is considered a 'fishing community within' Seattle. While this has historically been the case, when examined with specific respect to the Bering Sea pollock fishery, the area cannot cleanly be considered a 'village within a city.' While there is a concentration of multigeneration fishing families within the area, the 'industrialization' of the Bering Sea pollock fishery, this has tended to disperse the ties of the fishery throughout the area. While support service businesses remain localized to a degree (as discussed in another section below), there would not appear to be a continuity of residential location that is applicable to the Bering Sea pollock fishery that is consistent with, for example, the historic halibut fishery. It is also important to keep in mind that the Bering Sea pollock fishery is a relatively 'new' fishery (when one thinks in terms of fishing generations) and this has a marked influence on the specific Bering Sea pollock fishery ties to the historic centers of fishing within Seattle. This 'community within the community' issue is not straightforward due to the complex nature of historical ties, continuity of fishing support sector location through time, changes in the technology and methods of fishing, and the industrialization of the fishery, but clearly Seattle represents a different pattern of co-location of residence and industry with respect to the Bering Sea pollock fishery than that seen in the relevant Alaska communities.

4.3 SEATTLE AND THE LINKS TO SPECIFIC BERING SEA POLLOCK FISHING SECTORS

In this section we provide a perspective on the links between Seattle as a community and the relevant individual sectors of the Bering Sea pollock fishery as described in other sections of this report. This type of information is specifically intended to portray the dynamic relationship of Seattle to all of the relevant sectors, and discuss the nature and degree of variation between sectors.

4.3.1 Seattle and the Inshore Processing Sector

Included in this discussion are floating processors and shoreplants. We have only limited information for the former, and because of their limited numbers face confidentiality constraints in any event. Thus, floating processors are discussed only briefly as a separate class, while shoreplants are discussed at greater length.

Floating Processors

All floating processors with a significant participation in the Bering Sea pollock fishery for 1991, 1994, or 1996 were managed and operated out of Seattle. Their relative share of the total amount of Bering Sea pollock processed in those years increased from 2 percent to 6 percent, while the number of operations varied little in terms of absolute number of participants (and the larger operations appear in all three years data). While moveable in theory, Bering Sea pollock floating processors tend to operate in relatively fixed locations in Alaskan state waters, outside of incorporated city and organized Borough boundaries. They thus have minimal interaction with local Alaskan communities and can be characterized as true industrial enclaves. As noted in the inshore sector profile, they employ relatively few Alaska residents, another potential measure of local community or at least state labor force interaction. This, along with the fact that these operations are supported out of the Seattle area (with some logistical support in Unalaska/Dutch Harbor, and marked reliance on air transportation links to the community), would appear to reinforce the overall ties of this subsector to Seattle as opposed to the Alaska communities closer to their areas of operation.

Shore Plants

All shore plants which process Bering Sea pollock are located in Alaska, but all have multi-level ties to Seattle. All are administered from corporate headquarters in Seattle, which is the center for corporate and financial services. Thus, Seattle is the community where business decisions are made, or at least deliberated, for the Alaska shore plants (setting aside, as for other sectors, the complicating issue of degrees foreign ownership that vary by entity). This distinction should not be carried too far, however, as plant managers resident in the communities clearly have a role in corporate decision making, and executives based in Seattle also spend time in the Alaska communities where their plants are located. Nonetheless, the role of 'Seattle' in the decision making process, and the profound influence that process has in the Alaska shoreplant communities, is well recognized in the communities themselves. With the maturing of the fishing industry, the growth of local infrastructure and support services, and the overall changes in Unalaska/Dutch Harbor it is no longer common to hear people express their recognition of the strong industry ties between Unalaska/Dutch Harbor and Seattle by saying that in some respects Unalaska is a 'suburb of Seattle' as was not uncommon in the mid-1980s. The center-periphery relationship is perhaps more complex than ever for this sector. Seattle is the center of corporate operations; Unalaska/Dutch Harbor is the center of processing operations and the interdependencies are many and complex.

In addition to being a decision making and important administrative support community for the shoreplants, Seattle also is the location of some direct employment associated with the shore plant companies. While administrative shore plant sector employment in Seattle consists of relatively few jobs compared with positions at the plants themselves, the Seattle component has a greater proportion of upper compensation range jobs.

Physical plants for secondary processing are located in the Pacific Northwest, other parts of the country, and overseas. Some have direct business operation connections with primary processors (both onshore and offshore). This part of the industry has very wide geographical distribution, however, and was not the object of any research effort.

The day-to-day management of the labor force of shore plants in Unalaska/Dutch Harbor tends to consist of year round community residents (though these individuals were initially recruited from elsewhere). Managers of other shore plants tend to maintain homes outside of Alaska (many in the Seattle area), even though most spend most of their time in Alaska and may well qualify as Alaskan residents.

The bulk of the labor force for shore plants consists of the maintenance/support and the processing crews (although the two may well overlap). The former tends to be employed on a more year-round basis, and thus tends to be more of an Alaska resident labor force. The latter tends to have a higher turnover and, with a significant percentage of the workforce still coming from the PNW and the greater Seattle area in particular, employment ties to Seattle are still important for Bering Sea community based operations. As discussed in the sector profile, for the sector as a whole in 1996, non-Alaskan employees accounted for approximately 80% of the total workforce, but this figure varies widely by plant, with the range encompassing less than 10% to almost 40% of the workforce being Alaska residents of any one operation. While it is important to recall that there are significant differences between 'residence' and the location of jobs, as discussed in the inshore sector and Alaska communities section, there are impacts derived from the physical location of jobs more or less independent of the formal residency status of the workforce. The following two tables (Tables SEA-1 and SEA-2) provide information on the relative contribution of the shoreplants to the Alaska and non-Alaska employment pools. While specific break-outs are not available, it may be safely assumed that the bulk of the non-Alaska jobs come from the PNW region, and a disproportional number of those from Washington state and the greater Seattle area.

Interviews with processing personnel conducted for the 1994 SIA would indicate that a not insignificant portion of the wages paid to workers in Alaska plants were used to help support extended families outside of the region. While quantitative data do not exist regarding this type of wage flow, it is one more indication (particularly given a general knowledge of the industry) of the ties between the shoreplants and Seattle (and the greater West Coast area).

In terms of support services for the shore plants, Seattle would appear to play a similar role for the shoreplant sector as it does for several of the other sectors, in nature if not in relative magnitude. Shoreplants do purchase goods and services in their 'host communities' but this is highly variable by plant and community. Unalaska/Dutch Harbor has the highest degree of development of local support services, but it is still the case for this community that materials and supplies needed for the operation of the plants are not manufactured locally, and a great deal of these are shipped out of the Seattle area, given that Seattle is both the headquarters of the individual companies and the nearest major port in the Lower-48.

Table SEA-1
Alaska Residents as Percentage of Total Workforce
Bering Sea Shoreplants: 1991, 1994, and 1996
by Individual Entity and Sector Total

Entity	1991		1994		1996	
	Alaska Resident	Non-AK Resident	Alaska Resident	Non-AK Resident	Alaska Resident	Non-AK Resident
A	19%	81%	8%	92%	8%	92%
B	24%	76%	22%	78%	24%	76%
C	22%	78%	18%	72%	17%	83%
D	21%	79%	23%	77%	26%	74%
E	31%	69%	36%	64%	39%	61%
Total Sector	20%	80%	19%	81%	20%	80%

Source: Data derived from NPFMC provided figures for quarterly employment. Quarterly employment figures per year were summed and then percentages derived from summed figures.

Table SEA-2 Employment Summary, One Bering Sea Pollock Shoreplant Percentage of Alaska Resident Employees and Percent of Total Wages Paid to Alaska Residents, 1990-1998		
Year	% Alaskan Employees	% of Total Wages AK Residents
1990	29.08%	45.73%
1991	24.07%	44.68%
1992	19.40%	42.43%
1993	20.27%	43.07%
1994	22.74%	43.90%
1995	31.40%	45.88%
1996	22.69%	48.27%
1997	16.37%	33.19%
1998*	19.96%*	29.58%*

*1998 Figures are for 01/01/98 through 02/21/98 only.

Source: Constructed from confidential employment figures, specific [unnamed] Unalaska/Dutch Harbor-Akutan shoreplant.

In terms of expenditure patterns for the shore plant sector in relation to the Seattle area, there are several main areas to consider. First, the shore plants buy fish from the catcher vessel fleet and, as detailed in the sector profile for the CV fleet, the fleet is primarily based in Seattle and the PNW. While there has been a considerable shift in ownership patterns with respect to shore plants as a sector, with processing entities coming to own and/or control a considerable percentage of their delivering fleets, interview data would suggest that there has not been a dramatic shift in employment patterns for crew members. That is, while the locus of ownership may have changed, the patterns of employment have not appeared to do so, with most of the crew members and skippers coming out of the Seattle and PNW area. (How 'home port' has changed is a more complex issue, and is addressed in the CV sector profile.) This being the case, crew compensation as a function of shore plant expenditures for Bering Sea pollock disproportionately accrue to Seattle and the PNW as a region. Second, expenditures for support services would appear to be primarily directed toward the Seattle/Pacific Northwest area. Third, corporate finances would appear to flow through Seattle, so the community would derive economic benefits from these transactions. In short, shoreplant expenditures could not be seen as having no significant impact on Seattle when examined on a sector basis. The localization of such expenditures within Seattle is less clear.

In terms of fiscal impacts to Seattle, clearly the differences of scale between Seattle and the Alaska shoreplant communities make a great difference in relative significance of the sector. Beyond this, there are different types of fiscal inputs/taxation relationships between the companies and communities based on were the actual 'work' or 'industry' of processing takes place. In the shore plant communities themselves, the plants, as described in the Alaska communities discussion, provide a basic fiscal underpinning for local government in the form various business, property, sales, and fish taxes. Seattle, not being the 'industrial' center of the processing has a different relationship to the industry.

4.3.2 Seattle and the Mothership Sector

Motherships, as a sector, have strong ties to the Seattle area. As noted in the mothership sector description itself, all three Bering Sea pollock mothership operations are headquartered in Seattle, and the motherships themselves are managed and supported principally out of Seattle. Hiring is done from Seattle and, while we have no statistical breakdown of the mothership labor force, most come from the lower-48 and most are reportedly from the Pacific Northwest.

Given that the operations are headquartered in Seattle, the community acts as a corporate center for this industry sector, in terms of corporate and financial services support. There are a few administrative/office positions for each company in Seattle, but these account for less than 10% of the workforce in every case, even at the low end of operational range staffing aboard the vessels.

In terms of fiscal impacts to communities, like catcher processors, motherships are subject to the resource landing tax in Alaska, so they have come to have a different fiscal relationship to Alaska communities in recent years in contrast to earlier years. Individual operations vary in the location and number of offloads, so there is variability between operations in this regard, but motherships in general appear to offload fewer times in Alaskan communities than do catcher processors. At least one is reported to sometimes take product directly to Japan, and all report taking their 'last load' to a non-Alaskan port.

The catcher vessel fleet for motherships tends to have Seattle owners and to be maintained in the Seattle/Pacific northwest region. Some vessels have California or Alaska owners, or may have some connections with Oregon. Regardless of ownership or "homeport" designation, many of these catcher vessels normally remain in Alaskan waters between the pollock "B" and pollock "A" seasons unless there is a compelling reason for them to go to Seattle. Those mothership catcher vessels with Pacific whiting permits have an incentive to go south after the pollock "A" season, and those from that region are those most likely to have such permits, and they will normally schedule maintenance calls in Seattle during this period. Mothership catcher vessels do participate in more fisheries than does the mothership itself, but Bering Sea pollock is their most important fishery.

Many of the mothership catcher vessels, and those now specializing in delivery to catcher processors, participated in the JV fisheries and are generally thought to be less suitable for onshore Bering Sea pollock delivery than most other catcher vessels. Even so, most of these vessels have been modified so that it is at least feasible that they could develop onshore markets should that prove necessary. The stability of the mothership sector, including the catcher vessel fleet, partly reflects the profitability of the arrangement for the catcher vessels, but also reflects in part the lack of competitive alternatives for those vessels.

Mothership labor forces are predominately Seattle-based. Offices are maintained in Seattle, one in conjunction with its pollock CDQ partner and its parent onshore processing company. The actual mothership work forces range from 80 to 140 on the two smaller operations and 190 to 220 on the larger operation. An increasing number of these employees are reported to be from Western Alaska, especially on the CDQ partner vessel, but at present this would appear to represent no more than 20 positions per vessel. The larger operation employs a crew of 40 to 60 people to maintain the vessel and thus work 6 to 7 months a year. Office staff works year round, and the rest of the crew works only while the vessel is actively fishing or in transit (estimated at 90 days or so).

All mothership operations report using Seattle as their primary logistical base. That is, they will leave Seattle with as many of the supplies that they will need for the fishing season as possible. All contrasted this with the pattern of their catcher vessel fleet, which obtains most of its logistical support from Alaskan ports. The mothership reportedly does not carry supplies for its catcher vessel fleet (citing lack of storage capacity aboard their vessels). Motherships have a limited number of opportunities to take on additional supplies in Alaskan ports, since they normally do not have many offloads in Alaskan ports. Linkages to Alaskan communities are thus mostly through the resource landing tax paid on offloaded product and the activities of their catcher vessel fleet. Most mothership community linkages are with Seattle.

4.3.3 Seattle and the Catcher Processor Sector

The catcher-processor sector is the "most" Seattle of Bering Sea pollock fishery sectors, both in terms of ownership as well as localization of corporate and support operations. Employment is predominately from Washington state, as discussed in some detail in the catcher processor sector description, and summarized in the Tables SEA-3 and SEA-4 below. This information will be briefly reviewed here as well, from the Seattle/Washington perspective.

The pattern of catcher processor employment for both years is quite consistent, although because of increased Alaskan hire the percentage of Alaskan employees increased more in relative terms between 1996 and 1997 than did that of Washington state or other state employees. For both years, Washington state residents filled 65 to 67 percent of all job opportunities, accounted for 67 to 70 percent of all FTE years of employment, and received 71 to 73 percent of total compensation paid by the sector. Washington state residents thus seem to occupy the better paying positions, as their percentage of total compensation is greater than the percentage of positions which they actually occupy. For residents of other states, the percentages of all these categories are much closer to each other, ranging from 25 to 27 percent of the total. Further, this would imply that other state residents are distributed fairly evenly in the work force (long-term/short-term, all compensation levels). Alaskan resident employees display a much different pattern. For 1996 they occupied 6 percent of all job opportunities, 4 percent of total FTE years, and received 3 percent of total sector compensation paid. For 1997 these numbers increased to 9 percent, 6 percent, and 4 percent respectively. This clearly indicates that Alaskans, for what ever reasons, tend to work for shorter periods of time and receive less in compensation than other members of the work force.

Table SEA-3
Catcher Processor Sector Contribution to Employment, Washington and Other States
1996

State of Residence	Employment Opportunities	Gross Pay & Benefits	FTE Years of Employment	Pay per FTE Year
Alaska	177	$2,140,853	77.5	$27,623.91
Washington	1958	$52,652,553	1296	$40,626.97
other	789	$17,798,419	467.7	$38,055.20
TOTAL	2924	$72,591,825	1841.2	$39,426.37
per vessel (15)	195	$4,839,455	123	
AS PERCENTAGES				
Alaska	6%	3%	4%	
Washington	67%	73%	70%	
other	27%	25%	25%	

Source: APA provided information

Corporate management and operations of the catcher-processor fleet is concentrated in the Seattle and Puget Sound area, as is ownership (Tables Int-6a and Int-6b). For 1996, all twenty surimi catcher processors and the great majority (15 of 19) of fillet catcher processors report Washington state ownership. Alaskan owners are credited with 3 of the latter type of vessel, and Maine with 1, although even these entities have a Seattle office to manage operations. These vessels are typically not present in Alaska when not working, although there have been a very limited number of recent exceptions for ship work in Alaskan ports, and a very limited number of vessels (3 FCPs and 3 SCPs) were reported to have Alaskan homeports in 1996. Even these vessels for the most part use Seattle or Pacific Northwest facilities for regular maintenance and support. This pattern has been somewhat modified by the investment of two CDQ groups in the offshore sector, one through purchase of partial ownership in a catcher processor and the other through purchase of a 50 percent interest in a parent company which owns two catcher processors and other assets. A third CDQ group formerly had an interest in a catcher processor, but divested as the result of a failed partnership. These ownership shifts have affected some aspects of the operations of these vessels, but not the centralization of management and support services for them in Seattle.

Table SEA-4 Catcher Processor Sector Contribution to Employment, Washington and Other States 1997				
State of Residence	Employment Opportunities	Gross Pay & Benefits	FTE Years of Employment	Pay per FTE Year
Alaska	366	$4,720,743	196	$24,085.42
Washington	2663	$76,254,686	2180	$34,979.21
other	1085	$27,038,173	877	$30,830.30
TOTAL	4114	$108,013,602	3253	$33,204.30
per vessel (23)	274	$7,200,907	217	
AS PERCENTAGES				
Alaska	9%	4%	6%	
Washington	65%	71%	67%	
other	26%	25%	27%	
Source: APA provided information				

Catcher processors harvest and process Bering Sea pollock in Alaskan waters and, although Seattle based, have fiscal ties to Alaska through the payment of resource landing tax on the product they offload in taxable jurisdiction areas. For example, as noted in the discussion of Alaska communities, resource landing tax is a significant source of income to the community of Unalaska/Dutch Harbor. Surimi catcher processors will typically land their last load in Seattle, since they must make the trip anyway (but this varies somewhat by operation, and depends on a number of variables such as ultimate market, shipping costs, timing with respect to participation in other fisheries, and so on). Fillet catcher processors may also do so, but most have other possible Alaskan fisheries that they can participate in after pollock, so that they tend to land more of their total pollock production in Alaska.

Catcher processor vessels are moored and maintained in the Seattle/Pacific Northwest area. The Port of Seattle has made a sizeable investment in renovating part of Pier 91, and is in the process of renovating the rest, partly in response to the need of the largest catcher processor company for moorage and other work space for its operations. The ability and desire of this company to sign a long-term lease enabled the Port of Seattle to finance these renovations, so there is a direct link seen between the Bering Sea pollock fishery and port development. The Puget Sound area, and the Port of Seattle within the Puget Sound area, provides the majority of moorage available for the Bering Sea pollock fishery fleet (and especially so for catcher processors).

There were 39 catcher processors in the Bering Sea pollock fishery in 1996, and earlier data suggest that each has 100 to 150 employees and a crew income of $3 to $5 million (Miller et al. 1994). The labor force for catcher processors is predominately from Washington state. Systematic (but partial sector) information from 1993/94 and indicates that 68 percent of all catcher processor employees are residents of Washington state, with 19 percent Alaskan residents, 12 percent from other western states, and 1 percent "other." More recent, but also partial sector, information for 1996 and 1997 shows much the same pattern. For 1996, the percentage of Washington state employees was 67 to 73 percent (depending on whether one looks at job opportunities, FTEs, or gross pay and benefits). The percentages for Alaskan employees ranged from 6 percent of employment opportunities to 3 percent of total gross pay and benefits paid. For 1997 the range for Washington employees was 65 to 71 percent, and for Alaskans 9 percent (job opportunities) to 4 percent (gross pay and benefits). (This is the reverse of the pattern seen in the limited data available for shore processors, and likely results from the differential time depth of Alaska hiring and individual position longevity, among other factors.) Oregon residents were at a level of 3 to 4 percent, Idaho at 1 to 2 percent, California at 6 to 8 percent, and "other" at 12 to 13 percent. This is quite a wide geographical spread, and although there is some indication that Seattle residence may be reasonably common, there are also indications that the labor force can also be highly mobile.

Turnover varies from year-to-year and is highly dependent on level of compensation. Some people make careers of working on catcher processors, while others treat it as a seasonal activity or a "stage of life" activity. The one group of employees that was readily identifiable were those Alaskans hired from western Alaskan villages, primarily by fishing operations with CDQ partnerships. The program has not been in operation long enough to establish definite patterns, and the analysis of the CDQ program is being covered under a separate study effort, but indications are that many are using such employment as a way to earn seasonal wages to support life in the village. At least a limited number of individuals have relocated to Seattle, based on catcher processor employment, although interview data would indicate that they maintain contacts with relatives and return to the village at frequent intervals. Management and the vessel maintenance labor force, to the degree that such work does not require work in a shipyard, is clearly concentrated in Seattle.

Our interview information, derived from contact with five companies with 27 vessels, supported this general picture. Most employees are from Washington or other western states, with Seattle being the major (or only) point of hire. For those operations with CDQ partners, this was generally modified by an effort to incorporate CDQ group residents into the fishing (and other) operations through entry level positions and intern training programs. The companies contacted for the study reported that Alaskans comprised about 14 to 19 percent of their labor forces, and some of the firms had Anchorage or even more regional Alaskan hiring offices. An entry-level employee who works all trips on a fillet-capable vessel could earn $55,000. CDQ partnerships help stabilize and retain the access to fish resources, but do not really increase the access of the operation to capital or management resources, where Seattle has remained the primary source.

Available information on expenditure patterns of the catcher processor fleet is fairly sketchy. The catcher processor sector fleet, on average, purchases 10 percent of its open-access pollock from the catcher vessel sector fleet, which is itself predominately Seattle-based. From our interview information, individual companies varied from buying almost no pollock from catcher vessels up to 33 percent of their total open access pollock. Data from a relatively recent study put other operational expenditures as typically between $10 and $15 million a year (Miller et al. 1994) and are spent primarily in Seattle or the Seattle-area. Some drydock work has recently been done in Alaskan ports, specifically in Ketchikan, and in-season work also takes place in Alaska. Seattle is the only locale with a concentration of facilities that can provide these services for a large number of vessels, with the possibility for competitive bidding. Our interviews with most firms resulted largely in more general level information, as individual operations were hesitant to provide this detail, perhaps because of the time required to provide it in a systematic and complete form, not to mention the confidentiality of actual expenditure amounts and patterns. The general pattern, however, was clear: catcher processor operators consistently indicated that most expenditures were made in or through Seattle or the Puget Sound area -- with in-season support from Alaskan sources as required. They were quick to point out that they needed to purchase large amounts of fuel in Unalaska/Dutch Harbor, paid a great amount of dock fees and resource landing taxes there, and in general provided a good deal of support for that community, both through fees and taxes and direct expenditures. At the same time, like all other businesses, their operations are managed to minimize expenses, and in most cases this entails supplying the vessel as much as possible from Seattle.

One indication of the range of services that an individual vessel requires, and the magnitude of the cost involved, comes from the list of "unsecured" creditors of one of the catcher processors which most recently went bankrupt. The total unsecured debt was $3,589,099, owed to 48 creditors. Of the 48 creditors, 35 (73 percent) had Washington addresses, most in Seattle and all in the greater Seattle area. These represented about 62 percent of the total unsecured debt. Of the other 13 creditors, 10 were domestic (3 Alaska [2 of which were in Unalaska/Dutch Harbor], 3 Maryland, 2 Texas, and 1 each in New York and Ohio) and 3 were foreign (1 each in Japan, Canada, and England). Of the 3 largest single debts, one was to the New York creditor and one was to the Japanese creditor. The goods and services represented by the debts span a wide range of operations -- equipment suppliers, repair and maintenance providers, fuel and other operational good providers, transportation and shipping companies, insurance and other business service providers, cold storage and other operations service providers, local retailers of various sorts -- which serve as one measure of how the economic effects of any capital intensive enterprise ripple throughout an area where it is concentrated. The inclusion of the New York and Japanese creditors serve to remind us of the worldwide nature of the organization of this industry (especially in terms of finance and sales), but the bulk of the operational debts also indicate the degree to which goods and services are obtained in the Seattle area.

The community economic/fiscal links of the catcher processor sector can be summarized by the overall dichotomy or comparison of (Seattle) financial, most maintenance, and initial supply costs as opposed to (Alaskan and especially Unalaska) in-season operational costs. The majority of the labor force is in some way linked to Washington state or the Pacific Northwest. Thus, in terms of absolute value, the sector expends a great deal more, to a much wider economic network, in Seattle than it does in Alaska and Unalaska. The relative scales of the economies in Seattle and Alaska (especially Unalaska) make this comparison in absolute terms questionable, however -- at least in terms of whether the catcher processor sector is 'more important' for Seattle or Unalaska. That is, although the 'value' of the offshore sector to the community of Unalaska/Dutch Harbor, particularly in relation to the onshore sector, is the subject of considerable community debate, it would appear that in relative terms, the offshore sector is a larger percentage of the Unalaska/Dutch Harbor economy than it is of the Seattle economy, despite the fact that the absolute level of expenditures in Seattle is much, much higher than in Unalaska/Dutch Harbor.

4.3.4 Seattle and the Catcher Vessel Sector

Our principal purpose here is to discuss the relationship of the catcher vessel sector to Seattle, so we will not discuss differences within this category at great length (e.g., onshore versus offshore delivery patterns). For such discussions please see the catcher vessel sector description. There are also some catcher vessel sector dynamics that we noted during the course of field research but did not have the time to examine in detail, such as the increase in the absolute number of catcher vessels in 1996 compared to 1994, or the increase in catcher vessels from Oregon in 1996 compared to 1994. These dynamics may be related to processors stepping up the pace of the race for fish within each sector, and the increasing need for boats participating in Pacific coast fisheries to find alternative or supplemental opportunities to offset declining harvests. We did not examine either of these dynamics, however, so these are only possibilities that will not be examined in this document.

In terms of numbers, the majority of catcher vessels are owned and managed by residents of Washington (about 56 percent) and Oregon (about 19 percent -- Tables CV-3, CV-5b, and CV-5c). However, Washington boats account for about 73 to 77 percent of the reported onshore delivery of Bering Sea pollock, whereas Oregon boats account for only about 9 percent (Tables CV-5e, CV-5f). This is partly a function of size -- larger boats tend to be from Seattle/Washington -- and of Oregon boats not concentrating on Bering Sea pollock to the extent that Washington boats tend to. There has also been a tendency for shore plants to acquire ownership interest in catcher vessels, which in most cases will then tend to be primarily pollock vessels based in, or at least managed from, Seattle.

Catcher vessels, of course, harvest Bering Sea pollock in Alaskan waters, and because of inherent limitations in size must obtain extensive operational support in Alaskan ports. Most catcher vessels will have overhauls and other major work done in Seattle (or an alternate port in Washington, or Portland, Readsport, or Newport in Oregon), but may make the trip only every two years if they do not usually participate in PNW coast fisheries on a regular basis. This is also a tendency which seems to accompany shore plant acquisition of more pollock-specialized catcher vessels. The increasing need to economize and the decreasing fishing opportunities in Pacific coast fisheries are also factors in this trend. Depending on the degree of shelter provided by moorage at the different plant locations, catcher vessels may tend to tie up at Alaskan shore plants after the pollock "B" season. Limited moorage for catcher vessels participating in the Bering Sea pollock fishery exists in other Alaskan ports (Kodiak, Sand Point), but only to a very limited extent. Catcher vessels delivering offshore tend to go to Seattle every year if they participate in the Pacific coast hake fishery. Otherwise, they also tend to stay in Alaskan waters when they do not need major shipyard work, and will look for Alaskan fisheries to 'fill in' their annual harvest cycle. This trend has the effect of increasing the use of air flights to connect crew with vessels, so that an indirect effect is to increase the availability of and support for transportation links for various Alaskan fishery communities (a trend also seen to a much larger degree with the 'transient' components of the shore plant workforces).

The typical catcher vessel crew size seems to be about 5, with an additional person or two to fill in and allow crew members to rotate out for rests in turn. As noted in the sector profile, overall employment per vessel decreased with the shortening of the seasons (as there are no more 'crew rotations' as in earlier years). No systematic information on overall sector employment is available, but our interview information indicates that most crew is from the Washington/Oregon area, with a concentration in Seattle. This was true even though many catcher vessels apparently spent most of their time in Alaskan waters, and may tie up in Alaskan ports more than in Washington or Oregon. This may reflect an historical situation, before Alaskan moorage was available and boats did return to Seattle every year, combined with continued Washington/Oregon ownership. Much of our interviewing was conducted in Seattle, but a significant portion was also done in Unalaska (and some in Anchorage).

Catcher vessel expenditure patterns are difficult to generalize. In-season operational expenditures are made in Alaskan ports. Catcher vessels tend to tie up in Alaskan waters when possible, but maintenance requiring shipyard work and overhauls tend to take place in or near the owner's physical residence, which in most cases in the Pacific Northwest. Crew tends to reflect the boat's "community of origin" as well, so that the overall revenue flow for most catcher vessels is oriented to the Washington/Oregon area, and for the Bering Sea pollock fishery, more specifically to Washington. These economic effects are distributed more widely, and to a wider range of communities, than for the processing sectors considered above.

4.4 THE GENERAL SEATTLE COMMUNITY CONTEXT OF THE BERING SEA POLLOCK FISHERY

This section looks that the community end of the sector/fishery-Seattle community links from the community context perspective. This is done in two ways, from the general community context and from the localization of industry perspective.

4.4.1 General Bering Sea Fishery Seattle Community Context

The contribution of the seafood industry, and the Bering Sea pollock fishery in particular, is significant in absolute and relative terms in the context of the community of Seattle. As already noted, the offshore sectors of the Bering Sea pollock fishery are the most closely linked to the community in terms of uniformity of ties across different aspects of the business structure in general (i.e., a 'larger part' of their total operations are focused in Seattle than is the case of other sectors). This should not be taken to underestimate the overall important of the other sectors, however. According to a 1997 NRC report, in 1996 the Washington inshore seafood industry generated 32,837 FTEs (21,308 in Washington and 11,529 in Alaska) and $791 million of earnings impacts ($532 million in Washington and $259 million in Alaska). In terms of economic output, it contributed $1.9 billion to the Washington state economy and $1.2 billion to the state of Alaska economy. This underscores the interrelatedness of the economies of the two states. Companies based in Washington depend on Alaska fisheries for the great bulk of the raw materials processed in Washington.

Alaskan, as well as Washington, fishermen harvest this resource. The corporate offices and sales outlets of the processing companies are located in Washington, as are most of the suppliers and support services for the industry.

The focus of our analysis is this section is the contribution of the Bering Sea pollock fishery to Seattle and the preceding sections looked at sector specific ties. This section will examine the issue from the 'other side of the equation' -- from the community 'side' of the sector-community links. Unfortunately, most of the information available does not enable us to focus on this issue with a fine resolution. Different sources address different partial aspects of this comprehensive question. Some discuss different scales of detail -- local versus distant fisheries, groundfish versus other fisheries (crab, salmon, and so on), or fishing as a whole versus other maritime activity (shipping, for example). Some discuss different components of commercial fishing activity -- harvest versus production, or one particular type of operation versus all others. Some concentrated on more confined, or more broadly regional, geographical areas. By collecting some of this material together and piecing it together, however, some sort of understanding of the overall contribution of commercial fishing to Seattle should be possible.

We begin this portion of the discussion by summarizing some comprehensive, yet dated information on the structure of the relationship between Seattle and the Alaska distant water fishery. According to recent discussions (NRC 1998: personal communication), these data still represent the overall nature of the ties between Alaska fisheries and the Seattle area. Further, the several studies summarized here are presented in chronological order, so the evolution of ties can, to the extent that data from intermittent points allow, be seen.

Natural Resource Consultants 1986 is a dated, but quite comprehensive, account of commercial fishing activity by the Seattle and Washington state fleet. They provide a brief historical narrative on the development of the various fisheries, and then a more detailed summary of the harvest for 1985. The estimated ex vessel value of the grand total of all seafood taken from local waters by Washington's local fleet was about $93 million, by 5,747 vessels with an estimated crew employment of 11,072 (NRC 1986:18,19). Distant water fisheries, primarily in the Gulf of Alaska and the Bering Sea, yielded an estimated grand total of $290 million for 1,371 vessels with an aggregate crew of 6,088 (NRC 1986:28,33). The joint venture fleet accounted for about $80 million (ex vessel) of this, with about 81 vessels and 405 crew, with an additional 11 catcher processors accounting for another $25 million (ex vessel) and about 330 jobs. In their summary section these points are reemphasized. In terms of weight or volume, 92 percent of the seafood harvested by Washington fishermen came from Alaskan waters, and only 7 percent from local waters. In terms of ex vessel value, Alaskan harvest was worth $283 million and local harvest $110 million (and other harvest $8 million). Most of the Alaskan catch was processed to some extent in Alaska by a processor based in Seattle. NCR states that there were about 130 seafood processing/wholesaling and 33 wholesale/cold storage companies in Washington in 1985, operating 250 primary processing and wholesale plants in Washington and 120 shore-based or at-sea in Alaska. Washington processing employment was 4,000 seasonally, and in Alaska was 8,000, with half coming from Washington (NCR 1986:35-39).

Lastly, table SEA-5 reproduces NRC's conclusions as to the total contribution of the Washington state fishing industry to the total economy. Alaskan water activities account for fully half of it, and these activities were centered in Seattle (although that was not a central part of their discussion).

This study was updated in 1988, and again Washington fishermen harvested about 80 percent (ex vessel value) of their catch in distant waters, with 98 percent of that coming from Alaskan waters. About 72 Washington state vessels participated in the joint venture trawl fishery, directly employing about 360 people. There were also 43 catcher processors employing about 2,200 people, and 26 shore-based trawlers, employing about 130 people. Pollock was an unspecified percentage of the harvest of these operations (see Table SEA-6).

Table SEA-5
Total Economic Contribution of the Washington State Fishing Industry
1985 (Millions of $)

		Direct	Direct & Indirect
Locally Landed	Landed Value	109.7	170.0
	Value added by processing	94.5	123.8
Subtotal		204.2	293.8
Landed in	AK, CA, OR, HA	242.3	382.7
	Value added by processing	133.3	174.6
Subtotal		375.6	557.3
From Non-State landings: Washington share of value added		195.7	256.4
TOTAL		775.5	1107.5

Source: NRC 1986:41

Table SEA-7 reproduces NRC's summary of the contribution of commercial fishing to Washington state's economy in 1988. The grand total, including indirect effects, was estimated at $3.1 billion, an increase from the 1985 estimate of $1.876 billion. Local water harvest and processing accounted for about 19 percent of this, distant water fisheries and processing about 57 percent, and other processing activities by Washington companies for about 24 percent. Of the estimated 36,608 FTEs associated with this economic activity, 39 percent were attributed to the distant water fishing fleet and 40 percent to out-of-Washington-state processing. The $1.794 billion of direct and indirect benefits associated with the activities of the distant water fleet was also estimated to generate an additional $795 of induced benefits.

Table SEA-6 Estimated Volume and Value of Washington Distant Water Commercial Fish Harvest, 1985 and 1988						
Fishery	Harvest Volume (000 mt)		Harvest Value (million $)		Wholesale Value (million $)	
	1985	1988	1985	1988	1985	1988
Salmon	80.3	66.8	106.1	240.0	238.0	525.6
King and Tanner Crab	26.4	51.7	42.2	129.4	54.9	191.5
Longline Halibut and Blackcod	12.1	19.8	20.9	40.7	34.8	63.1
JV Trawl	720.8	802.8	78.3	120.4	78.3	120.4
Catcher Processor	111.6	546.0	24.6	103.7	61.6	334.1
Roe Herring	12.6	5.9	8.5	5.9	18.7	10.8
TOTAL	963.8	1493.0	280.6	640.1	486.3	1245.5

Note: Shore-based trawl landings are not included. Dungeness crab landings have been excluded. Volume and value estimates for salmon landings may be as much as 5 percent too high, but are retained for consistency with earlier work.
Source: NRC 1988:10

Table SEA-7 Total Economic Contribution to the Washington State Commercial Fishing Industry in 1988 (Millions of $ to Washington Economy)			
locally landed	Landed Value	137	269
	Value added by processing	171	320
Subtotal		308	589
Distant Water	Landed Value	639	1257
	Value added by processing	288	537
Subtotal		927	1794
Non-State Landings: Washington State share of value added		405	756
TOTAL		1640	3139

Source: NRC 1988:16

Turning to more recent data, Chase and Pascall (1996) focus on the importance of Alaska as a market for Seattle region (Puget Sound) produced goods and services. They do so by identifying particular industrial sectors that generate the bulk of these economic impacts, but they do not locate these industrial sectors in terms of particular geographic locations within the region. Table SEA-8 essentially reproduces their summary of the direct and indirect impacts (jobs and labor earnings) on the Puget Sound economy from regional goods exported to Alaska, and from industries that harvest and/or process Alaska resources. The indirect impacts they include are of two types -- one from industries that do not export to Alaska, but provide services to those who do, and from the spending of income earned by employees is such exporting or export-serving industries (the ripple effect).

Table SEA-8
Total Alaska Job, Value of Exports, and Labor Earnings Impacts on Puget Sound Region, 1994

Sector	Exports ($Million)	Jobs	Earnings ($Millions)
Export-Related Impacts			
Goods & Services, Total	NA	44890	$1,250.5
Manufacturing	$816.8	6696	$235.9
Trade	$296.2	13697	$298.6
Services	$312.1	19199	$503.3
Finance, Ins, & Real Estate	$59.7	3562	$137.3
Agriculture, Forestry, & Mining	$9.8	425	$14.5
Construction	NA	366	$11.0
Utilities & Communication	NA	944	$49.9
Transportation	$894.3	8547	$339.1
Resource Related Impacts			
Fisheries, Total	NA	29788	$1,082.6
Fishing Fleet, Total	$1,864.0	22094	$756.8
Fishing Fleet, direct	$863.0	8726	$386.6
Fishing Fleet, indirect	$1,001.0	13368	$370.2
Seafood Processing, direct	NA	5600	$189.0
Seafood Processing, indirect	NA	1094	$136.8
Petroleum Refining, Total	NA	6873	$251.0
TOTAL (of left justified labeled cells)	$2,388.9	90098	$2,923.2

Source: Chase and Pascall 1996, Tables 3 and 7.

In their discussion of the fisheries sector, Chase and Pascall indicate that only a fraction of the regional economy is based on fishing and seafood processing industries, but that these industry sectors are concentrated in several communities and rely heavily on North Pacific (Alaskan) resources. The communities that they single out are Bellingham, Anacortes, and the Ballard neighborhood of Seattle. They say that Seattle is the major base for vessels for various fisheries -- groundfish (catcher vessels, catcher processors, motherships), halibut, crab, salmon, and others. There are numerous secondary processing plants in the region, and about 60 percent of the seafood harvested and shipped south for processing moves through the Port of Tacoma (Chase and Pascall 1996:23).

The relative value of Alaskan groundfish (cod, pollock, sablefish, flounder, and other bottom fish aggregated together) for the Seattle fleet varies from year to year, but in 1994 was about 17 percent of the ex vessel value of the Alaska/North Pacific Commercial Fishing Harvest (Chase and Pascall 1996:26), which represented about 75 percent by harvest value, and 92 percent by weight, of all fish harvested by the Puget Sound fishing fleet (Chase and Pascall 1996:23 -- citing ADF&G, NPFMC, NMFS).

Direct jobs generated by fishing in the Seattle area are 8,726, with an additional 5,600 direct jobs from processing. Indirect jobs generated from the purchase of goods and services by the fishing fleet, and their workers spending money in the area, were calculated at 13,368 (1,094 for processing -- see Table SEA-8).

Other relatively recent work (Martin O'Connell Associates 1994) indicates the wide range of activities that the Port of Seattle supports, and the web of support services which commercial fishing helps support, but provides no measure of the contribution of the Bering Sea pollock fishery to this support. Fishing activities are included in this study only to the extent that they are reflected in activities at Fishermen's Terminal. This may reflect some Bering Sea catcher vessel activity, but would greatly underestimate catcher processor, mothership, and secondary processing activities. By their estimation, fishing activity at Fishermen's Terminal in 1993 generated 4007 direct jobs (the majority of them crew positions), earning an average of $48,690 per direct job (total $195 million). In addition, an additional 2,765 induced and indirect jobs were created. Fishing businesses also expended $145 million on local purchases of goods and services (Martin O'Connell Associates 1994:45-49). Again, this does not indicate the contribution of the Bering Sea pollock fishery so much as it establishes that the local fishing/processing economy is densely developed. Also, if the estimates or models of vessel expenditures developed for operations using Fishermen's Terminal can be extrapolated to other vessels based in Seattle, an estimate of the contribution of the Bering Sea pollock fishery may be possible. The estimate for annual expenditures in Seattle for a factory trawler using Fishermen's Terminal was about $2,000,000 in 1993. Miller et al. 1994 indicate that for a model surimi vessel, 1993 operating expenditures other than for crew had been in the range of $10 million annually. These would have been distributed among all the places where the vessel fished, as well as its Seattle (or Tacoma) home port, but still indicates that there is a large contribution to the regional economy from the presence of these vessels. Each vessel also represents more than 100 direct jobs and a payroll of $3 to $5 million (Mill et al. 1994:1,23).

A summary profile of the Puget Sound maritime industry, which includes commercial fishing, is included in Economic Development Council of Seattle and King County 1995 (Appendix A:39-49). Pertinent information will be abstracted here. The list of included businesses is quite long and is a good indicator of how far indirect benefits can spread:

> . . . cargo shipping, tugs and barges, commercial fishing and supply; sip and boat building; cruise ships; vessel design and repair; fueling; moorage; the fabrication and sale of marine gear such as electronics; refrigeration, hydraulics, and propulsion equipment; the operation of marinas, dry docks and boat yards; services provided by customs and insurance brokers and shipping agents; and maritime professional services including admittedly law, marine surveying and naval architecture (Appendix A:39).

It was estimated that in 1992 there were 30,000 jobs in the maritime sector within the four-county region, including 10,000 in commercial fishing; 7,000 in fish processing; 5,000 in marine recreation; and 3,900 in boat building and repair. Average wages were estimated at $24,000 for fish processors; $32,000 for ship and boat building and repair; and $50,000 to $80,000 for commercial fishing. The sector is one noted for providing entry level positions for those with limited education and job skills, so that they can learn a high-wage job. Each job in this sector creates or supports 1 to 2 other jobs in the regional economy, and each dollar of sector output generates about one additional dollar in output from the rest of the economy.

Seattle offers the maritime sector, and the distant water fleet in particular, a "critical mass" of businesses that allows vessel owners and other buyers a competitive choice of goods and services. The same is true to a lesser extent of other regional ports, such as Tacoma. Efficient land transportation systems are also critical, and Seattle has good rail and truck linkages (and the Port of Seattle is working to improve them).

Although the maritime sector is an important one for the region, some of its components are currently experiencing some difficult times. Other regional communities (Anacortes, Bellingham, Port Townsend) as well as non-regions locations in Alaska (closer to the distant fishing waters) are working to develop port facilities to lure vessels so that they may gain the economic benefits of the associated support and supply business. Common sorts of projects are the improvement of shoreside access, building additional moorage, or work and storage capacity. The Port of Seattle is in the process of an aggressive refurbishing of much of its moorage, originally built during World War II. Pier 91, now home to a central part of the catcher processor fleet through a long-term lease from the Port of Seattle, is being extensively rebuilt (Mark Knudsen, personal communication).

Regional shipyards have been in a slump, more-or-less reflective of the economic health (or lack of it) of the fishing industry. Low prices and regulatory uncertainty are cited as major weak points. There also seems to be a reasonable supply of used boats (Economic Development Council of Seattle and King County 1995, Appendix A:46)

Natural Resource Consultants repackaged some of their earlier work, and added additional analysis focused specifically on the contributions of inshore Washington state (but also Alaska) processing plants to the Washington state economy (NRC nd, 1997). The Washington inshore seafood processing industry purchased $859.5 million of raw material in 1991, $720.1 million form Alaska and $139.4 million from Washington waters. Salmon accounted for 46 percent of the total value of these purchases, while groundfish accounted for 19 percent. The total finished product from all this raw material was worth $2.134 billion ($1.8 billion from the Alaskan raw material). Salmon accounted for $780 million of the final product's value, while groundfish accounted for $482 million. "... inshore processors operating in Alaska and Washington account for more than 50% of the value of U.S. seafood exports" (NRC nd:4).

Expenditure patterns for Washington (and Washington-owned Alaskan) inshore plants were modeled in these NRC documents. Inshore plants expenditures average 46 percent for their raw materials (fish and shellfish), 16 percent for wages and benefits, 9 percent for processing materials, and 7 percent for tendering and other transportation costs. About 55 percent of these expenditures were made in Washington, 43 percent in Alaska, and 2 percent form other states. This is stated to include fish and shellfish purchased in Alaska from fishermen who homeport in Washington (NRC nd:9), and economic benefits were produced from these expenditures in direct proportion to their magnitude.

The estimated total economic output from primary and secondary processing activities for all seafood to the Washington state economy in 1991 was calculated to be $1.865 billion. This was the result of three main factors:

- A substantial portion of expenditures for raw material (fish) in Alaska are made to fishermen whose home ports are in Washington.
- The majority of administrative and sales functions of processing companies are carried out in Washington.
- A major portion of support industries (equipment and packaging manufacturing) are located in Washington.

That is also the order of their significance in terms of contributions to economic benefits.

In addition, a substantial amount of secondary processing takes place in Washington. This produces additional benefits to that of primary processing of about 3,635 FTEs, earnings of $81 million, and indirect benefits of $287 million. The report also points out that the Washington inshore processing sector is the second highest value food product contributor to the Washington state economy, being topped only by the apple.

NRC updated this report in 1997 and reached essentially the same conclusions. In 1996 the Washington inshore seafood industry generated 32,837 FTEs (21,308 in Washington and 11,529 in Alaska) and $791 million of earnings impacts ($532 million in Washington and $259 million in

Alaska). In terms of economic output, it contributed $1.9 billion to the Washington state economy and $1.2 billion to the state of Alaska economy (NRC 1997).

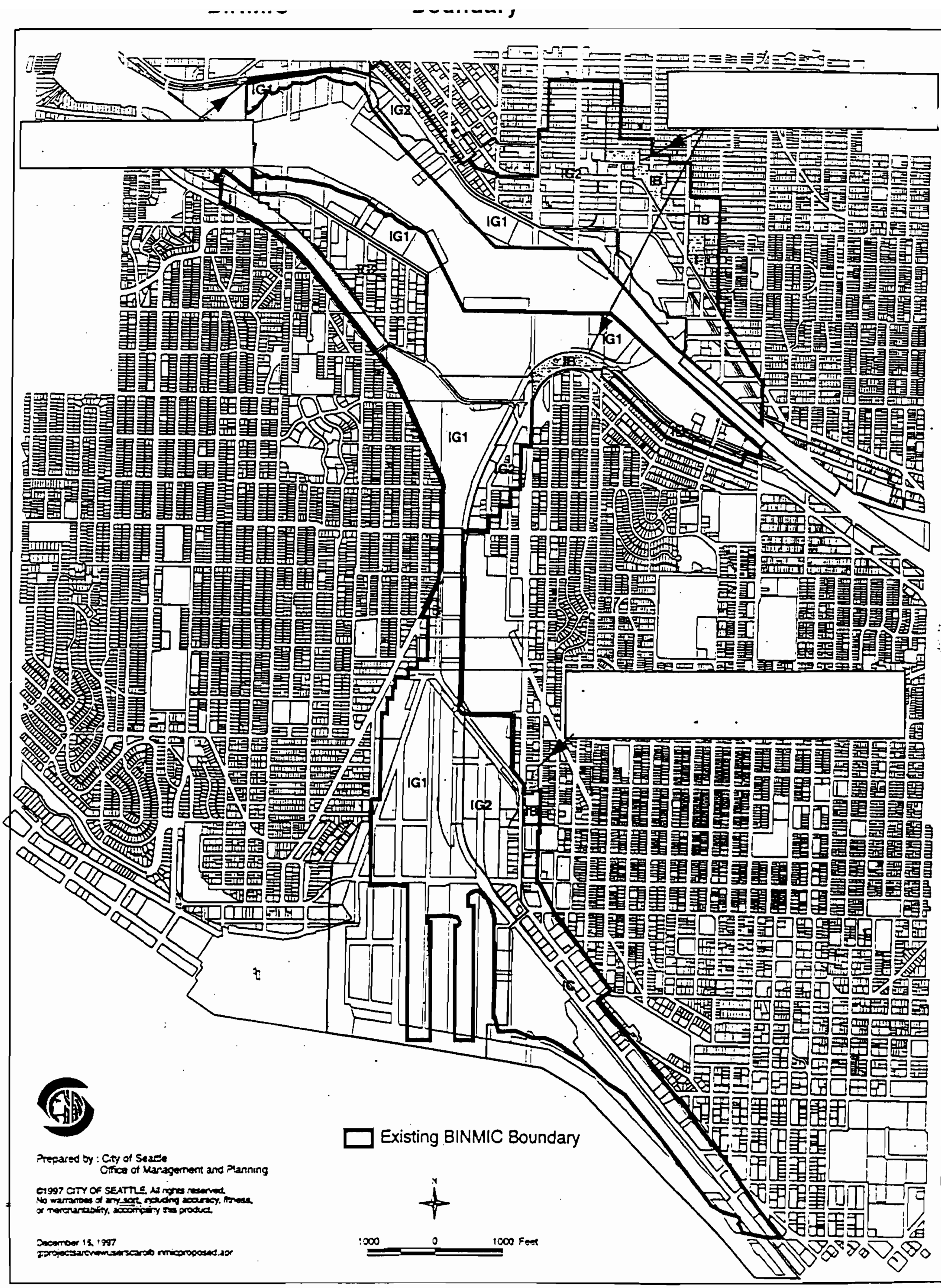
As noted earlier, these data underscore the interrelatedness of the economies of Alaska and Washington and, as has been seen through the sector profiles and the ties to particular communities, the ties between Seattle and specific Alaska communities. Companies based in Washington depend on Alaska fisheries for the great bulk of the raw materials processed in Washington, and residents of both states harvest Bering Sea resources. Also as noted earlier, the corporate offices and sales outlets of the processing companies are located in Washington, as are most of the suppliers and support services for the industry. The following section looks at the localization of the fishing industry within the waterfront area of Seattle.

4.4.2 Seattle Community Context and the Localization of Industry: The Ballard Interbay Northend Manufacturing Industrial Center

With previous discussion as a as regional context, we can now examine an attempt to more closely associate a specific area of Seattle with commercial fishing (and other associated) activities. One of the fundamental purposes for the establishment of the Ballard/ Interbay/ Northend Manufacturing and Industrial Center (BINMIC) Planning Committee was the recognition that this area provided a configuration of goods and services that supported the historical industrial and maritime character. At the same time, developmental regional dynamics are promoting changes within the BINMIC area which may threaten the continued vitality of its maritime orientation. Among other objectives, the BINMIC final plan states:

> The fishing and maritime industry depends upon the BINMIC as its primary Seattle home port. To maintain and preserve this vital sector of our economy, scarce waterfront industrial land shale be preserved for water-dependent industrial uses and adequate uplands parcels shall be provided to sufficiently accommodate marine-related services and industries (BINMIC Planning Committee 1998:6).

Ballard, in northwest Seattle, is commonly identified as the center of Seattle's fishing community. This may be true in an historical residential sense, but commercial fishing-related suppliers and offices are spread along both sides of Salmon Bay-Lake Washington Ship Canal, around Lake Union, along 15th Avenue West through Queen Anne, and then spread along the shores of Elliot Bay on both sides of Pier 91. Not surprisingly, this is also the rough outlines of the formal BINMIC boundaries, which is bordered by the Ballard, Fremont, Queen Anne, Magnolia, and Interbay neighborhoods (see map, next page). It is defined so as to exclude most residential areas, but to include manufacturing, wholesale trade, and transportation-related businesses. It includes rail transportation, ocean and fresh water freight facilities, fishing and tug terminals, moorage for commercial and recreational boats, warehouses, manufacturing and retail uses, and various Port facilities (Terminal 86, Piers 90 and 91).


IG1
IG2
IB
Existing BINMIC Boundary
Prepared by : City of Seattle
Office of Management and Planning
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No warranties of any sort, including accuracy, fitness, or merchantability, accompany this product.
December 15, 1997
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The BINMIC "Economic Analysis" document (Economic Consulting Services 1997) uses much of the same information as was reviewed above, in combination with an economic characterization of the BINMIC area, to establish that certain economic activities are especially important for that area. One of these activities is commercial fishing -- although again the connection to the Bering Sea pollock fishery in particular is somewhat difficult to establish concretely.

The BINMIC area is a relatively small one, but contributes disproportionately to the city and regional economy (Table SEA-9). Again, those characteristics are part of what determined its borders. The BINMIC resident population is only 1120 (1990 census), but there are 1,048 businesses in the area and 16,093 employees. The great majority of business firms are small -- 85 percent had fewer than 26 employees, but accounted for only 30 percent of total BINMIC employment. Self-employed individuals (i.e. fishermen) are probably not included in these numbers. Employment by industry -sector is displayed in Table SEA-10.

Table SEA-9
Relationship of Estimated BINMIC Population and Employment
to Local, Regional, and State Population and Employment
(% of total reflects BINMIC's share of each area's total pop. & emp.)

Area	1990 Population	BINMIC as % of Total	1994 Employment	BINMIC as % of Total
BINMIC	1120	100	16093	100.0
City of Seattle	516259	.22	490632	3.3
King County	1507319	.07	912038	1.8
Puget Sound	2748895	.04	1363226	1.2
Washington State	4866692	.02	2212594	0.7

Source: Economic Consulting Services 1997:14

Table SEA-10 BINMIC Employment by Industry Sector			
Industry Sector	Units	Employees	Percent of Total
Agriculture, Forestry, & Fishing	129	750	5
Mining & Construction	83	1169	7
Manufacturing	216	5322	33
Transportation & Utilities	35	1608	10
Wholesale Trade	178	2239	14
Retail Trade	121	1606	10
Finance, Insurance, & Real Estate	43	306	2
Services	233	2604	16
Government	10	489	3
TOTAL	1048	16093	100
Source: Economic Consulting Services 1997:29			

An important indicator of the importance of commercial fishing and other maritime activities is the availability of commercial moorage. As of 1994 more than 50 percent of all commercial moorage available in Puget Sound was located in Seattle, and of that, more than 50 percent was in the BINMIC area (representing 30 percent of all commercial moorage in the Puget Sound area). Thus the BINMIC area is clearly important in terms of being an area where vessels (especially larger commercial vessels) are concentrated. The Port of Seattle has concluded that only the Ports of Olympia and Tacoma at present provide a significant source of moorage in Puget Sound outside of Seattle. Port Angeles may build additional capacity at some point in the future. Olympia's facility was rebuilt in 1988, and Tacoma is serving as the home port for the Tyson fleet of catcher processors. Some older moorage constructed prior to 1950 of timber piling is nearing the end of its useful life, and will need to be replaced. The Port of Seattle is currently in the process of refurbishing Pier 91 in thus way, which has enabled it to sign American Seafoods to a long-term lease for its catcher processor fleet. On the other hand, it is expected that much of the private old timber moorage will not be replaced, so that overall moorage capacity will decline. In the Seattle area, there has also been a dynamic whereby commercial moorage had been converted to recreational moorage. Within the BINMIC area, recreational moorage within the UI Shoreline is prohibited altogether, because of the importance of commercial activity and the danger of interference from recreational moorage. The Port has concluded that it is unlikely that any new private commercial moorage will be developed (because of cost and regulatory regime) and is examining the options open to the Port (Port of Seattle 1994). As previously mentioned, the Port is pursuing a program of repairing its facilities where economically feasible (when it can be fairly well assured of a steady tenant).

The BINMIC area is fairly well "built out." The BINMIC area contains 971 acres, divided into 806 parcels with an average size of 1.043 acres, but a median size of ,207 acres. Thus there are many small parcels. Public entities of one sort or another own 574.8 acres (59 percent). The Port of Seattle is the largest landowner with 166 acres, while the city has 109 acres. Private land holders own 396 acres, of which only 19.45 acres were classified as vacant -- 19.27 acres in 81 parcels as vacant industrial land and .18 acres in 2 parcels as vacant commercial land. An additional 200.76 acres were classified as "underutilized," meaning that it had few buildings or other improvements on it. This classification does not mean that the land may not be in use in a fruitful way (for instance, storage of gear or other use that is not capital intensive).

Economic Consulting Services 1996 lists 85 companies that have a processing presence in Washington State (Appendix C). Of these, over half (47) are located in Seattle, with many in the surrounding communities (Bellevue, Kirkland, Redmond). Of these 47, at least 18 are located within the BINMIC. Another 30 are located very near the boundaries of the BINMIC. Some examples of fairly large fishing entities that are located within BINMIC (as well as elsewhere) are Tyson Seafoods, Trident Seafoods, Icicle Seafoods, Ocean Beauty Seafoods, Peter Pan, Alaska Fresh Seafood, and NorQuest Seafoods. All demonstrate some degree of integration of various fishing industry enterprises. Trident operates shore plants in a number of locations, owns a fleet of catcher vessels, cooperates in a catcher processor operation, and participates in a CDQ group partnership. Tyson operates shore plants, catcher processors, catcher vessels, and a floating processor, as well as operating a broadly based food company.

The BINMIC area of Seattle displays the following characteristics which indicate its important economic roles:

- it is a significant component of, and plays a vital role in, the greater Seattle economy;
- it is integrated into local, regional, national, and multinational markets;
- it is a key port for trade with Alaskan and the West Coast, Pacific, and Alaska fishing industries -- and the Alaskan fishery is especially significant;
- Salmon Bay, Ship Canal, and Ballard function as a small port of its own, but also support fishing and a wide range of other maritime activities -- including recreation and tourist vessels and activities;
- The BINMIC area is and has been an area of concentration of businesses, corporations, organizations, institutions, and agencies that participate in, regulate, supply, service, administer, and finance the fishing industry.

4.5 SUMMARY: SEATTLE AND SIA ISSUES

As noted in the introduction to this section, what Seattle an analytic challenge, in terms of a socioeconomic description and a social impact assessment directly related to the Bering Sea pollock fishery, is its scale and diversity. Seattle is arguably more involved in the Bering Sea pollock fishery than any other community, but from a comparative perspective, Seattle is arguably among the least involved of the communities considered. The sheer size of Seattle dilutes the overall impact of the Bering Sea pollock fishery jobs and general economic contributions when viewed on a community scale, in contrast to Alaskan communities where such jobs and revenues are a much greater proportion of the total economic base of the community. This section has attempted to portray the complexities of the ties of the Bering Sea pollock fishery to Seattle in terms of sectors, specific portions of the economy, and on a geographically localized basis.

All of the Bering Sea pollock fishery sectors are tied to Seattle in one way or another, although the magnitude and nature of these ties varies considerably between sectors. It is clear that Seattle, as a community is, from a number of different perspectives encompassing specific sector structures and geographically attributable industrial areas, engaged in and dependent upon the Bering Sea pollock fishery. To avoid losing the importance of the fishery in the 'noise' of the greater Seattle area, the potential reallocation effects discussed in the SIA summary section of this document will do so in terms of Bering Sea pollock fishery industry sectors and their linkages to Seattle, as described in this section, rather than attempting an overall contextualization of the fishery within the metropolitan area.

5.0 CDQ PROGRAM AND SOCIAL IMPACT ASSESSMENT

The role of the CDQ program, and the analysis of potential consequences of implementation of various inshore/offshore allocative alternatives, is being covered by another study. That study was not available at the time of the production of this document. As it was known that the CDQ study was in process at the time this work was being prepared, redundant information was not developed for this study.

We would, however, note that when the analysis of the CDQ communities and this more general socioeconomic description and social impact analysis are compared or contrasted, there are several main points, from a social impact perspective, that the reader should bear in mind. These include:

- Variability among CDQ communities
- Differences in the articulation of the fishery in CDQ and other participating communities
- The role of CDQ groups vis-a-vis their communities
- The frequent confusion/confoundment of CDQ program goals with those of I/O
- Some CDQ groups have used CDQ resources to invest in Bering Sea fisheries through investment in their CDQ partners. These CDQ groups may be potentially affected by inshore/offshore pollock allocation changes through effects upon their CDQ partners in ways that groups without such investments would not be. This would also potentially have community effects as well, but these would depend upon the relations between the CDQ group and the residents of its member communities.

These points are summarized below.

5.1 VARIABILITY AMONG CDQ COMMUNITIES

It is important to note that CDQ communities span a wide geographic range. With this range comes internal differentiation, on several levels. The local economic base varies from community to community, as do sociocultural factors/structure. This variability of baseline conditions will serve to shape the consequences of changes to existing relationships through changes in inshore/offshore allocations. In other words, consequences are likely to play out differently in different communities based, to a degree, on the variations between existing community conditions.

5.2 ARTICULATION OF COMMUNITIES AND THE FISHERY

CDQ involvement is different, in social terms, from the relationships residents of other communities have with the Bering Sea. This is the case on several levels. In terms of direct employment, communities historically associated with the Bering Sea pollock fishery have varied economic bases, but one issue has been the degree to which fishery activity was supported by "local resident" employment as opposed to an "imported nonresident" labor force. CDQ communities were generally uninvolved with the pollock fishery prior to the initiation of the CDQ program, but clearly their participation reflects that of long-term local residents. The revenue base for communities historically involved in the Bering Sea pollock fishery is also of a different nature than that of CDQ communities, and this is related to their previous non-involvement with the pollock fishery. This is particularly striking when one contrasts CDQ communities with communities that have shoreplants that process pollock. Not only is the economic base of such communities different in type, it is of a different magnitude, and entails a different set of relationships. For example, shoreplants comprise the major part of the tax base for those communities where they exist (property tax, fish taxes), employ large labor forces (which may be largely imported), buy fish from a CV delivery fleet which may include local boats or not, greatly affect the way community infrastructure may be developed in conjunction with the industrial needs of shoreplants, and so on. The fact that an industry is physically present in the community, and interacts with the community, has dynamic consequences for the social structure of that community.

5.3 ROLE OF CDQ GROUPS AND COMMUNITIES

It is also important to note the role that CDQ groups play in 'mediating' the link between the pollock fishery and individual communities. While individual communities are often discussed as 'CDQ communities,' the community as a whole (or the local government) is not the entity that is directly involved with the fishery -- it is a regional corporate entity formed specifically for administration and management of CDQ issues and programs. These groups have varying relations to their 'constituent' communities. It is a fundamentally important point that regional CDQ entities are not the same as individual communities. Clearly, there is a great deal of variability between CDQ groups in their strategies in managing their CDQ based resources. For example, some groups focus more on direct employment opportunities than do other groups.

5.4 CDQ AND INSHORE/OFFSHORE 'INTERACTION'

An additional consideration in looking at the relationship of the CDQ analysis and the Inshore/Offshore analysis is the confounding of the two issues, in a number of areas. Pollock CDQ allocations were originally implemented simultaneously with Inshore/Offshore allocations, but CDQ allocations themselves were 'inshore/offshore neutral.' That is, the CDQ allocations were not linked in any way to either inshore or offshore sector allocations. As the CDQ program has evolved, and partnerships developed, the CDQ program, as it exists today, is more heavily associated with the offshore than the onshore sector, for a variety of reasons. The NPFMC has formally 'decoupled' CDQ programs from Inshore/Offshore, but in many people's minds, the CDQ program has become to be very strongly associated with the offshore sector. This has, in turn, led to a number of complexities for analysis. For example, Alaska hires under the CDQ program are often 'counted' as Alaska hires for Inshore/Offshore analysis purposes, when they are not technically a part of the open access fishery, or at least the inshore/offshore allocative split, per se (although "CDQ hires" often work in both CDQ and open access fisheries). That is not to say there would not be disproportionate impacts to CDQ groups were their existing partners to be disproportionately impacted by any changes in allocation – the point is simply that CDQ considerations are not a part of the inshore/offshore action itself. The issue has been raised by some groups that confounding CDQ program related employment with open access fisheries related employment is a case of 'mixing apples and oranges.' While analytically separable, the CDQ-Offshore partnering pattern has become part of the baseline condition and, if adjustments are made, impacts to the CDQ organizations would not be neutral.

While we were not charged with the analysis of impacts of the proposed actions on the CDQ program, CDQ groups, or CDQ communities, we did conduct some limited discussions with CDQ group representatives in regard to the pattern of employment of their members in Bering Sea fisheries (both CDQ and non-CDQ). This was to contextualize the information we were obtaining form other contacts, and not to develop systematic information about this topic, since we did not contact all CDQ groups. One concrete result of one of these conversations was an enumeration by year of the people that one CDQ group placed in various fishing operations, with their aggregated wages. It is interesting that only some of these placements were with their own CDQ partner. Others placements were with fishing operations working with other CDQ groups, or even non-CDQ partner fishing/processing entities. This information is presented in Table CDQ-1.

5.5 SCALE OF THE CDQ PROGRAM

Table CDQ-2 presents aggregated total wage and employment information from the CDQ program for the years 1992-1997. The data in this table are taken directly from the McDowell report for the State of Alaska: Analysis of Inshore/Offshore Impacts on the CDQ Pollock Program, prepared for the Alaska Department of Fish and Game and the Alaska Department of Community and Regional Affairs, dated April 1998, and included as Appendix III in the Draft I/O-3 documentation prepared by the NPFMC for the April 1998 Council meetings. These data are presented here to provide the reviewer with a sense of scale of the CDQ program over the past several years. More information on the context of these numbers, and the methodology by which they are derived, are contained in the McDowell group report included in the larger document of which this is a part. The reader should bear in mind that the numbers represented in the table are a summation of the years 1992-1997. Again, these data are merely presented here to give the reader a sense of scale of the CDQ program.

Table CDQ-1: CDQ Pollock Employment Data, Members of One Specific CDQ Group

SECTOR/Information Category	YEAR												TOTAL	
	1992		1993		1994		1995		1996		1997			
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
MOTHERSHIPS														
Employees by Season	0	12	21	13	16	6	14	9	20	12	19	10	90	
Total Different People Employed	11		32		14		18		22		22			
Total Wages Earned	10421		169427		173573		333033		417363		455291		1559108	
CATCHER PROCESSORS														
Employees by Season	2	5	1	7	9	1	30	2	5	8	22	34	69	
Total Different People Employed	5		7		9		31		13		53			
Total Wages Earned			41416		37248		171980		164104		223119		637867	
ONSHORE PLANTS														
Employees by Season	0	0	0	0	0	0	0	2	7	0	5	0	NA	
Total Different People Employed	0		0		0		2		7		5			
Total Wages Earned	0		0		0		4000		5000		5000		14000	
CATCHER BOATS														
Employees by Season	0	0	0	0	0	0	0	0	0	0	2	3	NA	
Total Different People Employed	0		0		0		0		0		4			
Total Wages Earned	0		0		0		0		0		44780		44780	

Source: CDQ Group Job Placement Individual

Table CDQ-2 CDQ-Village Workers and the Wages They Received Through the CDQ Program from 1992-1997							
All Groups	APICDA	BBEDC	CBSFA	CVFC/CVRF	NSEDC	YDFDA	Totals
Partner Wages							
Pollock Wages	545,562	1,567,361	870,187	1,420,911	2,394,262	1,537,293	8335576
Pollock Individuals	77	413	140	382	199	119	1330
Wages per Individual	7,085	3,795	6,216	3,720	12,031	12,918	6,267
Other Fisheries	314,708	300,063	9,148	685,600	428,005	21,813	1759337
Individuals	108	171	77	500	0	15	871
Wages per Individual	2,914	1,755	3,885	1,371		1,454	2,353
Other Work	768,247	57,733	-	57,422	-	27,329	910731
Individuals	187	17	0	2	0	17	223
Wages per Individual	4,108	3,396	-	28,711	-	1,608	4,084
Total Partner Wages	1,628,517	1,925,157	1,169,335	2,163,933	2,822,267	1,586,435	11295644
Total Individuals/Year	372	371	145	884	199	119	2090
Wages per Individual	4,378	5,189	8,064	2,448	14,182	13,331	5,405
Group Wages							
Group Wages	671,648	1,103,606	828,100	32,552	2,299,127	1,156,772	6091805
Individuals	51	143	75	35	66	0	370
Wages per Individual	13,170	7,718	11,041	26,644	34,835	-	18,897
Other wages to residents through group efforts	-	475,080	928,300		1,761,405	696,647	3861432
Individuals		104	81		627	131	943
Wages per Individual	-	4,568	11,460		2,809	5,318	4,095
Fish Tickets paid to Residents	1,783,343				5,529,691		7313034

Source: McDowell Group Report, based on CDQ Groups and Harvesting Partners, NPFMC 1998: 18.
Notes: "other fisheries" and "group wages" total column vary from those of the McDowell Group report for reasons not yet clear.

Table CDQ-3 summarizes the total annual jobs and the total annual wages reported for all CDQ groups in the annual and quarterly reports for all CDQ employment. This information is taken directly from the April, 1998 "Revised Draft Report: Economic Impacts of the Pollock Community Development Quota Program" prepared by the State of Alaska. Table CDQ-3 appears as Table VI-1 on page 58 of that document, and comes with the following caveat regarding interpretation of the numbers:

> The reporting format for CDQ employment information changed in 1996. This caused some incongruities in the reported information. Appendix V [of the State report] describes the basic assumption made when each group described their employment information before 1996. Since 1996, the CDQ groups provided a cumulative count of the number of jobs and people that were employed through their programs. The information attempts to measure the number of actual people employed on an annual basis. Pollock employment for 1996 and 1997 measures the number of people employed in "A" season. There are likely some individuals that worked in the "B" season that are not accounted for. (Pg 58).

This table is presented in this section for informational purposes only, and to contrast with annual data with the cumulative data presented in Table CDQ-2. No attempt was made to reconcile the data between tables, nor compare methodologies employed in deriving employment and compensation information between the two separate CDQ studies and the main body of this SIA document. The purpose in presenting this table, like the other information in this section, is to give the reviewer a sense of scale of the CDQ program relative to the overall open access pollock fishery that is the subject of the I/O-3 allocation consideration.

Again, without delving into methodological and comparability issues, several main point can be drawn from Table CDQ-3 in relation to the pollock fishery. The number of CDQ pollock related jobs appears to be decreasing relative to other fisheries over time – this makes intuitive sense, given the timing of the implementation of the pollock versus the other species CDQ programs. In absolute numbers, other fisheries provided 629 positions while pollock provided 227 positions. In terms of total wages, pollock total wages are surpassed by other fisheries in 1996 and 1997, and again this makes intuitive sense, given the growth of other species CDQ programs and the number of workers in the other fisheries. In terms of average wage, however, the importance of pollock compared to the other species becomes clear with the average wage for a CDQ pollock related position being $11,222 in 1997 compared to an "other fisheries" position for that same year being worth $4,383. Pollock related average wage also well outdistances "other employment wages" (at $6,826 per year), though it falls far below "management" wages (at $28,631 in 1997).

Table CDQ-3
CDQ Employment and Wages: All CDQ Groups, by Year, 1993-1997

	1993	1994	1995	1996	1997
Number Working					
Management	26	48	58	63	63
CDQ Pollock Related	170	268	300	161	227
Other Fisheries	64	276	393	691	629
Other Employment	95	531	157	138	130
Total	355	1123	908	1053	1049
Total Wages					
Management	586,537	1,012,125	1,218,892	1,636,860	1,803,766
CDQ Pollock Related	1,047,107	1,358,302	2,075,819	1,742,967	2,547,276
Other Fisheries	609,058	1,000,103	1,132,824	2,280,554	2,756,688
Other Employment	0	1,791,479	1,350,766	723,724	887,338
Total	$2,242,702	$5,162,009	$5,778,301	$6,384,105	$7,995,068
Average Wage					
Management	$22,559	$21,086	$21,015	$25,982	$28,631
CDQ Pollock Related	6,159	5,068	6,919	10,826	11,222
Other Fisheries	0	3,624	2,883	3,300	4,383
Other Employment	6,411	3,374	8,604	5,244	6,826

Source: State of Alaska, "Revised Draft Report: Economic Impacts of the Pollock Community Development Quota Program" April, 1998, page 58

6.0 SUMMARY SIA DISCUSSION POINTS BY RANGE OF ALTERNATIVES

This section provides a "bullet" format explication of the likely social impacts arranged by major alternative. From the simplifying assumptions, the alternatives considered are the no action alternative, the roll-over alternative, a significant shift inshore alternative, and a significant shift offshore alternative. Based on discussions with Council staff, for this analysis we have taken "significant shift" to mean a shift in quota on the order of magnitude of 10% of the TAC. Realizing that the purpose of this social impact assessment to allow the Council to fulfill its obligations under National Standard 8 as well as for the larger purposes of understanding the magnitude and direction of likely social impacts by major alternatives, this relatively general degree of specificity is appropriate for the purposes at hand.

6.1 SOCIAL IMPACTS OF A NO ACTION ALTERNATIVE

From a social impact assessment perspective, the no action alternative would not meet the purpose and need of the allocative management process.

- The No-Action Alternative would result in expiration of Inshore/Offshore
- To the extent that the basic conditions that triggered I/O-1 remain (or functionally equivalent conditions have remained/evolved) the initial preemption issue still exists.
    - Given pre-I/O history, sustained participation of fishing communities at risk would be at risk under this alternative.
    - Alaskan communities would be primarily negatively affected (i.e., the communities, or more accurately, the inshore sectors associated with them would be a risk of preemption). Only one Alaska community (Unalaska) would experience any degree of offset by gains in the offshore sector, but these would not be of a magnitude to offset losses seen by inshore preemption.
    - Seattle would experience both positive and negative impacts, due to the fact that the community is host to all sectors involved, and losses by one sector would potentially be made up by gains in others.

6.2 SOCIAL IMPACTS OF STATUS QUO/ROLL-OVER OF I/O: EXISTING SECTOR TRENDS OF CHANGE

The current Bering Sea pollock fishery is not in equilibrium, in a number of different senses, when examined on either a sector or geographic community basis. This being the case, potential impacts of allocative shifts should be examined with regard to the direction and magnitude of trends or trajectories of change already taking place within the sectors and subsectors. That is to say, would proposed shifts accentuate or reverse existing trends (or change the ambient conditions in some other fashion)? This section lays out some of the existing trends that have been seen (and are likely to continue under roll over) and compares these to the magnitude and direction of social impacts likely to result from specified shifts.

- Roll-over alternative (status quo) will not provide a static or stable fishery as characterized by the 1996 (baseline) year information or as it most recently operated in 1997/98. The roll over alternative will provide stability in the sense of the gross allocation between inshore and offshore processors, and maintaining the same general set of conditions for business decision-making that have been in existence since I/O-1. In general, this alternative has the potential to be the alternative that would minimize adverse impacts on the 'engaged' and 'dependent' fishing communities. It should be clearly recognized, however, that all industry sectors are still overcapitalized, and "internal" sector dynamics will continue to change the structure and operations of these sectors. Of course "external" factors such as market price and demand also will continue to affect the industry structure and operations. Importantly for the purposes at hand, several trends were noted in the body of this document that illustrate the 'non-equilibrium' nature of the Bering Sea pollock fishery. Some of these are listed below.

    - Increasing CV ownership and/or management control by shore plants or cooperating/related entities
    - Increasing specialization of pollock CVs, which has resulted in decreased market adaptability or changeability
    - Increasing processing of Bering Sea pollock by GOA shore plants
    - Increasing processing of Bering Sea pollock by floating (inshore) processors
    - Increased consolidation of operations within the catcher processor sector
    - Changing number of participating entities

- Several existing trends of change within sectors have been identified which are relevant to social impact assessment. These can be examined as change relative to 'absolute' 1991 production levels, change as a function of percentage of yearly TAC, or change as a function of number of entities and ownership/homeport. Each of this is bulleted out below:

Change relative to absolute 1991 production levels is one useful way to look at internal fishery dynamics.

- Onshore percentage of 1991 production has relatively constant (6% decline in 1996 from the total seen in 1991) for the sector as a whole, *but*:
  - Shore plants proper have *declined* in overall production approximately 16% in the period 1991-1996.
  - Floating processors 1996 production has *increased* -- the 1996 total is 206% of 1991 production.

- Offshore percentage of 1991 production has seen a 31% decline in the period from 1991 (pre-I/O) to 1996
  - Motherships have declined 14% in production from 1991-1996
  - CPs *as a sector declined* 34% from 1991 production levels, but this was not evenly distributed throughout the sector:
    - Surimi CPs *declined* 42% 1991-1996
    - Fillet CPs *increased* 17% 1991-1996

Change as a function of percentage of yearly TAC (yearly total production) is another useful way of looking at inter- and intra-sector dynamics.

- Onshore percentage of TAC *increased* from 29% to 36% of TAC, 1991-1996
  - Shore plants increased from 27% to 30% from 1991-1996
  - Floating processors increase from 2% to 6% from 1991-1996 (i.e, though they are still relatively small as a subsector compared to the inshore sector as a whole, they have tripled their 'internal market share' – and increased more, on an absolute basis (4% of TAC versus 3% of TAC) than did the shore plant 'subsector.'

- Offshore percentage of TAC processed decreased from 71% to 64% between 1991-1996 (i.e., pre-I/O to post I/O), but this has been differentially distributed:
  - Motherships, as a subsector, have been fairly *stable* in terms of TAC amount accounted for (9% to 10%)
  - CPs as a sector *declined* from 62% to 54% of TAC, but again, this was differentially distributed by type of operation:
    - Surimi CPs percentage of TAC *declined* 53% to 40% 1991-1996
    - Fillet CPs percentage of TAC *increased* from 9% to 14% between 1991-1996

Change as a function of number of entities and ownership/homeport is yet another useful way to look at sector dynamics.

- Onshore
  - The number of shoreplants is the same for the three sample years, but the same entities were not involved in 1991 and 1994 -- however, the same shore plants occur in the 1994 and 1996 sample years. For all of these latter plants, ownership is located in Washington, with the processing operations themselves located in Alaska.
  - Floating processors have fluctuated in number of participants, but the 'core' operators are stable in number. As with the shore plants, ownership is Washington and location is Alaska.

- Offshore
  - Motherships have been constant in numbers for the sample years. For each of the entities both ownership and homeport is Washington, according to interview data (but one is listed with an Alaska homeport in the database)
  - Catcher Processors have varied widely over the sample years:
    - Surimi CPs were *reduced* from 24 to 20 entities. Ownership and homeport for vessels is nearly exclusively Washington -- although there has been some Alaska CDQ group investment. Production *declines* about 42% from 1991 levels for essentially the same number of Washington-based entities.
    - Fillet CPs were *reduced* from 30 to 19 entities. Washington based entities *declined* from 24 to 15 for 1991-1994, but remained *stable* at 15 from 1994 to 1996. Production *decreased* 41% 1991-1994 (i.e., when the number of vessels dropped), but production *increased* 61% for period 1994-1996 (i.e., during the time the number of vessels stabilized).

- ***Catcher Vessels***, as noted, though not an 'inshore' or 'offshore' sector, would potentially feel the impacts of an inshore/offshore allocative shift.

  - Overall as a sector, number of entities participating in the Bering Sea pollock fishery *increased* from 83 to 117 (i.e., by 40%), between 1991 and 1996. When examined by vessel length, delivery patterns, and length in combination with delivery patterns, it is apparent that there are differential trends of change operating within the CV sector. These are each bulleted out below:

When examined by length the following trends appear:

- Vessels less than 125 feet increased from 63 to 64 1991-94, then to 89 entities in 1996, accounting for the *largest increase* in the CV sector.
- Vessels 125 to 155 feet increased from 15 to 17 to 20 in the years 1991, 1994, 1996 respectively.
- Vessels over 155 feet increased from 5 to 11 for 1991-1994, and decreased to 8 in 1996.

When examined by delivery patterns the following changes (recalling, as noted in the main body of the text that the 'both' category is somewhat of an analytic construct that does *not* allow the analyst to compare 'primary' delivery modes among vessels that deliver to both onshore and offshore processors) are apparent:

- Vessels delivering onshore ONLY *decreased* from 64 to 58 1991-1994, then *increased* to 76 in 1996.
- Vessels delivering offshore ONLY remained at 16 for both 1991 and 1994, and *increased* to 24 for 1996.
- Vessels delivering to BOTH onshore and offshore *increased* from 3 to 18 for 1991-1994, and decreased only slightly to 17 for 1996.
- BOTH category is an analytical construct and may structure the above data, as the classification does not take into account relative delivery volumes onshore and offshore. 1994 was the first year of the three for which onshore and offshore seasons were of different lengths and times, so the source of 1991-1994 "changes" are unclear. 1994-1996 changes are more definitive and were collaborated through information obtained through interviews.

When examined by delivery patterns and vessel length additional useful information is gained on the relationship between vessel size and inshore/offshore sectors:

- With the exception of two medium-sized vessels in 1996, ***no medium or large-sized*** catcher vessels delivered *only* to offshore processor operations.
- In 1994, only 5 medium and 3 large vessels delivered both onshore and offshore. In 1996 these numbers were 4 medium vessels and 1 large vessel.
- Small vessels *increased in all delivery mode categories* between 1991 and 1996 -- 44 to 55 for onshore only deliveries, 16 to 22 for offshore only deliveries, and 3 to 12 for deliveries to both sectors.

6.3 SOCIAL IMPACTS AND SECTOR/COMMUNITY LINKS: ROLLOVER AND SIGNIFICANT ALLOCATIVE SHIFTS INSHORE AND OFFSHORE

In the following discussions, per the simplifying assumptions guiding this work, "allocative shift" refers to a change in allocative quota of the magnitude of 10% of the TAC. It was understood that the discussion of social impacts would be qualitative and directed toward the magnitude and direction of social impacts likely to be associated with a limited range of alternatives.

Alaska Bering Sea Pollock Communities

Essentially for the purposes of social impact assessment there are five main categories of communities that have links to inshore and offshore sectors of the Bering Sea pollock fishery. These are:

- Communities with well developed socioeconomic ties to both onshore and offshore sectors. This category is comprised of one community: Unalaska/Dutch Harbor.

- Communities with large shoreplants that are also CDQ communities. This category is comprised of one community: Akutan.

- Communities that are not CDQ communities, have shoreplants that process Bering Sea pollock, but that have no ties to the offshore sector. These are the communities of King Cove and Sand Point.

- Communities that are CDQ communities and thus have a tie to Bering Sea pollock, but that do not have a physical presence of either the onshore or offshore sector within their community. There are a number of western Alaska communities that fall under this category, but the potential effects of I/O-3 on these communities was and is the focus of a separate project.

- Other Alaska communities with ties to either onshore or offshore sectors. There are a number of other Alaska communities that have some tie to the Bering Sea pollock fishery, but that are peripheral to the fishery in relation to the communities mentioned above. These would include Kodiak, were a very small volume of Bering Sea pollock has been processed, and a scattering of other communities that may have ownership or homeport ties to vessels in various sectors. Given the low level of participation in the Bering Sea pollock fishery, these communities are not directly impacted by ongoing sector dynamics, although individual entities within these communities are likely to be affected.

Each of the primarily involved communities is bulleted out below:

Unalaska/Dutch Harbor

- The community has a fishery-based economy
  - Relatively small community by U.S. standards
  - Large economy for size of community
  - Large fishery economy for any community in U.S. (#1 fishing port)
  - In relative terms, fishery-related activities in general and pollock in particular are centrally important.
- It is a growing community
- It has strong links to both onshore and offshore sectors
- Growth in support service sectors in the community is attributable to both offshore and onshore sectors
  - Shipping and transhipment -- results in local employment and revenues
  - Diverse support services -- there are more companies than there used to be, and more different kinds of companies and services offered than ever before

Inshore Links: Unalaska/Dutch Harbor

- There has been an historic presence of shore plants in the community.
- Pollock processing has taken place in Unalaska since 1986.
- Historically, Unalaska has *not* been the homeport for the delivering fleet -- but more vessels staying in community during "off seasons" with changing ownership/management patterns.
- The community is the site of logistical support for floating processors.
- The community is the site of three large shore plants that incorporate pollock processing -- the existing trend is for decreasing volumes of pollock relative to other processing communities and inshore sector participants, but the number of entities has remained constant.
- Employment in Unalaska (and at the plants themselves) has been relatively stable in relation to processing volume change (though earnings would be down with shorter seasons).
- Historically important fiscal ties to community (raw fish tax, business tax, property tax, sales tax) -- community has been ranked first of US ports in volume and value of fish landed since 1992 but volume decreased each year 1993-1996 and value declined from $194 million in 1992 to $119 million in 1996 (but, importantly, tax revenue has not decreased proportionally, due at least in part to growth of the community, diversification of the local economy, and growth of support services specifically that support all sectors of the fishery.
- *Rollover implications* -- if current internal inshore sector trends continue, Unalaska shore plants will likely continue losing share of TAC to floating processors and other Alaskan communities. I/O

rollover will continue to protect Unalaska shore plants (and the community) from preemption by the offshore sector, but will not address these internal inshore sector dynamics.

Offshore Links: Unalaska/Dutch Harbor

- Relatively recent development in the community compared to the historic presence of shore processing facilities.
- Unalaska is *the* primary Alaskan support base for offshore sector in Bering Sea (and has historically acted as a support base for the marine related activities on the Bering Sea and for shipping to Western Alaska in general) -- while there has been some reduction in entity numbers and consolidation of ownership, and reduction in overall volume, the general organization and magnitude of support sector activity in the community directed toward offshore has not been greatly affected.
- Offshore links are fiscally important to the community through relatively recent resource landing tax as well as taxes on sales in community (especially fuel).
- Relatively few community residents are directly employed by the offshore sector, but since its development the Unalaska indirect or support services economic sector, which supports both offshore and onshore sectors, has grown significantly (with some facilities used more-or-less exclusively by offshore related entities during pollock seasons).
- *Rollover implications* -- there should not be significant detrimental effects upon Unalaska associated with its offshore links, although there may be further perturbations in the offshore sector itself (particularly if recent history is a guide). Demands for support services will continue, and offshore product will continue to be landed.

- *Allocation shift inshore implications*: Unalaska/Dutch Harbor

  - Net positive social impact, but Unalaska would not see the 'full benefit' of an inshore increase due to internal inshore sector dynamics (i.e., community shoreplants' share of sector overall is decreasing in relation to floating processors and shoreplants in other Alaskan communities -- individual plant throughput was widely variable has declined in the range of 10-40% between 1991 and 1996; average decline is 25%, with the 1996 total being 75% of the 1991 total -- therefore an increase to inshore would not all accrue to Unalaska, nor necessarily would the full increase stay proportionally in the community).

- Unalaska shoreplants in 1996 processed approximately 50% of the Bering Sea pollock processed inshore.
- Looked at in a I/O historical perspective, assuming a 10% shift inshore, and assuming the inshore sector distribution pattern remains consistent with that seen in 1996, Unalaska plants would process 28% more pollock than they did in 1996, or approximately 97% of their 1991 aggregate total (a 5% shift would bring the aggregate back to 86% of the 1991 total). In other words, a 10% inshore shift would get Unalaska/Dutch Harbor nearly 'back to where it was' in 1991 before the overall reduction in TAC and the internal inshore sector shift of pollock away from Unalaska to floating processors and other Alaskan communities.
- There would likely net increase in local tax revenues, but gains resulting from the increase inshore would be at least partially offset by declines in offshore related revenues and taxes.
- Likely increase in local employment duration and compensation levels, particularly at the shoreplants themselves, and associated support services. For jobs more closely associated with offshore, such as stevedoring, local job duration (and therefore compensation levels) would decline.

- *Allocation shift offshore implications*: Unalaska/Dutch Harbor

  - Net negative social impact, with loss of employment compensation and fiscal revenues from onshore related activities likely to be only marginally offset by potential increases in offshore support activity. It is not likely that the increases would be of a similar magnitude to the losses seen inshore.
  - Assuming a 10% shift offshore, Unalaska shoreplants would process approximately 28% less pollock than they did in 1996, or approximately 53% of their 1991 total (a 5% shift would result in processing 64% of the 1991 total). In other words, such a large shift offshore would result in the plants processing approximately one-half of what they did in 1991.
  - Shorter seasons for the shoreplants would result in less total local employment in terms of duration and compensation seasonal peaks.

Akutan

- The City of Akutan encompasses both a large shoreplant and a "small village" -- it presents a sharp contrast with Unalaska/Dutch Harbor where the seafood industry and support sectors are integrated with the socioeconomic fabric of the community itself.
- Akutan's recently achieved CDQ status highlights distinction between shore plant and the balance of the community.
- CDQ participation has meant community involvement (or, more precisely, community involvement with the CDQ group that is itself involved) with both inshore and offshore sectors through partnering relationships.
- *Rollover implications* -- No foreseeable detrimental effects on Akutan
- *Allocation shift inshore implications* -- Shift would benefit local inshore plant that provides substantial local tax base (community and Borough). More precise effects cannot be discussed due to confidentiality constraints on disclosing information about an individual operation. This plant is operated by a company that is a CDQ partner of the CDQ group to which the community belongs. This CDQ group also partners with an offshore operation so if this operation were adversely affected, the CDQ group may be as well. For the City of Akutan, there would be a net positive social impact, but to the extent that the 'village' is separable from the shore plant (though part of the same legal/political entity, there are clear social, sociocultural, and socioeconomic distinctions between the plant and the 'Aleut village' of Akutan) results of a shift would not be completely unambiguous (unlike Sand Point and King Cove, for example).
- *Allocation shift offshore implications* -- Shift would almost certainly reduce local plant production, with resultant decline in community and Borough tax revenues. Catcher fleet size and employment force is likely to remain at the same levels, but be employed for shorter periods of time. There would be a net negative impact to the City of Akutan, but for the 'village' of Akutan (to the extent that it is legitimately separable from the plant) the results would be less unidirectional.

Sand Point and King Cove

- Sand Point and King Cove are not geographically "Bering Sea communities" but currently are engaged in the Bering Sea pollock fishery.
- Both are historic fishing communities with resident fishing fleets and onshore processing capacity.
- Bering Sea pollock is a relatively new fishery with no processing reported in these communities in 1991.
- Both communities have one shore plant each that produces pollock. For both plants production increased significantly between 1994 and 1996.
- Deliveries of Bering Sea pollock to both plants are made by vessels primarily homeported elsewhere (i.e., not by the resident fleet, which may deliver GOA pollock in addition to a number of other species).
- Neither community has direct links to the offshore sector, nor does either community act as a support base for the offshore sector.
- *Rollover* will likely continue these trends -- increasing involvement in the Bering Sea pollock fishery through coordination of production with other facilities outside the community(ies) or increase in diversity of product or capacity.
- *Allocation shift inshore implications* -- Such a shift may well accelerate the internal inshore sector dynamic of increased Bering Sea pollock processing in Sand Point and King Cove relative to shoreplants in Unalaska/Dutch Harbor communities. Local community and Borough tax receipts could be expected to increase, and disproportionately so if additional growth is differential vis-a-vis Unalaska/Dutch Harbor. The catcher fleet size and employment force would not be expected to increase unless further pollock product diversification takes place at these plants. Employment periods and seasons may expand for catcher vessels and workers at these plants. There are no foreseeable negative social impacts in these communities resulting from such a shift, given that there are no ties to the offshore sector, nor benefits otherwise derived therefrom (e.g., neither Sand Point nor King Cove are CDQ communities).
- *Allocation shift offshore implications* -- All other things being equal, this shift would be expected to have no positive social impacts in these communities, as the most likely scenario is that less Bering Sea pollock would be processed in local plants. However, because of internal differentiation within the shore plant sector, and the coordination between one of these plants and a large Bering Sea shore plant, it is not clear what the magnitude of negative impacts would be. It is likely that local tax base would be reduced, along with plant operational time and employee and catcher vessel income. Threshold level may be reached where it makes less sense to process Bering Sea pollock in these GOA communities than it does now, but this is not clear.

Introduction

Management of the Bering Sea pollock harvest allocation has a unique feature termed the Community Development Quota, or CDQ. A total of seven and one-half percent of the approximately billion dollar harvest is allocated to six community CDQ groups that in turn represent 56 coastal Alaska villages. These villages, located adjacent to one of the world's richest fisheries, are, ironically, located in some of the most economically deprived regions of the United States. As a group these communities have very low per capita income, poor housing quality and other problems associated with low income and lack of services. The purpose of the CDQ program is to enhance the economic well being of the residents of Alaska's rural coastal reaches.

To benefit from their allocation, CDQ groups have partnered with both offshore and inshore harvesters and processors to obtain royalties, employment, training, community projects and other economic benefits. In turn, the partner companies receive substantial benefits such as a head start on locating stocks and tuning crews and equipment prior to the competitive open-access pollock fisheries, the ability to focus on higher value roe stocks, higher overall profits due to greater asset utilization, and favorable political consideration that comes with providing benefits to Alaska village residents.

The pollock harvest allocation is currently up for reconsideration and a decision will be made by 1999 setting allocations among the three types of harvesters – inshore, offshore and mothership. While the proposed reallocation scenarios may be expressed in terms such as 5% and 10% of the total, the actual impact on each sector is potentially more severe (or favorable). For example, a 10% shift of the total from the onshore sector translates to a 29% loss of the current onshore allocation. In the middle of this issue is the CDQ allocation and its obvious benefits to partner companies. It is within this sensitive context that this study of potential pollock reallocation impacts on CDQ groups has been conducted.

Purpose

The purpose of this study is to identify and analyze impacts of potential changes to the inshore/offshore open-access pollock allocation on Alaska's six Community Development Quota (CDQ) groups. The primary source of the impact information was a survey of CDQ groups followed by executive interviews and supplemented by data from other sources such as the Department of Community and Regional Affairs and the North Pacific Fisheries Management Council. Further, a portion of the research specifically addresses the level of CDQ-resident employment in the pollock fishery.

The study team's overall aim was to understand each group's rationale for how it would be affected by hypothetical changes in the inshore/offshore allocation and to compare and combine those rationales insofar as possible to profile the potential effects on the groups as a whole. Clearly, this is a sensitive time for CDQ groups, their partners and the pollock industry as a whole. The study team took great care in considering the environment in which information was provided and interpreting the data within the context of today's changing economic, political and regulatory issues.

The research was designed to provide information, not certainties. The study information is intended to inform discussion of the many complex issues surrounding the interaction between the CDQ program and the open-access pollock fishery. However, we do not regard all study results as conclusive. The study team has drawn inferences and conclusions and these should be regarded as professional interpretations of available data.

The McDowell Group brings to this analysis our perspective as pollock industry outsiders (though we have conducted many studies on other fisheries and the industry as a whole), with all the advantages and disadvantages that role implies. We also bring a perspective developed in the course of hundreds of analyses of Alaska economic issues. We recommend and expect that decision-makers will use the information in this report in the context of other data available to them.

Methodology

This report on the potential impacts of inshore/offshore allocations on the six CDQ groups is based primarily on information supplied by the groups and their partners in response to a survey designed by the McDowell Group (and supplemented by executive interviews) in conjunction with the Alaska Department of Community and Regional Affairs (DCRA). Some data was also obtained from DCRA's CDQ program records and from North Pacific Fishery Management Council (NPFMC) staff.

In view of earlier difficulties encountered by DCRA in collecting parallel quantitative data from the groups and in the interest of obtaining as much information as possible during the brief time available, the McDowell Group requested primarily qualitative, rather than quantitative information in its survey. To make the responses as specific as possible, we asked the groups to supply supporting data for their answers where they could. Industry partners of the six CDQ groups were asked to supply some employment data directly to the study team.

A survey instrument (Exhibit 1) was faxed to each of the six groups, then the study team met with representatives of each group to discuss the group's responses. Some groups provided written answers to the survey. Others relied primarily or entirely on the interview to give their responses. For some groups the executive director was the primary respondent, for others a consultant or staff person provided most of the information. For all but one group, at least a portion of the employment data requested was supplied directly by the partner company. Four of the six groups opted to have representatives of their partner companies supply other information as well.

Part of the survey asked the groups to estimate the implications for themselves and their partners in several areas based on hypothetical reallocation scenarios. The scenarios were those established by North Pacific Fishery Management Council staff. The scenarios are as follows:[1]

[1] The scenarios we supplied were stated only in absolute percentages (35% onshore shifting to 25% onshore, etc.). Most of the groups translated these percentages into relative shifts (for example, an increase of 14% or 29% of the current allocation) in order to judge the degree of impact. For the most part, we use the relative percentages in our discussion, because they are the reference points for most of the groups' projections. NSEDC assumed that the status quo was 56 percent of the harvest to the offshore sector rather than 55 percent. The difference is not enough to affect our analysis.

Status Quo 35–10–55	Scenario A 25–5–70	Scenario B 30–10–60	Scenario C 40–10–50	Scenario D 45–15–40
	Relative change:	Relative change:	Relative change:	Relative change:
35% Onshore	Onshore loses 29%	Onshore loses 14%	Onshore gains 14%	Onshore gains 29%
10% Motherships	Motherships lose 50%	Motherships unchanged	Motherships unchanged	Motherships gain 50%
55% Offshore	Offshore gains 27%	Offshore gains 9%	Offshore loses 9%	Offshore loses 27%

We thank all the groups and their partner companies for their efforts in supplying information for this report. The time allowed was extremely limited, and the cooperation received was much appreciated.

Review Process

A draft of this report was reviewed at the April meeting of the North Pacific Fishery Management Council. As a result of this review process, the authors have undertaken the following revisions:

- In order to provide more information about the circumstances of individual CDQ groups, two revisions were made. First, the authors have provided a brief overview of each group, and second, an appendix has been added that presents – as permitted by confidentiality considerations – examples of individual group responses to selected survey questions.
- Though limited both by confidentiality and by the length and complexity of many of the responses, the authors have tried to provide more complete rationales for several of the report's conclusions.
- The Council also requested some additional analysis of employment data specifically regarding the relative value of jobs in each sector. Results from this analysis have been incorporated into the Executive Summary section of the report.

Limitations

In keeping with the study contract terms, the focus of the data collection and analysis for this report was at the level of the CDQ group, and not at the industry, company or community levels. An inherent limitation, therefore, is that the study does not include first-hand information from the CDQ villages themselves. This study was not intended, financed nor scheduled to conduct research at the community level.

Readers are urged to remember that the survey and analysis requested and developed for this report use data provided primarily by the CDQ groups to focus on how those groups may be affected by reallocation. Yet the study team points out that impacts on companies are not synonymous with impacts on CDQ groups and neither is synonymous with impacts on communities. Since no first-hand data was obtained at the community level, the study team at times raises questions, but does not draw conclusions about direct community impacts.

A second limitation is that the primary sources of information for this study – the CDQ groups and their industry partners – have economic stakes in the outcome of the inshore/offshore decision. While we have no reason to believe that responses have been intentionally misleading or inaccurate, we cannot discount the possibility that respondents have made at least some effort to present information in a way favorable to their interests. We do appreciate the good faith effort the groups invested in providing information for the study. The study tried to interpret data in the context of all the information available.

As Council staff have pointed out, no study of this limited scope can draw firm conclusions about the profitability or viability of individual companies under hypothetical industry scenarios. To the extent that the team felt its analysis was limited by insufficient industry context, the team has acknowledged those limitations, both here and in the body of the report. In those instances the team restricted its conclusions and inferences according to its degree of confidence in its interpretations.

Finally, as the Science and Statistical Committee said in its recommendations regarding this and other Council documents analyzing Inshore/Offshore impacts, "A number of important limitations should be taken into account when interpreting the quantitative estimates presented in these documents. First, the analysis is linear in all variables, meaning that all changes identified are directly proportional to the basic changes in pollock quotas. Furthermore, because the costs of operation are unknown, and potential changes in product price, product form, and recovery rates could not be predicted, the quantitative predictions of changes in gross revenue should not be considered to be indicative of changes in net economic benefit. Similarly, changes in overall utilization rates should not be equated with improvements in net economic benefit.

"It is not clear that quantitative projections based on a particular point in recent history provide good predictions of what will in fact happen in the future under different Council allocation choices. Many of the indicators of interest to the Council, such as product recovery rates, catches of pollock by area, bycatch rates, prohibited species rates, Alaska employment, and wage rates, are themselves influenced by firm-level decisions. They can be expected to change as the fleets become aware of Council concerns and respond to them and as they respond to changes in the management environment. Their levels also tend to be variable over time and across fleets."

The study team concurs and believes, given the uncertainties of the industry, that there may not have been a time since the establishment of the CDQ program when all program statistics may be assumed to be entirely uncolored by political and competitive ends. For example, while discussing the potential impacts of reallocation on CDQ royalties, we have not based our analysis on the specific amounts of any royalty agreements or bids. These are relatively short-term commitments that may reflect a multitude of company strategies and goals, some directly related to day-to-day operations and some quite far removed, as discussed later in this report. This is not a criticism of such strategies, which are a normal part of every business. The team simply doesn't have a way of accurately interpreting this kind of data.

In addition to these inherent challenges, our methodology has the following specific limitations:

- Study methodology was not intended to provide statistically significant measures. Questions were intentionally open-ended in order to allow the groups to provide the information they believe to be most useful. Even where reasonably parallel information was obtained, the small number of groups and the fundamental differences among them make it difficult to generalize. Each group and their partnership(s) are unique and the specialized responses verify the fact that potential allocation impacts vary.

- As expected, the information received from the groups varied in completeness and specificity.

- Due to time and other limitations, we have made no attempt to verify the accuracy of information supplied by the groups or their partners, other than to consider it in the context of the other data available to us.

- Employment and other operating data is not aggregated by most companies in ways that lend themselves to analysis, a factor that CDQ program managers have found to be the case in the past. Study conclusions regarding employment and processor operations in particular are drawn from a combination of fragmented quantitative data and anecdotal information. The study team considers that, taken as a whole, the groups' responses are useful in assessing certain kinds of inshore/offshore impacts and we have made every effort to restrict conclusions to these areas. For example, data and conclusions about villager employment through the CDQ program should not be assumed to be a good proxy for general employment factors in the overall pollock industry.

Aleutian Pribilof Island Community Development Association

The six communities represented by APICDA are relatively small and located adjacent to the fishing grounds. Population of the six communities is approximately 730. APICDA is allocated 16 percent of the CDQ pollock harvest, which is shared among its inshore and offshore partners in such a way as to maximize the benefit to APICDA.

Because of proximity to the fishing grounds and year-round access to ice-free waters, APICDA's focus is primarily on community development and employment opportunities that occur in or near each community. These villages do not have the same need for factory trawler employment as do residents of many other CDQ communities, who do not have the same opportunity for local fishery development. This is reflected in APICDA's employment statistics, which show one of the highest total employment opportunities, but the lowest number of pollock processing jobs among the CDQ groups.

APICDA has employment provisions with both its inshore and offshore partners and has invested, both with them and individually, in a number of fisheries-based development projects in several of its villages, creating a variety of employment opportunities. Though the group has placed residents with all three pollock sectors, APICDA residents in general have shown a preference for non-pollock employment, with the single largest source being renovation and operation of a halibut processing plant in Atka.

Bristol Bay Economic Development Corporation

BBEDC represents 13 villages distributed around the circumference of Bristol Bay, including Dillingham, the second-largest CDQ community with approximately 2,200 residents and the location of BBEDC's home office. Total population is approximately 3,900. BBEDC is currently allocated 20 percent of the CDQ pollock harvest.

To date, BBEDC has focused its community development efforts primarily on creating offshore employment opportunities, and has employed more village residents in pollock processing jobs than any other group. The group changed from one offshore partner to another beginning with the 1996 harvest, and reports that its residents are more satisfied with the quality of employment and that more villagers are showing an interest in repeat employment. BBEDC's current partner is said to hire approximately 20 percent of its crew from CDQ villages.

BBEDC has also invested in a variety of fishing vessels, including part-interest in a pollock catcher/processor. However, BBEDC also has a program to evaluate investments in regional infrastructure. The group also has active vocational training and internship programs with its offshore partner, as well as providing internship opportunities with out-of-region and local businesses to develop administrative and other specialized skills. Recognizing that "the Bristol Bay region has changed from a subsistence economy to a cash economy,"[2] BBEDC is also helping to promote workforce readiness skills through the four Bristol Bay school districts.

Central Bering Sea Fisherman's Association

CBSFA is unusual among CDQ groups in that it represents a single community, St. Paul in the Pribilof Islands. St. Paul is strategically located to serve the Bering Sea fishing industry. As a result, CBSFA has focused attention on working with other island entities to improve St. Paul's harbor facility and on expanding the island's small boat fleet. The group also operates a revolving loan program to provide boat and gear loans to resident fishermen. CBSFA is primarily invested in crab vessels and has no current investment in the groundfish industry.

Reflecting the focus of St. Paul residents on developing local fishing ventures and infrastructure, CBSFA has not seen much demand among residents for off-island processing jobs, either offshore or inshore. The group is partnered with a large offshore company and would like to build on the the benefits of product offloads at St. Paul harbor and the attendant support services its residents there can provide. Currently, CBSFA receives 4 percent of the CDQ pollock harvest.

Coastal Villages Region Fund

CVRF manages 25 percent of the CDQ pollock harvest for its 17 member villages. The villages are located along the coast between the southern end of Kuskokwim Bay and Scammon Bay, including Nunivak Island. This remote area is poorly located to engage in the current Bering Sea fisheries. Furthermore, its residents, for the most part, have had little experience with a cash economy. CVRF has focused on helping them adjust to working conditions outside their normal environment, and employs a training coordinator who actively recruits residents for employment and internship opportunities. CVRF sees a distinct employment advantage in the offshore sector for its residents, primarily because of shorter time commitments and higher wages. However, the group currently has both inshore and offshore partners.

CVRF provides employment to fisherman through its nearshore CDQ halibut fishery and on a longline vessel that harvests CDQ sablefish. The group continues to be interested in establishing salmon processing facilities both on the Kuskokwim and elsewhere in the region.

In part to exercise control over the work environment, CVRF was engaged until last year in a partnership to own and operate the F/T Browns Point. The partnership was dissolved due to failure to meet financial and other goals.

[2] BBEDC survey response

Norton Sound Economic Development Corporation

Fifteen villages and approximately 8,700 people make up the region represented by NSEDC, which ranges from St. Michael to Diomede. The geographic expanse and diversity of interests among NSEDC's communities are challenging, as are the hurdles to developing local fisheries in this remote area, ice-bound in winter.

Nevertheless, NSEDC has actively pursued both local fisheries and Bering Sea pollock investment strategies. The group recently purchased approximately 50 percent of its offshore processor partner since the program's inception, Glacier Fish Company, including two catcher/processors and a seafood marketing subsidiary. Together with GFC, NSEDC owns the Norton Sound Fish Company, which operates a longline vessel and employs significant numbers of region residents. The group also owns independently two tender vessels specially built for the Norton Sound region.

NSEDC has developed or planned fisheries development projects in several villages, including Norton Sound Crab Company in Nome and commercial halibut operations on St. Lawrence Island. NSEDC obtains preferential hiring for its residents and has found employment with its offshore partner for approximately 35 individuals per year since the CDQ program started. It has also generated wages for another 100 people per year through its other ventures, as well as generating approximately $5.5 million since 1992 in fish purchases (fish tickets). NSEDC operates an employment and training office in Unalakleet and currently receives 22 percent of the CDQ pollock allocation.

Yukon Delta Fisheries Development Association

YDFDA represents the four communities, Alakanuk, Emmonak, Kotlik and Sheldon Point, containing approximately 1,750 people. The group's emphasis has been on creating employment opportunities in the Bering Sea fishery both through its mothership partner and through other pollock processors, both inshore and offshore. Another area of focus has been on a comprehensive training program that includes a combination trawl/pot/longline vessel, a 47 foot longline/crab vessel and a fleet of ten smaller fishing vessels. YDFDA has received steadily increasing CDQ pollock allocations, currently 13 percent.

YDFDA faces the challenges of representing a region with few natural resources to develop, long distances to most viable fisheries and relatively undeveloped human resources with respect to a cash-based economy. While the group places residents with all three sectors, it says that offshore and mothership employment are most useful for its residents. The group's CDQ royalties fund a variety of training activities encompassing technical and office skills.

General Findings

- **A central finding of the study is that the CDQ groups cannot be viewed as a homogenous entity that may experience uniform impacts from pollock reallocation.** Instead, as shown in part by the profiles above, each group is a unique complex organization with widely different characteristics, business philosophies, goals and partnership arrangements. Potential impacts of each allocation alternative are uniquely different for each of the six groups. Therefore, a single reallocation decision may have a wide variety of impacts on the groups and perhaps multiple impacts on each group.

  Five of the six groups have offshore partners, and two of those also have inshore partners. The sixth group has a mothership partner. One group specifically said it was neutral on the issue of inshore/offshore allocations. The others tended to support the status quo or, in the case of groups with single partners, additional allocation to their partner's sector. However, the range of predicted effects and rationales offered by the groups under various scenarios was broad and a number of issues, including multiple partnerships and equity investments by some groups in their partner companies make generalities about potential impacts on the groups as a whole inadvisable in most cases, in the opinion of the study team.

  Similarly, the 56 villages represented by the groups are also diverse. Encompassing many of Alaska's most economically deprived communities, and dispersed across more than 300,000 square miles, the CDQ villages have distinct social, geographic and economic characteristics that vary both from group to group and within individual groups. As reported in the *Inshore/offshore-III Social Impact Assessment*, "Clearly, there is a great deal of variability between CDQ groups in their strategies in managing their CDQ-based resources. For example, some groups focus more on direct employment than do other groups."[3]

- **While CDQ groups predicted they would experience both minor and major impacts from various reallocations, the most critical juncture for most groups seems likely to be the point at which the partner company stops participating in the open-access pollock fishery.** At this point the range of possible effects includes potentially serious disruption of community development projects and potentially significant losses in joint-venture investments for some groups. Further, if a round of bankruptcies or withdrawals from the fishery significantly reduces the number and variety of the companies (size, sector, strategy orientation, etc.) available as CDQ partners, this could inhibit the future growth and effectiveness of the program. The more options available to the CDQ groups for partnering, the more likely that royalty bids will be competitive, investment opportunities appropriate and community development strategies well tailored to the different CDQ regions.

[3] *Inshore/offshore-III Social Impact Assessment*, page 112

- **Groups with equity investments in their partner companies or in major pollock fishery assets are likely to experience earlier and more extreme effects from a reallocation than those without.** Currently, one CDQ group holds approximately a 50 percent equity stake in its offshore partner. Another group owns a 20 percent stake in a catcher/processor vessel and a third owns an inshore catcher vessel in conjunction with both an inshore and an offshore partner.

  Group responses indicated that, when investments are held in common with a partner company, royalty streams and partner profitability may become more closely linked. If these investments fall significantly below the break-even point, then the owners, including the groups, would face the choice of liquidating the investments or supporting them with additional capital. Whether this capital infusion is made in the form of reduced royalties or some other transfer of funds, it would represent a drain of resources for the group(s) involved. Group estimates of the specific Scenarios under which this effect might occur differed somewhat. However, two groups said that profit levels in open-access fishing were already marginal, with one referring to offshore and the other to both inshore and offshore.

  The study team believes that group investment in royalty partners is an important phenomenon that warrants more study. The potential of these investments to increase leveraging of community benefits through additional control of partner activities and access to partner profits is clear. However, the distinction between the partner and the group becomes blurred, as does the role of royalties. This makes assessing impacts of industry issues like inshore/offshore allocations difficult. As other analysts of pollock allocation effects have pointed out, there is a fundamental distinction between the CDQ groups and the 56 villages they represent.[4] There is also a distinction between the groups as *intermediaries between* communities and the industry and the groups as *companies within* the industry that have community ties.

- **The financial value of the CDQ allocation is likely to remain high under any of the allocation alternatives presented for analysis.** This conclusion is admittedly speculative given the large number of variables at work, and runs counter to one group's prediction, below. Moreover, this report identifies a number of forces that, in combination with or in spite of a reallocation could affect CDQ financial value. However, in the study team's opinion, no compelling arguments were presented that the CDQ itself -- as a fishery and a royalty stream -- would be significantly devalued under the scenarios presented. (This finding does not address employment impact, which is discussed separately, below.)

  One group projected that under Scenario D no companies would be interested in CDQ, saying "...all of the offshore sector would be financially very weak, and the shoreside sector would be so glutted with product that there would be little or no incremental value from picking up CDQ volume." However, this seems an extreme position given that another group with an offshore partner predicted little effect on operations under any scenario. A second group could make no prediction. Another group said it anticipated that companies would always be ready to bid for CDQ because of its inherent value under any scenario and, finally, mother ships would presumably benefit under Scenario D.

  The study team bases its conclusion on a number of overarching observations. First, the largest drop in royalties projected by a group that undertook to calculate them showed that under its (offshore) partner company's "worst-case" scenario, the

[4] *Inshore/offshore-III Social Impact Assessment*, page 112

partner would likely fail and a new one would be found at approximately 14 percent lower royalties. The argument offered was that the offshore companies remaining in the industry would be unable to pay current royalty levels even if they wanted to, and that only mother ships or onshore plants would be able to bid competitively for CDQ under Scenario D.

This argument for lower royalties is said further to assume that the roe royalty offered by motherships and onshore plants would "be low due to season timing" (i.e., longer processing time by inshore plants would mean that CDQ fishing would not coincide with prime roe season, and would therefore be less valuable). Another group with an offshore partner suggested that the same logic would mean CDQ fishing would increase in value to the offshore sector (since the roe season there would be shorter and prime roe season would be more likely to occur during CDQ season), but that decreases in the open-access roe value could affect the price of roe enough to devalue CDQ roe as well. This group predicted much less effect on B season. The study team does not have enough information to evaluate this effect of season timing on roe value or to conclude how this might affect the value of the CDQ harvest. However, we offer it for consideration by others.

Balanced against the "ability to pay" factor is the significant inherent value of the CDQ, including preseason fish finding prior to the open-access fisheries, equipment and crew tune-up, slower, and therefore more efficient (and higher yield) processing, access to prime roe recovery periods, ability to target high quality markets, crew retention, more fishing time with which to cover fixed costs and the range of political, market and other competitive advantages that later in this report we will describe as "structural value." It seems to the study team that this set of qualities tends to increase in value as competitive considerations intensify through smaller available open-access catches in either sector.

In the study team's opinion, the ability-to-pay argument requires one to believe that none, or virtually none of the offshore firms operating under Scenario D would be able to break even in open-access fishing or in some combination of open-access and other types of reasonably available ventures, such that a significant part of the revenues in excess of marginal costs for CDQ fishing would need to go toward covering fixed costs. Taken to its logical conclusion, this implies that any offshore firm that is not a CDQ partner at that point will go bankrupt for lack of a CDQ subsidy for its other operations, or, as the group above projects, that there will be some revenue available, but not as much as currently.

The study team believes that the number of variables involved in both CDQ value and company profitability make the "ability-to-pay" argument less than compelling and in particular that 1) there are likely to be companies in all sectors with both the interest and ability to bid competitively for CDQ under the allocations being discussed, and 2) that, a prediction of 14 percent reduced royalties is not an extreme outcome given the natural fluctuations of TAC, market prices and other industry factors.

Nevertheless, we emphasize as above, that if a reallocation did alter the structure of the industry in such a way as to substantially reduce partnering options to the extent that it deprives the CDQ groups of competitive bids, this could have adverse effects on royalties.

- For each CDQ group, the implications of reallocation depend in part on the role played by the group's industry partner(s) in furthering the group's goals. In general, the groups whose partners are smaller companies voiced the most concern about how an unfavorable reallocation might affect partner operations and group activities. For the most part, partner companies perform more complex functions for their CDQ groups than simply supplying a royalty stream. Most groups see their partners as an important way to leverage group assets through employment, training, investing and other community development strategies. This leverage may be affected by a reallocation even if royalties, per se, are not. Most groups say they are quite reluctant to change partners. No group anticipated changing partners in order to take advantage of increased royalties in another sector unless forced to because its current partner became nearly or entirely insolvent.

- The groups differed in their assessments of the profits available to their partners under the status quo, saying they ranged from unacceptable to barely workable to reasonably good. No partner companies revealed audited financial statements to the study team. As a result, the team cannot say what the current level of profitability is among CDQ partners. While some groups provided a great deal of materials and analysis in order to demonstrate that the open-access pollock fishery is only marginally profitable, others were more positive about the status quo. Publicly available data such as industry newsletters indicate that pollock profits for international firms are stronger than in some other world fisheries but that data does not specifically address CDQ partner economics.

- A number of industry issues could overshadow or significantly alter the effects of reallocation on the groups in the long run. These include SB 1221, management of the Catcher Vessel Operational Area, Asian economies, the impact on the resource of the Russian fishery and biological factors, the possibility of Individual Transferable Quotas (ITQs) and the potential effects of further concentration of the industry, either onshore or offshore.

Community Development Issues

- Most groups said current and planned CDP projects were strongly dependent on maintaining royalty levels. This seems reasonable given the general need to subsidize these often experimental ventures until they can be self-sustaining. Only one group explained the connection between royalties and CDP projects in detail, and none described potential impacts at the community level.

  Study responses provided by the groups do not give a basis for commenting about specific impacts of inshore/offshore on group CDPs, and perhaps this, in its way, is data. In the industry discussions of allocations, capitalization and profitability, it's easy to lose sight of the fact that the most valuable potential benefits of the CDQ program depend on community strategies that are more complex than wage rates and number of jobs. These are vital tools – a place to gain a foothold – but one must look wider and further down the road to map many of the important community impacts.

Employment Issues

Employment data made available to the study team by the CDQ groups was a mix of company payroll information, group records and estimates by group representatives. Most of the data was aggregated in some way. Some consists of individual wages. The wage data is useful as a guide, but not conclusive with respect to measuring the relative value of employment on a company by company or sector by sector basis, because it is not complete in all cases.

The role of employment in the CDQ program reflects the different needs of the six groups and the villages they represent. The attractiveness of pollock processing varies depending upon the region represented by each CDQ group and the other employment options available. The study team believes it is important that villagers have a range of employment options, if possible. This includes both pollock and other types of fishing activities as well as jobs with skills that are transferable outside the fishing industry.

Offshore employment offers the opportunity for villagers with few marketable skills to earn a high hourly wage for a relatively short time period and return to their home villages. The timing of the pollock A and B seasons is said to be particularly convenient in that they leave mid-summer free for traditional subsistence activities, including salmon harvesting. Onshore employement has been much less popular with village residents and seems to work mainly for individuals who are willing and able to relocate to the plant location for extended periods of time. Starting pay is lower than offshore, but inshore plants seem to offer a broader variety of options for learning new skills (though not necessarily faster wage increases).

The social environment, including company sensitivity to villager needs, presence of other villagers who can act as a support system, and exposure to drugs and alcohol are also important determinants of how attractive jobs are to villagers. Though inconclusive, study data suggests that smaller, offshore partner-companies have been particularly successful in these areas.

- **Most groups said those residents who are interested in pollock processing employment prefer offshore jobs to onshore jobs due to a combination of higher wages, shorter time commitments and what is said to be less exposure to drugs and alcohol in the offshore processing environment.**

  While the study team questions the extent to which pollock processing jobs are a long-term solution to many CDQ village employment needs, CDQ employment statistics support statements by most groups that village residents have shown a clear preference for offshore employment to date. Villagers who are able and willing to perform offshore processing work, and particularly those without access to more nearby fisheries employment, are said especially to value the opportunity to earn wages during short, intense periods of employment that interfere as little as possible with subsistence and other village activities.

- **Counting an individual once for each year of employment, of approximately 1270 Western Alaska individuals who were recruited by the CDQ groups to work in the pollock industry during the six years from 1992 through 1997, approximately 90 percent chose to work with the offshore or mothership sectors. Total pollock wages earned by all 1270 individuals recruited through the program were approximately $8.3 million, or an average of $1.4 million per year.**

It can be assumed that at least 90 percent of total pollock wages were earned in the offshore or mothership sectors. An analysis of limited employment data indicates that CDQ residents earn significantly higher hourly wages offshore, but how much higher depends on how and when one measures. Existing anecdotal evidence that bases the differential between offshore and onshore wages on a brief period of peak processing time is not a very useful indicator of the impact of wages on CDQ residents. While some data was provided that shows residents working offshore have earned as much as $45 per hour for a single voyage, the same data places the average wage for working open-access and CDQ in both A and B seasons at about $18 per hour. Onshore plants are generally acknowledged to pay approximately $7 per hour for entry-level processing jobs.

Some offshore partner companies argued that the overall wage impact if quota were shifted from offshore to inshore would be more than proportional to the wage differential as a result of other factors such as:

1. Depressed surimi prices resulting from shore plants producing a higher percentage of surimi and selling it into vertically integrated markets,
2. Offshore workers missing the most profitable part of the season -- the last few days of the A season -- because the A season would be shorter, and
3. Fewer residents willing to work offshore because of the reduced wages.

These arguments seem speculative to the study team, but those more knowledgeable about the industry may find them sound. For example, with respect to an effect of reallocation on surimi prices, Council analysis seems to indicate that surimi represents about half the total product tonnage in both sectors.[5] In any event, effects 1 and 2 are not specific to the CDQ program, but may be judged with respect to the industry as a whole.

- **The groups also generated about $13.8 million dollars in wages for activities other than pollock processing during the same six-year period. These wages were for administrative work, fishing and processing for species other than pollock, recruiting activities, construction and other group ventures.** In addition, some groups reported fish ticket "wages," i.e., money paid for round fish directly to catcher boats in various fisheries. These payments, which include vessel overhead as well as crew shares, were calculated to be at least $7.3 million over the course of the program. Some of these other employment benefits are likely to be affected to some extent by a reallocation, but the study team is not able to draw conclusions about those effects.

- **According to data supplied by all the groups and/or their partners, from 1992 through 1997 a village resident who was employed by a CDQ partner company, earned an average of about $6,600 per year for pollock processing.** This calculation includes residents who may have worked only a short time, as well as those who worked for several months or longer. The study team notes that averages don't distinguish between individuals who work partial seasons because they choose to and those who leave jobs early for other reasons. Further study is needed to determine how many residents truly have access to high-paying, short term positions, how much they value that opportunity and the extent to which patterns of CDQ employment are beginning to develop that show either inshore or offshore processing work becoming an ongoing and integral part of the lives of some villagers.

[5] Council document IO3EA_APR, page 98

Annual wages earned by CDQ residents from offshore processors vary, according to study data. 138 village residents who worked for one offshore company between 1992 and 1997 averaged about $5,700 per year in total fishing salary. 151 residents working for another offshore company averaged about $8,400 per year for 1996 and 1997. A third offshore company reported that average wages per resident per year for 1996 and 1997 were approximately $18,000. Average wages for 69 CDQ villagers who worked onshore during 1996 and 1997 were approximately $3,000 per year, or slightly less than half of the CDQ average of $6,600 per year.

While different pay rates may be part of the reason for the difference in average offshore processing pay, turnover seems to be the major factor. Some village residents are said to prefer brief periods of seasonal work in order to attend to subsistence and other lifestyle activities at home while others may have tried fishing and decided not to pursue full-time careers in this industry. Another factor may be low availability (to newly active residents) of the higher paying offshore jobs – particularly during the "A" season – that have historically been based on experience and seniority of offshore workers. The survey yielded no information about inshore turnover rates for CDQ residents.

- **There are a number of indicators that the availability of pollock employment exceeds current demand by CDQ community residents.**

  1. Statistics for average annual wages, and anecdotal evidence from the groups indicate that villagers for the most part do not work full seasons at pollock processing, but prefer to work for shorter periods.
  2. Several of the groups said there was plenty of employment to meet resident needs and that further growth is limited by villager interest. Three groups said they offer priority employment to their village residents, but facilitate employment for other Western Alaskans when resident demand does not fill available openings.
  3. Residents of some CDQ regions – for example APICDA's and CBSFA's -- are said to be not very interested in pollock processing work. (For example, analysis of Permanent Fund addresses for CDQ villagers employed in pollock processing indicates that fewer than 5 people from St. Paul have taken pollock processing jobs over the course of the program.)[6] This lack of interest extends to both sectors.
  4. Pollock employment jumped in 1997, but was relatively flat in the three years preceding that.

The level of interest reflects both the attractiveness of pollock processing employment and the degree to which village residents are prepared to seek *any* type of employment. One group stressed that the idea of holding a typical job is new to many residents and that cultural attitudes toward employment and how to integrate it with other village values are likely to shift only slowly.

Overall, since the number of jobs in each sector – inshore and offshore – is in the thousands and the number of villagers seeking pollock employment of any kind is in the hundreds, the study team would not expect a significant drop in employment opportunities for villagers under any of the scenarios, ***provided the CDQ program***

[6] CDQ-resident pollock employment with CBSFA's partner, American Seafoods, consists almost entirely of residents of other Western Alaska villages, facilitated in part through YDFDA.

continues to exert the economic and political leverage needed to obtain employment commitments from partner and non-partner companies.

However, if a reallocation leads to shorter or longer fishing seasons, then certain kinds of employment may become more or less attractive to villagers because of changes in wages and season timing. For example, significantly shorter offshore voyages would require a smaller time commitment, but would produce less wages. This might be attractive to some villagers, depending upon personal needs. However, to avoid a drop in overall wages, a resident would likely need to fish additional voyages, placing some additional demand on the overall availability of jobs as well as calling for a longer time commitment.

Program Overview

The CDQ program is an ambitious, large-scale strategy that pairs for-profit and non-profit partners to improve the socio-economic condition of targeted communities. However, it varies in a key respect from most other community development partnering strategies in the study team's experience. This key difference is that, while most industry-partnering strategies are founded upon some common community goal or interest of the for-profit and non-profit partners, such common interest is not obvious in the CDQ program.

For example, banks use non-profit partners to help them make profitable mortgages to lower-income home-buyers who otherwise would not have access to financing. Supermarket chains use non-profit partners to help them establish profitable stores that serve inner city neighborhoods with more affordable goods. Industrial firms use neighborhood groups to help them revitalize communities where plants are located, so that the communities are attractive to company customers, employees and residents alike. In each of these cases and many others, *both the company and the community benefit directly from the company's role in achieving the nonprofit's goals.*

In the case of the CDQ program, while partner companies may be said to benefit from access to the Western Alaska labor force, most seem not to view this as an opportunity, but rather are said to consider provision of employment and training to be a quid pro quo in return for various financial and operational benefits gained through access to the CDQ harvest. It is the CDQ groups' control of a natural resource that enables them to gain the cooperation of their partners in community development efforts.

Certainly in some cases company management is also concerned with bettering the lot of Alaska residents. However, unlike the examples above, there is little clear *economic reason* for them to engage in this pursuit, at least until the point at which Western Alaskans, through experience, availability, work ethic, etc., are acknowledged to be a superior, more cost-effective source of labor than others available, or unless the groups and their partners can identify investment opportunities that directly benefit both the communities and the partner companies.

The point here is that, for the foreseeable future, the ability of the CDQ groups to achieve their economic development goals depends largely on being able to *use their control of the resource to convince companies to help do what is not necessarily seen by the companies as in their best interests to do* apart from the benefits they gain through access to that resource. Therefore, any allocation or other decision regarding management of the pollock industry that increases the value of the resource controlled by the groups is likely to be in the interests of the groups and the communities they represent.

Finally, we thank the CDQ groups and their partners for providing a great deal of useful information and insightful opinions during a particularly sensitive time in the history of the Bering Sea pollock fishery.

This section summarizes the answers that the CDQ groups and/or their partners gave to our survey questions as well as during the follow-up executive interviews. In general, we have grouped responses by question. Occasionally, as with training and employment, we have combined responses to more than one question in the interests of clarity and completeness. Additional discussion of some of the issues raised by these responses is included under "Discussion of Reallocation Issues," below.

It should be kept in mind that the groups varied in the degree to which they provided detailed written answers to our survey. Some of the responses summarized here are from written documents prepared by the groups and their partners and some are drawn from notes taken during in-person and telephone executive interviews with group and partner representatives.

Areas Addressed by the Survey

The survey asked each CDQ group to estimate the effects of five scenarios on the group and its industry partner(s). The scenarios included continuation of the status quo and four potential shifts in inshore/offshore pollock allocation. The areas of impact considered in the survey were:

a) Pollock fishing and processing activities,
b) Capital investment,
c) Profitability and royalties,
d) Community Development Plan projects,
e) Training and employment opportunities,
f) Continuation of partnership relationship.

We also asked the groups to list the benefits their partner companies gain from the CDQ relationship, the benefits to the CDQ group of the relationship, and why most CDQ groups have chosen offshore partners. Responses to these three questions are summarized in the section following, "Benefits of the CDQ/Partner Relationship."

Effects of the Scenarios

The scenarios used by the groups for their analysis of inshore/offshore allocation impacts are as follows:

Status Quo 35–10–55	Scenario A 25–5–70	Scenario B 30–10–60	Scenario C 40–10–50	Scenario D 45–15–40
	Relative change:	Relative change:	Relative change:	Relative change:
35% Onshore	Onshore loses 29%	Onshore loses 14%	Onshore gains 14%	Onshore gains 29%
10% Motherships	Motherships lose 50%	Motherships unchanged	Motherships unchanged	Motherships gain 50%
55% Offshore	Offshore gains 27%	Offshore gains 9%	Offshore loses 9%	Offshore loses 27%

Current pollock fishing and processing activities

The following chart lists the CDQ groups and their industry partners. Information about parent companies and vessel ownership was provided by the North Pacific Fishery Management Council based in part on 1996 records and should be regarded as approximate.

CDQ Groups and Their Partners

Group	Partner(s)	Partner Pollock Facilities
APICDA	Inshore: Trident Offshore: Starbound (Aleutian Spray Fisheries/Starbound)	Trident: two plants: Sand Point and Akutan; 8 catcher vessels Starbound: l catcher/processor, 1 catcher vessel
BBEDC	Offshore: Arctic Storm	2 catcher/processors, 1 catcher vessel (One of the catcher/processors is part-owned by BBEDC. The other is part-owned by Oyang)
CBSFA	Offshore: American Seafoods (parent company : Norway Seafoods; Aker RGI)	14 catcher/processors; 1 catcher vessel
CVRF	Inshore: Westward (parent company : Maruha, which also owns 50% of Alyeska Seafoods) Offshore: Tyson	Westward: 1 plant in Dutch Harbor; 2 catcher vessels Tyson: 5 catcher/processors; 6 catcher vessels; 1 anchored processor
NSEDC	Offshore: Glacier Fish Company (part- owned by NSEDC)	2 catcher/processors
YDFDA	Mothership: Golden Alaska (parent company : Peter Pan Seafoods, which is 100% owned by Nichiro)	1 mothership, 2 catcher vessels

Most of the groups were able to provide some estimate of how their operations were likely to be affected by shifts in the inshore/offshore allocation. Some groups projected distinct outcomes for each scenario, while others could only estimate approximate degrees of impact.[7]

[7] Several days after our survey was distributed to the groups, we were told by two of the groups that a meeting had been arranged by several groups to discuss whether and how some common assumptions about industry conditions could be developed to assist in making operating and other projections. We supported the idea of using common assumptions about TAC, prices, etc. to make the analysis simpler and more comparable. We don't know for certain if this meeting actually occurred or, if it did, what may have been discussed. While some group projections seem based on similar methods and assumptions, we do not know of any specific parameters having been adopted in common by the groups.

APICDA prefaced its discussion of operating impact with the assertion that the current industry combination of TAC, prices, roe recovery and what it describes as overcapitalization make the status quo untenable in the long run. The group suggested that inshore/offshore adjustments were not likely to provide a solution, while passage of SB 1221 would address overcapitalization in the offshore sector. Given this conviction and the fact that APICDA has both an inshore and an offshore partner, the group did not take a position for or against any allocation scenario. However, the group asserted that offshore operation in general was not viable under Scenarios C and D unless SB 1221 passes.

BBEDC and NSEDC provided somewhat similar profitability analyses. Both groups are partnered with medium-size, offshore processors. Both argued for maintaining the status quo or increasing the offshore allocation and projected that Scenarios A and B would lead to increases in revenues and profits while Scenario D would create a significant chance that the partner company would become insolvent. The two groups differed somewhat on the profit margins available under the status quo and on whether Scenario C would produce net operating losses for their partners, with one arguing that it would and the other projecting a decrease in net income, but not necessarily an operating loss under Scenario C.

The two groups that are partnered with large offshore companies – CVRF and CBSFA – did not try to project specifically how the scenarios would affect partner operations. However, one said that the amount of royalties paid to the group could decrease under Scenarios C and D due to changes in the length of the season and a predicted drop in surimi prices resulting from shifting allocation inshore. This price effect was described by three of the groups. It is said to be based on the idea that shifting allocation inshore will result in a glut of surimi, since onshore plants produce mainly surimi. This oversupply is predicted to depress prices and therefore decrease profitability offshore still further. The other group was uncertain about the effect on royalties. (See further discussion under "Profitability and Royalties"). CBSFA said that increasing the offshore allocation would be in the best interests of the CDQ program, while CVRF supported the status quo.

The CDQ group that is aligned with a mothership operation, YDFDA, projected that Scenario A, which cuts mothership allocations by half, would result in at least one of the three motherships leaving the industry. They did not say which one was most likely. YDFDA predicted that Scenario D would increase the number of operating days from approximately 57 to 85, with attendant benefits for employees and catcher vessels. With respect to the inshore/offshore allocation, YDFDA said it prefers no disruption of the status quo.

Capital investment

According to group responses and program records three of the groups have purchased ownership stakes in pollock processor vessels, but one of those has divested as a result of a failed partnership. A fourth group says it is considering investment in a catcher/processor. All but one of the groups holds investments in other types of fishing vessels, including catcher and crab boats, longliners and smaller craft. Some of the groups have invested in onshore processing facilities for salmon, crab and other species. Other group investments include halibut and sablefish IFQs, loans to local businesses and at least one permit-brokering entity.

Potential impacts of inshore/offshore allocations on CDQ investment are too complex to predict in any detail based on the results of our research. Judging from the groups' responses, inshore/offshore allocation shifts may inhibit investment by some groups and create opportunities for others. In the end, investment decisions will be made on the basis of a variety of business and community development criteria, of which the inshore/offshore allocation is just one factor. However, if inshore/offshore affects royalties, this would in turn have an impact on investment.

The groups together have approximately $7.5 million invested in offshore pollock processing vessels. Those groups that have invested offshore say these assets would be negatively impacted by an inshore shift of allocation and positively impacted by an offshore shift. To the extent that these investments carry with them any responsibility for partner debt, the exposure of the groups may be more than just their share of the book value of the assets.

Two groups used projected royalties under each scenario as an indicator of the amount of free cash flow available for investment, which they said would increase or decrease according to the allocation to their sector. One group took a broad view, saying that any investment in pollock was unlikely unless SB 1221 passes and that it assumes, based on current capacity, that no additional shore (pollock) plants will be built. A fourth group said they did not anticipate any new investment in pollock under any of the scenarios.

One group has a part-interest in an inshore catcher/crab vessel. It says this vessel would be "seriously impacted" by a major shift of quota offshore. No detailed information was provided to support this or to indicate whether or not the vessel could find other opportunities.

Most of the groups said that the possibility of additional regulation changes in the pollock industry makes investment planning more difficult. One partner company said this uncertainty significantly inhibits access to debt financing.

Profitability and royalties

Profitability data

Groups varied in the degree to which they said they had access to partner records, and there were groups that said they didn't have specific information about partner profitability. Some of the groups submitted large amounts of what they said was confidential financial and operating data in support of their positions on various survey questions. This information was helpful but mostly inconclusive with respect to how sensitive the groups and their partners are to shifts in quota allocation. This is in part because the information comes from internal (unverified) records and in part because it is not complete in all cases. The information provided does not reveal actual profitability, data which the groups and their partners have every right to keep confidential.

Since none of the confidential information provided includes actual income statements and balance sheets, verification of group positions using audited data was not possible. One of the groups presented break-even analysis based on a model developed by Miller, Lipton and Hooker in 1994 that appeared to use a cost structure and yield rates provided by industry sources for 1991. Another group developed a model they say is based on an average of actual 1996/97 operating figures. That model shows operations for open-access as just above break-even assuming that CDQ fishing supports no fixed cost (total fixed cost is allocated between the core surimi operations of open-access A & B and hake). This model appeared internally consistent and may accurately represent marginal cost and revenue. Since it doesn't reveal the overall financial picture of the firm, it's problematic to use it as the basis for assessing the actual impact of a reallocation.

A third offshore partner developed profitability impact estimates that showed between 38 percent and 46 percent of their contribution to overhead and profit being generated or lost as a result of the incremental changes represented by Scenarios A through D using 1995 and 1996 as base years. We have no profitability models for onshore plants.

Effects on royalties

The groups pointed out that profitability and the degree to which it is likely to affect royalties is an extremely complex issue having to do with TAC, recovery rates, product lines, operating efficiency, market demand, international economies and overall business strategy. The groups didn't provide information about debt load, which is another key factor in profitability. Moreover, the groups have different formulas for computing royalties with their partners, so a situation that affects one group's royalties may not similarly affect another group with the same type of partner.

Finally, some groups pointed to an effect on royalties of the growing trend toward equity positions by the groups with respect to their partners, of which NSEDC's 50 percent stake in Glacier Fish Company is the most recent example. Other equity investments in partner companies include BBECD's 20 percent stake in Arctic Storm's *F/T Arctic Fjord* and CVRF's role in the recently dissolved Imarpiqamiut Partnership and its *F/T Browns Point*.

It seems reasonable to expect that groups holding equity in pollock fishing and processing assets will be affected more by reallocations than those that don't, but the effect on royalties is not clear. For example, BBEDC predicted no change in royalties if the offshore sector received an additional 5 percent of the harvest, but a substantial drop in royalties if 5 percent of the allocation were taken away. Some of BBEDC's reason for the royalty drop has to do with protecting its investment in the Arctic Fjord in the face of a loss in offshore quota. However, NSEDC, with a much larger offshore investment, did not say that royalties would necessarily be affected under a 5 percent shift.

Other financial effects of reallocation

Some groups also said that profitability would be affected if a shift of allocation away from offshore resulted in an offshore roe season that was too short to take advantage of the highest roe values. (It could be that this would also increase the value of the CDQ roe fishery, since the CDQ roe fishery occurs after the open-access).

Three of the groups who have offshore partners said that moving quota inshore would result in longer processing time inshore, which would reduce the value of the inshore roe harvest because the roe could not all be processed within the time period of peak value even if the plants ran at full capacity. (Perhaps this would also increase the price of offshore roe, since there would be less of it and it is reportedly of higher quality than inshore roe.) Representatives of onshore processors acknowledged that they often ran at capacity, but disputed that this meant a decrease in roe value if quota were moved inshore. Onshore proponents also argued that better extraction rates inshore make up for any efficiencies lost through longer processing time. The McDowell Group doesn't have enough data about actual processing operations to draw conclusions.

Community Development Plan projects

The groups' Community Development Plan (CDP) projects cover a wide range of activities meant to translate CDQ revenue into benefits for residents of western Alaska. These often involve investment in regional fisheries and fisheries infrastructure to encourage participation by village residents. Many also have scholarship programs and some provide business loans. All the groups have employment and training programs with their partners and several provide opportunities with other companies as well.

The groups as a whole did not undertake extensive analysis of the implications of inshore/offshore for individual community development strategies. Most said these strategies could be strongly affected by changes in royalties, either positive or negative. In general, these community development projects appear young, experimental and not strongly profit-driven, if at all. This could make them quite sensitive to changes in CDQ group fortunes. It may be that an allocation shift that has only a short-term financial effect on a CDQ group could have more profound effects on its community development projects if school- or welfare-to-work programs are interrupted or investment opportunities missed. However, this is not a finding but instead is study team speculation.

Employment and training opportunities

Five of the six groups reported that they had developed written employment and training guarantees with their company partners. The sixth group said that opportunities were "virtually unlimited" given the demand by their residents. All the groups indicated that as a result of the infrastructure developed since the beginning of CDQ, there are generally enough training and employment opportunities available both onshore and offshore for the residents that want them. The groups said further growth in training and employment depends in part on continuing to foster interest among residents while at the same time improving the quality of opportunities available with respect to type of work, pay, timing, work environment and opportunity for advancement.

CDQ group projections of reallocation impact on employment

Three of the groups – all of which have been very active in training and employment efforts – said that training opportunities would be particularly sensitive to quota reductions for their sectors. The reason given was that training is expensive and when margins are critical, processors can't afford to have more than the minimum number of inefficient trainees aboard. Two other groups said they didn't anticipate any limitations on employment under any scenarios, although an average worker's hours would grow or shrink depending upon whether allocation were gained or lost. Another group said that it takes a "good deal of leverage" to provide employment opportunities, noting that, "It's in the processor's interest to hire in Seattle."

Of the groups that predicted an impact on employment, one estimated that Scenarios C and D would result in a loss of 5 and 17 days respectively from the A and B seasons combined. It said that the resulting shorter, lower paying voyages with its offshore partner would not attract as many residents. This group also estimated that as a result of the lost work, an entry level worker would be paid approximately $2,100 less under Scenario C and $6,400 less under Scenario D.

Another group with an offshore partner estimated that the wage differential between onshore and offshore for an average worker currently is approximately $12,500 higher offshore for working the A and B seasons. The group said the average differential would shrink to about $5,000 more offshore due to lost wages under Scenario D and grow to nearly $20,000 under Scenario A as a result of increases in work time and the value of the products produced.

Estimating employment impact of the CDQ program

Although the CDQ program has maintained extensive data on employment and training activities by the CDQ groups, there has been some question about how to interpret it resulting in part from confusion over how to account for individuals who may work several different positions and positions that may have several different incumbents over the course of a season.

Analysis of payroll records is not a substitute for village-by-village research on the relevant impacts of different types of employment. However, in order to arrive at some straightforward measures of employment impact, the study team asked the groups to supply total wages by individual for a number of categories. Some of the data was structured by the CDQ groups; some was assembled directly from payroll summaries supplied by the processor partner.

The table below represents the number of individuals and the total wages earned by those individuals in the years 1992 through 1997. The category, "Total partner wages," is the sum of "pollock processing," "Other fish processing" and "Other work" (such as dry-dock, construction, maintenance, etc.). "Group wages" are wages paid to CDQ residents by the CDQ groups, mainly for administrative work, but occasionally for construction and other work. "Other wages to residents through group efforts" are wages paid for pollock and non-pollock fishing, processing and other work when the job was found through the group, but wages were paid by a company that was not the partner company. Finally, "Fish tickets paid to residents" consists of ex-vessel payments. We chose to break out this form of "wages" separately, since a portion goes to overhead expense, not wages.

CDQ-village workers and the wages they received through the CDQ program from 1992 - 1997

ALL GROUPS	APICDA	BBEDC	CBSFA	CVFC/CVRF	NSEDC	YDFDA	Totals
Partner Wages							
Pollock wages	$ 545,562	$ 1,567,361	$ 870,167	$ 1,420,911	$ 2,394,262	$ 1,537,293	$ 8,335,576
Pollock individuals	77	345	140	382	207	119	1270
Wages per individual	$ 7,085	$ 4,543	$ 6,216	$ 3,720	$ 11,566	$ 12,918	$ 6,563
Other fisheries	$ 314,708	$ 300,063	$ 299,148	$ 685,600	$ 428,005	$ 21,813	$ 2,049,337
Individuals	108	171	77	500	n/a	15	871
Wages per individual	$ 2,914	$ 1,755	$ 3,885	$ 1,371		$ 1,454	$ 2,353
Other work	$ 768,247	$ 57,733	$ -	$ 57,422	$ -	$ 27,329	$ 910,731
Individuals	187	17	0	2	0	17	223
Wages per individual	$ 4,108	$ 3,396	$ -	$ 28,711	$ -	$ 1,608	$ 4,084
Total partner wages	$ 1,628,517	$ 1,925,157	$ 1,169,335	$ 2,163,933	$ 2,822,267	$ 1,586,435	$ 11,295,643
Total individuals/year	372	371	145	884	207	119	2098
Wages per individual	$ 4,378	$ 5,189	$ 8,064	$ 2,448	$ 13,634	$ 13,331	$ 5,384
Group Wages							
Group wages	$ 671,648	$ 1,103,606	$ 828,100	$ 932,552	$ 2,299,127	$ 1,156,772	$ 6,991,805
Individuals	51	143	75	35	66	n/a	370
Wages per individual	$ 13,170	$ 7,718	$ 11,041	$ 26,644	$ 34,835		$ 18,897
Other wages to residents through group efforts	$ -	$ 475,080	$ 928,300		$ 1,761,405	$ 696,647	$ 3,861,432
Individuals		104	81		627	131	943
Wages per individual	$ -	$ 4,568	$ 11,460		$ 2,809	$ 5,318	$ 4,095
Fish tickets paid to residents	$ 1,783,343				$ 5,529,691		$ 7,313,034

Source: CDQ groups and harvesting partners.
Individuals were counted once in each year they held employment.
All American Seafoods village employment was assigned to its partner, CBSFA, although most of this consisted of villagers from other CDQ regions.

As noted earlier, the study team believes that one useful measure for assessing employment impact on village residents is actual annual wages. The table shows that pollock wages per year for every individual who has participated in either sector over the course of the CDQ program run from about $3,700 for the CDQ group with the lowest earnings-per-year to about $13,000 for that with the highest, with $6,600 the group average. However, this measure "punishes" groups for proactive recruiting, since it averages workers who decide to try a job but leave after just a week or two with those who consistently work all season. These totals also include training wages, which we would expect to be lower than average.

The table shows that, counting individuals once per year of employment, about 1270 people were placed by the CDQ groups in pollock fishing/processing jobs. Of these, the study team was able to identify only approximately 100 who worked for inshore plants. The remainder worked for offshore or mothership companies.

This calculation does not consider, and study analysis does not include, approximately 275 individuals who's residency as defined by Permanent Fund dividend application address was in the CDQ villages of Akutan, Clark's Point, South Naknek and St. Paul and who worked for inshore processors. These individuals were not identified by the CDQ groups as having been referred through the program, and, with the exception of 67 individuals from Akutan, it is unlikely that they were engaged in pollock processing. The study team believes that all or nearly all of these individuals found employment through channels other than the CDQ program, and therefore that analysis of CDQ program impacts ought not to include them. Nevertheless, under the Permanent Fund application residency test, they qualify as residents of CDQ villages.

The employment data the study team received is similar to, but not entirely consistent with employment information released in August, 1997 by the CDQ program in a document entitled Inshore/Offshore Allocations and the Pollock CDQ Program. That report cited total CDQ employment as 5,400 positions and $22,753,785 in wages through the second quarter 1997. Our analysis attempted to resolve the difference between a "position" and an individual by not counting any individual more than once in any one year.

Counted in this way, the study team obtained a total of 2,098+370+943 or 3,411 individuals. It is unlikely that all double counting was eliminated, so this may overstate the number of individuals slightly. The team found total wages to be $11,295,643+$6,991,805+$3,861,432 or $22,148,880. This is somewhat more conservative than the CDQ program estimate, since it also includes two additional quarters of 1997. There are several possible reasons. First, BBEDC said they were unable to supply complete data for their former partner, Oceantrawl. Second, since the data collection focused on wages provided by partner companies and by CDQ groups, we may have missed some wages paid by *non*-partner companies as a result of CDQ group efforts. Finally, some of the difference may be fish tickets that were reported to the CDQ program as wages but were subtracted from our summary and are reported separately in the bottom line of the table.

Continuation of the partnership relationship

While several of the groups predicted royalty changes under different scenarios as described above, three groups said that termination of their partner relationships was unlikely under any of the reallocation scenarios, with two of those saying that termination was very unlikely. One of those who said that termination was very unlikely also said that, in any event, there would be other potential partners available. A fifth group estimated that Scenario D might force its partner into bankruptcy, but that the group would be able to find another partner at somewhat lower royalty rates. The sixth group was unable to make any predictions about its partnership relationships because they are in flux.

Two groups said that Scenario D would lead to significant restructuring of the industry, with one saying they thought none of the offshore processors would be financially strong enough to bid competitively for the CDQ under Scenario D. A third group predicted restructuring under any scenario unless SB 1221 were to be enacted thereby decreasing overall capitalization.

NSEDC's relationship with the offshore processor Glacier Fish Company is somewhat different from the others, since the group holds a 50 percent equity position in the company. While NSEDC said termination was unlikely, the group does anticipate the need to inject capital under Scenario D. BBEDC outlined similar logic regarding its investment in the Arctic Fjord.

Benefits of the CDQ/Partner Relationship

What are the most important benefits to the processing partner from the CDQ relationship?

The benefits to the processing partner most often mentioned by the groups –or in some cases their partners, as noted in the table, below – were:

- Using the CDQ to find fish, tune equipment and train workers prior to the open-access season.
- Gaining political influence by working closely with Alaskan communities.
- Increased fishing time and profits leading to more stable crews and better utilization of assets.
- Market advantages including the ability to offer the highest quality products, more market share and the ability to market product when others can't.

The order of listing in the following table does not indicate priority.

The most important benefits to the processing partner from the CDQ relationship

APICDA	Arctic Storm for BBEDC	CBSFA
Increased revenue.	Increased crew stability from longer voyages and greater overall wage. (Said to be the most important benefit)	Fish finding, equipment tune-up and training period.
Fish finding, equipment tune-up and training period.	Guaranteed access to the resource resulting in more "significance" as players.	Increased fishing time and profits.
Additional wages with which to maintain a more stable crew.	Lower risk and improved access to capital.	Political influence.
Greater ability to access or expand markets on continuing basis.	Political influence.	
Enhanced reputation as growth-oriented and responsible.		

CVRF	NSEDC	Golden Alaska for YDFDA
Political influence.	Increased volume/vessel utilization.	Higher production and market share, especially for surimi and roe.
Infrastructure to provide employees (must be easy for company to use.)	Longer harvest period means better quality (fillets) overall.	Fish finding, equipment tune-up and training period.
Source of pollock.	Top quality products during CDQ harvest allow targeting market niche.	More business for catcher boats.
Having product when others don't and being able to fish when others aren't.	CDQ fishing has better environmental compliance.	More wages for processor crews.
Fish finding, equipment tune-up and training period.	Political influence.	Fish tax credits for CDQ scholarships.

What are the most important benefits to the CDQ group from the partner relationship?

The benefits to the CDQ group most often mentioned by the groups, themselves, were:

- Employment and training opportunities for western Alaska residents.
- Royalty income.
- Investment opportunities.
- Industry expertise and perspective.

The order of listing in the following table does not indicate priority.

The most important benefits to the CDQ group from its partner relationship

APICDA	BBEDC	CBSFA
Royalty revenues.	Employment opportunities for Bristol Bay residents.	Royalties, scholarships and other cash.
Employment / training.	Employment opportunities for other western Alaska residents.	Employment and training.
Investment advice and opportunity for joint ventures.	Royalties from pollock quotas.	Expertise.
Access to operating expertise.	Investment opportunities.	Industry connections and gear discounts for local fishermen.
Respect.	A more world-wide perspective of the seafood industry in BBEDC communities.	Increased revenue for St. Paul from operational activities in town.

CVRF	NSEDC	YDFDA
Employment.	New markets for local fishermen, including salmon and herring.	Royalties to fund CDP.
Training.	Employment in pollock and other fisheries.	Employment.
Industry experience.	Royalties and operating profits.	Training.
Royalties.	Stability – Investment in partner is component of long term transition to self-sufficiency.	Management expertise for new ventures.
		Investment opportunities.

Why do more CDQ groups partner with offshore firms?.

All six CDQ groups have offshore partners. Two groups also have inshore partners. On average about 85% of the CDQ is harvested by offshore processors. The study team asked this question of the groups to see to what extent the pattern of contracting with offshore partners was based on similar reasoning and goals on the part of the different groups. We found that, to a large extent, it was. Most of the groups echoed similar themes in answer to why there are more offshore partnerships. The most common explanation was that offshore firms offer better wages and other employment advantages for most region residents. Other reasons given were that offshore processors pay higher royalties and offer better co-investment opportunities. Finally, one group said it was attracted to its offshore partner in part because of the partner's exemplary fishing practices record.

- *Better wages.* This was ascribed to the fact that the offshore sector has better operating margins because it is more efficient (handles the fish less), doesn't have to pay as many catcher vessels and creates higher value through better quality roe and the flexibility to make fillets as well as surimi. (It's not clear to the study team how to reconcile the idea of better margins offshore with the assertion by some groups that offshore companies are barely breaking even on open-access fishing).

- *Other employment advantages.* The groups noted that, while offshore employment is not suited for everyone, it is attractive to many villagers for a variety of reasons in addition to wages. These include:
  - a) Shorter time commitments in the offshore sector allow workers to be away from home less for the same or greater earnings and to schedule work better around their subsistence activities.
  - b) While problems can exist in both sectors, exposure to alcohol and drugs is viewed by the groups as more likely in the on-shore plants. This issue is said to be extremely important to some village elders.
  - c) Residents of certain communities are said to be more likely to want offshore work because of their (unpleasant) history with cannery operations, for example in negotiating salmon and herring prices.

- *Higher royalties.* Three groups said that offshore companies can pay higher royalties (because of the same efficiencies that are said to allow for better wages). Two cited what they said was a history of more responsive bids from offshore. Another group said it didn't necessarily see a royalty advantage to any particular sector. CDQ program records show that onshore companies have bid competitively for CDQ and in two cases have been chosen as CDQ partners, though not exclusive ones.

- *More investment opportunities.* One group said the bulk of investment opportunities offered to it had been from the offshore sector and ascribed this in part to more intense political motivation. Another group said that when it suggested investing in a shoreside plant, the group was told that the processor was not interested in any joint investment. However, a representative of a shoreside processor said that their participation in multiple fisheries presented many opportunities for joint venturing with CDQ groups.

This section discusses and analyzes the implications of the groups' responses to the survey questions. Because of the complexity of many of the issues raised by the survey – the study team was asked to analyze effects of a three-sector industry on a six-group program overseen by three State departments and having 56 regional village constituencies – the analysis raises questions as much as it provides answers. However, one principal purpose of the study is to call attention to the major CDQ impact issues that need to be considered when making pollock resource management decisions. The following discussions seek to serve that end.

Effects on Industry Partner Performance

A central finding of the study is that CDQ groups cannot be viewed as homogenous entities. Instead, each of them is a unique complex organization with widely different characteristics, business philosophies, goals and partnership arrangements. Potential impacts of each allocation alternative are uniquely different for each of the six groups. Therefore, a single reallocation decision may have a wide variety of impacts on the groups and perhaps multiple impacts on each group.

These differences extend to the effects on partner performance as reported by the CDQ groups. While responses to the question on partner impacts may be (and rightfully should be) presented with self-interest in mind, the variety of responses has a great deal to do with the variety of CDQ groups and their partners. For example, how one views the effect of inshore/offshore on the CDQ groups has much to do with what one believes about the status quo. The groups had somewhat different perspectives on the current state of the industry. While the groups provided a considerable amount of confidential operating data on several of the partner companies, the data is fragmented and does not allow estimates of the actual profitability of the several different types of companies that constitute CDQ group partners (mothership, onshore plant, smaller offshore processor, large offshore processor).

One CDQ group argued that the offshore open-access pollock fishery is only marginal, and another described the industry as a whole as "untenable" due to overcapitalization. If these assessments are accurate, then a small allocation shift, or none at all, could cause hardship for at least some of the CDQ partners, particularly those with direct investment in a processing company. One group that made this argument said the situation could translate into lower royalties, lost investment, less employment, lower Alaskan wages, lower industry prices and, ultimately, bankruptcies and lost partnerships. It was reported that at least two groups have lowered the royalty fees charged to their partners during past bad years. Thus, there appears to be some history of poor financial performance on the part of industry partners affecting CDQ group royalties.

Other groups were not so pessimistic. One recently made a sizable investment in an offshore company, presumably with the knowledge that a reallocation could take place. Also, both onshore and offshore processors – but particularly onshore – reported that profits from pollock help make possible more risky investments in other area fisheries. We are not sure how to interpret this in light of the fact that pollock processing is said by some to be financially unsustainable under current conditions.

Effects on the Value of the CDQ

The survey of the CDQ groups asked about the value of the CDQ relationship to both the groups and their partners. In analyzing the answers, the study team found that they tended to fall into two areas: an "operational" value and a "structural" value.

Operational value

The operational value derives from the CDQ's independent season. This is the area of value most commonly alluded to by the groups and their partners when they discuss the advantages of being in a CDQ partnership. The operational value is said to have a number of components, including:

- Pre-season fish finding and equipment tune-up,
- Slower, more efficient (higher yielding) processing,
- Ability to target the market for very high quality products (made possible by slower fishing and processing) and to market at times when others cannot (because of season timing).
- Crew training and better crew retention resulting from the longer season and additional wages.

Changes in the inshore/offshore allocation would seem to have some partially offsetting effects on operational value. As pointed out by several groups, if the offshore allocation is lowered, offshore companies presumably would be less profitable and so have less money available to contribute to royalties. However, with less fish to go around, the need to secure the operational advantages of the CDQ would appear to increase (limited, as some groups pointed out, by the partner company's ability to pay). Moreover, if fewer fish meant a significantly shorter season, it could be that the CDQ would be the only way to ensure that one could fish the peak part of the roe season. Conversely, if the offshore quota is increased, the CDQ would be a smaller percentage of overall revenue and the competitive advantage from CDQ fishing would seem to be somewhat less critical given the larger open-access harvest.

The conclusion is a double edged sword as the case could be made for both higher and lower operational value in the instance of either an increase or decrease in the offshore allocation. The study team does not have a firm opinion. However, for any sector experiencing a decrease, the CDQ allocation and its competitive advantages in regard to the open-access fisheries become proportionately more important.

Structural value

In contrast to operational value, the structural value of the CDQ derives from any leverage it may be seen to confer with respect to the set of economic, political, competitive, environmental and other industry forces at work at any particular time. Most groups believe, for example, that the CDQ can provide some political advantages, at least currently. Another structural value might be a market advantage if CDQ products can be "branded" as a higher value line (one company says it already does this to some extent).

Structural value might also exist if one or more companies sees the CDQ as a way to enhance company value in preparation for putting the company on the market. Finally, if companies believe that being a CDQ partner will enhance their position in an ITQ program -- either because CDQ "tune-up" fishing helps increase their catch history or for some other reason -- this would also increase the structural value. In any event, the structural value varies over time depending upon the extent to which the CDQ is seen to be an advantage with respect to these or other elements of the industry environment.

Several groups said they believe the overall value of the CDQ currently is near its peak, in part because of structural forces like inshore/offshore and ITQs. However, there are other potentially very significant structural issues for which any CDQ advantage is not as clear, including the overall health of the pollock resource and the potential effects of the Russian fishery, SB 1221, and access to the Catcher Vessel Operational Area. Only one partner company made mention of the potential effects of reduced or lost access to the Catcher Vessel Operational Area which, according to some executives, could have a very serious impact on both inshore and offshore processors and, by virtue of its effect on the roe harvest, on CDQ royalties.

While there seems to be general agreement that the CDQ confers some leverage with respect to inshore/offshore decisions as a result of employment and other positive impacts on western Alaskans, the links between CDQ and these other structural elements are not clear, other than that guaranteed access to a percentage of the harvest lends some measure of certainty to a company's strategy under most any scenario.

As a result of uncertainty about how to interpret structural value, the study team has not based any analysis on specific royalty levels paid or offered to be paid by partners and potential partners. To do so would require an extraordinarily detailed company-by-company analysis.

Value as a fishery

Access to the harvest clearly is a third source of CDQ value, namely the value to the villages of western Alaska of the CDQ as a fishery in itself. Since, the number of metric tons of pollock represented by the total CDQ is roughly equal to what could be processed by a company with two catcher/processors, the CDQ represents, at least theoretically, a fishing/processing company with annual revenues in the neighborhood of $60 million. It might also be the basis for an onshore processing operation, particularly in light of the multi-species CDQ.

In either case the company might capture all of the operational and structural value currently represented by the CDQ royalty and also the full value of the 90,000 -100,000 mt harvest without participating at all in the open-access fishery. It could brand its products, target niche markets and presumably provide the best possible employment opportunities for residents. Of course, it would likely have less ability to leverage its impact through multiple companies as the program does now.

The economic value of the CDQ harvest volume is substantial regardless of any shift in other allocations. The CDQ portion is the only allocation that is assured and not subject to competitive forces. This also means the scale of investment could be based on economic return rather than the necessity to compete in an overcapitalized industry. However, this discussion of self-harvesting by the groups is speculative. The study team knows of no indication that such a strategy is being contemplated.

Effects on Group Finances

Because the six CDQ groups have different kinds of partners and partnership arrangements, they would not all be affected in the same way by a given allocation shift. Two of the groups are partnered with both inshore and offshore companies, mitigating the effects on them of a shift either way. A third is partnered with a mothership and would be directly affected only by a change in the mothership allocation. The other three are partnered only with offshore companies, two of which are fairly small and one of which is very large.

Different royalty agreements

While the study did not collect complete information on how all groups compute royalties, many royalty agreements appear to have a base level and also to depend upon the price and volume for the CDQ harvest, including a premium for roe. That is, they are calculated independent of the profitability of the open-access fishery. As a result, while the groups said that royalties begin to be affected when open-access fishing falls below break-even, and companies look to CDQ fishing to cover fixed as well as marginal costs, we know of no cases where the relationship between open-access fishing and CDQ royalties may be predicted based simply on the royalty agreement.

The groups were somewhat less likely to predict an increase in royalties resulting from an increase in allocation to their partners than they were to predict a decline in royalties from a drop in allocation. This could support the contention that most processors are relatively unprofitable under the status quo, or it could be an indication that royalties are not so closely coupled to open-access profitability.

Different investment positions

Beside royalties, the other important financial connection between the groups and their partners is the level of investment the groups may or may not have in either the inshore or offshore sector, both directly in their partner companies and in the form of joint ventures. The groups with equity investments anticipate multiple financial effects from any allocation shift, including effects on cash flow from partner operations as well as royalties, changes in asset value and effects from group and/or partner debt load.

Effects on Community Development

By all accounts the CDQ program has made a significant contribution to village employment. Many of these jobs have been, of necessity, entry level. However, it may not be in the long-term interests of the CDQ groups to focus discussion on entry-level wages. Employment as a community development strategy goes beyond entry-level jobs. Many factors in addition to wages enter into village employment needs. Does the type of employment currently being made available provide villagers with the range of skills and options they need to pursue – invent, really – an economic future for themselves and their families? Does the CDQ program have enough leverage – not just in a reallocation year, but ongoing – to ensure that this happens?

Employment statistics also fail to capture certain other financial investments by CDQ partner companies in the economic advancement of village residents. These include scholarships (for which the companies receive tax credits), training costs (sometimes, but not always subsidized by the groups), and recruitment costs (often borne by the company). One partner company estimated these investments at approximately $300,000 per year.

Finally, insufficient information exists to assess the employment impact of "fish-ticket wages," that is, purchases of round-fish – pollock and other species – from catcher vessels by both inshore and offshore sectors. This would seem to be an area of growing importance as villagers become more involved and invested in the Bering Sea fisheries as a whole. Some discussion of the relationship between ex-vessel value and wages is available in a 1995 study commissioned by the Pacific Seafood Processors Association entitled, *The Economic Impact of the Shoreside Processing Industry upon Alaska during 1993.*[8]

Working conditions

The issue of alcohol and drug availability is an important concern of the groups and also of many of the village elders. Many assert that alcohol and drugs are better controlled in the confined space aboard ship than in onshore installations. This seems logical, though we have no data on the subject, but it begs some additional questions. Is it true of all vessels? Is it more true of partner vessels? Are some onshore plants better than others in this regard? What can be done to improve both offshore and onshore processors in this respect?

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[8] This reference is informational only and should not be construed as an endorsement of either the methods or the findings of that study.

What about other aspects of the work environment, such as racial barriers, language barriers and opportunities for advancement? Our survey did not directly address these issues. If an inshore/offshore allocation did change employment opportunities in one sector or another, would there be any correlation between employment gains or losses and those companies that are best or worst to work for from the perspective of village residents?

Working condition issues are critical factors for Alaskans considering employment in the pollock industry, whether onshore or offshore. In other words, perhaps one of the primary benefits of the CDQ program – employment – is heavily dependent on working conditions as well as wage rates.

Long-term employment issues

A great deal of discussion has focused on how wages compare between inshore and offshore companies. However, it is not clear to the study team that residents in general consider inshore and offshore employment to be an either/or choice. In the words of one group, offshore work is "not for everybody;" the same may be said of onshore work. While it has been suggested that offshore work pays better because offshore companies are "more efficient," the study team knows of few employers who pay more than they need to for the work at hand. Likewise, workers tend to want wages commensurate with the demands of the job. All this is to say that the long-term interests of the CDQ program may be best served by ensuring that residents have access to as many types of employment as possible, so that they may choose what is appropriate for them.

Moreover, as outsiders to the CDQ program, it seems worthwhile to ask to what extent do processing jobs inshore or offshore answer the long-term employment needs of western Alaskan residents. The preponderance of opportunities to date have been suitable mainly for those willing and able to work offshore or relocate for three or more months to an onshore plant.

Does either sector have an advantage with respect to providing other types of employment opportunities? Both sectors have administrative and operational functions beyond fishing and processing. Those for the offshore sector seem to be somewhat more geographically removed from the villages than for the onshore. If this is true, does it matter? What will be the role of higher education – made more and more accessible through CDQ scholarships – in future employment strategies? How does the alcohol, drug and social barrier question play out for these other types of jobs? What is the potential impact of inshore/offshore on all this? Once the current allocation crisis period is past, how will the traditional personnel systems allow for advancement (including access to A season voyages) beyond entry level jobs for Alaskans? The study team has no real basis for predicting.

Role of CDQ Partnerships

Having said earlier that one theoretical option might be for the CDQ groups to harvest their quota independently of industry partners, it is nevertheless clear from our survey that most of the groups consider their current partnerships to be key elements in their development strategies. Most, if not all, of the CDQ groups indicate that they have invested significant time and resources in finding and nurturing good partnerships, and several said they would be willing to accept lower royalties to avoid having to find another partner as a result of an allocation shift.

We are told that two groups have found new partners in the past three years and at least two others have reportedly entertained offers recently. So shifting partners seems to be at least one acceptable way to meet a group's changing needs. However, this may not be as much a sign that changing partners is not so hard as it is a sign that finding the best possible partner is critical, and reviewing other offers simply makes sense when one is negotiating the sale of something as valuable as CDQs.

Partnerships seem a particularly important tool given the overall CDQ program strategy, which calls on the groups both to invest in the industry and to create immediate employment opportunities. (One might, of course, shift the program strategy to one based purely on investing royalties to maximize return for example. In that case partnerships might not play as large a role, or at least a different one.)

At the same time, the study team recognizes the fundamental principles of both law and economics that cause the for-profit firm to act in its own interests. For purposes of evaluating the potential effects of inshore/offshore on CDQ groups and their partners, we see no reason to ascribe *any* of the desirable effects of the CDQ program thus far to altruism on the part of any partner company nor to expect such altruism in the future. Some groups pointed out that, while they may have excellent employment relationships with their partners, these were not easy to develop. Most partners are said to have little or no incentive to hire western Alaskans in the absence of the CDQ program and other outside influences. This is not meant to denigrate the actions of any of these companies. Instead, as economic analysts, the study team recognizes that CDQ partnerships are business arrangements with corporations that are required by law to seek profits for their stockholders. We are simply recognizing responsible corporate business behavior.

Choosing partners

Each of the groups has developed its own priorities with respect to its partner(s). These are said to depend upon the group's community development strategy, the location and interests of its constituents and many other factors. While all the groups list royalties as one of the top five benefits of their partnerships, quality of employment and training experiences, investment opportunities, and industry and business expertise were also key benefits. Other vital criteria for partners were financial stability, a willingness to communicate openly with the group and a sense that the group played an important role in the partner's operations (referred to as "respect" by one group). Clearly, most groups see the partner relationship as complex and one that both requires and is worth significant efforts over time to establish and nurture.

The scope of our information about the groups and their partners does not provide a basis for making judgments about the wisdom of individual partnerships. However, it does indicate that the strategy of partnering, overall, has been a good one, yielding substantial benefits to both sides. Here we make a distinction between partnering and simply putting the quota out to bid. Given the important role of industry partners in the CDQ program, it seems worth taking a look at the type of partners most likely to meet the groups' needs and the industry structure most likely to produce those potential partners.

Implications for the Groups of Industry Forces

Industry concentration

It is unclear that an inshore/offshore reallocation would further concentrate capital within the pollock industry, but if it did, this might inhibit the ability of some groups to form productive partnership relationships. This opinion is based primarily on basic business theory and our view of the CDQ partnership role. The pollock industry, particularly the offshore sector, has been consolidating steadily since the beginning of the CDQ program. (The inshore sector was already dominated by a small number of firms). Yet those groups with the most ambitious employment strategies have chosen to partner primarily with smaller-sized companies consisting of two or fewer processing vessels.[9] One of these is also partnered with a sizable onshore firm, but with the smallest of the onshore processors, nevertheless. The sixth group is partnered with the largest offshore firm, but it has the smallest percentage of quota and says there is limited interest among its residents in pollock employment and direct investment.[10]

Our point is simply an extension of the employment and partnership discussions above. To date, it has been the smaller companies who seem to have engaged in the most comprehensive community development efforts. We don't know why this is, but it may reflect more financial dependence on the CDQ, a closer match of company and CDQ group cultures, larger (percentage-wise) existing and potential equity participation by the groups in the partner companies and in joint ventures, and/or simply better communications between companies and groups because top management is more accessible. Some or all of these factors may be the case but the fact remains that the most complex and involved partnerships are with smaller firms.

Other industry forces

A host of forces in the pollock industry, including SB 1221, ITQs, the impact of the Russian fishery, the health of the resource, potential changes to management of the Catcher Vessel Operating Area, Asian economies, and others could potentially amplify, alter or over-ride the effects on the CDQ groups of a change in inshore/offshore allocation. For the most part we have tried to ignore these factors in order to keep the analysis manageable.

However, it seems not only possible, but probable that any or all of these other factors could combine with an inshore/offshore reallocation to produce effects on the CDQ groups that are entirely unanticipated by this report.

[9] One of these, Golden Alaska, is owned by the Japanese parent company Nichiro. However, from our observation the partnership functions so as to be between the CDQ group and the subsidiary, Golden Alaska, rather than the parent company.

[10] One of the groups that originally partnered with a smaller company and launched a comprehensive employment effort is now reorganizing its partnerships after running into financial problems.

Economic Impact Analysis

The CDQ program is unique and has provided exceptionally important economic benefits to a region of Alaska that desperately needs economic enhancement. While detailed records have been kept regarding the many economic development strategies utilized by the groups, differences in approaches and regional needs and attributes make it difficult to gauge the range of economic impacts of the program.

We understand that CDQ program records have been refined and impact analysis undertaken. We fully support this effort to establish the best possible methods of setting benchmarks, sharing lessons and measuring progress in a way that both finds commonalities and values necessary differences between the six groups. We acknowledge from our brief experience with the program the sizable challenge this engenders.

Employment Analysis

The study team has tried to fill some gaps in the employment data available to the CDQ program. We regret that time did not allow us to resolve more of the inconsistencies we encountered. We recommend that future employment analysis be structured so as to best inform a *long-term* employment strategy (or group-by-group strategies) that is coordinated with and helps guide and support investments, scholarship programs, training opportunities and a *village-based* approach to community development.

Investment Analysis

Are the investment strategies of the CDQ groups demonstrating an optimum balance of financial soundness and well-conceived community development impact? This, to us, seems an absolutely critical question and one on which there appears to be no comprehensive analysis. Most of the groups have amassed enough capital to begin charting investment courses that will carry well into the next decade.

Program-wide, these investments already represent a substantial portfolio of community development venture capital, yet to the study team's knowledge, no single entity formally evaluates this portfolio as a whole, either from an impact or from a risk management standpoint. The study team suggests that it may be in the CDQ program's interests to explore this function.

Exhibit 1-- Survey Instrument and Cover Letter

February 12, 1998

Dear

The McDowell Group has been asked to revise and administer a survey of the six Alaskan CDQ groups with the objective of determining, within the limitations of such a tool, some of the likely effects on those groups of potential changes in the inshore/offshore pollock allocation. This survey attempts to incorporate and also simplify questions and subject matter that proved problematic in earlier versions drafted by the Department of Community and Regional Affairs and others.

As professional surveyors and analysts, we can only acknowledge that supplying the requested information will require substantial effort and that the time allotted is very short. We therefore ask your cooperation and offer our own to make this as manageable a process as possible.

It is our opinion that the issues involved are too complex and variable to be captured with confidence by quantitative data alone. As you will see, our survey asks you to make estimates and then use narrative responses to explain the logic behind them. Any documentation you can provide to support your projections and assertions will be extremely helpful. The more factual your answers, the more weight they will carry. Nevertheless, since the questions are not designed to collect strictly parallel information, our analysis will also focus on the underlying rationales you give for your answers. We understand that this inherent lack of precision can be frustrating. However, we believe it is unavoidable. Our overall objective is to give each CDQ group the opportunity to make the best case it can for its own convictions and projections.

In order to ensure that respondents have ample opportunity to explain their answers, we plan to meet personally with a representative of each group to discuss and clarify that group's responses as necessary. We plan to conduct these meetings in Anchorage and Juneau between February 23 and March 4 and expect them to take 2 - 3 hours each. If either the dates or locations are not satisfactory, we will do our best to accommodate your needs. Unfortunately, the schedule established by the NPFMC does not allow for much flexibility. We are grateful for all efforts you and your colleagues may make to work within these admittedly challenging limitations.

Our hope is that each of the groups will be able to fax us a draft of its responses prior to our in-person meeting. This draft need not be finely finished in terms of style or presentation. No one will see the drafts except our analysts. At minimum, we need the answers to questions 1, 2 and 6 in writing. The other questions may be answered orally during our meeting, if desired.

I am faxing copies of the attached survey to each CDQ group today. We will also send hard copies by express mail. Please let me know if you have any questions.

Sincerely,

Scott Miller
Senior Analyst

1. Please describe how you would expect your group's CDQ program to change under each of the open-access pollock allocation scenarios* described below. Please address for each scenario both 1) your partner(s)' responses, and 2) the effect on your CDQ group with respect to:

   a) Pollock fishing and processing activities;

   b) Current capital investment in Alaskan fishing and processing;

   c) Future capital investment in Alaskan fishing and processing;

   d) Profitability for your partner(s) and the financial means to maintain or increase current royalties paid to your CDQ group;

   e) Community Development Plan projects currently underway or proposed;

   f) Training opportunities made available through your current pollock partnership(s). (Please list separately the current required and non-required training opportunities provided by your partner(s) and how they might change);

   g) Employment opportunities in both CDQ and open-access seasons. (Please list separately the current required and non-required employment opportunities provided by your partner(s) and how they might change).

Scenarios for the open-access pollock fishery:	Inshore Allocation	True-Mothership Allocation	Offshore Allocation
Scenario A	25%	5%	70%
Scenario B	30%	10%	60%
Status Quo	35%	--	65%
Scenario C	40%	10%	50%
Scenario D	45%	15%	40%

* Please focus your answers on how the different scenarios would alter the Status Quo for you and your partner(s). Assume that other elements of the business environment – TAC, price/#, international currency rates, Asian economies, etc. – behave according to your/your partner's best estimates.

Use your own method for making assumptions about these other business elements, but please keep those assumptions as simple as possible, bearing in mind that the focus of this survey is the RELATIVE impact of the different allocations. We do not expect 100% accuracy in predicting the actual future performance of individual ships, companies or sectors. Please specify and explain any assumptions you use as the basis for this analysis.

NOTE: The wide range of allocation scenarios is for purposes of analysis and does not necessarily represent actual alternatives under consideration by the North Pacific Fisheries Management Council.

2. How likely is it that your current partner(s) would terminate its (their) relationship with your CDQ group under each of the five scenarios above, and how likely is it that you could find a replacement?

3. What are the five most important benefits that your processing partner(s) receives from its current relationship with your CDQ group?

4. What are the five most important benefits that your CDQ group receives from its current relationship with its processing partner(s)?

5. Through the course of the CDQ program, why have more CDQ groups formed relationships with the offshore sector than with the inshore sector?

6. Please provide the following employment information regarding CDQ community residents for each year of the CDQ program, 1992 -1997:

   a) The total annual wages and ex-vessel payments paid by CDQ partner (or wholly owned), for-profit businesses to CDQ community residents, and the number of unique individuals who received those wages or payments.

   b) The portion of the wages and ex-vessel payments in "a," above, paid as compensation for direct employment in pollock fishing or processing, and the number of unique individuals who received those wages or payments.

   c) The portion of the wages in "a," above, paid as compensation for direct employment in fishing or processing in other fisheries beside pollock, and the number of unique individuals who received those wages or payments.

   d) The portion of the wages in "a," above paid as compensation for work other than fishing or processing, a brief explanation of the nature of that work and the number of unique individuals receiving the wages.

   e) The total annual wages paid by CDQ groups (excluding for-profit partners) to CDQ community residents as compensation for services as staff, contractors, officers and as other employees, and the number of unique individuals who received those wages. (This is the total CDQ group payroll and contracted services paid to community residents). It is our intention that the sum of total wages in part "a" and total wages in part "e" be equal to the total wages paid to CDQ community residents by the CDQ group and its partners.

NOTE: The data requested in question 6, above is not employee-specific. It is company property and may be released at the discretion of the company, without approval from individual employees. One effective way to supply supporting data demonstrating employment impact is for your partner(s) to convey individual social security numbers (on disk) to the Alaska Department of Labor for confidential analysis. This step is optional. To pursue this option, please contact Scott Miller at the McDowell Group, 586-6135 (mcdowell@ptialaska.net)

7. If you believe that revisions in the inshore/offshore allocation would have important short or long-term effects on the financial health, viability and effectiveness of your CDQ group that are not addressed above, please discuss them.

8. If you believe that revisions in the inshore/offshore allocation would have important effects on your CDQ communities that are not addressed above, please discuss them

Exhibit 2-- Sample Group Responses

Individual Group Responses and Comments

The following group responses were selected to provide a representational range. Each group is represented at least once in each category. Where a group is represented more than once in a category it is because the remarks are judged to be informative and substantially unrelated to each other. Confidentiality considerations prevent listing many of the groups' responses, particularly those specific to individual scenarios. Some groups designated substantially all of their responses to the survey as confidential.

Royalties and Profitability

- Offshore companies have consistently offered higher royalties, better employment opportunities, and more investment opportunities....The shoreside sector is not as efficient and has a difficult time paying comparable royalties. (Our) royalties have been consistently strong since 1992.
- In the short-term, royalty could exceed gross margin, but it's not a stable relationship. Must also factor in costs of developing the group relationship.
- Have not seen evidence that either sector consistently pays more in royalties. Depends on products and structure of the royalty. Offshore does have an advantage with roe revenues.
- Changes in inshore/offshore coupled with continued poor markets and low TACs could trigger ability to pay problems for partners in the sector losing quota share.
- Royalties are mainly from A season. CDQ B season has never been profitable.
- Scenario A would not support three motherships. Unable to predict outcome, but it seems likely that one mothership would anchor in and operate shoreside.
- The higher willingness to pay by the offshore sector therefore seems to demonstrate that they continue to have higher margins, more available profit, and an understanding that cooperative ventures with Western Alaskans is beneficial in a political sense.
- All companies and likely many boats have different cost structures
- Overall royalties are about equivalent on and offshore.
- Could get higher royalties by bidding out small amounts of CDQ to various processors for fish-finding and operations tuning, but the State might choose to reallocate to a more "needy" group.

Likelihood of Partnership Terminating

- Very low under any scenario. The right to harvest fish outside the regular season is very valuable. In the event we sought a new partner, for whatever reasons, we would expect no lack of willing suitors.
- Very low likelihood of termination; some chance under Scenario A.
- Likelihood unknown under any scenario.
- Termination of partnership likely under scenario D. Unlikely under other scenarios. However, royalties will be affected.
- Termination of partnership likely under scenario D. Unlikely under other scenarios. However, royalties will be affected. Partner selection is made based on a variety of criteria beside royalties. As a result, the group would be reluctant to change partners.
- Termination not likely under any scenario, but royalties will vary depending upon available profits.

Employment Opportunities

- Job opportunities are virtually unlimited in the offshore sector.
- Role models from the community are an important factor in building resident interest in pollock employment.
- It's because of CDQs that seafood companies send recruiters to Western Alaska.
- Reduced group and partner revenues from a reallocation away from the offshore would impact training and fragile fisheries development investments particularly hard, as these have high up-front costs and long-term paybacks.
- If we are talking about employing villagers who remain villagers, then offshore has an advantage. Look at the Red Dog Mine -- most people left the village.
- It takes lots of leverage and infrastructure to get village people into fishing. It's in the interest of the processor to hire in Seattle.
- More offshore quota would increase crew shares, leading to increased crew retention because of higher pay. Higher profitability would also allow for additional crew and administrative positions. Lower offshore quotas would have the opposite effect and, in addition, wages would drop because of depressed surimi prices due to concentration of the harvest in vertically integrated (onshore) firms.
- There are enough jobs for those qualified to get one.
- Residents of certain areas are less willing to work in onshore plants because of past hard feelings in the area regarding prices and fish-buying activities by onshore plants in other fisheries, especially salmon and herring.
- Better wages and working conditions exist with the offshore and mothership fleets and more wages are ultimately returned to the villages through these sectors.
- Everyone who wants work can get it. We do not foresee any changes in employment opportunities for our residents.
- Early in the (offshore) employment program many residents were unable to meet the requirements of a drug-free test. There has been a dramatic improvement in this area and now few if any are turned away due to problems.

Other

- The original intent of the program was to make the CDQ groups players in the fishery. This has changed over time to more local community development.
- More groups have formed relationships with offshore partners in part because the offshore has been politically motivated while the onshore sector has not.
- Our experience is that onshore processors have no serious inclination to share business ventures (with CDQ groups).
- A business environment subject to no more than the normal vagaries of international trade, weather and resource fluctuations (i.e., without the specter of reallocations) would be a welcome relief.
- Any change that increases allocation to the shoreside sector is, in essence, ceding additional market control to to integrated seafood companies, Nipon-Suisan and Maruha(Taiyo). History has shown that this market control translates into lower prices for the resource, and lower value-added because of the concentration of production into surimi at the expense of fillets.
- Under Scenario D, there would be no interest in CDQ by any companies in the industry.
- Failure to pass SB 1221, without regard to any modification in the inshore/offshore allocations, will undoubtedly result in bankruptcies in both sectors of the pollock industry.
- If reallocation lengthened the offshore season by a week, then CDQ fishing might occur too late to catch prime roe, resulting in significantly reduced value. A shortening of the open A season might increase the value of CDQ products slightly, but could decrease the value of the open roe enough to decrease overall prices.
- Many sources state that surimi produced offshore satisfies a different market niche than that produced onshore. Also, some state that offshore production forces the overall surimi price up by providing sources other than those from two or three major Japanese trading houses. Based on this we must assume that a significant reallocation to onshore will result in decreases in wholesale prices to all pollock products, particularly those produced offshore.

OWNERSHIP INFORMATION

There are 168 vessels or plants which participated in the 1996 pollock Bering Sea and Aleutian Islands fishery. Of the 168 vessels or plants there are 22 catcher-boats which operated in both inshore and offshore sectors (there are 118 different catcher-boats altogether). The count of the inshore plants (eight) does not include the International Seafoods of Kodiak inshore plant or one inshore catcher processor which harvested small amounts of pollock in 1996. In the inshore sector there are 99 vessels or plants, and in the offshore sector there are 88 vessels (one vessel has multi-country affiliation and is subtracted from 89).

Three foreign countries, Japan, Norway, and South Korea have some degree of foreign-affiliation in plants, catcher vessels or processors as follows:

Country of Ownership	Inshore: Plants (#)	Inshore: Catcher-Vessels	Offshore: Catcher-Processors	Offshore: Catcher-Vessels	Offshore: True Motherships
Japan	4	11 [4]	1 [3]	3 [4]	1
Norway	0	0	18	2	0
South Korea	0	3 [2]	3 [3]	3 [2]	1
Fully US	4 [1]	77	16	41 [5]	1
Total	8	91	37	49	3

1/ Including two anchored processors in Dutch Harbor.
2/ Includes two vessels with inconclusive parent-company affiliation of South Korea.
3/ Has a vessel with multi-country affiliation.
4/ A vessel was Lost at Sea since 1996.
5/ Includes a vessel with inconclusive partial UK affiliation.

Inshore Sector Processing Plants: Parent-companies that are affiliated with Japan account for 4 of the 8 total plants of the inshore sector, or 50%. There aren't any plants in the inshore sector where the parent company is from Norway or South Korea. The remaining four plants, 50% of the inshore sector, are fully US owned.

Catcher-Boats Overall: There are 118 catcher-boats altogether: 91 in the inshore sector and 49 in the offshore sector. When added this makes 140 vessels, and subtracting 22 for those that operated in both sectors again equals 118 different catcher-vessels. Ownership of catcher-boats by parent companies of Japan account for 14 or about 12%. A little less than 2% of the catcher-boats have ownership by parent companies foreign-affiliated in Norway. There are two to six vessels where the parent company is from South Korea (four of these vessels are inconclusively of South Korea), or less than 5%. The remaining 95 catcher-boats are fully US owned (which includes one vessel with some inconclusive UK affiliation), or about 81%.

Offshore Catcher Processors: Parent-companies that are affiliated with Japan account for one of the 37 catcher processors in the offshore sector, or about 2%. Norway-affiliation includes 18 vessels or about 49%. South Korea includes two to three vessels (because some vessels have ownership by a parent companies of Japan as well as South Korea), or about 5%. There remains 16 catcher processors in the offshore sector which are fully US owned, or 46% of the total.

True Motherships: There are three true motherships operating in the offshore sector. One is fully-affiliated with Japan (33% of the total), one is 10% affiliated with South Korea and 90% US or about 3% of the total, and one is fully US. Ownership by US companies accounts for 63% of the total of offshore motherships.

Table 1. Ownership by Sector in the 1996 Bering Sea and Aleutian Islands Pollock Fishery with Name, Data-Source and Summary Conclusions.

Sector and Plant or Vessel Name	Data-Source: Alaska Report	Data-Source: Lexis-Nexis	Ownership Conclusions
Inshore Plants			
Alyeska Seafoods (Dutch Harbor)	x	x*	50% Maruha (Japan), 43% Wards Cove Packing (US), 6% Marubeni (Japan), 1% Western Alaska (Japan).
Peter Pan Seafoods (King Cove)	x	x*	100% Nichiro (Japan).
Trident Seafoods (Akutan,Sand Pt)		x*	100% US (11% ConAgra, 89% Non-ConAgra).
UniSea (Dutch Harbor)	x	x*	100% Nippon Suisan Kaisha (Japan).
Westward Seafoods (Dutch Harbor)	x	x*	100% Maruha (Japan).
Inshore Anchored Processors			
Arctic Enterprise		x	100% Tyson Seafood Group (US).
Northern Victor	x	x*	100% Northern Victor Partnership (US).
Inshore Catcher Vessels			
Alaska Dawn		x*	100% Alaska Dawn (US).
Aldebaran		x*	100% Trident (US).
Alsea		x	100% Alsea Fisheries-Rondys (US).
Alyeska		x*	25% Nippon Suisan Kaisha (Japan). Sold 1997.
American Beauty **		x*	100% Golden Alaska Seafoods-Nichiro (Japan).
American Eagle		x*	100% THW Enterprises (US).
Anita J		x	100% Anita J Fisheries (US).
Arctic 1 **		x	100% Tyson Seafood Group (US).
Arctic 3 **		x	100% Tyson Seafood Group (US).
Arctic 4 **		x	100% Tyson Seafood Group (US).
Arctic 6 **		x	100% Tyson Seafood Group (US).
Arctic Wind		x*	100% Alaskan Pride Partnership (US).
Arcturus		x*	100% Trident (US).
Argosy		x	100% Rondys-Futura Fisheries (US).

* The company confirmed or revised its ownership information, and therefore ownership conclusions are based on the information provided by the company. ** Operated in both inshore and offshore sectors.

Sector and Plant or Vessel Name	Data-Source: Alaska Report	Data-Source: Lexis-Nexis	Ownership Conclusions
Inshore Catcher Vessels (continued)			
Auriga		x*	100% Alyeska Ocean (US).
Aurora		x*	100% Alyeska Ocean (US).
Caitlin Ann		x	100% JR Partners (US).
Caravelle		x*	100% Caravelle-Dakota Management (US).
Carefree		x	100% F/V Carefree (US).
Cape Kiwanda		x	100% F/V Cape Kiwanda (US).
Celtic		x	100% F/V Celtic (US).
Chelsea K		x*	100% Ocean Dynasty LP (US).
Collier Brothers		x	100% F/V Collier Brothers (US).
Columbia		x *	100% Trident (US).
Commodore **		x*	100% Commodore Partnership (US).
Defender		x*	49% Nippon Suisan Kaisha (Japan), 51% (US).
Destination		x*	20% Western Alaska Fisheries (Japan), 51% Wards Cove Packing (US), 29% Austneberg Fisheries (US).
Dominator		x*	100% Trident (US).
Dona Liliana **		x*	100% Dona Fisheries (US).
Dona Martita		x*	100% Dona Fisheries (US).
Dona Paulita		x*	100% Dona Fisheries (US).
Elizabeth F		x	100% Elizabeth F (US).
Endurance		x	100% Endurance (US).
Exodus		x*	100% Exodus Partners (US). Sold 1998.
Flying Cloud		x*	100% Trident (US).
Golden Dawn		x*	100% Golden Dawn LLC (US).
Golden Pisces		x	100% Golden Pisces (US).
Gold Rush		x*	100% Gold Rush LP (US).
Great Pacific		x*	49% Western Alaska Fisheries (Japan), 51% Dall Head (US).

* The company confirmed or revised its ownership information, and therefore ownership conclusions are based on the information provided by the company. ** Operated in both inshore and offshore sectors.

Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Inshore Catcher Vessels (continued)			
Gun-Mar		x	100% Margun Fisheries (US).
Half Moon Bay		x	100% Steuart Fisheries (US).
Hazel Lorraine I **		x	100% JR Partners (US).
Hickory Wind		x	100% Hickory Wind (US).
Lady Joanne		x	100% Lady Joanne (US).
Leslie Lee **		x*	100% Leslie Lee (US).
Lisa Melinda		x	100% Lisa Melinda Fisheries (US).
Majesty **		x*	100% Trident (US).
Marathon		x	100% Marathon Fisheries (US).
Marcy J		x*	100% Marcy J (US).
Miss Berdie		x	100% Miss Berdie (US).
Morning Star		x*	75% Morning Star LP (US), 25% Alyeska Seafoods (see Inshore Plants).
Ms Amy		x	100% F/V Maranatha (US).
Nordic Star		x	100% Nordic Star Fisheries-Nordtek (US).
Ocean Enterprise **		x	100% Tyson Seafood Group (US).
Ocean Hope 1 **		x	inconclusive.US Marine Corporation(So. Korea).
Ocean Hope 3 **		x	inconclusive.US Marine Corporation(So. Korea).
Oceanic **		x	100% Oceanic Partners (US).
Pacific Alliance **		x*	66% Maruha (Japan), 44% US.Lost at sea 1997.
Pacific Enterprise **		x	100% Tyson Seafood Group (US).
Pacific Knight		x*	100% Westward Seafoods-Maruha (Japan).
Pacific Monarch **		x*	100% AAS Finance LLC (US).
Pacific Prince **		x	100% JR Partners (US).
Pacific Ram		x	100% Pacific Ram Enterprises-Blue Sea Fisheries (US).
Pacific Viking		x*	100% Trident (US).

* The company confirmed or revised its ownership information, and therefore ownership conclusions are based on the information provided by the company. ** Operated in both inshore and offshore sectors.

Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Inshore Catcher Vessels (continued)			
Pegasus		x	100% Cape Lookout-North Sea (US).
Peggy Jo		x*	100% F/V Peggy Jo (US).
Perseverance		x	100% Marcon Fisheries (US).
Persistence		x	100% Marcon Fisheries (US).
Poseidon		x*	100% Poseidon Partnership (US).
Predator		x	100% Marcon Fisheries (US).
Progress		x	100% Wards Cove Packing (US).
Raven		x	100% Yaquina Trawlers (US).
Rosella		x	100% F/V Rosella (US).
Royal American		x	100% Haweco (US).
Royal Atlantic		x*	100% Royal Atlantic LP (US).
Sea Storm **		x	50% Oyang (So.Korea), 50% Arctic Storm (US).
Seadawn		x*	100% FY Fisheries (US).
Seawolf		x*	75% Duke Point LP (US), 25% Western Alaska Fisheries-Maruha (Japan).
Seeker		x*	100% F/V Seeker (US).
Starfish		x	100% Aleutian Spray-Starfish Group (US).
Starlite		x	100% Aleutian Spray-Starfish Group (US).
Starward **		x	100% Aleutian Spray-Starfish Group (US).
Storm Petrel		x*	100% Storm Petrel Partnership (US).
Sunset Bay		x	100% Steuart Fisheries (US).
Topaz		x*	100%. F/V Topaz (US).
Traveler **		x	100% Leslie Lee (US).
Viking		x	100% Westward Seafoods-Maruha (Japan).
Viking Explorer		x*	100% Trident (US).
Walter N		x	100% Elizabeth F (US).
Western Dawn **		x	100% Western Dawn LLC (US).

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Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Inshore Catcher Vessels (continued)			
Westward I[illegible]		x*	49.5% Western Alaska Fisheries-Maruha (Japan), 50.5% Horizon Trawlers (US).
Offshore Catcher Processors			
Alaska Ocean		x	100% Alaska Ocean Seafoods (US).
Alaska Victory		x*	100% Fishing Co. of AK-Alaska Victory (US).
Alaska Voyager		x*	100% Fishing Co. of AK-Alaska Voyager (US).
American Dynasty	x	x	100%. RGI US Seafoods-Aker RGI (Norway).
American Empress	x	x*	100%. RGI US Seafoods-Aker RGI (Norway).
American Enterprise		x	100% Tyson Seafood Group (US).
American No. 1		x	100% North Pacific Fishing (US).
American Triumph		x*	100%. RGI US Seafoods-Aker RGI (Norway).
Arctic Fjord		x*	100% ProFish International (US).
Arctic Storm	x	x*	50% Oyang Fisheries (So.Korea), 50%(US).
Browns Point		x	100% Imarpiqamiut Partnership-Signature Seafoods-Golden Age Fisheries (US).
Christina Ann (Aleutian Speedwell)		x*	100% RGI US Seafoods-Aker RGI (Norway).
Claymore Sea	x	x*	100%. New Pollock LP-Emerald Resource Mgt. (Norway). RF.
Elizabeth Ann (Snowking)		x*	100% RGI US Seafoods-Aker RGI (Norway).
Endurance	x	x	100% Daerim Corporation (South Korea).
Harvester Enterprise		x	100% Tyson Seafood Group (US).
Heather Sea	x	x*	100%. New Pollock LP-Emerald Resource Mgt. (Norway). RF.
Highland Light		x*	100% Highland Light Seafoods LLC (US).
Island Enterprise		x	100% Tyson Seafood Group (US).
Kodiak Enterprise		x	100% Tyson Seafood Group (US).
Northern Eagle	x	x*	100%. RGI US Seafoods-Aker RGI (Norway).
Northern Glacier	x	x*	100% Glacier Fish Company (US).

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Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Offshore Catcher Processors (continued)			
Northern Hawk	x	x*	100%. RGI US Seafoods-Aker RGI (Norway).
Northern Jaeger	x	x*	20%. RGI US Seafoods (Norway), 80% Jaeger Investment (US).
Ocean Peace	x	x*	40% Il Heung (So. Korea); 9% Happy World (Japan). 51% (US).
Ocean Rover		x*	100% American Seafoods-Norway Seafoods-Aker RGI (Norway).
Pacific Explorer	x	x*	100% ASC Alaska-RGI US Seafoods-Aker RGI (Norway).
Pacific Glacier	x	x*	100% Glacier Fish Company (US).
Pacific Navigator		x*	100% ASC Alaska-RGI US Seafoods-Aker RGI (Norway).
Pacific Scout	x	x*	100% ASC Alaska-RGI US Seafoods-Aker RGI (Norway).
Rebecca Ann (Royal King)	x	x*	100% Bering Sea Development Corp-RGI US Seafoods-Aker RGI (Norway).
Royal Sea (Katie Ann)		x*	100% Bering Sea Development Corp-RGI US Seafoods-Aker RGI (Norway).
Saga Sea	x	x*	100%. New Pollock LP-Emerald Resource Mgt. (Norway). RF.
Seattle Enterprise		x	100% Tyson Seafood Group (US).
Seafisher		x	100% Cascade Fishing (US).
Starbound		x	100% Aleutian Spray Fisheries-Starbound (US).
Victoria Ann (Valiant)		x*	100% RGI US Seafoods-Aker RGI (Norway).
Offshore Catcher Vessels			
AJ		x*	51% Saga Seafoods LP (US), 49% (Norway).
Aleutian Challenger		x*	100% Meddar Corporation (US).
Amber Dawn		x*	100% Amber Dawn Fisheries (US).
American Beauty **		x	100% Peter Pan Seafoods-Nichiro (Japan).

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Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Offshore Catcher Vessels (continued)			
American Challenger		x	100% American Seafoods-Aker RGI (Norway).
American Enterprise		x	100% Tyson Seafood Group (US).
Arctic 1 **		x	100% Tyson Seafood Group (US).
Arctic 3**		x	100% Tyson Seafood Group (US).
Arctic 4 **		x	100% Tyson Seafood Group (US).
Arctic 6 **		x	100% Tyson Seafood Group (US).
California Horizon		x*	100% Kydaka Corporation (US).
Commodore **		x*	100% Commodore Partnership (US).
Dona Liliana **		x*	100% Dona Fisheries (US).
Excalibur II		x*	100% Excalibur II LLC (US).
Fierce Sea		x	100% Fierce Sea LLC-Lucky Star (US).
Forum Star		x	inconclusive. Forum Star (US, UK).
Golden Pride (now Blue Fox)		x*	100% Pacific Draggers (US).
Hazel Lorraine		x	100% JR Partners (US).
Hazel Lorraine I **		x	100% JR Partners (US).
Leslie Lee **		x*	100% F/V Leslie Lee (US).
Majesty **		x*	100% Trident (US).
Mar-Gun		x	100% Margun Fisheries (US).
Margaret Lyn		x	100% F/V Margaret Lyn (US).
Mark I		x*	100% Mark I (US).
Misty Dawn		x*	100% Katahdin (US).
Muir Milach		x*	100% Muir Milach (US).
Nordic Fury		x	100% Fury Group (US).
Neahkahnie		x	100% Neahkahnie Fisheries (US).
Ocean Enterprise **		x	100% Tyson Seafood Group (US).
Ocean Harvester		x	100% Royal Atlantic LLC (US).
Ocean Hope 1 **		x	inconclusive. US Marine Corporation(So.Korea).

* The company confirmed or revised its ownership information, and therefore ownership conclusions are based on the information provided by the company. ** Operated in both inshore and offshore sectors.

Sector and Plant or Vessel Name	Data-Source: Alaska Report	Lexis-Nexis	Ownership Conclusions
Offshore Catcher Vessels (continued)			
Ocean Hope 3 **		x	inconclusive. US Marine Corporation(So.Korea).
Ocean Leader		x*	100% Golden Alaska Seafoods-Nichiro (Japan).
Oceanic **		x	100% F/V Oceanic Fisheries (US).
Pacific Alliance **		x*	66% Maruha (Japan). Lost at sea 1997.
Pacific Challenger		x*	100% Pacific Challenger-Chetna (US).
Pacific Enterprise **		x	100% Tyson Seafood Group (US).
Pacific Monarch **		x*	100% AAS-Finance LLC (US).
Pacific Fury		x	100% Fury Group (US).
Pacific Prince **		x	100% JR Partners (US).
Papado II		x*	100% Popado (US).
Sea Storm **		x*	50% Oyang Fisheries (So.Korea), 50% (US).
Sharon Lorraine		x	100% JR Partners (US).
Starward **		x	100% Aleutian Spray Fisheries-Starfish Group (US).
Tracy Anne		*	100% Tracy Anne (US).
Traveler **		x*	100% F/V Leslie Lee (US).
U-Rascal		x	100% Kodiak Island Charters (US).
Vanguard		x*	100% Futura Fisheries (US).
Vesteraalen		x*	100% Vesteraalen LLC (US).
Western Dawn **		x	100% Western Dawn LLC (US).
True Motherships			
Golden Alaska	x	x*	100% Peter Pan Seafoods-Nichiro (Japan).
Excellence	x	x*	100% Alaska Joint Venture Seafoods (US).
Ocean Phoenix		x	90% Phoenix Processor LP (US), 10% Dongwong Industries (So. Korea).

* The company confirmed or revised its ownership information, and therefore ownership conclusions are based on the information provided by the company. ** Operated in both inshore and offshore sectors.

APPENDIX II

INSHORE/OFFSHORE-3 SOCIOECONOMIC DESCRIPTION AND SOCIAL IMPACT ASSESSMENT

North Pacific Fishery Management Council
Anchorage, Alaska

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July 15, 1998

Summary of Changes to Social Impact Assessment Document Changes from May 6, 1998 Public Review Document (as presented at the June, 1998 NPFMC meetings) and the July 15, 1998 Secretarial Review Document		
Section	**Page(s)**	**Changes from Public Review (May 6, 1998) SIA Document**
1.4.6	**18**	**Footnote #1 added to clarify reason for variation of pollock volume statistics between this SIA document and the main document.**
2.3.2	**84-85**	**Table MOTH-2, which appeared on page 85 of the May 6, 1998 document was deleted from the July 15, 1998 document. Text added on page 84 of the July 15, 1998 document discussing the data that had appeared in the table.**

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1.0 INTRODUCTION AND OVERVIEW

The goal of this work is to provide sufficient socioeconomic description of existing and historical conditions, along with a general-level social impact assessment, to support the North Pacific Fishery Management Council's consideration of eliminating, retaining, or modifying the present Inshore/Offshore allocative split of the groundfish fisheries in federal waters off of Alaska. More specifically, the analysis focuses on the socioeconomic and social impacts on a community/regional basis as well as on a fishery sector basis.

1.1 ORGANIZATION OF THE DOCUMENT

The document is organized in the following manner:

- This overview section: (1) lays out the relationship of this effort to earlier social impact assessment (SIA) work conducted for the North Pacific Fishery Management Council (NPFMC) and National Standard 8 regarding fishing communities; (2) provides a set of simplifying assumptions that were used to guide the work; (3) provides a brief discussion of the methodology used in preparing this document; (4) provides an general treatment of trends of change and a preliminary SIA discussion of trends of change; and (5) summarizes general SIA issues.

- The following four sections describe, on a sector by sector basis, the 'engagement' and 'dependence' upon the Bering Sea pollock fishery by the major sectors involved with the fishery itself, as defined by the (simplified) I/O-3 allocative alternative framework. These are: (1) the inshore processing sector; (2) the catcher-processor sector; (3) the mothership sector; and (4) the catcher vessel sector.

- After the sector descriptions, the next two major sections provide a look at: (1) Alaska; and (2) Pacific Northwest community 'engagement' and 'dependence' upon the Bering Sea pollock fishery, specifically with respect to interactions with industry sectors. Alaska communities are further differentiated into: (a) Unalaska/Dutch Harbor; (b) Akutan; and (c) Sand Point and King Cove. The Pacific Northwest discussion focuses on the community of Seattle and the greater Seattle metropolitan area, for reasons developed in that section.

- Following these discussions, a brief overview of Community Development Quota (CDQ) issues is provided. It is important to clearly state that this document does not provide an SIA for CDQ groups or communities – that work was undertaken simultaneously by another entity. These issues are included in this document only to assist the reader in comparing or contrasting CDQ and SIA issues.

- Finally, this document concludes with a summary outline of SIA issues by (simplified) allocative alternative, which provides an at-a-glance summary of the issues developed in detail in the main body of this document.

1.2 RELATIONSHIP TO EARLIER WORK AND NATIONAL STANDARD 8

This socioeconomic description and social impact assessment explicitly builds upon two earlier efforts undertaken by Impact Assessment, Inc. (IAI) for the NPFMC. These are: (1) work associated with the first inshore/offshore analysis (1991); and, (2) work associated with proposed regulatory changes in groundfish and crab fisheries (1994-1995). These works are incorporated by reference, and are not recapitulated in this document. By way of background, these two efforts were quite different in their structure, which is discussed below. Since these earlier works were produced, however, the context of social impact assessment with relation to conservation and management measures has changed somewhat through National Standard 8 under the Magnuson-Stevens Act Provisions; National Standards and Guidelines (Fed. Reg. Vol. 62, No. 149, 41907-41920). This is briefly discussed below.

1.2.1 Earlier SIA Work for the NPFMC

The work undertaken for the first inshore/offshore analysis (I/O 1) in 1991 focused on geographically based descriptions, and the geographic distribution of impacts, particularly on the community level, and not so much on internal distribution of impacts within industry sectors. This effort first produced a set of detailed community profiles which provided a community context for the fishery. Following that work, a description of the social environment and consequences of alternatives document was produced which looked at how likely consequences would play out in the various profiled communities.

The work associated with the groundfish and crab fisheries in 1994-1995 was quite different, looking at the structure of participation in the fisheries themselves, by describing the fishing industry on a sector by sector basis. That is, this work began with the task of constructing a set of sector profiles and basic description of existing conditions. The first document produced for this work included the sector descriptions and a preliminary social impact assessment. This was followed with a supplemental social impact assessment, or "bridging document" that examined more closely the potential social impacts associated with more narrowly defined license limitation options, primarily in terms of the differential distribution of impacts among sectors. The thrust of this analysis, then, was directed toward shifts among and between sectors, rather than at how impacts would likely play out in any particular community.

Taken together, the community frame of reference from I/O 1 and the sector frame of reference from the 1994-95 work, provide a great deal of background information that is useful for the current work. This effort is on a much smaller scale that either of the two previous studies, but is perhaps more ambitious. It is directed, to a degree, at updating the relevant information for directly involved communities and sectors, and at linking the two so that potential general level social impacts of I/O 3 may be understood both on a sector and geographic basis.

1.2.2 National Standard 8

National Standard 8 is part of a set of guidelines intended as an aid to decision making and, along with the other standard guidelines, will apply to all Fishery Management Plans and implementing regulations, existing and future. Specifically, National Standard 8 notes that:

> Conservation and management measures shall, consistent with the conservation requirements of the Magnuson-Stevens Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to: (1) Provided for the sustained participation of such communities; and, (2) To the extent practicable, minimize adverse economic impacts on such communities. (41917)

It should be clearly noted that the stated that the standard "does not constitute a basis for allocation resources to a specific fishing community nor for providing preferential treatment based on residence in a fishing community." It further defined ' fishing community' as:

> a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities. A fishing community is a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops).

'Sustained participation' is defined to mean continued access to the fishery within the constraints of the condition of the resource. In the case of Bering Sea pollock, recreational or subsistence fishing would appear not applicable to the fishery being regulated. Sustained participation is clearly at issue, given that I/O-1 was specifically crafted to address the 'preemption' issue (i.e., the threat to 'sustained participation' of Alaskan coastal communities or, more specifically, inshore sector participants with ties to those communities).

Consistent with National Standard 8, this document first identifies affected fishing communities (both on a 'physical community' and 'industry sector-community link' basis) and then describes and assesses their differing nature and magnitude of dependence on and engagement in the Bering Sea pollock fishery. Each sector and geographic area treatment allows the reader to understand the likely affects of various allocative alternatives discussed, and a section at the end of this document summarizes each major alternative's likely effect on the sustained participation of these fishing communities in the fishery, and identifies those alternatives that would minimize adverse impacts on these fishing communities. (It should be clearly borne in mind, however, that a number of simplifying assumptions are a part of the analysis herein, as described in the following section, and, due to these real-world constraints, we cannot discuss all of the possible or even probable impacts likely to arise from management action, such as impacts on other fisheries in which various Bering Sea pollock sector participants also engage.)

1.3 SIMPLIFYING ASSUMPTIONS

The issues encompassed by I/O 3 are many and complex. Further, the geographic 'footprint' of potential impacts is very large indeed. In order to make this work practical, a number of simplifying assumptions were made at the time the scope of work was designed by the NPFMC. It is important to note these assumptions early on. While any simplifying assumptions limit the ultimate utility of the product, there is clearly a balance to be struck between what could be done with unlimited time and resources and what can be done given real world constraints. This being the case, the general simplifying assumptions may be stated as follows:

- Focus on the Bering Sea-Aleutian Islands Fishery

The Inshore/Offshore amendment covers both the Bering Sea-Aleutian Islands (BSAI) and Gulf of Alaska (GOA) fisheries. At the time of this work, the Inshore/Offshore allocation issue is a far less contentious issue in the GOA than in the Bering Sea. It was agreed to essentially exclude the GOA fishery from the socioeconomic/SIA analysis, and to concentrate on a single area fishery (BSAI). This serves to simplify the analysis by allowing concentration on a single species -- pollock (i.e., Inshore/Offshore covers pollock and Pacific cod in the GOA, but only pollock in the BSAI). To the extent that GOA-based processors and harvesters (and other sectors) participate in the BSAI pollock fishery, that portion of their operations can potentially be discussed. It should also be noted that the 'GOA Problem Statement' is far less complex than the analogous statement for the BSAI.

- Focus on Sector Participation in the Pollock Fishery and Simplify the Problem of Interactive Fisheries Issues

During the Sector Profiles/Supplemental SIA process, IAI described the dynamic interactions between fisheries across sectors. Recognizing that changes in the management of any one fishery necessarily influences decisions about participation in other fisheries for various sectors, it was seen as important to understand and characterize how the sectors involved in the groundfish and crab fisheries were involved in other fisheries, and what sort of factors influenced their varying degrees of participation. This is clearly fundamentally important data to the Council, given its overall management mandates. On the other hand, developing (or even updating) this type of information requires an intensive effort over a broad geographic reach. The Council staff has been discussing the development of a tool, a comprehensive data base, that would have assisted in this task, but this is not available at this time. Without such a comprehensive data base, interactive fisheries effects are beyond the scope of this project. Therefore the socioeconomic/SIA analysis for

Inshore/Offshore-3 focuses on participation, by sector, in the pollock fishery itself. The implications of this focus are that the range of impacts to other fisheries (and to participants in other fisheries) resulting from an Inshore/Offshore reallocation will not be addressed, except perhaps in a very qualitative way at a high level of generality.

- Employ a Tiered Approach to Community Linkages Through Focused Updating of Community Profiles

The socioeconomic/SIA analysis approach to Inshore/Offshore-3 encompasses both sector and community based impacts, at least on a general level. As already noted, the sector analysis will be focused on the BSAI pollock fishery. For Inshore/Offshore I, the socioeconomic/SIA analysis relied to a large degree on well-developed, broad-based community profiles to provide a context for the understanding of community based impacts. For Inshore/Offshore-3, it will not be possible to update those now six-year-old profiles across the board, nor, given exclusion of the GOA from the analysis, would it be desirable to do so. Instead, the socioeconomic/SIA analysis focuses on updating those specific aspects of community profile information necessary to understand and analyze the role of the BSAI pollock fishery in those communities. This has resulted in a 'tiered' approach to community characterization, where depth and detail of characterization corresponds to the number of levels of relationship between the fishery and the community.

- Rely on DCRA Analysis of CDQ Reallocation Impacts Analysis

The Community Development Quota (CDQ) program was implemented as part of the first Inshore/Offshore amendments, but was not tied to either Inshore or Offshore components. As it has evolved, however, CDQs are not 'Inshore/Offshore neutral.' That is, the CDQ organizations and communities have come to partner much more heavily with Offshore entities such that, at present, only 15% or so of the total 7.5% overall CDQ reserve is being harvested/processed by the inshore sector. A reallocation in Inshore/Offshore quotas could have impacts with respect to the role of CDQs for inshore and offshore partners, as well as to the CDQ groups and communities themselves. This could expand the socioeconomic/SIA effort greatly, especially since CDQ program now encompasses all BSAI fisheries (not just pollock). The decisions by the Council to restrict this SIA to pollock and to 'decouple' CDQs from Inshore/Offshore has greatly simplified the SIA task. Further, CDQ impact analysis is being independently performed for the Council by the Alaska Department of Community and Regional Affairs (DCRA), although this analysis was not available at the time this document was produced.

- Narrow the Range of Alternatives Analyzed

The Council has come up with numerous reallocation alternatives, in addition to expiration and status quo ('rollover') options. As a simplifying assumption, it was assumed that there would be diminishing returns on performing analysis on a broad range of options and therefore only a limited number of options will be examined. These options will encompass the status quo and the 'extremes' of change, so as to accentuate differential effects and to enable discussion regarding trends and directions of effects.

- Omit Analysis of Foreign Ownership Issue

For the purposes of the socioeconomic/SIA analysis, the question of the implications of degree of foreign ownership in the various sectors was not considered. The relative effective contribution of earnings (to communities, to the nation at large) on capital versus earnings from labor, and the international nature of capital and corporate ownership, are not presently well described or understood. Independently developing and verifying such data, and then assessing the ramifications of those data, were tasks well beyond the scope of this effort.

1.4 METHODOLOGY

In this section, an overview of the methodology used in the socioeconomic description/SIA is provided. This includes individual sections giving a general description of the work, laying out specific research goals and tasks, and stating information goals and objectives. Subsequent subsections describe the type of documentary and ethnographic research utilized, and discuss sampling, special issues, and field data processing and initial analysis in relation to field data.

1.4.1 General Description of Work

The work performed was designed include socioeconomic description and social impact assessment of various Inshore/Offshore allocative alternatives of the BSAI pollock fishery sufficient to enable the NPFMC to use the results of this effort in their decision-making process regarding the Inshore/Offshore 3 amendment to the FMP. This work consisted of the following community/region and sector based analysis:

- *Community Profile Updates*. Focused community profiles were prepared for the relevant participating communities that have direct ties to the BSAI pollock fishery. Based on our preliminary examination of the data, these communities included Unalaska/Dutch Harbor in the BSAI region itself. (Akutan was also profiled, but as an adjunct to the Unalaska/Dutch Harbor effort, given the ties between the two locales.) Sand Point and King Cove were also profiled, but to a lesser extent, based on a preliminary examination of the data provided by the Council. Seattle was characterized in several different ways. First, sector descriptions for those sectors based out of Seattle were adequately developed to allow an understanding and analysis of the role and significance of Seattle-based operations in the overall BSAI pollock fishery. In this regard, bounded 'subcommunities' or groups of fishery participants within Seattle corresponding to sectors were characterized, at least on a general level, to the extent feasible. Second, while it is recognized that the Seattle metropolitan area cannot be characterized with as fine grained detail as smaller communities, sufficient information for appropriate data domains for King County were developed to allow for a balanced treatment of the greater Seattle area and the smaller Alaska communities. Additional Pacific Northwest and Alaska communities were descriptively linked to the BSAI pollock fishery through an analysis of participation in the fishery via vessel homeporting (or vessel/facility ownership) information, but were not profiled as such.

- *Sector Profiles*. Limited sector profiles for the relevant participating BSAI pollock fishery sectors were provided. These sectors were consistent with the sector definitions used by Council staff in other analyses of the Inshore/Offshore 3 amendment and, to the extent feasible, with those used in earlier SIA work for the Council.

- *Sector-Community Linkages*. The links between the sectors and communities were described to understand, to the extent possible given the data limitations, the dynamic between changes to sectors and impacts to communities. Specifically, information on the domains of interaction between sectors and communities was developed. For example, for shoreplants in the BSAI, there is a multi-level range of interactions with communities (that vary from community to community), based on the 'social enclave' nature of some plants, point of hire and retention of workforce, growth (or lack of growth) of support sectors in the communities, and proportion of local/municipal revenues attributable to such plants, among others. Similarly, there is a range of interactions with, and revenues from, the offshore sectors in the various communities, varying degrees of infrastructure development attributable to offshore sectors, and so on. While the focus of this research is not revenue or expenditure oriented (per the study design, this SIA effort relied on Council staff analysis for those types of information, where they are appropriate and available), we did include qualitative discussions of these issues based on information derived from sector contacts. This was especially important for Seattle, where service and supply linkages are clearly important, but are buried in the "noise" within the aggregated information available.

- *Sector-Employment Linkages*. Information on the employment characteristics of each of the sectors was developed, and the likely direct employment effects of each of the general alternatives on the specified participating sectors were discussed. To the extent feasible, information on the location of support sector employment, and the links of impacts to support sector employment by sector and by alternative, were described and analyzed for Seattle and Unalaska. Locational data was obtained from primary sector participants, and supplemented with secondary data, as available. Only limited information on employment alternatives available to potentially displaced workers was developed, as employees were not, for the most part, directly contacted (though data derived for the 1994 SIA were available and, based on entity interviews, were still representative of general sector trends). Interviews with fishing entity supervisors or personnel department staff did provide some general information in this regard.

- *Revenue Flow/Economic Analysis*. Though this was not a main thrust of our work, we have incorporated some relevant information on revenue flow found in the economic analysis performed by NPFMC staff into our work. This information was broken out by major sector, and the revenue flow roughly attributed to communities (based on homeport, ownership location, or facilities location, as appropriate). We did not do independent revenue flow analysis.

- *Field Data Collection.* Field data collection to ensure descriptive adequacy (and currency of information) was required. Due to resource limitations, and the likely potential disproportionate effects upon Unalaska/Dutch Harbor and Seattle, field visits were confined to those communities (along with a brief field visit to Akutan to supplement earlier field work in that community). Seattle was and is an especially challenging field site. Contacts in other communities were made by phone or other means; Sand Point and King Cove governmental and industry representatives were contacted in Anchorage and/or Seattle.

1.4.2 Specific Research Tasks

The research generally followed the steps outlined below. In practice, of course, a number of different tasks took place simultaneously.

- *Preliminary Data Analysis.* NPFMC staff provided IAI with relevant sector and location data throughout the project. This included homeport data, harvest data, and other relevant data by sector/location. These data were used initially to help focus the research effort, including facilitating the specification of field sites.

- *Formulate Study Plan, including a Field Plan.* Following a preliminary examination of the current fishery data, an overall study plan, with emphasis upon the field plan for collecting additional sector/community information, was be prepared. This document in effect incorporates that document, as modified by actual events.

- *Summarize Relevant Existing Information.* Prior to the collection of field data, existing information relevant to the socioeconomic/SIA tasks were summarized. Important sources for this information will included the 1991 community profiles and accompanying SIA and the 1994 Sector Profiles and Supplemental SIA (and supporting materials) prepared by IAI for earlier NPFMC groundfish management tasks. These materials, along with other relevant sources, were summarized to develop preliminary pre-field community and sector profiles, to identify information gaps, and to guide field interviews and research.

- *Conduct Field Visits to Collect Required Information.* Field site visits were made to Seattle (Downs and Galginaitis) and Unalaska/Dutch Harbor-Akutan (Downs). Other in-person contacts were made in Anchorage.

- *Incorporate Additional Staff Analysis.* The socioeconomic/SIA analysis effort incorporated and discussed Council staff analysis in several related areas,. This task was actually a constant throughout the project, since time constraints were so tight on both NPFMC staff as well as our team members.

- *Incorporate DCRA Analysis of CDQ Issues.* It was intended that DCRA analysis of CDQ issues would be incorporated into the socioeconomic/SIA analysis at a very general level, if the DCRA report was available in time to do so. This was, in fact, not possible within the time constraints of the availability of DCRA's analysis. It was also not possible within the short time allotted for revisions between the NPFMC's April meeting and the release of this report to integrate the two studies.

- *Prepare Report.* Primary data and secondary data were analyzed, and a comprehensive final report prepared. The final report included focused community and sector profiles and potential impacts analysis. The main body of the draft report was prepared by April 2, 1998. Supplemental revisions were required during the period just prior to the April NPFMC meetings, and two revised sections, incorporated into this document, were provided at those meetings.

- *NPFMC Meeting and Consultation.* Meetings and consultations with the NPFMC and staff were required over the course of the contract, and results were presented at the April NPFMC meeting. Questions and suggestions were received at the SSC, the AP, and the Council meeting itself. To the extent feasible within very tight time constraints, this document has been modified and expanded to address the questions and suggestions received. The research will also be presented at the June 1998 NPFMC meeting.

1.4.3 Information Goals and Objectives

The overview discussion above summarizes the overall information goals of this project. Our charge was to update the characterization of the industry sectors participating in the Bering Sea pollock fishery, as well as the socioeconomic context of those communities of which these industry sectors are a part (whether through residence of participants, socioeconomic links, or other relationships). Industry sectors were characterized through the summation of existing information (provided by NPFMC staff, industry sources, community sources, and various government sources) and, more to the point for this discussion, field contacts with industry participants and other community residents and officials. This effort was a continuation of past NPFMC efforts and built upon the existing industry and community profiles developed for earlier regulatory decisions. Contacts with industry participants were given priority, given the research constraints and resource limitations.

Methods used were similar to those used by the researchers for past NPFMC projects. General community contacts were renewed (and, where necessary, established) with key community officials, in order to gain access to and collect planning documents and other contextual information. This was confined for the most part to that information required to update the existing community profile for the specific communities identified as primary field sites.

Industry participant contacts were a primary means through which existing industry sector profiles were updated. Our main method was to talk with a sample of industry participants from each of the sectors identified as important components of the Bering Sea pollock fishery -- shoreside processors (fixed location plants as well as inshore floating processors), offshore catcher-processors, and catcher vessels (which may deliver onshore, offshore, or both). As in previous projects, our conversations were guided by a research protocol so that we could collect comparable information from those people we talk with, without submitting them to the time requirements of a more formal and inflexible survey instrument. The time horizons for this project were too short to allow for the development of a formal survey instrument which would have been subject to a lengthy review process by the Office of Management and Budget, because of the Federal funding of the project. Again, as in previous projects, employment and labor participation were addressed primarily through direct industry sector contacts, although it was also part of the community profile discussion. Most specific employment information was developed as part of the field interview process (and follow-up data requests from industry associations and individual entities).

Preliminary examples of the protocols used in the field are provided in an appendix to this document, and were derived from those used in our work in support of the NPFMC's Groundfish License Limitation analysis (1994). As with previous projects for the Council, these were subject to internal team review and modification following initial field contacts, but they represent the main topical or information issue areas about which relatively consistent information needed to be developed for the purposes of this project.

Implementation of this study generally followed the standards for ethnographic work and the methods of Rapid Ethnographic Assessment Procedures as outlined by the NPS in the *Cultural Resource Management Guideline*, Release 4 (National Park Service 1994) and the NOAA Guidelines and Principals for Social Impact Assessment. Implementation of this study used multiple data collection techniques, discussed below in terms of documentary research and ethnographic research. Separate discussions are also devoted to sampling and other special considerations.

1.4.4 Documentary Research

Because of the unique circumstances of this project, much of the previous literature and other documentary sources had already been compiled in previous work. Since the action to be taken was a continuation of a previous action, and the analysis built upon that for this earlier action (and parallel actions already underway by Council staff), the research required was more in the way of an update and supplementation than a complete new construction. Thus there was no need for a literature review as such.

An essential part of the project was the incorporation of NPFMC staff provided information and data sets into our sector/community descriptions and effects analysis. This information included vessel characteristics and pollock harvest statistics for all participants in the Bering Sea pollock fishery for 1991, 1994, and 1996, as well as similar information for all processors of Bering Sea pollock for the same years. We processed this information using dBase III+ and Paradox. Because of changing definitions and a tighter problem definition, there was a need to rework some of the earlier sector analysis (for license limitation) so that it could be compared in a reasonable (although not necessarily direct) way.

To update the community profiles, and to adequately document localization of fishery-related activities in Seattle, we did need to collect and integrate recent secondary information of a socioeconomic descriptive and general planning nature. This was, for the most part, the extent of our effort in this area and was accomplished primarily through contacts with key community officials and planning employees (and the collection of planning documents).

1.4.5 Ethnographic Research

Most of our primary research effort was be devoted to field work. In this section we discuss each of the methods used, the sort of information recovered through each method, and (briefly) the use that information has had for the project. The ethnographic methods utilized are based on traditional anthropological and social science methods to investigate the nature and meaning of public values, attitudes, and beliefs. These methods are exemplified in the traditional ethnographic approaches of anthropologists such as Lowie (1969), Kroeber (1952), Geertz (1983), and Malinowski (1950) while at the same time informed by some of the most recent work about cultural schemas that function as " information packages" about a domain of cultural knowledge (D'Andrade and Strauss 1992). For example, a cultural schema about natural resources would examine how people conceptualize and categorize the characteristics of their natural environment or specific features within that environment such as a National Forest (IAI 1993). A cultural schema is a concept that can be applied to systematically investigate how people understand one area of cultural knowledge by focusing on the characteristics of and connections among elements within that knowledge area (Strauss 1992).

These schema and context data were collected through primarily open-ended, key informant interviews with persons representing different sector/community interest groups. The procedures for selection of these informants is discussed below. A set of interview protocols was constructed prior to field work, based on similar previous work, and reviewed with NPFMC staff. As noted earlier, the protocols specified a set of topics to cover, but not a standard set of questions that were asked of each person interviewed. Rather the specific questions asked, and the order in which topics were covered, were likely to be different depending on the process of each interview. The use of the protocol insures that there was consistent converge of the topics of research interest. Also, keeping in mind that a good portion of the field effort was directed toward updating information already in hand (and often collected from the same individuals or entities contacted for previous study efforts), for many interviews only a subset of protocol topics were pursued after some general questions were asked regarding relevant changes since the last set of interviews. Our experience has been that if the interviewee is discussing topics of interest that it is generally more efficient overall to allow him or her to guide the discussion rather than to impose the more artificial structure of direct questions. A more inflexible, formally structured, interview often produces much less direct information and very little interpretative context. The successful use of protocol interviewing of course depends upon the judgement of the interviewer, but is a technique with which we have much experience. Even with a "standard" protocol, not all interviews/contacts were guided by them to the same extent. We briefly discuss several of these special interview situations below.

"Standard Protocol" Interviews

The most common interview situation will be one where the researcher is talking with an individual about his or her participation in the Bering Sea pollock fishery, often in a group context for larger corporate fishery entities. The interview will be guided by the use of a protocol which specifies certain areas of interest and topics to be covered.

Key Person Interviews

Most of the initial interviews completed were 'key person' interviews. Key person interviews are conducted with people who hold central positions in public or private community organizations, or are key participants in the activity of main interest. These types of interviews are only semi-structured because the interviewees involved usually have busy schedules and time constraints. Although semi-structured interviews maintain the same open-ended quality of informal interviews, the structure of the interviews are determined by the researcher. Semi-structured interviews are usually employed in situations in which the researcher only has one chance to interview an informant. All interviews were be recorded in narrative form, primarily by written notes. Upon review of the data, follow-up interviews or contacts were sometimes arranged to clarify or obtain further information.

Group Meetings

There were many occasions when we had meetings of the researcher(s) with a number of people at the same time. These were not always predictable. Often the person with whom the meeting had been arranged would have asked one or more additional employees to attend, to provide information as well as to keep them informed of our role in the NPFMC's research and decision-making process. There were other occasions when a number of fishery participants would talk with us as a group, either because they all happened to be in the same place and/or because they (or we) did not have the time or flexibility to talk individually. In our experience, local people can be interested in such group meetings for a number of reasons -- to find out from the researcher what he or she is doing, to communicate to the researcher some specific sorts of information, or to make themselves available to the researcher for whatever he or she wants to know. The last can thus, in essence, be a group interview (or a 'focus group'), and can be guided by the same sort of protocol utilized in the individual interviews. Note taking and recording in such a situation can be challenging, however, as the discussion moves between individuals and the researcher and between other people present. Pragmatically, the researcher typically allows those who 'arranged' the meeting to initially structure the information flow, before moving on to a more general discussion of other topics of interest to the research and specific areas of inquiry, as shaped by the initial interaction.

Participant Observation

Participant observations are among the standard methodologies used in anthropological research. While this is a method that is best suited to longer term work, it may nonetheless be applied on a limited basis in shorter term fieldwork. This approach requires that the researcher establish a rapport with individuals in research communities and to engage this community and its members so that there is minimal disruption of the usual flow of everyday activity. The researcher's task is to observe activities, events, and ways of living in order to understand these from an "insider's perspective." Insight is further gained by participating in the events and activities. Participant observation is a strategy that facilitates data collection in the field (both qualitative and quantitative), reduces problems of reactivity by community members, and provides researchers with an understanding of different community processes. This technique is valuable even in limited, focused efforts when there is an opportunity to engage some portion of a community about a focused topic as well as interact with individuals outside of the interview context per se. This process was facilitated by the individual researchers' previous experience. In addition to having many years of formal research experience in general, Mike Downs has been doing ethnographic research in Unalaska/Dutch Harbor (and, to a much lesser degree, Akutan) since 1982; Michael Galginaitis began working on Southwest Alaska region projects in 1985. Both Downs and Galginaitis have both worked in the communities relevant to the present work on NPFMC projects since 1990.

Nonreactive Observations

Nonreactive observations are sometimes referred to as "unobtrusive" measures, and refer to a research approach that does not require the participation of an informant. Unobtrusive observations typically have little no impact on what is being studied, and include all methods for studying behavior and context in which informants do not actively participate. One of this technique's main concerns is to avoid sensitizing informants to issues that are important to the researcher. Thus, researchers do not ask informants direct questions about individual behavior or community patterns of behavior. Instead, they conduct systematic observations that measure behaviors of interest in a less direct form. As an example, researchers may count vessels at various private docks or public moorage locations to gain insight into patterns of use during fishing seasons that may then be followed up on during interviews. Such measures sometimes provide insight and information that is often unobtainable through other techniques when informants are aware of the researcher or subject matter of interest, particularly where a strong potential for biasing answers exists. Nonreactive observations are especially useful when weighing conflicting information from different informants. Again, given the limited scope of the field research for this project, these techniques were of limited utility, but were employed to a degree.

Informal "Unstructured" Interviews

Informal interviews are often considered to be a form of participant observation. However, an unstructured interview differs from a conversation held during participant observations. While participant observation implies letting a 'cultural consultant' define the form and content of conversations, informal interviews are clearly interviews. That is, when the researcher meets with informants, he or she has a clear plan in mind concerning conversational topics, but does not have a specific set of questions that should be asked. Although the researcher establishes the general direction of the conversation, he or she maintains little control over the direction or topicality of informant's responses. The objective of this type of interviewing is to allow the informant to speak freely and at his or her own pace. These types of interviews are often useful in conjunction with more formal interviews when more than one informant is present.

1.4.6 Sampling

Obtaining a randomly selected and statistically representative sample was not the goal of this study. Rather, for this type of study data are needed from a non-random but systematically selected sample. The intention of this study is to identify knowledgeable "industry experts" and key fishery participants who can identify relationships and associations (both historic and current) between themselves and other fishery participants.

Overview

Given that a specific type of information is desired, and this information is not randomly distributed within the group, efficient gathering of these data required a well defined, targeted approach. Such targeted sampling approaches include quota sampling, purposive sampling, and "snowball" or network sampling. These methods are systematic approaches to the identification of appropriate interviewees. Each is briefly described below.

Snowball sampling may be used as an entre for research with members of various interest and stakeholder groups as a means to identify the full range of groups that are similar to or different from the point of entre. Like most other research of this type, initial field data collection among any particular group identified will almost always begins with informant networking. Networking is a process whereby the researcher requests several key informants to identify others who would be suitable to interview. The process begins with the researcher contacting and interviewing a person who holds a formal status in the group, such as an association executive director, or the like. The informants are apprized of the research project during the interviews, and if they are confident that the researcher will not violate group interests and values, they will usually refer the researcher to other knowledgeable individuals. This sampling technique provides an effective means of building an adequate sampling frame in short order, particularly in a small population where people are likely to be in contact with one another and when the research is focused to the point where the type of information desired is held by a relatively few individuals. Snowball sampling is also a useful tool when studying small, bounded, or difficult to locate populations. In this case, we started with the various industry and/or sector associations and worked outward in addition to recontacting individuals known from previous research.

Quota sampling can be used to a degree to assure adequate coverage of geographical areas, interest groups, and stakeholders. In quota sampling the researcher decides on the categories of interest before the research begins. The sample is selected from those predetermined categories and then a targeted number of individuals are interviewed from each category. That is, the researcher constructs a matrix describing all of the characteristics of information to be obtained. A relative proportion is assigned to each cell in the matrix, and data is collected from persons who possess the characteristics of a given cell. Of all the nonprobability sampling techniques, quota sampling closest to approximating a true random sample. In addition, it guarantees that all the research categories of interest will be represented in the study. In most instances, it is possible to indicate some sort of estimate or evaluation, since this sort of sample represents the population from which it is drawn. Under extremely good conditions, quota sampling results in a stratified random sample, but in most cases it is not possible to determine if members of all categories have had an equal chance of selection. For the purposes of this research, the relatively small number of interviews conducted in any one location, and the focus of such interviews on "key" people and sector/industry experts, would not result in any sort of random sample in any event, however, the research did benefit from well defined categories for the beginning 'matrix' so this did not prove to be a significant difficulty.

Purposive or "Judgement" sampling refers to the selection of a sample based on what the researcher believes will yield the most comprehensive understanding of the subject under study. This sampling technique is similar to quota sampling in that the researcher selects his or her target categories of inquiry based on the objectives of the research. However, for this type of sample there is no overall sampling design that dictates how many respondents from each category are needed for the study. Purposive samples are often used when a researcher wants to select only a few cases for intensive study, when conducting life history research, or when engaging in qualitative research on special populations. The potential problems of defining and enumerating the sampling universe exist for this method as well. This type of sampling, in practical terms, means keeping the design flexible so that, in the words of National Standard 8, "the analysis does not have to contain an exhaustive listing of all communities [or, by extension subcommunities or subsectors] that might fit the definition [of fishing communities]; a judgement can be made as to which are primarily affected" (Fed Reg 1997:41918). Purposive sampling allows for reasoned judgement in adjusting interview targeting strategies once the fieldwork is underway, information begins to be developed, and salient issues begin to become apparent.

Selection of SIA Interview Sample

Use of formal interview instruments that would require OMB approval was precluded by the short time horizon and amount of resources available for the work. Further, it was recognized that representative samples in a statistical sense (at least for some sectors) would not be achievable. A complete characterization of the population before sampling was infeasible (such description was, after all, one of the intended goals of the research), and the random selection (and contact) of interviewees impractical. Given these limitations, the sampling strategy was guided by a statistical description based on historical fishery participation data provided by the NPFMC staff, with special emphasis on the most recently available information (1996). Based on this categorization, and in view of the amount of other information already available and a judgement as to the extent of change in different sectors of the fishery since the construction of the last sector profile, target goals for the adequate description of each sector and a discussion of the dynamics of change in that sector were established. The basic sector descriptive information and these target goals, with the number of actual contacts made, are presented in Table Int-1.

The information goal of interviews conducted for this research was to characterize sector operations as individual entities and aggregate that information to facilitate sector dynamics, particularly with respect to community linkages. To the extent that crew and employment dynamics could also be documented, such information was elicited, but interviews were conducted with operators and managers rather than crew and line employees. Again, this was an explicit decision made in the initial definition of the research problem by the NPFMC staff, in recognition of time and resource limits, to concentrate on the providing the type of information most likely to be needed for the Council to make an informed and reasoned decision on I/O-3.

No attempt was made to contact past fishery participants who were not active in the fishery in 1996. For sectors with a small number of participants it was judged necessary to contact as high a proportion of category members as possible, within the constraints of the project. This was most pressing in the processing sectors. All pollock mothership operations were contacted, and five of seven shore plant operations (the entity processing Bering Sea pollock in Kodiak was not targeted, and direct contact with the Sand Point plant was never established, although that operation was discussed with its management in Seattle, and community linkage information was developed through contacts in Anchorage). One of the three floating processors was contacted, but since one of those not contacted was not a large processor, this represented approximately half of the floating processor entities.

For catcher processors, sampling was more problematic due to the variation in operational size within this sector. Fourteen business entities operated 39 vessels, but one company essentially comprised 40 percent of the sector, in terms of vessel numbers. Only the two largest companies operated both surimi and fillet catcher processors (although others could produce multiple products on the same vessel -- essentially the definition of a surimi catcher processor for I/O-3). We wished to adequately document the sector both in terms of business entities as well as individual vessels. Thus, the two largest companies had to be included in our sample. Clearly, in the case of our information from these companies, vessel-specific information obtained from managers was of a more general nature than that obtained from companies with fewer vessels. We contacted five of the fourteen (36 percent) of the business entities in this sector, operating 26 of 39 (67 percent) of the active catcher processors. Table Int-2 indicates that this sample over represents surimi operations relative to fillet operations, but both are still well represented, not only in terms of entity numbers but also in terms of percentage of sector pollock production

Table Int-1
Numbers of Economic Enterprises Participating in the Bering Sea Pollock Fishery, 1996
with Inshore/Offshore Social Impact Analysis Interview Sample Description

Inshore/Offshore Category (and Subcategory)		1996 Entities		Entity Contacts		Notes
				Goal	Actual	
Catcher Vessel delivering	Inshore Only	76	117	17	12[1]	Plus interviews with shore plant fleet managers, association manager and officers
	Offshore Only	24		10	6[1]	Five mothership catcher vessels plus two CP delivery catcher vessel operations (3 vessels); plus interviews with mothership managers and catcher processor operations managers
	Both	17		13	4[1]	Apparently more of an artificial category, or at least one very difficult to characterize (and locate)
Processor	Shore-based	7		6	5	No direct contact with Sand Point shore plant; did talk with corporate contacts in Seattle.
	Floating Inshore	3		3	1	Only two entities of real pertinence; contacted corporate owner of one.
	Mothership	3		3	3	
Catcher/ Processor	Fillet	19		10	9	Majority from one owner, and detailed operational information not obtained for each vessel
	Surimi	20		11	18	Majority from one owner, and detailed operational information not obtained for each vessel
CDQ Group Contacts		7		3	2	Contacts in the course of other fieldwork

[1]Includes only individual vessel interviews. See Table Int-3 and test for "fleet" sample information.
Note: Contacts in Seattle and Unalaska for more general community information not enumerated in this table, as they are more difficult to characterize in tabular form. Selected contacts in other communities were made by phone.

Source: NPFMC-supplied data files. These files required manipulation to prevent double-counting of economic entities. Any economic entity which harvested or processed any amount of Bering Sea pollock was counted. This affected mainly the catcher vessels categories and may have "inflated" their numbers somewhat. In some cases information was lacking to adequately identify a harvest data record with a vessel, so that a slight undercount is possible.

Table Int-2 Processing Entity Interview Sample						
Sector	Count of Entities		Pollock Production[1]		Sample %	
	Total	Sample	Total	Sample	Entities	Pollock Production
Shore Plants	7	5	347,458	318,006	71%	92%
Floating Processors	3	1	70,513	****	33%	****
Motherships	3	3	121,623	121,623	100%	100%
Fillet Catcher Processors[1]	19	9	162,804	106,263	47%	65%
Surimi Catcher Processors[1]	20	17	468,244	399,685	85%	85%
[1]See text for qualifications.						

Catcher vessels were a much more difficult challenge, partly because of the larger number of individual entities and the variation among them, as well as the wider geographical distribution of these entities. As with the catcher processor sector, some business entities operated more than one vessel, and in those cases information obtained about individual vessel operations was less detailed than for other entity interviews. These two types if interviews are differentiated in Table Int-3 as "fleet" and "individual" components of the sample. The first is the more general, collective, sort of information and the second is more detailed and specific to individual vessel operations. The first also includes information obtained through interviews with shore plant operators about the fleet delivering to them (whether the plant had an interest in those vessels or not) as well as vessel associations.

For our initial characterization of the catcher vessel sector we used three categories, based on where vessels delivered pollock -- onshore, offshore, or both. We had complete information by vessel for onshore deliveries, but very incomplete information for offshore delivery by catcher vessel. Thus, any vessel with any amount of offshore delivery was classified as an offshore vessel or a "both" vessel. Based on mothership interview information, we can distinguish mothership catcher vessels from other (catcher processor) catcher vessels. If pressed, we can assign most of the "both" vessels to either onshore or offshore, based on the partial information we have. Four appear to be offshore catcher vessels delivering to catcher processors (their onshore deliveries are minimal for 1996). Eight appear to be onshore catcher vessels, although this is not a firm conclusion since offshore

[1] It should be noted that the volume data in this SIA appendix vary somewhat from the pollock volumes by sector as shown in the main document. This is a result of the SIA numbers being based on a data set provided by the NPFMC that was, in turn, based on 'fish ticket' data. The main document, on the other hand, uses 'blended' data. Both data sets are internally consistent, and the analysis is not compromised by this disjunction. It does mean, however, that caution must be taken when making direct, quantitative comparisons of pollock volume figures between this section and the main document.

delivery information is incomplete. For three vessels, pollock deliveries onshore and offshore appeared to be about equal in 1996 -- but again, offshore delivery information is potentially incomplete and thus these vessels may be more offshore than onshore. They did deliver more than 500 tons to each sector. As an aside, only three onshore vessels enumerated in the tables above delivered less than 500 tons of pollock in 1996.

Table Int-3
Catcher Vessel Interview Sample by Delivery Categorization

Catcher Vessel Delivery		"Main" Categorization: Total	"Main" Sample: Fleet	"Main" Sample: Indiv	"Main" Sample (combined)	"Main" Sample: % of total	"Derived" Characterization: Total	"Derived" Sample: Fleet	"Derived" Sample: Indiv	"Derived" Sample (combined)	"Derived" Sample: % of total
Inshore Entities		76	18	12	30	39%	84	19	15	34	40%
Inshore Pollock Delivery Volume		381,414	124,850	115,611	240,461	63%	414,623	126,864	137,764	264,628	64%
Offshore Entities	Mothership	17	4	4	8	47%	17	4	4	8	47%
Offshore Entities	Catcher Processor	9	0	2	2	22%	13	1	3	4	31%
Both (Entities)		15	2	4	6	40%	3	0	0	0	0%

See text for discussion of definitions. "Individual" sample is composed of vessels the specific operations of which were discussed with a skipper or owner. "Fleet" sample is composed of vessels for which only selected operational aspects were discussed with a fleet or corporate manager.

Our interview sample of catcher vessels does over represent vessels which harvest more rather than less pollock. Of the "top 20" onshore pollock catcher vessels in 1996, our sample includes 18 of the 20 entities (10 "individual" and 8 "fleet"). Of the "second 20" the sample contains 11 of the 20 entities (3 "individual" and 8 "fleet"). For offshore catcher vessels, we cannot rank vessels by total harvest. For the mothership catcher vessels, we talked to all three mothership operations, and so talked with the entire sector in terms of fleet management from the mothership perspective. We also talked with eight mothership catcher vessels on an individual operation or catcher vessel "fleet" basis. Thus this component of the fleet was also well represented in our sample. Catcher vessels delivering to catcher processors are perhaps the most sparse part of our sample, but still consists of 4 of 13 entities (or 31 percent of the total). An additional vessel could be included in our sample, as part of this component of the catcher vessel sample, except that it does not appear in the NPFMC data base as delivering pollock in 1991, 1994, or 1996 -- although the operator states that it has made these type of deliveries in the past and is doing so in the present.

Table Int-4 simply presents our interview sample in terms of catcher vessel length classification. It indicates again that the sample is fairly representative in a gross sort of way, and is adequate for the collection of the type of operational/qualitative or linkage information that was sought. In a more intensive study, more small onshore catcher vessels would have been interviewed individually, and more intensive efforts to contact the three vessels delivering both onshore and offshore would have been made.

Table Int-4
Catcher Vessel Interview Sample by Delivery Classification and Length Classification

Catcher Vessel Delivery Category by Length Category		Sample Numbers		Non-Sample Numbers	Total
		fleet	individual		
CV Inshore	L	1	3	4	8
	M	8	7	1	16
	S	10	5	45	60
CV Offshore	M	0	1	3	4
	S	1	2	6	9
CV Mothership	S	4	4	9	17
CV Delivering Both	S	0	0	3	3
TOTALS		24	22	71	117

See text for discussion of definitions. "Individual" sample is composed of vessels the specific operations of which were discussed with a skipper or owner. "Fleet" sample is composed of vessels for which only selected operational aspects were discussed with a fleet or corporate manager.

In addition, field workers in Seattle and Unalaska contacted a number of other people not directly involved in the Bering Sea pollock fishery. The purpose of these contacts was to develop more general information about the linkages between the community and the Bering Sea pollock fishery and/or to develop contextual community background information. There is no simple way to enumerate these contacts. Some were in essence "negative contacts" which revealed the lack of directly applicable information (especially for Seattle and the measurement of the Bering Sea pollock fishery to its economy and social organization). Although these consumed project resources and may not appear to have directly contributed to the research, they were actually quite useful in directing effort away from such lines of inquiry and into other, potentially more fruitful, ones.

1.4.7 Special Issues

There are four interrelated concerns that must be addressed for the successful interpretation of the research. Our discussions will necessarily be brief, not because the issues are unimportant, but because in the final analysis each is dependent on the degree of participation of the industry participants in the research and their general reaction to the project. These topics are industry participation, confidentiality, informed consent, and self-interest. The order is not accidental. All are interconnected, with the latter three being perhaps more complex than the first two.

Industry Participation

The ability to carry out this project depended to a large extent on the active involvement of industry participants. The active participation of industry or sector associations, whether directly involved in inshore/offshore issues (such as the At-Sea Processors Association and the North Pacific Seafood Coalition), or neutral on the issue, but involved as a sector (such as the United Catcher Boats) were critical to the success of this study. Given the real-world constraints associated with this project, we approached this industry organizations early in the study and asked for their assistance in providing aggregated data from their membership. These groups also facilitated contact with member and non-member entities alike.

Confidentiality

The tasks required for the specified scope of work impose substantial challenges in the area of guaranteeing confidentiality for those research participants who desire this protection. Any ethnographic field work in small communities requires that the form of publicly disseminated products be carefully designed and written so that the privacy of individuals are protected. When this is combined with potential financial and operational confidential information concerns, these considerations are even more accentuated. A verbal process of informed consent for research participants, combined with the coding of field notes and a restrained use of information identifying individuals in public reports, is usually adequate to handle these problems. This project will be less problematic in these regards than it could have been because of the clear awareness most industry participants have in these areas, and their familiarity with the Council analysis and decision-making process.

Informed Consent

Informed consent is a very difficult subject, because if everyone were truly "fully informed" of all of the more remote potential consequences of their participation, this would be an extraordinarily extensive discourse, and few would be likely to participate in whatever they are being asked to do. Most social science is conducted within ethical guidelines and with verbal, or even implied, informed consent obtained. Verbal informed consent, though a disclosure of the research goals and process, as well as contractor and sponsor information, and a question of whether or not the individual wished to speak with us was obtained for all interviews. (Notes made about public behavior were not subject to such informed consent.)

Self-Interest

It must be recognized that most of the information, other than that derived from data sets obtained from NPFMC staff, is from parties with a vested interest in the final decision of the NPFMC. As such, all can contain potential sources of bias. This is not an unusual situation, however, and truly "objective" information about any human endeavor is extremely rare. The object is not to eliminate self-interested information from this research, but rather to recognize the potential distortions which self-interest may introduce and to adjust for them. Needless to say, this is not an exact process. Where industry provided data is utilized, it is so noted so that the reviewer can draw his or her own judgements regarding the utility of the data. Further, industry sectors have provided data to the Council independent of this study effort, and have accompanied these data with cross-referencing or 'audit' information that allows the reviewer to understand additional context information.

1.4.8 Field Data Processing and Initial Analysis

As noted, the data obtained in the field were written in field notes during and after interviews. All data files produced by field workers were named in a systematic way which identifies the field site, the researcher, and the date on which the data were recorded. This data recording process has been a standard practice for IAI. This system allows for the quick organization and selection of files, and serves as a rough indicator of how much data has been collected.

One key issue that arises when formulating a data management system is that of defining the units to be managed. Clearly, individual "facts," even if they are identifiable, would be far too numerous to manage. Our system was much more pragmatic and dealt only with logical data units as they are collected. A single data unit may be a document collected from an office, a set of related observations made on one day, notes from an informal interview, or a completed key person interview. As these data units were processed, the different issues that the electronic file contained were extracted and recombined with other data to produce the study products. The fundamental organizational unit, however, are the data units that were collected in the field based on the decisions of field workers. Ultimately (post-field) data were indexed to allow for data sorts by geographic and topical area of reference to enable the required analysis.

1.5 BERING SEA POLLOCK SECTORS: TRENDS OF CHANGE AND PRELIMINARY SIA

Our selection of study communities and industry sectors was based on a preliminary analysis of information provided by the Council staff, previous experience developed in working on similar projects for the Council, and a keen awareness 'real world' constraints imposed by available time and existing resources, modified somewhat by our actual field information collection activities. The tables in this section, summarizing general level sector participation information and trends of change will provide the framework for the general descriptive and SIA discussion.

As in past projects we have undertaken for the NPFMC, the data we are working with has some inherent uncertainties. The "homeport" and similar geographical identification fields is one major area of fuzzy information. The extent to which this information actually represents the operational base of the economic entity is not always clear. Thus, identification of number of operations with any community in the discussion below is only normative at best. For sectors with relatively few participants (shore plants, motherships, floating processors, and, to some extent, catcher processors) we were able to field verify or correct this information and achieve an overall perspective of sector-community linkages. This was not possible for sectors with relatively numerous participants (catcher vessels).

For the tables in this section, each "Inshore/Offshore Category" will be discussed in their terms which make the most sense -- year by year, as a time series across years, or even in comparison with another I/O category. Our goal is to hit the highlights of the relevant trends or issues. More detailed discussion of each sector appear in the profiles that follow this introductory section. The discussion for some sector cells will be necessarily general, as reported harvest and processing numbers cannot be specified for cells with small numbers of operations (due to confidentiality constraints), or such information may simply be unavailable. Table Int-5 presents a summary enumeration of harvesting and processing operations by year for 1991, 1994, and 1996, and is a table that will be relevant to all sector discussions.

Table Int-5
Numbers of Economic Enterprises Participating in the Bering Sea Pollock Fishery, Categorized in Terms of Activity and Inshore/Offshore Processing, for 1991, 1994, and 1996

Inshore/Offshore Category (and Subcategory)		1991		1994		1996	
Catcher Vessel delivering	Onshore Only	64	83	58	92	76	117
	Offshore Only	16		16		24	
	Both	3		18		17	
Processor	Shore-based	7		7		7	
	Floating Inshore	4		2		3	
	Mothership	3		3		3	
Catcher/Processor	Fillet	30		20		19	
	Surimi	24		24		20	

Source: NPFMC-supplied data files. These files required manipulation to prevent double-counting of economic entities. Any economic entity which harvested or processed any amount of Bering Sea pollock was counted. This affected mainly the catcher vessels categories and may have "inflated" their numbers somewhat. In some cases information was lacking to adequately identify a harvest data record with a vessel, so that a slight undercount is possible.

The various sector levels of participation over the years may be characterized as follows:

(1) ***Shore-based processors.*** Shore-based processing of Bering Sea pollock is centered in Dutch Harbor and Akutan. Seven shore-based plants processed some amount of Bering Sea pollock in each of the years considered (1991, 1994, 1996), but only four of those plants did so in all three years. These were the three plants in Dutch Harbor and the one in Akutan. They accounted for about 90 percent of all Bering Sea pollock shore-based processing (which was significantly less in 1996 than in 1991). Plants in Sand Point and King Cove have also processed Bering Sea pollock as a regular part of plant operations in recent years (1994 and 1996 of the years considered), but at roughly an order of magnitude less than the Dutch Harbor/Akutan totals (approximately 10 percent of the total). Dutch Harbor/Akutan Bering Sea pollock totals have been decreasing in recent years, while Sand Point/King Cove have been increasing, but the absolute difference is still quite large. Kodiak shore-based processors operated at a level similar to this in 1991, but have progressively processed less since then and a relatively insignificant amount in 1996, and the specific Kodiak plant processing Bering Sea pollock differed in each of the years considered.

(2) ***Floating inshore processors.*** The number of enterprises operating as floating processors in inshore waters has varied from year-to-year (average of 3), but the level of effort (amount of Bering Sea pollock) has increased steadily since 1991. The weight of Bering Sea pollock processed by floating processors in 1996 was over twice that so processed in 1991, and was equivalent to the throughput of a good-sized shore plant. All floating inshore processors with a significant amount of pollock product are apparently managed and operated out of Seattle.

(3) ***Motherships.*** Level of effort from enterprises in this sector-cell has been consistent, both in terms of number of enterprises and in weight of pollock processed, although weight processed in 1991 was above that processed in either 1994 or 1996. The major operations are operated out of Seattle.

(4) ***Fillet catcher-processor vessels.*** This sector shrank significantly after Inshore/Offshore I, from 30 vessels in 1991 to 20 in 1994, but has been reasonably stable since, with 19 vessels in 1996. The weight of pollock processed in 1996 was actually greater than in previous years. Of the vessels active in 1994 and 1996, over 75 percent are based in or operated out of Seattle. Vessels in some way tied to Juneau on paper also account for a significant (perhaps 15 percent) of this sector's pollock.

(5) ***Surimi catcher-processor vessels.*** This sector-cell has been fairly stable in terms of number of operations since 1991 (24 vessels in 1991 and 1994, 20 in 1996), but has experienced a significant decrease in the weight of Bering Sea pollock it has processed since 1991. Of the twenty vessels active in 1996, sixteen (80 percent) are from Seattle, with three others homeported on paper in Homer. The "Homer" vessels are currently managed and operated out of Seattle.

(7) ***Catcher Vessels delivering Onshore only.*** The numbers of vessels have varied from year-to-year, but the level of effort as measured by weight of Bering Sea pollock delivered has remained fairly consistent. Small boats (less than 125 feet) predominate, but medium (125 to 155 feet) and

large (155 feet and longer) vessels also participate. In 1996, of 77 vessels which delivered Bering Sea pollock onshore only, 56 were small, 14 were medium, and 7 were large. Seattle or the Seattle area was given as the homeport for the great majority of the large and medium vessels. For small vessels, roughly a third have Seattle as a homeport, somewhat less than a fourth have Newport as a homeport, a tenth are homeported in Juneau, and another tenth in Kodiak. Seattle is clearly a key community of interest here, but operations in other localities are also significant and will be discussed below in the more extended sector description.

(8) *Catcher Vessels delivering Offshore only*. Harvest information for this sector is not available. For 1991 and 1994 the number of vessels was the same (16 each year), but increase by over 50 percent in 1996 (25 vessels). Small boats (less than 125 feet long) dominate, with only two being larger. Close to 60 percent of the active 1996 boats homeport in Seattle, with the remainder attributed to a wide range of communities (no more than 2 boats in any one other place). Seattle is again clearly a key community of interest.

(9) *Catcher Vessels delivering both Onshore and Offshore*. This category was quite small in 1991 (3 vessels), but was relatively stable in numbers from 1994 to 1996 (18 and 16 vessels respectively). Total delivery statistics are not available. Only four vessels were in this category in both 1994 and 1996 (one for both 1991 and 1996). Thus most have been in this category for only one year of record. Most (50 percent) are small boats homeported in Seattle. Several other boats may be homeported in the Seattle area, and Juneau, Unalaska, and Newport each have two or three vessels associated with them. This is a sector category that is not well documented in existing information, and may well be more of a descriptive and analytical construction than a truly separate category.[2] This will be further discussed in the more detailed sector description.

Tables Int-6a and Int-6b enumerate and display all processor I/O-3 categories by year and some measure of ownership or managerial control. Table Int-6a uses the reported address of the vessel/operation owner as the indicator of the likely community of orientation for primary socioeconomic effects. Table Int-6b uses reported homeport, which at least for some vessels in the past has been an indicator more of operational or logistical factors than of ownership. For these tables, ownership and homeport correspond to each other very closely, so that the two tables are quite similar. Ownership and homeport are both heavily concentrated in Washington state, and more specifically in Seattle and the Seattle area. Tables Int-7a and Int-7b are in the same format, but instead of counting the number of operations, the amount of Bering Sea pollock processed is summed. Even without converting the numbers to percentages, it is clear that Washington shore plants and surimi catcher processors produce the bulk of the product, which is expected from the numbers in Tables Int-6a and Int-6b.

[2] Note: At the April 1998 NPFMC meetings in Anchorage, a question arose at the AP whether or not the 'both" category could be further subdivided using a threshold or 'filter' level to characterize those vessels who had delivered to both inshore and offshore as 'primarily inshore' or 'primarily offshore' or otherwise indicate the relative participation in the inshore and offshore sectors. The data available at the time of the draft document would not allow such a characterization, and these data were not available in a form that would allow the differentiation of these data prior to the release of this document, except in a very rough way (see discussion of sample).

Table Int-6a Number of Processors by Year and State of Ownership						
Year	Ownership State	Inshore/Offshore Category				
		Fillet CP	Surimi CP	Mothership	Floater	Shore Plant
1991	Alaska	4	3	1	0	0
	Maine	1	0	0	0	0
	Rhode Island	1	0	0	0	0
	Washington	24	21	2	4	7
1994	Alaska	4	3	1	0	0
	Maine	1	0	0	0	0
	Washington	15	21	2	2	7
1996	Alaska	3	0	1	1	0
	Maine	1	0	0	0	0
	Washington	15	20	2	2	7
Source: Electronic data file provided by the NPFMC						

Table Int-6b Number of Processors by Year and Homeport State of Processor						
Year	Homeport_S	Inshore/Offshore Category				
		Fillet CP	Surimi CP	Mothership	Floater	Shore Plant
1991	Alaska	4	3	1	Not Specified	7
	Massachusetts	1	0	0		0
	Oregon	1	0	0		0
	Washington	24	21	2		0
1994	Alaska	2	3	1	Not Specified	7
	Maine	1	0	0		0
	Washington	17	21	2		0
1996	Alaska	3	3	1	Not Specified	7
	Maine	1	0	0		0
	Washington	15	17	2		0
Source: Electronic data file provided by the NPFMC						

Table Int-7a
Processors Pollock Production by Year and Ownership State of Processor

Year	Ownership State	Inshore/Offshore Category				
		Fillet CP	Surimi CP	Mothership	Floater	Shore Plant
1991	Alaska	2141	109881	140807		
	Maine	***				
	Rhode Island	***				
	Washington	135572	703015		34295	412159
1994	Alaska	51392	107753	110815	***	
	Maine	***				
	Washington	80381	511800			409058
1996	Alaska	33232		121623	70513	
	Maine	***				
	Washington	129433	468244			347458

Source: Electronic data file provided by the NPFMC

Table Int-7b
Processors Pollock Production by Year and Homeport State of Processor

Year	Homeport_S	Inshore/Offshore Category				
		Fillet CP	Surimi CP	Mothership	Floater	Shore Plant
1991	Alaska	2141	109881	140807	Not Specified	412159
	Massachusetts	***				
	Oregon	***				
	Washington	135279	703015			
1994	Alaska	51122	107753	110815	Not Specified	409058
	Maine					
	Washington	80997	511800			
1996	Alaska	33232	80329	121623	Not Specified	347458
	Maine	***				
	Washington	129433	387915			

Source: Electronic data final provided by the NPFMC

Table Int-8 is a measure of how dependent each I/O-3 category of processor is on Bering Sea pollock by expressing the amount of Bering Sea pollock they process as a percentage of all Bering Sea fish that they process. The higher the percentage, the more dependent on it they are. An ownership measure is also used in this table, but as for prior tables homeport and vessel state are for the most part redundant.

Table Int-9 is another sort of dependency measure, based on the percentage of an operation's annual wholesale value of production contributed by each species. Both dependency tables demonstrate the extent to which all industry sectors are dependent upon Bering Sea pollock. In terms of weight of product processed from Bering Sea resources, the degree of dependence has been remarkably similar for the period 1991-1996. Surimi catcher processors, motherships, and inshore facilities produced 80 percent or more of their total Bering Sea derived product from Bering Sea pollock. Fillet catcher processors are also highly dependent on Bering Sea pollock. In terms of raw material, pollock comprised 50 to 60 percent of their total Bering Sea input. In terms of annual wholesale value, those sectors with the most dependence upon Bering Sea pollock in 1991 maintained that dependence through 1996, while other sectors increased their economic dependence upon pollock. That is, surimi catcher processors and motherships derive 85 to 90 percent of their revenue stream from Bering Sea pollock, and have since 1991. Fillet catcher process derived 49 percent of their product wholesale value from Bering Sea pollock in 1991, but this increased to 74 percent in 1996. Similarly, inshore processing facilities derived 54 percent of their product wholesale value from Bering Sea pollock in 1991, but 65 percent in 1996.

This pattern makes sense in a straight forward way. The most specialized processors, those most dependent upon a single product form (surimi), were and are those most dependent upon pollock as a raw material. Those processors with a wider range of product options were and are less dependent upon pollock, but clearly rely on it as the single most important component of their raw material mix. Also, the dynamics of the market have either forced or induced these processors to place more emphasis and reliance on pollock.

The information summarized in Table Int-10a is presented here for two reasons. First, it provides an overview of historical (1991, 1994, 1996) sector and subsector harvest and processing of Bering Sea pollock. This information is relatively self explanatory at this point and will be further referenced in specific sector discussions. Second, it can be used in combination with Table Int-11 to draw attention to the nature of the quantitative information on pollock harvest and processing available for various sectors. This information is derived from various and different sources for the different sectors, and do not necessarily result in directly comparable information. For instance, although catcher vessel harvest delivered to onshore processors (Table Int-11) should equal the amount of pollock that onshore plants report processing (Table Int-10a), the actual correspondence in the information currently available is only approximate (reported catcher vessel harvest tends to be higher than reported processing). This underscores that no number should be taken as an "absolute" value, and that trends, relative values, and other relations are better measures through which to evaluate potential effects of any proposed changes.

Table Int-8
"Dependency" Table -- Bering Sea Pollock as a Percentage (by weight) of Total Bering Sea Product

by owner management residence	1991			1994			1996		
	Total	Pollock	% Pollock	Total	Pollock	% Pollock	Total	Pollock	% Pollock
FCP VState									
Alaska	19158	2141	11%	89693	51392	57%	59618	33232	56%
Washington	239622	135572	57%	161078	80381	50%	212840	129433	61%
FCPHPST									
Alaska	19158	2141	11%	71231[a]	51122[a]	72%	59618	33232	56%
Washington	233046	135279	58%	187436	80997	43%	212840	129433	61%
SCP VState									
Alaska	117053	109881	94%	109659	107753	98%			
Washington	740284	703015	95%	555271	511800	92%	514106	468244	91%
SCP HPState									
Alaska	117053	109881	94%	109659	107753	98%	104972	80329	77%
Washington	740284	703015	95%	555271	511800	92%	409134	387915	95%
Mothership[a]	141150	140807	100%	112364	110815	99%	123301	121623	99%
Floater[a]	67644	34295	51%	63514	49004	77%	87876	70513	80%
Shore Plant[b]	463075	412159	89%	465183	409058	88%	435234	347458	80%

[a]Ownership and management in Washington, operates in Bering Sea for pollock.
[b]Ownership and administration in Washington, physically located in Alaska.

Table Int-9
"Dependency" Table -- Percentage Contribution of Selected Species Group to the Processor's Total Annual Wholesale Value

Inshore/Offshore Class	Year	Pollock	Other Groundfish	Pacific Whiting	Other
Fillet CP	1991	49	51	0	0
Fillet CP	1994	58	41	0	1
Fillet CP	1996	74	26	0	0
Surimi CP	1991	90	5	5	0
Surimi CP	1994	88	4	7	1
Surimi CP	1996	85	3	7	4
Mothership	1991	85	0	15	0
Mothership	1994	88	4	7	1
Mothership	1996	87	1	12	0
Shore Plant	1991	54	21	0	24[a]
Shore Plant	1994	67	10	0	24[a]
Shore Plant	1996	65	18	0	18[a]

[a]Primarily shellfish
Source: BSAI Pollock Sector Profiles, NPFMC staff, 09/02/97

In Table Int-10a, the percentage in each cell expresses that cells value in terms of the comparable 1991 production value. This allows some relative observations within and between sectors to be made. While the onshore sector as a whole, and shore plants in particular, experienced declines in production from 1991 to 1996, floating inshore processors had large relative increases (although their pollock processing in absolute numbers was still relatively small). Similarly in the offshore sector, which also had an overall decline in production from 1991 to 1996, surimi catcher processors had a much steeper decline than did motherships, and fillet catcher processors actually increased their level of production. This is at least one indicator that during this period of time mothership operations were able to successfully compete on some level with surimi catcher processors.

<table>
<tr><th colspan="6">Table Int-10a
Total Bering Sea Pollock Processed, by Sector and Subsector
Metric Tons (Percentage of 1991 Production)</th></tr>
<tr><th rowspan="2">Year</th><th colspan="2">Inshore</th><th colspan="3">Offshore</th></tr>
<tr><th>Shore Plants</th><th>Floating Processors</th><th>Motherships</th><th>Surimi CPs</th><th>Fillet CPs</th></tr>
<tr><td rowspan="4">1991</td><td>412159 (100%)</td><td>34295 (100%)</td><td rowspan="2">140807 (100%)</td><td>812896 (100%)</td><td>138959 (100%)</td></tr>
<tr><td colspan="2" rowspan="2">446454 (100%)</td><td colspan="2">951855 (100%)</td></tr>
<tr><td colspan="3">1092662 (100%)</td></tr>
<tr><td colspan="5">1539116 (100%)</td></tr>
<tr><td rowspan="4">1994</td><td>***</td><td>***</td><td rowspan="2">110815 (79%)</td><td>619553 (76%)</td><td>132119 (96%)</td></tr>
<tr><td colspan="2" rowspan="2">458062 (103%)</td><td colspan="2">751672 (79%)</td></tr>
<tr><td colspan="3">862487 (79%)</td></tr>
<tr><td colspan="5">1320549 (86%)</td></tr>
<tr><td rowspan="4">1996</td><td>347458 (84%)</td><td>70513 (206%)</td><td rowspan="2">121623 (86%)</td><td>468244 (58%)</td><td>162804 (117%)</td></tr>
<tr><td colspan="2" rowspan="2">417971 (94%)</td><td colspan="2">631048 (66%)</td></tr>
<tr><td colspan="3">752671 (69%)</td></tr>
<tr><td colspan="5">1170642 (76%)</td></tr>
<tr><td colspan="6">Source: Based on electronic processor file provided by the NPFMC
*** Suppressed due to confidentiality</td></tr>
</table>

Table Int-10b presents the same information in a somewhat different way. In this table the percentage expresses that I/O-3 category's pollock production level for that year as a percentage of the total pollock processing production for that year. This allows one to make the observation that although shore plants as a sector did lose production relative to their 1991 processing levels, they did maintain their relative percentage of the overall pollock production for each year. That is, they maintained their level of competitiveness in the race for fish. Also, floating processors clearly increased their share of pollock significantly. Motherships held their own or gained a bit, relative to other sectors. Fillet catcher processors also gained a larger relative share of the processing whole, while surimi catcher processors had their share of the yearly pollock production eroded. These two tables in conjunction summarize the dynamics of sector catch history from 1991 to 1996.

<table>
<tr><th colspan="6">Table Int-10b
Total Bering Sea Pollock Processed, by Sector and Subsector
Metric Tons (Percentage of Yearly Total Production)</th></tr>
<tr><th rowspan="2">Year</th><th colspan="2">Inshore</th><th colspan="3">Offshore</th></tr>
<tr><th>Shore Plants</th><th>Floating Processors</th><th>Motherships</th><th>Surimi CPs</th><th>Fillet CPs</th></tr>
<tr><td rowspan="4">1991</td><td>412159 (27%)</td><td>34295 (2%)</td><td rowspan="2">140807 (9%)</td><td>812896 (53%)</td><td>138959 (9%)</td></tr>
<tr><td colspan="2" rowspan="2">446454 (29%)</td><td colspan="2">951855 (62%)</td></tr>
<tr><td colspan="3">1092662 (71%)</td></tr>
<tr><td colspan="5">1539116 (100%)</td></tr>
<tr><td rowspan="4">1994</td><td>***</td><td>***</td><td rowspan="2">110815 (8%)</td><td>619553 (47%)</td><td>132119 (10%)</td></tr>
<tr><td colspan="2" rowspan="2">458062 (35%)</td><td colspan="2">751672 (57%)</td></tr>
<tr><td colspan="3">862487 (65%)</td></tr>
<tr><td colspan="5">1320549 (100%)</td></tr>
<tr><td rowspan="4">1996</td><td>347458 (30%)</td><td>70513 (6%)</td><td rowspan="2">121623 (10%)</td><td>468244 (40%)</td><td>162804 (14%)</td></tr>
<tr><td colspan="2" rowspan="2">417971 (36%)</td><td colspan="2">631048 (54%)</td></tr>
<tr><td colspan="3">752671 (64%)</td></tr>
<tr><td colspan="5">1170642 (100%)</td></tr>
<tr><td colspan="6">Source: Based on electronic processor file provided by the NPFMC</td></tr>
</table>

Table Int-11
Total Bering Sea Pollock Harvest by Catcher Vessels Delivering Onshore, by Vessel Length Category

1991			1994			1996		
S	M	L	S	M	L	S	M	L
226243	136205	88371	243926	169553	113544	250104	151190	81270
450819			527023			482564		

Source: Based on electronic catcher vessel file provided by the NPFMC

Table Int-12 also allows one to make some interesting observations. It displays the amount of pollock processed by each I/O-3 category of processor for 1996, by the mode of harvest of that pollock (that is, self caught or catcher vessel caught). It is the only information we have on the aggregate amount pollock harvested by catcher vessels and delivered to offshore processors (other than for motherships). Motherships and shore plants of course obtain 100 percent of their pollock from catcher vessels. In Olympic fisheries, surimi catcher processors bought 11 percent of their fish from catcher vessels, and fillet catcher processors bought 17 percent. In CDQ fisheries catcher processors essentially did not use *any* catcher vessels to harvest pollock. While this may be stating the obvious, this is a clear indication that it is the race for fish that provides the incentive for speed and capital-stuffing and, given the choice of a non-Olympic fishery context, that operators will operate in different ways. This in turn would have create reward structures for other current fishery participants that are quite different from those of the present.

Table Int-12
Open Access, CDQ, and Total Bering Sea Pollock Processed in 1996, by Sector and Subsector, by Mode of Harvest

Fishery Component or Comparison	I/O Class						
	Inshore	Mothership	Fillet CP - harvest by		Surimi CP - harvest by		Total
			Self	CV	Self	CV	
Open Access	384946	112906	103572	14024	405626	49232	1070306
CDQ	10512	9053	21869	0	51225	115	92774
Total Harvest	395458	121959	125441	14024	456851	49347	1163080
CDQ as % of Total Catch	3%	7%	17%	0%	11%	0%	8%
			16%		10%		
			11%				
CV harvest as % of							
non-CDQ	100%	100%	12%		11%		52%
CDQ	100%	100%	0%		0%		21%
Total	100%	100%	10%		10%		50%

Source: Aggregated information provided by the NPFMC, 1998.

1.6 GENERAL SIA ISSUES

There were a number of general issues or themes that emerged during the study process that will be elaborated in the body of this document. In particular, there are several issues or trends that have emerged since the previous SIA work for the Council. These will be briefly noted here. In addition, we will bullet out potential social impact effects of concern.

- There is a marked difference between participating coastal communities with respect to the role of the pollock fishery in the communities.

  - Unalaska is a major participant in the fishery with a strong presence of both the inshore and offshore sectors. The relative benefits to the community of the two different sectors is a matter of considerable debate, but clearly Unalaska is in a unique position with respect to the degree to which it has benefitted from both sectors. The flip side of this is that Unalaska, while benefitting the most from both sectors, is also the community that is featuring the most divisive debate on the inshore/offshore issue. Unalaska's direct participation is based on its proximity to the fishing grounds.

  - Seattle is also a major participant in the fishery with a strong presence of both the inshore and offshore sectors. The relative benefits to the community of the two can be debated, but clearly the offshore presence is more visible than is the onshore participation, which at times seems to be represented by management and administration as much as by physical product. As with Unalaska, Seattle interests are bitterly divided on the inshore/offshore issue. Seattle's participation is based in part on history and ownership, and on a central administrative and financial role. Seattle and the region also have a number of secondary processing plants.

  - Unalaska, Akutan, King Cove, and Sand Point all have shore plants that participate in the fishery, but the nature of the participation, and of the articulation of the operations with the communities vary. King Cove and Sand Point are more alike than they are like the other communities. Both have resident fleets, and shore plants in both communities take deliveries of pollock from non-resident vessels. Neither is a CDQ community. Akutan has a large shore plant in the community, but the village of Akutan has retained an identity distinct from the shore plant that is quite different from the plant-community relationships found in nearby Unalaska. Akutan is also a CDQ community, which Unalaska is not, though some Unalaska residents benefit from CDQ programs.