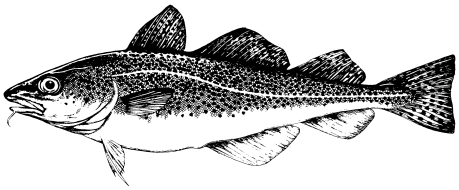
Preliminary Review Draft

ENVIRONMENTAL ASSESSMENT/REGULATORY IMPACT REVIEW/
INITIAL REGULATORY FLEXIBILITY ANALYSIS

for Proposed Amendment to the
Fishery Management Plan for Groundfish
of the Gulf of Alaska Management Area

ALLOCATION OF PACIFIC COD AMONG SECTORS IN THE WESTERN AND CENTRAL GULF OF ALASKA



Abstract: This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis analyzes the impacts of allocating the Western and Central Gulf of Alaska Pacific cod TACs among the fixed gear sectors (hook-and-line catcher processors, hook-and-line catcher vessels, pot catcher processors, ≥60' pot catcher vessels, and pot vessels <60' in length), jig sector, and trawl sectors based on recent sector catch histories. This action also includes provisions to increase the jig allocation if it is fully utilized. The proposed action is intended to provide stability and protect long-term investments of participants in the fishery by establishing sector allocations that reflect historic use of the Pacific cod resource by each sector.

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1 INTRODUCTION

The groundfish fisheries in the Exclusive Economic Zone (3 to 200 miles offshore) of the Gulf of Alaska are managed under the Gulf of Alaska Fisheries Management Plan (FMP), developed by the North Pacific Fishery Management Council under the Magnuson-Stevens Fishery Conservation and Management Act. The Gulf of Alaska FMP was approved by the Secretary of Commerce and became effective in 1978.

This document is an Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) for proposed sector allocations of the Western and Central Gulf of Alaska Pacific cod total allowable catch (TAC), which would result in an amendment to the Gulf of Alaska FMP. The proposed action would divide the TACs among the various sectors based on historic catch levels. For the purposes of this action, the sectors are defined as follows: pot catcher vessels, pot catcher processors, hook-and-line catcher vessels, hook-and-line catcher processors, trawl catcher vessels, trawl catcher processors, and jig catcher vessels, with options to further divide sectors by vessel length and by inshore and offshore processing components.

An environmental assessment is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the proposed action will result in a significant impact on the human environment. If the action is determined not to be significant based on an analysis of the relevant considerations, the EA and 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.

The purpose of the EA is to analyze the environmental impacts of the proposed Federal action to apportion the Western and Central GOA Pacific cod TACs among the gear sectors based on historic catch levels. The human environment is defined by the Council on Environmental Quality as the natural and physical environment and the relationships of people with that environment (40 CFR 1508.14). This means that economic or social effects are not intended by themselves to require preparation of an EA. However, when an EA is prepared and socio-economic and natural or physical environmental impacts are interrelated, the EA must discuss all of these impacts on the quality of the human environment. NEPA requires a description of the purpose and need for the proposed action as well as a description of alternatives which may address the problem. This information is included in **Chapter 1** of this document. **Chapter 2** contains a description of the affected human environment and information on the impacts of the alternatives on that environment, specifically addressing potential impacts on endangered species and marine mammals and cumulative effects**.**

Executive Order 12866 (E.O. 12866) requires preparation of a Regulatory Impact Review (RIR) to assess the social and economic costs and benefits of available regulatory alternatives, in order to determine whether a proposed regulatory action is economically "significant" as defined by the order. This analysis is included in **Chapter 3. Chapter 4** addresses the requirements of other applicable laws, including the Magnuson Stevens Act, Marine Mammal Protection Act, and Regulatory Flexibility Act (RFA). The RFA requires an analysis of potential adverse economic impacts to small entities that would be directly regulated by the proposed action. The references and literature cited are in **Chapter 5**, the list of preparers is in **Chapter 6**, and the list of agencies and individuals consulted is in **Chapter 7**.

1.1 Purpose and Need for the Action

1.1.1 Background

Management of the Gulf of Alaska groundfish fisheries has become increasingly complex as a result of Steller sea lion protection measures, increased participation by vessels displaced from other fisheries, and requirements to reduce bycatch under the Magnuson-Stevens Act (MSA). These factors have made achieving the goals set by the National Standards in the MSA difficult, and have had significant adverse social and economic impacts on harvesters, processors, crew, and communities that depend on the GOA fisheries. As a result, in 1999 the Council began developing a package of measures to rationalize the Gulf of Alaska groundfish fisheries. At its April 2003 meeting, the Council adopted a motion defining preliminary alternatives for rationalizing the Gulf of Alaska groundfish fisheries. During 2003 through 2006, the Council worked to develop and refine these alternatives. However, in December 2006, the Council elected to delay further consideration of the comprehensive rationalization program. Instead, the Council decided to proceed with the more discrete issues of allocating the Pacific cod resource to the various gear sectors and limiting future entry to the Gulf groundfish fisheries by extinguishing latent LLP licenses.

At its February 2007 meeting, the Council reviewed a discussion paper that outlined the goals, objectives, elements, and options for dividing the Gulf of Alaska Pacific cod TACs among various sectors and removing latent licenses from fisheries in the Gulf. After reviewing the discussion paper, the Council decided to address these issues through separate actions and take further public testimony before developing a statement of purpose and need and alternatives for consideration. In April 2007, the Council adopted a problem statement and outlined draft components and options for establishing Gulf Pacific cod sector allocations.

1.1.2 Purpose and Need Statement

The Gulf of Alaska Pacific cod resource is targeted by multiple gear and operation types, principally by pot, trawl, and and hook-and-line catcher vessels and hook-and-line catcher processors. Smaller amounts of cod are taken by other sectors, including catcher vessels using jig gear. Separate TACs are identified for Pacific cod in the Western, Central, and Eastern Gulf of Alaska management subareas, but the TACs are not divided among gear or operation types. This results in a derby-style race for fish and competition among the various gear types for shares of the TAC. To address these issues, the Council adopted the following problem statement in April 2007:

Gulf of Alaska Pacific Cod Sector Split Purpose and Need Statement

The limited access derby-style management of the Western Gulf and Central Gulf Pacific cod fisheries has led to competition among the various gear types (trawl, hook-and-line, pot, and jig) and operation types (catcher processor and catcher vessel) for shares of the total allowable catch (TAC). Competition for the GOA Pacific cod resource has increased for a variety of reasons, including increased market value of cod products, rationalization of other fisheries in the BSAI and GOA, increased participation by fishermen displaced from other fisheries, a reduced federal TAC due to the state waters cod fishery, and Steller sea lion mitigation measures including the A/B seasonal split of the GOA Pacific cod TAC. The competition among sectors in the fishery may contribute to higher rates of bycatch, discards, and out-of-season incidental catch of Pacific cod.

Participants in the fisheries who have made long-term investments and are dependent on the fisheries face uncertainty as a result of the competition for catch shares among sectors. Allocation of the catch among sectors would reduce this uncertainty and contribute to stability across the sectors. Dividing the TAC among sectors may also facilitate development of management measures and fishing practices to address Steller Sea lion mitigation measures, bycatch reduction, and prohibited species catch (PSC) mortality issues.

The proposed action would divide the Western and Central Gulf of Alaska Pacific cod TACs among gear and operation types based on historic dependency and use by each sector. This action would enhance stability in the fishery, reduce competition among sectors, and preserve the historic distribution of catch among sectors. Without sector allocations, future harvests by some sectors may increase and impinge on the historic levels of catch by other sectors.

For example, some non-trawl participants believe that the relatively high catching power of the trawl fleet has limited their ability to maintain their historic catch levels in the Pacific cod fishery. Sector allocations would stabilize the proportion of the catch taken by each sector, allowing participants to better plan their operations. Another concern expressed by some participants is that larger boats, both trawl and non-trawl, are more capable of fishing during the winter months (January/February) of the A season. Entry level opportunities for smaller vessels may be limited if larger vessels are able to quickly catch the entire TAC. The proposed action contains options to further divide the catcher processor and pot catcher vessel sectors by vessel length to ensure that smaller boats have a stable allocation. Finally, some participants are concerned that catcher processors fishing the inshore TACs have the potential to increase their catch and impinge on catcher vessel harvest shares. The Council is considering options to create inshore catcher processor allocations to protect harvest shares of inshore participants.

While sector allocations may reduce competition among sectors and protect historic catch levels, sector allocations alone may not slow down the race for fish, reduce bycatch, increase product quality, or have a substantial effect on the number of participating vessels. Sector allocations may be a first step toward stabilizing the GOA Pacific cod fishery, and may enable the Council to begin developing a series of Gulf of Alaska management measures to address Steller sea lion issues, halibut PSC usage, and bycatch reduction.

1.2 Alternatives Considered

This section identifies the alternatives and options for consideration under the proposed action. **Alternative 1** is the status quo alternative. **Alternative 2** would allocate the Western and Central Gulf of Alaska Pacific cod TACs among the trawl, pot, hook-and-line, and jig catcher vessel and catcher processor sectors based on historic catch levels and other considerations, and includes the following components:

Component 1: Areas for which allocations will be established
Component 2: Sectors for which allocations will be established
Component 3: Definitions of qualifying catch
Component 4: Years included for purposes of determining catch history
Component 5: Jig allocation of Pacific cod
Component 6: Apportionment of Pacific cod to meet incidental catch needs
Component 7: Rollover provisions among sectors

ALTERNATIVE 1. **No Action.** The Gulf of Alaska Pacific cod TACs would not be allocated to the various gear and operation types.

ALTERNATIVE 2. Allocate the Western and Central Gulf of Alaska Pacific cod TACs to the trawl, pot, hook-and-line, and jig catcher vessel and catcher processor sectors based on catch history or other criteria**.**

Component 1: Areas for which allocations will be established
The Western and Central Gulf of Alaska Pacific cod TACs will be allocated among the various gear and operation types, as defined in Component 2.

Component 2: Sectors for which allocations will be established
The Western and Central GOA Pacific cod TACs will be allocated among the following sectors:

- Trawl catcher processors
- Trawl catcher vessels
- Hook-and-line catcher processors
- Hook-and-line catcher vessels
- Pot catcher processors
- Pot catcher vessels
- Jig vessels
- Inshore trawl catcher processors
- Inshore hook-and-line catcher processors
- *Or* Single Inshore catcher processor allocation

Additional divisons could include:

- Pot catcher vessels <60 ft
- Pot catcher vessels ≥60 ft
- All catcher processors <125 ft
- All catcher processors ≥125 ft

Component 3: Definition of qualifying catch
The Council identified three options for defining qualifying catch:

Option 1 All retained legal catch of Pacific cod in the federal and parallel waters fisheries in the Western and Central Gulf of Alaska.
Option 2 All retained legal catch of Pacific cod in the federal and parallel waters fisheries in the Western and Central Gulf of Alaska, excluding meal.
Option 3 All retained Pacific cod harvested during the directed federal fisheries in the Western and Central Gulf, excluding meal.

Under all options, allocations to the trawl sectors will deduct incidental catch allocated to the trawl sector for the Central Gulf Rockfish program.

Component 4: Years included for purposes of determining catch history
The Council identified four options:

Option 1 Qualifying years 1995-2005: average of best 5 years
Option 2 Qualifying years 1995-2005: average of best 7 years
Option 3 Qualifying years 2000-2006: average of best 3 years
Option 4 Qualifying years 2000-2006: average of best 5 years

Component 5: Allocation of Pacific cod to jig sector

Options include setting aside 1%, 3%, 5%, or 7% of the Western and Central GOA Pacific cod TACs for the jig catcher vessel sector, with a stairstep provision to increase the TACs if 90% of the allocation is fished.

The jig allocation could be set aside from the A season TAC, the B season TAC, or divided between the A and B season TACs.

Component 6: Apportionment of Pacific cod to meet incidental catch needs[1]

Option 1 Reserve the amount of Pacific cod needed to support incidental catch of cod in all other directed Gulf of Alaska fisheries off the top before allocating to the sectors; or

Option 2 Give each sector separate incidental catch allocations, and sectors will be responsible for their own incidental catch needs.

Component 7: Rollover provisions among sectors

The trawl catcher processor (CP) and catcher vessel (CV) allocations would become available to other sectors when the final trawl halibut PSC apportionment is reached. The final trawl halibut PSC apportionment becomes available on October 1st.

1. The trawl CV allocation would become available to other CV sectors.
2. The trawl CP allocation would become available:
    a) To other CP sectors, or
    b) To both CP and CV sectors, but CV catch accounts to CV allocations first, and when those allocations are fully used, they would begin accounting to the trawl CP allocation.

The hook-and-line CP and CV allocations would become available to other sectors when the final hook-and-line halibut PSC apportionment is reached. The final trawl halibut PSC apportionment becomes available on September 1st.

1. The hook-and-line CV allocation would become available to other CV sectors.
2. The hook-and-line CP allocation would become available:
    (a) To other CP sectors, or
    (b) To both CP and CV sectors, but CV catch accounts to CV allocations first, and when those allocations are fully used, they would begin accounting to the hook-and-line CP allocation.

Any quota not caught by the CV sector by November 1, November 15, or December 1 would become available to either:

1. All CV sectors
2. All sectors

Any quota not caught by the CP sector by November 1, November 15, or December 1 would become available to either:

1. All CP sectors
2. All sectors

The jig sector's allocation would become available to other sectors on:

1. August 1
2. September 1, or
3. October 1

[1] Under regulation, 20 percent of the TAC of each Gulf species (including Pacific cod) can be held in reserve for later allocation to accommodate bycatch. In recent years, NOAA fisheries has not set aside a separate incidental catch allowance for cod, and has instead included the reserves as part of the GOA Pacific cod TACs.

1.3 Proposed changes to the Gulf of Alaska FMP

The proposed action would result in an amendment to the Gulf of Alaska Fisheries Management Plan (FMP) and 50 CFR 679.20(a)(11). This action would require changing language in the following sections of the FMP:

ES-3	Executive Summary
p. 18	Section 3.2.6.3.2 Management Measures of GOA Groundfish Fisheries
p. 50	Section 4.1.2.2 Pacific cod
Appendix A	Summary of Gulf of Alaska Amendment XX

1.4 Consistency with the Problem Statement

The alternatives under consideration are consistent with the problem statement. Under the no action alternative, the Western and Central Gulf of Alaska Pacific cod fisheries will continue to be managed on a fleet-wide basis. The problem identified is that participants who have made significant long-term investments, have extensive catch histories, and are highly dependent on the Gulf Pacific cod fisheries need stability in the form of sector allocations. Without sector allocations, future harvests by some sectors may increase and impinge on historic levels of catch by other sectors.

The intent of the proposed action is to establish direct allocations for each gear sector in the GOA Pacific cod fishery based on historic catch levels. The problem statement notes that dividing the TAC among sectors may also facilitate the future development of management measures to address Steller Sea lion mitigation issues, bycatch reduction, and PSC mortality issues.

2 ENVIRONMENTAL ASSESSMENT

The purpose of this environmental assessment (EA) is to analyze the environmental impacts of the proposed Federal action to allocate the Central and Western Gulf of Alaska Pacific cod TACs among the various gear and operation types. An EA is intended to provide sufficient evidence of whether or not the environmental impacts of the action are significant (40 CFR 1508.9).

The purpose and need statement for this action and a description of the alternatives and options are included in Chapter 1. This chapter analyzes the alternatives for their effects on the biological, physical, and human environment. Each section discusses the environment that would be affected by the alternatives and then describes the impacts of the alternatives. The following components of the environment are discussed: the Pacific cod fishery, other groundfish and prohibited species caught incidentally in the Pacific cod target fishery, seabirds and marine mammals, benthic habitat, essential fish habitat, the ecosystem, and economic impacts and management considerations, and cumulative effects.

The criteria listed in Table 2-1 are used to evaluate the significance of impacts. If significant impacts are likely to occur, preparation of an Environmental Impact Statement (EIS) is required. Although economic and soci-economic impacts must be evaluated, such impacts by themselves are not sufficient to require the preparation of an EIS (see 40 CFR 1508.14).

Table 2-1. Criteria Used to Evaluate the Alternatives.

Component	Criteria
Fish species	An effect is considered to be significant if it can be reasonably expected to jeopardize the sustainability of the species or species group.
Habitat	An effect is considered to be significant if it exceeds a threshold of more than minimal and not temporary disturbance to habitat.
Seabirds and marine mammals	An effect is considered to be significant if it can be reasonably expected to alter the population trend outside the range of natural variation.
Ecosystem	An effect is considered to be significant if it produces population-level impacts for marine species, or changes community- or ecosystem-level attributes beyond the range of natural variability for the ecosystem.

2.1 Pacific Cod

Pacific cod (*Gadus macrocephalus)* is widely distributed in the Gulf of Alaska (GOA) and occurs at depths from shoreline to 500 m (Thompson et al. 2006). Pacific cod are moderately fast growing, and females reach 50% maturity at approximately 5.8 years old. Spawning occurs during January through April in the Gulf of Alaska. Cod are demersal and concentrate on the shelf edge and upper slope at depths of 100-250 m in the winter, and move to shallower waters (<100 m) in the summer.

The Pacific cod resource is managed under three discrete TACs in the Gulf of Alaska: the Western Gulf TAC, the Central Gulf TAC, and the Eastern Gulf TAC. In addition, the GOA Pacific cod TACs are divided between the A season (60 percent) and B season (40 percent), and apportioned to the inshore processing component (90 percent) and offshore component (10 percent). Historically, the majority of the GOA Pacific cod catch has come from the Central and Western Gulf management subareas. Final 2006 harvest specifications apportioned 55% of the GOA TAC to the Central Gulf (28,405 mt) and 39% to the Western Gulf (20,141 mt). Table 2-2 provides a history of acceptable biological catch (ABC), total allowable catch (TAC), and actual catch of Pacific cod in the federal and state fisheries in the Gulf of Alaska from 1985 to 2006. From 1989 to 1996, the Federal TAC was set at 100% of the acceptable

biological catch (ABC). The Federal TAC has been set below the ABC since 1997 to accommodate the State waters Pacific cod fishery. Total catch in the federal and state Pacific cod fisheries averaged 88% of the ABC from 1997 to 2006.

Table 2-2. Total catch in the Federal and State GOA Pacific cod fisheries, total allowable catch (TAC) for the Federal fishery, and acceptable biological catch (ABC), 1985-2005.

Year	Federal catch	Federal TAC	Percentage of TAC harvested	State catch	Total catch	ABC	Percentage of ABC harvested
1985	14,428	60,000	24.0	n/a	14,428	n/a	n/a
1986	25,012	75,000	33.3	n/a	25,012	136,000	18.4
1987	32,939	50,000	65.9	n/a	32,939	125,000	26.4
1988	33,802	80,000	42.3	n/a	33,802	99,000	34.1
1989	43,293	71,200	60.8	n/a	43,293	71,200	60.8
1990	72,517	90,000	80.6	n/a	72,517	90,000	80.6
1991	76,328	77,900	98.0	n/a	76,328	77,900	98.0
1992	80,747	63,500	127.2	n/a	80,747	63,500	127.2
1993	56,487	56,700	99.6	n/a	56,487	56,700	99.6
1994	47,484	50,400	94.2	n/a	47,484	50,400	94.2
1995	68,985	69,200	99.7	n/a	68,985	69,200	99.7
1996	68,384	65,000	105.2	n/a	68,384	65,000	105.2
1997	68,492	69,115	99.1	8,543	77,016	81,500	94.5
1998	62,101	66,060	94.0	10,404	72,523	77,900	93.1
1999	68,607	67,835	101.1	13,171	81,785	84,400	96.9
2000	54,492	58,715	92.8	12,031	66,560	76,400	87.1
2001	41,614	52,110	79.9	9,920	51,541	67,800	76.0
2002	42,345	44,230	95.7	12,137	54,482	57,600	94.6
2003	41,270	40,540	101.8	11,460	52,497	52,800	99.4
2004	43,183	48,033	89.9	12,921	56,194	62,810	89.5
2005	35,031	44,433	78.8	12,385	47,416	58,100	81.6
2006	37,787	52,264	72.3	9,859	47,646	68,859	69.2

Source: 2006 Groundfish SAFE Report, Pacific cod stock assessment (Thompson et al., 2006), and NMFS Blend and Catch Accounting databases (1995-2006 federal catch).

Changes in the abundance of major predator or prey species may affect Pacific cod abundance and recruitment. Pacific cod prey on polychaetes, amphipods, crangonid shrimp, walleye pollock, fishery offal, yellowfin sole, and crustaceans. Predators of Pacific cod include Pacific cod, halibut, salmon shark, northern fur seals, Steller sea lions, harbor porpoises, various whale species, and tufted puffin.

Effects of the proposed action depend to some extent on current and future abundance of the Pacific cod stock. Model projections indicate that the Pacific cod stock is not overfished. However, total allowable catch is projected to decline over the next several years due to below average recruitment levels during a series of recent years. A comprehensive description of recent survey data and biomass projections is available in the groundfish SAFE report (NMFS 2006a).

Effects of the Alternatives

Current management of the GOA Pacific cod fishery was analyzed in detail in the Groundfish PSEIS (NOAA 2004a). This analysis is updated annually during the harvest specifications process for the groundfish fisheries (NMFS 2006a). These analyses concluded that the Pacific cod stock is currently

being managed at a sustainable level, and that the probability of overfishing occurring is low. The status quo management of Pacific cod is not expected to have a significant impact on the long-term sustainability of the GOA Pacific cod stock.

The proposed action would divide the GOA Pacific cod TACs among the various gear and operation types based on the average annual harvest share by each sector. In effect, Alternative 2 would not change the status quo apportionment of Pacific cod among sectors. The proposed action would not change the annual harvest specifications process, which sets TACs at appropriate levels to prevent the stock from being overfished.. As a result, the proposed action is not expected have a significant effect on the sustainability of the Pacific cod stock.

2.2 Incidental catch in the Pacific Cod target fishery

Incidental catch of groundfish and other species in the GOA Pacific cod target fisheries is summarized by season and gear type in Table 2-3. Incidental catch was averaged across the period from 2003 to 2006. Pot and jig vessels have little incidental catch of other species while fishing for Pacific cod. Hook-and-line vessels have a somewhat higher incidental catch rate, and trawl vessels, which participate in multiple directed fisheries in the Gulf, have the highest incidental catch rates.

Table 2-3. Average catch composition of Pacific cod target fisheries (mt) by season and gear, including percent retained, during 2003-2006.

Sector	Season	Pacific Cod			Flatfish		Rockfish		Roundfish		Skate, Squid, and Other species		Total[2]
		Mt	Percent Retained	Pacific cod catch as percent of total	Mt	Percent Retained	Mt	Percent Retained	Mt	Percent Retained	Mt	Percent Retained	
HAL CP	A	2,677	98	90	7	30	8	12	133	28	150	29	2,975
HAL CP	B	993	99	78	4	13	24	26	187	43	73	47	1,280
HAL CV	A	3,682	99	88	2	0	2	67	358	34	130	12	4,174
HAL CV	B	1,135	100	95	0	n/a	1	100	60	100	1	100	1,196
Jig CV	A	132	100	95	0	76	1	97	1	98	5	3	138
Jig CV	B	53	100	98	0	n/a	1	100	0	100	0	n/a	54
Pot CP	A	179	98	98	0	n/a	0	n/a	1	0	3	100	183
Pot CP	B	71	100	96	0	n/a	0	n/a	0	n/a	3	100	74
Pot CV	A	10,390	99	97	5	1	7	3	15	10	285	22	10,702
Pot CV	B	3,568	99	97	1	2	12	1	10	11	75	46	3,666
Trawl CP	A	62	99	30[3]	84	54	5	56	52	13	6	30	208
Trawl CP	B	342	96	30	82	76	72	26	597	26	36	73	1,128
Trawl CV	A	8,360	97	89	367	68	86	14	461	33	89	34	9,364
Trawl CV	B	3,118	99	87	200	77	0	41	231	28	18	7	3,568

[1]Roundfish includes pollock, sablefish, and Atka mackerel.

[2]Total catch includes retained and discarded catch.

[3]NMFS determines target species based on total retained catch. Here, Pacific cod catch is reported as percent of total catch, which includes both retained and discarded catch. Thus, Pacific cod comprises only 30 percent of total catch, but is the dominant retained species.

Source: NMFS Catch Accounting database, 2003-2006. Prohibited species catch is not included.

Incidental catch of skates, "other species", and non-specified species during 2005 and 2006 is summarized in Table 2-4. The "other species" management category is comprised of octopus, squid, sculpins, and sharks, and is managed under a single TAC in the GOA. Species in the "other species" category cannot be targeted, and are only taken incidentally during other directed fisheries. Information on "other species" and non-specified species is derived from observer data. A complete account of incidental catch in the Pacific cod target fisheries since 1997 is included in the Pacific cod chapter of the GOA Stock Assessment and Fishery Evaluation report (Thompson et al. 2006).

Table 2-4. Incidental catch (mt) of skates, 'other species' and non-specified species in the Gulf of Alaska Pacific cod target fisheries, 2004- 2005.

Gear	Species group	Catch		Proportion	
		2004	2005	2004	2005
Hook-and-line	Skates	472	108	0.21	0.06
	Sea Star	246	170	0.23	0.17
	Large sculpins	129	49	0.20	0.09
	Sharks	13	10	0.11	0.04
	Other sculpins	7	7	0.14	0.15
	Misc fish	6	2	0.02	0.01
	Octopus	1	0	0.01	0.00
	Sea Anemone	1	0	0.09	0.02
	Greenlings	1	1	0.06	0.16
	Sponge	0	1	0.07	0.34
Trawl	Misc fish	108	35	0.36	0.11
	Skates	49	26	0.02	0.01
	Large sculpins	20	88	0.03	0.16
	Sea Star	9	3	0.01	0.00
	Other sculpins	5	0	0.09	0.00
	Sharks	5	7	0.04	0.03
	Greenlings	5	0	0.36	0.03
	Octopus	3	0	0.02	0.00
	Sea Anemone	1	0	0.06	0.00
Pot	Sea Star	756	748	0.71	0.73
	Large sculpins	262	157	0.41	0.28
	Octopus	135	88	0.86	0.96
	Other sculpins	7	8	0.15	0.18
	Greenlings	1	0	0.04	0.04
	Skates	0	1	0.00	0.00

Source: 2006 Groundfish SAFE Report, Pacific cod stock assessment (Thompson et al., 2006).

In the hook-and-line fishery, skates, large sculpins, other sculpins, sharks, and sea stars comprise the majority of the other and non-specified species bycatch. The pot fishery catches the majority of the octopus bycatch in the Gulf of Alaska, and the trawl fishery catches much of the miscellaneous fish species catch. It is not possible to determine whether the 'other species' complex is overfished or whether it is approaching an overfished condition. However, even though the complex is managed under a single ABC and TAC, the 'other species complex' stock assessment recommended ABCs for each species group. Catch in 2005 did not exceed these ABC recommendations (NMFS 2006a).

Incidental catch of halibut during the GOA Pacific cod fisheries is discussed in detail in Chapter 3. Prohibited species catch limits for halibut apply to the hook-and-line and trawl sectors and constrain

incidental catch levels. Attainment of these seasonal limits often closes the trawl fishery, particularly during the B season, and occasionally closes the hook-and-line fishery. Halibut PSC seasonal apportionments for the Gulf of Alaska are described in Table 3-16. Halibut mortality rates during the directed Gulf of Alaska Pacific cod fisheries, reported by sector, are summarized in Tables 3-17 and 3-18.

Effects of the Alternatives

Incidental catch of other groundfish species during the directed GOA Pacific cod fishery is counted toward the TAC for that species or species group. Groundfish stocks are assessed annually and are managed using conservative catch quotas. The Groundfish PSEIS (NOAA 2004a) and the Harvest Specifications Environmental Assessment (NMFS 2006d) both conclude that the groundfish species caught incidentally during the directed GOA Pacific cod fishery are currently at sustainable population levels and are unlikely to be overfished under the current management program. As a result, impacts on these species under the status quo alternative are not likely to be significant.

The proposed action is not expected to result in significant changes in incidental catch levels. Sector allocations will reflect the current distribution of catch among the gear sectors. Overall levels of fishing effort by each gear sector, and the timing and location of fishing activities, are not expected to change under the proposed action. Consequently, effects on populations of the species caught incidentally to Pacific cod are not expected to be significant.

2.3 Marine Mammals

Marine mammals occur in diverse habitats in the GOA, and include both resident and migratory species. Marine mammal species that occur in the GOA are listed below (NOAA 2004b). The Groundfish PSEIS (NOAA 2004a) provides descriptions of the range, habitat, diet, abundance, and population status for these marine mammals. Annual stock assessment reports prepared by the National Marine Mammal Laboratory provide population estimates, population trends, and estimates of potential biological removals (Angliss and Outlaw 2006).

NMFS Managed Species

Pinnipeds: Steller sea lion (Western U.S., Eastern U.S.), Northern fur seal (Eastern Pacific), Harbor seal (Southeast Alaska, Gulf of Alaska, Bering Sea), Spotted seal (Alaska), Bearded seal (Alaska), Ringed seal (Alaska), Ribbon seal (Alaska).

Cetaceans: Beluga Whale (Beaufort Sea, Eastern Chukchi Sea, Eastern Bering Sea, Bristol Bay, Cook Inlet), Killer whale (Eastern North Pacific Northern Resident, Eastern North Pacific transient), Pacific White-sided dolphin (North Pacific), Harbor porpoise (Southeast Alaska, Gulf of Alaska), Dall's porpoise (Alaska), Sperm whale (North Pacific), Baird's beaked whale (Alaska), Cuvier's beaked whale (Alaska), Stejneger's beaked whale (Alaska), Gray whale (Eastern North Pacific), Humpback whale (Western North Pacific, Central North Pacific), Fin whale (Northeast Pacific), Minke whale (Alaska), North Pacific right whale (North Pacific)

USFWS Managed Species

Northern sea otter (Southeast Alaska, Southcentral Alaska, Southwest Alaska), Pacific walrus (Alaska)

Direct and indirect interactions between marine mammals and the groundfish fisheries result from temporal and spatial overlap between commercial fishing activities and marine mammal occurrence. Direct interactions include injury or mortality due to entanglement in fishing gear. Indirect interactions include overlap in the size and species of groundfish important both to the fisheries and to marine mammals as prey. The GOA Pacific cod target fisheries are classified as Category III fisheries under the

Marine Mammal Protection Act. Category III fisheries are unlikely to cause mortality or serious injury to more than 1 percent of the marine mammal's potential biological removal level, calculated on an annual basis (50 CFR 229.2). Taking of marine mammals is monitored by the North Pacific observer program.

Marine mammals listed under the Endangered Species Act (ESA) that may be present in the GOA are listed in Table 2-5. All of these species are managed by NMFS, with the exception of Northern Sea Otter, which is managed by U.S. Fish and Wildlife Service. A Biological Opinion evaluating impacts of the groundfish fisheries on the endangered species managed by NMFS was completed in November 2000 (NMFS 2000). The western population segment of Steller sea lions was the only ESA-listed species identified as likely to be adversely affected by the groundfish fisheries. A new Section 7 consultation was initiated in 2006. NMFS is also currently consulting with USFWS on the distinct southwest Alaska population of northern sea otters.

Table 2-5. ESA-listed marine mammal species that occur in the Gulf of Alaska.

Common Name	Scientific Name	ESA Status
Steller Sea Lion (Western Population)	*Eumetopias jubatus*	Endangered
Steller Sea Lion (Eastern Population)	*Eumetopias jubatus*	Threatened
Blue Whale	*Balaenoptera musculus*	Endangered
Fin Whale	*Balaenoptera physalus*	Endangered
Humpback Whale	*Megaptera novaeangliae*	Endangered
Right Whale	*Balaena glacialis*	Endangered
Sei Whale	*Balaenoptera borealis*	Endangered
Sperm Whale	*Physeter macrocephalus*	Endangered
Northern Sea Otter	*Enhydra lutris*	Threatened

A Biological Opinion addressing Steller sea lion management issues was completed in 2001 (NMFS 2001b), and found that the under the new suite of protection measures, the GOA groundfish fisheries were unlikely to jeopardize the continued existence of the western population of Stellar sea lions or adversely modify critical habitat. Protection measures include area-specific closures around rookeries and haulouts and seasonal divisions of TACs to disperse fishing effort throughout the year. The Pacific cod fishing season was divided into two periods: 60 percent of the TAC was allocated to the A season (Jan. 1 – June 10) and 40% to the B season (June 10 – Dec. 31). The objective was to limit the total amount of cod harvested in the first half of the year. Pacific cod is one of the four most important prey items of Steller sea lions and is especially important to sea lions during winter (Sinclair and Zeppelin 2002).

Since 2000, the western population of Steller sea lions has been increasing. However, the 2004 count (38,988 animals) was still 7.4% lower than the 1996 count and 32.6% lower than the 1990 count. In the Gulf of Alaska, the 2004 count (9,005 animals) was 12.6% higher than the 2000 count (7,995 animals), but was 45.1% lower than the 1990 count. Annual counts at haulouts and rookeries represent a minimum population estimate and are not corrected to account for animals that were at sea during the surveys (Angliss and Outlaw 2006).

Incidental mortality of Steller sea lions during the GOA Pacific cod target fisheries is summarized in Table 2-6. No incidental mortalities were observed in the fixed gear sectors. The GOA Pacific cod trawl fishery contributes an estimated 4% of the total annual mortality to the western population of Steller sea lions attributed to commercial fisheries. The minimum estimate of incidental mortality due to commercial fishing activities in all waters off Alaska is 24.6 sea lions per year, which is slightly more than 10 percent of the allowable level (234 animals) of removal for this stock (Angliss and Outlaw 2006).

Table 2-6. Incidental mortality of Steller sea lions in the Gulf of Alaska Pacific cod target fisheries from 2000 through 2004 and estimate of the mean annual mortality rate, based on observer data.

Fishery	Years	Observer coverage	Observed mortality	Estimated mortality	Mean annual mortality
GOA Pacific cod trawl	2000	13.5	0	0	0.48
	2001	20.3	1	4.7	(CV = 0.96)
	2002	23.2	0	0	
	2003	27.3	0	0	
	2004	27.0	0	0	

Source: Angliss and Outlaw 2006.
Note: No Steller sea lion mortality was observed in other GOA Pacific cod sectors during 2000-2004.

Effects of the Alternatives on Marine Mammals

Impacts of the GOA Pacific cod fishery on Steller sea lions were analyzed in the Programmatic SEIS (NOAA 2004a) and in the 2001 Biological Opinion. Current management practices were found to have no adverse impacts on marine mammals, including Steller sea lions. As a result, the status quo alternative is not expected to have asignificant impact on Steller sea lions or other marine mammals.

The proposed action would allocate the Western and Central GOA Pacific cod TACs based on historic catch levels by each sector. The timing, location, and overall level of fishing effort in the GOA Pacific cod fishery is not expected to change, and there will be no changes in the harvest specifications process. Annual mortality of Steller sea lions is not expected to change under the proposed action, because fishing effort by the various gear sectors will remain similar to the status quo. Sector allocations will continue to be divided into seasonal apportionments to disperse fishing effort throughout the year.

2.4 Seabirds

Various species of seabirds occur in the Gulf of Alaska, including resident and migratory species that nest in Alaska and migratory species that only occur in Alaska outside of the breeding season. A list of species is provided below.[2] The Groundfish PSEIS (NOAA 2004a) provides descriptions of the range, habitat, diet, abundance, and population status for these seabirds.

Species nesting in Alaska
Tubenoses-Albatrosses and relatives: Northern Fulmar, Fork-tailed Storm-petrel, Leach's Storm-petrel
Kittiwakes and terns: Black-legged Kittiwake, Red-legged Kittiwake, Arctic Tern, Aleutian Tern
Pelicans and cormorants: Double-crested Cormorant, Brandt's Cormorant, Pelagic Cormorant, Red-faced Cormorant
Jaegers and gulls: Pomarine Jaeger, Parasitic Jaeger, Bonaparte's Gull, Mew Gull, Herring Gull, Glaucous-winged Gull, Glaucous Gull, Sabine's Gull
Auks: Common Murre, Thick-billed Murre, Black Guillemot, Pigeon Guillemot, Marbled Murrelet, Kittlitz's Murrelet, Ancient Murrelet, Cassin's Auklet, Parakeet Auklet, Least Auklet, Wiskered Auklet, Crested Auklet, Rhinoceros Auklet, Tufted Puffin, Horned Puffin

[2]Source: (USFWS web site "Seabirds. Species in Alaska. Accessed at http://alaska.fws.gov/mbsp/mbm/seabirds/species.htm on August 31, 2007).

Species that visit Alaska waters

Tubenoses: Short-tailed Albatross, Black-footed Albatross, Laysan Albatross, Sooty Shearwater, Short-tailed Shearwater

Gulls: Ross's Gull, Ivory Gull

The Northern Fulmar accounts for the majority of incidental seabird take in the groundfish fisheries, and is one of the most abundant species breeding in Alaska. The hook-and-line sector causes most of this take. Three ESA-listed species occur in waters off Alaska (see Table 2-7), and Kittlitz's Murrelet is a candidate species for listing under the ESA. The U.S. Fish and Wildlife Service (USFWS) has primary responsibility for managing seabirds, and has evaluated effects of the BSAI and GOA FMPs and the harvest specifications process on currently listed species in two Biological Opinions (USFWS 2003a and 2003b). Both Biological Opinions concluded that the groundfish fisheries, including the GOA Pacific cod fishery, are unlikely to jeopardize populations of listed species or adversely modify or destroy critical habitat for listed species.

Table 2-7. ESA-listed and candidate seabird species that occur in the management area.

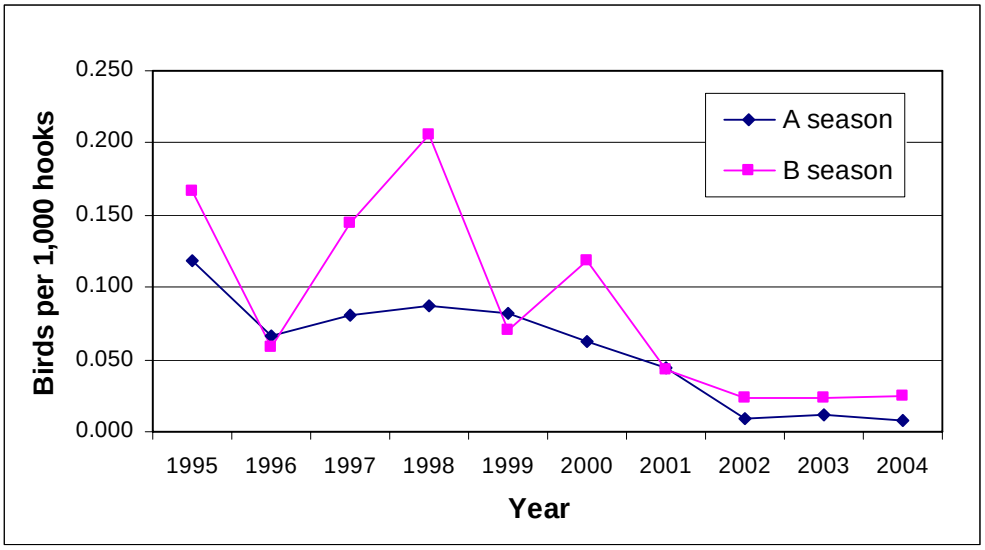
Common Name	Scientific Name	ESA Status
Short-tailed Albatross	*Phoebaotria albatrus*	Endangered
Steller's Eider	*Polysticta stelleri*	Threatened
Spectacled Eider	*Somateria fishcheri*	Threatened
Kittlitz's Murrelet	*Brachyramphus brevirostris*	Candidate

The Pacific cod fishery has direct and indirect impacts on seabirds. Seabird take is the primary direct effect of fishing operations. Seabirds are taken in the hook-and-line fisheries in two ways. While hooks are being set, seabirds attracted to the bait may become entangled in fishing lines. Seabirds are also caught directly on baited hooks. Seabirds are taken in the trawl fisheries when they are attracted by offal or discarded fish and become entangled in fishing gear. Hook-and-line and trawl gear accounts for most seabird take in the groundfish fisheries.

Indirect effects include impacts to food sources. The Pacific cod fishery may reduce the biomass of prey species available to seabird populations. Fishing gear may disturb benthic habitat used by seabirds that forage on the seafloor and reduce available prey. Bottom trawl gear is the primary source of benthic habitat disturbance in the groundfish fisheries. Fishing activities may also create feeding opportunities for seabirds, for example when catcher processors discard offal.

Hook-and-line gear accounts for the majority of seabird take in the North Pacific groundfish fisheries. Depending on which estimates are used, hook-and-line gear accounts for either 65% or 94% of seabird bycatch in the BSAI and GOA combined (Fitzgerald et al. 2006). Seabird bycatch by the GOA hook-and-line fisheries consists of 46% fulmars, 34% albatrosses, 12% gull species, 5% unidentified seabirds, 2% shearwater species, and <1% 'all other' species (Fitzgerald et al. 2006). Most bycatch of Black-footed Albatross in waters off Alaska occurs in the GOA hook-and-line fisheries. From 2000 to 2004, an estimated 88 Black-footed Albatross were taken annually in the GOA hook-and-line fisheries. Total seabird bycatch in the GOA hook-and-line fisheries peaked in 1996 at 1,649 birds, and decreased to 156 birds in 2004, despite an increase in fishing effort. The incidental catch rate in the GOA decreased from an annual average of 0.021 birds per 1,000 hooks from 1993 to 2004 to 0.01 birds per 1,000 hooks from 2000-2004.

Figure 2-1. Seabird catch rates in the hook-and-line catcher processor sector by season, 1995-2004.



Source: AFSC. Data include BSAI and GOA hook-and-line CP fisheries.

Figure 2-2 compares seabird bycatch rates per 1,000 hooks by the hook-and-line catcher processor fleet during the A and B seasons from 1995 to 2004, and includes data from both the BSAI and GOA. Seabird bycatch by hook-and-line catcher processors is higher during the B season than during the A season, but bycatch rates have been reduced substantially since 2001 as a result of widespread use of seabird avoidance techniques such as paired streamer lines. The average bycatch rate for hook-and-line catcher processors from 2002 through 2004 was 0.018 birds per 1,000 hooks (Figure 2-), a substantial reduction from previous years.

Due to different sampling procedures on trawl vessels, two sets of estimates are calculated for seabird bycatch. Average annual take by trawl vessels in the GOA from 1993 to 2004 was either 63 birds or 97 birds (Fitzgerald et al. 2006). Northern Fulmars comprised the majority of bycatch by trawl vessels during this period. Seabird bycatch by the groundfish pot sector has historically been very low. Average annual bycatch in the GOA pot sector from 1993–2004 was 55 seabirds, less than 1% of the average annual seabird bycatch in the groundfish fisheries.

Effects of the Alternatives

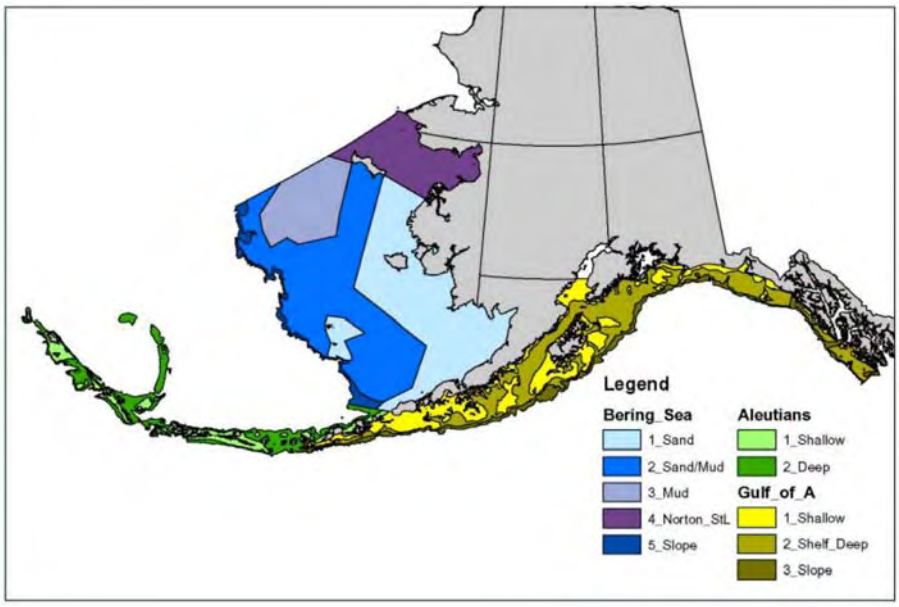
The Groundfish PSEIS (NMFS 2004a) concluded that the current groundfish fisheries are not adversely impacting ESA-listed seabird species. Biological Opinions by the USFWS (2003a and 2003b) concluded that the groundfish fisheries, including the GOA Pacific cod fishery, are unlikely to jeopardize populations of listed species or adversely modify or destroy critical habitat for listed species. Based on current estimates of seabird bycatch, the status quo alternative is not likely to have a significant impact on seabird populations.

The proposed action would establish sector allocations for the GOA Pacific cod fisheries based on historic catch levels. Under this alternative, overall levels of fishing effort by each gear sector, and the timing and location of fishing activities are not expected to change. Sector allocations will not modify the management practices analyzed in previous Biological Opinions (USFWS 2003a, 2003b), are not likely to cause additional adverse effects to ESA-listed species, and are not likely to increase incidental takes of listed species. Consequently, the proposed action is not likely to have a significant impact on seabird populations.

2.5 Benthic Habitat and Essential Fish Habitat

Benthic habitat is potentially impacted by fishing practices that contact the seafloor. The impacts of fishing gear on benthic habitat are discussed in the Groundfish PSEIS (NOAA 2004a). Essential fish habitat (EFH) is defined as those areas necessary to fish for spawning, breeding, feeding, or growth to maturity. Maps and descriptions of EFH for the GOA groundfish species are available in the EFH EIS (NMFS 2005). This document also describes the importance of benthic habitat to different groundfish species and the impacts of different types of fishing gear on benthic habitat. In the hook-and-line fishery, anchors, groundline, ganglions, and hooks potentially contact the seafloor. The Pacific cod pot fishery has a very small footprint (an estimated 0.17 square mile footprint for the GOA and BSAI combined). The jig fishery has no direct contact with the seafloor, although contact may occur incidentally. In the trawl fishery, doors, sweeps, and bobbins on the net may contact the seafloor.

Figure 2-2. Surficial Sediment Textural Characteristics, according to Naidu (1988).



Effects of the Alternatives

The effects of the GOA Pacific cod fishery on benthic habitat and EFH were analyzed in the EFH EIS (NMFS 2005e). Year-round area closures protect sensitive benthic habitat. Current fishing practices have minimal or temporary effects on benthic habitat and essential fish habitat. These effects are likely to continue under Alternative 1, and are not considered to be significant.

Under the proposed sector allocations, the location, timing, and overall level of fishing effort by the various gear sectors will remain essentially the same as under Alternative 1. As a result, impacts on benthic and essential fish habitat under this alternative are not expected to be significant.

2.6 Ecosystem

Ecosystems consist of communities of organisms interacting with their physical environment. Within marine ecosystems, competition, predation, and environmental disturbance cause natural variation in recruitment, survivorship, and growth of fish stocks. Human activities, including commercial fishing, can also influence the structure and function of marine ecosystems. Fishing may change predator-prey relationships and community structure, introduce foreign species, affect trophic diversity, alter genetic diversity, alter habitat, and damage benthic habitats.

The GOA Pacific cod fishery potentially impacts the GOA ecosystem by relieving predation pressure on shared prey species (i.e., species which are prey for both Pacific cod and other species), reducing prey availability for predators of Pacific cod, altering habitat, imposing bycatch mortality, or by "ghost fishing" caused by lost fishing gear. Further information may be found in the Ecosystems Considerations Appendix to the Stock Assessment and Fisheries Evaluation report (NMFS 2006b) and the Groundfish PSEIS (NOAA 2004a).

Effects of the Alternatives

An evaluation of the effects of the GOA Pacific cod fisheries on the ecosystem is conducted annually in the Ecosystem Assessment section of the Stock Assessment and Fishery Evaluation report (NMFS 2006b) and in the Harvest Specifications SAFE report (NMFS 2006c). These analyses conclude that the current GOA Pacific cod fishery does not produce population-level impacts to marine species or change ecosystem-level attributes beyond the range of natural variation. Consequently, Alternative 1 is not expected to have a significant impact on the ecosystem.

Alternative 2 will result in the same overall level of Pacific cod harvest as Alternative 1. The level of fishing effort by each sector, and the location and timing of fishing activities is not expected to change. As a result, Alternative 2 is not likely to have a significant impact on the ecosystem.

2.7 Economic Impacts and Management Considerations

A detailed description of the economic and socioeconomic components of the GOA Pacific cod fisheries and an analysis of the effects of the proposed action are found in Chapter 3. Here, management and enforcement considerations are briefly discussed. A more comprehensive analysis of the effects of the proposed action on management of the GOA Pacific cod fishery is provided in Chapter 3.

The GOA Pacific cod fishery is currently managed as a limited access race for fish, with fleet-wide TACs in the Western, Central, and Eastern Gulf. The A season TACs are typically fully fished, but much of the B season TACs have remained unharvested in recent years. The majority of catcher vessels participating in the Gulf Pacific cod fisheries are ≤60 feet in length, and incidental and prohibited species catch rates on these vessels are not estimated by an independent observer. Currently, there is no separate incidental catch allowance (ICA) for Pacific cod in the Gulf of Alaska. NOAA Fisheries closes the GOA Pacific cod A seasons before the TACs are fully fished to accommodate incidental harvests of cod. Halibut PSC is currently managed on a Gulf-wide basis, with separate allocations for the trawl and hook-and-line sectors.

Implementation of sector allocations will require NOAA managed catch levels for up to 15 sectors, depending on the how the Council chooses to define sectors. Each sector's allocation would be further divided into A and B season allocations, and for catcher processors, into inshore and offshore processing components. The Groundfish PSEIS (NOAA 2004a) discusses management and enforcement considerations in detail, and notes that any increase in the number of quotas that must be monitored

increases the difficulty of accurately determining when a quota has been reached and when to close a fishery. Inseason monitoring of sector allocations and management of rollovers of unused quota would require additional staff resources.

2.8 Cumulative Effects

Analysis of the potential cumulative effects of a proposed action and its alternatives is a requirement of NEPA. Cumulative effects result from the incremental impact of the proposed action in addition to past, present, and reasonably foreseeable future actions. The Alaska Groundfish Fisheries PSEIS (NOAA 2004a) assesses the potential direct and indirect effects of groundfish FMP policy alternatives in combination with other factors that affect physical, biological and socioeconomic components of the BSAI and GOA environment.

Beyond the cumulative impacts analysis documented in the Groundfish PSEIS, no additional past, present, or reasonably foreseeable cumulative negative impacts on the natural and physical environment (including fish stocks, essential fish habitat, ESA-listed species, marine mammals, seabirds, or marine ecosystems), fishing communities, fishing safety or consumers have been identified that would occur as a result of the proposed action. The proposed action, in combination with other actions, may have additional economic effects on sectors participating in the GOA Pacific cod fishery. In recent years, several regulatory changes implemented to protect Steller sea lions have had economic effects on participants in the GOA Pacific cod fisheries. Several reasonably foreseeable future actions are expected to have additional social and economic effects on these sectors, including GOA non-trawl LLP recency, GOA and BSAI trawl LLP recency, and possible revisions to the GOA Pacific cod sideboards.

3 REGULATORY IMPACT REVIEW: ECONOMIC IMPACTS OF THE ALTERNATIVES

This chapter provides information on the economic and socioeconomic impacts of the alternatives, as required by Executive Order 12866 (E.O. 12866). This chapter includes a description of the current Gulf of Alaska Pacific cod fishery, an analysis of the potential effects of the proposed action on the fishery, identification of the individuals or groups that may be affected by the action, and a discussion of the nature of those impacts (quantifying the economic impacts where possible) and potential tradeoffs.

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 addresses the requirements of E.O. 12866 to provide adequate information to determine whether an action is "significant" under E.O. 12866. The order 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.

3.1 Description of the Pacific cod fishery

The Gulf of Alaska Pacific cod resource is targeted by multiple gear and operation types, principally by pot, trawl and hook-and-line catcher vessels and hook-and-line catcher processors. Smaller amounts of cod are taken by other sectors, including catcher vessels using jig gear. After pollock, Pacific cod is the second most dominant species in the commercial groundfish catch in the Gulf of Alaska, accounting for about 35,100 mt or 19.0% of the total 2005 commercial groundfish catch (Hiatt et al. 2006). About 15% of the total commercial Pacific cod catch off Alaska is harvested in the Gulf of Alaska, with the remaining 85% harvested in the Bering Sea and Aleutian Islands.

Table 3-1. Pacific cod catch by gear type in the Federal and State fisheries in the Gulf of Alaska, total allowable catch (TAC), and acceptable biological catch (ABC), 1985-2006.

Year	Federal				Total federal catch	Federal TAC	State		Total catch	ABC
	Trawl	Longline	Pot	Other			Pot	Other		
1985	4,876	9,411	2	139	14,428	60,000	n/a	n/a	14,428	n/a
1986	6,850	17,619	141	402	25,012	75,000	n/a	n/a	25,012	136,000
1987	22,486	8,261	642	1,550	32,939	50,000	n/a	n/a	32,939	125,000
1988	27,145	3,933	1,422	1,302	33,802	80,000	n/a	n/a	33,802	99,000
1989	37,637	3,662	376	1,618	43,293	71,200	n/a	n/a	43,293	71,200
1990	59,188	5,919	5,661	1,749	72,517	90,000	n/a	n/a	72,517	90,000
1991	58,093	7,656	10,464	115	76,328	77,900	n/a	n/a	76,328	77,900
1992	54,593	15,675	10,154	325	80,747	63,500	n/a	n/a	80,747	63,500
1993	37,806	8,962	9,708	11	56,487	56,700	n/a	n/a	56,487	56,700
1994	31,446	6,778	9,160	100	47,484	50,400	n/a	n/a	47,484	50,400
1995	41,875	10,978	16,055	77	68,985	69,200	n/a	n/a	138,185	69,200
1996	46,044	10,225	12,062	53	68,384	65,000	n/a	n/a	133,384	65,000
1997	48,415	10,986	9,065	26	68,492	69,115	7,224	1,319	77,035	81,500
1998	41,569	9,993	10,510	29	62,101	66,060	9,088	1,316	72,505	77,900
1999	37,167	12,362	19,015	63	68,607	67,835	12,075	1,096	81,778	84,400
2000	25,442	11,659	17,351	40	54,492	58,715	10,388	1,643	66,523	76,400
2001	24,382	9,910	7,171	151	41,614	52,110	7,836	2,084	51,534	67,800
2002	19,809	14,666	7,694	176	42,345	44,230	10,423	1,714	54,482	57,600
2003	18,912	9,591	12,679	88	41,270	40,540	8,031	3,429	52,730	52,800
2004	17,584	10,371	14,884	344	43,183	48,033	10,117	2,804	56,104	62,810
2005	14,489	5,722	14,617	203	35,031	44,433	9,712	2,673	47,416	58,100
2006	13,111	10,163	14,397	116	37,787	52,264	9,269	590	47,646	68,859

Source: 2006 Groundfish SAFE Report, Pacific cod stock assessment (Thompson et al., 2006), and NMFS Blend and Catch Accounting databases (1995-2006 federal catch).

In the Gulf of Alaska, trawl landings of Pacific cod peaked in 1990 and 1991 at nearly 60,000 mt per year, and declined to just 12,930 mt in 2006 (see Table 3-1). Harvests by hook-and-line vessels peaked in the early 1980s at more than 25,000 mt per year. Since 1990, longline harvests have fluctuated between 6,000 and 15,000 mt per year. Vessels using pot and jig gear began to make significant landings in the early 1990s. Pot and jig landings increased substantially when the State waters Pacific cod fishery, which only allows the use of pot and jig gear, was initiated in 1997. Since 2003, vessels using pot gear have harvested a larger share of Gulf of Alaska Pacific cod than the trawl or hook-and-line sectors. Total catch of Pacific cod peaked in 1999 at 81,785 mt, and declined to 42,733 mt in 2006. Total federal catch as a percentage of the federal TAC has declined since Steller sea lion regulations went into effect in 2001. From 1995-2000, 99% of the federal TAC was harvested, and from 2001-2006, only 86% of the federal TAC was fished.

Fishing effort for Pacific cod is widely distributed along the shelf edge in the Gulf of Alaska. Trawl effort was also located near Chirikof, Cape Barnabus, Cape Chiniak, and Marmot Flats. The hook-and-line fishery primarily occurs at depths of 25 to 140 fathoms over gravel, cobble, mud, sand, and rocky bottoms (Livingston et al. 2002). Figures 3-1 through 3-12 indicate the location of Pacific cod fishing effort by hook-and-line, pot, and trawl gear during 1995-2000 and 2001-2006, when an observer was onboard.

Figure 3-1. Location of observed hook-and-line catcher processor Pacific cod fishing activity, 1995–2000.

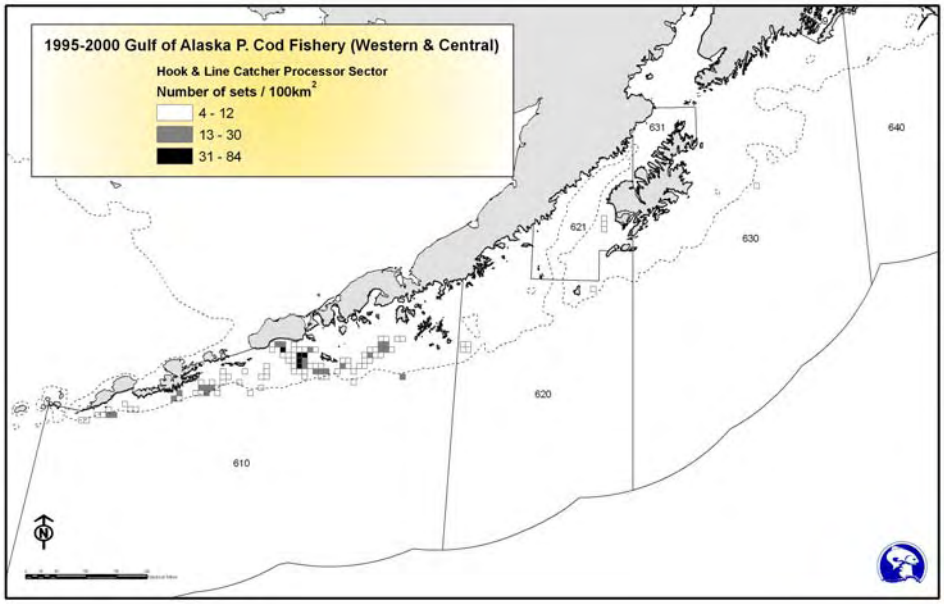


Figure 3-2. Location of observed hook-and-line catcher processor Pacific cod fishing activity, 2001-2006.

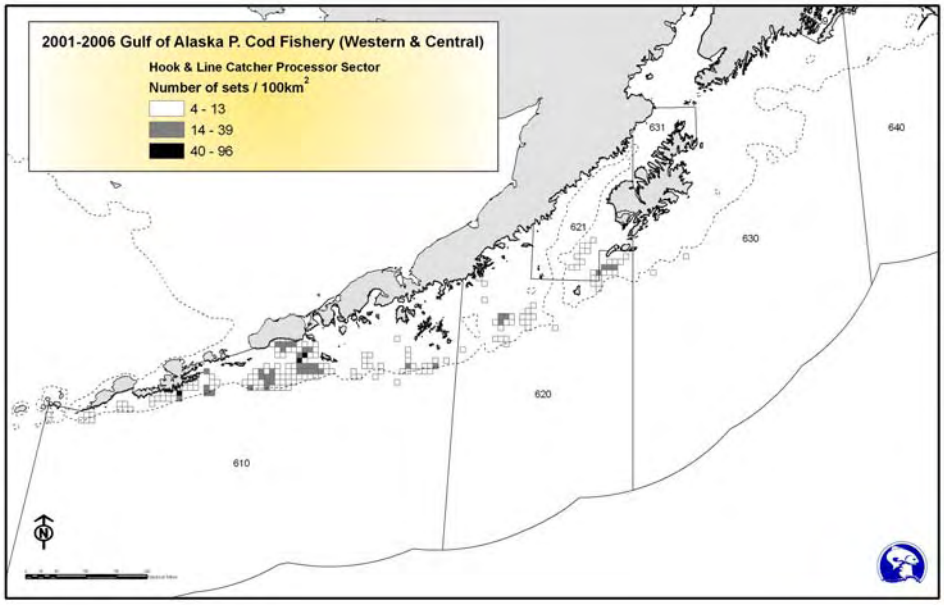


Figure 3-3. Location of observed hook-and-line catcher vessel Pacific cod fishing activity, 1995-2000.

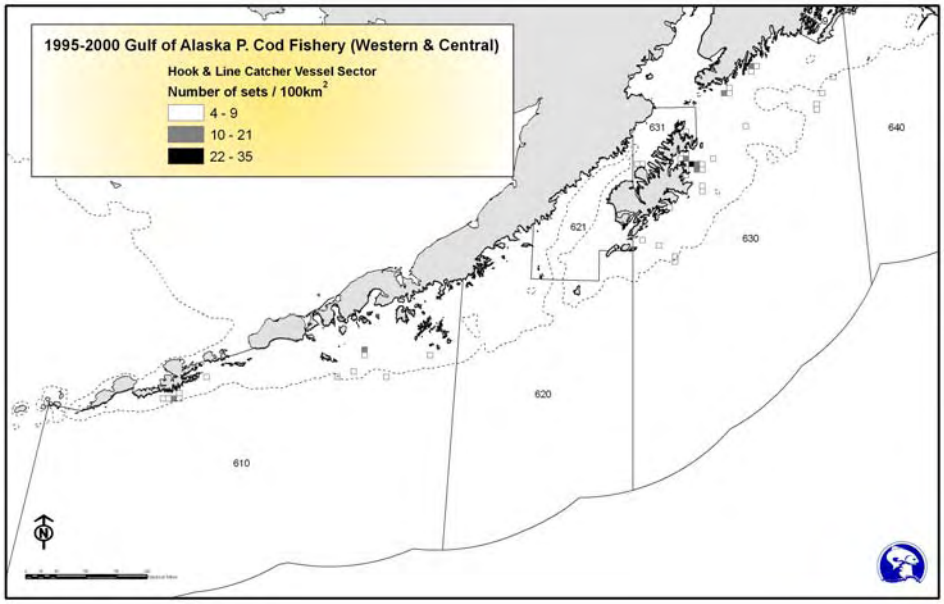


Figure 3-4. Location of observed hook-and-line catcher vessel Pacific cod fishing activity, 2001-2006.

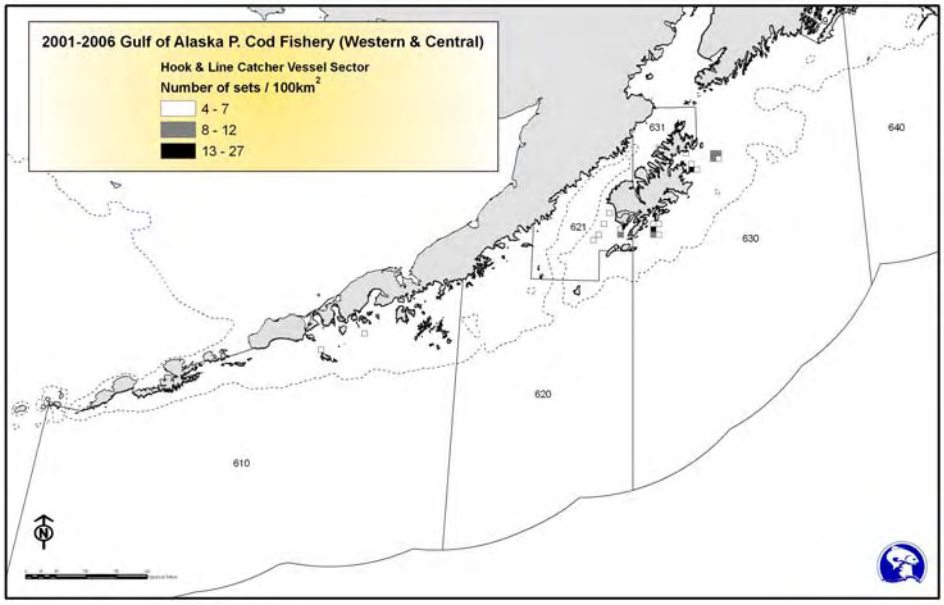


Figure 3-5. Location of observed pot catcher processor Pacific cod fishing activity, 1995-2000.

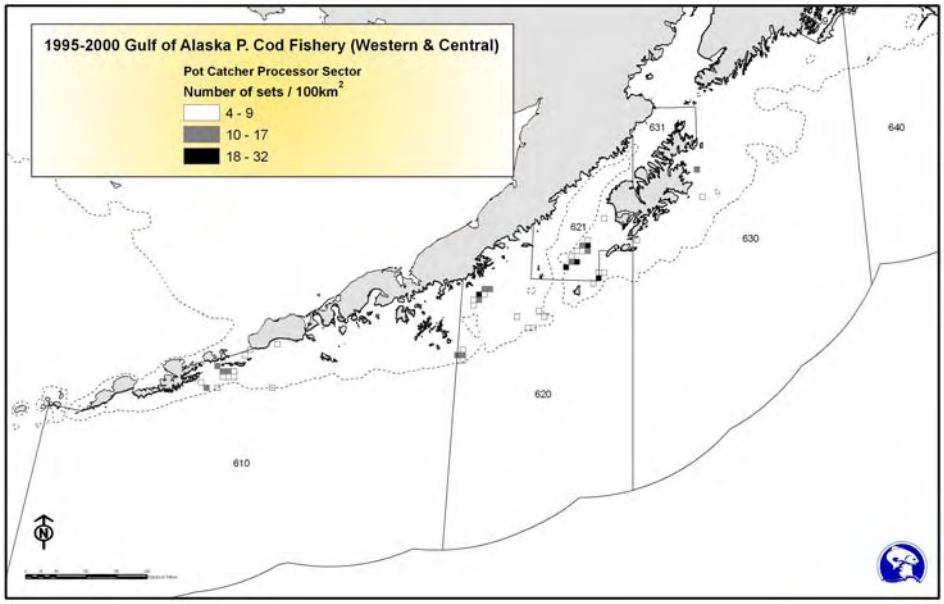


Figure 3-6. Location of observed pot catcher processor Pacific cod fishing activity, 2001-2006.

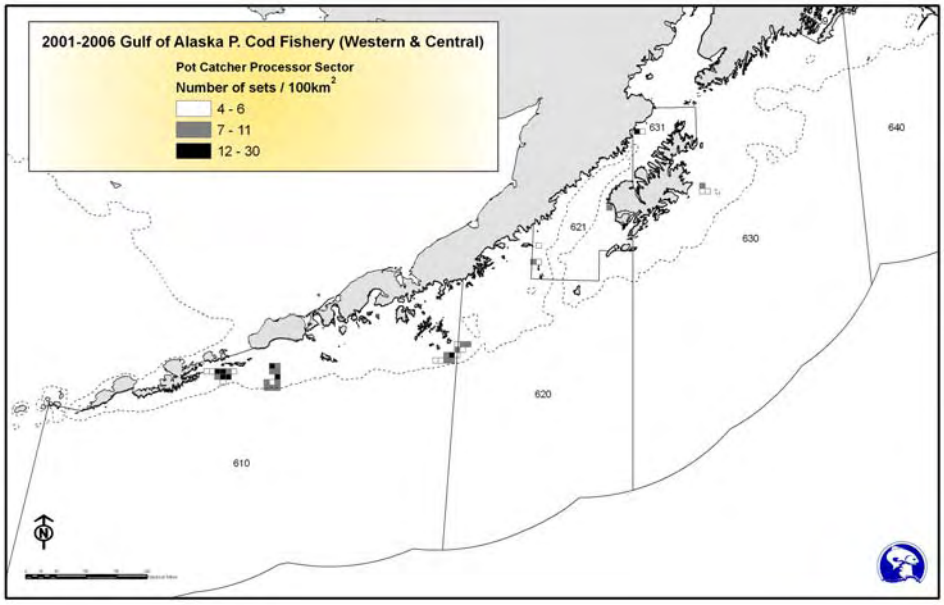


Figure 3-7. Location of observed pot catcher vessel Pacific cod fishing activity, 1995-2000.

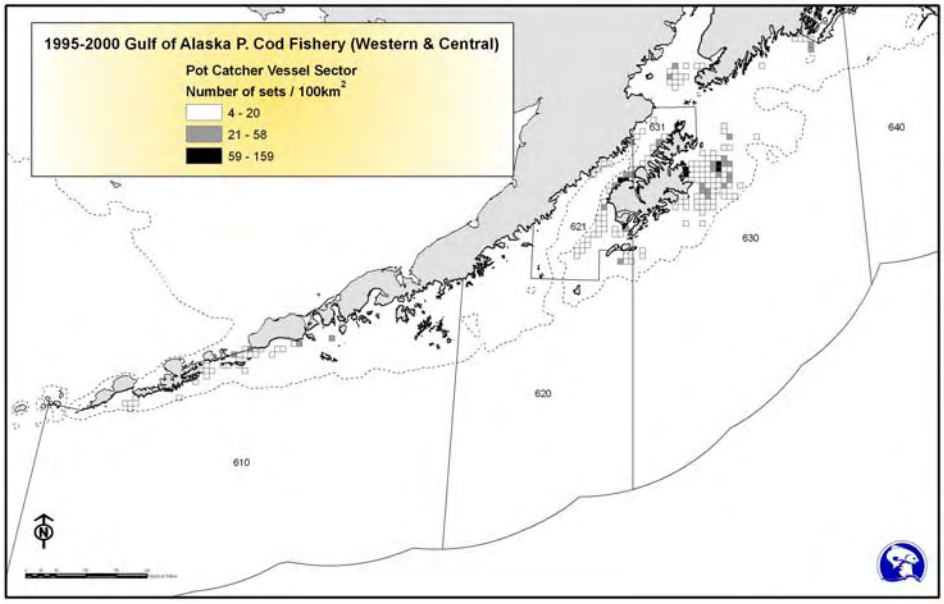


Figure 3-8. Location of observed pot catcher vessel Pacific cod fishing activity, 2001-2006.

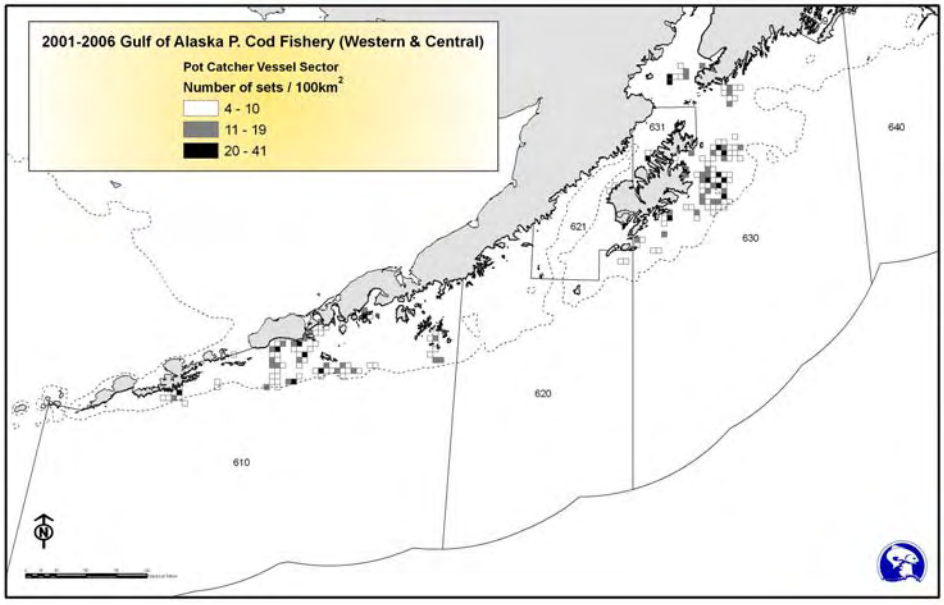


Figure 3-9. Location of observed trawl catcher processor Pacific cod fishing activity, 1995-2000.

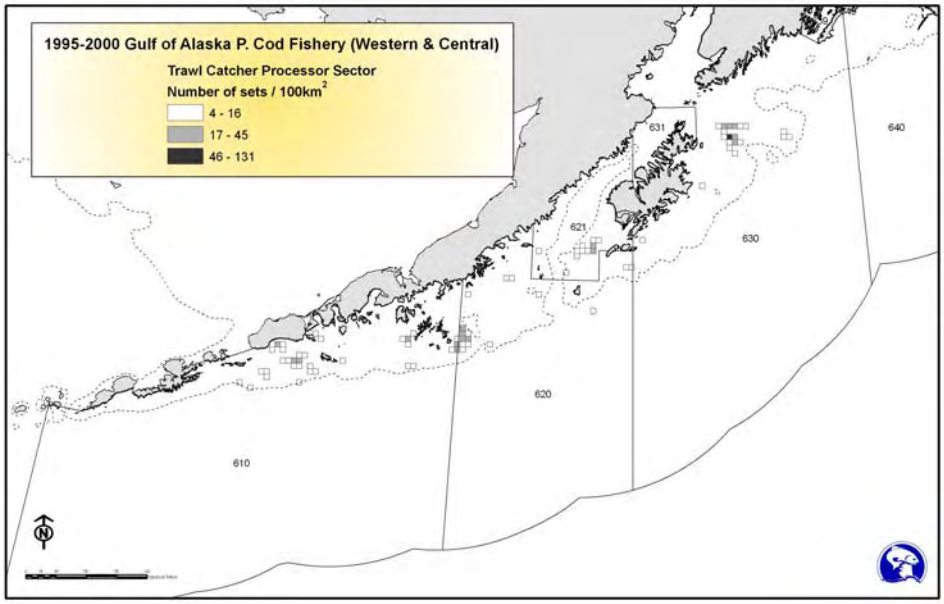


Figure 3-10. Location of observed trawl catcher processor Pacific cod fishing activity, 2001-2006.

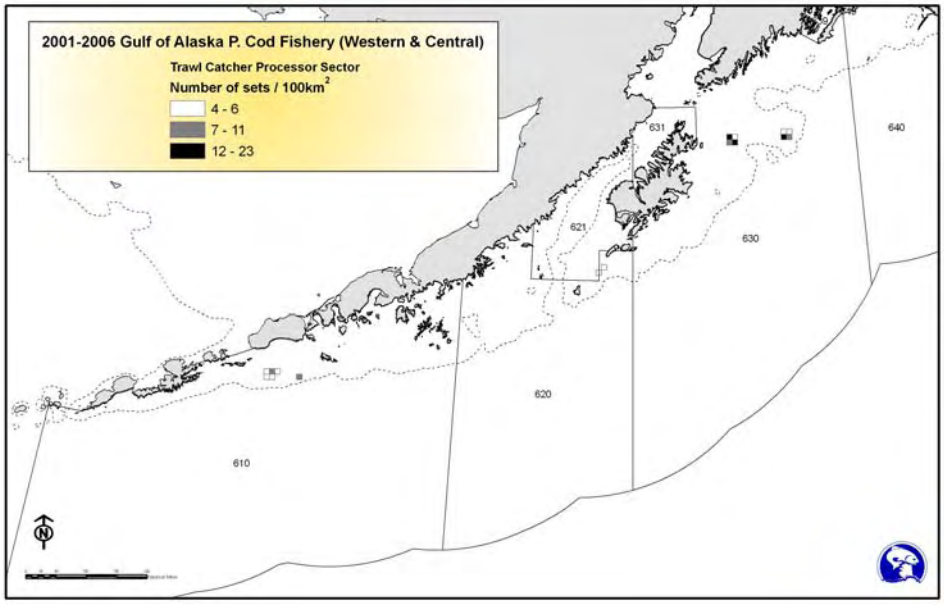


Figure 3-11. Location of observed trawl catcher vessel Pacific cod catch, 1995-2000.

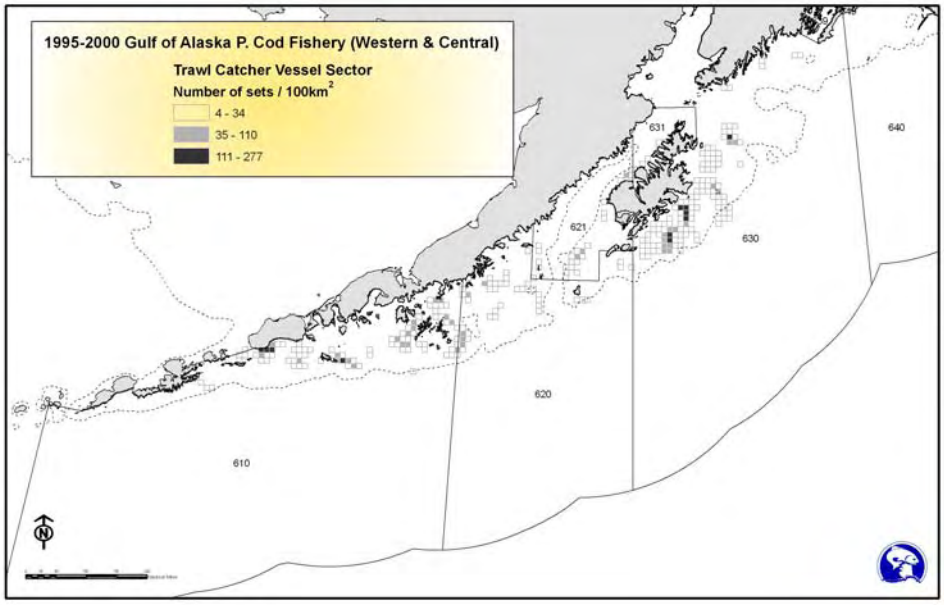
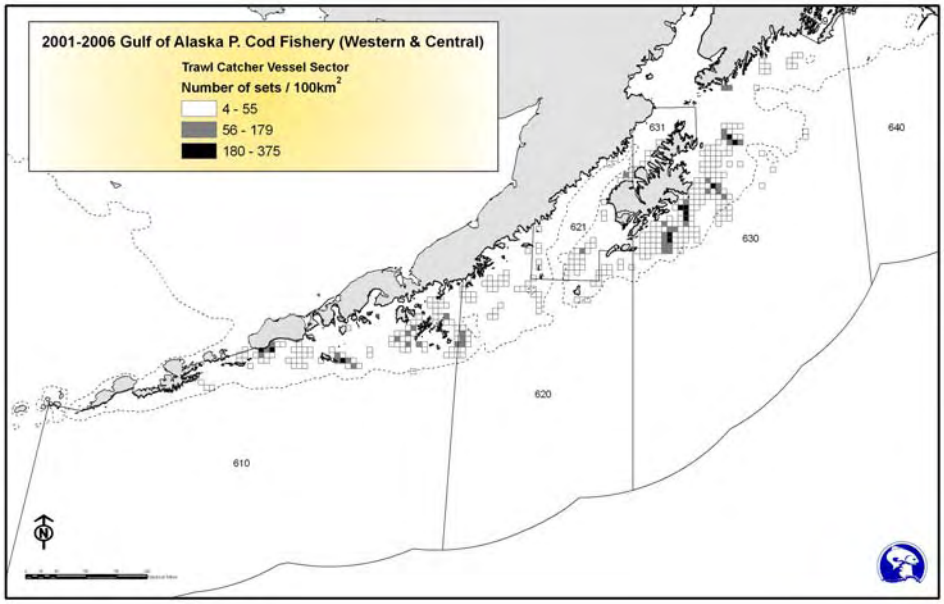


Figure 3-12 Location of observed trawl catcher vessel Pacific cod catch, 2001-2006.



Additional descriptions of the Gulf of Alaska Pacific cod fisheries are included in the Groundfish Economic Stock Assessment and Fishery Evaluation (SAFE) report (Hiatt et al. 2006) and the Groundfish PSEIS (NOAA 2004a). The SAFE document includes information on catch and revenues from the fisheries, the numbers and sizes of fishing vessels and processing plants, and other economic variables that describe or relate to the performance of the fisheries.

3.1.1 Management of the Pacific cod fishery in the Gulf of Alaska

Three separate area TACs are identified for Pacific cod in the Western Gulf, Central Gulf, and Eastern Gulf management subareas. Final 2006 harvest specifications apportioned 55% of the Gulf catch to the Central Gulf (28,405 mt) and 39% to the Western Gulf (20,141 mt). The GOA Pacific cod TACs are not divided among gear types, but are apportioned to the inshore and offshore processing sectors, with 90 percent allocated to the inshore component and 10 percent to the offshore component. In addition, the TACs are apportioned seasonally, with 60 percent of the TACs allocated to the A season and 40 percent to the B season. The A and B seasons were implemented in 2001 as a Steller sea lion protection measure. The A season begins on January 1st for fixed gear vessels, and on January 20th for trawl vessels. The A season ends on June 10th, but NMFS usually closes the season much earlier when the TAC has been fully fished. In 2005, the trawl sector's A season closed before the TAC was reached because it had used its halibut PSC apportionment. The B season begins on September 1st for all gear types, and ends November 1st for trawl vessels and December 31st for non-trawl vessels. However, the B season usually closes much earlier for the trawl sector, and often closes early for the hook-and-line sector as well, due to PSC halibut restrictions. The total allowable catch (TAC), actual catch, and percentage of TAC harvested in the federal Pacific cod fisheries in the Western and Central GOA are summarized in Table 3-2.

Table 3-2. Total allowable catch of Pacific cod in the federal Pacific cod fisheries in the Western and Central Gulf of Alaska, 1995-2006.

Year	Western Gulf			Central Gulf		
	Federal TAC	Total catch	Percent of TAC harvested	Federal TAC	Total catch	Percent of TAC harvested
1995	20,100	22,516	112.0	45,650	45,465	99.6
1996	18,850	19,823	105.2	42,900	47,589	110.9
1997	24,225	23,949	98.9	43,690	43,678	100.0
1998	23,170	19,817	85.5	41,720	41,436	99.3
1999	23,630	23,158	98.0	42,935	44,544	103.7
2000	20,625	21,867	106.0	34,080	32,188	94.4
2001	18,300	14,161	77.4	30,250	27,324	90.3
2002	16,849	17,168	101.9	24,790	25,058	101.1
2003	15,450	16,235	105.1	22,690	24,828	109.4
2004	16,957	15,554	91.7	27,116	27,464	101.3
2005	15,687	12,402	79.1	25,086	22,595	90.1
2006	20,141	14,742	73.2	28,405	23,011	81.0

Source: NMFS Blend (1995-2002) and Catch Accounting (2003-2006) databases.

Inseason managers monitor catch in the fishery and time the closure of the directed fishery to allow full harvest of the TAC. To meet that goal, the closure must be timed to leave only enough of the TAC to support incidental catch in other fisheries during the remainder of the season. Managers attempt to time the A season closure to leave a sufficient portion of the A season TAC available for incidental catch by other directed fisheries. Incidental catch continues to accrue to the A season TAC until the A season ends on June 10th. Any A season overage or incidental catch between the end of the A season (June 10th) and

the beginning of the B season (September 1st) counts toward the B season TAC. Incidental catch when the directed fishery is closed is limited to a maximum retainable allowance (MRA). An MRA limits the amount of non-directed species catch that may be retained to a percentage of directed species catch. For Pacific cod, the MRA with respect to all directed species is 20 percent. There is currently no MRA for Pacific cod in the directed Arrowtooth Flounder fishery, but the Council is considering options for implementing an MRA. When Pacific cod is not open for directed fishing, a vessel may retain Pacific cod in an amount up to 20 percent of its catch of species that are open for directed fishing.[3] Pacific cod is also an Improved Retention/Improved Utilization Species. Thus, all catch must be retained when the fishery is open for directed fishing, and all catch up to the MRA must be retained when the fishery is closed to directed fishing.

Halibut Prohibited Species Catch (PSC) apportionments are important to the trawl and hook-and-line sectors and often determine season closure dates for the trawl sector, and to a lesser extent, for the hook-and-line sector. In the Gulf, halibut catch in the Pacific cod fishery is accounted for against the applicable halibut PSC allowance. Separate halibut mortality allowances are made to trawl and hook-and-line fisheries and allowances are apportioned seasonally (Table 3-3). The hook-and-line allowance is divided into three periods, January 1st to June 10th (the A season for Pacific cod), June 10th to September 1st, and September 1st to December 31st (the B season for Pacific cod). The trawl halibut PSC apportionment is divided not only seasonally, but also between the shallow-water species complex (pollock, Pacific cod, shallow-water flatfish, flathead sole, Atka mackerel, skates, and "other species") and the deep-water species complex (all other species, which includes Pacific ocean perch, northern rockfish, pelagic shelf rockfish, and deep-water flatfish). The shallow-water trawl halibut PSC apportionment is divided into four periods, January 20th to April 1st, April 1st to July 1st, July 1st to September 1st, and September 1st to October 1st. In addition, a separate apportionment that is not divided between shallow-water and deep-water is available for use from October 1st to December 31st.

Table 3-3. Halibut prohibited species catch seasonal allowances for the trawl and hook-and-line fisheries in the Gulf of Alaska, 2007.

Trawl		Hook-and-line			
		Other than Demersal Shelf Rockfish		Demersal Shelf Rockfish	
Dates	Amount	Dates	Amount	Dates	Amount
Jan 20 - Apr 1	550 (27.5%)	Jan 1 - Jun 10	250 (86%)	Jan 1 - Dec 31	10 (100%)
Apr 1 - July 1	400 (20%)	Jun 10 - Sep 1	5 (2%)		
July 1 - Sep 1	600 (30%)	Sep 1 - Dec 31	35 (12%)		
Sep 1 - Oct 1	150 (7.5%)				
Oct 1 - Dec 31	300 (15%)				
Total	2000	Total	290		10

Source: NMFS 2007-2008 harvest specifications for the groundfish fisheries in the Gulf of Alaska.

Managers monitor halibut PSC catch in the Pacific cod fishery and close the directed fishery if halibut PSC mortality limits are reached. After such a closure, the directed fishery is typically reopened when the next apportionment of PSC becomes available. In recent years, managers have frequently closed the directed trawl fishery due to halibut PSC limits, particularly during the B season, and have occasionally closed the hook-and-line fishery due to PSC restrictions. In 2005, the trawl sector's A season was closed due to halibut PSC restrictions.

[3] Pacific cod catch is also retained in the halibut and sablefish IFQ program. Vessels fishing IFQ are required to retain Pacific cod up to the MRA, except if Pacific cod is on PSC status.

Entry to the Pacific cod fishery in federal waters has been restricted under the License Limitation Program (LLP) since 2000. The number of vessels with valid LLPs participating in the directed Federal Pacific cod fisheries is described further in Section 3.1.4. Catcher processors participating in the directed Pacific cod fishery must elect annually to participate in either the inshore or offshore components. The inshore component is comprised of shore plants, stationary floating processors, and vessels less than 125 feet in length that process less than a total of 126 metric tons (round weight) per week of pollock and Gulf Pacific cod in the aggregate.

The directed fishery for Pacific cod in state waters (0 to 3 nm) is open contemporaneously with the directed fishery in federal waters (3 to 200 nm). This fishery in State waters (referred to as the 'parallel fishery') is prosecuted under the same rules as the federal fishery, with catch counted against the federal TAC. In addition, beginning in 1997 the State of Alaska has managed its own Pacific cod fisheries inside on 3 nm (referred to as the 'State waters fishery'), which is allocated a portion of the federal TAC. The State waters fishery is described in more detail in **Section 3.1.2.**

3.1.2 State waters Pacific cod fishery in the Gulf of Alaska

In 1997, the State of Alaska began managing its own Pacific cod fisheries inside of 3 nm (referred to as the 'State waters fishery'), which is allocated a portion of the federal TAC. The State waters allocation has increased incrementally from 15% of the GOA allowable biological catch (ABC) in 1997 and 1998 to 24% of the ABC from 2004-2006. The State waters fishery is open only to pot and jig vessels. State fisheries are managed under a guideline harvest level (GHL), which limits total catch in the fishery in a manner similar to the federal TAC. State waters GHLs are specified as a portion of the federal TAC and can be increased on an annual basis if the GHL is fully fished. Currently, all GHLs are at the maximum level permitted by State regulation, with the exception of the Prince William Sound fishery. The Prince William Sound GHL is at its regulatory minimum, because the allocation has not been fully utilized by the fishery. Vessels fishing in state waters (including both the parallel and State waters fisheries) are not required to hold LLP licenses. Table 3-4 shows total State waters Pacific cod catch by gear type from 1997 through 2006. The majority of State waters catch is by pot vessels.

Table 3-4. Catch of Pacific cod in Gulf of Alaska State waters fisheries, 1997-2006.

Year	Pot	Jig	Total
1997	7,224	1,319	8,543
1998	9,088	1,316	10,404
1999	12,075	1,096	13,171
2000	10,388	1,643	12,031
2001	7,836	2,084	9,920
2002	10,423	1,714	12,137
2003	8,031	3,429	11,460
2004	10,117	2,804	12,921
2005	9,712	2,673	12,385
2006	9,168	590	9,758

Source: 2006 Groundfish SAFE Report, Pacific cod stock assessment (Thompson et al., 2006).

3.1.3 Catch History and Participation in the Gulf of Alaska Pacific Cod Fisheries

3.1.3.1 Total catch of Pacific cod in the Gulf of Alaska

The problem statement notes that one reason for allocating the Western and Central Gulf of Alaska Pacific cod TACs among sectors is that the fisheries are fully subscribed. Without sector allocations, future harvests by some sectors may increase and impinge on the historic levels of catch by other sectors. However, in some recent years, the Gulf of Alaska Pacific cod TACs have not been fully harvested (Tables 3-5 and 3-6). During 3 of the last 6 years, the inshore sector in the Western Gulf harvested less than 90 percent of the TAC. In contrast, in the Central Gulf, the inshore sector harvested more than 90 percent of the TAC in all but one of the last six years. During 2004 through 2006, the offshore sector in both management areas has harvested 75 percent or less of the TAC.

Table 3-5. Pacific cod catch and percentage of the TAC harvested in the inshore and offshore sectors in the Western Gulf of Alaska, 2001-2006.

	Inshore			Offshore		
Year	TAC	Catch	Percent harvested	TAC	Catch	Percent harvested
2001	16,470	12,461	75.7	1,830	1,700	92.9
2002	15,164	15,541	102.5	1,685	1,627	96.6
2003	13,905	14,029	100.9	1,545	2,205	142.7
2004	15,261	14,274	93.5	1,696	1,281	75.5
2005	14,118	11,978	84.8	1,569	423	27.0
2006	18,127	13,648	75.3	2,014	1,095	54.4

Source: NMFS Catch Accounting database (2003-2006) and Blend database (2001-2002).

Table 3-6. Pacific cod catch and percentage of the TAC harvested in the inshore and offshore sectors in the Central Gulf of Alaska, 2001-2006.

	Inshore			Offshore		
Year	TAC	Catch	Percent harvested	TAC	Catch	Percent harvested
2001	27,255	25,255	92.7	3,025	2,066	68.3
2002	22,311	22,665	101.6	2,479	2,393	96.5
2003	20,421	22,601	110.7	2,269	2,228	98.2
2004	24,404	25,533	104.6	2,712	1,931	71.2
2005	22,577	22,234	98.5	2,509	361	14.4
2006	25,565	21,609	84.5	2,840	1,402	49.4

Source: NMFS Catch Accounting database (2003-2006) and Blend database (2001-2002).

The A and B season TACs are not utilized equally (see Tables 3-7 and 3-8). The A season TAC, which is harvested when Pacific cod are aggregated and roe peaks, is typically fully harvested. In recent years, A season catches have substantially exceeded A season TACs in both the Western and Central Gulf. Most of this overage is a result of incidental catch after the A season has closed to directed fishing, but prior to June 10th, when the A season ends. Incidental catch between the A and B seasons is substantial, particularly by the inshore sector in the Central Gulf. Incidental catch made between the A and B season accrues to the B season TAC, but due to limited directed fishing effort during the B season, much of the B season TACs have remained unharvested.

Table 3-7. Pacific cod catch during the A and B seasons by the inshore and offshore sectors in the Western Gulf, 2003-2006.

	Inshore						Offshore					
	A season			B season			A season			B season		
Year	TAC	Catch	Percent harvested	TAC	Catch	Percent harvested	TAC	Catch	Percent harvested	TAC	Catch	Percent harvested
2003	8,343	10,057	120.5	5,562	3,972	71.4	927	2040	220.1	618	165	26.7
2004	9,157	10,536	115.1	6,104	3,738	61.2	1017	626	61.6	679	655	96.5
2005	8,471	10,298	121.6	5,647	1,686	29.9	941	123	13.1	628	300	47.8
2006	10,876	12,299	113.1	7,251	1,349	18.6	1208	666	55.1	806	429	53.2

Source: NMFS Annual Catch Reports, 2003-2006.

Table 3-8. Pacific cod catch during the A and B seasons by the inshore and offshore sectors in the Central Gulf, 2003-2006.

	Inshore						Offshore					
	A season			B season			A season			B season		
Year	TAC	Catch	Percent harvested	TAC	Catch	Percent harvested	TAC	Catch	Percent harvested	TAC	Catch	Percent harvested
2003	12,253	15679	128.0	8,168	6,922	84.7	1361	1,440	105.8	788	908	115.2
2004	14,643	15673	107.0	9,761	9,860	101.0	1627	1,347	82.8	1,085	584	53.8
2005	13,547	12688	93.7	9,660	9,660	100.0	1414	91	6.4	1,003	270	26.9
2006	15,339	15529	101.2	10,226	6,083	59.5	1679	25	1.5	1,136	1,378	121.3

Source: NMFS Annual Catch Reports, 2003-2006.

Short season lengths are another indication that the GOA Pacific cod fishery is fully utilized. In recent years, the A seasons for the Gulf Pacific cod fisheries have closed approximately one month after the trawl gear opening on January 20th because the TAC has been fully harvested (see Table 3-9). In 2005 in the Central Gulf, the A season inshore TAC was fully fished just 7 days after the trawl season opened. Halibut PSC restrictions have occasionally limited A season harvests by the trawl sector. During the B season, the trawl fishery has been closed due to halibut PSC restrictions in 4 of the past 6 years (see Tables 3-10 and 3-11). The hook-and-line sector's B season has been closed twice in the past 6 years due to halibut PSC limits.

Table 3-9. Pacific cod A season closures for the Western and Central Gulf of Alaska, 2001-2007.

	Western Gulf				**Central Gulf**			
	Inshore		**Offshore**		**Inshore**		**Offshore**	
Year	Date	Reason	Date	Reason	Date	Reason	Date	Reason
2001	27-Feb	TAC	24-May	TAC	4-Mar	TAC	24-May (TRW)	**HAL**
2002	26-Feb	TAC	9-Feb	TAC	9-Mar	TAC	25-Mar	TAC
2003	17-Feb	TAC	20-Mar	TAC	9-Feb	TAC	1-Feb	TAC
2004	24-Feb	TAC	8-Mar	TAC	31-Jan	TAC	2-Feb	TAC
2005	24-Feb	TAC	22-Feb	TAC	26-Jan	TAC	22-Feb	TAC
2006	23-Feb (TRW)[1]	**HAL**	19-Feb	TAC	23-Feb (TRW)[2]	**HAL**	19-Feb	TAC
2007	8-Mar	TAC	14-Feb	TAC	27-Feb	TAC	14-Feb	TAC

1 Season closed to other gear groups on March 2 when TAC reached.
2 Season closed to other gear groups on Feb 28 when TAC reached.
Source: NMFS Alaska region season closures summary.

Table 3-10. Pacific cod B season closures for the trawl and hook-and-line sectors in the Western Gulf of Alaska, 2001-2006.

	Inshore		Offshore		Inshore		Offshore	
	Trawl				Hook-and-line			
Year	Date	Reason	Date	Reason	Date	Reason	Date	Reason
2001	21-Oct	**HAL**	21-Oct	**HAL**	4-Sep	**HAL**	4-Sep	**HAL**
2002	13-Oct	**HAL**	3-Oct	TAC	23-Nov	TAC	3-Oct	TAC
2003	12-Sep	**HAL**	not opened	TAC	25-Sep	TAC	not opened	TAC
2004	1-Oct	**HAL**	1-Oct	**HAL**	2-Oct	**HAL**	2-Oct	**HAL**
2005	1-Oct	**HAL**	1-Oct	**HAL**	31-Dec	n/a	31-Dec	n/a
2006	8-Oct	**HAL**	8-Oct	**HAL**	31-Dec	n/a	31-Dec	n/a

Source: NMFS Alaska region season closures summary.

Table 3-11. Pacific cod B season closures for the trawl and hook-and-line sectors in the Central Gulf of Alaska, 2001-2006.

	Inshore		Offshore		Inshore		Offshore	
	Trawl				Hook-and-line			
Year	Date	Reason	Date	Reason	Date	Reason	Date	Reason
2001	21-Oct	**HAL**	21-Oct	**HAL**	4-Sep	**HAL**	4-Sep	**HAL**
2002	not opened	TAC	8-Oct	TAC	26-Sep	TAC	8-Oct	TAC
2003	3-Sep	TAC	14-Oct	TAC	3-Sep	TAC	14-Oct	TAC
2004	1-Oct	**HAL**	1-Oct	**HAL**	2-Oct	**HAL**	2-Oct	**HAL**
2005	1-Oct	**HAL**	1-Oct	**HAL**	31-Dec	n/a	31-Dec	n/a
2006	8-Oct	**HAL**	8-Oct	**HAL**	31-Dec	n/a	31-Dec	n/a

Source: NMFS Alaska region season closures summary.

3.1.3.2 Participation by the harvest sectors

Tables 3-12 and 3-13 show the number of vessels from each sector that participated in the directed federal Pacific cod fisheries in the Western and Central Gulf of Alaska from 1995 to 2006. Participation by trawl catcher vessels has dropped sharply in both the Central and Western Gulf. In the Central Gulf, participation dropped from 123 vessels in 1998 to 36 vessels in 2006. In the Western Gulf, participation dropped from 78 vessels in 1995 to 36 vessels in 2006. Trawl catcher processor participation has also decreased by more than half in both the Western and Central Gulf.

Few pot catcher processors participate in the directed federal fishery in either the Western or Central Gulf, with the exception of 1999, when 10 vessels fished in the Central Gulf and 6 fished in the Western Gulf. Pot catcher vessel participation has fluctuated from 35 to 120 vessels in the Central Gulf and from 20 to 81 vessels in the Western Gulf. Jig catcher vessel participation has increased in recent years in the Central Gulf, with between 24 and 29 vessels fishing during 2004 to 2006. In the Western Gulf, jig participation increased substantially during 2001 to 2004, and then dropped to just one vessel in 2006.

Table 3-12. Number of vessels participating in the directed federal Pacific cod fishery in the Western Gulf, by sector, from 1995-2006.

Year	HAL CP	HAL CV	Jig CV	Pot CP	Pot CV	Trawl CP	Trawl CV
1995	14	4	10	2	56	6	78
1996	13	10	5	0	37	15	54
1997	9	2	2	0	20	15	67
1998	4	1	2	0	53	3	65
1999	19	2	0	6	31	5	63
2000	11	2	2	2	79	4	51
2001	9	4	16	3	42	7	50
2002	11	13	26	2	46	6	43
2003	14	8	11	1	59	3	32
2004	7	13	22	1	81	3	22
2005	5	26	6	1	58	2	30
2006	12	20	1	0	51	3	36

Source: Weekly production reports and ADF&G fish tickets, 1995 – 2006.

Table 3-13. Number of vessels participating in the directed federal Pacific cod fishery in the Central Gulf, by sector, from 1995-2006.

Year	HAL CP	HAL CV	Jig CV	Pot CP	Pot CV	Trawl CP	Trawl CV
1995	3	119	15	0	120	10	99
1996	4	133	11	0	87	11	106
1997	1	170	6	0	61	6	120
1998	1	134	15	0	59	17	123
1999	5	181	9	10	84	14	89
2000	3	149	16	1	114	9	54
2001	1	116	14	3	62	5	70
2002	4	97	6	2	45	2	49
2003	4	70	7	0	35	1	52
2004	3	83	29	0	35	5	46
2005	2	107	25	0	48	4	39
2006	6	130	24	0	58	7	36

Source: Weekly production reports and ADF&G fish tickets, 1995 – 2006.

Participation by hook-and-line catcher processors fluctuates widely on an annual basis. From 1995 to 2006, 1 to 6 vessels fished in the Central Gulf and 4 to 19 vessels fished in the Western Gulf. Hook-and-line catcher vessel participation in the Central Gulf peaked at 181 vessels in 1999, decreased to only 70 vessels in 2003, and has increased again in recent years. In the Western Gulf, hook-and-line catcher vessel participation has also increased in recent years.

Note that the eligibility requirements for the sectors changed when the License Limitation Program was implemented in 2000. The Council is currently considering extinguishing both trawl and non-trawl licenses in the Gulf of Alaska that did not meet a minimum landings threshold of groundfish. Due to the low landings threshold, this action is unlikely to reduce the number of vessels participating in GOA cod fisheries, but will limit future entry opportunities for licenses that are not currently active in the GOA.

3.1.3.4 Steller Sea Lion protection measures and distribution of catch within seasons

In November 2000, NMFS determined that the pollock, Pacific cod, and Atka mackerel fisheries in the BSAI and GOA were likely to jeopardize the continued existence of the western population of Steller sea lions. NMFS completed a Steller Sea Lion Protection Measures Final Supplemental Environmental Impact Statement in November 2001 (NMFS 2001). Protection measures were implemented in 2001, including measures to temporally disperse fishing effort for Pacific cod. The Pacific cod fishing season was divided into two periods: 60 percent of the TAC was allocated to the A season (Jan. 1 – June 10) and 40% to the B season (June 10 – Dec. 31). The objective was to limit the total amount of cod harvested in the first half of the year.

One of the concerns noted during development of the Steller sea lion SEIS was that management measures to protect Steller sea lions may impose a heavier burden on catcher vessels than on catcher processors. The catcher vessel fleet is comprised mostly of <60 ft vessels, and fishing during the early months of the A season (January/February) may be more difficult for smaller vessels. All gear sectors typically harvest the majority of their catch during the A season (January 1 – June 10), when cod are aggregated and catch per unit effort is higher.

Tables 3-14 and 3-15 show the percentage of Pacific cod landed before June 1 from 1995 to 2006. With the implementation of seasonal allocations, nearly all of the sectors land a substantially smaller proportion of total catch prior to June 1, with a few exceptions. Both small vessels (<60 MLOA) and larger vessels land less cod during the A season months. However, hook-and-line catcher vessels >60 MLOA fishing in the Central Gulf and trawl catcher vessels fishing in the Western Gulf continue to land more than 95 percent of their total catch before June.

Table 3-14. Percentage of Pacific cod caught before June 1st in the Western Gulf of Alaska, 1995-2006.

Year	HAL CP	HAL CV <60	HAL CV >=60	JIG	Pot CP	Pot CV <60	Pot CV >=60	Trawl CP	TRW CV <60	TRW CV >=60
1995	99.8	90.6	0.0	94.5	100.0	100.0	96.1	99.4	100.0	99.9
1996	100.0	98.0	100.0	94.5	n/a	100.0	95.7	99.8	100.0	99.9
1997	99.9	83.6	99.0	76.6	n/a	100.0	99.1	86.5	99.9	99.7
1998	99.8	56.7	1.8	0.0	n/a	94.7	66.8	63.4	99.5	99.1
1999	99.9	86.1	81.9	n/a	66.5	99.5	87.7	83.1	99.8	99.4
2000	99.8	70.9	61.4	83.5	100.0	100.0	100.0	83.1	99.1	97.1
2001	99.6	72.0	27.8	0.1	53.3	81.4	40.7	36.1	95.9	86.7
2002	69.8	55.2	49.3	1.9	*	81.6	34.0	41.2	96.5	98.8
2003	85.2	77.7	21.6	0.0	78.5	86.7	42.0	35.0	94.1	99.5
2004	70.5	18.9	59.6	64.7	*	88.9	50.6	50.5	97.1	98.6
2005	48.3	70.8	14.1	100.0	*	85.2	76.3	67.8	97.5	99.0
2006	56.8	53.6	0.0	*	*	83.4	98.3	70.3	98.6	96.4
Avg. 95-00	99.9	81.0	57.4	69.8	88.8	99.0	90.9	85.9	99.7	99.2
Avg. 01-06	71.7	58.1	28.7	33.3	56.5	84.5	57.0	50.1	96.6	96.5

Source: Weekly production reports and ADF&G fish tickets, 1995 – 2006.
* Indicates that data are confidential. Averages do not include confidential data.

Table 3-15. Percentage of Pacific cod caught before June 1st in the Central Gulf of Alaska, 1995-2006.

Year	HAL CP	HAL CV <60	HAL CV >=60	JIG	Pot CP	Pot CV <60	Pot CV >=60	Trawl CP	TRW CV <60	TRW CV >=60
1995	96.0	96.9	94.4	84.7	n/a	97.6	92.2	79.8	98.1	88.7
1996	100.0	100.0	99.5	100.0	n/a	100.0	100.0	99.5	100.0	100.0
1997	*	95.9	87.6	85.4	n/a	99.3	97.8	30.1	96.7	75.4
1998	100.0	98.0	94.5	100.0	n/a	100.0	100.0	24.8	96.8	83.1
1999	95.7	98.5	95.0	88.1	0.0	99.1	82.1	29.6	90.0	71.9
2000	99.0	98.8	98.3	99.8	73.8	100.0	100.0	65.9	99.4	82.6
2001	*	97.7	95.3	97.9	100.0	98.0	77.3	75.7	84.4	41.3
2002	89.7	82.2	93.7	100.0	*	100.0	66.4	62.3	97.4	80.7
2003	97.6	91.5	98.0	95.3	*	100.0	98.4	30.0	85.0	55.0
2004	100.0	76.6	93.1	60.9	n/a	78.0	73.8	11.0	33.0	47.1
2005	96.8	63.7	98.0	70.5	n/a	69.8	43.7	14.6	70.2	54.2
2006	0.6	66.6	97.9	84.4	n/a	77.2	76.9	16.6	98.4	71.2
Avg. 95-00	98.1	98.0	94.9	93.0	36.9	99.3	95.3	54.9	96.8	83.6
Avg. 01-06	76.9	79.7	96.0	84.8	67.4	87.1	72.8	35.0	78.1	58.3

Source: Weekly production reports and ADF&G fish tickets, 1995 – 2006.
* Indicates that data are confidential. Averages do not include confidential data.

3.1.3.5 PSC by sector

The prohibited species halibut allowances are currently allocated separately to the Gulf of Alaska trawl and hook-and-line sectors, according to the guidelines outlined in 50 CFR 679.21(d). The 2007 PSC allowances for the GOA Pacific cod trawl and hook-and-line fisheries are shown in Table 3-16. The pot and jig sectors are exempt from halibut PSC limits. The halibut PSC allowance is set in regulation and is not tied to population assessments for the halibut resource. The Gulf-wide halibut PSC allowance is 2000 mt for the trawl sector and 300 mt for the hook-and-line sector.

Table 3-16. 2007 Gulf of Alaska halibut Prohibited Species Catch (PSC) allowances for the trawl and hook-and-line sector.

Trawl		Hook-and-line			
		Other than Demersal Shelf Rockfish		Demersal Shelf Rockfish	
Dates	Amount	Dates	Amount	Dates	Amount
Jan 20 - Apr 1	550 (27.5%)	Jan 1 - Jun 10	250 (86%)	Jan 1 - Dec 31	10 (100%)
Apr 1 - July 1	400 (20%)	Jun 10 - Sep 1	5 (2%)		
July 1 - Sep 1	600 (30%)	Sep 1 - Dec 31	35 (12%)		
Sep 1 - Oct 1	150 (7.5%)				
Oct 1 - Dec 31	300 (15%)				
Total	2000	Total	290	Total	10

Source: NMFS 2007-2008 Groundfish harvest specifications for the Gulf of Alaska.

Table 3-17. Halibut mortality (mt) by vessels targeting Pacific cod in the Western Gulf, 1995-2006.

Year	HAL CV	HAL CP	HAL Total	Trawl CP	Trawl CV	Trawl Total	Pot CP	Pot CV	Pot Total	Total
1995	0.2	87.6	87.8	12.7	122.3	135.0	*	2.2	2.2	225.0
1996	1.3	37.3	38.6	21.6	86.1	107.7	0.0	1.8	1.8	148.0
1997	*	41.1	41.1	0.7	90.5	91.3	0.0	1.1	1.1	133.4
1998	*	34.3	34.3	2.9	92.7	95.6	*	1.7	1.7	131.5
1999	*	142.3	142.3	31.9	376.8	408.6	3.4	0.4	3.8	554.8
2000	*	84.1	84.1	15.2	131.1	146.3	*	1.2	1.2	231.6
2001	0.3	122.0	122.3	32.9	77.9	110.9	0.4	0.9	1.3	234.4
2002	0.0	99.9	100.0	5.5	32.9	38.4	*	1.0	1.0	139.4
2003	0.9	100.5	101.4	16.0	43.9	59.9	*	8.4	8.4	169.7
2004	0.2	106.5	106.7	31.8	102.5	134.2	*	13.3	13.3	254.2
2005	6.3	33.6	39.9	*	24.6	162.9	*	7.5	7.5	810.2
2006	2.5	103.6	106.0	0.4	60.4	60.8	*	4.6	4.6	171.4

Source: NMFS Catch Accounting PSC Database (2003-2006) and Blend PSC Database (1995-2002).
* Indicates data are confidential. Totals do not include confidential data.

Table 3-18. Halibut mortality (mt) by vessels targeting Pacific cod in the Central Gulf, 1995-2006.

Year	HAL CV	HAL CP	HAL Total	Trawl CP	Trawl CV	Trawl Total	Pot CP	Pot CV	Pot Total	Total
1995	254.0	16.5	270.5	42.7	294.2	336.8	0.0	15.3	15.3	622.7
1996	94.2	18.2	112.5	24.9	130.4	155.3	0.0	14.7	14.7	282.5
1997	70.2	*	70.2	65.7	446.6	512.3	0.0	8.4	8.4	590.8
1998	212.3	*	212.3	242.9	358.5	601.4	0.0	11.4	11.4	825.0
1999	167.5	9.2	176.7	147.5	678.0	825.5	24.7	12.3	37.1	1039.3
2000	165.1	4.4	169.4	50.7	188.6	239.3	*	4.7	4.7	413.4
2001	143.9	*	143.9	149.7	529.6	679.3	0.5	2.7	3.2	826.4
2002	75.4	62.6	138.0	*	152.1	152.1	*	1.2	1.2	291.4
2003	78.5	10.6	89.0	*	367.2	367.2	0.0	5.2	5.2	461.5
2004	158.5	25.7	184.2	55.8	779.1	834.9	0.0	9.5	9.5	1028.6
2005	157.6	*	157.6	33.1	594.1	627.2	0.0	25.4	25.4	810.2
2006	166.3	45.7	212.1	19.7	267.7	287.4	0.0	13.9	13.9	513.4

Source: NMFS Catch Accounting PSC Database (2003-2006) and Blend PSC Database (1995-2002).
* Indicates data are confidential. Totals do not include confidential data.

Halibut PSC usage in the directed GOA Pacific cod fisheries during 1995 – 2006 is summarized in Tables 3-17 and 3-18. The directed hook-and-line Pacific cod fishery uses the majority of the GOA hook-and-line halibut PSC apportionment. In recent years, hook-and-line catcher processors in the Central Gulf have used increasing amounts of halibut PSC. The majority of trawl usage of halibut PSC is by trawl catcher vessels. Pot vessels are not subject to halibut PSC limits, but NMFS tracks halibut PSC usage by the pot sector, and PSC mortality has increased in recent years as pot effort in the GOA Pacific cod fisheries has increased.

3.1.3.6 Sideboards on Pacific cod harvests

Sideboards on GOA Pacific cod catch are discussed in Agenda Item C(4)(b), and due to time limitations, a summary will not be provided in the preliminary draft of this document. The next iteration of this document will include a discussion of Pacific cod sideboards in the GOA.

3.1.4 Eligibility requirements by sector

Entry to the Pacific cod fishery in federal waters has been restricted under the License Limitation Program (LLP) since 2000. All sectors that would receive Pacific cod allocations under the proposed action are subject to the LLP requirement when participating in Federal GOA Pacific cod fisheries, with the exception of vessels less than or equal to 26 feet in length. All vessels subject to the LLP requirement must have a Western or Central Gulf area endorsement and the appropriate operation type designation (catcher vessel or catcher processor) and gear designation (trawl or non-trawl) to participate in the Gulf Pacific cod fisheries. The number of valid LLPs in the Western and Central Gulf for the catcher processor and catcher vessel sectors with non-trawl and trawl endorsements is shown in Table 3-19. The Council is currently considering extinguishing trawl and non-trawl LLP licenses that do not meet minimum landings thresholds. These actions would potentially limit future entry into the Pacific cod fisheries in the Gulf of Alaska.

Table 3-19. Number of valid LLPs in the Western and Central Gulf of Alaska, by operation type and gear endorsement, 2007.

	Western Gulf		Central Gulf	
Gear Endorsement	**Catcher Processors**	**Catcher Vessels**	**Catcher Processors**	**Catcher Vessels**
Trawl	26	160	27	176
Non-trawl	33	266	51	886

Source: NMFS Restricted Access Management (RAM) groundfish license file, August 2007.

3.1.5 Participation by the processing sectors

The total number of at-sea and shoreside processors that received deliveries of Pacific cod from the Western and Central Gulf of Alaska fisheries peaked in 1999 with 65 shoreside and 54 at-sea processors participating (Table 3-20). The numbers of participating processors have declined over time in both the at-sea and shoreside sectors, and in both the Western and Central Gulf. The total amount of Pacific cod landed by GOA processors has declined as the Federal TACs have declined and State waters Pacific cod fisheries have taken an increasing proportion of the TACs. Total landings have decreased by nearly half since the late 1990s in both the at-sea and shoreside sectors in both management areas (see Table 3-21).

Table 3-20. Number of processors receiving landings of Pacific cod from the Western and Central Gulf of Alaska fisheries, 1995-2006.

Year	Central Gulf		Western Gulf		Total Shoreside	Total At-sea
	At-sea	Shoreside	At-sea	Shoreside		
1995	34	51	30	18	59	49
1996	25	39	30	10	44	39
1997	23	43	25	16	48	33
1998	24	43	22	22	51	32
1999	36	60	40	16	65	54
2000	24	43	31	14	48	41
2001	16	37	29	15	41	33
2002	17	35	33	16	43	37
2003	21	29	30	11	34	39
2004	17	33	30	14	40	34
2005	19	36	28	10	38	32
2006	20	32	27	11	35	34

Source: ADFG/CFEC fish tickets and Weekly Production Reports.

Table 3-21. Pacific cod landings (mt) by At-sea and Shoreside processors from the Western and Central Gulf of Alaska Pacific cod fisheries, 1995-2006.

Year	Central Gulf		Total[1]	Western Gulf		Total[1]	Grand Total[1]
	At-sea	Shoreside		At-sea	Shoreside		
1995	2,100	40,290	42,390	5,861	13,205	19,066	61,456
1996	2,361	36,552	38,913	4,831	18,389	23,220	62,132
1997	863	40,482	41,345	3,548	21,607	25,155	66,499
1998	5,100	34,935	40,035	3,212	18,723	21,935	61,969
1999	4,939	37,837	42,776	7,108	15,827	22,935	65,711
2000	3,200	28,974	32,174	6,785	13,815	20,600	52,774
2001	3,027	24,208	27,235	5,349	8,587	13,936	41,171
2002	2,106	20,540	22,646	7,128	9,475	16,602	39,249
2003	2,711	21,050	23,762	4,736	10,589	15,325	39,087
2004	2,362	24,035	26,396	4,642	10,396	15,038	41,434
2005	1,110	21,069	22,179	3,455	8,684	12,139	34,318
2006	1,963	20,598	22,560	3,330	10,151	13,481	36,041

Source: ADFG/CFEC fish tickets and Weekly Production Reports.
Note: State waters Pacific cod landings are not included.
[1] Does not include landings by catcher sellers.

3.1.6 Ex-vessel prices and gross revenues

Ex-vessel prices for Gulf of Alaska Pacific cod landed by the fixed gear sectors ranged from $0.267 to $0.304 per pound round weight during 2001–2005 (see Table 3-22). During this same time period, prices for the trawl sector ranged from $0.234 – $0.269 per pound round weight. These ex-vessel prices are provided in the 2005 Economic SAFE for the Groundfish Fisheries off Alaska (Hiatt et al., 2006). Preliminary data from 2006 indicate that ex-vessel prices have increased substantially. Based on CFEC gross revenues data, which do not include price adjustments or end-of-season bonuses, fixed gear ex-vessel prices averaged $0.396 in 2006, and trawl ex-vessel prices averaged $0.304.

Ex-vessel gross revenues for GOA Pacific cod landings by all catcher vessel sectors totaled $27.3 million in 2006 (Table 3-23). Pot catcher vessel revenues totaled $12.5 million, trawl catcher vessel revenues were $9.0 million, and hook-and-line catcher vessel revenues were $5.7 million.

Table 3-22. Ex-vessel prices (dollars) in the Gulf of Alaska Pacific cod fisheries.

Year	Fixed Gear	Trawl Gear
2001	0.299	0.258
2002	0.287	0.234
2003	0.304	0.282
2004	0.267	0.251
2005	0.297	0.269
2006	0.396	0.304

Source: 2005 Economic SAFE (Hiatt et al. 2006) for 2001-2005 prices; ADFG/CFEC fish tickets for 2006 prices.

Table 3-23. Ex-vessel gross revenues (millions of dollars) for catcher vessels in the Gulf of Alaska Pacific cod fisheries, 2001-2006.

Year	Pot	Trawl	Hook-and-line	Jig	Total
2001	3.5	11.8	4.2	0.1	19.6
2002	3.9	7.2	4.4	0.1	15.6
2003	7.7	10.0	2.7	0.04	20.4
2004	8.4	8.6	3.3	0.2	20.5
2005	9.7	7.8	5.7	0.1	23.3
2006	12.5	9.0	5.7	0.09	27.3

Source: ADFG/CFEC fish tickets.

3.1.7 Products produced from Pacific cod

Table 3-24 shows the product mix for Pacific cod in the Gulf of Alaska. Catcher processors produce mostly eastern and western cut headed and gutted (H&G) products and several ancillary products. Shorebased processors produce fillets and H&G products, along with a wide variety of ancillary products. During 2001 to 2005, headed and gutted fish comprised the majority of products for at-sea processors, while fillets made up a larger fraction of the product mix for shoreside processors (Hiatt et al. 2006).

Table 3-24. Products produced from Pacific cod harvested in the Gulf of Alaska, 2001-2005.

	Whole fish		Head & gut		Fillets		Other products		Total
Year	Mt	Percentage	Mt	Percentage	Mt	Percentage	Mt	Percentage	Mt
2001	1.8	8.5	9.0	42.8	6.0	28.6	4.3	20.2	21.1
2002	1.1	5.0	7.1	33.8	6.7	32.0	6.1	29.2	21.0
2003	2.2	9.7	4.5	19.7	8.6	38.0	7.4	32.6	22.6
2004	0.8	3.5	10.3	45.3	6.5	28.8	5.1	22.3	22.6
2005	0.9	4.9	6.4	35.1	5.9	32.4	5.0	27.6	18.2

Source: 2005 Economic SAFE (Hiatt et al., 2006).

3.1.8 First wholesale prices and revenues

First wholesale revenues for Pacific cod in the Gulf of Alaska are estimated in the 2006 Economic SAFE (Hiatt et al., 2006). From 2001-2005, catcher processor revenues ranged from $1,047 to $1,277 per round mt. Shoreside processor revenues ranged from $1,247 to $1,881 per round mt. In 2005, the average price per pound for all cod products was $1.29 per pound for at-sea processors and $1.65 per pound for shoreside processors, a substantial increase over 2004 prices (see Table 3-25). The 'all products' price estimate is a weighted average of all product prices.

Table 3-25. Price per pound of Pacific cod products in the fisheries off Alaska by processing sector, 2001-2005 (dollars).

	Whole fish		Head & gut		Fillets		Other products		All products	
Year	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside
2001	0.46	0.51	1.09	0.87	1.49	1.86	1.39	1.04	1.11	1.24
2002	0.29	0.41	0.97	0.99	1.58	2.28	1.03	0.79	0.98	1.31
2003	0.41	0.56	1.13	0.98	2.29	2.18	0.89	0.56	1.14	1.26
2004	0.43	0.54	1.09	1.04	2.2	2.13	1.02	0.8	1.09	1.26
2005	0.56	0.58	1.29	1.5	2.07	2.72	1.32	0.81	1.29	1.65

Source: 2005 Economic SAFE (Hiatt et al., 2006).

3.1.9 Percentage of Revenues from GOA Pacific Cod Fisheries

The distribution of ex-vessel revenues across groundfish and other fisheries for catcher vessels with GOA Pacific cod catch is summarized in Table 3-26. These data provide a general assessment of the dependence of the various catcher vessel sectors on Gulf of Alaska Pacific cod. Pot catcher vessels <60 MLOA had the highest proportion of revenues from GOA Pacific cod during both 1995-2000 (32%) and 2001-2006 (35%), and Pacific cod surpassed salmon as the most important source of revenue for this sector during 2001-2006. Pot catcher vessels >60 ft were more dependent on Pacific cod during 2001-2006 (24% of revenues) than during 1995-2000 (10%), and less dependent on crab. Similarly, jig catcher vessels relied more heavily on Pacific cod revenues in 2001-2006 (22%) than in 1995-2000 (13%), and salmon revenues decreased. Revenues from GOA Pacific cod remained a relatively small but consistent proportion of total ex-vessel revenues for hook-and-line and trawl catcher vessels across the two time periods.

Table 3-26. Percentage of ex-vessel revenues from GOA Pacific cod and other fisheries for catcher vessels with GOA Pacific cod catch during 1995-2000 and 2001-2006.

Fishery	Hook-and-line		Jig		Pot <60		Pot >60		Trawl	
	95-00	01-06	95-00	01-06	95-00	01-06	95-00	01-06	95-00	01-06
Gulf Pacific Cod	**9.4**	**8.9**	**13.0**	**22.3**	**31.8**	**34.9**	**10.4**	**23.6**	**15.2**	**15.6**
Gulf Other Groundfish	24.9	27.1	2.2	1.3	7.8	11.6	3.1	1.8	23.3	35.5
BSAI Pacific Cod	0.6	1.8	0.9	0.8	0.1	5.0	6.0	8.6	6.3	13.2
BSAI Other Groundfish	1.5	2.7	0.1	0.0	0.7	0.5	0.4	1.2	42.0	29.0
Halibut	37.4	41.1	8.4	13.7	13.1	12.3	7.4	7.1	2.9	3.5
Crab	8.1	7.2	5.4	3.6	1.7	3.7	72.5	57.6	4.5	1.4
Salmon	16.5	10.0	67.4	56.3	38.7	27.8	0.0	0.0	5.1	1.5
Other Non-groundfish	1.7	1.4	2.6	2.0	6.1	4.0	0.3	0.2	0.7	0.4

Source: ADFG/CFEC fish tickets and ex-vessel gross revenues data, 1995-2006.

The distribution of first wholesale revenues across several groundfish fisheries for catcher processors with GOA Pacific cod catch is summarized in Table 3-27. First wholesale revenues from halibut, crab, salmon, and other non-groundfish for these vessels were not available for this analysis. Hook-and-line catcher processors derive the majority of groundfish revenues from BSAI Pacific cod. Gulf of Alaska Pacific cod comprised a slightly smaller share of first wholesale revenues for hook-and-line catcher processors in 2001-2006 (9%) than in 1995-2000 (13%). Relatively few pot catcher processors participate in the GOA Pacific cod fishery, but those that do derived the majority of first wholesale revenues from GOA Pacific cod between 2001 and 2006. Trawl catcher processors mostly catch Pacific cod incidentally while participating in other directed fisheries, and revenues from GOA Pacific cod are less than 2 percent of first wholesale revenues.

Table 3-27. Percentage of first wholesale revenues from GOA Pacific cod and other fisheries for catcher processors with GOA Pacific cod catch during 1995-2000 and 2001-2006.

Fishery	Hook-and-line		Pot		Trawl	
	95-00	01-06	95-00	01-06	95-00	01-06
Gulf Pacific cod	**12.9**	**9.3**	**35.5**	**51.3**	**1.8**	**1.6**
Gulf Other Groundfish	13.0	10.7	0.0	0.5	16.2	15.2
BSAI Pacific cod	61.1	74.3	61.1	47.8	11.5	18.5
BSAI Other Groundfish	13.0	5.6	3.4	0.4	70.5	64.7

Source: Weekly Production Reports, 1995-2006.

3.2 Analysis of the Components and Options of the Proposed Action

The proposed sector allocations would divide the Western and Central Gulf of Alaska Pacific cod TACs among the various gear sectors and would preserve the historic distribution of catch among sectors. The Western and Central Gulf A season TACs are fully utilized, and vessels race for shares of the TACs. Sector allocations would reduce competition among sectors for the A season TACs, but may not reduce competition among vessels within each sector or slow down the fishery.

The GOA Pacific cod B season TACs are not typically fully fished due to halibut PSC closures, adverse weather conditions, lower catch per unit effort, and difficulty finding cod. Trawl vessels, and to a lesser extent, hook-and-line vessels, race against each other for shares of the GOA halibut PSC apportionments during the B season, and halibut PSC limits often constrain B season catch by these sectors. During years when halibut PSC closures have not limited participation by trawl and hook-and-line vessels, the B season TACs have been fully fished. Sector allocations would protect historic B season shares during these years.

Options for Sector Definitions

Under the proposed action, separate allocations would be made to hook-and-line catcher vessels, hook-and-line catcher processors, pot catcher vessels, pot catcher processors, trawl catcher vessels, trawl catcher processors, and jig catcher vessels. There are options to establish separate allocations for inshore trawl and hook-and-line catcher processors, and to divide all of the catcher processor allocations by vessel length (CPs <125 ft and ≥125 ft). There is also an option to divide the pot catcher vessel allocation by vessel length (Pot CVs <60 ft and ≥60 ft). Dividing allocations by vessel length would protect harvest shares of smaller catcher processors and pot catcher vessels. Establishing distinct inshore catcher processor allocations would protect harvest shares of vessels that typically fish off the inshore TACs, if combined with a provision to limit entry to the inshore component. The non-trawl LLP recency action currently being considered by the Council includes an option to give catcher processors a one-time election to participate in the inshore or offshore processing sector rather than an annual election. This would likely stabilize participation in the inshore sector, particularly if combined with an inshore catcher processor allocation.

Some of the proposed divisions of the catcher processor sectors may not be desirable due to the small number of participating vessels in each sector (see Tables 3-28 and 3-29). For example, there may not be enough participating pot catcher processors to justify splitting this sector by either vessel length or by inshore and offshore processing components. In recent years, 4 or more hook-and-line catcher processors have participated in the inshore sector in the Western Gulf, but fewer vessels have typically participated in the inshore sector in the Central Gulf. Overall, few trawl catcher processors fish inshore. Given the small numbers of inshore participants, the Council could consider creating a single inshore allocation for all catcher processors. Similarly, although there are sufficient numbers of catcher processors to further divide allocations by vessel length (CPs >125 ft and ≤125 ft), this would result in allocations to small numbers of vessels in each gear sector.

Table 3-28. Number of catcher processors participating in the inshore and offshore processing sectors for Pacific cod in the Central and Western Gulf of Alaska, 1995-2006.

	Central Gulf				Western Gulf			
YEAR	HAL Inshore	HAL Offshore	Trawl Inshore	Trawl Offshore	HAL Inshore	HAL Offshore	Trawl Inshore	Trawl Offshore
1995	7	1	6	19	11	4	3	9
1996	4	0	6	15	10	3	4	13
1997	1	0	5	16	7	2	4	12
1998	4	1	4	13	5	0	6	10
1999	5	3	5	10	9	11	5	8
2000	6	2	5	6	9	4	3	10
2001	1	1	5	6	7	7	4	9
2002	1	5	3	6	8	8	3	11
2003	4	4	3	9	6	13	3	6
2004	2	4	3	7	4	7	3	11
2005	3	5	3	7	4	6	2	11
2006	2	6	2	9	7	7	1	10

Source: NMFS Blend (1995-2002) and Catch Accounting (2003-2006) databases.

Table 3-29. Number of catcher processors with Central and Western Gulf of Alaska Pacific cod catch by vessel length, 1995-2006.

	Central Gulf						Western Gulf					
YEAR	HAL CP <125	HAL CP ≥125	Pot CP <125	Pot CP ≥125	Trawl CP <125	Trawl CP ≥125	HAL CP <125	HAL CP ≥125	Pot CP <125	Pot CP ≥125	Trawl CP <125	Trawl CP ≥125
1995	8	0	0	0	7	18	11	4	1	1	3	9
1996	4	0	0	0	8	13	10	3	0	0	4	13
1997	1	0	0	0	6	15	7	2	0	0	4	12
1998	4	1	0	0	5	12	5	0	0	0	5	11
1999	6	2	2	9	5	10	9	11	0	6	5	8
2000	6	2	1	2	5	6	10	3	0	2	3	10
2001	1	1	1	2	5	6	9	5	0	3	4	9
2002	1	5	0	2	4	5	8	8	1	1	3	11
2003	4	4	1	0	5	7	6	13	1	0	5	4
2004	2	4	0	0	5	5	4	7	1	0	4	10
2005	3	5	0	0	5	5	4	6	1	0	4	9
2006	2	6	0	0	5	6	7	7	0	0	3	8

Source: NMFS Weekly Production Reports.

Options for Defining Qualifying Catch

The Council identified three options three options for defining qualifying catch:
(1) All retained catch from the Federal and parallel fisheries, including incidental catch of Pacific cod in other target fisheries.
(2) All retained catch from the Federal and parallel fisheries, including incidental catch of Pacific cod in other target fisheries, but excluding meal.
(3) All retained catch from the *directed* Federal and parallel Pacific cod fisheries, excluding meal.

Retained catch of Pacific Cod in the Western and Central Gulf of Alaska, calculated in the three different ways specified by the Council, is summarized in Table 3-30 through 3-35. Note that sectors are not mutually exclusive, and some vessels have catch history in more than one sector. These tables also show each sector's annual harvest share as a percentage of the total catch by all sectors, and average annual harvest shares during the two qualifying periods specified by the Council, 1995-2005 and 2000-2006.

Table 3-30. Retained catch of Pacific cod from the Western GOA, 1995-2006.

	HAL CP		HAL CV		Jig CV		Pot CP		Pot CV		Trawl CP		Trawl CV	
Year	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total
1995	4,875	25.5	25	0.1	36	0.2	*	*	3,299	17.3	602	3.2	10,188	53.3
1996	4,199	18.0	147	0.6	32	0.1	0	0.0	4,448	19.0	632	2.7	13,914	59.5
1997	3,285	13.0	34	0.1	5	0.0	0	0.0	3,838	15.2	263	1.0	17,879	70.7
1998	2,959	13.4	61	0.3	1	0.0	0	0.0	3,820	17.3	251	1.1	15,007	67.9
1999	4,947	21.5	70	0.3	0	0.0	1,347	5.8	2,713	11.8	618	2.7	13,364	58.0
2000	4,532	22.0	54	0.3	5	0.0	193	0.9	4,392	21.3	654	3.2	10,770	52.3
2001	3,657	26.2	31	0.2	157	1.1	1,074	7.7	2,263	16.2	618	4.4	6,160	44.1
2002	5,787	34.8	38	0.2	192	1.2	*	*	4,600	27.7	419	2.5	5,073	30.5
2003	3,923	25.6	46	0.3	46	0.3	*	*	9,549	62.2	317	2.1	1,361	8.9
2004	2,811	18.6	28	0.2	183	1.2	*	*	9,715	64.2	425	2.8	1,717	11.4
2005	698	5.7	281	2.3	43	0.4	*	*	6,402	52.3	228	1.9	4,441	36.3
2006	2,473	18.1	106	0.8	*	*	*	*	5,779	42.3	206	1.5	4,917	36.0
95-05	3,789	20.4	74	0.5	64	0.4	338	2.0	5,003	29.5	457	2.5	9,079	44.8
00-06	3,412	21.6	83	0.6	*	*	633	4.3	6,100	40.9	409	2.6	4,920	31.3

Table 3-31. Retained catch of Pacific cod, <u>excluding meal</u>, from the Western GOA, 1995-2006.

	HAL CP		HAL CV		Jig CV		Pot CP		Pot CV		Trawl CP		Trawl CV	
Year	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total
1995	4,875	25.5	24.8	0.1	35.8	0.2	*	*	3,299	17.3	602	3.2	10,188	53.3
1996	4,199	18.0	146.7	0.6	32.2	0.1	0	0.0	4,448	19.0	632	2.7	13,914	59.5
1997	3,285	13.0	33.6	0.1	4.7	0.0	0	0.0	3,838	15.2	263	1.0	17,878	70.7
1998	2,959	13.4	60.8	0.3	0.7	0.0	0	0.0	3,805	17.2	251	1.1	14,988	67.9
1999	4,947	21.5	69.8	0.3	0.0	0.0	1,347	5.8	2,708	11.8	618	2.7	13,345	57.9
2000	4,532	22.1	53.2	0.3	5.2	0.0	193	0.9	4,331	21.1	654	3.2	10,741	52.4
2001	3,657	26.4	31.2	0.2	157.2	1.1	1,074	7.8	2,259	16.3	618	4.5	6,033	43.6
2002	5,787	35.0	37.5	0.2	189.2	1.1	*	*	4,571	27.6	419	2.5	5,019	30.3
2003	3,923	25.8	46.5	0.3	45.8	0.3	*	*	9,438	62.1	317	2.1	1,314	8.7
2004	2,811	18.7	24.3	0.2	182.5	1.2	*	*	9,644	64.2	425	2.8	1,697	11.3
2005	698	5.7	279.9	2.3	43.1	0.4	*	*	6,381	52.3	228	1.9	4,410	36.2
2006	2,473	18.1	105.2	0.8	*	*	*	*	5,758	42.2	206	1.5	4,911	36.0
95-05	3,789	20.5	73	0.4	63	0.4	338	2.0	4,975	29.5	457	2.5	9,048	44.7
00-06	3,412	21.7	83	0.6	*	*	633	4.4	6,055	40.8	409	2.6	4,875	31.2

Table 3-32. Retained catch of Pacific cod <u>from the directed Pacific cod fishery</u>, <u>excluding meal</u>, from the Western GOA, 1995-2006.

	HAL CP		HAL CV		Jig CV		Pot CP		Pot CV		Trawl CP		Trawl CV	
Year	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total
1995	4,489	25.6	11.4	0.1	32.1	0.2	*	*	2,316	13.2	413	2.4	10,178	58.2
1996	4,080	20.0	140.6	0.7	27.6	0.1	0	0.0	1,669	8.2	615	3.0	13,823	67.9
1997	3,234	14.7	*	*	*	*	0	0.0	1,041	4.7	215	1.0	17,447	79.5
1998	2,789	13.8	*	*	*	*	0	0.0	2,516	12.5	128	0.6	14,709	72.9
1999	4,787	22.6	*	*	0.0	0.0	1,202	5.7	1,403	6.6	426	2.0	13,302	62.9
2000	4,151	21.2	*	*	*	*	*	*	4,262	21.8	368	1.9	10,583	54.0
2001	3,311	25.6	18.6	0.1	157.1	1.2	1,058	8.2	2,076	16.1	310	2.4	6,001	46.4
2002	5,394	34.4	8.3	0.1	184.7	1.2	*	*	4,521	28.8	52	0.3	4,999	31.9
2003	3,763	25.7	26.2	0.2	45.8	0.3	*	*	9,383	64.1	120	0.8	1,219	8.3
2004	2,591	17.9	8.6	0.1	182.4	1.3	*	*	9,644	66.4	192	1.3	1,651	11.4
2005	664	5.6	253.2	2.1	43.1	0.4	*	*	6,360	53.9	*	*	4,320	36.6
2006	2,430	18.4	86.4	0.7	*	*	*	*	5,758	43.5	37	0.3	4,821	36.5
95-05	3,568	20.7	54	0.4	62	0.4	319	2.0	4,108	26.9	259	1.4	8,931	48.2
00-06	3,186	21.3	61	0.5	88	0.6	334	2.4	6,001	42.1	*	*	4,799	32.2

Source for Tables 3-32 – 3-34: ADFG Fish Tickets and NMFS Weekly Production Reports, 1995-2006.

Table 3-33. Retained catch of Pacific cod from the Central GOA, 1995-2006.

	HAL CP		HAL CV		Jig CV		Pot CP		Pot CV		Trawl CP		Trawl CV	
Year	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total
1995	216	0.5	4,546	10.6	50	0.1	0	0.0	13,760	32.2	1,859	4.3	22,330	52.2
1996	494	1.3	4,486	11.4	34	0.1	0	0.0	10,485	26.8	1,867	4.8	21,815	55.7
1997	*	*	6,401	15.4	21	0.1	0	0.0	8,418	20.3	789	1.9	25,756	62.1
1998	107	0.3	5,815	14.5	50	0.1	0	0.0	9,205	22.9	4,155	10.3	20,820	51.9
1999	314	0.7	6,145	14.4	23	0.1	2,932	6.9	12,043	28.1	1,451	3.4	19,881	46.5
2000	209	0.6	6,529	20.3	38	0.1	781	2.4	11,943	37.1	1,724	5.4	10,971	34.1
2001	*	*	5,684	20.7	11	0.0	572	2.1	3,504	12.8	2,446	8.9	15,169	55.4
2002	1,291	5.7	6,753	29.8	3	0.0	*	*	3,228	14.2	687	3.0	10,568	46.6
2003	1,257	5.3	3,497	14.7	16	0.1	*	*	3,200	13.4	1,448	6.1	14,405	60.5
2004	1,383	5.2	5,423	20.5	108	0.4	0	0.0	4,887	18.5	934	3.5	13,669	51.7
2005	264	1.2	4,271	19.3	137	0.6	0	0.0	8,169	36.8	752	3.4	8,591	38.7
2006	836	3.7	6,182	27.1	93	0.4	0	0.0	8,398	36.9	886	3.9	6,377	28.0
Avg 95-05	510	1.9	5,414	17.4	45	0.2	402	1.1	8,077	23.9	1,647	5.0	16,725	50.5
00-06	*	*	5,477	21.8	58	0.2	213	0.7	6,190	24.3	1,268	4.9	11,393	45.0

Table 3-34. Retained catch of Pacific cod, excluding meal, from the Central GOA, 1995-2006.

	HAL CP		HAL CV		Jig CV		Pot CP		Pot CV		Trawl CP		Trawl CV	
Year	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total
1995	216	0.5	4,546	10.6	50.1	0.1	0	0.0	13,760	32.2	1,859	4.3	22,330	52.2
1996	494	1.3	4,485	11.4	34.1	0.1	0	0.0	10,485	26.8	1,867	4.8	21,814	55.7
1997	*	*	6,400	15.4	21.2	0.1	0	0.0	8,418	20.3	789	1.9	25,755	62.1
1998	107	0.3	5,812	14.6	49.7	0.1	0	0.0	9,154	23.0	4,155	10.4	20,532	51.6
1999	314	0.7	6,143	14.4	23.5	0.1	2,932	6.9	12,039	28.3	1,451	3.4	19,648	46.2
2000	209	0.7	6,515	20.4	38.1	0.1	781	2.4	11,932	37.3	1,724	5.4	10,814	33.8
2001	*	*	5,670	21.0	11.4	0.0	572	2.1	3,500	12.9	2,446	9.0	14,852	54.9
2002	1,291	5.8	6,751	30.3	2.8	0.0	*	*	3,162	14.2	687	3.1	10,255	46.0
2003	1,257	5.4	3,497	14.9	15.7	0.1	*	*	3,179	13.5	1,448	6.2	14,084	60.0
2004	1,383	5.3	5,421	20.6	108.3	0.4	0	0.0	4,884	18.6	934	3.6	13,526	51.5
2005	264	1.2	4,271	19.3	136.7	0.6	0	0.0	8,157	36.9	752	3.4	8,542	38.6
2006	836	3.7	6,182	27.2	92.7	0.4	0	0.0	8,398	36.9	886	3.9	6,347	27.9
95-05	510	1.9	5,411	17.5	45	0.2	402	1.1	8,061	24.0	1,647	5.0	16,560	50.2
00-06	*	*	5,473	21.9	58	0.2	213	0.7	6,173	24.3	1,268	4.9	11,203	44.7

Table 3-35. Retained catch of Pacific cod from the directed Pacific cod fishery, excluding meal, from the Central GOA, 1995-2006.

	HAL CP		HAL CV		Jig CV		Pot CP		Pot CV		Trawl CP		Trawl CV	
Year	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total	Catch	Percent of total
1995	207	0.5	4,342	11.1	42.3	0.1	0	0.0	13,067	33.5	1,388	3.6	19,947	51.2
1996	470	1.2	4,456	11.6	33.5	0.1	0	0.0	10,485	27.3	1,567	4.1	21,423	55.7
1997	*	*	6,252	15.8	17.7	0.0	0	0.0	8,395	21.2	477	1.2	24,411	61.6
1998	*	*	5,623	15.3	49.3	0.1	0	0.0	9,153	24.8	2,787	7.6	19,122	51.9
1999	308	0.8	5,957	14.8	23.5	0.1	2,459	6.1	12,039	29.9	877	2.2	18,560	46.1
2000	207	0.7	6,357	22.5	38.0	0.1	*	*	11,932	42.2	1,395	4.9	8,348	29.5
2001	*	*	5,536	22.9	11.2	0.0	572	2.4	3,491	14.5	2,150	8.9	12,372	51.3
2002	1,135	6.0	6,632	35.3	2.7	0.0	*	*	3,162	16.8	*	*	7,642	40.7
2003	1,207	6.4	3,238	17.3	14.5	0.1	0	0.0	3,179	17.0	*	*	11,058	59.1
2004	1,380	5.9	5,262	22.4	105.1	0.4	0	0.0	4,884	20.8	673	2.9	11,139	47.5
2005	*	*	4,208	21.5	134.1	0.7	0	0.0	8,157	41.6	264	1.3	6,582	33.6
2006	832	4.2	6,089	30.5	92.7	0.5	0	0.0	8,398	42.0	316	1.6	4,254	21.3
95-05	483	2.1	5,261	19.1	43	0.2	286	0.8	7,995	26.3	1,067	3.4	14,601	48.0
00-06	716	3.5	5,332	24.6	57	0.3	98	0.4	6,172	27.8	708	2.9	8,771	40.4

Source for Tables 3-35 – 3-37: ADFG Fish Tickets and NMFS Weekly Production Reports, 1995-2006.

Estimates of total retained catch are summarized in Table 3-30 and Table 3-33. In addition, estimates of retained catch by vessel length (CPs >125 ft and ≤125 ft, and Pot CVs >60 ft and ≤60 ft) and by inshore and offshore processing components are reported in **Appendix A**. Since 1995, the proportion of catch taken by the various sectors has changed, in some cases substantially. In general, the proportion of Central and Western Gulf Pacific cod caught by trawl catcher vessels has declined, while the proportion caught by pot catcher vessels has increased. This trend is particularly apparent in the Western Gulf. From 1995-2005, trawl catcher vessels harvested the largest share (45%) of Pacific cod in the Western Gulf, followed by pot catcher vessels (30%), and hook-and-line catcher processors (20%). From 2000 to 2006, pot catcher vessels harvested a larger share (41%) than trawl catcher vessels (31%). Similarly, in the Central Gulf, trawl catcher vessels harvested the largest share (50%) of Pacific cod during 1995-2005, but the trawl share decreased to 45% from 2000-2006. Catch by hook-and-line vessels has also increased in recent years. The hook-and-line catcher vessel share increased from 17% during 1995-2005 to 22% during 2000-2006. Jig catcher vessels typically harvested less than 1% of the total catch of Pacific cod in the Western and Central Gulf. Jig catch has generally been increasing since 1995.

In developing catch history estimates for recent sector allocations, the Council at times has elected to exclude meal from estimates of catch history. Meal has typically been excluded when a certain segment would be disadvantaged by the inclusion of meal in calculations. Specifically, small catcher processors without meal plants could be disadvantaged. However, Weekly Production Reports indicate that in the Gulf of Alaska no catcher processors produced meal from Pacific cod during 1995 to 2006. Pacific cod is a relatively high value product, and the majority of cod is processed into headed and gutted products or fillets. Fish tickets may designate catch as 'destined for meal production,' but this estimate is not particularly reliable and may underestimate the amount of catch used for meal production. Meal is a relatively minor component of the total retained catch by catcher vessels. Tables 3-31 and 3-34 exclude meal, and subtracting these catch estimates from those in Tables 3-30 and 3-35 produces an estimate of catch used for meal production. For example, in the Central Gulf, approximately 1.0 percent of retained catch by trawl catcher vessels was used for meal production between 1995 and 2005. From 2000 to 2006, approximately 1.7 percent of Central Gulf trawl catcher vessel catch was used for meal. In general, meal comprised less than 1 percent of total retained catch for other catcher vessel sectors.

Estimates of retained **directed** catch of Pacific cod (Tables 3-32 and 3-35) exclude incidental catch of cod during other directed fisheries, and **also exclude catch used for meal production**. Pacific cod is an Increased Retention/Increased Utilization species and has a maximum retainable amount (MRA) of 20 percent for most directed fisheries in the Gulf of Alaska. The trawl sector catches a substantial portion of its annual Pacific cod catch while participating in other directed fisheries. The trawl catcher vessel sector in the Central Gulf has the highest retained incidental catch of Pacific cod of any of the sectors. **Tables 3-36 and 3-37 summarize retained incidental catch including meal,** and provide an indication of the annual variation in incidental catch levels within each sector, and for all sectors combined.

If directed catch is used by the Council to allocate GOA Pacific cod among the sectors, a separate incidental catch allowance will need to be set aside off the top to accommodate the incidental catch needs of each sector. Estimating incidental catch needs may be difficult, because incidental catch need vary from year to year. Since 2001, incidental catch in the Central Gulf has ranged from about 2,500 mt to nearly 5,000 mt. In the Western Gulf, incidental catch ranged from approximately 300 mt to over 900 mt. The pot sector has almost no incidental catch of Pacific cod. What appears to be incidental catch by pot catcher vessels between 1995 and 1999 in the Western Gulf is likely due to a reporting error. It appears that catch from the BSAI directed Pacific cod fishery was incorrectly recorded as Western Gulf catch. Staff is currently working with source agencies to determine the cause of this error and make corrections.

Table 3-36. Retained incidental catch of Pacific cod in the Western Gulf of Alaska, 1995-2006.

Year	HAL CP	HAL CV	Jig CV	Pot CP	Pot CV	Trawl CP	Trawl CV	Total
1995	385	13	4	*	983[a]	189	9	1,583
1996	119	6	5	0	2,778[a]	17	91	3,016
1997	51	16	1	0	2,797[a]	47	432	3,345
1998	170	13	0	0	1,300[a]	123	287	1,894
1999	160	33	0	145	1,309[a]	192	46	1,886
2000	381	25	1	*	72	287	168	933
2001	347	13	0	16	183	308	68	935
2002	393	29	5	*	50	367	42	886
2003	160	20	0	*	55	197	132	565
2004	220	19	0	0	0	232	58	529
2005	34	27	0	0	22	223	107	413
2006	43	19	0	0	0	168	94	324

[a]There appear to be reporting errors in the fish tickets. BSAI catch may be reported as Western Gulf catch.
* Indicates that data are confidential. Totals do not include confidental data.
Source: ADFG Fish Tickets and NMFS Weekly Production Reports, 1995-2006.

Table 3-37. Retained incidental catch of Pacific cod in the Central Gulf of Alaska, 1995-2006.

Year	HAL CP	HAL CV	Jig CV	Pot CP	Pot CV	Trawl CP	Trawl CV	Total
1995	9	203	8	0	693	472	2,383	3,767
1996	24	29	1	0	0	299	391	744
1997	*	148	3	0	22	312	1,344	1,830
1998	8	189	0	0	1	1,368	1,489	3,056
1999	6	186	0	473	0	574	1,106	2,345
2000	3	157	0	754	0	330	2,519	3,762
2001	3	135	0	0	8	296	2,503	2,945
2002	156	120	0	*	0	552	2,653	3,481
2003	50	258	1	*	0	1,423	3,132	4,865
2004	3	160	3	0	0	262	2,414	2,842
2005	20	62	3	0	0	487	1,967	2,539
2006	5	93	0	0	0	570	2,101	2,769

[a]There appear to be reporting errors in the fish tickets. BSAI catch may be reported as Western Gulf catch.
* Indicates that data are confidential. Totals do not include confidental data.
Source: ADFG Fish Tickets and NMFS Weekly Production Reports, 1995-2006.

Apportionment of Pacific cod to meet incidental catch needs

Under current regulations, 20 percent of the TAC of each Gulf species (including Pacific cod) can be held in reserve for later allocation to accommodate incidental catch during other directed fisheries. In recent years, NOAA fisheries has not set aside a separate incidental catch allowance for cod, and has instead included the reserves as part of the GOA Pacific cod TACs. The Council is currently considering two options to revise management of incidental catch of cod. Options include:

(1) Reserve the amount of Pacific cod needed to support incidental catch of cod in all other directed Gulf of Alaska fisheries off the top before allocating to the sectors; or
(2) Give separate incidental catch allocations to each sector based on historic catch levels, and each sector will be responsible for their own incidental catch needs.

Reserving an incidental catch allowance (ICA) for Pacific cod off the top of the Western and Central Gulf TACs (Option 1) is the less flexible option. If the ICA is too large, unused quota has to be reallocated at some point during the season. If the ICA is too small, it may constrain participation in other directed

fisheries. Setting aside an ICA also complicates the harvest specifications process and is more difficult to manage. For example, it can be difficult for inseason managers to determine on an instantaneous basis if catch should account to the ICA or if it is directed catch (M. Furuness, pers. comm., 8/27/2007).

Option 2 is straightforward to implement and manage. It is relatively simple to give each sector a single allocation of cod based on historic catch levels that is sufficient to accommodate incidental catch needs. Options 1 and 2 for defining qualifying catch both include incidental catch. The Council could use either of these definitions of qualifying catch to incorporate incidental catch needs into sector allocations.

Comparison of catch using different data sets

In developing catch histories for recent sector allocations, the Council has typically used Fish Tickets for catcher vessels and Weekly Production Reports (WPRs) for catcher processors. An alternative is to use the NMFS Blend (1995-2002) and Catch Accounting (2003-present) databases, which incorporate observer data as well as Fish Tickets and WPRs. NMFS uses the Blend and Catch Accounting databases to manage the fishery inseason, and these databases comprise the official catch record. In **Appendix B**, estimates of total retained catch based on the Blend and Catch Accounting databases are compared to catch estimates based on Fish Tickets and WPRs. In general, ADFG Fish Tickets are a more complete record of catcher vessel catch than the Blend database, particularly in the years prior to implementation of the AFA (M. Furuness, pers. comm., 8/2007). As a result, catch estimates based on fish tickets are generally higher than those from the Blend database.

Catch estimates based on WPRs are generally lower than those in the Blend and Catch Accounting databases. Discrepancies between WPRs and Blend/Catch Accounting data may be the result of underreporting on WPRs, the use of product recovery rates to back-calculate round weights for catch recorded on WPRs, and the incorporation of observer estimates in Blend/Catch Accounting data. The advantage of using WPRs for allocations is that certain product types, such as meal, can be excluded from catch estimates. The Blend and Catch Accounting databases do not contain a record of products produced. However, in the Gulf of Alaska no catcher processors produced meal from Pacific cod during 1995-2006. For this reason, the Council could consider using Blend and Catch Accounting data rather than WPRs to calculate qualifying catch for catcher processors.

Options for Calculating Sector Allocations

Options include two qualifying periods:

- Qualifying years 1995-2005: average of best 5 or 7 years
- Qualifying years 2000-2006: average of best 3 or 5 years

The ranges of potential allocations of the Western and Central GOA Pacific cod TACs are summarized in Tables 3-38 and 3-39. The qualification period that includes earlier years (1995-2005) generally favors the trawl catcher vessel sector, particularly in the Western Gulf. The qualification period that only includes more recent years (2000-2006) generally favors the pot catcher vessel sector, and, to a lesser extent, the hook-and-line sectors. Using each sector's best years reduces the disparities among the options somewhat, but there are still strong differences depending on the range of qualifying years selected by the Council. For example, depending on which definition of qualifying catch is used, the trawl catcher vessel allocation could range from 30.9 percent to 47.7 percent of the Western Gulf TAC. Similarly, the pot catcher vessel allocation could range from 28.6 percent to 42.6 percent of the Western Gulf TAC. Differences among the various options are generally much smaller for the Central Gulf.

The Council has indicated its intent to reduce the trawl allocation in the Central Gulf by the percentage of the TAC allocated to the Central Gulf Rockfish pilot program. A fixed percentage of the Central Gulf

Pacific cod TAC is currently allocated to participants in the Rockfish program. The allocation to the trawl sector could be simply reduced by the allocation to the pilot program during the tenure of that program.

Table 3-38. Potential percent allocations of the Western Gulf Pacific cod TACs based on 3 options for defining qualifying catch and 4 options for selecting qualifying years.

		HAL CP	HAL CV	Jig CV	POT CP	POT CV	Trawl CP	Trawl CV
All retained catch	1995-2005: Best 7 years	19.4	0.5	0.5	2.4	29.5	2.4	45.3
	1995-2005: Best 5 years	18.8	0.5	0.6	2.7	31.9	2.3	43.3
	2000-2006: Best 5 years	20.7	0.6	0.7	2.5	40.6	2.4	32.5
	2000-2006: Best 3 years	20.2	0.8	0.8	2.9	41.8	2.4	31.0
Retained catch, no meal	1995-2005: Best 7 years	19.5	0.5	0.5	2.4	29.4	2.4	45.3
	1995-2005: Best 5 years	18.8	0.5	0.6	2.7	31.8	2.3	43.2
	2000-2006: Best 5 years	20.9	0.6	0.7	2.5	40.5	2.5	32.4
	2000-2006: Best 3 years	20.4	0.8	0.8	2.9	41.7	2.4	30.9
Directed catch, no meal	1995-2005: Best 7 years	18.9	0.4	0.5	2.3	28.6	1.5	47.7
	1995-2005: Best 5 years	17.9	0.5	0.6	2.7	31.3	1.6	45.5
	2000-2006: Best 5 years	20.3	0.5	0.7	2.5	41.6	1.1	33.3
	2000-2006: Best 3 years	19.8	0.7	0.8	3.0	42.6	1.3	31.7

Table 3-39. Potential percent allocations of the Central Gulf Pacific cod TACs based on 3 options for defining qualifying catch and 4 options for selecting qualifying years.

		HAL CP	HAL CV	Jig CV	POT CP	POT CV	Trawl CP	Trawl CV
All retained catch	1995-2005: Best 7 years	2.5	17.3	0.2	1.5	25.2	5.3	48.0
	1995-2005: Best 5 years	3.0	17.7	0.2	1.9	25.8	5.7	45.7
	2000-2006: Best 5 years	3.7	20.8	0.3	0.9	25.2	4.9	44.3
	2000-2006: Best 3 years	4.1	19.5	0.4	1.3	27.8	5.1	42.0
Retained catch, no meal	1995-2005: Best 7 years	2.5	17.5	0.2	1.5	25.2	5.4	47.8
	1995-2005: Best 5 years	3.0	17.8	0.2	1.9	25.8	5.7	45.5
	2000-2006: Best 5 years	3.7	20.9	0.3	0.9	25.2	4.9	44.0
	2000-2006: Best 3 years	4.1	19.6	0.4	1.3	27.8	5.2	41.6
Directed catch, no meal	1995-2005: Best 7 years	2.7	19.1	0.2	1.1	26.8	4.1	45.9
	1995-2005: Best 5 years	3.3	19.5	0.2	1.4	27.3	4.5	43.7
	2000-2006: Best 5 years	4.1	23.1	0.3	0.5	28.3	3.4	40.2
	2000-2006: Best 3 years	4.5	21.5	0.4	0.7	30.5	4.1	38.3

Allocation of Pacific cod to the jig sector

The Council is considering options to set aside 1%, 3%, 5%, or 7% of the Western and Central GOA Pacific cod TACs for the jig catcher vessel sector, with a stairstep provision to increase the TACs if 90% of an allocation is fished during a given year. The jig allocation could be set aside from the A season TAC, the B season TAC, or divided between the A and B season TACs.

Currently, the jig sector catches less than one percent of the Western and Central GOA Pacific cod TACs. In 2006, the jig sector harvested 0.4 percent of the retained catch of cod in the Central Gulf (Tables 3-30 and 3-33). Only one jig vessel participated in the Western Gulf cod fishery in 2006. In 2005, jig vessels caught 0.4 percent of the total retained catch in the Western Gulf. The Council is currently considering an option to give the jig sector a base 1 percent allocation of each TAC, with a provision to increase

allocations if 90 percent of the quota is fished during a given year. Based on 2006 catch levels, the jig sector would not fully use a one percent allocation, and would not be eligible for an increased allocation unless catch levels increased substantially.

However, jig catch has fluctuated considerably, and during recent years (2001, 2002, and 2004) the jig share exceeded 1 percent of the total retained catch in the Western Gulf. Under options being considered by the Council, these catch levels would trigger a stairstep increase in the Western Gulf jig allocation to 2 percent or more of the TAC. If there is concern that fluctuations in effort by the jig sector may result in unharvested TAC, the Council may wish to consider adding an option for a stairstep decrease in the jig allocation back to a base level of 1 percent if increased allocations (2 percent or more) are triggered but are not fully fished or nearly so (90 percent or more) during a period of years.

Rollover provisions among sectors

Rollover provisions would make unused quota available to other sectors. The trawl catcher processor and trawl catcher vessel allocations would become available to other sectors when the final trawl halibut PSC apportionment is used. The **final trawl halibut apportionment** becomes available on **October 1st**, and was used in one day in 2004 and 2005 (see Tables 3-10 and 3-11). Trawl vessels race against each other for shares of the GOA halibut PSC apportionments during the B season, and halibut PSC limits constrain B season catch. The hook-and-line CP and CV allocations would become available to other sectors when the final hook-and-line halibut PSC apportionment is used. The **final hook-and-line halibut apportionment** becomes available on **September 1st**.

In 2005 and 2006, the directed trawl seasons closed on October 1st and October 8th, respectively, due to halibut PSC limits, but the directed fixed gear sectors remained open until December 31st. Participation and catch during 2005 and 2006 may provide an indication of potential participation levels and catch during the B season if rollovers of unused quota were made available during specific months.

Table 3-40. Number of vessels participating and catch (mt) of Pacific cod during the B season in 2005 and 2006 in the Western and Central Gulf of Alaska.

Month	Sector	Central Gulf		Western Gulf	
		Vessels	Mt	Vessels	Mt
September	HAL CP	1	*	4	224
	HAL CV	92	1,835	18	16
	Jig CV	7	24	0	0
	Pot CV	28	1,863	16	1,059
	Trawl CP	7	652	3	12
	Trawl CV	38	2,810	24	28
October	HAL CP	6	364	9	259
	HAL CV	80	494	14	9
	Jig CV	6	18	1	*
	Pot CV	17	1,576	14	496
	Trawl CP	4	67	1	*
	Trawl CV	31	797	27	142
November	HAL CP	4	468	9	807
	HAL CV	39	128	15	55
	Jig CV	6	6	1	*
	Pot CV	21	839	7	164
	Trawl CV	4	79	1	*
December	HAL CP	0	0	2	*
	HAL CV	30	717	5	28
	Jig CV	3	5	0	0
	Pot CV	26	1,386	0	0

Source: ADFG Fish Tickets (1995-2006, catcher vessels), and WPRs (1995-2006, catcher processors).

In both the Western and Central GOA, a substantial number of pot and hook-and-line catcher vessels and hook-and-line catcher processors continued to fish into November during 2005 and 2006. Participation and catch in the Western Gulf dropped off sharply during December. In the Central Gulf, pot and hook-and-line catcher vessel catch was higher in December than in November, but no hook-and-line catcher processors fished.

During 4 of the last 6 years, the trawl B season was closed due to halibut PSC limits (see Tables 3-10 and 3-11). Trawl season closure dates ranged from October 1st to October 21st. The hook-and-line B season was closed due to halibut PSC restrictions twice between 2001 and 2006. The hook-and-line season closed on September 4th in 2001 and on October 2nd in 2004. If halibut PSC closures occur, the Council could make unused catcher vessel quota available to other catcher vessel sectors, and make unused catcher processor quota available to other CP sectors or to all vessels. Restricting rollovers to a given operation type could either protect a given operation type's historic share, or prevent quota from being fully fished, depending on participation levels and other restrictions. For example, if both the trawl and hook-and-line catcher processor seasons close due to halibut PSC restrictions and unused quota is only available to other catcher processors, the remaining catcher processor quota may not be fished.

The Council is considering options to roll over all remaining quota on November 1st, November 15th, or December 1st. Based on participation and catch levels in 2005 and 2006, it appears that earlier rollovers are more likely to be fished, particularly in the Western Gulf. Options also include rollovers within operation type (i.e., catcher vessel to catcher vessel) or to all vessels. Only hook-and-line catcher processors continued to fish for directed Pacific cod after November 1st, but several catcher vessel sectors continued to fish. Again, restricting rollovers to a particular operation type may result in unfished quota.

The Council is considering rolling over unused jig quota on August 1st, September 1st, or October 1st. In the Central Gulf, the jig sector caught 42 mt, or about 18 percent, of its total annual catch (230 mt) during September and October of 2005 and 2006. Only one jig vessel fished in the Western Gulf during the B season in 2005 and 2006. Jig vessel participation and catch fluctuates considerably from year to year, and it may be difficult for inseason management to project whether jig quota is likely to be fished.

3.3 Analysis of the Alternatives

The proposed action would allocate the Western and Central Gulf of Alaska Pacific cod TACs to the various gear sectors, and includes two alternatives. **Alternative 1** is the no action alternative. **Alternative 2** would establish Gulf of Alaska Pacific cod allocations for the trawl, fixed gear (hook-and-line and pot), and jig sectors based on catch history or other considerations. Within Alternative 2 there are multiple components and options, summarized in **Chapter 1.**

Effects on harvest participation and fishing practices, and effects on management, monitoring, and enforcement are discussed here. In the future, a discussion of effects on production efficiency, processors, consumers, and net benefits to the nation will be added to this analysis, after the Council has reviewed this preliminary analysis and refined the list of alternatives and options for the proposed action.

3.3.1 Effects on harvest participation and fishing practices

Under the status quo alternative, participation levels are likely to continue to vary annually with changes in the GOA Pacific cod fishery, market conditions, and opportunities to participate in other fisheries. Vessel partipation levels are summarized in Tables 3-12 and 3-13. There has been a general trend toward fleet consolidation that would likely continue. Since 1995, the proportion of catch taken by the various sectors has changed, in some cases substantially (see Tables 3-30 through 3-35). In general, the proportion of the Central and Western Gulf Pacific cod caught by trawl catcher vessels has declined,

while the proportion caught by pot catcher vessels has increased. Catch by hook-and-line catcher processors has also increased in recent years. Under the status quo alternative, these trends may continue.

Under the no action alternative, the sectors would continue to race each other for shares of the TACs, particularly duing the A season, and the relative catch levels of each sector would vary from year to year, depending on fishing conditions and incentives to participate in other fisheries. Product quality likely suffers as a result of the race for fish. Overfilling nets can affect fish quality, and catcher processors must process fish quickly to maintain quality. Larger vessels that can process fish quickly have an advantage over smaller vessels.

Under the proposed action, sectors would receive allocations based on historic catch levels. Allocations would be based on one of several options specified by the Council for calculating catch history, and would differ substantially depending on the range of qualifying years selected by the Council (see Tables 3-38 and 3-39). In the Western Gulf, trawl catcher vessels would receive a substantially larger allocation if 1995-2005 is selected as the qualifying period instead of 2000-2006. For pot catcher vessels in the Western Gulf, the opposite is true. In the Central Gulf, trawl vessels have generally caught less cod in recent years, while the fixed gear sectors have increased their catch. Allocating fixed shares to each sector would reduce this annual variability and allow participants to better plan their fishing year, but will also decrease the flexibility of sectors to respond to changes in fishing and market conditions.

Under existing options, there is potential for growth in entry-level opportunities within the jig sector. Small vessels (≤26 feet MLOA) do not need an LLP license to participate in the federal Pacific cod fishery in the Gulf of Alaska, and existing options include a provision for increasing the percentage of TAC allocated to jig vessels if the jig allocation is fully harvested. In recent years, less than 1% of the Western and Central Gulf TACs were harvested by jig vessels. The jig share could potentially increase to 7% on a stairstep basis, starting at 1%, if at least 90% of the allocation is harvested in a given year.

However, in recent years, the jig sector has not fully fished its State waters Pacific cod quota in the Gulf, and few vessels have elected to participate in the federal fishery, because fish have been difficult to find and operating costs are high (J. Whiddon, pers. comm., 8/23/07). In the current fishery, weather conditions may limit jig vessel participation during the A season. When the B season opens on September 1, adverse weather conditions again limit participation by smaller vessels. If jig vessels were given a fixed allocation that could be fished in March through May, for example, when weather and fishing conditions are more favorable, the number of jig participants and total catch may increase.

Growth in the number of vessels participating in the trawl, hook-and-line, and pot sectors is also possible, but not likely. The Council is currently considering extinguishing LLP licenses that do not have recent groundfish landings in the Gulf. Also, season opening dates would not change, and seasons are likely to remain short, so any new participants would have to forgo participation in other fisheries. Sector allocations are more likely to stabilize participation patterns in the fishery. Fleet consolidation may continue, but in the absence of the formation of cooperatives, the number of vessels participating is not likely to decrease dramatically.

While sector allocations may reduce competition among sectors in the Gulf of Alaska Pacific cod fishery, participants within each sector will continue to race each other for shares of the TAC. Poor fish handling practices will likely continue, and product quality will continue to suffer.

3.3.2 Effects on management, monitoring, and enforcement

The GOA Pacific cod fishery is currently managed as a limited access race for fish, with fleet-wide TACs in the Western, Central, and Eastern Gulf. Complete observer coverage is required on all vessels 125 feet

or longer, and 30 percent observer coverage is required on vessels between 60 and 125 feet in length. The majority of catcher vessels participating in the Gulf Pacific cod fisheries are ≤60 feet in length, and incidental and prohibited species catch rates on these vessels are not estimated by an independent observer. The GOA Pacific cod TACs are split between the A season (60 percent) and B season (40 percent). Currently, there is no separate incidental catch allowance (ICA) for Pacific cod in the Gulf of Alaska. NOAA Fisheries closes the A season before the TAC is fully fished to accommodate incidental harvests of Pacific cod continue to accrue to the A season TAC until June 10. Incidental harvests after June 10 accrue to the B season TAC. Halibut PSC is currently managed on a Gulf-wide basis, with separate allocations for the trawl and hook-and-line sectors. Halibut PSC allowances are fixed in regulation, and do not fluctuate based on annual stock assessments.

Implementation of sector allocations will require NOAA fisheries to determine catch by each sector and calculate sector allocations. Sector allocations would consist of fixed percentages of the annual Western and Central Gulf TACs. Inseason managers would monitor catch levels of up to 15 sectors, depending on the how the Council chooses to define sectors. Each sector's allocation would be further divided into A and B season allocations, and for catcher processors, into inshore and offshore processing components. As a result, NMFS inseason management would need to monitor GOA Pacific cod catch in up to 30 separate accounts. Substantial staff resources would be required at the front end to revise the catch accounting system. Inseason monitoring of sector allocations and management of rollovers of unused quota would also require additional staff resources (M. Furuness, pers. comm., 8/27/07).

Under the proposed action, there are two options for managing incidental catch of Pacific cod. One is to continue with the status quo, described above. Another option is to set aside an incidental catch allowance (ICA) of Pacific cod prior to sector allocations. This allowance would be based on incidental catch levels during recent years, and would ensure that incidental catch of Pacific cod does not result in closure of other directed fisheries. Halibut PSC would continue to be managed on a Gulf-wide basis, with separate allocations for the trawl and hook-and-line sectors.

4 INITIAL REGULATORY FLEXIBILITY ANALYSIS (IRFA)

The Regulatory Flexibility Act (RFA), enacted in 1980, requires the government to review all regulations to ensure that they do not unduly inhibit small entities from competing. 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 requires government agencies to consider alternatives that minimize adverse economic impacts on small entities while still achieving the stated objectives of the action. When an agency publishes a proposed rule, it must either 'certify' that the action will not have a significant adverse economic impact on a substantial number of small entities or prepare an Initial Regulatory Flexibility Analysis (IRFA) that describes the impact of the proposed rule on small entities. When an agency publishes a final rule, it must prepare a Final Regulatory Flexibility Analysis (FRFA).

The IRFA must contain:

1. A description of the reasons why the proposed action is being considered;
2. A succinct statement of the objectives of, and the legal basis for, the proposed rule;
3. An estimate of the number of small entities affected by the proposed rule;
4. A description of the reporting, recordkeeping and compliance requirements of the proposed rule;
5. An identification of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule;
6. A description of any alternatives to the proposed rule that would minimize adverse economic impacts on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as:

    a. Establishment of different compliance, reporting requirements, or timetables that take into account the resources available to small entities;
    b. The clarification, consolidation, or simplification of compliance and reporting requirements;
    c. The use of performance rather than design standards;
    d. An exemption from coverage of the rule, or any part thereof, for such small entities.

In preparing an IRFA, an agency may provide either a quantifiable or numerical description of the effects of a proposed rule (and alternatives to the proposed rule), or more general descriptive statements if quantification is not practicable or reliable.

4.1 Definition of a small entity

Harvesters are defined as small entities if they have gross annual receipts of less than $4.0 million. Shoreside processors are considered small entities if they employ 500 or fewer persons on a full-time, part-time, temporary, or other basis, at all affiliated operations worldwide. A business that both harvests and processes seafood products is considered to be a small entity if gross receipts from harvesting operations are less than $4.0 million. A wholesale business servicing the fishing industry is considered to be a small business if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all affiliated operations worldwide.

4.2 Reason for considering the proposed action

The Council developed a purpose and need statement defining the reasons for considering the proposed action (see Chapter 1). The Western and Central GOA Pacific cod fisheries are currently managed as a limited access race for fish, and the sectors race each other for shares of the TACs. Participants who have made significant long-term investments, have extensive catch histories, and are highly dependent on the Gulf Pacific cod fisheries need stability in the form of sector allocations. Without sector allocations, future harvests by some sectors may increase and impinge on historic levels of catch by other sectors.

4.3 Objectives of, and legal basis for, the proposed action

The objective of the proposed action is to establish direct allocations for each gear sector in the GOA Pacific cod fishery in order to protect the relative catch distribution among sectors. The problem statement notes that dividing the TAC among sectors may also facilitate the development of management measures to address Steller Sea lion mitigation issues, bycatch reduction, and PSC mortality issues.

The legal basis for this action is the Magnuson-Stevens Fishery Conservation and Management Act (MSA). One of the stated purposes of the MSA is to promote domestic commercial fishing under sound conservation and management principles and to achieve and maintain the optimum yield from each fishery.

4.4 Number and description of affected small entities

The proposed action directly regulates vessels and processors that participate in the Pacific cod fishery in the Gulf of Alaska. The majority of catcher vessels in all gear sectors can be considered small entities under the current definition, with the exception of some vessels owned as part of a larger fleet. In 2006, 385 catcher vessels harvested Pacific cod in the Gulf of Alaska. Shorebased plants and floating processors operating within Alaska waters process most of the cod harvested by catcher vessels. During 2006, 35 shoreside processors and 34 at-sea processors received landings of Pacific cod from the Western or Central Gulf of Alaska fisheries. Estimates of the number of small entities directly regulated by the action will be provided in the future.

4.5 Recordkeeping and reporting

Implementation of the proposed action to establish sector allocations would not change the overall reporting structure and record keeping requirements for vessels in the GOA Pacific cod fisheries.

4.6 Relevant Federal rules that may duplicate, overlap, or conflict with proposed action

There do not appear to be any Federal rules that duplicate, overlap, or conflict with the proposed action.

4.7 Description of significant alternatives to the proposed action

The Council is currently considering two alternatives for this action. **Alternative 1** is the no action alternative, under which the GOA Pacific cod TACs would not be allocated among sectors. Under **Alternative 2**, the Western and Central GOA Pacific cod TACs would be allocated among the various gear sectors and operation types. Allocations would be based on catch history over a series of years during 1995-2005 or 2000-2006. The Council is considering 3 options for defining qualifying catch: all retained catch, retained catch excluding meal, and retained directed catch excluding meal. The action

would have similar impacts on small and large entities. Allocations would stabilize catch within sectors. Options to increase the jig sector allocation beyond historic catch levels would be advantageous to jig vessels, which are among the smallest entities participating in the fisheries. The jig allocation allows for potential growth in entry-level opportunities in the GOA Pacific cod fishery. On average during 1995 through 2006, the jig sector harvested less than 1 percent of the Western and Central Gulf of Alaska Pacific cod TACs. This allocation could potentially increase to 3 percent, 5 percent, or 7 percent of the Western and Central GOA TACs.

5 CONSISTENCY WITH OTHER APPLICABLE LAWS

5.1 Consistency with National Standards

Below are the ten National Standards in the Magnuson-Stevens Act (Act), and a brief discussion of the consistency of the proposed alternatives with those National Standards.

National Standard 1 – Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery.

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.

The GOA Pacific cod fisheries will continue to be managed under the current harvest specifications process. Pacific cod stocks in the GOA are not currently in danger of being overfished and are considered stable. Overall levels of Pacific cod catch in the GOA will not be affected by the proposed sector allocations. The proposed allocations will not substantially change the current distribution of catch among sectors, and overall net benefits to the Nation are not expected to change to an identifiable degree.

National Standard 2 – Conservation and management measures shall be based upon the best scientific information available.

This analysis is based on the most current, comprehensive data available, recognizing that some information (such as operation costs) is unavailable.

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 Western and Central Gulf of Alaska Pacific cod TACs are established on an annual basis during the harvest specifications process. NOAA fisheries conducts annual Gulf of Alaska stock assessments for Pacific cod and makes acceptable biological catch recommendations to the Council. The Council sets the Pacific cod TAC based on the most recent stock assessment and survey information. The GOA TAC is divided among the three GOA management areas (Western, Central, and Eastern GOA) based on stock

assessment models and survey data. Separate quotas for each sector would continue to be monitored inseason by NMFS.

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.

Sectors are defined by gear type (hook-and-line, pot, jig, or trawl), operation type (catcher vessel or catcher processor), and vessel length. Residency is not a criterion for sector allocations, and allocations will not be made to individual persons or entities.

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 1996 Magnuson-Stevens Act authorization, to 'consider' rather than 'promote' efficiency. Efficiency in this context refers to economic efficiency, and the reason for the change is to de-emphasize 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). The analysis presents information on economic considerations, but does not emphasize this standard over other considerations.

National Standard 6 – Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Establishing sector allocations will likely reduce the ability of participants to increase effort in response to changes in fishing and market conditions. Overall harvest levels by each sector would be constrained by sector allocations. In the event of lower Pacific cod quotas in the BSAI or changes in other fisheries, sector allocations would protect the relative harvest levels of sectors that have long-term participation and are dependent on the GOA Pacific cod resource. In addition, provisions to increase the jig sector quota may increase opportunities for participation and total catch by this sector.

National Standard 7 – Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The alternatives under consideration appear 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.

Major ports in Alaska that process catch from the Western and Central Gulf of Alaska include Kodiak, Dutch Harbor, Akutan, Sand Point, and King Cove. Additionally, the greater Seattle, Washington metropolitan area is home to many catcher and catcher processor vessels operating in these fisheries, as well as cold storage, transshipping, and secondary processing facilities. Information on these communities is available in the Steller Sea Lion SEIS (NMFS 2001b), the Draft Programmatic SEIS (NMFS 2001a), and the crab rationalization EIS (NPFMC 2004). Detailed information on Kodiak,

Akutan, Dutch Harbor, and King Cove is available in the Comprehensive Baseline Commercial Fishing Community Profiles Final Report (EDAW 2005).

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.

The EA (Chapter 2) presents information on incidental catch rates in the Gulf of Alaska Pacific cod fishery by sector. Bycatch rates are low in the GOA Pacific cod fixed gear sectors, and higher in the trawl sectors. Chapter 3 presents information on halibut PSC mortality rates by sector. Halibut PSC limits will not be changed as a result of this action. Because sector allocations will reflect historic levels of catch by each sector, incidental catch levels are not expected to change under the proposed action.

National Standard 10 – Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

In recent years, the A season has closed approximately one month after the trawl season opens. Participants in the A season have had to fish early in the year (January/February). The proposed action would create a separate allocation for the <60' pot catcher vessels. This allocation may reduce the incentive for the <60' fixed gear sector to harvest Pacific cod early in the year during adverse weather and promote safer fishing practices.

5.2 MSA Section 303(a)(9) – Fisheries Impact Statement

The Magnuson Stevens Act requires that any management measure submitted by the Council take into account potential impacts on participants in the fisheries subject to the proposed action, as well as participants in other fisheries. The impacts of alternatives on participants in the harvesting and processing sectors are discussed in Chapter 3. Sector allocations will reflect the historic distribution of catch among sectors, and are unlikely to have a substantial effect on the number of participants or overall level of effort in the GOA Pacific cod fishery. Seasons will likely continue to be short, particularly during the A season, and participants will need to forgo participation in other fisheries. Consequently, no impacts to participants in other fisheries are anticipated.

5.3 Marine Mammal Protection Act (MMPA)

The Marine Mammal Protection Act (MMPA) of 1992 (16 U.S.C. 1361 *et seq*.) vests the Department of Commerce with authority to manage marine mammal populations. The Department of the Interior, USFWS, has management authority for all other marine mammal species in Alaska, including sea otter, walrus, and polar bear. The MMPA recognizes that certain species and populations of marine mammals are or may be in danger of depletion due to human activities, and that marine mammals are resources of international significance and should be protected using best management practices.

The primary management objectives of the MMPA are to maintain the health and stability of the marine ecosystem and to maintain sustainable populations of marine mammals within the carrying capacity of the habitat. The MMPA is intended to work in concert with the provisions of the Endangered Species Act. The Secretary of Commerce is required to give full consideration to all factors regarding regulations applicable to the "take" of marine mammals, including the conservation, development, and utilization of marine resources, and the economic and technological feasibility of implementing the regulations. Impacts of commercial fishing activities on marine mammal populations must be analyzed in an EA or EIS, and the Council or NMFS may be requested to consider measures to mitigate adverse impacts.

Under the proposed Pacific cod sector allocations, no changes in the temporal or spatial distribution of harvests or overall level of fishing effort are anticipated. Consequently, no additional impacts to marine mammal populations are expected to result from the proposed action.

5.4 Coastal Zone Management Act

Implementation of either of the alternatives would be conducted in a manner consistent with the Alaska Coastal Management Program and Section 30(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

6 REFERENCES

Angliss, R. P., and R. B. Outlaw. 2006. Alaska marine mammal stock assessments, 2006. U.S. Department of Commerce, NOAA Technical Memorandum. NMFS-AFSC-161, 250 p.

Fitzgerald, S., K Kuletz, M Perez, K Rivera, and D Dragoo. 2006. Seabirds. *In* J Boldt, ed., Appendix C, Ecosystem Considerations for 2007. November 2006. NPFMC 605 West 4th Ave., Suite 306 Anchorage, AK 99501. Pp. 239-278.

Hiatt, Terry. 2006. *Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries Off Alaska, 2005.* NMFS Plan Team for the Groundfish Fisheries of the GOA.

NOAA. 2004a. Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement, U.S. Dept. of Commerce, NOAA Fisheries, Alaska Region. June 2004.

NOAA. 2004b. Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement, Appendix B, Section 5.2, U.S. Dept. of Commerce, NOAA Fisheries, Alaska Region. June 2004.

NMFS. 2006a. *Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Gulf of Alaska Region, 2007.* NPFMC Plan Team for the Groundfish Fisheries of the GOA. November 2006.

NMFS. 2006b. *Stock Assessment and Fishery Evaluation Report. Ecosystem Considerations.* NPFMC Plan Team for the Groundfish Fisheries of the BSAI and the GOA. November 2006.

NMFS. 2006c. BSAI and GOA Harvest Specifications for 2007-2008: Environmental Assessment (EA) and Initial Regulatory Flexibility Analysis (IRFA). NOAA NMFS Alaska Regional Office. Juneau, Alaska. November 2006. 238 pp.

NMFS. 2005. Environmental Impact Statement for the Essential Fish Habitat Identification and Conservation in Alaska. April 2004. DOC, NOAA, NMFS P.O. Box 21668, Juneau, AK 99802.

NMFS. 2003. Supplement to the Endangered Species Act – Section 7 Consultation: Biological Opinion and Incidental Take Statement of October 2001. NMFS, Alaska Region, Sustainable Fisheries Division. November 30, 2000.

NMFS. 2001. Steller Sea Lion Protection Measures Final Supplemental Environmental Impact Statement (SEIS). NOAA, NMFS, Alaska Region. November 2001.

NMFS. 2000. Endangered Species Act – Section 7 Consultation: Biological Opinion and Incidental Take Statement (Biological Opinion). NMFS, Alaska Region, Sustainable Fisheries Division. November 30, 2000. p.352.

Sinclair, E., and T. Zeppelin. 2002. Seasonal and spatial differences in diet in the western stock of Steller sea lions (*Eumetopias jubatus*). Journal of Mammalogy 83(4).

Thompson, G., M. Dorn, and D. Nichol. 2006. Assessment of the Pacific Cod Stock in the Gulf of Alaska. Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Gulf of Alaska. National Marine Fisheries Service. pp. 147-220.

USFWS. 2003a. Programmatic Biological Opinion on the effects of the Fishery Management Plans (FMPs) for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) groundfish fisheries on the endangered short-tailed albatross (Phoebastria albatrus) and threatened Steller's eider (Polysticta stelleri). Anchorage Fish and Wildlife Field Office.

USFWS. 2003b. Biological Opinion on the Effects of the Total Allowable Catch (TAC)-Setting Process for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) Groundfish Fisheries to the Endangered Short-tailed Albatross (Phoebastria albatrus) and Threatened Steller's Eider (Polysticta stelleri). Anchorage Fish and Wildlife Field Office.

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APPENDIX A

Table A-1. Total retained catch of Pacific cod by inshore and offshore catcher processors in the Western Gulf from 1995-2006.

YEAR	HAL Inshore			HAL Offshore			Trawl Inshore			Trawl Offshore		
	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total
1995	11	4370	22.9	4	505	2.6	3	48	0.3	9	554	2.9
1996	10	3624	15.5	3	575	2.5	4	54	0.2	13	578	2.5
1997	7	*	*	2	*	*	4	161	0.6	12	101	0.4
1998	5	2959	13.4	0	0	0.0	6	212	1.0	10	39	0.2
1999	9	3858	16.7	11	1089	4.7	5	574	2.5	8	44	0.2
2000	9	3488	16.9	4	1044	5.1	3	437	2.1	10	217	1.1
2001	7	3302	23.7	7	355	2.5	4	388	2.8	9	229	1.6
2002	8	5072	30.5	8	715	4.3	3	281	1.7	11	138	0.8
2003	6	2489	16.2	13	1434	9.3	3	261	1.7	6	56	0.4
2004	4	2160	14.3	7	652	4.3	3	166	1.1	11	259	1.7
2005	4	483	3.9	6	215	1.8	2	*	*	11	*	*
2006	7	1892	14.0	7	582	4.3	1	*	*	10	*	*
95-05	7	*	*	6	*	*	4	*	*	10	*	*
00-06	6	2698	17.1	7	714	4.5	3	252	1.6	10	158	1.0

Source: NMFS Weekly Production Reports, 1995-2006.

Table A-2. Total retained catch of Pacific cod by the inshore and offshore catcher processor sectors in the Central Gulf, 1995-2006.

YEAR	HAL Inshore			HAL Offshore			Trawl Inshore			Trawl Offshore		
	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total
1995	7	216	0.5	1	0	0.0	6	272	0.6	19	1587	3.7
1996	4	494	1.3	0	0	0.0	6	216	0.6	15	1651	4.2
1997	1	*	*	0	0	0.0	5	678	1.6	16	112	0.3
1998	4	8	0.0	1	99	0.2	4	1601	4.0	13	2554	6.4
1999	5	307	0.7	3	7	0.0	5	672	1.6	10	780	1.8
2000	6	207	0.6	2	2	0.0	5	424	1.3	6	1300	4.0
2001	1	*	*	1	*	*	5	820	3.0	6	1626	5.9
2002	1	*	*	5	*	*	3	328	1.4	6	359	1.6
2003	4	280	1.2	4	977	4.1	3	392	1.6	9	1056	4.4
2004	2	*	*	4	*	*	3	175	0.7	7	759	2.9
2005	3	244	1.1	5	20	0.1	3	493	2.2	7	258	1.2
2006	2	*	*	6	*	*	2	*	*	9	*	*
95-05	3	186	0.6	2	324	1.3	4	552	1.7	10	1095	3.3
00-06	3	138	0.5	4	612	2.6	3	*	*	7	*	*

Source: NMFS Weekly Production Reports, 1995-2006.

Table A-3. Total retained catch of Pacific cod from the Western Gulf reported by vessel length, 1995-2006.

Year	HAL CP <125			HAL CP ≥125			Trawl CP <125			Trawl CP ≥125			Pot CV <60			Pot CV >=60		
	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total
1995	11	4,370	22.9	4	505	2.6	3	48	0.3	9	554	2.9	36	1,219	6.4	33	2,080	10.9
1996	10	*	*	3	*	*	4	54	0.2	13	578	2.5	34	1,397	6.0	28	3,051	13.1
1997	7	*	*	2	*	*	4	161	0.6	12	101	0.4	18	810	3.2	18	3,028	12.0
1998	5	2,959	13.4	0	0	0.0	5	212	1.0	11	40	0.2	33	1,726	7.8	31	2,094	9.5
1999	9	3,858	16.7	11	1,089	4.7	5	574	2.5	8	44	0.2	29	1,245	5.4	21	1,468	6.4
2000	10	4,404	21.4	3	128	0.6	3	437	2.1	10	217	1.1	37	1,011	4.9	44	3,381	16.4
2001	9	3,601	25.8	5	57	0.4	4	388	2.8	9	229	1.6	32	1,346	9.6	10	917	6.6
2002	8	5,072	30.5	8	715	4.3	3	290	1.7	11	129	0.8	33	3,009	18.1	13	1,591	9.6
2003	6	2,489	16.2	13	1,434	9.3	5	280	1.8	4	37	0.2	42	6,026	39.3	18	3,523	23.0
2004	4	2,160	14.3	7	652	4.3	4	332	2.2	10	93	0.6	53	4,726	31.2	28	4,990	33.0
2005	4	483	3.9	6	215	1.8	4	171	1.4	9	56	0.5	40	1,896	15.5	19	4,506	36.8
2005	7	1,690	12.4	7	784	5.7	3	134	1.0	8	72	0.5	33	1,827	13.4	18	3,952	28.9
95-05	7	3032	16.5	6	538	3.2	4	276	1.6	10	145	0.8	35	2274	14.0	23	2955	17.7
00-06	6	2582	17.2	8	643	4.3	4	266	1.8	9	103	0.7	39	3138	21.2	18	3246	23.0

Source: NMFS Weekly Production Reports and ADFG Fish Tickets, 1995-2006.

Table A-4. Total retained catch of Pacific cod from the Central Gulf reported by vessel length, 1995-2006.

Year	HAL CP <125			HAL CP ≥125			Trawl CP <125			Trawl CP ≥125			Pot CV <60			Pot CV >=60		
	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total	No. Vessels	Catch	Percent of total
1995	8	216	0.5	0	0	0.0	7	320	0.7	18	1,540	3.6	67	7,631	17.8	55	6,128	14.3
1996	4	494	1.3	0	0	0.0	8	240	0.6	13	1,627	4.2	48	5,479	14.0	39	5,006	12.8
1997	1	*	*	0	0	0.0	6	681	1.6	15	108	0.3	41	5,099	12.3	20	3,318	8.0
1998	4	*	*	1	*	*	5	1,630	4.1	12	2,525	6.3	38	4,328	10.8	23	4,878	12.1
1999	6	*	*	2	*	*	5	672	1.6	10	780	1.8	45	6,069	14.2	39	5,974	14.0
2000	6	*	*	2	*	*	5	424	1.3	6	1,300	4.0	56	4,162	12.9	58	7,781	24.2
2001	1	*	*	1	*	*	5	820	3.0	6	1,626	5.9	34	2,069	7.6	28	1,434	5.2
2002	1	*	*	5	*	*	4	374	1.7	5	312	1.4	28	1,560	6.9	17	1,668	7.4
2003	4	280	1.2	4	977	4.1	5	591	2.5	7	857	3.6	22	1,640	6.9	13	1,560	6.5
2004	2	*	*	4	*	*	5	567	2.1	5	368	1.4	20	2,470	9.3	13	2,418	9.2
2005	3	244	1.1	5	20	0.1	5	667	3.0	5	84	0.4	25	3,323	15.0	22	4,846	21.8
2006	2	*	*	6	*	*	5	545	2.4	6	341	1.5	36	4,007	17.6	22	4,392	19.3
95-05	4	186	0.6	2	323	1.3	5	635	2.0	9	1012	3.0	36	3655	11.6	27	3934	12.8
00-06	3	138	0.5	4	612	2.6	5	570	2.3	6	698	2.6	28	2511	10.5	19	2720	11.6

Source: NMFS Weekly Production Reports and ADFG Fish Tickets, 1995-2006.