Three-Year Review
of the
Crab Rationalization Management Program
for
Bering Sea and Aleutian Islands Crab Fisheries

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

As a part of the crab rationalization program, the Council requested a preliminary review of the program three years after its implementation. At the December 2007 Council meeting, staff presented the Council with a workplan for the review. This paper is the three-year review of the program.

The paper reviews the distribution of allocations to both harvesters and processors under the program and examines changes in those distributions to the extent feasible. The paper goes on to examine the participation patterns and distribution of activities of both sectors and changes in their operations. The paper also briefly examines the effects of the program on crews in both sectors. Changes in ex vessel pricing brought on by the shares structure of the program are also examined. Entry opportunities for both sectors are examined. Changes in management arising as a result of the change in management and changes in costs are also examined, as the effects of the program on safety and biological condition of crab stocks.

The analysis is preliminary, as it examines only three years of fishing under the program. The change to any share-based management system requires participants to modify their behavior. For example, in the derby fisheries landings were made during and after the compact seasons. One of benefits expected to arise from the crab rationalization program is an extension of fishing over a longer period, to achieve harvesting efficiencies. Participants in the fishery can be expected to modify their behaviors to realize gains from this flexibility. The extended fishing period can be expected to complicate scheduling of deliveries. Participants in the program continue to adapt to the change in management.

The program is a complex system that incorporates regulatory aspects intended to balance the interests of various stakeholders. As with any such system, participants are likely to develop a better understanding of the program over time. In addition, the operation of certain aspects of the program is likely to become more predictable as the program matures. Adequately assessing the performance of the program after only three seasons is difficult, since participants have had little time to learn how to operate under the program and adapt to the changes it has brought on.

The paper does not attempt to be a comprehensive study of management of the crab fisheries. The paper is intended to address only changes brought on by the change in management to the rationalization program. For example, the paper examines changes in fishing behavior under the program that might affect stocks in the fisheries, but does not attempt to examine stock management in general.

The Fishery Management Plan (FMP) for the commercial king and Tanner crab fisheries in the Bering Sea/Aleutian Islands (BSAI) was approved by the Secretary of Commerce on June 2, 1989. The FMP establishes a State/Federal cooperative management regime that defers crab management to the State of Alaska with Federal oversight. State regulations are subject to the provisions of the FMP, including its goals and objectives, the Magnuson-Stevens Act national standards, and other applicable federal laws.

The FMP specifies three categories of management measures: (1) those that are fixed in the FMP under Council control, (2) those that are frameworked so that the State can change them according to criteria outlined in the FMP, and (3) those measures under complete discretion of the State (Table 1-1).

Table 1-1 Management measures used to manage king and Tanner crabs in the BSAI management unit by category

Category 1 (Fixed in the FMP)	Category 2 (Frameworked in FMP)	Category 3 (Discretion of State)
Legal Gear	Minimum Size Limits	Reporting Requirements
Permit Requirements	Guideline Harvest Levels	Gear Placement and Removal
Federal Observer Requirements	In-season Adjustments	Gear Storage
Limited Access	Districts, Subdistricts and Sections	Vessel Tank Inspections
Norton Sound Superexclusive Registration	Fishing Seasons	Gear Modifications
	Sex Restrictions	Bycatch Limits (in crab fisheries)
	Pot Limits	State Observer Requirements
	Registration Areas	Other
	Closed Waters	

In large part, this review examines the change in limits on access established under the FMP. Where relevant, the paper does, however, examine changes in other aspects of management that have resulted from the change in management of access.

2 DESCRIPTION OF MANAGEMENT

2.1 Pre-rationalization management

The eight major Bering Sea and Aleutian Islands crab fisheries were managed under the License Limitation Program, a limited entry program under which licenses were allocated to harvesters based on historic participation. Licenses were endorsed for one or more area and species and were issued by vessel type, catcher vessel or catcher processor.

Individual harvests were determined in competitive race for fish. Since the seasons in most of the BSAI crab fisheries do not conflict, most participants were active in several of the fisheries, moving from one fishery to another. However, stock declines in the Bristol Bay red king crab and the Bering Sea *C. opilio* led to seasons lasting only a few days or weeks. Consequently, equipment was often idle for several months of the year.

A guideline harvest level (GHL) for each fishery set target catch for the fishery. Initially, these GHLs were ranges, but later they became fixed amounts. Managers monitored harvests by in-season reports and attempted to time the closure of a fishery with completion of the harvest of the GHL. Harvests exceeded the GHLs in some years, however, because in-season monitoring could not keep pace with harvests during the short seasons. Over time, managers improved in their abilities to monitor catch in season, limiting the extent of these GHL overages in the years immediately preceding the implementation of the rationalization program.

2.2 Description of rationalization program

The program rationalizes the large crab fisheries in the BSAI, including the following:

- Bristol Bay red king crab
- Bering Sea *C. opilio* (snow crab)
- Eastern Bering Sea *C. bairdi* (Tanner crab) – East of 166º W
- Western Bering Sea *C. bairdi* (Tanner crab) – West of 166º W
- Pribilof blue and red king crab
- St. Matthew Island blue king crab
- Western Aleutian Islands (Adak) golden king crab – West of 174º W
- Eastern Aleutian Islands (Dutch Harbor) golden king crab – East of 174º W
- Western Aleutian Islands (Adak) red king crab – West of 174º W

To address the concerns of various stakeholders in these fisheries, the Council developed a "voluntary three pie cooperative" program intended to protect the interests of the harvest sector, the processing sector and defined regions and communities. Allocations under the program are based on historic participation to protect investment in and reliance on the program fisheries.

The primary elements of the program are as follows:

- Total allowable catch
- Harvesting shares
- Processing shares
- Regional share designations
- C share allocation to protect captain and crew interests
- Catcher processor shares
- Binding arbitration system
- Cooperatives
- Community Development Quota and Adak community allocations
- Crew loan program
- Annual economic data collection (or Economic data reports)

The remainder of this section describes each of these program elements and their intended purpose.

2.2.1 Total allowable catch

Each program fishery is managed with a total allowable catch (TAC), which sets a specific catch limit, instead of a GHL. Although the change to a TAC may be largely semantic, it signifies a change to more precise catch management. To discourage harvesters from exceeding the TAC in a program fishery, any overharvest of an allocation is a violation. Although penalties are at the discretion of NOAA Enforcement and NOAA General Counsel, the Council has recommended that all overages be subject to forfeiture and that additional penalties be imposed only for overages in excess of 3 percent of a harvester's shares at the time of landing.

2.2.2 Harvesting shares

Harvesting quota shares (QS) were created in each program fishery. QS are a revocable privilege that allow the holder to harvest a specific percentage of the annual TAC in a program fishery. The annual allocations, which are expressed in pounds, are referred to as individual fishing quota (IFQ). The size of each annual IFQ allocation is based on the amount of QS held in relation to the QS pool in a program fishery—a person holding one percent of the QS pool receives IFQ to harvest one percent of the annual TAC in the fishery. IFQ TACs do not include pounds that have been set aside for the Community Development Quota program. All crab that is sold or kept for personal use and all deadloss is debited against the IFQ account of the allocation holder. Discards, however, are not counted against an IFQ holder's account.

QS are designated as either catcher vessel QS or catcher processor QS, depending on whether the vessel that created the privilege to the shares processed the qualifying harvests on board. Approximately 97 percent of the QS (referred to as "owner QS") in each program fishery were initially allocated to license holders based on their catch histories in the fishery. The remaining 3 percent of the QS (referred to as "C shares" or "crew QS") were initially allocated to captains based on their catch histories in the fishery. Under an amendment to the program that is awaiting Secretary of Commerce approval, C share QS may be held only by persons who either demonstrate active participation in a program fishery or are recipients of an initial allocation of C share QS who demonstrate active participation in State or Federal fisheries in or off Alaska.

Catcher vessel owner IFQ are issued in two classes, Class A IFQ and Class B IFQ. Class A IFQ are issued for 90 percent of the catcher vessel owner IFQ in a program fishery. Crab harvested using these IFQ must be delivered to a processor holding unused individual processing quota (IPQ). In addition, Class A IFQ are subject to regional share designations, whereby harvests are required to be delivered within an identified region. The delivery restrictions of Class A IFQ are intended to add stability to the processing sector by protecting processor investment in program fisheries and to preserve the historic distribution of landings and processing between regions.

Class B IFQ are issued for the remaining 10 percent of the catcher vessel owner QS in a program fishery. Crab harvested using these IFQ can be delivered to any processor (except a catcher processor) regardless of whether the processor holds unused IPQ. In addition, Class B IFQ are not regionally designated. The absence of delivery restrictions on a portion of the catch is intended to provide harvesters with additional market leverage for negotiating prices for landings of crab. Consequently, Class B IFQ are allocated only to harvesters that are unaffiliated with holders of processing shares. The absence of an affiliation with a holder of processing shares is established by a QS holder filing an annual affidavit identifying any PQS holdings or affiliations with PQS holders.

Implementation of the program required the initial allocation of QS to eligible harvesters. To be eligible for an allocation of QS in a program fishery a harvester must have held a valid, permanent, fully transferable LLP license endorsed for the fishery. A harvester's allocation of QS in a fishery was based on landings in that fishery (excluding landings of deadloss). Specifically, each allocation was the harvester's average annual portion of the total qualified catch during a specific qualifying period. Qualifying periods were selected to balance historical participation and recent participation. Different periods were selected for different program fisheries to accommodate fishery closures and other circumstances in the fisheries in recent years. The most recent seasons were excluded in part to limit the effectiveness of efforts by participants to obtain a larger allocation by increasing participation in recent seasons when it was apparent that allocations would be based on historic harvest levels.

QS and IFQ are transferrable under the program, subject to limits on the amount of shares a person may own or use. Transferability of shares among eligible purchasers of QS and IFQ may promote production efficiency in the harvest sector and provides a means for compensated removal of excess harvesting capacity in the program fisheries. In addition, transferability may be used to avoid overages, in the event a harvester exceeds its available IFQ. The use of transfers to avoid overages could increase under a new amendment adopted by the Council that allows transfers after delivery to remedy an overage.

Leasing of owner QS (or equivalently, the sale of owner IFQ) will be prohibited, except by cooperatives, after the first five years of the program. Leasing is defined as the use of IFQ on a vessel in which the owner of the underlying QS holds less than a 10 percent ownership interest and on which the underlying QS holder is not present. The prohibition on leasing of QS (or sale of IFQ) by persons not in cooperatives is intended to create an incentive for cooperative membership. The interim period in which leasing is not constrained is intended to allow a period of adjustment during which harvesters can coordinate fishing activities and build relationships necessary for cooperative membership.

To be eligible to purchase QS or IFQ a person is required to be a US citizen and to have at least 150 days of sea time in US commercial fisheries in a harvest capacity. An entity is eligible to purchase shares only if it is at least 20 percent owned by a US citizen with at least 150 days of sea time in US commercial fisheries in a harvest capacity and is at least 75 percent U.S. owned, allowing it to document a vessel. Initial recipients of QS and CDQ groups are exempt from these eligibility criteria. Sea time requirements are intended to ensure that the harvest sector does not evolve into a fishery owned by persons with no fishing background.

"Individual use caps" are imposed on the use and holdings of harvest shares by any person in order to prevent excessive consolidation of shares under the program. Different caps apply to owner share holdings and C share holdings. In addition, a higher cap applies to CDQ group holdings of owner shares, as those entities represent the interests of several communities. Individual use caps vary across program fisheries because of different fleet characteristics and the differences in historic dependency of participants on the different fisheries. In addition, CDQ groups, who each represent the interests of one or more Bering Sea and Aleutian Island communities, are subject to higher caps (see Table 2-1). A "grandfather" provision exempted persons who received an initial allocation of QS in excess of the cap. Individual use caps are applied individually and collectively. Under this approach, all of a person's direct QS holdings are credited toward the cap. In addition, a person's indirect QS holdings are also credited toward the cap in proportion to the person's ownership interest. For example, if a person owns a 20 percent interest in a company that holds 100 shares, that person is credited with holding 20 shares for purposes of determining compliance with the cap. "Vessel use caps" limit the amount of owner IFQ that may be harvested by a single vessel. Vessel use caps do not apply to cooperatives, thereby providing an additional incentive for cooperative participation.

To protect independent vessel owners and processors that are not vertically integrated, processor harvest share holdings are also limited by caps on vertical integration. A PQS holder's harvest share holdings are limited to 5 percent of the share pool on a fishery basis. These caps are applied using a threshold rule for determining whether the shares are held by a processor, and then the individual and collective rule for determining the extent of share ownership. Under the threshold rule, any entity with 10 percent or more common ownership with a processor is considered to be a part of that processor. Any direct holdings of those entities are fully credited to the processor's holdings. Indirect holdings of an entity are credited toward the processor's cap in proportion to the entity's ownership.

Table 2-1 Harvest share use caps as percent of the respective quota share pool.

Fishery	Owner share		C share use cap**	Vessel use cap*
	Individual use cap*	CDQ group use cap*		
Bristol Bay red king crab	1	5	2	2
Bering Sea *C. opilio*	1	5	2	2
Eastern Bering Sea *C. bairdi*	1	5	2	2
Western Bering Sea *C. bairdi*	1	5	2	2
Pribiolof red and blue king crab	2	10	4	4
St. Matthew Island blue king crab	2	10	4	4
Eastern Aleutian Islands golden king crab	10	20	20	20
Western Aleutian Islands golden king crab	10	20	20	20
Western Aleutian Islands red king crab	10	20	20	20

* as a percentage of the owner share pool.

** as a percentage of the C share pool.

2.2.3 Processing shares

The program also created processing quota shares (PQS), which are allocated to processors and are analogous to the QS allocated to harvesters. PQS are a revocable privilege to receive deliveries of a fixed percentage of the annual TAC from a program fishery. These annual allocations are referred to as individual processing quota (IPQ). IPQ is issued for 90 percent of the owner IFQ pool, corresponding to the 90 percent allocation of owner IFQ as Class A IFQ. As with owner QS and Class A IFQ, PQS and

IPQ are designated for processing in a region. These processing shares are intended to protect processor investment in program fisheries and preserve regional interests in the fisheries.

IPQ do not apply to the remaining 10 percent of the owner IFQ, corresponding to the 10 percent of the owner IFQ allocated as Class B IFQ. These Class B IFQ are intended to provide harvesters with additional bargaining power. In addition, Class B IFQ may provide an opportunity for the entry of new processors in the program fisheries. Alternatively, new processors can enter a fishery by purchasing PQS or IPQ or by purchasing landings of CDQ crab. To ensure harvesters of the latitude to use their Class B IFQ to pursue the best markets, processors are not permitted to leverage their IPQ to acquire crab harvested using Class B IFQ; the penalty is forfeiture of all of the processor's IPQ.

As in the harvest sector, processors received initial allocations of PQS based on processing history during a specified qualifying period for each fishery. A processor's allocation in a program fishery was equal its share of all qualified processing in the qualifying period (i.e., pounds processed by the processor divided by pounds processed by all qualified processors).

Processing shares are transferable, including leasing of PQS (or equivalently, the sale of IPQ) subject to use caps. As with harvesting shares, transferability of processing shares is intended to promote efficiency and facilitate compensated reduction of excess capacity. In addition, IPQ transfers may aid in the coordination of deliveries from the fisheries. To provide a period of general stability for processors and communities to adjust to the program a two-year ''cooling off period'' was established during which processing shares could not be relocated from the community where the historical processing occurred that led to the allocation (the community of origin).[1] In addition, a right of first refusal was granted to community groups and CDQ groups from communities with significant crab processing history on the sale of any processing shares for use outside of the community of origin. Exceptions to the right allow a company to consolidate operations among several commonly owned plants to achieve intra-company efficiencies and the temporary leas of shares outside of the community of origin.

A processing share cap prevents any person from holding or using in excess of 30 percent of the outstanding processing shares in any program fishery. In general, all share holdings of an entity and any custom processing by a plant owned by an entity is counted toward that entities cap. An exception that would exempt custom processing in certain fisheries and regions from the plant owners share cap was adopted recently. That exemption is intended to allow consolidation beyond the caps in fisheries and regions that pose particular economic challenges to processors.[2] As with vertical integration caps, processor share caps are applied using a threshold rule for determining whether the shares are held by a processor and then the individual and collective rule for determining the extent of share ownership. Under the threshold rule, any entity with 10 percent or more common ownership with a processor is considered to be a part of that processor. Any direct holdings of those entities are fully credited to the processor's holdings. Indirect holdings of those entities are credited toward the processor's cap in proportion to the entities ownership. A "grandfather" provision exempted initial allocations of PQS in excess of the cap. In

[1] The 'cooling off' limitation applied to most processing shares, but shares allocated based on processing history in communities with minor amounts of crab were not subject to the provision. In addition, each processing share holder was permitted to move small amounts of IPQ out of the 'community of origin' during the cooling off period to allow for some coordination of landings and more complete use of Class A IFQ and IPQ allocations.

[2] The exemption would apply to custom processing in the North region of the *C. opilio*, Pribilof red and blue king crab, the St. Matthew Island blue king crab, the Western Aleutian Islands red king crab, the Western Aleutian Islands golden king crab, and the Eastern Aleutian Islands golden king crab fisheries. The exemption is limited to processing that occurs in communities to protect community interests. Along with the exemption, a provision was adopted that would limit the processing in any facility to 60 percent of the IPQ in the Western Aleutian Islands golden king crab and Eastern Aleutian Islands golden king crab fisheries.

the *C. opilio* fishery, in addition to the PQS ownership cap, no processor is permitted to use in excess of 60 percent of the IPQ issued in the North region.

2.2.4 Regional share designations

The allocation to regions is accomplished by regionally designating all Class A (delivery restricted) harvest shares and all corresponding processing shares. In most program fisheries, regionalized shares are either North or South, with North shares designated for delivery in areas on the Bering Sea north of 56º 20´ north latitude and South shares designated for any other areas, including Kodiak and other areas on the Gulf of Alaska. In the Western Aleutian Islands (Adak) golden king crab fishery, the designation is based on an east/west line to accommodate a different distribution of activity in that fishery. Share designations are based on the historic location of the landings and processing that gave rise to the shares.

2.2.5 Catcher processor shares

Catcher processors participate in both the harvest and processing sectors and therefore have a unique position in the program. Catcher processors are allocated catcher processor QS and issued corresponding catcher processor IFQ. These shares carry both a harvest privilege and an accompanying onboard processing privilege. To be eligible for the initial allocation of catcher processor QS, a person must have been eligible for a harvest allocation by holding a permanent, fully transferable catcher processor LLP license. In addition, the catcher processor must have processed crab in either 1998 or 1999. These requirements parallel the harvester QS and processor PQS eligibility requirements, respectively. Persons meeting these eligibility requirements were allocated catcher processor QS in accordance with the allocation rules for harvest shares for all qualified catch that was processed onboard.

Since catcher processor IFQ provide both harvesting and on board processing privileges, a person holding those shares may harvest and process crab onboard under the allocation. In addition, holders of catcher processor IFQ may choose not to process harvested crab, instead delivering their catch to any other processor. Use of catcher processor IFQ in this manner is akin to the use of Class B IFQ, which do not require the receiving processor to hold unused IPQ. Catcher/processor shares do not have regional designations.

Holders of catcher processor QS may also sever the harvesting and processing privileges, thereby creating separate QS and PQS. These newly severed interests create a privilege to annual IFQ allocations and IPQ allocations, which can be held by different persons. When severed, the resulting QS and PQS must be designated for a region with both shares taking the same regional designation. Allowing the conversion of shares permits a catcher processor shareholder to realize the maximum value of shares and provides greater flexibility in using the privileges.

Some catcher processors historically accept delivery of crab from catcher vessels for processing. PQS are allocated based on this activity to the extent that processing vessels met processor eligibility requirements and had qualifying processing history. In addition, catcher processors are permitted to purchase use additional IPQ. All processing of deliveries by catcher processors is required to take place within three miles of shore in the applicable region. The requirement of processing within three miles of shore is intended to ensure that the regional benefits of processing activity occur. Catcher processors may not purchase for processing crab harvested with Class B shares.

2.2.6 Crew shares

To protect captains' historical interests in the program fisheries, 3 percent of the initial allocation of QS were issued to eligible captains. These "C shares" are to be held only by active captains and crew and are intended to provide additional leverage to those captains and crew when negotiating contracts with vessel

owners. The Council chose to exempt C shares from all IPQ and regional landing requirements, as it recognized the logistical complications that would likely arise under the program as a result of the interaction of active participation requirements, fleet contraction, and the IPQ and regional landing requirements.[3]

To be eligible for the initial allocation of C share QS, a captain was required to demonstrate both historical dependence on a program fishery and recent participation. Allocations to captains were based on participation in landings during the same qualifying years applicable to owner QS allocations. To ensure captains are an integral part of the program, C share holders are permitted to join cooperatives. IFQ attributable to C share QS of cooperative members are allocated directly to the cooperative and are harvested in accordance with the applicable cooperative agreement.

To ensure that C shares benefit active participants in the program fisheries, C share QS and IFQ may be acquired by transfer only by persons who are active in one of the program fisheries in the 365 days prior to the application for transfer.[4] Under current rules, individuals who hold C share IFQ are required to be on board the vessel harvesting those IFQ. However, C share holders who choose to join a cooperative are effectively exempted from the 'owner on board' rule, since the IFQ are held by the cooperative.

Under the rule recently adopted by the Council, which is pending Secretarial approval, annual C share IFQ are issued only to C share QS held by persons who meet an active participation requirement of being on board a vessel for one landing in the three years preceding the IFQ allocation. In addition, C share QS is revoked from persons who is not active in at least one of the fisheries for four consecutive years.[5] The Council also included a transition period for persons who would be deprived of IFQ or QS by these active participation requirements. Under this transition period, no IFQ would be withheld until 3 years after implementation of the amendment and no QS would be revoked until 5 years after the implementation of the amendment. Although the Council took this action in the spring of 2008, the action is pending approval by the Secretary of Commerce.

Individual C share holdings and use are capped at the same level as the vessel use caps applicable to owner IFQ. A "grandfather" provision exempted initial allocations of Class C shares in excess of the cap. C share IFQ are not considered in determining a vessel's compliance with the vessel use caps applicable to owner IFQ.

Catcher processor captains are allocated catcher processor C share QS that include both a harvesting and onboard processing privilege. Harvests with catcher processor C share IFQ may also be delivered to shoreside or stationary floating processors. Harvests with catcher vessel C share IFQ must be delivered to shoreside or stationary floating processors (i.e., they cannot be delivered to catcher processors).

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[3] The initial exemption from these requirements applied only for the first three years of the program. The Council extended this exemption indefinitely under a recent amendment to the program that was implemented by NOAA Fisheries for the 2008-2009 season.

[4] The Council recently adopted a provision that would allow initial recipients of C share QS and persons who fished in Bering Sea and Aleutian Islands crab fisheries in 3 of the 5 seasons preceding implementation of the rationalization program to acquire C shares. This provision is intended to address concerns of crews displaced by fleet consolidation who are interested in acquiring C shares to maintain an interest in the fisheries.

[5] An alternative active participation requirement can be met by recipients of an initial allocation of C share QS. Initial recipients of C share QS allocations, who are active in a fishery in or off Alaska for a total of at least 30 days during three crab seasons preceding the annual IFQ allocation would receive that allocation (regardless of whether they are active in the crab fisheries. In addition, C share QS would not be revoked from initial recipients who have at least 30 days of participation in a fishery in or off Alaska.

2.2.7 Binding arbitration system

The arbitration system serves several important purposes in the program, including dissemination of market information to facilitate negotiations, the coordination of matching Class A IFQ held by harvesters to IPQ held by processors, and a binding arbitration process to resolve terms of delivery.

A "market analyst" and a "formula arbitrator," jointly selected by the harvesting and processing sectors, develop a market report and price formula, which specifies an ex vessel price as a portion of the first wholesale price, to be used by participants to guide their delivery negotiations. The market report nor the formula price are non-binding, but are intended to provide information concerning the market and a reasonable price that might be generated by the arbitration system.

Matching of Class A IFQ with IPQ is facilitated through a process of share commitments and dissemination of information concerning available shares. Once shares are matched, the parties unable to negotiate terms of delivery may use the arbitration system to resolve those terms.

To ensure predictability and fairness, the arbitration system sets forth standards to be followed by formula arbitrators and contract arbitrators. Although different standards apply to the formula arbitrator and the contract arbitrator, the differences between the standards are very limited and do not substantively change the general approach to be applied. The regulations state that both the non-binding price formula and contract arbitrator's decision must "(A) Be based on the historical distribution of first wholesale revenues between fishermen and processors in the aggregate based on arm's length first wholesale prices and ex-vessel prices, taking into consideration the size of the harvest in each year; and (B) Establish a price that preserves the historical division of revenues in the fishery while considering" several listed factors.[6]

2.2.8 Cooperatives

The program allows harvesters to form voluntary cooperatives associated with one or more processors holding PQS. Cooperatives receive the annual IFQ allocated to their members. Formation of cooperatives is intended to facilitate production efficiency by aiding harvesters in coordinating harvest activities among members and deliveries to processors. In addition, the cooperative relationship can facilitate the trading of IFQ under prearranged terms and conditions. Such trades help harvesters consolidate small portions of their allocations on a single vessel when a small portion of each vessel's allocation is remaining. In addition, processors can benefit by associating with a cooperative; for example, coordinated deliveries can result in less down time for processing crews and equipment and decrease deadloss by reducing queuing of harvesters waiting to offload their catches. Scheduling of deliveries is especially important under the program because the allocation of harvest shares can result in the extension of fishing over a longer period.

A minimum membership of four unique QS holders is required for cooperative formation. Cooperatives must file a cooperative agreement with NOAA Fisheries annually. Once the filing is made, the cooperative receives the annual allocation of its members in the applicable program fisheries. Cooperative members are permitted to leave a cooperative at any time after a season retaining their QS and associated IFQ. Harvesters within a cooperative may transfer IFQ freely since those IFQ are directly allocated to the cooperative and are counted against the cooperative's allocation. Vessels on which cooperative shares are

[6] Listed factors in both standards include current ex vessel prices for all IFQ types, consumer and wholesale product prices, innovations and developments of both sectors, efficiency and productivity of both sectors, quality, the interest of maintaining financially healthy and stable harvesting and processing sectors, safety and expenditures for ensuring adequate safety, timing and location of deliveries, and cost of harvesting and processing less than the full IFQ or IPQ allocation (underages) to avoid penalties for overharvesting IFQ and reasonable deadloss.

fished are not subject to use caps. IFQ are also freely transferable between cooperatives, but these transfers require filing with NOAA Fisheries before they can be fished.

2.2.9 Community Development Quota and Adak community allocations

The program made changes in the allocations under the Community Development Quota (CDQ) program. The CDQ program was broadened to include the Eastern Aleutian Islands (Dutch Harbor) golden king crab fishery and the Western Aleutian Islands (Adak) red king crab fishery. In addition, the allocations in all crab fisheries covered by the CDQ program were increased from 7.5 to 10 percent of the TAC. These changes in the CDQ allocations are intended to further facilitate fishing activity and economic development in rural Western Alaska communities. The CDQ allocations are managed independently from the program and are not subject to IPQ and regional landing requirements. However, CDQ groups are required to deliver at least 25 percent of the allocations to shoreside processors.

Sea time eligibility requirements for the purchase of QS are waived for CDQ and community groups in eligible communities allowing those communities to build and maintain local interests in harvesting. CDQ and community groups are not permitted to purchase C shares.

The program also made an allocation to the community of Adak from the Western Aleutian Islands (Adak) golden king crab fishery in an amount equal to the unused resource during the qualifying period. This allocation is capped at 10 percent of the total allocation in that fishery. This allocation to Adak is thought to be appropriate because that community was excluded from the CDQ program because of its history as a military community.

2.2.10 Crew loan program

The rationalization program includes a low interest loan program to assist eligible captains and crew in purchasing QS. Implementation of the loan program was delayed because of the absence of a Congressional appropriation to authorize loans, which was provided in early 2008. Currently, NOAA Fisheries Financial Services Division is in the process of developing regulations defining eligibility for the loan program. Although the outcome of that process is uncertain, in February of 2008, the Council passed a motion recommending that loan funds be available exclusively to licensed crew who are U.S. citizens with at least 150 days sea time as part of a harvesting crew in any U.S. commercial fishery, and who have made at least one delivery in a fishery subject to the crab rationalization program in two of the three years prior to application for the loan. The Council recommended that loan funds for QS purchase in a fishery be available only to persons holding below a threshold amount of QS in that fishery (varying by fishery from 0.1 percent to 1.0 percent of the QS pool) after completing the purchase. In addition, the Council proposed that a borrowing limit be established so that no person could borrow more than 10 percent of the available funds in any year.

2.2.11 Sideboards to protect participants in other fisheries

Sideboards limit the activity of crab vessels in other fisheries to protect participants in those fisheries from a possible influx of activity that could arise from vessels that exit the program fisheries or are able to time activities in the program fisheries to increase participation in other fisheries. In the development of the program, the Council included sideboards to protect harvesters in the Gulf of Alaska groundfish fisheries from possible increase in effort from participants in the crab fisheries.

2.2.12 Economic data collection program

The program includes a comprehensive economic data collection requirement to help the Council and NMFS assess the success of the program and develop amendments to the program. The data collection

requirement includes two variations of Economic Data Reports (EDRs): a historic EDR and an annual EDR. The first requires submission of historical-based economic data from 1998, 2001 and 2004. Historical EDRs capture pre-program implementation data for comparison to the economics of harvesting and processing before and after program implementation. The annual EDRs capture economic data on an annual basis at the conclusion of each calendar year's crab fisheries. Historical EDRs were collected in June and July 2005; the first annual EDRs were collected in 2006 for the 2005 calendar year.

Participation in the data collection program is mandatory for all participants in the program fisheries, including catcher vessel, catcher processor, stationary floating crab processors and shoreside crab processors. Should a submitter fail to submit an annual EDR by the due date, NMFS is authorized to withhold issuance or transfer of shares. Persons submitting the data have an opportunity to correct errors before enforcement action is taken.

EDRs contain cost, revenue, ownership and employment data. These data are collected and held the Pacific States Marine Fisheries Commission (PSMFC). PSMFC abides by all statutory and regulatory data confidentiality requirements, and will only release the data to NMFS, Council staff, and any other authorized users in a "blind" format. Specifically, all identifiers associated with data submitters will be eliminated and replaced with fictitious vessel and processor identifiers for purposes of analyses. However, in cases where the data are requested by NMFS Alaska Region Restricted Access Management, NMFS Office of Enforcement, NOAA General Counsel, the U.S. Department of Justice or the Federal Trade Commission for a purpose connected to law enforcement or qualification for quota and other Federal permits, PSMFC will provide the data and the identity of the submitter.

Based on public testimony and a recommendation from the Advisory Panel at the December 2006 meeting, the Council passed a motion directing staff to develop protocols concerning confidentiality and quality of data collected under the economic data collection requirement. That process is ongoing.

3 HARVEST SHARE HOLDINGS

3.1 Harvest sector privileges

Prior to implementation of the rationalization program, NOAA Fisheries managed the Bering Sea and Aleutian Island crab fisheries under the License Limitation Program (LLP), whereby vessels assigned a LLP license could participate in those fisheries designated by the license. With the implementation of the rationalization program, participation in program fisheries is limited by QS and the IFQ allocation yielded annually by those IFQ. This section of the paper summarizes the distribution of harvest privileges under the LLP and rationalization program.

3.1.1 LLP licenses

The LLP was a limited entry program which allocated licenses based on historic participation. Licenses were issued with species-area (fishery) endorsements (see Table 3-1). Licenses were issued by vessel type (catcher vessel or catcher processor) and specified a maximum vessel length (MLOA). Since licenses could carry multiple species-area endorsements, the total number of licenses was not additive. Exceptions to the LLP license requirement included vessels that do not exceed 32 feet LOA in the BSAI and certain vessels constructed for, and used exclusively in, CDQ fisheries.

Table 3-1 LLP licenses in the Bering Sea and Aleutian Islands crab fisheries (2005).

Licenses endorsed for / also endorsed for	Bristol Bay red king crab	Bering Sea *C. opilio*	Pribilof red and blue king crab	St. Matthew Island blue king crab	Aleutian Island red king crab	Aleutian Island golden king crab	Catcher processor
Bristol Bay red king crab	**270**	264	110	168	28	25	26
Bering Sea C. opilio		**273**	109	169	30	27	27
Pribilof red and blue king crab			**118**	77	15	8	2
St. Matthew Island blue king crab				**170**	26	19	13
Aleutian Island red king crab					**30**	8	4
Aleutian Island golden king crab						**28**	9

Source: NMFS RAM Division.

The moratorium established by Amendments 23 and 28 limited speculative entry into the fisheries while the LLP was being developed and approved. Nevertheless, the fisheries remained heavily overcapitalized. Further, the limited access management increased the incentive for all license holders to participate in the fisheries because a person could not receive a return without participating. Some participants allege that financial pressures of boat payments ensured their participation, as revenues from the fisheries were their primary source of income from their vessels. Participants also likely remained in the fisheries to reinforce their stake in any future history-based allocation.

Entry into the fisheries occurred in different ways. Crew members worked their way up to become skippers and used their crew shares to purchase interests in vessels. Alternatively, persons entered the fisheries as an investment. These persons typically used capital from other sources to purchase vessel interests in the fisheries.

As shown in Table 3-2, the transfer of LLP licenses to new entrants following implementation of the LLP was limited.[7] There were a number of reasons for the small volume of transfers. First, entry to the crab fisheries was costly because it required the purchase of an LLP permit and a properly configured vessel from which to fish. Secondly, the continuing overcapitalization situation, together with the historically low GHLs for the Bering Sea *C. opilio* fishery, made the crab fisheries economically unattractive for potential new entrants. Moreover, as the economic benefits derived from the fisheries declined, it became more difficult to acquire financing for the purchase of licenses and vessels.

Table 3-2 Volume of license transfers under the LLP.

Year	Number of transfers							
	Total	Bristol Bay red king crab	Bering Sea *C. opilio* and *C. bairdi*	Pribilof red and blue king crab	St. Matthew Island blue king crab	Aleutian Island red king crab	Aleutian Island golden king crab	Catcher processor
2002	1	1	1	0	1	0	0	0
2003	3	3	3	1	0	1	2	2
2004	1	1	0	0	0	0	0	0

Source: NMFS RAM LLP license file.

Includes only transfers with change of named license holder.

3.2 Initial allocations by sector and region

When the program was implemented, NOAA Fisheries made initial allocations of owner QS to persons holding LLP licenses. Since most licenses were held by corporations, aggregation by owner name typically will not reflect actual common control of QS holdings. Complex corporate ownership patterns

[7] The reported volume of LLP license transfers may be an underestimate because NOAA Fisheries Restricted Access Management recorded only those transfers in which the named license holder changed.

prevented a complete assessment of the level of concentration of ownership beyond relying on the named owner for this report. Consequently, levels of consolidation of owner shares exceed those represented in the following tables and discussion.

Table 3-3 shows a summary of the initial owner quota share allocations to harvesters in the different program fisheries. The Aleutian Islands fisheries, which have the least participants, were the most concentrated. In all fisheries, the largest initial allocation exceeded the individual use cap. In the Western Aleutian Island golden king crab and Western Aleutian Islands red king crab fisheries the largest initial allocation was in excess of 4 times the share cap; in the Bristol Bay red king crab, Bering Sea *C. opilio*, Bering Sea *C. bairdi*, Eastern Aleutian Islands golden king crab, and St. Matthew Island blue king crab fisheries, the largest initial allocation was more than double the individual use cap. Notwithstanding these large allocations, the median allocation in all fisheries, except the Eastern Aleutian Islands golden king crab fishery, was less than half the individual use cap. The regional distribution of shares differed with landing patterns that arose from the geographic distribution of fishing grounds and processing activities. In the Bering Sea *C. opilio* fishery, almost half of the catcher vessel owner QS are designated for landing in the North region, while in excess of two-thirds of the catcher vessel owner pool is designated for landing in the North region in both the St. Matthew Island blue king crab and Pribilof red and blue king crab fisheries.

Table 3-3 Initial allocation of owner quota shares.

Fishery	Share holdings by region						Across regions			
	Region	Percent of Pool	QS holders	Mean holdings	Median holdings	Maximum holding	QS holders	Mean holdings	Median holdings	Maximum holding
Bristol Bay red king crab	North	2.4	28	0.1	0.1	0.2	251	0.4	0.4	2.2
	South	93.0	241	0.4	0.3	2.1				
	Catcher processor	4.5	13	0.3	0.4	1.0				
Bering Sea *C. opilio*	North	42.6	205	0.2	0.2	1.2	241	0.4	0.4	2.4
	South	48.4	214	0.2	0.2	2.1				
	Catcher processor	9.1	14	0.6	0.7	1.2				
Bering Sea *C. bairdi*	Undesignated	93.3	248	0.4	0.3	2.4	258	0.4	0.3	2.4
	Catcher processor	6.7	14	0.5	0.4	1.0				
Eastern Aleutian Island golden king crab	South	95.2	13	7.3	6.6	20.4	15	6.7	6.0	20.4
	Catcher processor	4.8	2	2.4	2.4	4.1				
Western Aleutian Island golden king crab	Undesignated	26.9	13	2.1	1.0	11.0	15	6.7	1.8	45.7
	West	26.9	9	3.0	1.3	13.5				
	Catcher processor	46.2	2	23.1	23.1	45.7				
Western Aleutian Island red king crab	South	61.0	29	2.1	0.6	13.5	30	3.3	0.6	45.2
	Catcher processor	39.0	2	19.5	19.5	37.8				
St. Matthew Island blue king crab	North	76.7	121	0.6	0.6	3.4	135	0.7	0.6	4.4
	South	21.3	83	0.3	0.1	3.8				
	Catcher processor	2.0	5	0.4	0.3	0.9				
Pribilof red and blue king crab	North	67.1	84	0.8	0.6	3.1	112	0.9	0.5	3.4
	South	32.4	76	0.4	0.3	2.8				
	Catcher processor	0.5	1	0.5	0.5	0.5				

Source: NMFS Restricted Access Management QS database, initial allocation.
Note: These share holdings data are publicly available and non-confidential.

Crew quota share were allocated to captains based on their individual catch histories. In addition, only individuals are permitted to acquire and hold C shares. Consequently, concentration of C share holdings is accurately reflected in the following discussion and tables.

The initial crew quota share allocations showed a similar pattern across the program fisheries (see Table 3-4). Since fewer persons qualified for initial allocations, the initial C share QS holdings were more concentrated than initial owner QS holdings. Yet, in most cases, the initial allocations of C share QS were more evenly distributed among initial recipients. In most fisheries, the largest initial allocations of C share QS are a smaller percentage of the C share QS pool. Also, since C share use caps are double owner share caps, few initial allocations of C share QS exceeded the applicable use cap. Initial allocations of C share QS exceeded the use cap in only the Western Aleutian Island golden king crab and Western Aleutian Islands red king crab fisheries, where very few persons qualified for an allocation. With the exception of the Bering Sea *C. bairdi* fishery, catcher vessel C share QS makes up a larger share of the QS pool in each fishery than catcher vessel owner QS. No catcher processor C share QS exists in the Eastern

Aleutian Island golden king crab, St. Matthew Island blue king crab, and the Pribilof red and blue king crab fisheries.

Table 3-4 Initial allocation of crew quota shares.

Fishery	Share holdings by operation type						Share holdings across operation types			
	Operation type	Percent of pool	QS holders	Mean holding	Median holding	Maximum holding	QS holders	Mean holding	Median holding	Maximum holding
Bristol Bay red king crab	Catcher vessel	96.5	178	0.5	0.5	1.1	181	0.6	0.5	1.2
	Catcher processor	3.5	8	0.4	0.4	1.2				
Bering Sea *C. opilio*	Catcher vessel	94.1	152	0.6	0.6	1.3	155	0.6	0.6	1.6
	Catcher processor	5.9	8	0.7	0.7	1.6				
Bering Sea *C. bairdi*	Catcher vessel	91.8	170	0.5	0.5	1.7	176	0.6	0.5	1.7
	Catcher processor	8.2	15	0.5	0.4	1.5				
Eastern Aleutian Island golden king crab	Catcher vessel	100.0	13	7.7	8.2	12.8	13	7.7	8.2	12.8
Western Aleutian Island golden king crab	Catcher vessel	57.5	8	7.2	5.6	21.7	9	11.1	6.2	41.7
	Catcher processor	42.5	2	21.3	21.3	41.7				
Western Aleutian Island red king crab	Catcher vessel	86.4	4	21.6	14.3	49.5	4	25.0	20.8	49.5
	Catcher processor	13.6	1	13.6	13.6	13.6				
St. Matthew Island blue king crab	Catcher vessel	100.0	72	1.4	1.4	3.1	72	1.4	1.4	3.1
Pribilof red and blue king crab	Catcher vessel	100.0	40	2.5	2.4	4.8	40	2.5	2.4	4.8

Source: NMFS Restricted Access Management QS database, initial allocation.

3.3 Transfers of quota share

Currently, transfers are administered by NOAA Fisheries Restricted Access Management (RAM) Office. Transfers are usually processed by RAM within two or three days of receipt of a complete application, but can take up to 10 days. RAM is in the process of developing a system of electronic transfers. Once in place, users of this system will be able to engage in real time transfers through the internet. This system is unlikely to be fully implemented for at least one more seasons.

Table 3-5 shows the number of harvesting quota shares transferred by operation type, share type, and fishery. In the first three years of the program, substantial portions of the harvesting QS pools have been transferred. Approximately 10 percent of the C share pool in the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries traded hands in each of the first two years of the program. The transfer market for C shares seems to have slowed in the third year, which may be a reflection of persons who are no longer employed in the fisheries deciding to divest their shares. As with other data concerning owner share holdings, transfer data can be misleading. In some cases, transfers are changes in the name of the holder. In other cases, the transfer might reflect a change in structure of the share holding entity (such as the addition of a new partner or a change in corporate ownership), which differs across transactions.

Table 3-5 Transfers of harvesting QS by share type and fishery (2005-2006 through January 2008).

Year	Fishery	Sector	QS transferred	
			units	as a percent of total QS pool
2005 - 2006	Bristol Bay red king crab	Catcher processor owner	1,569,702	0.4
		Catcher vessel owner	15,337,188	3.8
		Catcher vessel crew	1,434,287	0.4
	Bering Sea *C. opilio*	Catcher processor owner	11,997,148	1.2
		Catcher vessel owner	40,969,076	4.1
		Catcher vessel crew	3,082,755	0.3
	Bering Sea *C. bairdi**	Catcher processor owner	1,570,469	0.8
		Catcher processor crew	19,854	0.0
		Catcher vessel owner	11,870,491	5.9
		Catcher vessel crew	563,706	0.3
	Eastern Aleutian Islands golden king crab	Catcher vessel owner	1,021,237	10.2
		Catcher vessel crew	43,372	0.4
	Pribilof red and blue king crab	Cather vessel owner	387,936	1.3
	St. Matthew Island blue king crab	Catcher vessel owner	766,644	2.5
		Catcher vessel crew	57,443	0.2
	Western Aleutian Islands golden king crab	Catcher vessel owner	878,114	1.5
		Catcher vessel crew	75,643	0.1
2006 - 2007	Bristol Bay red king crab	Catcher processor owner	777,429	0.2
		Catcher vessel owner	28,744,461	7.2
		Catcher vessel crew	1,237,670	0.3
	Bering Sea *C. opilio*	Catcher processor owner	3,494,652	0.3
		Catcher processor crew	222,842	0.0
		Catcher vessel owner	60,901,248	6.1
		Catcher vessel crew	3,049,661	0.3
	Bering Sea *C. bairdi**	Catcher vessel crew	181,990	0.1
	Eastern Bering Sea *C. bairdi*	Catcher processor owner	460,039	0.2
		Catcher vessel owner	17,195,877	8.6
		Catcher vessel crew	491,486	0.2
	Pribilof red and blue king crab	Catcher vessel owner	960,391	3.2
		Catcher vessel crew	48,351	0.2
	St. Matthew Island blue king crab	Catcher vessel owner	1,620,414	5.4
		Catcher vessel crew	79,301	0.3
	Western Aleutian Islands red king crab	Catcher vessel owner	1,232,580	2.1
	Western Bering Sea *C. bairdi*	Catcher processor owner	460,039	0.2
		Catcher vessel owner	17,195,877	8.6
		Catcher vessel crew	491,486	0.2
2007 - 2008	Bristol Bay red king crab	Catcher vessel owner	4,734,563	1.2
		Catcher vessel crew	493,960	0.1
	Bering Sea *C. opilio*	Catcher vessel owner	18,434,596	1.8
		Catcher vessel crew	983,437	0.1
	Eastern Aleutian Islands golden king crab	Catcher processor owner	396,848	4.0
		Catcher vessel crew	35,191	0.4
	Eastern Bering Sea *C. bairdi*	Catcher vessel owner	2,886,182	1.4
		Catcher vessel crew	217,301	0.1
	Pribilof red and blue king crab	Catcher vessel owner	654,792	2.2
	St. Matthew Island blue king crab	Catcher vessel owner	1,374,990	4.5
		Catcher vessel crew	48,781	0.2
	Western Aleutian Island golden king crab	Catcher processor owner	190,857	0.5
	Western Aleutian Island red king crab	Catcher vessel owner	265,488	0.4
	Western Bering Sea *C. bairdi*	Catcher vessel owner	3,208,167	1.6
		Catcher vessel crew	217,301	0.1

Source: NMFS Restricted Access Management transfer data.

Note: Percentages are based on quota share pool as of 2008. Annual transfers fishery and sector transfers of less than 5,000 units are excluded.

Data for 2007-2008 are partial year data, as of January 2008.

* Uses Eastern Bering Sea *C. bairdi* for the QS pool denominator.

3.4 Current holdings

Share holdings distribution data in the Bristol Bay red king crab, Bering Sea *C. opilio*, and both Bering Sea *C. bairdi* fisheries suggest that owner quota share have become slightly more concentrated since the initial allocation (see Table 3-6). In each of these fisheries, the maximum holding increased beyond a level in excess of the individual cap at the initial allocation. CDQ groups, who are subject to separate higher share holdings caps, are permitted to acquire shares over the cap level that applies to all other persons. In each case, one of those groups has acquired shares beyond the individual cap applicable to persons other than CDQ groups. Although these data suggest substantial consolidation in the fisheries, very few persons have left the fisheries—fewer than 15 persons (or less than 6 percent of the initial share holders). In all of the other fisheries, the number of owner quota share holders increased over the number in the initial allocations. In those fisheries, the mean, median, and maximum share holding was largely unchanged.

Table 3-6 Current owner quota share holdings by region.

Fishery	Share holdings by region						Across regions			
	Region/Catcher processor	QS holders	Percent of pool	Mean holding	Median holding	Maximum holding	QS holders	Mean holding	Median holding	Maximum holding
Bristol Bay red king crab	North	32	2.4	0.1	0.0	0.2	245	0.41	0.34	3.44
	South	234	93.0	0.4	0.3	3.4				
	Catcher processor	12	4.5	0.4	0.3	1.0				
Bering Sea *C. opilio*	North	202	42.7	0.2	0.2	1.2	231	0.43	0.41	2.59
	South	205	48.2	0.2	0.2	2.6				
	Catcher processor	13	9.1	0.7	0.7	2.2				
Eastern Bering Sea *C. bairdi*	Undesignated	234	93.3	0.4	0.3	2.6	244	0.41	0.31	2.91
	Catcher processor	13	6.7	0.5	0.5	1.1				
Western Bering Sea *C. bairdi*	Undesignated	234	93.3	0.4	0.3	2.7	244	0.41	0.31	2.91
	Catcher processor	13	6.7	0.5	0.5	1.1				
Eastern Aleutian Island golden king crab	South	13	95.2	7.3	6.6	20.4	15	6.67	5.97	20.35
	Catcher processor	2	4.8	2.4	2.4	4.1				
Western Aleutian Island golden king crab	Undesignated	13	26.9	2.1	1.0	11.0	16	6.25	1.74	45.73
	West	9	26.9	3.0	1.3	13.5				
	Catcher processor	3	46.2	15.4	0.5	45.7				
Western Aleutian Island red king crab	South	32	61.0	1.9	0.5	13.5	33	3.03	0.62	45.16
	Catcher processor	2	39.0	19.5	19.5	37.8				
St. Matthew Island blue king crab	North	121	76.7	0.6	0.6	3.4	136	0.74	0.62	4.45
	South	84	21.3	0.3	0.1	2.2				
	Catcher processor	5	2.0	0.4	0.3	0.9				
Pribilof red and blue king crab	North	85	67.1	0.8	0.5	3.1	113	0.88	0.52	3.42
	South	76	32.4	0.4	0.3	2.8				
	Catcher processor	1	0.5	0.5	0.5	0.5				

Source: NMFS Restricted Access Management IFQ database, crab fishing year 2007-2008.
Note: These share holdings data are publicly available and non-confidential.

As might be expected, the current distribution of C share quota share holdings shows larger changes from the initial allocation than that of owner shares (see Table 3-7). In general, C share holdings show some consolidation, as persons have acquired shares to the individual cap in the Bristol Bay red king crab, Bering Sea *C. opilio*, and both Bering Sea *C. bairdi* fisheries. Approximately 20 persons fewer persons hold shares in each of these fisheries. In most instances, these are likely persons who no longer participate in the fisheries as active crew. Although active participation requirements did not apply for the first three years of the program, these people may have divested as they lost their connection to the fisheries. C share holders might also be more likely to divest of their share holdings, since those holdings are a relatively small portion of the overall QS pool limiting the annual income that might be derived from those shares. Holders of owner QS who no longer enter a vessel into the fishery may be more likely to maintain their share holding, as the flow of income from those shares is likely to be substantially greater, as those shares make up a much larger share of the QS pool.

Table 3-7 Current C share quota share holdings by operation type.

Fishery	Share holdings by operation type						Share holdings across operation types			
	Operation type	QS holders	Percent of pool	Mean holding	Median holding	Maximum holding	QS holders	Mean holding	Median holding	Maximum holding
Bristol Bay red king crab	Catcher vessel	153	96.5	0.6	0.5	2.0	156	0.64	0.54	2.00
	Catcher processor	8	3.5	0.4	0.4	1.2				
Bering Sea *C. opilio*	Catcher vessel	134	94.1	0.7	0.6	2.0	136	0.74	0.66	1.99
	Catcher processor	7	5.9	0.8	0.7	2.0				
Eastern Bering Sea *C. bairdi*	Catcher vessel	150	91.8	0.6	0.6	1.9	156	0.64	0.57	2.00
	Catcher processor	15	8.2	0.5	0.4	1.5				
Western Bering Sea *C. bairdi*	Catcher vessel	150	91.8	0.6	0.6	1.9	156	0.64	0.57	2.00
	Catcher processor	15	8.2	0.5	0.4	1.5				
Eastern Aleutian Island golden king crab	Catcher vessel	11	100.0	9.1	9.2	20.1	11	9.09	9.18	20.14
	Catcher processor	0	0.0	0.0	0.0	0.0				
Western Aleutian Island golden king crab	Catcher vessel	8	57.5	7.2	5.6	21.7	9	11.11	6.17	41.74
	Catcher processor	2	42.5	21.3	21.3	41.7				
Western Aleutian Island red king crab	Catcher vessel	4	86.4	21.6	14.3	49.5	4	25.00	20.84	49.46
	Catcher processor	1	13.6	13.6	13.6	13.6				
St. Matthew Island blue king crab	Catcher vessel	69	100.0	1.4	1.4	3.3	69	1.45	1.41	3.32
	Catcher processor	0	0.0	0.0	0.0	0.0				
Pribilof red and blue king crab	Catcher vessel	39	100.0	2.6	2.6	4.8	39	2.56	2.55	4.84
	Catcher processor	0	0.0	0.0	0.0	0.0				

Source: NMFS Restricted Access Management IFQ database, crab fishing year 2007-2008.
Note: These share holdings data are publicly available and non-confidential.

3.5 Processor holdings of catcher vessel owner QS

Under the program, a holder of PQS and its affiliates who hold catcher vessel owner QS do not receive allocations of Class B IFQ, up to the PQS holder's annual IPQ allocation. These persons receive Class A IFQ exclusively to offset their allocations of IPQ, and receive a split of Class A IFQ and Class B IFQ in the same proportion as catcher vessel owner QS holders with no PQS holder affiliation for any remaining catcher vessel owner QS. This split Class A IFQ/Class B IFQ allocation is determined such that the overall share of Class B IFQ in the fishery is 10 percent of the catcher vessel owner IFQ allocation. In the Bristol Bay red king crab 2007-2008 season, QS holders with no processor affiliation received approximately 11.7 percent of their annual IFQ allocation as Class B IFQ, suggesting that approximately 20 percent of the QS pool is subject to affiliated PQS. A similar portion of the Bering Sea *C. bairdi* catcher vessel owner pool is subject to PQS affiliation, while slightly less of the Bering Sea *C. opilio* catcher vessel owner pool is subject to PQS affiliation. In the two Aleutian Island golden king crab fisheries almost no QS are held by persons with PQS affiliations. Although the amount of shares available for delivery to persons not holding unused IPQ is unchanged by this distribution of Class B IFQ, this distribution increases the portion of each independent harvesters allocation that may be marketed competitively.

Table 3-8 Allocations of Class A IFQ and Class B IFQ by processor affilation (2007-2008)

Fishery	QS holders with a processor			QS holders without processor affilation			
	Number of QS holders	Percent of Class A IFQ pool received	Percent of Class B IFQ pool received*	Number of QS holders	Percent of Class A IFQ pool received	Percent of Class B IFQ pool received	Percent of allocation as B shares
Bristol Bay red king crab	39	21.3	6.5	199	78.7	93.5	11.7
Bering Sea *C. opilio*	31	18.2	6.5	191	81.8	93.5	11.3
Eastern Aleutian Islands golden king crab	1	0.6	0.0	12	99.4	100.0	10.1
Eastern Bering Sea *C. bairdi*	24	16.0	0.0	24	84.0	100.0	11.7
Western Aleutian Islands golden king crab	1	0.0	0.0	12	100.0	100.0	10.0
Western Bering Sea *C. bairdi*	24	16.0	0.0	211	84.0	100.0	11.7

Source: RAM IFQ database (2007-2008).
* Processor affiliates may receive Class B IFQ for IFQ allocations in excess of IPQ holdings.

4 HARVEST SECTOR

This section reviews harvest sector IFQ use and participation in the fisheries in the first three years of the program. The section begins with a brief discussion of participation levels before and after implementation of the program and the overall harvest of IFQ. The section goes on to discuss cooperative fishing and leasing, to the extent that those practices are known. The section concludes with a discussion of vessel operations and the distribution of catch among the participating fleet.

Annual IFQ allocations issued in pounds of allowable catch and are classified based on operation type, holder, and share class (see Table 4-1). Approximately 97 percent of the annual allocation is owner shares, while the remaining 3 percent are allocated as captain/crew shares (or C shares). The division of shares by operation type are based on catch histories of eligible participants in the qualifying years. In addition, 90 percent of the annual IFQ allocation of catcher vessel owner shares are Class A IFQ, which must be delivered to a processor holding unused IPQ, while the remaining 10 percent are issued as Class B IFQ, which may be delivered to any processor.

Table 4-1 IFQ allocation by share type (2007-2008).

	Catcher vessel			Catcher processor		Total
	Owner		Captain/	Owner	Captain/	
Fishery	Class A	Class B	crew		crew	
Bristol Bay red king crab	15,281,406	1,697,931	528,407	807,708	19,247	18,334,699
Bering Sea *C. opilio*	45,030,918	5,003,431	1,601,490	4,994,834	99,922	56,730,595
Eastern Aleutian Islands golden king crab	2,243,082	249,229	80,995	126,663	0	2,699,969
Eastern Bering Sea *C. bairdi*	2,525,080	280,564	85,165	202,073	7,623	3,100,505
Western Aleutian Islands golden king crab	1,140,787	126,752	41,914	1,089,563	30,989	2,430,005
Western Bering Sea *C. bairdi*	1,594,952	177,211	53,792	127,637	4,812	1,958,404

Source: NMFS Restricted Access Management IFQ database, crab fishing year 2007-2008.

4.1 Vessel participation

Table 4-2 displays changes in the numbers of vessels participating in fisheries under the program, compared with years just prior to program implementation. Examining data from the first three years of the program show a substantial reduction in the fleets in all fisheries. The figures reveal initial precipitous declines that, as expected, gradually slowed over time. Prior to the implementation of the rationalization program, between 167 and 251 vessels participated annually in each of the two largest fisheries, the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries. In the Bristol Bay red king crab fishery, the fleet contracted to less than one-third its pre-rationalization size. In the Bering Sea *C. opilio* fishery the fleet contracted to levels similar to those in the Bristol Bay red king crab fishery, but the contraction was of smaller magnitude because this fleet had contracted to some degree prior to implementation of the program, as GHLs in the fishery were at historic lows in the years preceding the program. The table shows that catcher processor participation in the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries dropped slightly less than participation of catcher vessels. Substantial fleet consolidation also occurred in the smaller Aleutian Islands golden king crab fisheries, while the Bering Sea *C. bairdi* fisheries were reopened under the program after being closed for nearly a decade.

Table 4-2 Catch and number of vessels by operation type.

Fishery	Season	Catch	Catch (as percent of total**) by		Number of vessels participating		
			catcher vessels	catcher processors	catcher vessels	catcher processors	all unique vessels
Bering Sea *C. opilio*	2001	22,940,704	86.5	13.5	201	8	207
	2002	29,609,702	94.4	5.6	182	9	190
	2003	25,410,122	96.8	3.2	185	5	190
	2004	21,939,493	97.0	3.0	183	6	189
	2005	22,655,777	97.1	2.9	161	6	167
	2005 - 2006	33,248,009	92.2	7.2	76	4	78
	2006 - 2007	32,699,911	90.9	8.4	66	4	70
	2007 - 2008	56,722,400	92.4	7.6	74	4	78
Bristol Bay red king crab	2000	7,468,240	97.2	2.8	238	6	244
	2001	7,681,106	95.9	4.1	224	8	230
	2002	8,770,348	96.6	3.4	234	9	241
	2003	14,237,375	95.2	4.8	242	8	250
	2004	13,889,047	95.7	4.3	243	8	251
	2005 - 2006	16,472,400	96.7	3.3	88	4	89
	2006 - 2007	13,887,531	*	*	79	3	81
	2007 - 2008	18,324,046	*	*	72	3	74
Eastern Bering Sea *C. bairdi*	2006 - 2007	1,267,106	*	*	33	3	36
	2007 - 2008	1,439,435	*	*	19	1	20
Western Bering Sea *C. bairdi*	2005 - 2006	791,025	*	*	42	2	43
	2006 - 2007	633,910	*	*	34	2	36
	2007 - 2008	467,136	*	*	26	1	27
Eastern Aleutian Islands golden king crab	2000 - 2001	3,086,890	*	*	15	0	15
	2001 - 2002	3,128,409	100.0	0.0	19	0	19
	2002 - 2003	2,765,436	100.0	0.0	19	0	19
	2003 - 2004	2,900,247	100.0	0.0	18	0	18
	2004 - 2005	2,846,273	100.0	0.0	20	0	20
	2005 - 2006	2,569,209	*	*	6	1	7
	2006 - 2007	2,692,009	*	*	5	1	6
	2007 - 2008	2,690,377	*	*	3	1	4
Western Aleutian Islands golden king crab	2000 - 2001	2,902,518	*	*	11	1	12
	2001 - 2002	2,693,221	*	*	8	1	9
	2002 - 2003	2,605,237	*	*	5	1	6
	2003 - 2004	2,637,161	*	*	5	1	6
	2004 - 2005	2,639,862	*	*	5	1	6
	2005 - 2006	2,382,468	*	*	2	1	3
	2006 - 2007	2,002,186	*	*	2	1	3
	2007 - 2008	2,246,040	*	*	2	1	3
All fisheries	2000 - 2001				246	10	253
	2001 - 2002				235	11	243
	2002 - 2003				238	11	247
	2003 - 2004				245	9	254
	2004 - 2005				247	9	256
	2005 - 2006				100	5	101
	2006 - 2007				87	5	91
	2007 - 2008				83	5	87

Sources: ADFG fishtickets and NMFS RAM catch data (for 2005-2006, 2006-2007, and 2007-2008)

* Withheld for confidentiality.

** Catch as a percent of IFQ allocations for 2005-2006, 2006-2007, and 2007-2008 seasons.

Note: "All fishery" participation in a season includes all fisheries prosecuted between August 1 and July 31.

For 2005-2006, 2006-2007, and 2007-2008 catcher processor vessel count include all vessels harvesting catcher processor shares.

Fleet consolidation in the program fisheries was the result of owners and operators making business decisions to idle boats in order to remove excess capacity from the fisheries. Leasing of quota, and the accompanying retirement or sidelining of excess capital, has taken place to the degree but more quickly than most predicted. A few factors likely contributed to the substantial consolidation that occurred in the first years of the program. Consolidation was stimulated by the cooperative structure under the program. Cooperatives created the framework and led to the development of harvesting associations, strengthening relationships creating an environment ripe for leasing. The cooperative structure also reduces administrative burdens for in-season quota exchanges among members, which are not reported to NOAA

Fisheries administrators, since each cooperative manages the aggregated allocation of IFQ of its members.

In the first three years of the program, participants have harvested most of the issued IFQ (Table 4-3). The percentage of shares harvested is relatively consistent across regions in most fisheries. The exceptions are the Western Bering Sea *C. bairdi*, Eastern Bering Sea *C. bairdi* and Western Aleutian Islands golden king crab fisheries. The *C. bairdi* fisheries are reported by participants to be particularly difficult to prosecute because of low catch rates. Harvest of the Western Aleutian Islands golden king crab fishery is reported to be economically challenging because of low market prices for golden king crab. Although the amount of unharvested IFQ in the Western Aleutian Islands golden king crab fishery cannot be reported on a regional basis due to policies regarding the protection of confidential data, participants report that most of the unharvested IFQ are from the West region, where processing costs are reported to be relatively high.

Although little can be disclosed concerning catcher processor catches, a comparison of the number of vessels by operation type and the number of vessels harvesting IFQ by share type shows that catcher vessels are harvesting a portion of the catcher processor allocation for delivery to shore-based processors. The use of catcher processor shares by catcher vessels likely arises from two types of activities. Some share holders likely transfer their shares to catcher vessels as a part of planned consolidation of operations; others may make transfers of small amounts after harvesting most of their holdings to avoid stranding the remaining portions of their allocations.

Table 4-3 Percentage of IFQ harvested by operation type, share type, and region.

Season	Fishery	Catcher vessel												Catcher processor			
		Owner										Crew		Owner		Crew	
		Class A North		Class A South		Class A West		Class A Undesignated		Class B							
		Number of vessels	Percent of IFQ harvested	Number of vessels	Percent of IFQ harvested	Number of vessels	Percent of IFQ harvested	Number of vessels	Percent of IFQ harvested	Number of vessels	Percent of IFQ harvested	Number of vessels	Percent of IFQ harvested	Number of vessels	Percent of IFQ harvested	Number of vessels	Percent of IFQ harvested
2005 - 2006	Bristol Bay red king crab	9	100.0	84	99.9					68	99.7	65	95.6	8	100.0	6	99.8
	Bering Sea *C. opilio*	59	99.3	69	99.6					55	99.2	50	93.6	7	99.9	7	87.4
	Eastern Aleutian Islands golden king crab			6	95.1					6	92.6	4	95.9	3	*		
	Western Aleutian Island golden king crab					2	*	2	*	2	*	2	*	2	*	2	*
	Western Bering Sea *C. bairdi*							32	58.4	18	41.5	10	27.9	2	*	2	*
2006 - 2007	Bristol Bay red king crab	6	100.0	75	100.0					61	99.2	58	96.1	8	99.9	7	100.0
	Bering Sea *C. opilio*	43	100.0	54	100.0					50	99.9	44	96.8	7	100.0	5	86.8
	Eastern Aleutian Islands golden king crab			5	100.0					4	100.0	3	88.4	2	*		
	Eastern Bering Sea *C. bairdi*							27	79.0	11	68.5	13	55.5	5	42.5	4	55.0
	Western Aleutian Island golden king crab					1	*	2	*	2	*	2	*	2	*	1	*
	Western Bering Sea *C. bairdi*							28	69.0	11	56.0	10	48.6	3	33.4	2	*
2007 - 2008	Bristol Bay red king crab	6	100.0	71	100.0					45	99.8	41	99.4	10	99.9	7	100.0
	Bering Sea *C. opilio*	67	100.0	69	100.0					50	99.9	37	100.0	8	100.0	6	100.0
	Eastern Aleutian Islands golden king crab			3	99.9					3	98.2	2	*	1	*		
	Eastern Bering Sea *C. bairdi*							18	47.0	6	52.2	4	38.7	3	36.4		
	Western Aleutian Island golden king crab					1	*	2	*	2	*	1	*	2	*	1	*
	Western Bering Sea *C. bairdi*							25	26.4	4	14.7	4	19.8	1	*		

Source: RAM IFQ database, 2005-2006, 2006-2007, and 2007-2008.

* withheld for confidentiality.

Note: blanks are inapplicable.

While most participants have managed to harvest close to their full allocations, few overages have occurred in the first three years of the program (Table 4-4). A slight increase in the number of overages occurred in the second year of the program, with an overall increase from 15 to 22 IFQ overages. A slight increase in the number of overages per vessel and per landing also occurred, as harvests were slightly more concentrated across vessels and landings in the second year. However, the number of overages

dropped to 14 in the third year of the program. Over all three years, overages have been small relative to the size of the TAC in the fisheries. In the Bering Sea *C. opilio* and Bristol Bay red king crab fisheries (the only fisheries for which data can be released), overages were approximately one-one thousandth of the TAC or less. Cooperative membership likely plays a role in reducing the number of overages, since IFQ attributable to QS of several different holders are aggregated at the cooperative level. Cooperative held IFQ is fished as a pool by members with no overage until the entire cooperative allocation is fully harvested. Consequently, individual harvesters in the cooperative may exceed their intended catch without an overage, provided the cooperative holds unused shares. Any consequence of these overharvests are internal to the cooperative (i.e., addressed under the terms of the cooperative agreement).[8]

The ability of harvesters to avoid overages is also aided by permissible discarding. Under the program, harvesters are permitted to discard crab without charge against IFQ. So, when a harvester estimates that available IFQ are fully used, any catch in remaining deployed gear may be discarded. Under this system, overages are effectively dependent on the ability of a harvester to estimate the quantity of crab harvested and in the tanks.

In future years, it is possible that overages can be reduced further from these already low levels. The Council has adopted an amendment that will allow the post-delivery transfer of IFQ and IPQ to cover overages. That amendment will take effect on Secretarial approval and completion of the rule making process.

Table 4-4 Overages by fishery

Season	Fishery	Number of participating vessels	Number of landings	Number of overages	Number of overages exceeding 3 percent	Weight of overages	Percent of landings with overage
2005-2006	Bristol Bay red king crab	89	238	7	3	5,984	2.94
	Bering Sea *C. opilio*	78	270	6	*	8,294	2.22
	Western Bering Sea *C. bairdi*	43	68	1	0	*	1.47
	Eastern Aleutian Islands golden king crab	7	30	0	0	0	0.00
	Western Aleutian Islands golden king crab	3	21	1	*	*	4.76
2006-2007	Bristol Bay red king crab	81	175	9	*	9,661	5.14
	Bering Sea *C. opilio*	70	246	9	5	40,763	3.66
	Eastern Bering Sea *C. bairdi*	36	53	2	0	*	3.77
	Western Bering Sea *C. bairdi*	36	56	0	0	0	0.00
	Eastern Aleutian Islands golden king crab	6	29	1	0	*	3.45
	Western Aleutian Islands golden king crab	3	11	1	0	*	9.09
2007-2008	Bristol Bay red king crab	74	237	5	*	3,854	2.11
	Bering Sea *C. opilio*	78	427	8	*	9,320	1.87
	Eastern Bering Sea *C. bairdi*	20	50	0	0	0	0.00
	Western Bering Sea *C. bairdi*	27	43	0	0	0	0.00
	Eastern Aleutian Islands golden king crab	4	29	0	0	0	0.00
	Western Aleutian Islands golden king crab	3	17	1	*	*	5.88

Source: NMFS RAM IFQ database, crab fishing years 2005-2006, 2006-2007, and 2007-2008.

* withheld for confidentiality.

Note: One overage during the 2005-2006 season was a catcher processor overage; three overages during the 2006-2007 season were catcher processor overages.

4.2 Summary of leasing and cooperative fishing

Short term transfers under leases and cooperative fishing arrangements are the primary means by which QS holders in the crab fisheries have achieved fleet consolidation under the rationalization program. This section examines the use of cooperative fishing and leasing in the fisheries under the rationalization program.

[8] Although an overage may not occur when a person makes a landing in excess of the intended delivery, the excess catch must be covered by some share holdings. At times, these excesses may be covered by A shares intended to be harvested by another cooperative member (provided those A shares are (or may be)) committed to processor receiving the delivery; other times, B shares must be used for these excesses.

Favorable lease rates have made quota leasing (inside and outside of cooperatives) particularly attractive under the rationalization program. High lease rates have likely contributed greatly to consolidation under the program. In the first season, Bristol Bay red king crab lease rates have been as high as 70 percent of the ex vessel price, while Bering Sea *C. opilio* lease rates have reached 50 percent of the ex vessel price in some cases. In the Bering Sea *C. bairdi* fishery lease rates were approximately 35 percent of the ex vessel price. The lower rate in this fishery is likely a reflection of the fact that the fisheries are primarily an incidental catch fishery with relatively lower catch rates and a low TAC. Lease rates in the Eastern Aleutian Islands golden king crab fishery were approximately 50 percent of the ex vessel prices, while lease rates in the Western Aleutian Islands golden king crab fishery were approximately 25 percent of the ex vessel price. The low price in the Western Aleutian Islands fishery likely has resulted from the high operating costs and low ex vessel price in that remote fishery. Lease rates dropped by as much as 10 percentage points in the various fisheries in the second year. Demand for shares in the Western Aleutian Islands golden king crab fishery reportedly did not supported a lease market in the second year.[9]

The cooperative arrangements and the complexity of ownership patterns in the fisheries prevent any reliable estimates of the extent of leasing in the fisheries. Intra-cooperative transfers of IFQ are not administered or tracked by managers, limiting available information concerning these transfers.[10] Vessel ownership data are limited. QS ownership information reveal complex, overlapping individual, partnership, and corporate holdings of QS. This array of QS ownership arrangements, together with the absence of vessel ownership information, limits any ability to develop a full understanding of the scope of leasing in the fisheries.[11]

Cooperative membership appeals to QS holders for several reasons. Cooperative shares are more easily consolidated because transfers among cooperative members are administered by the cooperative rather than by NOAA Fisheries, with NOAA Fisheries monitoring catch of the cooperative as a whole. Since NOAA Fisheries monitors a cooperative's fishing in the aggregate, share transactions among members may be held confidential. Liberal rules exempt vessels fishing cooperative allocations from vessel IFQ use caps. Because of these attributes, most QS holders have elected to join cooperatives (Table 4-5). By the third year of the program, nearly all IFQ were held by cooperatives. In addition, the inability of non-cooperative IFQ holders to engage in IFQ transfers with cooperatives increases the incentive for cooperative membership as the share of IFQ held outside of cooperatives (which may be available for

[9] These lease rates, together with ex vessel prices (less landing fees), are likely the best source of information for establishing the value of QS and IFQ in the fisheries. Annual IFQ are simply valued at the competitive market lease rates. QS can be valued based on the discounted stream of lease revenues that would be yielded annual IFQs. In considering QS values, it is important to note that some risk premium should be incorporated into the value to account for variations in stocks and market conditions. In addition, it is possible that lease rates in the first few years of the program may be inflated as some vessel owners attempt to secure their position in the fleet in the face of substantial excess capital. The potential production efficiency benefits of the program to harvesters in the Bristol Bay red king crab fisheries were explored by Matulich (2008). In that paper, a simulation of pre and post rationalization harvests (based on 2004 operating costs, TACs, and prices) suggested trades of quota among different vessel owners based on efficiency differences across vessel classes would result in substantial benefits to harvesters under the program. Although harvest by vessel class in the simulation varies substantially from fleet composition in the fishery, the simulation findings are reinforced by lease rates observed in the program.

[10] Although leasing information is collected in the economic data reports, the reliability of those data are uncertain because the leasing definition may not be consistently interpreted across the fleet and some transactions may be between affiliates.

[11] Determining the scope of leasing also requires the development of a definition of leasing. Depending on the definition, two very similar arrangements could be characterized differently. In addition, under any definition, minor changes in a relationship may result in the recharacterization of the relationship as a lease. For example, under most definitions of leasing if two persons have equal QS holdings and one independently owns a vessel that harvests all of the yielded IFQ, half of the IFQ would be viewed as leased. If these persons formed a partnership that held all of the QS, it is possible that none of the IFQ would be viewed as leased.

coordinating harvest activity among non-cooperative IFQ holders) decreases. The degree of consolidation of harvest activity is also shown by the relatively large share of the IFQ held by a relatively small number of cooperatives in the fisheries. In the 2007-2008 Bristol Bay red king crab and Bering Sea *C. opilio* fisheries, fewer than 20 cooperatives held in excess of 98 percent of the IFQ, with a single cooperative holding in excess of 20 percent of the IFQ in the Bristol Bay fishery. Although these cooperatives may allow each large QS holder to fish their contribution to the cooperative's IFQ, the cooperative management provides a framework that simplifies consolidation in the harvest sector.

Table 4-5 Percent of IFQ held by cooperatives.

Fishery	Number of IFQ holders (including cooperatives)	Number of cooperatives	Number of cooperative members	Percent of IFQ allocated to cooperatives	Maximum cooperative allocation	Maximum number of cooperative members
	2005 - 2006					
Bristol Bay red king crab	90	13	306	83.3	16.9	74
Bering Sea *C. opilio*	82	13	285	83.6	15.2	64
Bering Sea *C. bairdi*	111	13	291	82.5	14.3	69
Eastern Aleutian Island golden king crab	7	3	22	91.2	59.9	12
Western Aleutian Island golden king crab	3	3	18	100.0	47.3	12
	2006 - 2007					
Bristol Bay red king crab	37	16	350	98.2	21.7	87
Bering Sea *C. opilio*	31	16	318	98.5	19.4	74
Eastern Bering Sea *C. bairdi*	54	15	327	96.9	17.2	75
Western Bering Sea *C. bairdi*	55	16	338	96.9	17.9	75
Eastern Aleutian Island golden king crab	5	4	23	99.9	45.9	12
Western Aleutian Island golden king crab	4	3	17	99.8	45.6	10
	2007 - 2008					
Bristol Bay red king crab	28	17	361	98.7	20.5	85
Bering Sea *C. opilio*	25	18	347	99.4	18.8	73
Eastern Bering Sea *C. bairdi*	29	13	313	99.0	17.9	74
Western Bering Sea *C. bairdi*	32	16	336	99.0	14.8	74
Eastern Aleutian Island golden king crab	5	4	23	99.9	53.3	11
Western Aleutian Island golden king crab	4	3	15	99.8	48.1	9

Source: NMFS RAM catch data.

High operating costs also contributed to the high amount of leasing (and rapid consolidation of fishing). Fuel prices increased greatly during the 2005-2006 season, increasing by more than 50 percent. Several participants also reported increases in insurance costs, in part, because many purchased cargo insurance to cover the quota landings committed to IPQ holders and lease payments committed to other quota holders. In the face of exceptionally favorable quota lease rates and high operational costs many participants elected to lease their quota holdings. This trend has continued, as operational costs have remained high.

In addition, consolidation within cooperatives continued as cooperative members become more comfortable with cooperative management of their quota. The result of these factors has been greater consolidation of IFQ harvests. During the 2007-2008 season, the number of vessels participating in the Bristol Bay red king crab fishery fell to 74 despite a TAC increase of 31 percent from the previous year. In the Bering Sea C. opilio fishery, an increase in the TAC in the third year of approximately 70 percent stimulated the reentry of vessels. This increase, however, only returned the fleet to a size of 78 vessels, its size in the first year of the program. As a result, the average vessel harvest in the fishery increased by more than 50 percent, despite the increase in the number of vessels.

Comparing the harvests of vessel fishing in cooperatives with the harvests of vessels fishing outside of cooperatives provides some insight into the contribution of cooperatives to consolidation. Table 4-6 through Table 4-11 show the number of vessels fishing inside and outside of cooperatives, as well as the total catch and average and median amount of IFQ fished by these vessels for each fishery. In the first three years of the program in the Bristol Bay red king crab and Bering Sea C. opilio fisheries, approximately 15 percent of the vessels fishing cooperative held IFQ exceeded the vessel use cap that applies only to vessels fishing individual IFQ. Although the average cooperative vessel harvest has fluctuated, the median vessel harvest has risen each year in both of these fisheries; however, some of this

increase in the third year is a result of TAC increases in these two fisheries, as opposed to greater consolidation of IFQ. As notable as the concentration of harvest activity by cooperative vessels is the decline in harvests and average vessel harvests of individually held IFQ. The low median vessel harvest of individual IFQ in the third year suggests that by that time, only a few vessels in the Bristol Bay red king crab and Bering Sea C. opilio fisheries continued to make full trips to harvest individually held IFQ.

Table 4-6 Number of vessels fishing and catch inside and outside of cooperatives in the Bristol Bay red king crab fishery.

BBR	Fishing inside cooperatives					Fishing outside cooperatives			
Season	Number of vessels	Catch (in pounds)	Average vessel's catch of cooperative held IFQ	Median vessel's catch of cooperative held IFQ	Cooperartive vessels fishing over the non-cooperative cap	Number of vessels	Catch (in pounds)	Average vessel's catch of individually held IFQ	Median vessel's catch of individually held IFQ
2005-2006	71	13,750,613	193,671	141,529	10	37	2,721,787	73,562	46,332
2006-2007	77	13,637,335	177,108	161,928	15	16	240,535	15,033	3,036
2007-2008	72	18,088,305	251,226	226,322	13	7	235,741	33,677	4,136

Source: RAM IFQ landings data

Table 4-7 Number of vessels fishing and catch inside and outside of cooperatives in the Bering Sea *C. opilio* fishery.

BBS	Fishing inside cooperatives					Fishing outside cooperatives			
Season	Number of vessels	Catch (in pounds)	Average vessel's catch of cooperative held IFQ	Median vessel's catch of cooperative held IFQ	Cooperartive vessels fishing over the non-cooperative cap	Number of vessels	Catch (in pounds)	Average vessel's catch of individually held IFQ	Median vessel's catch of individually held IFQ
2005-2006	63	27,938,875	443,474	348,802	13	34	5,309,134	156,151	78,670
2006-2007	69	32,182,046	466,406	411,855	13	12	477,102	39,759	7,789
2007-2008	78	56,387,093	722,911	611,455	12	7	335,307	47,901	14,306

Source: RAM IFQ landings data

The consolidation of catch across vessels fishing cooperative held IFQ in the *C. bairdi* fisheries differs from that in the two larger fisheries. In these fisheries, the average catch is substantially less than the median suggesting that most vessels have minor amounts *C. bairdi* catch, likely caught incidentally in one of the two larger fisheries. These catch amounts suggest that few vessels (inside or outside of cooperatives) have targeted *C. bairdi* which is likely the case because of the relatively low TACs and reported catch rates in the fishery.

Table 4-8 Number of vessels fishing and catch inside and outside of cooperatives in the Eastern Bering Sea *C. bairdi* fishery.

EBT	Fishing inside cooperatives					Fishing outside cooperatives			
Season	Number of vessels	Catch (in pounds)	Average vessel's catch of cooperative held IFQ	Median vessel's catch of cooperative held IFQ	Cooperartive vessels fishing over the non-cooperative cap	Number of vessels	Catch (in pounds)	Average vessel's catch of individually held IFQ	Median vessel's catch of individually held IFQ
2006-2007	34	1,232,366	36,246	3,833	12	4	31,678	7,920	*
2007-2008	20	1,439,435	71,972	33,807	5				

Source: RAM IFQ landings data

Table 4-9 Number of vessels fishing and catch inside and outside of cooperatives in the Western Bering Sea *C. bairdi* fishery.

WBT	Fishing inside cooperatives					Fishing outside cooperatives			
Season	Number of vessels	Catch (in pounds)	Average vessel's catch of cooperative held IFQ	Median vessel's catch of cooperative held IFQ	Cooperartive vessels fishing over the non-cooperative cap	Number of vessels	Catch (in pounds)	Average vessel's catch of individually held IFQ	Median vessel's catch of individually held IFQ
2005-2006	31	665,998	21,484	2,672	7	14	125,027	8,931	6,768
2006-2007	36	633,910	17,609	396	12				
2007-2008	27	467,136	17,301	9,943	4				

The two Aleutian Islands golden king crab fisheries have experienced substantial consolidation through cooperatives, as well. In only one season in the first three years have any vessels fishing cooperative IFQ remained under the 10 percent cap that applies only to non-cooperative IFQ harvests. The relatively small TACs, remoteness, and specialized nature of these fisheries likely contributed to their consolidation. In addition, in only the first year of the program did any vessels harvested any individually held IFQ in the Eastern Aleutian Islands golden king crab fishery; at no time have vessels harvested individually held IFQ in the Western Aleutian Islands golden king crab fishery.

Table 4-10 Number of vessels fishing and catch inside and outside of cooperatives in the Eastern Aleutian Islands golden crab fishery.

EAG	Fishing inside cooperatives					Fishing outside cooperatives			
Season	Number of vessels	Catch (in pounds)	Average vessel's catch of cooperative held IFQ	Median vessel's catch of cooperative held IFQ	Cooperartive vessels fishing over the non-cooperative cap	Number of vessels	Catch (in pounds)	Average vessel's catch of individually held IFQ	Median vessel's catch of individually held IFQ
2005-2006	6	2,336,448	389,408	348,029	6	3	232,761	77,587	*
2006-2007	6	2,690,662	448,444	336,415	*				
2007-2008	4	2,690,377	672,594	*	4				

Source: RAM IFQ landings data
* Withheld for confidentiality.

Table 4-11 Number of vessels fishing and catch inside and outside of cooperatives in the Western Aleutian Islands golden crab fishery.

WAG	Fishing inside cooperatives					Fishing outside cooperatives			
Season	Number of vessels	Catch (in pounds)	Average vessel's catch of cooperative held IFQ	Median vessel's catch of cooperative held IFQ	Cooperartive vessels fishing over the non-cooperative cap	Number of vessels	Catch (in pounds)	Average vessel's catch of individually held IFQ	Median vessel's catch of individually held IFQ
2005-2006	3	2,382,468	794,156	*	3				
2006-2007	3	2,000,276	666,759	*	3				
2007-2008	3	2,246,040	748,680	*	3				

Source: RAM IFQ landings data
* Withheld for confidentiality.

In general, each cooperative has managed its IFQ allocation as a pool. Underages (or unused IFQ) are often distributed among cooperative members in proportion to members' QS holdings in the program fishery. This method of distributing IFQ ensures that cooperative members share in both the benefits and costs of the cooperative's ability to precisely manage the use of its IFQ.

In addition to altering the relationship among harvesters, co-ops altered the relationship between harvesters and processors. Former competitors are now in the same co-operative structure, and deliveries (and harvester efforts) are structured to increase efficiencies in processing. Co-ops have tended to hire business managers that work with the processor to coordinate the fleet, and this has increased information flow between catchers and processors to a level that did not occur in the past due to competitive/business information tensions between the two sectors.

4.3 Vessel operations

Comparing vessel activities before and after implementation of the program brings to light further changes in the fleet dynamics in the fisheries. Table 4-13 shows some simple statistics of the fleet participating in the Bristol Bay red king crab fishery during the years immediately prior to program implementation and the first three years of the program. Figure 4-1 shows the distribution of catch across the fleet during those years, with each point showing the average catch of four vessels to protect confidentiality. The table and histogram show the considerable consolidation that occurred in the first year of the program. In the Bristol Bay red king crab fishery, the fleet contracted to slightly more than

one-third its pre-rationalization size. Since many of the vessels that remained active in the program fisheries fished for more than the QS allocation attributed to the vessel (while other vessels sat idle and owners collected lease royalties), most active vessels substantially increased their catch after rationalization. Under the rationalization program, both the median and largest harvests have been more than double their prerationalization levels in pounds and as a percent of the total catch. The mean and median vessel harvest in the fishery has grown consistently in the first three years of the program, but the largest harvests have fluctuated, both in pounds and as a percent of the total harvests. The histogram of harvests also shows a consistent pattern of consolidation since implementation.

Table 4-12 Simple statistics of the fleet participating in the Bristol Bay red king crab fishery.

Season	Number of vessels in the fishery	Total Catch	Average vessel harvest		Median vessel harvest		Average of highest four vessel harvests	
			as percent of total allocation	in pounds	as percent of total allocation	in pounds	as percent of total allocation	in pounds
2001	230	7,681,106	0.43	33,396	0.37	28,747	1.28	98,202
2002	241	8,770,348	0.41	36,391	0.40	35,316	0.82	71,911
2003	250	14,237,375	0.40	56,950	0.33	47,540	1.40	198,892
2004	251	13,889,047	0.40	55,335	0.38	52,780	0.86	119,599
2005-2006	89	16,472,400	1.12	185,120	0.85	140,698	3.90	643,007
2006-2007	81	13,887,531	1.23	170,268	1.05	146,374	3.27	453,476
2007-2008	74	18,324,046	1.35	247,343	1.22	222,838	3.57	654,402

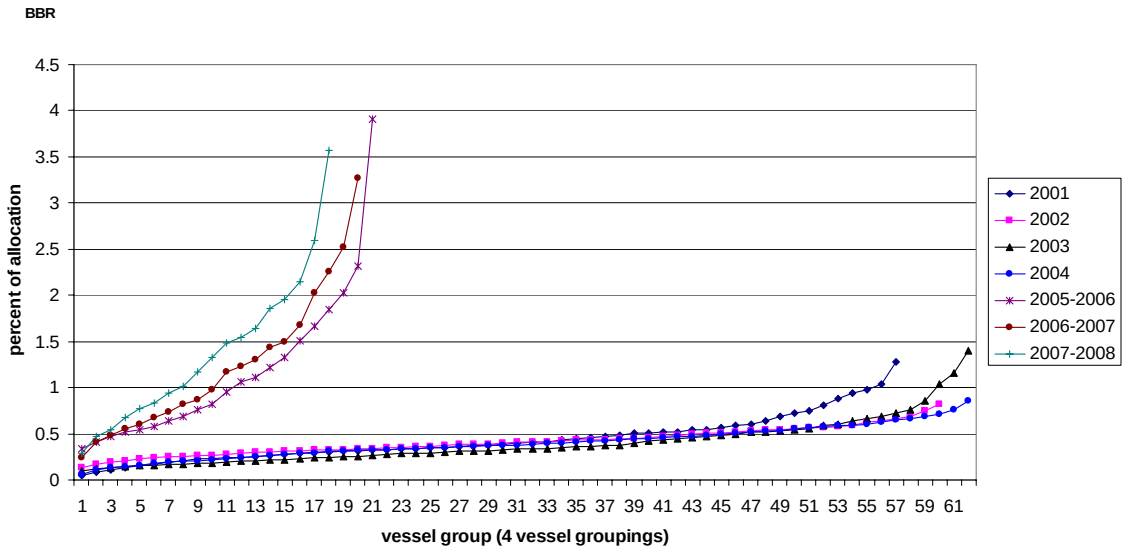

Figure 4-1 Catch by vessel as a percent of the total allocation in the Bristol Bay red king crab fishery

Table 4-13 shows simple catch statistics of the fleet participating in the Bering Sea *C. opilio* fishery during the years immediately prior to program implementation and the first three years of the program. Figure 4-2 is a histogram showing the distribution of catch across the fleet during those years, with vessels grouped in fours to protect confidentiality. In the first year of the program in Bering Sea *C. opilio* fishery, the fleet contracted to levels similar to those in the Bristol Bay red king crab fishery, but the contraction was of smaller magnitude because this fleet had contracted to some degree prior to implementation of the program. The relatively fewer vessels in the Bering Sea *C. opilio* fishery prior to the 2005-2006 season likely occurred because GHLs in that fishery were at historic lows leading up to

implementation of the program. From 1997 through 1999, the average vessel harvest was approximately 617,000, substantially higher than the average vessel harvest in the 2005-2006 season. In the first year of the program, the harvests of the largest vessels in the fleet greatly exceeded the largest pre-rationalization harvests.[12]

Unlike the Bristol Bay red king crab fishery, the fleet size fluctuated across the first three years, reaching a low in the 2006-2007 season, then rising in the 2007-2008 season. This increase likely occurred to support harvest of the increased TAC in the third year of the program, as the mean, median, and largest harvests increased substantially despite the increase in participating vessels.

Table 4-13 Simple statistics of the fleet participating in the Bering Sea *C. opilio* fishery.

Season	Number of vessels in the fishery	Total Catch	Average vessel harvest		Median vessel harvest		Average of highest four	
			as percent of total allocation	in pounds	as percent of total allocation	in pounds	as percent of total allocation	in pounds
2001	207	22,940,704	0.48	110,825	0.38	86,479	2.59	593,306
2002	190	29,609,702	0.53	155,841	0.50	147,730	1.44	425,538
2003	190	25,410,122	0.53	133,737	0.49	125,655	1.07	271,901
2004	189	21,939,493	0.53	116,082	0.49	106,791	1.30	284,844
2005	167	22,655,777	0.60	135,663	0.57	128,122	1.21	273,237
2005-2006	78	33,248,009	1.27	423,485	1.05	349,851	3.59	1,192,020
2006-2007	70	32,699,911	1.42	463,589	1.19	389,008	4.14	1,352,638
2007-2008	78	56,722,400	1.28	727,105	1.08	611,366	3.27	1,853,105

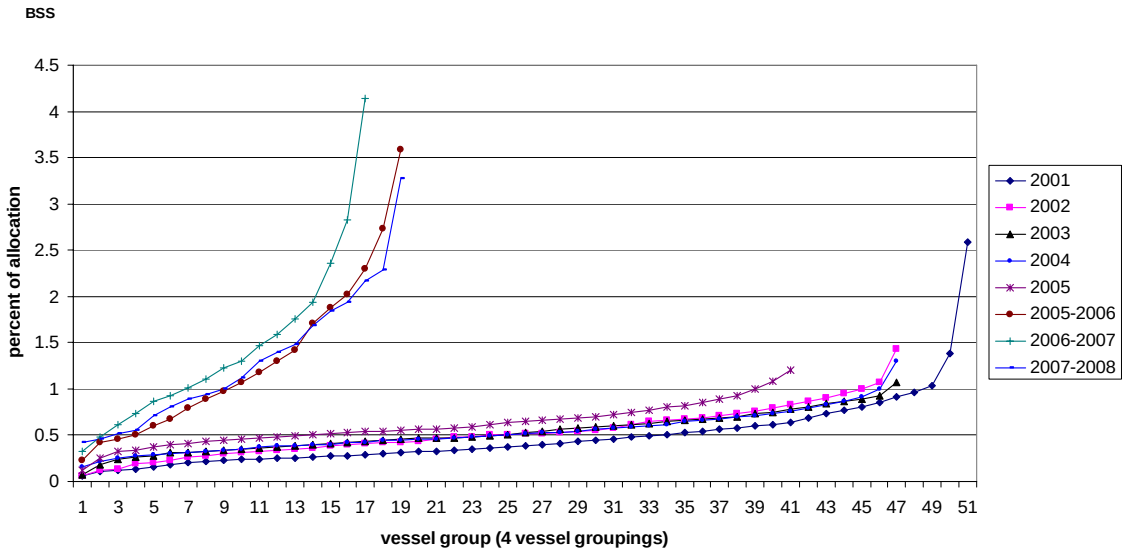

Figure 4-2 Catch by vessel as a percent of the total allocation in the Bering Sea *C. opilio* fishery.

Table 4-14 and Table 4-15 show simple catch statistics of the fleets participating in the Western and Eastern Bering Sea *C. bairdi* fishery during the first three years of the program. These fisheries were reopened under the program after being closed for nearly a decade. Figure 4-3 and Figure 4-4 are histograms showing the distribution of catch across the fleets during the first three years of the program, with vessels grouped in fours to protect confidentiality. The fisheries are generally prosecuted incidentally to the Bering Sea *C. opilio* and Bristol Bay red king crab fisheries, although participants have found it

[12] The four largest vessels in the fishery in 2001 harvested a substantially greater share than the four largest harvests in any other year. This likely occurred because some catcher processors did not acknowledge a catcher vessel strike in the fishery that year.

necessary to target *C. bairdi* to catch a reasonable portion of the quota. The relatively low median vessel catch and high average of the high four vessel catches is a reflection of the tendency of few vessels to actively target *C. bairdi*.

Table 4-14 Simple statistics of the fleet participating in the Western Bering Sea *C. bairdi* fishery.

Season	Number of vessels in the fishery	Total Catch	Average vessel harvest		Median vessel harvest		Average of highest four	
			as percent of total allocation	in pounds	as percent of total allocation	in pounds	as percent of total allocation	in pounds
2005-2006	43	791,025	1.26	9,981	0.26	2,051	6.97	55,151
2006-2007	36	633,910	1.79	11,337	0.04	255	8.32	52,724
2007-2008	27	467,136	0.88	4,127	0.51	2,372	2.70	12,635

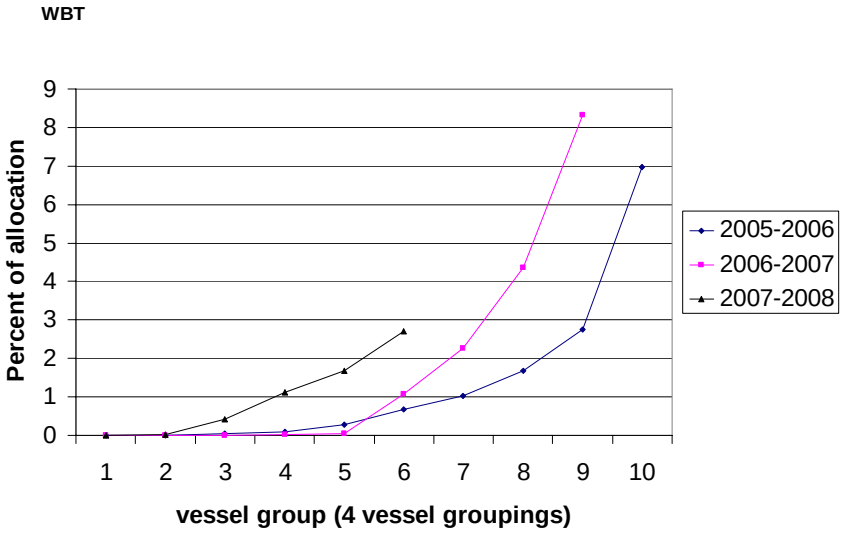

Figure 4-3 Catch by vessel as a percent of the total allocation in the Western Bering Sea *C. bairdi* fishery.

Table 4-15 Simple statistics of the fleet participating in the Eastern Bering Sea *C. bairdi* fishery.

Season	Number of vessels in the fishery	Total Catch	Average vessel harvest		Median vessel harvest		Average of highest four	
			as percent of total allocation	in pounds	as percent of total allocation	in pounds	as percent of total allocation	in pounds
2006-2007	36	1,264,044	2.08	26,301	0.23	2,871	9.58	121,130
2007-2008	20	1,439,435	2.32	33,414	1.09	15,695	7.81	112,409

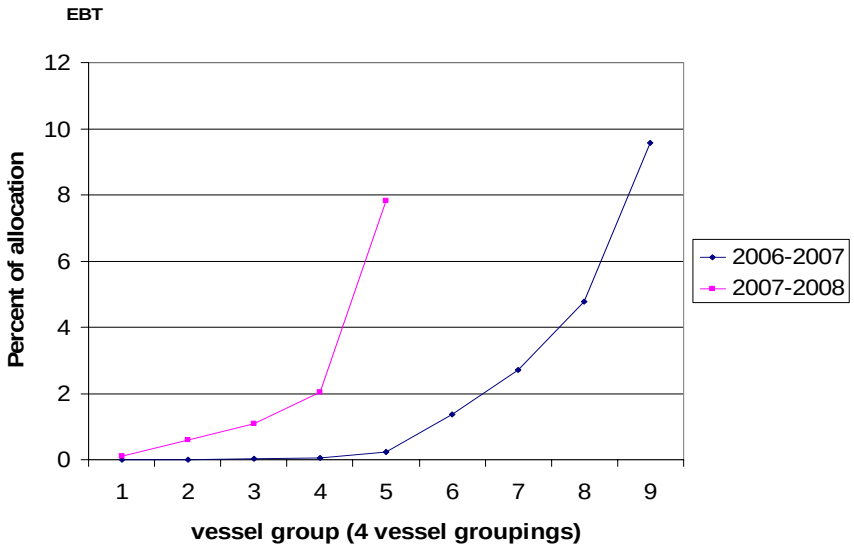

Figure 4-4 Catch by vessel as a percent of the total allocation in the Eastern Bering Sea *C. bairdi* fishery.

Table 4-16 and Table 4-17 show simple catch statistics of the fleets participating in the Eastern and Western Aleutian Islands golden king fisheries during the first three years of the program. Data confidentiality restrictions preclude the distribution of catch across the fleets from being shown. Substantial fleet consolidation occurred in these smaller fisheries. Both fisheries' fleets consolidated to half or fewer vessels than pre-rationalization levels. The harvest amounts of the average vessel in the rationalized fisheries are substantially greater than harvests in the rationalized Bristol Bay red king crab fishery. The average vessel's harvests in the Eastern fishery are comparable to the average harvests in the *C. opilio* fishery, which are half of the harvests of the average vessel in the Western fishery. These high harvest levels are not surprising given the relative catch rates, manner of prosecution (i.e., longline pots), limited grounds, and relative price. These factors all contribute to greater levels of concentration than in the Bristol Bay red king crab fishery, while all except price contribute to greater consolidation than in Bering Sea *C. opilio* fishery. The substantially greater concentration in the Western fishery results from the remoteness of those grounds, which together with high fuel prices and low crab prices (particularly in the first year of the program) substantially reduced economic returns in that fishery.

Table 4-16 Simple statistics of the fleet participating in the Eastern Aleutian Islands golden crab fishery.

Season	Number of vessels in the fishery	Total Catch	Average vessel harvest		Median vessel harvest		Average of highest four	
			as percent of total allocation	in pounds	as percent of total allocation	in pounds	as percent of total allocation	in pounds
2001-2002	19	3,128,409	5.26	164,653	5.19	162,353	9.65	302,015
2002-2003	19	2,765,436	5.26	145,549	5.05	139,601	8.90	246,047
2003-2004	18	2,900,247	5.56	161,125	5.28	153,039	8.76	254,082
2004-2005	20	2,846,273	5.00	142,314	5.47	155,654	7.97	226,772
2005-2006	7	2,569,209	13.59	349,251				
2006-2007	6	2,692,009	16.61	447,116				
2007-2008	4	2,690,377	24.91	670,197				

Table 4-17 Simple statistics of the fleet participating in the Western Aleutian Islands golden crab fishery.

Season	Number of vessels in the fishery	Total Catch	Average vessel harvest		Median vessel harvest		Average of highest four	
			as percent of total allocation	in pounds	as percent of total allocation	in pounds	as percent of total allocation	in pounds
2001-2002	9	2,693,221	11.11	299,247	4.46	120,155	21.70	584,538
2002-2003	6	2,605,237	16.67	434,206	13.59	354,129	24.50	638,228
2003-2004	6	2,637,161	16.67	439,527	13.99	368,959	23.80	627,711
2004-2005	6	2,639,862	16.67	439,977	14.17	374,012	24.18	638,314
2005-2006	3	2,382,468	32.68	778,622				
2006-2007	3	2,002,186	27.44	549,372				
2007-2008	3	2,246,040	30.81	692,002				

Prior to the rationalization program, seasons in all of the program fisheries, except the Western Aleutian Islands golden king crab fishery, were typically less than one month long. The Bristol Bay red king crab fishery, which drew the most participants, seasons lasted less than one week in the years immediately preceding implementation of the rationalization program. Both the Bering Sea *C. opilio* and the Eastern Aleutian Islands golden king crab fisheries lasted for less than one month, both of which had progressively shorter seasons leading up to implementation of the program. Although the Western Aleutian Islands golden king crab fishery lasted several months, it seasons also shortened progressively leading up to implementation of the program.

Table 4-18 Season openings and closings in four years prior to August 2005 implementation of the rationalization program.

Fishery	Season	Season opening	Season closing
Bristol Bay red king crab	2001	October 15	October 18
	2002		October 18
	2003		October 20
	2004		October 18
Bering Sea *C. opilio*	2002	January 15	February 8
	2003		January 25
	2004		January 23
	2005		January 20
Eastern Aleutian Islands golden king crab	2001-2002	August 15	September 10
	2002-2003		September 7
	2003-2004		September 8
	2004-2005		August 29
Western Aleutian Islands golden king crab	2001-2002	August 15	March 30
	2002-2003		March 8
	2003-2004		February 2
	2004-2005		January 3

Source: ADFG Annual Management Report.

The allocation of exclusive harvest shares allowed the seasons in the fisheries to be extended substantially. Currently season limits are imposed for biological reasons. With this new latitude to schedule harvest activity, participants have dispersed catch substantially across the allowable seasons (see Table 4-19).[13] For example, the 2005-2006 Bristol Bay red king crab season was prosecuted towards the 18.3 million pound TAC over the 3-month period following the October 15, 2005 season opening date; the first delivery was made on October 20, 2005 and the last delivery was made on the day after the regulatory closure date of January 15, 2006. In all of the fisheries, deliveries have been distributed over a

[13] The following tables concerning deliveries include only catcher vessel activity.

period of several months; however, deliveries remain most concentrated in the Bristol Bay red king crab fishery. That season is only four months, substantially shorter than the season in other fisheries, and markets tend to be strongest at the year's end leading up to the holidays.

Table 4-19 Post-rationalization pattern of deliveries by fishery.

Fishery	Season	Season opening	Date of first delivery	Week of most deliveries (in pounds)		Date of last delivery	Season closing
				Weekending date	Percent of quota delivered		
Bristol Bay red king crab	2005-2006	October 15	October 20	November 5	28.6	January 16	January 15
	2006-2007		October 19	November 5	44.0	November 28	
	2007-2008		October 18	November 5	31.1	January 15	
Bering Sea *C. opilio*	2005-2006	October 15	October 27	February 4	11.0	May 27	May 15 (east) May 31 (west)*
	2006-2007		November 7	February 25	11.1	May 5	
	2007-2008		November 18	February 25	13.0	May 10	
Eastern Aleutian Islands golden king crab	2005-2006	August 15	August 30	September 19	14.1	March 28	May 15
	2006-2007		August 31	**	**	January 13	
	2007-2008		August 30	**	**	February 9	
Eastern Bering Sea *C. bairdi*	2006-2007	October 15	October 23	March 11	18.1	March 27	March 31
	2007-2008		October 20	March 24	7.0	April 2	
Western Aleutian Islands golden king crab	2005-2006	August 15	September 6	October 24	11.4	March 25	May 15
	2006-2007		September 10	**	**	May 6	
	2007-2008		September 14	**	**	May 21	
Western Bering Sea *C. bairdi*	2005-2006	October 15	October 27	March 25	7.9	May 3	March 31
	2006-2007		November 4	March 11	16.3	April 5	
	2007-2008		November 16	March 3	5.5	March 31	

Source: RAM IFQ landings data

* The boundary between the Eastern and Western Subdistricts is 173° W longitude.

** withheld for confidentiality.

The concentration of deliveries in the Bristol Bay red king crab fishery is also demonstrated by examining the cumulative catch by week throughout the season (see Figure 4-5).[14] In all three years of the program, in excess of 50 percent of the catch was landed in the two week period, during the first two weeks of November. Vessels making deliveries also peaked during this period, with between approximately 40 and 60 vessels making deliveries (see Figure 4-6). Participation in the first week of the fishery and after the sixth week dropped to approximately 10 vessels or fewer.

[14] In weeks with fewer than 3 vessels with landings, catch is aggregated with the most proximate week with landings to protect confidentiality.

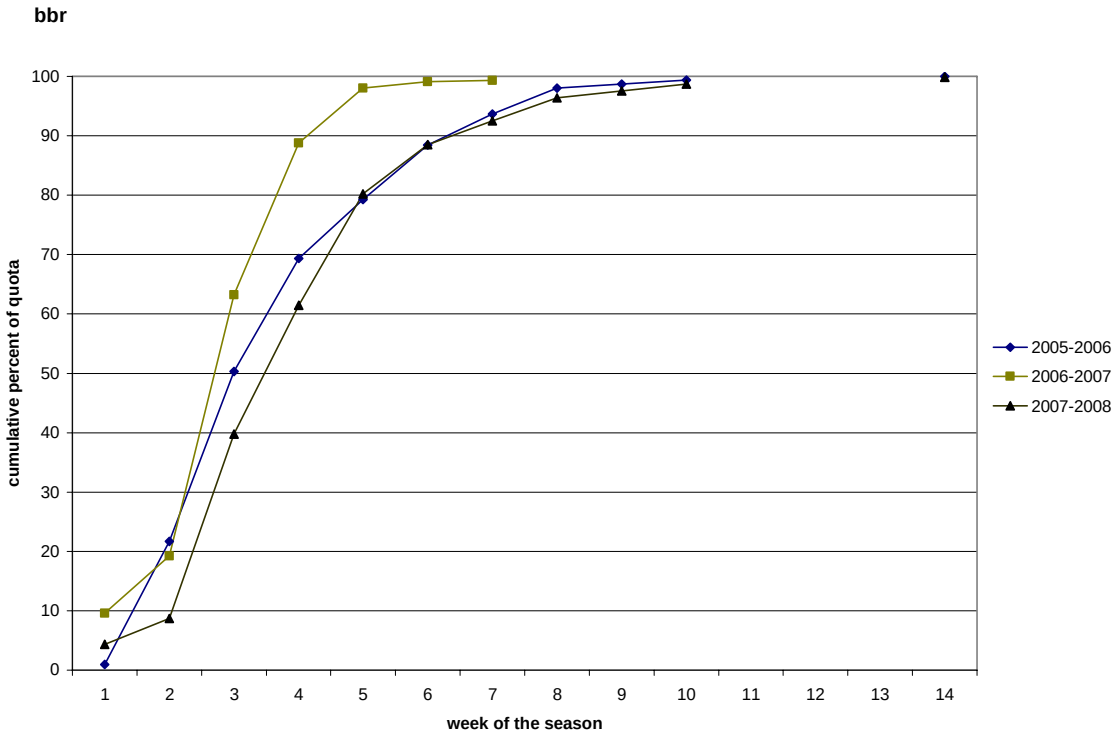

Figure 4-5 Post-rationalization cumulative deliveries in the Bristol Bay red king crab fishery.

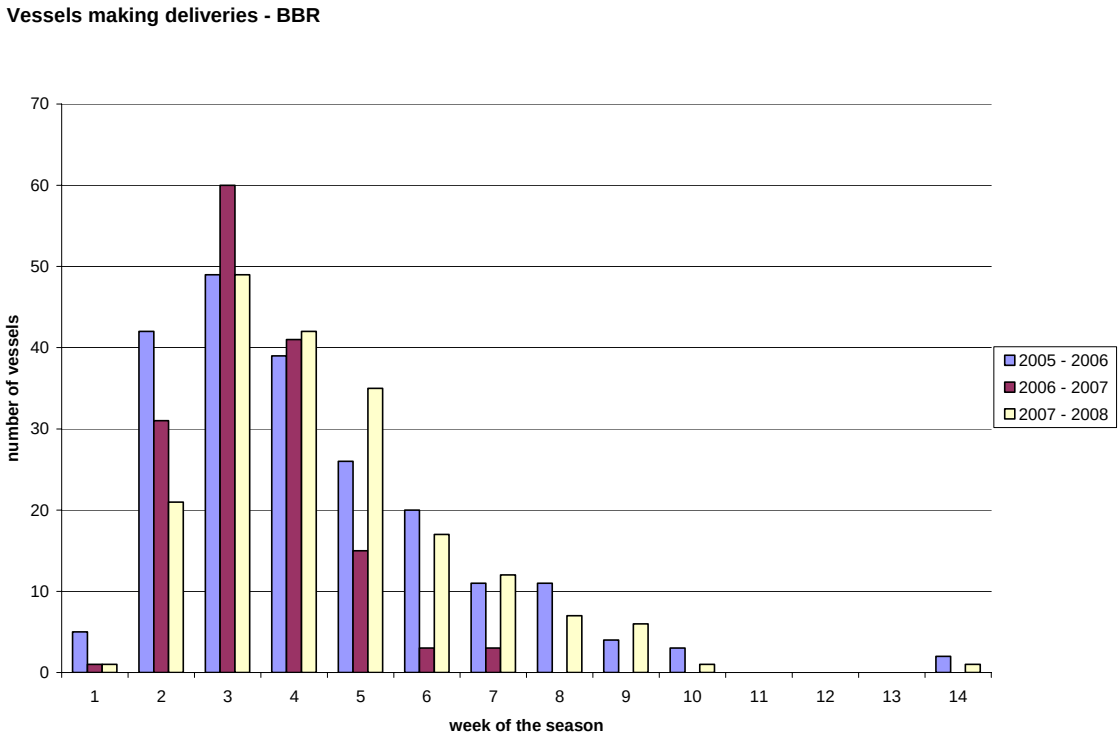

Figure 4-6 Vessels making deliveries by week in the Bristol Bay red king crab fishery (2005-2006 through 2007-2008).

The distribution of landings across the Bering Sea *C. opilio* season under the rationalization program is much more disperse than in the Bristol Bay red king crab fishery (see Figure 4-7). Less than 10 percent of the total catch is landed prior to the New Year. Shortly after the New Year, activity in the fishery has increased, with more than 5 percent of the total catch landed each week for several consecutive weeks. Vessel participation is consistently strongest during this period, but has varied across years (see Figure 4-8). Although vessel participation appears weak at times during the period (e.g., less than 10 vessels making landings during a week in 2006–2007 in the sixteenth week of the season), some vessels are likely fishing on extended trips, not making a delivery each week.

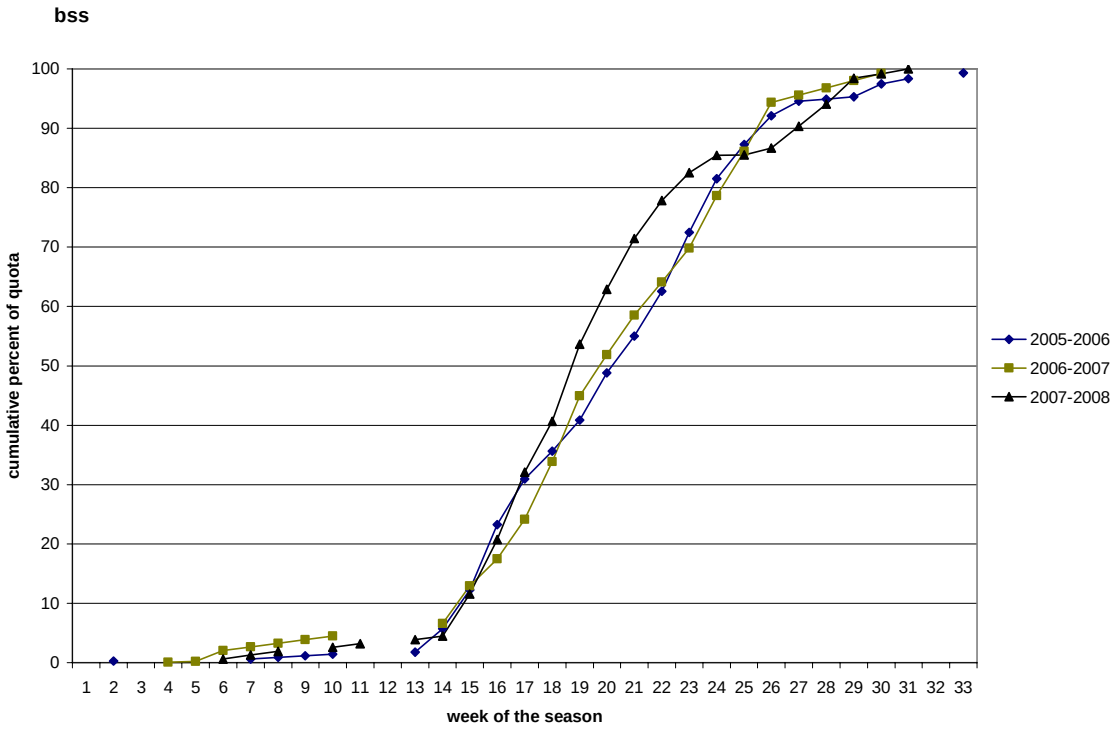

Figure 4-7 Post-rationalization cumulative deliveries in the Bering Sea *C. opilio* fishery.

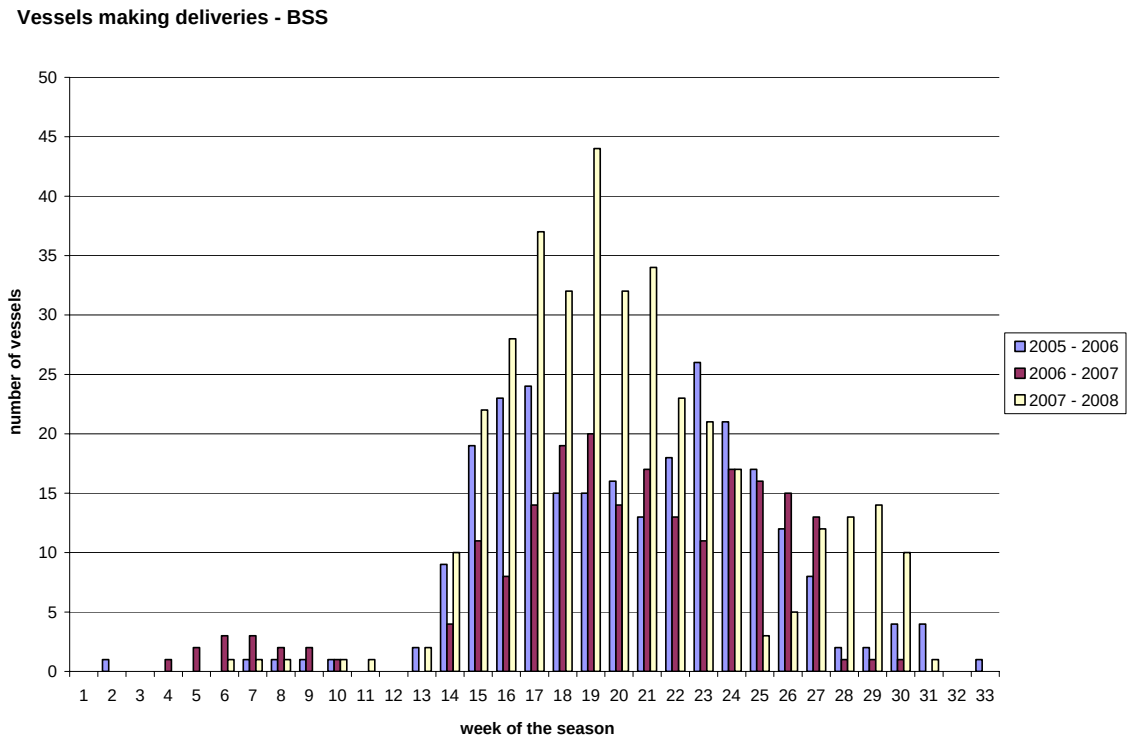

Figure 4-8 Vessels making deliveries by week in the Bering Sea *C. opilio* fishery (2005-2006 through 2007-2008).

The extension of fishing over a longer period after program implementation has substantially changed the number and volume of deliveries. If a delivery is defined as a set of fish tickets with a single processor on a single day, a comparison of pre-rationalization deliveries (Table 4-20) with post-rationalization deliveries (Table 4-21) shows that the average number of deliveries per vessel has doubled in most program fisheries.[15] In addition, the average amount of crab delivered has increased. Prior to the rationalization program, in most fisheries vessels made a single delivery after a fishery closing. Under the rationalization program, almost all vessels make multiple deliveries in a season, fishing closer to the vessel's capacity prior to making deliveries.

[15] In some instances, multiple deliveries are suggested by multiple fish tickets across multiple days in a single delivery.

Table 4-20 Pre-rationalization number and volume of deliveries by fishery.

Fishery	Season	Number of vessels	Number of deliveries	Average number of deliveries per vessel	Maximum number of deliveries by a vessel	Average delivery	Median delivery	Average delivery of 3 vessels with largest average delivery
Bristol Bay red king crab	2001	224	228	1.0	3	32,302	28,285	94,055
	2002	234	234	1.0	1	36,204	34,580	71,911
	2003	242	246	1.0	2	55,111	46,587	198,892
	2004	243	246	1.0	2	54,009	52,105	114,212
Bering Sea *C. opilio*	2001	201	255	1.3	3	77,805	64,396	253,970
	2002	182	373	2.0	4	74,902	64,402	332,877
	2003	185	222	1.2	3	110,841	103,624	260,376
	2004	183	209	1.1	2	101,793	96,305	284,844
	2005	161	184	1.1	3	119,602	116,459	260,055
Eastern Aleutian Islands golden king crab	2001	19	45	2.4	4	69,520	64,270	135,157
	2002	19	43	2.3	3	64,312	52,732	112,656
	2003	18	37	2.1	3	78,385	74,116	127,041
	2004	20	33	1.7	2	86,251	78,443	178,952
Western Aleutian Islands golden king crab	2001-2002	8	63	7.9	17	29,354	28,809	33,362
	2002-2003	5	44	8.8	15	40,082	40,490	
	2003-2004	5	38	7.6	12	52,510	50,265	
	2004-2005	5	32	6.4	10	58,517	51,801	

Source: ADFG Fish tickets.

Note: Blanks are withheld for confidentiality. Deliveries include all offloads in a single day. A delivery may be divided between two processors.

Table 4-21 Post-rationalization number and volume of deliveries by fishery.

Fishery	Season	Number of vessels	Number of deliveries	Average number of deliveries per vessel	Maximum number of deliveries by a vessel	Average delivery	Median delivery	Average delivery of 3 vessels with largest average delivery
Bristol Bay red king crab	2005-2006	88	233	2.6	6	68,366	60,713	217,511
	2006-2007	79	170	2.2	5	79,355	66,544	211,753
	2007-2008	72	222	3.1	7	80,186	72,728	180,477
Bering Sea *C. opilio*	2005-2006	76	260	3.4	10	118,621	112,076	283,254
	2006-2007	66	228	3.5	11	131,165	120,434	253,611
	2007-2008	74	399	5.4	14	131,400	115,892	278,541
Eastern Aleutian Islands golden king crab	2005-2006	6	28	4.7	6	91,060	100,547	107,370
	2006-2007	5	24	4.8	12	111,307	113,598	
	2007-2008	3	27	9.0	10	94,973	87,652	
Eastern Bering Sea *C. bairdi*	2006-2007	33	51	1.5	4	24,061	5,824	94,443
	2007-2008	19	50	2.6	7	28,033	16,991	54,225
Western Aleutian Islands golden king crab	2005-2006	2	19	9.5	10			
	2006-2007	2	9	4.5	5			
	2007-2008	2	16	8.0	13			
Western Bering Sea *C. bairdi*	2005-2006	42	69	1.6	5	11,042	1,662	44,006
	2006-2007	34	55	1.6	4	11,150	419	41,657
	2007-2008	26	43	1.7	5	10,632	6,596	38,752

Source: RAM IFQ database, 2005-2006, 2006-2007, and 2007-2008.

Note: Blanks are withheld for confidentiality. Deliveries include all offloads in a single day. A delivery may be divided between two processors.

Under the rationalization program, since allocations are exclusive, participants do not need to race to prevent others from preempting their catch. To improve returns from the fisheries, participants have an incentive to reduce costs. The most obvious means of reducing costs is fleet consolidation, which is demonstrated by the removal of vessels from the fisheries. Stacking quota on fewer vessels can save on

costs not only of capital, but also on maintenance, insurance, crew, fuel, and other variable input costs. Stimulated by fuel price increases throughout the first three years of the program, several participants in the fisheries have reported that the exclusive allocations have allowed them to reduce vessel speed to conserve fuel without risking loss of catch.

The pot usage and pot catches in the fisheries suggest vessels are using the flexibility provided by exclusive allocations and extended season to save on operating costs in the fisheries (see Table 4-22). In the first three years of the program, the number of registered pots per vessel remained constant or increased in all fisheries, while the total number of registered pots in each fishery declined or remained constant. Prior to implementation of the program, pot limits constrained pot usage in some fisheries. Those limits were relaxed under the rationalization program, allowing vessels to choose the number of pots to use to increase operational efficiency. With fewer vessels in the fisheries, fewer pots may be used in total, with some vessels using more pots and pulling those pots more times each season. Vessels are believed to have increased soak times through slowing the pace of fishing and allowing pots to fish during periods when deliveries are made. These increased soak times are believed to have contributed to the increased catch per unit effort observed in most fisheries in the first three years of the program.

Although fishing efficiency may be improved by increasing the number of pots used by each vessel and allowing pots to fish during deliveries, the risk of pot loss may increase through this change in fishing operations. In the Bering Sea *C. opilio* fishery, in particularly, pot losses can occur as ice descends from the north.

Table 4-22 Pots usage and catches by fishery

Fishery	Season	Number of pots registered*	Registered pots per vessel	Number of pot lifts *	Lifts per registered pot*	Average catch per unit effort (crabs per pot lift)*	Pounds per pot
Bering Sea *C. opilio*	2001	40,379	195	176,930	4.4	97	129.7
	2002	37,807	199	308,132	8.2	76	96.1
	2003	20,452	108	139,279	6.8	154	182.4
	2004	14,444	76	110,087	7.6	157	199.3
	2005	12,840	77	69,863	5.4	239	324.3
	2005 - 2006	13,734	176	108,320	7.9	204	306.9
	2006 - 2007	10,851	155	80,112	7.4	332	408.2
	2007 - 2008	13,647	175	129,457	9.5	349	438.2
Bristol Bay red king crab	2000	26,352	108	98,694	3.7	12	75.7
	2001	24,571	107	63,242	2.6	19	121.5
	2002	25,833	107	68,328	2.6	20	128.4
	2003	46,964	188	128,430	2.7	18	110.9
	2004	49,506	197	90,976	1.8	23	152.7
	2005 - 2006	15,713	177	99,573	6.3	25	165.4
	2006 - 2007	14,685	181	64,325	4.4	34	215.9
	2007 - 2008	11,885	161	101,734	8.6	28	180.1
Eastern Aleutian Islands golden king crab	2000 - 2001	10,598	707	71,551	6.8	10	43.1
	2001 - 2002	12,927	680	62,639	4.8	12	49.9
	2002 - 2003	11,834	623	52,042	4.4	12	53.1
	2003 - 2004	12,518	695	58,883	4.7	11	49.3
	2004 - 2005	13,165	658	34,848	2.6	18	81.7
	2005 - 2006	8,833	1,262	21,898	2.5	25	117.3
	2006 - 2007	8,150	1,358	23,839	2.9	24	112.9
	2007 - 2008	4,200	1,050	20,496	4.9	28	131.3
Western Aleutian Islands golden king crab	2000 - 2001	8,910	743	101,239	11.4	7	28.7
	2001 - 2002	8,491	943	105,512	12.4	7	25.5
	2002 - 2003	6,225	1,038	78,979	12.7	8	33.0
	2003 - 2004	7,140	1,190	66,236	9.3	10	39.8
	2004 - 2005	7,240	1,207	56,846	7.9	12	46.4
	2005 - 2006	4,800	1,600	27,503	5.7	21	86.6
	2006 - 2007	6,000	2,000	22,694	3.8	20	88.2
	2007 - 2008	4,800	1,600	25,287	5.3	21	88.8

Sources: *ADFG Annual Management Report and **fishtickets and ***NMFS RAM catch data (for 2005-2006, 2006-2007, and 2007-2008)

Many of the changes that occurred in the catcher vessel fleet have also similarly affected the catcher processor fleet. Catcher processors have consolidated catch on fewer vessels improving production efficiencies and now time fishing to avoid weather conflicts and conflicts with other activities. Avoiding poor weather not only improves safety on the deck and in the plant, but also allows for better quality.

4.4 Captains and crew

The changes in vessel participation in program fisheries arising after rationalization have had noticeable impacts on the number of captains and crew employed in the fisheries. The reduction in vessel participation decreased the number of crew employed substantially. Anecdotal reports indicate that crew sizes have changed minimally (at most one person per vessel) since implementation of the program. In some instances, vessels are reported to have added crew to reduce the burden of deck labor in the fisheries. Absent improved data, the removal of vessels from the fisheries provides a direct estimate of the number of crew jobs lost. Assuming approximately six crew members per vessel, approximately 975 fewer crew (including captains) were employed in the Bristol Bay red king crab fishery on average in the first three years of the rationalization program, in comparison to the 2000 to 2004 season average; approximately 675 fewer crew were employed in the Bering Sea *C. opilio* fishery on average in the first three years of the program, when compared to the 2001 to 2005 season average. In the Eastern Aleutian Islands golden king crab and the Western Aleutian Islands golden king crab fisheries, these declines in the average number of crew positions were approximately 75 positions and 25 positions, respectively.

Although these job losses are substantial, one must also consider the terms of employment in the prerationalized fisheries in assessing the magnitude of the loss. Few crab deck jobs, particularly in the two large fisheries, fully supported a crewmember. Because of the small size of the fisheries in years leading up to the rationalization program, most crew worked only a month or so in the crab fisheries. Crew typically worked other jobs (including crew jobs in other fisheries) throughout the remainder of the year. The relatively short tenure of crab crew jobs was attractive to many crew, since they were able to negotiate (or take) short periods away from other employment to fish crab. Notwithstanding the relatively short term of these jobs, for many deck crew, their crab fishing jobs were reported to have provided important contributions to annual income. Particularly in the case of crew from remote communities with few job opportunities, replacing income from lost crab crew jobs is reported to be problematic.

Most crew (including captains) who retained their positions under the new management faced a change in terms of employment and payment. Though crew payment practices differ somewhat across the fleets, the most common practice is that the crew are paid a share of the gross revenues net of the crew's share of operating expenses. Based on anecdotal evidence, many crew received full crew share on IFQ owned by the vessel owner. In most cases, shares paid on leased IFQ fished by a vessel were computed after deduction of any lease payments to the IFQ owner. Consequently, the base revenues used to compute a crew payment for catch of leased IFQ were reduced by as much as 65 to 70 percent in the Bristol Bay red king crab fishery and as much as 45 to 50 percent in the Bering Sea *C. opilio* fishery. The effects of this change vary to the extent that the amount of leased quota varied across the fleet. In some instances, vessels reportedly leased a substantial portion of the quota fished, with little held quota. In these instances, crew received virtually all share payments from the discounted revenue base. In some other instances, vessels reportedly fished almost all owned quota, in which case crew received a share similar to their historic share. Some vessels held substantial amounts of quota, but also leased substantial quota. In most of these instances, crew are reported to have received historic share payments for vessel owned quota, supplemented with shares from the discounted base revenues on leased quota. In some cases, however, vessel owners are reported to have charged royalties on owned quota, lowering the base on which shares are calculated for all quota fished on the vessel. Depending on the level of royalty charged, crew could receive substantially reduced payments from the historic shares. Although some instances of crew compensation moving away from a traditional crew share format to a wage labor or salary format were reported in the first year of the program, it is believe that the most (if not all) crew in the fisheries are currently paid on a traditional crew share basis.

Notwithstanding these changes in compensation, in most cases, crew employed by vessels fishing in the program are reported to have more stable and better paying positions than prior to the program's implementation. Many crew are reported to rely exclusively on crab fishing for their income. Other crew are reported to work on the crab vessel in other fisheries or tendering, relying on employment from their crab fishing vessels for all of their income. Vessel owners hiring crew generally give priority to crew willing to work in all crab fisheries that the vessel participates in (and non-crab fisheries or tendering, if the vessel engages in those activities). These preferences have led to changes in crew composition, as some former participants are unwilling to give up other employment to work exclusively for a crab vessel. Maintaining a steady crew, however, can greatly simplify vessel management, reduce hiring costs arising from high turnover, and improve efficiency and safety, as crew become more familiar with the vessel's operation and other crew. In addition, overall improvements in safety in the fishery may also have helped improved conditions for crew.

4.5 Effects of the buyback

In December of 2004, eight months before fishing began under the rationalization program, NOAA Fisheries tendered payments to 25 successful bidders under a $100 million fishing capacity reduction program in the Bering Sea and Aleutian Islands crab fisheries included in the rationalization program.

Each bid offered to remove a vessel from all fisheries and relinquish all associated fishing privileges (including the assigned LLP licenses) and any future privileges arising out of the fishing history of the vessel. The capacity reduction program sought to obtain the maximum sustained reduction in crab fishing capacity at the least cost by establishing a bidding procedure that would remove vessels considered to have the highest value as crab harvesting vessels per dollar bid for their removal. A bid was valued by dividing the bid by the total value of the crab caught aboard the vessel during the period specified by the program. The resulting bids were then ranked from smallest to largest, with bids accepted so that the cumulative value of accepted bids would use as much of the $100 million loan as possible. The effect was to remove vessels with the greatest amount of fishing history (as specified by the buyback program) using the $100 million loan funding.

After the winning bids were announced, NMFS conducted a post bidding referendum to determine whether eligible voters authorized an industry fee system to repay the loan. The referendum succeed by receiving the required favorable votes of in excess of two-thirds of the LLP holders in the now rationalized fisheries.

Since the qualifying years under the buyback differed from those specified by the rationalization program, bids may have been valued differently under the buyback than they would have had the rationalization qualifying years been used to specify their values. At the time of the referendum, LLP holders requested that Council staff prepare revised estimates of denominators that could be used for calculating individual allocations under the rationalization program removing catch histories of the buyback vessels. Since the rationalization program was fully defined at the time of the buyback referendum, these estimates could be used by persons participating in the referendum to estimate the effects of the buyback on their initial allocations of QS. Based on the information concerning histories of the vessels included in successful bids contain in the referendum letter and the revised rationalization program denominators, LLP holders passed a referendum approving the buyback of vessels and the accompanying fees that would be imposed on landings in the crab fisheries. The result was the removal of the 25 vessels and accompanying LLPs from the crab fisheries (see Table 4-23).

Table 4-23 Licenses purchased by the capacity reduction program by fishery endorsement.

Total	Bristol Bay red king crab	Bering Sea *C. opilio* and *C. bairdi*	Pribilof red and blue king crab	St. Matthew Island blue king crab	Aleutian Island red king crab	Aleutian Island golden king crab
25	24	25	13	22	1	3

Source: Federal Register Vol. 96 No. 226, November 24, 2004.

Assessing the effects of the buyback on consolidation of fishing and QS holdings in the fisheries is not without complication. Although initial QS allocations, including and excluding the licenses removed by the buyback were calculated at the time the program was implemented, these estimates are known to have contained error. In addition, the effects of the buyback on the initial allocation to a license varied depending on the specific annual history associated with the license. Yet, examining the evolution of the fisheries under the rationalization program provides insight into the effects of the buyback on consolidation. Since the rationalization program was implemented, QS holdings have consolidated beyond that attributable to the buyback. Similarly, fleet consolidation has removed between half and two-thirds of the vessels from each of the crab fisheries (including the 25 vessels removed by the buyback). In every fishery included in the rationalization program, fleet and quota consolidation has occurred well beyond that attributable to the buyback. In other words, persons remaining in the fisheries, who had already removed vessels and effectively acquired additional QS through the buyback, have chosen to

remove additional vessels by leasing IFQ and further consolidate QS holdings, through the markets for those shares. Given that the buyback was a voluntary program, under which owners of vessels and licenses removed from the fisheries and the owners of remaining vessels and holders of remaining licenses voluntarily elected to engage in the transaction for the removal of licenses and vessels from the fisheries, it is likely that these person would have used the flexibility of transferable allocations to consolidate the fleet and quota holdings in the absence of the buyback. In other words, buyback vessels, likely would have been retired from the fisheries in the absence of the buyback. In addition, given the additional consolidation of the fleet and quota holdings that has occurred since the buyback, the buyback likely has had a very limited (if any) effect on the current level of consolidation in the fisheries.

Two aspects of the buyback may have led the buyback to have had minor effects on the rate of consolidation in the fisheries; however, these effects are likely to have been minor and short-lived. First, the buyback provided substantial capital at a favorable interest rate to participants wishing to buy out a portion of the fleet and remain in the fishery. Given the success of these remaining participants to secure additional capital for further consolidation, it is unlikely that this effect is great. Second, the buyback provided an organized means of removing future quota holders and capital from the fisheries. This structured removal of capital and interests from the fisheries may have accelerated the consolidation process.

The buyback may be argued to have contributed to consolidation under the rationalization program, since the buyback removed 25 vessels and licenses from the fisheries. Given the substantial consolidation that occurred subsequent to the buyback in all fisheries affected by the buyback, it is unlikely that the buyback has had a notable effect on consolidation under the program.

5 PROCESSOR SHARE HOLDINGS

Prior to implementation of the rationalization program, processor entry to the crab fisheries was not subject to limit. With the implementation of the rationalization program, participation in program fisheries by processors is limited by PQS and IPQ allocations yielded annually by those PQS. Under the program, IPQ are issued annually in an amount equal to 90 percent of the annual allocation of catcher vessel owner IFQ (or 87.3 percent of the catcher vessel IFQ allocation). This section of the paper summarizes the distribution of those processing privileges under the rationalization program.

5.1 Initial allocations by region

Initial allocations of processor quota shares were substantially more concentrated than harvester quota share allocations under the program because fewer processors than vessels were active in the fisheries during the qualifying period (see Table 5-1). As in the harvest sector, concentration of initial allocations of processing privileges varied across fisheries. The Aleutian Islands fisheries, which had the least participation during the qualifying period, were the most concentrated. The Bristol Bay red king crab, Bering Sea *C. opilio*, and Bering Sea *C. bairdi* fisheries, which had the most participants during the qualifying period, were the least concentrated. The regional distribution of shares differed with landing patterns that arose from the geographic distribution of fishing grounds and processing activities. In the St. Matthew Island blue king crab and the Pribilof red and blue king crab fisheries, most qualified processing occurred in the Pribilofs, resulting in over two-thirds of the processing allocations in those fisheries being designated for processing in the North region. The Bering Sea *C. opilio* fishery allocations are split almost evenly between the North and South regions; while less than 5 percent of the Bristol Bay red king crab PQS is designated for North processing. All qualifying processing in the Eastern Aleutian Island golden king crab fishery occurred in the South region, resulting in all processing shares in that fishery (and in the Western Aleutian Islands red king crab fishery, which was based on the same history) being designated for processing in the South region. All processing allocations Western Aleutian Islands golden

king crab fishery were split evenly with half required to be processed in the West region and half undesignated, which can be processed anywhere. Bering Sea *C. bairdi* processing shares are also undesignated.

The relatively low median share holding at initial allocation suggests that a large portion of the historic processing was concentrated among fewer than 10 processors in the large fisheries (the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries). In the smaller fisheries, fewer than 5 processors received a large majority of the initial allocation. The maximum allocation in each fishery was in excess of twenty percent of the pool. In the Western Aleutian Islands golden king fishery, the maximum allocation was in excess of 60 percent of the pool, double the share holdings cap. In the Eastern Aleutian Islands fishery, one of approximately 45 percent of the pool was in excess of one and one-half times the cap. In only one other fishery, the St. Matthews Island blue king crab fishery, did an initial allocation exceed the cap. In that fishery, slightly greater than 30 percent of the quota was allocated to one processor.

Table 5-1 Initial allocation of processing quota shares.

Fishery	Share holdings by region						Across regions			
	Region	Percent of total allocation	QS holders	Mean holding	Median holding	Maximum holding	QS holders	Mean holding	Median holding	Maximum holding
Bristol Bay red king crab	North	2.6	3	0.85	0.23	2.31	17	5.88	1.64	22.98
	South	97.4	17	5.73	1.64	20.68				
Bering Sea *C. opilio*	North	47.0	9	5.22	5.42	15.46	20	5.00	2.08	25.18
	South	53.0	17	3.12	0.38	9.72				
Bering Sea *C. bairdi**	Undesignated	100.0	23	4.35	0.83	24.26	23	4.35	0.83	24.26
Eastern Aleutian Island golden king crab	South	100.0	8	12.50	6.04	45.91	8	12.50	6.04	45.91
Western Aleutian Island golden king crab	Undesignated	50.0	8	6.25	0.41	33.29	9	11.11	1.03	62.98
	West	50.0	9	5.56	0.49	29.69				
Western Aleutian Island red king crab	South	100.0	9	11.11	1.03	62.98	9	11.11	1.03	62.98
St. Matthew Island blue king crab	North	78.3	6	13.06	8.92	29.94	12	8.33	5.06	32.67
	South	21.7	9	2.41	1.76	7.81				
Pribilof red and blue king crab	North	67.5	6	11.26	12.01	23.28	14	7.14	3.17	24.49
	South	32.5	11	2.95	0.98	13.50				

Source: NMFS Restricted Access Management IFQ database, initial allocation of PQS.

Note: These share holdings data are publicly available and non-confidential.

* After the first year of the program the allocation in the Bering Sea *C. bairdi* fishery was divided between the Eastern and Western fisheries

5.2 Transfers

During the first three years of the program, a substantial portion of the processor quota share pools were transferred. As with harvester shares, the extent to which these transfers represent actual market transfers is uncertain, as some restructuring of processing interests occurred in the first three years of the program. In two instances, merging of significant processing interests has consolidated interests in that sector. In one case, the consolidation did not result in share transfers, but only affects the interests underlying share holdings, so that is not reflected in these data.[16] In the other case, certain shares did change named holder, which explains a large part of the transfer of processing share interests (including share leasing) shown in these data. This consolidation, however, also resulted in the transfer of a substantial interest in Eastern Aleutian Island golden king crab PQS to a new entrant, as the merged entity was required to divest of shares in that fishery to comply with the processor share holding cap.

In addition to the transfers of processor quota shares, substantial leases of quota (IPQ transfers) occurred in the first two years of the program. As with PQS transfers, in some cases, these leases represent shifting of shares within a corporate structure that may not reflect a true lease; yet, true leasing of interests did occur in cases. Leases are reported to have occurred for a variety of reasons. In some instances,

[16] This merger did result in a processor exceeding the cap in certain fisheries. The divestiture of shares required to comply with use caps was not completed until the summer of 2008 and is not reflected in these data. Since the merger did not change the named holder of shares, the consolidation resulting from the merger is also not reflected in the share holdings data from the current year.

processors elected to exchange shares (without an exchange of money) to realize production efficiencies. In other cases, processors acquired shares to increase production or to serve specific markets. As a result, it is not the extent of leasing is not apparent, but transfer data should be considered an upper limit on leasing (as opposed to a reflection of the amount of leasing that has occurred).

Table 5-2 Processor share transfers (2005-2006 through 2006-2007).

Fishery	Season	PQS transfers			IPQ transfers (leases)		
		Number of transfers	PQS units	Percent of pool	Number of transfers	Pounds of IPQ	Percent of pool
Bristol Bay red king crab	2005-2006	1	37,557,492	9.4	2	2,638,857	19.2
	2006-2007	1	14,199,170	3.6	8	3,000,012	25.8
Bering Sea C. opilio	2005-2006	1	83,536,499	8.3	9	5,870,736	22.0
	2006-2007	2	1,470,884	0.1	10	8,168,240	31.3
Bering Sea *C. bairdi* *	2005-2006	1	17,743,023	8.9	6	230,903	19.5
	2006-2007	1	20,876	0.0	NA	NA	NA
Eastern Aleutian Island golden king crab	2005-2006	1	1,149,483	11.5	5	152,718	6.8
	2006-2007	0	0	0.0	4	129,703	5.8
Eastern Bering Sea *C. bairdi*	2005-2006	NA	NA	NA	NA	NA	NA
	2006-2007	1	3,676,006	1.8	7	327,962	23.9
Pribilof red and blue king crab	2005-2006	1	4,050,738	13.5	NA	NA	NA
	2006-2007	0	0	0.0	NA	NA	NA
St. Matthew Island blue king crab	2005-2006	1	2,342,552	7.8	NA	NA	NA
	2006-2007	1	12,955	0.0	NA	NA	NA
Western Aleutian Island golden king crab	2005-2006	0	0	0.0	10	50,290	4.4
	2006-2007	0	0	0.0	9	198,240	17.4
Western Aleutian Island red king crab	2005-2006	0	0	0.0	NA	NA	NA
	2006-2007	0	0	0.0	NA	NA	NA
Western Bering Sea *C. bairdi*	2005-2006	NA	NA	NA	NA	NA	NA
	2006-2007	1	3,676,006	1.8	6	186,784	23.3

Source: RAM PQS and IPQ database.

* Bering Sea *C. bairdi* was separated into an Eastern and Western fishery after the first year of the program.

5.3 Current holdings

As in the initial allocation, PQS holdings are currently substantially more concentrated than either catcher vessel owner or catcher vessel crew QS holdings (Table 5-3). Comparing current holdings with the initial allocation suggests that PQS holdings data suggest some consolidation has occurred since implementation of the program. Since these data do not show changes in ownership at the individual level, they do not completely describe existing holdings of processor share interests. At least one large merge occurred that is not reflected in these data, since share holdings did not change under the terms of that agreement (and divestiture required to comply with share holding caps were not completed until after these data were produced). As a consequence, consolidation may be underreported by these data. In addition, the absence of a change in ownership patterns in all fisheries except the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries suggest that changes in holdings in other fisheries were as a result of changes in the named holder of shares (which may or may not reflect a change in ownership).[17]

[17] It should be noted that

Table 5-3 Current processing quota share holdings by region

Fishery	Share holdings by region					Across regions			
	Region	QS holders	Mean holding	Median holding	Maximum holding	QS holders	Mean holding	Median holding	Maximum holding
Bristol Bay red king crab	North	2	1.28	1.28	2.33	16	6.25	2.60	23.16
	South	16	6.09	2.60	20.83				
Bering Sea *C. opilio*	North	8	5.87	5.51	15.46	20	5.00	2.08	25.18
	South	18	2.95	0.25	9.72				
Eastern Bering Sea *C. bairdi*	Undesignated	23	4.35	0.83	24.26	23	4.35	0.83	24.26
Western Bering Sea *C. bairdi*	Undesignated	23	4.35	0.83	24.26	23	4.35	0.83	24.26
Eastern Aleutian Island golden king crab	South	8	12.50	6.04	45.91	8	12.50	6.04	45.91
Western Aleutian Island golden king crab	Undesignated	8	6.25	0.41	33.29	9	11.11	1.03	62.98
	West	9	5.56	0.49	29.69				
Western Aleutian Island red king crab	South	9	11.11	1.03	62.98	9	11.11	1.03	62.98
St. Matthew Island blue king crab	North	6	13.06	8.92	29.94	12	8.33	5.06	32.67
	South	9	2.41	1.76	7.81				
Pribilof red and blue king crab	North	6	11.26	12.01	23.28	14	7.14	3.17	24.49
	South	11	2.95	0.98	13.50				

Source: NMFS Restricted Access Management IFQ database, crab fishing year 2007-2008.
Note: These share holdings data are publicly available and non-confidential.

In the second year of the program a processor elected not to apply of its annual allocation of IPQ in a fishery. Under regulation, IPQ were allocated then allocated based on PQS holdings of those PQS holders who applied for their annual allocations. Although not a transfer of shares, this regulatory issuance has the effect of consolidating IPQ in a fishery. Since no PQS transfer occurred, share caps are not imposed on IPQ allocations. As a result, the allocation of IPQ to one PQS holder exceeded the share cap in the fishery. The Council could question whether this allocation of IPQ is consistent with the intent of the processor share allocations under the program. To the extent that a PQS holder elects not to apply for an allocation (or alternatively to transfer its shares to another person), it is unclear whether the IPQ that would have been issued for the unused PQS are protecting a processor interest as intended by the program.

6 PROCESSING SECTOR

This section reviews processing sector participation in the fisheries (including IPQ use) in the first three years of the program. The section begins with a brief discussion of participation levels before and after implementation of the program and the overall processing. The section goes on to discuss IPQ use and custom processing arrangements, to the extent that those practices are known. The section concludes with a discussion of processing operations and the distribution of processing among the participating fleet.

6.1 Processor participation

In the years leading up to the rationalization program, 20 or fewer processors participated in the largest crab fisheries (see Table 4-2).[18] The largest three processors in these fisheries processed less than 15 percent of the fisheries' landings in each year (or between 2 and 3 times the mean). Processing by the median processor was approximately equal to the mean suggesting that processing in the fisheries was dominated by approximately 10 or fewer processors. Between 2 and 6 processors were active in the Aleutian Islands golden king crab fisheries in the years leading up to implementation of the program, limiting the information that may be released concerning processing in those fisheries.

[18] In the early 1990s processor participation was as much as three times higher, but waned with declines in TACs in the two major fisheries.

Table 6-1 Processing in the Bristol Bay red king crab, Bering Sea *C. opilio*, Eastern Aleutian Island golden king crab, and Western Aleutian Island golden king crab fisheries in the years leading up the implementation of the rationalization program

Fishery	Season	Plants processing	Mean		Median		Average processing	
			pounds processed	as a percent of fishery	pounds processed	as a percent of fishery	in pounds	as a percent of fishery
Bristol Bay red king crab	2001	17	433,230	5.9	381,096	5.2	1,113,502	15.1
	2002	17	498,344	5.9	463,363	5.5	1,169,863	13.8
	2003	20	677,865	5.0	372,667	2.7	1,862,769	13.7
	2004	17	781,547	5.9	513,753	3.9	1,942,253	14.6
Bering Sea *C. opilio*	2002	17	1,643,446	5.9	1,422,515	5.1	4,147,694	14.8
	2003	17	1,447,451	5.9	1,438,688	5.8	3,022,202	12.3
	2004	18	1,181,935	5.6	1,025,185	4.8	2,564,168	12.1
	2005	14	1,571,915	7.1	1,525,714	6.9	3,136,110	14.3
Eastern Aleutian Islands golden king crab	2001 - 2002	4	782,102	25.0	*	*	*	*
	2002 - 2003	4	691,359	25.0	*	*	*	*
	2003 - 2004	4	725,062	25.0	*	*	*	*
	2004 - 2005	4	711,568	25.0	*	*	*	*
Western Aleutian Islands golden king crab	2001 - 2002	6	308,220	16.7	253,814	13.7	592,502	32.0
	2002 - 2003	2	881,793	50.0	*	*	NA	NA
	2003 - 2004	4	498,842	25.0	*	*	*	*
	2004 - 2005	3	624,186	33.3	*	*	NA	NA

Source: ADFG Fish tickets.
* withheld for confidentiality.

Dutch Harbor shore plants attracted a majority of landings in the Bristol Bay red king crab fishery and slightly less than a majority in the Bering Sea *C. oplio*. he remainder of landings were divided primarily among Akutan and St. Paul and floaters in the Bering Sea and King Cove and Kodiak on the Gulf. In the two Aleutian Islands golden king crab fisheries, participation fluctuated between 2 and 7 processors during the years leading up to implementation of the program. Dutch Harbor and Adak supported virtually all of the processing in those fisheries (see Table 6-3).

Table 6-2 Number of processors and amounts processed by fishery and community (2001-2004/5)

Fishery	Season	Communities	Number of processors	Pounds processed	Percent of pounds processed
Bristol Bay red king crab	2001	Adak, Akutan, Floaters, King Cove	6	2,663,437	36.2
		Dutch Harbor	5	3,902,545	53.0
		Kodiak	6	798,932	10.8
	2002	Akutan, Floaters, King Cove	7	3,374,438	39.8
		Dutch Harbor	6	4,276,910	50.5
		Kodiak, St. Paul	4	820,497	9.7
	2003	Akutan, Floaters, King Cove, Sand Point	10	5,207,419	38.4
		Dutch Harbor	7	7,131,382	52.6
		Kodiak, St. Paul	5	1,218,494	9.0
	2004	Akutan, King Cove, Floaters, St. Paul, Sand Point	7	5,932,888	44.7
		Dutch Harbor	6	6,504,531	49.0
		Kodiak	4	848,879	6.4
Bering Sea *C. opilio*	2001	Akutan, King Cove, Kodiak	3	1,889,513	9.5
		Dutch Harbor	5	7,916,618	39.9
		Floaters, St. Paul	8	10,034,268	50.6
	2002	Dutch Harbor, King Cove	6	13,008,117	46.6
		Floaters, St. Paul	8	14,292,205	51.2
		Kodiak	3	638,264	2.3
	2003	Akutan, King Cove, Kodiak	3	2,162,245	8.8
		Dutch Harbor	6	10,308,648	41.9
		Floaters, St. Paul	8	12,135,777	49.3
	2004	Akutan, King Cove, Kodiak	4	2,287,481	10.8
		Dutch Harbor	6	8,714,351	41.0
		Floaters, St. Paul	8	10,273,001	48.3
	2005	Akutan, King Cove, Kodiak	3	2,206,008	10.0
		Dutch Harbor	6	9,759,358	44.3
		Floaters, St. Paul	5	10,041,444	45.6

Source: ADFG Fishtickets.

Table 6-3 Processor participation in the Eastern Aleutian Islands golden king crab and Western Aleutian Islands golden king crab fisheries (2001-2002 through 2004-2005)

Fishery	Season	Communities	Number of processors
Eastern Aleutian Islands golden king crab	2001-2002	Adak	1
		Dutch Harbor	3
	2002-2003	Adak	1
		Dutch Harbor	3
	2003-2004	Adak	2
		Dutch Harbor	3
	2004-2005	Adak	2
		Dutch Harbor	3
Western Aleutian Islands golden king crab	2001-2002	Adak	3
		Dutch Harbor	3
		Floater	1
	2002-2003	Adak	1
		Dutch Harbor	1
	2003-2004	Adak	3
		Dutch Harbor	2
	2004-2005	Adak	2
		Dutch Harbor	2

Source: ADFG Fishtickets.

Under the rationalization program, a large portion of the processing (and raw crab purchasing) is vested in the holders of processing shares. To achieve efficiencies in processing, holders of processor shares have used custom processing arrangements to process substantial portions of the landings in the fisheries. Under these arrangements, a share holder contracts for the processing of landings of crab, while retaining all interests and obligations associated with the landed and processed crab. The processor of the crab provides processing services passing on the finished product to the buyer of the crab. The buyer is obligated to pay both the fisherman for the landing, as well as taxes on the landing. Because of the prevalence of these arrangements, this section assesses both plant activities and buyer activities.

Since the rationalization program, the number of processing plants participating in the Bristol Bay red king crab fisheries declined to 12, and has remained constant at that level. The average processing by the top 3 plants in fishery increased to approximately 20 percent, with the concentration of the different share types slightly higher (suggesting that the largest processors of the different share types differ). In two of three years, the median amount of Class A IFQ processed (as a percent of the share type) exceeded the median amounts of Class B IFQ and C share IFQ processed suggesting that a few plants dominated the Class B and C share IFQ processing in two of the three first years.

Table 6-4 Processing by plants in the Bristol Bay red king crab fishery (2005-2006 through 2007-2008)

IFQ type	Season	Plants processing	Mean		Median		Average processing of top 3 plants	
			pounds processed	as a percent of type	pounds processed	as a percent of type	in pounds	as a percent of type
Class A	2005 - 2006	10	1,375,757	10.0	1,130,961	8.2	2,931,557	21.3
	2006 - 2007	10	1,158,447	10.0	949,379	8.2	2,485,826	21.5
	2007 - 2008	10	1,527,741	10.0	1,255,323	8.2	3,313,186	21.7
Class B	2005 - 2006	11	137,180	9.1	59,062	3.9	371,057	24.6
	2006 - 2007	11	116,034	9.1	118,436	9.3	210,795	16.5
	2007 - 2008	12	141,257	8.3	47,155	2.8	431,982	25.5
C share	2005 - 2006	12	38,265	8.3	22,649	4.9	103,619	22.6
	2006 - 2007	11	35,033	9.1	26,734	6.9	70,515	18.3
	2007 - 2008	11	47,749	9.1	29,198	5.6	125,408	23.9
All types	2005 - 2006	12	1,310,477	8.3	827,587	5.3	3,100,353	19.7
	2006 - 2007	12	1,103,850	8.3	783,650	5.9	2,760,604	20.8
	2007 - 2008	12	1,458,145	8.3	1,193,875	6.8	3,372,689	19.3

Source: RAM IFQ database.

In the first three years of the program, between 10 and 12 processors have participated in the Bering Sea *C. opilio* fishery, a decline of almost 5 processors from prior to the program (see Table 6-5). The overall concentration of processing increased for both Class B IFQ and C share IFQ in each successive year of the program. Concentration of processing declined slightly in the most recent season. This decline likely resulted from the increase in the TAC, which resulted in substantial increases in the mean and median pounds processed, as well as the average pounds processed by the largest three plants.

Table 6-5 Processing by plants in the Bering Sea *C. opilio* fishery (2005-2006 through 2007-2008)

IFQ type	Season	Plants processing	Mean		Median		Average processing	
			pounds processed	as a percent of type	pounds processed	as a percent of type	in pounds	as a percent of type
Class A	2005 - 2006	11	2,400,246	9.1	2,372,329	9.0	3,924,617	14.9
	2006 - 2007	9	2,881,633	11.1	2,331,253	9.0	6,074,034	23.4
	2007 - 2008	9	5,002,827	11.1	4,163,969	9.2	10,068,852	22.4
Class B	2005 - 2006	12	243,747	8.3	192,240	6.6	555,989	19.0
	2006 - 2007	10	287,619	10.0	254,839	8.9	595,039	20.7
	2007 - 2008	12	416,730	8.3	141,278	2.8	1,155,638	23.1
C share	2005 - 2006	12	75,449	8.3	63,174	7.0	166,724	18.4
	2006 - 2007	10	89,613	10.0	51,791	5.8	214,125	23.9
	2007 - 2008	10	160,149	10.0	63,573	4.0	411,866	25.7
All types	2005 - 2006	12	2,519,421	8.3	2,698,056	8.9	4,347,366	14.4
	2006 - 2007	11	2,700,638	9.1	2,115,634	7.1	6,210,576	20.9
	2007 - 2008	12	4,302,308	8.3	3,384,599	6.6	10,298,816	19.9

Source: RAM IFQ database.

Ten or fewer plants participated in processing in the Bering Sea *C. bairdi* fisheries in the first three years of the program (see Table 6-6 and Table 6-7). Since these fisheries are directly prosecuted by few vessels, the processing is slightly more concentrated than in the two largest fisheries.

Table 6-6 Processing by plants in the Western Bering Sea *C. bairdi* fishery (2005-2006 through 2007-2008)

IFQ type	Season	Plants processing	Mean		Median		Average processing	
			pounds processed	as a percent of type	pounds processed	as a percent of type	in pounds	as a percent of type
Class A	2005 - 2006	10	69,321	10.0	45,337	6.5	154,448	22.3
	2006 - 2007	6	91,470	16.7	62,614	11.4	154,396	28.1
	2007 - 2008	6	70,090	16.7	78,316	18.6	90,131	21.4
Class B	2005 - 2006	7	7,815	14.3	8,122	14.8	11,633	21.3
	2006 - 2007	4	12,366	25.0	*	*	*	*
	2007 - 2008	3	8,674	33.3	*	*	NA	NA
C share	2005 - 2006	6	1,859	16.7	2,133	19.1	3,086	27.7
	2006 - 2007	4	3,283	25.0	*	*	*	*
	2007 - 2008	3	3,544	33.3	*	*	NA	NA
All types	2005 - 2006	10	75,907	10.0	49,436	6.5	165,797	21.8
	2006 - 2007	6	101,903	16.7	72,172	11.8	166,025	27.2
	2007 - 2008	6	76,199	16.7	78,316	17.1	102,194	22.4

Source: RAM IFQ database.
* withheld for confidentiality

Table 6-7 Processing by plants in the Eastern Bering Sea *C. bairdi* fishery (2005-2006 through 2007-2008)

IFQ type	Season	Plants processing	Mean		Median		Average processing	
			pounds processed	as a percent of type	pounds processed	as a percent of type	in pounds	as a percent of type
Class A	2006 - 2007	6	180,952	16.7	151,177	13.9	290,613	26.8
	2007 - 2008	7	169,461	14.3	129,131	10.9	272,961	23.0
Class B	2006 - 2007	6	17,263	16.7	14,769	14.3	20,543	19.8
	2007 - 2008	3	48,861	33.3	*	*	NA	NA
C share	2006 - 2007	7	3,673	14.3	3,983	15.5	6,265	24.4
	2007 - 2008	4	8,246	25.0	*	*	*	*
All types	2006 - 2007	7	173,571	14.3	132,478	10.9	316,038	26.0
	2007 - 2008	8	170,725	12.5	134,287	9.8	300,502	22.0

Source: RAM IFQ database.
* withheld for confidentiality

Five or fewer processors participated in the Eastern Aleutian Island golden king crab and Western Aleutian Island golden king crab fisheries in the first three years of the program, limiting the information that may be released concerning processing in those fisheries (see Table 6-8). In all cases, fewer plants processed deliveries of Class B IFQ and C share IFQ than deliveries of Class A IFQ.

Table 6-8 Number of plants active in the Eastern Aleutian Islands golden king crab and Western Aleutian Islands golden king crab fisheries (2005-2006 through 2007-2008)

IFQ type	Season	Plants processing the IFQ type in the	
		Eastern Aleutian Islands golden king crab fishery	Western Aleutian Islands golden king crab fishery
Class A	2005 - 2006	4	5
	2006 - 2007	5	3
	2007 - 2008	4	3
Class B	2005 - 2006	2	3
	2006 - 2007	2	2
	2007 - 2008	3	2
C share	2005 - 2006	3	3
	2006 - 2007	3	2
	2007 - 2008	2	1
All types	2005 - 2006	4	5
	2006 - 2007	5	3
	2007 - 2008	4	3

Source: RAM IFQ database.

In the first two years of the program, a large portion of the IPQ pool was subject to the "cooling off" provision, which required processing to occur in the community of the processing history that led to the allocation of the underlying PQS. Consequently, few changes in the distribution of processing of Class A IFQ/IPQ landings occurred in the first two years of the program. Also, entities representing the community of origin hold a right of first refusal on any transfer of the PQS and IPQ for use outside the community. This right is relatively weak because intra-company transfers are exempt from the right and the right lapses, if the IPQ are used outside of the community of origin for a period of years. Despite the end of the cooling off period and the ease with which the right of first refusal may be avoided, in the third year of the program, most processing of IPQ landings have continued to be made in the community of origin. Three factors likely contribute to this distribution of processing. First, in many cases, shore-based

processing capital was used to develop the history leading the PQS allocation. That capital continues to be used for processing in most of the fisheries by the initial recipient of the PQS allocation. The regionalization of PQS strictly limits the movement of processing across regional boundaries. In addition, to date, most processors have acknowledged a community interest in processing of landings using their IPQ, and have continued to process those landings in the community of origin. Whether this acknowledgement of community interests will persist is not known. In the case of IPQ designated for processing in the North region, processing has effectively been required to occur in St. Paul, the only available location for processing in the North region to date. Further discussion of community effects are contained in the Social Impact Assessment, attached as Appendix A.

Little information concerning the extent of processing in specific communities can be released because of the limited number of processors that participate in the crab fisheries. By aggregating across communities, some information can be gleaned concerning the distribution of processing across communities. In the first year of the program, approximately equal percentages of Class A IFQ, Class B IFQ, and C share IFQ deliveries were processed in Dutch Harbor and Akutan, collectively, and King Cove and Kodiak, collectively; however, in the Bering Sea *C. opilio* fishery, Dutch Harbor and Akutan, collectively, received a substantially greater percentage of Class B IFQ and C share IFQ deliveries than Class A IFQ deliveries. Since deliveries of Bering Sea *C. bairdi* were not subject to the 'cooling off' period landing requirements, the distribution of Class A IFQ/IPQ landings in the first year were not largely predictable. Approximately one-third of the Class A IFQ/IPQ landings in the fishery were processed in Dutch Harbor. A substantially greater share of Class B IFQ and C share IFQ were processed in that community (see Table 6-9).

Table 6-9 Processing by share type and community (2005-2006)

Fishery	Community	Class A IFQ			Class B IFQ			C share IFQ		
		Number of active plants	Pounds of share type processed	Percent of share type processed	Number of active plants	Pounds of IPQ landings processed	Percent of IPQ pool processed	Number of active plants	Pounds of IPQ landings processed	Percent of IPQ pool processed
Bristol Bay red king crab	Akutan	1	8,548,391	62.2	1	958,658	63.5	1	296,099	64.5
	Dutch Harbor	3			3			3		
	Floater	2	*	*	2	*	*	2	*	*
	King Cove	1	3,242,970	23.6	1	370,538	24.6	1	102,567	22.3
	Kodiak	2			2			2		
	Sitka							1	*	*
	St. Paul	1	*	*	1	*	*	1	*	*
Bering Sea *C. opilio*	Akutan	1	12,186,788	45.9	1	1,964,551	67.2	1	688,401	76.0
	Dutch Harbor	4			4			4		
	Floater	4	*	*	3	*	*	3	*	*
	King Cove	1	*	*	1	355,650	12.2	1	116,054	12.8
	Kodiak	1	*	*	2			2		
	St. Paul	1	*	*	1	*	*	1	*	*
E. Aleutian Islands golden king crab	Dutch Harbor	3	*	*	2	*	*	3	*	*
	Floater	1	*	*						
W. Aleutian Islands golden king crab	Adak	1	*	*	1	*	*	1	*	*
	Dutch Harbor	2	*	*	2	*	*	2	*	*
	Floater	2	*	*						
Western Bering Sea *C. bairdi*	Akutan	1	*	*	1	*	*	1	*	*
	Dutch Harbor	4	329,999	27.8	3	32,967	60.3	3	5,016	45.0
	Floater	2	*	*	1	*	*	1	*	*
	King Cove	1	*	*						
	Kodiak	1	*	*	1	*	*			
	St. Paul	1	*	*	1	*	*	1	*	*

Source: RAM IFQ data and RCR permit file.
* withheld for confidentiality.
Note: For Class A IFQ shows percentage of IPQ pool.

In Bristol Bay red king crab fishery in the second year of the program, the percent of deliveries processing of Class B and C share IFQ was slightly lower than the percentage of Class A IFQ deliveries processed in Dutch Harbor and Akutan. In addition, the percentage of Class B IFQ and C share IFQ processing in these communities dropped from the previous year. The percentage of Class B and C share IFQ deliveries processed in King Cove and Kodiak exceeded the percent of Class A IFQ deliveries processed in those communities in that year. King Cove and Kodiak appear to have processed Class B and

C share IFQ landings lost to Dutch Harbor and Akutan. In the Bering Sea *C. opilio* fishery, processing of Class B IFQ and C share IFQ deliveries exceeded the percentage of Class A IFQ deliveries processed in Dutch Harbor and Akutan, collectively, by approximately one-third. In the Eastern Bering Sea *C. bairdi* fishery, more than one-half of the Class A IFQ/IPQ processing occurred in Dutch Harbor. That community also drew approximately 60 percent of the Class B IFQ processing and approximately 70 percent of the C share IFQ processing. In the Western Bering Sea *C. bairdi* fishery, Dutch Harbor also attracted approximately one-half of the processing of Class A IFQ/IPQ landings.

Table 6-10 Processing by share type and community (2006-2007)

Fishery	Community	Class A IFQ			Class B IFQ			C share IFQ		
		Number of active plants	Pounds of share type processed	Percent of share type processed	Number of active plants	Pounds of IPQ landings processed	Percent of IPQ pool processed	Number of active plants	Pounds of IPQ landings processed	Percent of IPQ pool processed
Bristol Bay red king crab	Akutan	1	7,316,578	62.8	1	740,833	58.0	1	226,044	58.7
	Dutch Harbor	3			4			4		
	Floater	2	*	*	1	*	*	1	*	*
	King Cove	1	2,726,317	23.4	1	421,251	33.0	1	133,047	34.5
	Kodiak	2			3			3		
	St. Paul	1	*	*	1	*	*	1	*	*
Bering Sea *C. opilio*	Akutan	1	12,055,242	46.2	1	2,159,053	75.1	1	629,685	70.3
	Dutch Harbor	3			4			4		
	Floater	2	*	*	2	*	*	2	*	*
	King Cove	1	*	*	1	*	*	1	*	*
	Kodiak	1	*	*	2	*	*	2	*	*
	St. Paul	1	*	*						
E. Aleutian Islands golden king crab	Akutan	1	*	*						
	Dutch Harbor	4	*	*	2	*	100.0	3	*	100.0
W. Aleutian Islands golden king crab	Adak	1	*	*						
	Dutch Harbor	2	*	*	2	*	100.0	2	*	100.0
Western Bering Sea *C. bairdi*	Akutan	1	*	*	1	*	*	1	*	*
	Dutch Harbor	3	280,116	34.9	3	*	*	3	*	*
	Floater	1	*	*						
	King Cove	1	*	*						
Eastern Bering Sea *C. bairdi*	Akutan	1	*	*	1	*	*	1	*	*
	Dutch Harbor	3	615,168	44.8	3	61,085	59.0	4	19,000	73.9
	Floater	1	*	*	1	*	*	1	*	*
	King Cove	1	*	*	1	*	*	1	*	*

Source: RAM IFQ data and RCR permit file.
* withheld for confidentiality.
Note: For Class A IFQ shows percentage of IPQ pool.

In the third year of the program, with the lapse of the 'cooling off' provision requirements, some redistribution of processing of Class A IFQ landings is apparent. Dutch Harbor and Akutan, collectively, attracted slightly more Class A IFQ landings and a substantially larger majority of the Class B and C share IFQ landings than in the two preceding years. These landings returned King Cove and Kodiak, collectively, to a percentage of C share IFQ processing observed in the first year of the program, but reduced their processing of Class B IFQ crab to lower than the first year level. Akutan and Dutch Harbor also drew a substantial percentage of Class B and C share IFQ in the Bering Sea *C. opilio* fishery in the third year of the program; however, processing of A share IFQ in those communities dropped substantially (by approximately 25 percent) from the previous two years. In the Eastern Bering Sea *C. bairdi* fishery, Dutch Harbor attracted slightly less than one-half of the Class A IFQ/IPQ processing and processed all Class B IFQ and C share IFQ landings.

Table 6-11 Processing by share type and community (2007-2008)

Fishery	Community	Class A IFQ			Class B IFQ			C share IFQ		
		Number of active plants	Pounds of share type processed	Percent of share type processed	Number of active plants	Pounds of IPQ landings processed	Percent of IPQ pool processed	Number of active plants	Pounds of IPQ landings processed	Percent of IPQ pool processed
Bristol Bay red king crab	Akutan	1	10,141,102	66.4	1	1,395,927	82.4	1	359,073	68.4
	Dutch Harbor	4			4			4		
	Floater	1	*	*	1	*	*	1	*	*
	King Cove	1	2,931,636	19.2	1	204,118	12.0	1	118,397	22.5
	Kodiak	2			3			3		
	St. Paul	1	*	*	1	*	*	1	*	*
Bering Sea *C. opilio*	Akutan	1	15,364,728	34.1	1	4,466,230	89.3	1	1,400,046	87.4
	Dutch Harbor	3			4			4		
	Floater	2	*	*	2	*	*	2	*	*
	King Cove	1	*	*	1	378,219	7.6			
	Kodiak	1	*	*	3			2	*	*
	St. Paul	1	*	*	1	*	*	1	*	*
E. Aleutian Islands golden king crab	Dutch Harbor	4	2,241,690	99.9	3	244,843	100.0	2	*	100.0
W. Aleutian Islands golden king crab	Adak	1	*	*	1	*	*			
	Dutch Harbor	2	*	*	1	*	*	1	*	*
Western Bering Sea *C. bairdi*	Dutch Harbor	2	*	*	2	*	*	2	*	*
	Floater	2	*	*	1	*	*			
	King Cove	1	*	*						
	St. Paul	1	*	*				1	*	*
Eastern Bering Sea *C. bairdi*	Akutan	1	*	*						
	Dutch Harbor	3	695,543	27.5	3	146,584	100.0	4	32,984	100.0
	Floater	2	*	*						
	King Cove	1	*	*						

Source: RAM IFQ data and RCR permit file.
* withheld for confidentiality.
Note: For Class A IFQ shows percentage of IPQ pool.

6.2 Summary of leasing and custom processing arrangements

Short term transfers under leases and custom processing arrangements are the primary means by which PQS holders in the crab fisheries have achieved consolidation under the rationalization program. This section examines the use of leasing and custom processing in the fisheries under the rationalization program.

In the first two years of the program, as much as 20 to 30 percent of the IPQ pools in some fisheries were leased (see Table 5-2). The extent of these leases suggests that some holders of PQS may choose not to be active in processing in a given year, instead leasing their IPQ to realize benefits of consolidation. In addition to those more traditional leasing transactions, some portion of these leases is believed to be movement of shares to achieve efficiencies among active processors. For example, an IPQ holder operating a plant in the North may choose to exchange its South IPQ for another IPQ holder's North IPQ to achieve efficiencies and consolidate processing of its holdings. Leasing arrangements, however, are not the only means to achieving consolidation in the fisheries.

Custom processing arrangements are particularly attractive to IPQ holders who have identified markets for sales, but wish to achieve efficiencies in processing. Under these arrangements, the IPQ holder can contract for processing services, maintaining its interest in the crab and processed products. Custom processing is particularly appealing for processing in remote regions, where an IPQ holder may have an obligation to process and few fully operational shore plants exist. In these areas, a cost effective means of processing is for IPQ holders to consolidate processing in one or two plants reducing the cost of capital and labor (including the costs of moving crews and supplies to the remote location).

The prevalence of custom processing relationships is evident in comparing the number of active IPQ accounts with the number of active processing plants. In the first year of the program, custom processing of IPQ occurred most prominently in North region of the Bering Sea *C. opilio* fishery. Custom processing arrangements in that fishery expanded in the second year of the program and appear to have declined in the third year. The decline may have occurred as relationships between plants and share holders stabilized, with fewer share holders having relationships with more than one plant. Few custom

processing arrangements existed in the Bristol Bay red king crab fishery until the third year of the program, when Dutch Harbor plants entered relationships with several buyers. Few custom processing arrangements exist in other fisheries; however, it is possible that extensive custom processing may have occurred under any of those arrangements. Data cannot be revealed on these processing under these arrangements because of the relatively few processing participants in the fisheries.

Table 6-12 Number of active IPQ holder (buyer) accounts and IPQ processing plants by fishery (2005-2006 though 2007-2008)

Fishery	Region	Community of Plant	2005 - 2006		2006 - 2007		2007 - 2008	
			Number of active IPQ holder accounts	Number of active plants	Number of active IPQ holder accounts	Number of active plants	Number of active IPQ holder accounts	Number of active plants
Bristol Bay red king crab	North	St. Paul	1	1	1	1	2	1
	South	Akutan	1	1	1	1	2	1
		Dutch Harbor	3	3	3	3	7	4
		King Cove	1	1	3	1	1	1
		Kodiak	2	2	2	2	2	2
		Floater	2	2	2	2	2	1
Bering Sea *C. opilio*	North	St. Paul	1	1	1	1	5	1
		Floater	6	3	14	2	3	1
	South	Akutan	1	1	1	1	1	1
		Dutch Harbor	5	4	7	3	4	3
		King Cove	1	1	1	1	1	1
		Kodiak	1	1	1	1	1	1
		Floater	1	1			3	1
E. Aleutian Islands golden king crab	South	Akutan			1	1		
		Dutch Harbor	3	3	4	4	4	4
		Floater	1	1				
W. Aleutian Islands golden king crab	Undesignated	Adak	1	1				
		Dutch Harbor	2	2	2	2	2	2
	West	Adak	2	1	2	1	1	1
		Floater	3	2				
Eastern Bering Sea *C. bairdi*	Undesignated	Akutan	Fishery closed		1	1	1	1
		Dutch Harbor			5	3	4	3
		King Cove			1	1	1	1
		Floater			1	1	2	2
Western Bering Sea *C. bairdi*	Undesignated	Akutan	1	1	1	1		
		Dutch Harbor	4	4	5	3	2	1
		King Cove	1	1	1	1	1	1
		Kodiak	1	1				
		St. Paul	1	1			3	1
		Floater	4	2	1	1	3	2

Source: RAM IFQ data and RCR permit file.

6.3 Processor operations

As with harvesters one of the primary changes in operations under the rationalization program is the distribution of landings among processors and throughout the season. Prior to the rationalization program in the two largest fisheries, deliveries were concentrated in a very short period (see Table 6-13). In the Bristol Bay red king crab fishery, all deliveries were received in a period of one week or less, except in 2003, when a processor received its last delivery approximately 15 days after its first delivery under a special authorization. In four of five seasons leading up to the rationalization program in the Bering Sea *C. opilio* fishery, all landings were completed in fewer than 20 days. In the Eastern Aleutian Islands golden king crab fishery, all landings were completed in less than one month in the seasons leading up to implementation of the program. In the Western Aleutian Islands golden king crab fishery, landings were spread over a substantially longer period in the season prior to implementation of the program. In that fishery, the average time between first and last landings for processors was approximately 3 months or more.

Table 6-13 Days between first and last delivery by processor prior to implementation of the rationalization program

Fishery	Season	Number of plants receiving one delivery	Number of plants receiving multiple deliveries	Average days between first and last delivery	Median days between first and last delivery	Maximum days between first and last delivery
Bristol Bay red king crab	2001	3	14	3.2	3.0	7
	2002	2	15	2.9	3.0	5
	2003	0	20	4.3	4.0	15
	2004	1	16	4.6	5.0	7
Bering Sea *C. opilio*	2001	0	16	8.9	7.5	16
	2002	1	16	17.9	20.5	38
	2003	1	16	10.6	9.5	17
	2004	2	16	8.9	8.0	16
	2005	1	13	9.0	10.0	14
Eastern Aleutian Islands golden king crab	2001-2002	1	3	24.0	22.0	28
	2002-2003	0	4	17.3	17.0	24
	2003-2004	0	4	19.5	20.0	22
	2004-2005	0	4	12.8	9.5	25
Western Aleutian Island golden king crab	2001-2002	2	4	91.8	83.5	179
	2002-2003	0	2	173.0	173.0	191
	2003-2004	1	3	85.3	92.0	154
	2004-2005	1	2	97.5	97.5	122

Source: ADFG Fish tickets.
Note: Mean and medians exclude processors receiving a single delivery.

The distribution of landings across time under the rationalization program is apparent when considering the day between first and last deliveries in each fishery on a processor basis (see Table 6-14). In the Bristol Bay red king crab fishery, most landings continue to be concentrated in a relatively short period in the fall; however, the processing season is considerably longer than prior to the rationalization program. In the North region, the average number of days between first and last deliveries in the first year was approximately one month, but has shortened to less than two weeks in the second and third years. Given the small allocation required to be landed in the North, this concentration of landings is important to maintaining processing efficiencies in the North. To support that processing crews need to be brought to the Pribilofs specifically to process these landings. Spreading these few landings over an extended period could be costly to the processor that must maintain crews and the plant while waiting to receive deliveries. In the South region, processing occurs over a slightly longer period, with the average processor receiving all deliveries within a three week period or less. This concentration of landings helps processors, since lines are not required to be kept sanitized for deliveries for an extended period. Crews in the South also typically work in several groundfish fisheries, aiding processors in achieving efficiencies by using crews in processing activities for the different fisheries (including groundfish and crab) as demands arise.

In the North region of the Bering Sea *C. opilio* fishery, the days between a processor's first and last deliveries follows no apparent pattern across years. A few factors likely contribute to this lack of orderliness. In first year of the program, participants in both sectors were likely learning how to operate under the program. Processors operating in the North expressed a clear preference for concentrating deliveries in a short period of time, but several factors, including general lack of familiarity with use of cooperative fishing practices may have contributed to extending processing over a period of between two and three months. In the second year of the program harvesters had greater coordination in harvesting practices. In addition, a processor fire delayed the start of deliveries to the North region. By the time processing capacity came available, a substantial portion of the fleet was ready to make deliveries. These changes resulted in processing being concentrated in a relatively short period (less than one month for the

average processor and less than two months for the longest operating processor). In the third year of the program, In the third year (when the TAC was substantially larger, processing was concentrated in two plants, and ice conditions delayed fishing and deliveries), the average time between first and last landing was between two and three months. Although the larger TAC and the concentration of processing in two plants contributed to the extended processing season, icing delayed operations requiring plants to incur the costs of maintaining inactive crews for a period of time.

In the South region in the Bering Sea *C. opilio* fishery for the average processor, landings were distributed across a noticeably longer period in the first two years. This distribution of landings over time is less costly to most processors in the South, which process landings from competing groundfish fisheries (i.e., pollock and cod) during the early part of the year when the *C. opilio* fishery is primarily prosecuted. In the third year of the program, the distribution of landings for the average processor was remained similar to the distribution in the second year, but was shorter than in the North, where deliveries were delayed by ice conditions.

In the Eastern Aleutian Islands golden king crab fishery in the first three years of the program, processors distributed their processing over a period of between two and three months. Since most of the processors in this fishery also participate in the groundfish fisheries, the distribution of landings across a greater period of time is of less importance, as crews need not be transported to the plants exclusively for crab processing.

The average days between first and last delivery in the Western Aleutian Islands golden king crab fishery differs year to year since the rationalization program was implemented. To some extent, these differences arise from a failure of harvesters and processors to coordinate activities through matching shares and committing to harvest and receive catch. In the 2006-2007 season, the limited average processing period likely arose from a delay in the harvest of any crab from the fishery by catcher vessels until late in the season.

Table 6-14 Days between first and last delivery by processor (2005-2006 through 2007-2008)

Season	Fishery	Region	Number of plants receiving one delivery	Number of plants receiving multiple deliveries	Average days between first and last delivery	Median days between first and last delivery	Maximum days between first and last delivery
2005-2006	Bristol Bay red king crab	North	0	1	32.0	32	32
		South	1	9	52.6	43	88
	Bering Sea *C. opilio*	North	0	3	72.3	77	88
		South	2	7	103.1	90	202
	Eastern Aleutian Islands golden king crab	South	0	4	80.5	65	182
	Western Aleutian Island golden king crab	None	0	2	162.0	162	174
		West	1	2	77.5	77.5	116
	Western Bering Sea *C. bairdi*	None	1	9	84.1	71	167
2006-2007	Bristol Bay red king crab	North	0	1	13.0	13	13
		South	1	10	17.0	15	32
	Bering Sea *C. opilio*	North	0	3	28.7	24	60
		South	1	7	86.6	84	144
	Eastern Aleutian Islands golden king crab	South	1	4	59.0	72	82
	Eastern Bering Sea *C. bairdi*	None	2	5	96.0	152	155
	Western Aleutian Island golden king crab	None	0	2	76.5	76.5	78
		West	0	1	18.0	18	18
	Western Bering Sea *C. bairdi*	None	1	5	61.8	45	141
2007-2008	Bristol Bay red king crab	North	0	1	10.0	10	10
		South	0	10	36.3	29	84
	Bering Sea *C. opilio*	North	0	2	107.0	107	108
		South	1	9	81.9	82	119
	Eastern Aleutian Islands golden king crab	South	0	4	56.5	60	94
	Eastern Bering Sea *C. bairdi*	None	0	8	91.5	122.5	150
	Western Aleutian Island golden king crab	None	0	2	146.5	146.5	232
		West	0	1	172.0	172	172
	Western Bering Sea *C. bairdi*	None	0	6	67.7	59.5	115

Source: RAM IFQ database.

Note: Region is region of operation of the plant in the fishery. A delivery is all offloads from a vessel on a single day.

The number of deliveries received by each processor during each season also affects efficiencies in the processing sector. Receiving more, smaller deliveries may provide efficiency, if those deliveries are well-timed and spread over a longer period. Using this approach, a processor may operate at a lower level of throughput for a longer period, possibly operating fewer lines or slowing the rate of processing on a line. Yet, poorly timed deliveries over an extended period can cost a processor that must keep crews on hand and ready to receive those deliveries. Consequently, care must be taken in interpreting data concerning the effects of deliveries on processors.

In the years leading up to the program, the average processor received between 10 and 15 deliveries in the Bristol Bay red king crab fishery (see Table 6-15). The processors receiving the most deliveries received between 34 and 40 deliveries. Since the implementation of the rationalization program, deliveries per plant have changed in some fisheries. Since regional processing requirements apply to IPQ, examining the processing by region is important. In the first and third years of the program, processors in the South region in the Bristol Bay red king crab fishery took slightly more deliveries on average than prior to implementation of the program. The single processor operating in the North region in this fishery received at most 10 deliveries each season.

Table 6-15 Deliveries per processor in the Bristol Bay red king crab fishery (2001 through 2007-2008)

Season	Region	Number of plants	Average number of deliveries	Median number of deliveries	Maximum number of deliveries
2001	NA	17	13.5	8.0	39
2002		17	14.2	11.0	41
2003		20	13.1	8.0	34
2004		17	15.0	9.0	40
2005-2006	North	1	10.0	10.0	10
	South	10	22.7	23.0	50
2006-2007	North	1	7.0	7.0	7
	South	11	14.8	12.0	35
2007-2008	North	1	9.0	9.0	9
	South	10	21.7	21.0	54

Sources: ADFG Fish tickets and RAM IFQ database.

Note: Region is region of operation of the plant in the fishery. A delivery is all offloads from a vessel on a single day.

In the years leading up to implementation of the program in Bering Sea *C. opilio* fishery, the average processor received between 10 and slightly more than 20 deliveries (see Table 6-16). The processors receiving the most deliveries received between 26 and 66 deliveries. Since implementation of the program, the average number of landings at each facility in the North was more than twice the average number of deliveries in the South. Since the IPQ in that fishery are split near 50/50 North/South, the deliveries reflect efforts on the part of processors to consolidate processing activity to achieve efficiencies in the North. In the North, little groundfish processing occurs in the winter. To achieve efficiencies, processors have consolidated processing in few plants, who receive all deliveries designated for that region. In addition, the average number of deliveries at each plant in the South is slightly higher than the average prior to the rationalization program.

Table 6-16 Deliveries per processor in the Bering Sea *C. opilio* fishery (2001 through 2007-2008)

Season	Region	Number of plants	Average number of deliveries	Median number of deliveries	Maximum number of deliveries
2001	NA	16	16.1	19	40
2002		17	22.1	25.0	66
2003		17	14.3	17.0	31
2004		18	12.7	14.5	26
2005		14	13.3	13.5	27
2005-2006	North	3	37.0	37.0	39
	South	9	17.1	17.0	37
2006-2007	North	3	30.0	35.0	53
	South	8	17.6	13.0	44
2007-2008	North	2	80.0	80.0	101
	South	10	24.0	24.0	69

Sources: ADFG Fish tickets and RAM IFQ database.

Note: Region is region of operation of the plant in the fishery. A delivery is all offloads from a vessel on a single day.

In the two Bering Sea *C. bairdi* fisheries, plants received fewer deliveries on average than in the Bering Sea *C. opilio* or Bristol Bay red king crab fisheries (see Table 6-17). This lower number of average deliveries likely arises from the relatively low TACs in these two fisheries.

Table 6-17 Deliveries per processor in the Eastern and Western Bering Sea *C. bairdi* fishery (2005-2006 through 2007-2008)

Fishery	Season	Number of plants	Average number of deliveries	Median number of deliveries	Maximum number of deliveries
Eastern Bering Sea *C. bairdi*	2006-2007	7	7.4	5.0	21
	2007-2008	8	6.3	5.5	14
Western Bering Sea *C. bairdi*	2005-2006	10	6.8	7.0	13
	2006-2007	6	9.2	6.5	27
	2007-2008	6	7.2	7.0	13

Sources: RAM IFQ database.
Note: A delivery is all offloads from a vessel on a single day.

In the years leading up to implementation of the program in the two Aleutian Islands golden king crab fisheries, the average processor received approximately 10 deliveries, except in the Western Aleutian Island golden king crab fishery in 2002-2003, when only 2 processors were active (see Table 6-18 and Table 6-19). In the Eastern Aleutian Islands golden king crab fishery and in plants outside the West region in the Western Aleutian Islands golden king crab fishery, the number of deliveries per plant has declined likely representing consolidation of catch in fewer deliveries in the harvest sector.

Table 6-18 Deliveries per processor in the Eastern Aleutian Islands golden king crab fishery (2001-2002 through 2007-2008)

Season	Number of plants	Average number of deliveries	Median number of deliveries	Maximum number of deliveries
2001-2002	4	11.3	12.5	19
2002-2003	4	10.8	7.0	27
2003-2004	4	9.3	9.0	16
2004-2005	4	8.3	8.5	12
2005-2006	4	7.5	6.5	15
2006-2007	5	5.8	7.0	11
2007-2008	4	7.3	8.0	11

Sources: ADFG Fish tickets and RAM IFQ database.
Note: A delivery is all offloads from a vessel on a single day.

Table 6-19 Deliveries per processor in the Western Aleutian Islands golden king crab fishery (2001-2002 through 2007-2008)

Fishery	Season	Number of plants	Average number of deliveries	Median number of deliveries	Maximum number of deliveries
Eastern Bering Sea *C. bairdi*	2006-2007	7	7.4	5.0	21
	2007-2008	8	6.3	5.5	14
Western Bering Sea *C. bairdi*	2005-2006	10	6.8	7.0	13
	2006-2007	6	9.2	6.5	27
	2007-2008	6	7.2	7.0	13

Sources: RAM IFQ database.
Note: A delivery is all offloads from a vessel on a single day.

Clearly, the largest effect of the program on processing operations has arisen from the extended seasons in the fisheries. In some cases (particularly in the South region), processors have operated fewer crab lines and reduced peak operating crews. Use of fewer lines reduces both labor and capital costs associated with opening, configuring, and maintaining lines. Reductions in peak crews allow processors to save on transportation costs associated with bringing in crew for the short crab seasons. In some instances, savings on overtime labor may also be realized. In the North region, these savings are less available as plants in that area typically process only crab during the periods when the crab fisheries are open. In North plants, concentrating processing activity into a short period is needed to achieve efficiencies. With processing consolidated in fewer plants, the processing season is substantially longer, but operations are conducted in a manner similar to before implementation of the program.

Scheduling deliveries around available processing windows is critical to processor efficiencies. The importance and the success of processors in scheduling deliveries have varied across time, location, and fisheries. At times in the first year of the program, harvester/processor relationships were particularly strained by attempts of both sectors to dictate scheduling of deliveries. Although some conflicts have continued to arise in the last two years, most delivery scheduling issues have been resolved amicably. In the case of processors in the North region, scheduling of deliveries is critical to maintaining processing efficiencies under the program. Harvesters are generally sensitive to these circumstances and put some effort into cooperating with processor's operational schedules. Processors in the South have more latitude to move effort among crab and groundfish species production. Despite this greater flexibility, delivery scheduling occasionally causes tension between the sectors.

Processor efforts to achieve efficiencies in scheduling deliveries may conflict at times with custom processing arrangements. Although custom processing arrangements aid processors through consolidation, the matching of shares and buyer/cooperative relationships have at times complicated delivery arrangements at plants receiving deliveries for multiple buyers.

6.4 Processing labor

Little information concerning the effects of the program on processing labor is available. The lengthening of seasons and greater distribution of landings across those seasons has reduced peak staff levels in plants in the South during the Bristol Bay red king crab and Bering Sea *C. oplio* processing seasons. Although these changes in delivery patterns, at times, mean less overtime for staff, in some instances, they may allow longer term employment, particularly for crews that work in both groundfish and crab fisheries. In addition, processors may be able to secure better trained or more suitable crews, as short term employment requirements decline. These changes can improve safety and performance in plants.

In the North region during the Bering Sea *C. opilio* season, processing patterns have changed under the extended seasons, but processing labor works under terms and conditions similar to those prior to rationalization. Processors attempt to concentrated deliveries to achieve efficiencies. This scheduling means plants operate at set capacity for a period of time with employees working relatively long hours and earning substantial overtime pay. Fewer persons are employed, as processing is consolidated into fewer plants, but those plants tend to operate for an extended period. Although the seasons last a few months (as opposed to a few weeks) work is short term with all employees brought in exclusively for the crab season.[19] In some cases, these employees are relatively long term employees of the processor who work in other plants. In others, they are short term employees hired exclusively for crab processing.

[19] In the case of floaters used in the North region *C. opilio* fishery, some employees may remain with the plant to work in other fisheries in other areas.

In the other program fisheries, most processing is done by crews that work in both groundfish and crab fisheries, with crews shifting among different species production as demands arise. These crews tend to be longer term employees, working several months for the processor. The change to rationalization has had little affect on processing workers active in these fisheries, but to the extent that rationalization has allowed fisheries to be prosecuted that might otherwise have been closed (e.g., the two Bering Sea *C. bairdi* fisheries) processing workers have benefited from additional employment.

7 CDQ GROUP AND ADAK COMMUNITY GROUP PARTICIPATION IN PROGRAM FISHERIES

Community development quota (CDQ) groups and the community group representing Adak annually receive 10 percent of the TAC of each of the program fisheries prior to allocations being made under the program. The Adak group receives 10 percent of the Western Aleutian Islands golden king crab TAC, while the CDQ groups divide 10 percent of the TAC in the other fisheries. These CDQ and Adak allocations are exempt from the crab rationalization program management and are fished under separate CDQ regulations. In addition, CDQ groups hold interests in shares issued under the program. This section examines the extent of CDQ and Adak holdings under the program and the integration of fishing of CDQ and the Adak allocations with program allocations.

7.1 CDQ and Adak community group share holdings

Both before and after implementation of the rationalization program, CDQ groups have made substantial investments in the program fisheries. In the 2007-2008 season, neither CDQ groups nor the Adak community group held any PQS directly. CDQ groups and the Adak community group have acquired PQS interests recently and may also have indirect holdings of PQS.

Four of the six CDQ groups had direct holdings of QS during the 2007-2008 season. The Adak community group has no direct holdings in the program fisheries. In addition, it is believed that some CDQ groups also have indirect holdings. Direct holdings alone show that CDQ groups have substantial interests in most program fisheries. CDQ holdings are greatest in the Eastern Aleutian Islands golden king crab fisheries, in which CDQ interests exceed 30 percent of the QS. CDQ groups also directly hold in excess of 6 percent of the QS in both of the major fisheries (the Bristol Bay red king crab and the Bering Sea *C. opilio* fishery).

Table 7-1 CDQ group direct holdings of QS

Fishery	CDQ group holdings of catcher processor QS			CDQ group holdings of catcher vessel QS			CDQ group holdings of all QS		
	in units	as percent of operation type	as percent of fishery quota	in units	as percent of operation type	as percent of fishery quota	Number of groups holding QS	in units	as percent of fishery quota
Bristol Bay red king crab	1,250,587	7.1	0.3	23,444,451	6.3	6.0	4	24,695,038	6.3
Bering Sea C. opilio	8,061,549	9.1	0.8	59,169,661	6.7	6.1	4	67,231,210	6.9
Eastern Aleutian Islands golden king crab				2,961,237	32.1	30.5	2	2,961,237	30.5
Eastern Bering Sea C. bairdi	915,592	7.0	0.5	10,788,865	5.9	5.5	4	11,704,457	6.0
Pribilof red and blue king crab				1,307,970	4.5	4.5	3	1,307,970	4.5
St. Matthew Island blue king crab				1,491,571	5.2	5.1	3	1,491,571	5.1
Western Aleutian Islands golden king crab				4,664,466	22.4	12.0	2	4,664,466	12.0
Western Aleutian Islands red king crab				1,017,010	2.9	1.7	3	1,017,010	1.7
Western Bering Sea C. bairdi	915,592	7.0	0.5	10,821,156	6.0	5.6	4	11,736,748	6.0

Source: RAM QS database (2007-2008).

7.2 Harvest of CDQ and Adak allocations

CDQ groups may, and do, harvest their allocations using vessels of either operation type (catcher vessel or catcher processor). The distribution of catch between the operation types, however, cannot be shown because confidentiality limits prevent disclosure of catch information of the few catcher processors that harvest CDQ allocations. The number of vessels of each operation type may be shown. In all CDQ fisheries, at least one or two catcher processors actively harvest CDQ allocations. In the Western Aleutian Islands golden king crab fishery, the Adak allocation is harvested exclusively by catcher vessels.

Table 7-2 Participation in program and CDQ fisheries by operation type (2005-2006 through 2007-2008)

Fishery	Season	Participation in program fisheries		Participation in CDQ fisheries	
		by catcher vessels	by catcher processors	by catcher vessels	by catcher processors
Bristol Bay red king crab	2005-2006	88	4	11	2
	2006-2007	79	3	12	1
	2007-2008	72	3	8	2
Bering Sea *C. opilio*	2005-2006	76	4	13	2
	2006-2007	66	4	10	2
	2007-2008	74	4	10	2
Eastern Aleutian Islands golden king crab	2005-2006	6	1	3	0
	2006-2007	5	1	3	0
	2007-2008	3	1	3	0
Eastern Bering Sea *C. bairdi*	2006-2007	33	3	3	1
	2007-2008	19	1	2	1
Western Aleutian Islands golden king crab*	2005-2006	2	1	1	0
	2006-2007	2	1	2	0
	2007-2008	2	1	1	0
Western Bering Sea *C. bairdi*	2005-2006	42	2	6	0
	2006-2007	34	2	7	1
	2007-2008	26	1	5	1

Source: RAM IFQ database, 2005-2006, 2006-2007, and 2007-2008.

* Adak allocation.

The integration of the harvest of CDQ allocations with program fishery allocations can be shown by examining the number and quantities of landings that include both program and CDQ allocations. In the Bristol Bay red king crab fishery, between approximately one-half and two thirds of annual CDQ harvests have been landed with harvests from the program fishery allocations. In the Bering Sea *C. opilio* fishery, between 25 and 40 percent of the annual CDQ harvests are landed with harvests from the program fisheries. In the other program fisheries, amounts of CDQ landings cannot be revealed because of confidentiality limitations. In most years in those fisheries, more landings comprised exclusively CDQ harvests have been made than landings that include both CDQ and program fishery harvests. Although the effects of these combined activities do not show the marketing of these landings, they suggest that CDQ groups have actively integrated fishing of their allocations with harvest of program allocations.

Table 7-3 Landings of CDQ group and Adak community group allocations (2005-2006 through 2007-2008)

Fishery	Season	Deliveries of combined CDQ and program harvests				Deliveries of exclusively CDQ harvests			
		Number of vessels	Number of deliveries	CDQ pounds	Percent of CDQ catcher vessel catch	Number of vessels	Number of deliveries	CDQ pounds	Percent of CDQ catcher vessel catch
Bristol Bay red king crab	2005-2006	8	11	601,781	47.3	8	12	671,790	52.7
	2006-2007	11	14	826,638	66.1	6	8	423,681	33.9
	2007-2008	7	13	799,806	51.8	6	11	743,129	48.2
Bering Sea *C. opilio*	2005-2006	8	10	1,119,106	40.7	8	14	1,631,838	59.3
	2006-2007	7	9	723,567	31.5	7	14	1,571,906	68.5
	2007-2008	6	11	970,809	24.8	9	21	2,950,805	75.2
Eastern Aleutian Islands golden king crab	2005-2006	2	2	*	*	3	4	*	*
	2006-2007	3	5	*	*	1	1	*	*
	2007-2008	2	2	*	*	1	1	*	*
Eastern Bering Sea *C. bairdi*	2006-2007	2	2	*	*	1	1	*	*
	2007-2008	1	2	*	*	1	2	*	*
Western Aleutian Islands golden king crab**	2005-2006	1	1	*	*	1	3	*	*
	2006-2007	1	1	*	*	2	4	*	*
	2007-2008	1	2	*	*	1	2	*	*
Western Bering Sea *C. bairdi*	2005-2006	5	6	113,057	71.9	3	4	44,186	28.1
	2006-2007	2	2	*	*	5	7	*	*
	2007-2008					5	7	*	*

Source: RAM IFQ database, 2005-2006, 2006-2007, and 2007-2008.
* withheld for confidentiality.
** Adak allocation.

8 CRAB MARKETS AND PRICES

This section briefly summarizes market conditions in the first three years of the program. A short summary of recent first wholesale prices is also included. Crab harvested in program fisheries is sold in an international market in which landings from high-volume crab producing countries such as Canada and Russia largely determine world prices. Program fisheries have accounted for only a small percentage of the overall supply in their primary markets, Japan and the United States. Consequently, the Alaska crab industry has very limited ability to influence prices for Alaska product (Herrmann and Greenberg 2006).

8.1 Red king crab markets

For the past several years the market and prices for Bristol Bay red king crab have been especially affected by Russian king crab production. In the first season of the program (2005-2006), the Russian supply of king crab increased substantially, pushing prices for Bristol Bay red king crab down. Prices declined steadily, bottoming out in 2006 as the increase in the crab supply caused by the expansion of Russian crab exports continued. A price increase that started in late 2006 was stimulated by a sharp drop in Russian production, together with a more aggressive Japanese market and growth of king crab as a promotion item by high-volume U.S. retailers. (Sackton, 2007a). That recovery in prices continued in 2008 due to a persistent lack of Russian product (Urner Barry, 2008).

8.2 C. opilio markets

In the first season of the program, the demand for Bering Sea *C. opilio* was poor in both the Japanese and U.S. markets, as buyers cut back purchases in response to high prices in 2005. Large inventories of unsold product from 2005 caused prices to plummet in 2006. Disruptions in important tourist markets in late 2004 and early 2005 (such as the unusually destructive hurricanes in the southern United States) contributed to this inventory buildup (Department of Fisheries and Oceans, Canada, 2007). Moreover, increased Canadian shipments of *C. opilio* to the United States from the Gulf of St. Lawrence and Newfoundland and record catches of Dungeness crab on the West Coast added to the downward pressure on Bering Sea *C. opilio* prices. In early 2007, Bering Sea *C. opilio* prices rebounded, stimulated in part by

strong demand from U.S. and Japanese retail buyers drawn to the snow crab market by the low prices in the preceding year. In addition, the steadily declining exchange rate between the U.S. and Canadian dollar prompted many Newfoundland *C. opilio* producers to place a portion of their harvests in inventory, in hopes of higher prices in the U.S. market (Sackton, 2007c). Bering Sea *C. opilio* prices remained high in early 2008 as a result of drop in West Coast Dungeness crab production and the cut back on exports of king crab from Russia.

8.3 C. bairdi markets

The 2005-2006 *C. bairdi* fishery was the first since 1996, causing some uncertainty over whether *C. bairdi* would draw a substantial premium over *C. opilio*, as it had historically. In the first few years of the program, *C. bairdi* prices have generally tracked closely with *C. opilio* prices. Inconsistent quality has likely contributed to most *C. bairdi* drawing a price similar to large *C. opilio* (Sackton, 2007c). In addition, the relatively small TACs of *C. bairdi*, have limited the extent to which its products can develop greater independence from the *C. opilio* market.

8.4 Golden king crab markets

In the first season of the program, Aleutian Islands golden king crab prices declined substantially, tracking the price for red king crab products. This trend continued into the second season, as an abundance of competing small sized red king crab imports further weakened prices. In the third season, prices for golden king crab recovered, in part because of a decline in the availability of small red king crab from Russia, which competes with golden king crab. This increase in demand for golden king crab continued through the third season of the program (Sackton, 2007b).

8.5 New market development/changes in existing markets

For many years, the majority of king and snow crab produced in Alaska has been brine frozen and blast/plate frozen "sections" or "clusters", e.g. a group of legs and a claw from one side of a crab with the connecting shoulder still attached. Depending on the market, prior to final sale the sections may be separated into individual legs, sized, and graded.

One of the goals of the crab rationalization program is to increase the value of production from the fisheries. Some product development has occurred since the program began. A few processors and brokers have attempted to develop live and fresh crab markets in the U.S. and abroad. Processors, including catcher processors, have also produced more whole frozen crab, a small but possibly growing market. In addition, at least one processor has processed crab by breaking down sections into single legs prior to cooking to increase value and recovery. These market developments have generally focused on red king crab, the crab that is best suitable for development of new high-end markets. While these attempts to develop new markets are encouraging to some observers, overall the progress in market development has been slower than in most fisheries undergoing rationalization.

A few characteristics of the Bering Sea and Aleutian Islands crab fisheries have likely slowed product innovation. First, the requirement that all crab harvested in BSAI fisheries be processed live was in effect before the rationalization program began; consequently, the opportunities to make product quality improvements were less than those commonly observed in the transition to share-based management in other fisheries. Secondly, the distance to markets and less reliable air service in remote processing locations pose challenges to processors attempting to innovate with products with relatively short shelf lives, such as live crab and fresh crab. Thirdly, development of new product forms, such as more heavily processed products, may require significant outlay of capital or increases in labor, which may be more costly in remote Alaska communities where most of the crab from program fisheries is processed. Finally, the recent market price for shellfish sections has been so high that processors may have little incentive to

produce anything else. The higher price received for value added products, such as meat, may not offset the yield loss of those products.

Product improvement can also occur through more selective harvests or retention. Under the program, allocations are exclusive and discards are not counted against that allocation; therefore, harvesters can discard less desirable crab without risking loss of catch. In the first year of the program, the Bristol Bay red king crab fishery showed high discard rates for legal male crab (Barnard and Pengilly, 2006). It is believed that most of these discards were crab with "old" or "dirty" shells (i.e., shells that are barnacled or show other discoloration). These crab can bring substantially lower market prices, as they are less visually appealing (Sackton, 2007a). Processors, in turn, may pay harvesters less for old shell crab, particularly when this crab exceeds a certain percentage of a delivery. In response to these incentives, discard rates in the first Bristol Bay red king crab fishery under the program were substantially greater than historic discard rates for legal size male crab (Barnard and Pengilly, 2006). In the following year, ADF&G reduced the TAC in the fishery to take into account the bycatch mortality during the previous season. Since that time, discard rates have returned to levels observed prior to rationalization. This reduction in discards is believed to have arisen from processors removing price differentials based on quantities of old shell crab in a delivery and the disincentive created by the downward adjustment of the TAC to account for discards in the second year of the program.

8.6 Ex vessel prices and terms of delivery

Ex vessel pricing structures have changed under the rationalization program. Class A IFQ must be delivered to a holder of unused IPQ and are subject to the arbitration system, which guides both delivery negotiations and price formation. Class B and C share IFQ may be marketed and sold freely. Moreover, negotiations of prices and terms of delivery are likely to occur independently for the different share types to avoid potential infractions of the statute that prohibits processors from using IPQ to leverage Class B IFQ deliveries. That statute specifically provides:

> *If the Secretary determines that a processor has leveraged its Individual Processing Quota shares to acquire a harvester[']s open-delivery 'B shares', the processor's Individual Processor Quota shares shall be forfeited.*

For these reasons, the price setting and delivery terms for Class A IFQ are discussed separately from those for Class B and C share IFQ.

Data limitations complicate efforts to discern differences in ex vessel prices across share types. The only data collected by NOAA Fisheries that show price by share type are elandings data.[20] These data are collected at the time of landing and do not include any post-landing payments, which are reportedly an important part of pricing under current practices. Consequently, elandings data may be misleading and are not presented here. Instead, the discussions of ex vessel prices for different share types rely primarily on information reported by fishery participants.

Following a brief discussion of pre-rationalization delivery terms (including ex vessel pricing), this section describes delivery terms under the rationalization program, including those terms for Class A IFQ landings and Class B and C share IFQ landings.

8.6.1 Delivery terms under the LLP

Prior to the rationalization program, harvests in most Bering Sea Aleutian Islands crab fisheries were consolidated over a short season. Pricing practices differed somewhat between fisheries with relatively

[20] Economic data reports included ex vessel price by share type beginning in the 2006 calendar year.

short seasons and a relatively high number of participants (such as the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries) and fisheries with fewer participants and longer seasons (such as the Aleutian Islands golden king crab fisheries). These differences in ex vessel pricing across fisheries are highlighted below.

8.6.1.1 Pricing in the Bristol Bay red king crab and Bering Sea C. opilio fisheries

In the years leading up to implementation of the rationalization program, harvesters in the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries coordinated most price negotiations. Since the early 1990s, the Alaska Marketing Association (AMA) represented a substantial share of harvesters in price negotiations in the largest crab fisheries—the Bristol Bay red king crab, the Bering Sea *C. opilio*, and the Bering Sea *C. bairdi* fisheries. Informal discussions indicate that AMA membership has ranged from 25 to 95 percent of all the vessel owners participating in these fisheries.

Approximately one month prior to each season opening, AMA representatives met with each of the major crab processors to informally discuss the markets for crab products. Based on these discussions and information gathered through its own market research, AMA representatives would determine an expected price for crab, which it would communicate to the processors. The AMA would then solicit price offers from each processor and submit those offers to its members for a vote. This process of soliciting prices would continue until a price offer acceptable to AMA members was received. Since deliveries were unrestricted, once an acceptable offer was received from a processor all other processors usually matched that offer in order to maintain market share. Prices generally remained constant over the short seasons. In 2001, AMA members created an incentive for higher price offers in the Bristol Bay red king crab fishery by informally agreeing to reward the processor that offered the accepted price with additional deliveries. AMA members made a similar agreement for the 2002 Bering Sea *C. opilio* fishery.

If an acceptable price was not received prior to the seasoning opening, catcher vessels would not begin fishing. For example, in both the 2000 and 2001 Bering Sea *C. opilio* seasons harvesters did not begin fishing until several days after the announced opening because no processor had offered an acceptable price during pre-season price negotiations. Although not all vessel owners were members of the AMA, the entire catcher vessel fleet remained at port until an acceptable price was received by the AMA. Catcher processors, on the other hand, did not abide by these "stand downs" but began fishing at the opening of the season. These boats were unaffected by the price negotiations because they process their own fish. Fishing by catcher processors, however, had the potential to weaken the negotiating position of catcher vessels by reducing the amount of fish available for harvest after a price agreement was reached.

This pricing process typically established two prices—the main price applied to higher value, new shell crab (grade 1) and a secondary, lower price was established for lower value, old shell crab (grade 2). The price differential reflected the differences in prices the two grades brought in wholesale and retail markets. The ex vessel price difference between grades often varied substantially across processors. In general, the price difference averaged approximately 25 percent of the grade 1 price ($1.00 per pound for red king crab and $0.25 for *C. opilio*), but in some instances the price difference was much greater.

Although this informal system established a single price for each grade of crab, price competition among processors existed on a minor scale. Occasionally, some processors offered small bonuses (e.g., $0.05 per pound) or used different grading practices to attract additional vessels. In addition, a few harvesters preferred to handle their own price negotiations rather than be represented by the AMA.

Ex vessel pricing could also vary regionally for a number of reasons. In fisheries where vessels made several deliveries, the availability of goods and services in a delivery location can be important to harvesters. Food, bait, fuel, and good port facilities could make a processor more attractive to vessels

wishing to offload harvests. Processors in locations that offer fewer goods and services were at times compelled to pay a price premium to induce harvesters to sell their catch. Processors more distant from grounds might also be required to pay a higher price to compensate harvesters for increased transiting time and costs and higher risk of deadloss (and possibly for time away from the grounds if harvesters made midseason deliveries). Proximity to markets could also influence ex vessel prices. Processors with less access to markets sometimes paid slightly less for crab because they were required to bear a higher cost to transport the crab to markets.

8.6.1.2 Pricing in the Aleutian Islands golden king crab fisheries

Historically, the Aleutian Island golden king crab fisheries had far fewer participants than the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries. Seasons in these golden king crab fisheries also lasted several months, in contrast to seasons shorter than one month in the Bristol Bay red king and Bering Sea *C. opilio* fisheries. As a result, ex vessel pricing practices differed substantially in the Aleutian Islands golden king crab fisheries.

Longer seasons in the Aleutian Islands golden king crab fisheries allow for substantial in-season price fluctuations, which are uncommon in the short season fisheries. The long seasons with fluctuating prices complicate collective negotiation of ex vessel prices by participants in the Aleutian Islands golden king crab fisheries. Traditionally, harvesters in these fisheries negotiated prices independently. Only recently did some harvesters use collective action to negotiate ex vessel prices for a portion of the fleet.

8.6.2 Delivery terms under the rationalization program

During the first three years of the rationalization program a number of outside factors created significant challenges for program fishery participants. In the first two years of the program, prices for red king crab, *C. opilio* crab, and golden king crab products were considerably lower than in the preceding years. The relatively poor market for crab economically stressed all participants in the fisheries, contributing to contentious price negotiations and lowering the financial returns of all participants. Since the program's implementation, marine fuel prices have escalated sharply, thereby substantially driving up vessel operating costs. In addition, the Bering Sea *C. opilio* fishery experienced a few specific difficulties: heavy ice in the early 2006, 2007, and 2008 seasons disrupted fishing and deliveries of landings to the Pribilofs, and a fire on a processing platform in January of 2007 disabled the facility for approximately one month. In assessing the performance of the program, these various events should be kept in mind, as they significantly affected negotiations between the fleet and processors during the initial years of the program.

The different catcher vessel IFQ types (Class A IFQ v. Class B and C share IFQ) may bring different prices because of the different limitations on use of those shares and the effects of the arbitration program on Class A IFQ landing prices. This section begins with a detailed discussion of pricing of Class A IFQ landings (including the arbitration system). The section concludes with a discussion of landings of Class B and C share IFQ and distributional issues related to the use of those shares. Where relevant, the interactive effects of the IFQ types on the distribution of benefits between harvesters and processors are discussed.

Separation of the discussion of Class A IFQ price setting and delivery terms from that discussion with respect to Class B and C share IFQ is justified by the statutory prohibition on processors using IPQ to leverage Class B IFQ deliveries. That provision states:

> *If the Secretary determines that a processor has leveraged its Individual Processing Quota shares to acquire a harvester[']s open-delivery 'B shares', the processor's Individual Processor Quota shares shall be forfeited.*

Given this prohibition, processors have tended to separately negotiate the terms of delivery of the different catcher vessel IFQ types in order to avoid potential transgressions.

8.7 Pricing and terms of Class A IFQ/IPQ deliveries

This section describes the pricing and terms of delivery of Class A IFQ landings in the first three years of the program. The arbitration system defines a procedure for matching Class A IFQ to IPQ, and the binding arbitration procedure is available to IFQ holders who are unable to negotiate terms of delivery (including prices) for Class A IFQ/IPQ deliveries. As such, the arbitration system effectively defines the ex vessel prices of Class A IFQ landings (and has a great influence on other delivery terms). Consequently, this section largely focuses on the workings of the arbitration system.

8.7.1 Description of the arbitration system

The arbitration system serves several important purposes in the program, including dissemination of market information to facilitate negotiations, the coordination of matching Class A IFQ held by harvesters to IPQ held by processors, and a binding arbitration process to resolve terms of delivery.

The arbitration process begins with the two sectors (harvesters and processors) jointly selecting a "market analyst" who produces a market report, a "formula arbitrator," who develops a price formula specifying an ex vessel price as a portion of the first wholesale price, and a pool of "contract arbitrators," who preside over any binding arbitration proceedings. The market report and formula price are required to be released at least 50 days prior to the season opening. The market analyst and formula arbitrator (who may be the same person) generate the market report and formula price, respectively, based on any relevant information.[21] Neither the market report nor the formula price has any binding effect. Rather, they are intended to provide baseline information concerning the market and a signal of a reasonable price.

Matching of Class A IFQ with IPQ is facilitated through a process of share commitments and dissemination of information concerning available shares. For a 5-day period starting when IFQ and IPQ are issued, shares are matched only by mutual agreement of share holders. After that period has expired, shares may be matched either by agreement or by unilateral commitment of the IFQ holder. Throughout, holders of unused IPQ are required to report the amount of unused shares held to holders of unused IFQ (updating that report within 24 hours of any change). Although this share matching process may aid in establishing commitments to deliver and receive Class A IFQ landings, the terms of those transactions may be disputed (i.e., the commitments need not define all terms of the delivery). If the parties are unable to negotiate terms, an arbitration procedure may be used to resolve those terms.

An IFQ holder that is not able to resolve all terms of delivery with a processor to whom it has committed deliveries may unilaterally initiate an arbitration proceeding. Once a proceeding is initiated, harvesters that are party to the proceeding select an arbitrator to preside over the specific proceeding from the pool of arbitrators jointly selected earlier. The window for initiating arbitration is 10 days long, beginning 5 days after the allocation of IFQ and IPQ. The starting point for initiating arbitration coincides with the start of the period during which harvesters may unilaterally commit IFQ to a processor. Once an arbitration proceeding is initiated with an IPQ holder, any holder of IFQ that has committed shares to that

[21] The Council recently adopted an amendment that, if approved by the Secretary of Commerce, will allow the arbitration organizations to determine the timing and content of the market report. The amendment will allow the report and any supplements to be prepared mid-season to provide current market information. The report may rely only on publicly available information to ensure that it is not used for anticompetitive purposes. Under the current rule, private information may be used provided the information is at least three months old at the time the report is published and is aggregated from at least five independent entities.

IPQ holder may join the arbitration proceeding. This ability to join is critical because the system limits each processor to a single arbitration proceeding. A last opportunity to make use of arbitration is available for harvesters that choose not to join a proceeding. After arbitration is completed, any holder of uncommitted IFQ can bind the IPQ holder to the terms of the proceeding by committing deliveries to the IPQ holder.

Binding arbitration proceedings are conducted on a "last best offer" basis. Under this system, each party to the proceeding submits a "last best offer". The role of the arbitrator is to select one offer from each of the two competing offers. In binding arbitration involving two or more harvesters, each harvester may either submit an independent offer or join a collective offer (as part of a Fishery Collective Marketing Act (FCMA) cooperative). The processor submits a single offer. For each harvester offer, the arbitrator's role is to select either that harvester's offer or the processor's offer (which applies to all harvesters).

Since the full effects of the program on the timing of fishing and marketing activities were not predictable, the arbitration system allowed participants to modify the arbitration timeline. This "lengthy season" approach allows IFQ and IPQ holders that have committed deliveries to negotiate a modified schedule for arbitration. If the parties are unable to agree on the lengthy season approach, they may arbitrate whether to adopt that approach and the timing of the proceeding. Agreements to use the lengthy season approach to arbitration must be entered into prior to the opening of a program fishery.

An important aspect of the arbitration system is the flow of information among the parties. To effectively participate in the program, holders of uncommitted IFQ need timely updates on the availability of unused IPQ, the initiation of arbitration proceedings, and the outcome of these proceedings. Equally (or more) important are limitations placed on the flow of information in order to prevent potential collusive behavior. Allowing price and share holdings information, which is necessary for IFQ holders to participate in the system, to flow to IPQ holders could enable some IPQ holders to unfairly leverage their position in the limited landings market.

The arbitration program is administered through a series of contracts among share holders and arbitration organizations formed by share holders in the fisheries. These organizations are responsible for establishing the administrative aspects of the arbitration system, including selecting arbitrators, coordinating the dissemination of information concerning uncommitted shares among the participants, ensuring confidentiality of sensitive information, and collecting payments to disburse program costs. All share holders from both sectors are required to join an arbitration organization by May 1st of each year.[22] NOAA Fisheries will not issue IFQ or IPQ in a program fishery until arbitration organizations representing enough QS and PQS holders to account for at least 50 percent of the QS and 50 percent of the PQS issued for a fishery select the market analyst, formula arbitrator and a pool of contract arbitrators, and notify NOAA Fisheries of their selection. This requirement is intended to ensure that the arbitration system is in place prior to the start of the fishery. Once a proceeding is initiated, harvesters that are party to the proceeding select an arbiter from the pool to preside over the specific proceeding. Separate organizations are required for harvest share holders and processing share holders. Holders of harvest shares that are affiliated with holders of processing shares are required to join an arbitration organization for purposes of facilitating share matching and administration. Due to antitrust concerns, these "affiliated harvesters" are not permitted to join an organization that includes unaffiliated harvesters and are not permitted to use a binding arbitration proceeding to settle terms of delivery.

[22] Holders of catcher processor shares are exempt from the requirement of arbitration organization membership because they are not subject to the processor landing requirements. In addition, C share holders are exempt from the requirement because the IPQ landing requirements do not apply to C shares.

To ensure predictability and fairness, the arbitration system sets forth standards to be followed by formula arbitrators and contract arbitrators. The specific standards applicable to the two different arbitrators follow (with substantive differences bolded):[23]

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(2) **The contract with the Formula Arbitrator must specify that:**

(i) The Formula Arbitrator will conduct a single annual fleet-wide analysis of the markets for crab to establish a Non-Binding Price Formula under which a fraction of the weighted average first wholesale prices for crab products from the fishery may be used to set an ex-vessel price; and

(ii) The Non-Binding Price Formula shall:

(A) Be based on the historical distribution of first wholesale revenues between fishermen and processors in the aggregate based on arm's length first wholesale prices and ex-vessel prices, taking into consideration the size of the harvest in each year; and

(B) Establish a price that preserves the historical division of revenues in the fishery while considering the following:

(1) Current ex-vessel prices, including ex-vessel prices received for crab harvested under Class A, Class B, and CVC IFQ permits;

(2) Consumer and wholesale product prices for the processing sector and the participants in arbitrations (recognizing the impact of sales to affiliates on wholesale pricing);

(3) Innovations and developments of the harvesting and processing sectors and the participants in arbitrations (including new product forms);

(4) Efficiency and productivity of the harvesting and processing sectors (recognizing the limitations on efficiency and productivity arising out of the management program structure);

(5) Quality (including quality standards of markets served by the fishery and recognizing the influence of harvest strategies on the quality of landings);

(6) The interest of maintaining financially healthy and stable harvesting and processing sectors;

(7) Safety and expenditures for ensuring adequate safety;

(8) Timing and location of deliveries; and

(9) The cost of harvesting and processing less than the full IFQ or IPQ allocation (underages) to avoid penalties for overharvesting IFQ and a mechanism for reasonably accounting for deadloss.

(C) Include identification of various relevant factors such as product form, delivery time, and delivery location.

(D) Consider the "highest arbitrated price" for the fishery from the previous crab fishing season, where the "highest arbitrated price" means the highest arbitrated price for arbitrations of IPQ and Arbitration IFQ which represent a minimum of at least 7 percent of the IPQ resulting from the PQS in that fishery. For purposes of this process, the Formula Arbitrator may aggregate up to three arbitration findings to collectively equal a minimum of 7 percent of the IPQ. When arbitration findings are aggregated with 2 or more entities, the lesser of the arbitrated prices of the arbitrated entities included to attain the 7 percent minimum be considered for the highest arbitrated price. 80 CFR 680.20(g)(2)

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(4) Basis for the Arbitration Decision.

The contract with the Contract Arbitrator shall specify that the Contract Arbitrator will be subject to the following provisions when deciding which last best offer to select.

(i) The Contract Arbitrator's decision shall:

(A) Be based on the historical distribution of first wholesale revenues between fishermen and processors in the aggregate based on arm's length first wholesale prices and ex-vessel prices, taking into consideration the size of the harvest in each year; and

(B) Establish a price that preserves the historical division of revenues in the fishery while considering the following:

(1) Current ex-vessel prices, including ex-vessel prices received for crab harvested under Class A IFQ, Class B IFQ, and CVC IFQ permits;

(2) Consumer and wholesale product prices for the processing sector and the participants in the arbitration (recognizing the impact of sales to affiliates on wholesale pricing);

(3) Innovations and developments of the harvesting and processing sectors and the participants in the arbitration (including new product forms);

[23] In the regulation, "Arbitration IFQ" refers to Class A IFQ held by harvesters that are not affiliated with a PQS holder. These "Arbitration IFQ" are the only IFQ for which delivery terms may be arbitrated.

(4) Efficiency and productivity of the harvesting and processing sectors (recognizing the limitations on efficiency and productivity arising out of the management program structure);
(5) Quality (including quality standards of markets served by the fishery and recognizing the influence of harvest strategies on the quality of landings);
(6) The interest of maintaining financially healthy and stable harvesting and processing sectors;
(7) Safety and expenditures for ensuring adequate safety;
(8) Timing and location of deliveries; and
(9) The cost of harvesting and processing less than the full IFQ or IPQ allocation (underages) to avoid penalties for overharvesting IFQ and a mechanism for reasonably accounting for deadloss.

(C) Consider the Non-Binding Price Formula established in the fishery by the Formula Arbitrator. 80 CFR 680.21(h)(4)

As set out, the standards applicable to the two different arbitrators are both intended to "establish a price that preserves the historical division of revenues in the fishery" while considering several factors. The findings of both arbitrators should be based on the historical division of "first wholesale revenues between fishermen and processors in the aggregate based on arm's length first wholesale prices and ex-vessel prices, taking into consideration the size of the harvest each year." Within the context of this primary standard, the arbitrator is directed to take into account the listed factors.

The differences between the standards applicable to the formula arbitrator's non-binding formula and the contract arbitrator's last best offer finding do not appear to substantively change the general approach to be applied. Both arbitrators must consider a number of common factors. In addition, the formula arbitrator is required to identify relevant factors such as product form, delivery time, and location. This direction suggests that the arbitrator has the latitude to distinguish among product forms, delivery locations, and delivery times in the pricing formula, if appropriate. The formula arbitrator is required to consider the "highest arbitrated price" from the previous season. To ensure that the price is generally applicable, it must apply to at least 7 percent of the IPQ in the fishery. In turn, the contract arbitrator is required to consider the non-binding price formula produced by the formula arbitrator in deciding a contract in a last best offer proceeding. These two requirements effectively create a feedback between the non-binding arbitration of the formula arbitrator and the binding arbitration of the contract arbitrator. By providing the formula arbitrator with the submissions from the binding proceedings, the formula contract arbitrator can provide some guidance on factors at issue in the prior year's binding proceedings. Less structured than a formal record of opinion from the binding process (which has been suggested by some participants), this informal feedback creates a flexible system under which the application of the standard is both adaptive and predictable.

Both formula and contract arbitrators are instructed to consider any relevant information presented by the parties. In this context, the standards appear to direct the arbitrators to establish a price that preserves the historical division of first wholesale revenues, while at the same time allowing them to consider other relevant information, including information relevant to the listed considerations.

8.7.2 The market report and non-binding formula arbitration

Certain aspects of the arbitration system operate regardless of whether participants in the fisheries use the system to directly resolve terms of delivery. All share holders are required to join an arbitration organization. These organizations are parties to the contracts that define and govern the share matching and arbitration system. Since the arbitration organizations serve primarily an administrative function, share holders are able to achieve efficiencies through joining a common organization without compromising their competitive position or operational aspects of their businesses. The annual deadline for arbitration organization membership is May 1st. In the first year of the program, two unaffiliated organizations formed. One organization consisted mostly of Aleutian Islands golden king crab harvest share holders; the other organization represented most share holders in the Bristol Bay red king crab,

Bering Sea *C. opilio*, and Western Bering Sea *C. bairdi* fisheries. After this first year all unaffiliated harvesters joined a single organization. In each of the first three years of the program, a single organization formed for processor share holders and a single organization formed for processor-affiliated harvester share holders.

8.7.3 The market report and formula price

During the first three years of the program, an annual market report and pricing formula were required to be generated for each program fishery at least 50 days prior to the opening of the season. The market analyst and formula arbitrator who prepare these documents are selected by mutual agreement of arbitration organizations representing at least 50 percent of the non-affiliated QS holders and at least 50 percent of the PQS holders in a fishery. To ensure that market report information is timely, an amendment to the program will allow the market report and supplements to be produced at any time agreed by the arbitration organization, including in season. The amendment, approved by the Council in February 2008, will take effect on approval of the Secretary of Commerce.

In the first three years of the program, the person (or team) that prepared the market report for a fishery also prepared the non-binding price formula. Participants in the program fisheries generally believe that using a single source for both reports has reduced both the direct costs of the report and the time costs of providing information to the analysts. In the first year of the program, the market report and price formula for the Aleutian Island golden king crab fisheries were prepared by one team of analysts, while the market report and price formula for the Bristol Bay red king crab, Bering Sea *C. opilio* and the Bering Sea *C. bairdi* fisheries were prepared by a different analyst. After the first year, a single analyst prepared all market reports and price formulas.

The relatively late issuance of QS and PQS during the first year of the program, together with the need for participants to organize into arbitration organizations and select an analyst, contributed to the market reports and price formulas for the various fisheries being prepared on a short timeline.[24] Participants and analysts have since been able to follow the regulatory schedule for developing these reports. To the extent that the market report and price formula have served as the starting point for price negotiations, these reports have met the expectations of the Council (NPFMC, 2004). However, participants from both sectors have expressed various concerns, which will be discussed below.

8.7.3.1 The market report

During the first three years of the program, the Council recognized that crab price volatility prevented a preseason market report from being an ideal tool for setting ex vessel prices. For example, by the time fishing typically begins in the Bering Sea *C. opilio* fishery, the market report is four months old, while the information it contains is approximately seven months old. To address the staleness of the market report, the Council approved an amendment to the program (currently under Secretarial review) that would allow arbitration organizations to time the preparation of the market report as they deem appropriate. In addition, the amendment would allow the report to be supplemented throughout the season by agreement of the organizations. The report (and any supplements) would be based only on publicly available market

[24] The Council recently amended two aspects of the arbitration system that concern the non-binding formula. First, the Council adopted a procedure that would allow arbitration organizations to forgo the production of the non-binding formula for fisheries that are unlikely to open (provided the organizations have an agreement for the production of the formula, in the event that the fishery does open). Second, it modified the timeline for producing the formula for the Aleutian Islands golden king crab fisheries, so that the formula is due 30 days prior to the season opening. By postponing the due date for this report by 20 days, the revised timeline ensures that the formula arbitrator will have access to the price information in the preceding year's Commercial Operators Annual Reports.

information, including information from subscription services, in order to prevent information in the report from being used for anticompetitive purposes.[25]

The added flexibility provided by the amendment should improve the usefulness of the market reports to participants. In general, past reports have identified market volatility as a major impediment to forecasting prices. As a consequence, the reports have chosen to identify factors most likely to influence prices and gauge the possible effects of those factors in the coming year. With new authority to supplement the market report, the arbitration organizations could agree to make available current, publicly available market information to participants in both sectors, in addition to the market analysis contained in past reports. Given the contentious price negotiations in the crab fisheries in recent years, the presence of an unbiased source of up to date market information is expected to have a beneficial effect on negotiations.

Use of this market information in negotiations will require some care. Under the arbitration standard (which establishes ex vessel prices as a share of first wholesale revenues while considering several factors), the relevance of periodic market information to an appropriate ex vessel price is nuanced. No single price reported in these market reports should determine the ex vessel price (unless specifically agreed to by the parties to that transaction). Instead, periodic price information, along with other relevant information concerning market prices, should be interpreted in the broad scope of the markets to arrive at an appropriate ex vessel price. The application of the arbitration standard is further discussed later in this section.

8.7.3.2 The price formula

The price formula is the most important of the preseason reports because this formula is intended to inform negotiations and the binding arbitration process by a general application of the arbitration standard. Many participants view the formula as not only the starting point for negotiations, but the driver of delivery terms for Class A IFQ landings in the program fisheries.

In the first year of the program, the price formula report for Aleutian Islands golden king crab recommended a staged price setting process. Under this approach, harvesters receive an advance, guaranteed minimum price at the time of landing based on prevailing market prices at the time of the report. At the end of the season, a price adjustment is made based on average first wholesale prices for the year. This formulation was suggested to put market risk on processors, who were said to be more capable of absorbing that risk than harvesters because of the relative scales of their operations. The report suggested that this starting price would present a risk of loss to processors only in years of very steeply declining market conditions. This approach to pricing has been followed in negotiations in most program fisheries to date, but has not been suggested in any of the other non-binding price formulas. The approach has also not been part of any binding arbitration proceeding. Instead, harvesters have negotiated for a minimum price paid at landing prior to beginning fishing.

The formulas in the different fisheries generally attempt to derive the average historic division of first wholesale revenues from price information from 1990 until the season preceding the implementation of the rationalization program (2004 in all fisheries except the Bering Sea *C. opilio* fishery which had a 2005 season under the LLP management). The formulas generally define a historic ex vessel price as a percentage of the historic first wholesale value after consideration of certain criteria. In each of the formulas, the analyst has included a discussion of all relevant criteria under the standard (e.g., efficiency and financial stability). The discussion of these criteria is at times intertwined with the discussion of the more mechanical generation of the formula based on available data.

[25] Under the original provision defining the market report requirement, the reports were limited to historical information to prevent the distribution of market data that could be used in an anticompetitive manner (Arnold & Porter, 21-22). This risk is avoided by using only publicly available information.

The methodology for development of the formula has evolved over time. In the first year of the program, the non-binding price formula for both Bristol Bay red king crab and Bering Sea *C. opilio* noted that the ex vessel price as a percentage of first wholesale price varied over time. The analyst noted, however, that the change in the percentage from year to year was related to the direction of the market. The analyst used the preceding year's relationship, but applied an adjustment based on the direction of the market. Using this adjusted relationship (together with a minor adjustment for rising fuel costs), the analyst generated an ex vessel price as a percent of the first wholesale price for the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries. The analyst noted that the closure of the Bering Sea *C. bairdi* fishery in recent years created uncertainty about the market for this species and the appropriate formula. To overcome this uncertainty, the *C. bairdi* formula was based on the *C. opilio* formula, with adjustments that could be applied in the event of unexpectedly low first wholesale prices or lower than expected price premiums relative to *C. opilio*.

In the second year of the program (with considerably more time available to develop the formula), the analyst focused on demonstrating a relationship between the historic average first wholesale prices and average ex vessel prices. To overcome data shortcomings in the Bristol Bay red king crab fishery, the market analyst relied on November and December Japanese wholesale price data to generate first wholesale prices. These data were perceived to be more reliable than Commercial Operator Annual Report (COAR) data, which are collected on a calendar year basis and include winter sales after the New Year in the data for the subsequent year. A simple linear regression was adopted with ex vessel price as a function of first wholesale price. In the third year of the program, Japanese wholesale price data represented first wholesale prices, while Alaska Business Tax data was used to generate some ex vessel prices. These data were used in a regression to establish the relationship between these historic first wholesale prices and ex vessel prices.

In the *C. opilio* fishery, similar formulas were developed in the second and third years; however, separate formulas were developed for North region deliveries, South region deliveries, and all deliveries combined. The generated ex vessel prices in the North differed from those in the South by as much as $0.09. The basis for different regional estimations is controversial within industry, as there is debate over whether prices have historically differed across the two regions. At relatively low ex vessel prices, prices in the North have tended to be lower than South prices and vice versa. This pattern is consistent with the observation in the formula report that TACs can affect the price differential, as prices in the North may be lower than South prices in low TAC years, when the harvester operational advantage of delivering to the North is greater. As expected, the price generated by combining landings from both regions falls between the two region-based estimates, but is typically closer to the North estimate. An additional consideration in the price formulation was the arbitrated prices from the preceding season. Under the arbitration standard, the arbitrator is required to consider the highest arbitrated price that applies to greater than 7 percent of the fleet. Because harvesters prevailed in an arbitration proceeding in the first year of the program, the arbitrated price increased the ex vessel price generated by the price formula in the second year. How the arbitrated price was considered is unclear in the report. In the third year of the program, the same methodology was used for generating the formula. The arbitrator elected to use Alaska Business Tax data for some ex vessel prices, as was done in the Bristol Bay red king crab formula.

In the second and third year of the program, the *C. bairdi* formula relied on data from the Bering Sea *C. bairdi* fishery from 1990 to 1996 and the Kodiak *C. bairdi* fishery from 2001 to 2004. Because the Bering Sea fishery was closed for several years leading up to the rationalization program, the arbitrator looked beyond the fishery for establishing the historic relationship between ex vessel prices and first wholesale prices.

Table 8-1 through Table 8-3 show the first wholesale prices and ex vessel prices in the Bristol Bay red king crab, Bering Sea *C. opilio*, and Aleutian Islands golden king crab fisheries from 1997 to 2005. Ex vessel prices were obtained from Commercial Operator's Annual Reports and fish tickets. Fish tickets typically show payments at the time of landing, while COAR data generally include post-landing bonuses. In the COAR database, the location of the processor that purchased the fish is recorded by ADFG regulatory area, but harvest location is not reported. Crab harvested in one regulatory area may be sold to a processor in another area. Consequently, data for the Aleutian Islands golden king crab and Bristol Bay red king crab fisheries include deliveries from the Norton Sound red king crab fishery and relatively small fisheries in southeast Alaska. The Bering Sea *C. opilio* fishery is the only *C. opilio* fishery in the state; therefore, those data are solely from the Bering Sea fishery. The tables also show the ex vessel price as a percentage of first wholesale price generated by the formula arbitrator. The tables display only first wholesale prices for shellfish sections, which is consistent with the methodology followed by the formula arbitrator. Focusing on shellfish sections simplifies the analysis, as the prices of other products would have to take into account differences in recovery rates. In addition, shellfish sections represent a large majority of the production from program fisheries (both historically and currently) and generally provide a good overall measure of the change in markets for crab. A future change in product types could require a change in application of the price formula.

Table 8-1 First wholesale prices and ex vessel prices in the Bristol Bay red king crab fishery (1997-2005)

Fishery	Season	GHL/TAC[a]	First wholesale price[b]	COAR ex vessel price[c]	COAR ex vessel percentage of first wholesale price	Percentage from formula arbitrator's report
Bristol Bay Red King Crab	1997	7.0	6.18	3.27	53.0%	53.1%
	1998	15.8	5.52	2.63	47.7%	47.6%
	1999	10.1	11.25	6.25	55.6%	55.7%
	2000	7.7	9.11	4.74	52.0%	52.7%
	2001	6.6	8.93	4.83	54.0%	55.1%
	2002	8.6	11.58	6.21	54.0%	53.5%
	2003	14.5	9.82	5.14	52.0%	52.5%
	2004	14.3	9.25	4.69	50.7%	51.4%
	2005	16.5	8.52	4.50	53.0%	
	2006	15.5	7.49	3.85	51.4%	
	2007	18.3	8.60	4.42	51.4%	

[a] Guideline Harvest Level (Total Allowable Catch from 2005 forward) in millions of pounds for Bristol Bay fishery only.

[b] Source: ADFG Commercial Operator's Annual Reports. Wholesale price is reported for shellfish sections and includes all Red King Crab fisheries because COAR reports do not indicate harvest location.

[c] Source: ADFG Commercial Operator's Annual Reports. Prices are for all RKC fisheries combined because COAR reports do not indicate harvest location.

Table 8-2 First wholesale prices and ex vessel prices in the Bering Sea *C. opilio* fishery (1997-2005)

Fishery	Season	GHL/TAC[a]	First wholesale price[b]	COAR ex vessel price[c]	COAR ex vessel percentage of first wholesale price	Percentage from formula arbitrator's report
Bering Sea	1997	117.0	2.13	0.79	37.2%	37.1%
C. opilio	1998	225.9	2.03	0.57	27.9%	28.1%
	1999	186.2	2.92	0.98	33.7%	33.6%
	2000	26.4	4.16	1.85	44.5%	44.5%
	2001	25.3	3.73	1.55	41.6%	41.3%
	2002	28.5	3.58	1.39	38.9%	38.6%
	2003	23.7	4.40	1.85	42.0%	42.0%
	2004	19.3	4.79	2.07	43.1%	43.2%
	2005	19.4	3.85	1.81	47.0%	47.0%
	2006	36.6	2.89	1.15	39.8%	
	2007	56.7	3.83	1.74	45.4%	

[a] Guideline Harvest Level (Total Allowable Catch from 2005 forward) in millions of pounds.

[b] Source: ADFG Commercial Operator's Annual Reports. Wholesale price is reported for shellfish sections.

[c] Source: ADFG Commercial Operator's Annual Reports.

Table 8-3 First wholesale prices and ex vessel prices in the Aleutian Islands golden king crab fisheries (1997-2005)

Fishery	Season	GHL/TAC[a]	First wholesale price[b]	COAR ex vessel price[c]	COAR ex vessel percentage of first wholesale price	Percentage from formula arbitrator's report
AI Golden	1997	5.9	4.79	2.26	47.1%	46.9%
King Crab	1998	5.7	4.24	1.97	46.5%	45.0%
	1999	5.7	6.89	3.15	45.8%	46.6%
	2000	5.7	7.20[e]	3.31	46.0%	58.9%
	2001	5.7	6.95	3.37	48.4%	48.1%
	2002	5.7	7.58	3.46	45.6%	46.2%
	2003	5.7	7.89	3.62	45.9%	45.7%
	2004	5.7	6.02	3.15	52.3%	52.2%
	2005	5.7	6.00	2.89	48.2%	46.4%
	2006	5.1	4.35	2.18	50.1%	
	2007	5.1	5.55	2.43	43.8%	

[a] Guideline Harvest Level (Total Allowable Catch from 2005 forward) in millions of pounds for E. and W. Aleutian Islands.

[b] Source: ADFG Commercial Operator's Annual Reports. Wholesale price is reported for shellfish sections and includes all Golden King Crab fisheries, because COAR Reports do not indicate harvest location.

[c] Source: ADFG Commercial Operator's Annual Reports. Includes all GKC fisheries, because COAR reports do not indicate harvest location.

Table 8-4 and Table 8-5 show the first wholesale prices and ex vessel prices in the Bering Sea *C. opilio* North and South regions from 1997 to 2005. The data show some variation across the two regions, with South region prices slightly higher in some years. Whether these price variations are significant enough to differentiate prices in the formula is a matter that may be considered by the arbitrator. Data since the program was implemented are not available because of confidentiality limitations.

Table 8-4 First wholesale prices and ex vessel prices in the North region of the Bering Sea *C. opilio* fishery (1997-2005)

Fishery	Season	GHL/TAC[a]	First wholesale price[b]	Ex vessel price[c]	COAR ex vessel percentage of first wholesale price	Percentage from formula arbitrator's report
Bering Sea	1997	117.0	2.24	0.78	34.8%	34.8%
C. opilio	1998	225.9	2.01	0.56	27.9%	27.9%
Northern[d] Region	1999	186.2	2.94	0.97	33.1%	33.0%
	2000	26.4	4.29	1.85	43.0%	43.1%
	2001	25.3	3.68	1.55	42.0%	42.1%
	2002	28.5	3.79	1.40	37.0%	36.9%
	2003	23.7	4.48	1.84	41.1%	41.1%
	2004	19.3	4.84	2.05	42.5%	42.4%
	2005	19.4	3.85	1.81	47.0%	47.0%

[a] Guideline Harvest Level (Total Allowable Catch from 2005 forward) in millions of pounds.

[b] Source: ADFG Commercial Operator's Annual Reports. Wholesale price is reported for shellfish sections.

[c] Source: ADFG Commercial Operator's Annual Reports.

[d] For purposes of price calculations, Northern District includes COAR processor areas Q, T, and W (Pribilof Islands, St. Matthew's Island, Bristol Bay, Kuskokwim).

Table 8-5 First wholesale prices and ex vessel prices in the Southern region of the Bering Sea *C. opilio* fishery (1997-2005)

Fishery	Season	GHL/TAC[a]	First wholesale price[b]	Ex vessel price[c]	COAR ex vessel percentage of first wholesale price	Percentage from formula arbitrator's report
Bering Sea	1997	117.0	2.11	0.82	38.7%	38.9%
C. opilio	1998	225.9	2.04	0.57	28.1%	27.9%
Southern[d] Region	1999	186.2	2.89	1.00	34.7%	34.6%
	2000	26.4	4.10	1.86	45.3%	45.4%
	2001	25.3	3.75	1.54	41.1%	41.1%
	2002	28.5	3.47	1.38	39.9%	39.8%
	2003	23.7	4.36	1.85	42.5%	42.4%
	2004	19.3	4.77	2.07	43.5%	43.4%
	2005	19.4	3.85	1.81	47.0%	47.0%

[a] Guideline Harvest Level (Total Allowable Catch from 2005 forward) in millions of pounds.

[b] Source: ADFG Commercial Operator's Annual Reports. Wholesale price is reported for shellfish sections.

[c] Source: ADFG Commercial Operator's Annual Reports.

[d] For purposes of price calculations, Southern District includes COAR processor areas E, F, H, K, L, M, and O (Gulf of Alaska from Prince William Sound west).

8.7.3.3 Application of the arbitration standard in development of the price formula[26]

The arbitration standard applicable to the development of the price formula has four general components to it. First, the formula arbitrator is required to establish a price that preserves the historic division of first wholesale revenues between harvesters and processors. Second, in developing this price the arbitrator must consider several factors, including current ex vessel, consumer, and wholesale prices, innovations and developments, efficiency and productivity, quality, and financial health and stability. Third, the arbitrator must identify factors relevant to price determination, including delivery timing and location; however, the arbitrator is not required to consider these factors in setting the price. Fourth, the arbitrator is required to consider the "highest arbitrated price" from the previous season.

Given the array of directions that an arbitrator is given in establishing a price formula, it is not surprising that some confusion arose in the interpretation and application of the standard. However, a review of the record of the standard's development indicates that establishing a price that preserves the historical division of revenues was a primary consideration. At the time the Council was formulating the standard, it considered allowing an arbitrator to identify a price based on all relevant factors, including historic ex vessel prices and division of first wholesale revenues. Instead, the Council identified the principal role of the arbitrator as determining a price that preserves the historic division of first wholesale revenues in program fisheries (see options in NMFS/NPFMC, 2004b). The primacy of preserving this historic division is also suggested by the EIS, which states that:

> *Assuming no change in the total benefits derived from the fishery, this standard would preserve the historic distribution of benefits for A share landings* (NPFMC/NMFS, 2004a, p. 4-162).

The EIS also suggests that, under the standard, improvements in returns from program fisheries should be shared according to the contribution to those changes:

> *If processed product revenues are improved through product improvements or developments (capturing greater rents), both sectors could share those additional rents. The arbitration standard would likely provide for the sharing of these revenues between the sectors with the division influenced by the contribution of the parties to the product developments and improvements* (NPFMC/NMFS, (2004a) at 4-162).

The report of the workgroup that developed the arbitration program also support interpreting the as preserving the historic division of revenues, while considering other relevant factors. The report states:

> *[The preferred standard] provides additional definition by directing the arbitrator to decide a price that maintains the historical division of revenues in the fishery, while considering other relevant factors. These additional factors would include product developments and efficiency gains, the benefits of which should generally be distributed to each sector based on the contribution of the sector to those benefits. The committee favors [the preferred standard] because of the additional guidance the historical division of revenues provides to the arbitrator. Retaining the historical division of revenues is thought to be a fair method of preserving the balance of interests of the two sectors in the fisheries* (Workgroup on Binding Arbitration, 2002a).

[26] As noted above, the differences between the standards applicable to the formula arbitrator's non-binding formula and the contract arbitrator's last best offer finding do not appear to substantively change the general approach to be applied by both arbitrators. Consequently, much of this discussion also applies to the application of the standards by the contract arbitrator.

The workgroup report suggests that adjustments to the price that preserves the historic division of revenues would allow the different sectors to receive the benefit of their respective contributions to improvements in the fisheries. This interpretation of the standard suggests that future changes in program fisheries cannot be predicted, but that the arbitrator could be justified in adjusting the price on equity grounds as changes in the fisheries and their production occur after implementation of the program.

Over the first three years of the program, the price formula has evolved, and the confusion over interpretation of the arbitration standard has lessened. In the first year of the program, the formula arbitrators for the Aleutian Islands golden king crab fisheries interpreted the standard as requiring the establishment of a price formula that preserves the historic division of profits in the fishery.[27] The formula arbitrator for all fisheries since that first report interpreted the standard as requiring the establishment of a price formula that preserves the historic division of first wholesale revenues in the fishery (Sackton, 2006b; Sackton, 2006c). The arbitrator has exercised his discretion in using different data sources to describe ex vessel and first wholesale prices for the different program fisheries. In addition, in some instances, the arbitrator has adjusted the formula based on factors set forth in the standard.

Assuming that the standard is generally intended to establish a price that preserves the historic division of revenues in the fisheries, it is especially important to specify which years of history to consider.[28] The workgroup generally agreed that the years 1994-2002 were representative years that should be used for applying the standard for the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries. However, the Council took no action to identify historical years. There is some justification for expanding the years to be considered beyond those suggested by the workgroup. For example, the Bristol Bay fishery was closed in 1994 and 1995. On the other hand, if the standard is intended to preserve pricing relationships at levels observed prior to implementation of the program, prices after the program began should not be considered.[29]

The next step in putting into practice the historic division of revenues standard is describing the historic relationship of first wholesale price/ex vessel prices. Debate about the best data for describing that relationship has contributed to discord among the sectors. During the first three years of the program, COAR data have generally been used by the arbitrator. Yet, some of these data may not accurately reflect annual first wholesale/ex vessel price relationships. COAR data are collected on an annual basis; however, ex vessel sales and first wholesale sales from a fishery season may not have occurred within that time frame. The Western (and, at times, the Eastern) Aleutian Island golden king crab fishery season historically extended over the New Year; consequently, ex vessel prices and first wholesale transactions from a single season may have been reported in more than one year. In the event that production in a given year is not sold during that year, COAR respondents are directed to provide an estimated price based on prevailing market conditions. These price estimates may differ from actual sales prices. A similar problem arises in the Bristol Bay red king crab fishery, where a large portion of a calendar year's

[27] The report of the formula arbitrators acknowledged that the formula must preserve the historical division of revenues in the fishery, but raised the concern that the requirement to consider the "efficiency and productivity of the harvesting and processing sectors" and "the interest of maintaining financially healthy and stable harvesting and processing sectors" implied that costs and profitability should be a consideration. The report concluded that the intent of the standard is to preserve "historic profit shares". Data shortfalls, however, led the arbitrators to rely on a historic division of revenues standard (Northern Economics, Inc., 2005, p. 35).

[28] Applying this standard also requires one or more sources of revenue data. Both the EIS and arbitration workgroup expressed concern over the adequacy of existing data sources and the need to consider all relevant, verifiable price data, including data obtained from public sources and fishery participants (Workgroup on Binding Arbitration, 2002b; NPFMC/NMFS. 2004b, p. 386).

[29] Prices after program implementation may be relevant to establishing a price formula, but not for the purpose of determining the historic division of revenues.

harvests are sold in the following year. In addition, some fishery participants have questioned the accuracy of certain portions of the COAR data, such as whether COAR data accurately describe prices for FOB Alaska sales (as distinguished from FOB Seattle sales), and have suggested that data entry errors may exist. In response, the arbitrator has substituted Alaska Business Tax data for COAR data in some instances.

The standard and the minutes of the committee suggest at least two factors that could be considered as affecting the historic relationship between first wholesale prices and ex vessel prices.[30] In the first clause of the standard, the arbitrator is directed to consider the size of the annual harvest in determining the historic division of revenues. This provides clear direction to the analyst to consider whether the ex vessel price/first wholesale price relationship should be a function of the TAC. A second factor that could influence the historic relationship is suggested by the committee minutes. Those minutes suggest (without reaching conclusion) that ex vessel prices may have varied by port (Workgroup on Binding Arbitration (2002b)). The analysis of the standard also suggests that these factors could influence the historic division of revenues:

> *Market changes are also likely to have influence[d] the share of revenues. For example, harvesters may have received a different share of the revenues in years of high prices than in years of low prices. In addition, the revenue share received by harvesters is also likely to [be] sensitive to changes in total harvest. Location[s] of landings are also likely to influence the division of revenues. Prices for landings in different communities have historically varied. The arbitrator will need to accommodate these variations in applying the arbitration standard.* (NPFMC/NMFS, (2004b) at 385).

This discussion suggests the identified factors could be considered in assessing historical prices under the standard. For example, the arbitrator could consider whether the division of revenues varied with TACs in a fishery and incorporate any observed variation into the formula. If such variation occurred, its incorporation into the formula would be necessary to preserve the relative positions of the two sectors as intended by the formula. Similarly, variations across landing locations could be assessed by the arbitrator and incorporated in the formula, if deemed necessary to preserve the historic division of revenues. Development of an accepted historic division of revenues relationship has also been hindered by debate over the existence of an ex vessel price differential across regions in the program fisheries. Minutes of the arbitration workgroup suggest (without reaching conclusion) that ex vessel prices may have varied by port (Workgroup on Binding Arbitration, 2002b). The EIS analysis of the standard also suggests that this factor could influence the historic division of revenues:

> *Location[s] of landings are also likely to influence the division of revenues. Prices for landings in different communities have historically varied. The arbitrator will need to accommodate these variations in applying the arbitration standard* (NPFMC/NMFS, 2004b, p. 385).

Each of the formula reports for the Bering Sea *C. opilio* fishery has considered this potential price differential and has included three different price formulas (one for each region, as well as a formula derived from prices from both regions combined). These data interpretation issues have also contributed to the failure of the system to arrive at a settled, accepted historic division of first wholesale revenues relationship. Once the historic price relationship is established, other relevant factors (including those

[30] In addition, the 18 month review of the program suggests that the historic division of revenues may have varied with production. Given the historic dominance of shellfish section production, it is unlikely that sufficient data exist to distinguish the historic division of revenues for other product forms or that the historic division of revenues in the fisheries was ever based on any other product form.

listed in the standard) may be considered. As discussed above, most of these factors are generally considered to accommodate changes in the fisheries that might justify deviating from the historic price relationship (rather than modifying that relationship itself).

Several factors involved in application of the standard could receive additional attention and specification in the formula report. For example, once the formula is established, the price to which the formula applies should be considered. One approach is to simply apply the formula to the first wholesale price received by the processor to the transaction. This approach is appealing for its simplicity, yet may not be appropriate in all cases. If a processor secures an extremely favorable first wholesale price (i.e., well above the average in the fishery) it may be appropriate to allow that processor to retain a portion of that additional price. By doing so, the processor will have a greater incentive to work to find the best markets in the future. On the other hand, if a processor has an extremely unsuccessful marketing year—securing a price well below the average in the fishery—it might be appropriate to apply some price other than that processor's first wholesale price to create an incentive for that processor to make greater marketing efforts and to avoid penalizing holders of Class A IFQ who might have been required to deliver to that processor. While these extremes may not arise in many cases, the need to develop a fair scheme for addressing cases of a processor deviating from the average success in the market will instill greater confidence in the arbitration system.[31]

A related area of concern is that the standard be applied to fairly must balance the incentives for processors hold inventory against the processors' inventory holding costs. As the formula arbitrator has observed, the standard should not be interpreted to create an incentive for a processor to limit inventory holdings to relatively short periods simply to avoid holding costs. If a processor bears all holding costs, it is possible that the processor would try to move inventories as quickly as possible to avoid holding costs. The arbitrator has suggested that average historic inventory holding periods should be the baseline for assessing whether some adjustment from the historic formula should be made. While this is a reasonable starting point for the consideration of adjustments, it should be clear to most participants in the fisheries that deviation from the average alone should not lead to an adjustment. While it may not be possible to determine a specific adjustment for each circumstance, it is possible that the formula could begin to develop a methodology for identifying circumstances in which an adjustment might be appropriate and for determining the extent of the adjustment. Although the adjustment in an individual case would be at the discretion of the contract arbitrator, an identified methodology for determining whether adjustments are appropriate and the scale of the adjustment would add certainty to the arbitration process. This added certainty might benefit participants in the fishery by providing some basis for assessing the consequences of their choices.[32]

As the development of the formula and the fisheries evolve additional attention can be given to other factors. Product developments, as well as the development of new markets, could require attention in the future. Not only is the distribution of the benefits from these developments important, but as the potential for the arbitration system to create incentives and disincentives for innovation must be considered. The importance of factors is likely to change over time requiring both sectors and the arbitrator to follow trends to ensure that the arbitration system effectively addresses issues affecting the fisheries and the markets can or may serve.

[31] The formula arbitrator has correctly noted that first wholesale prices historically varied across processors and years to suggest that some level of variability should be expected and tolerated Sackton (2007a,b,c). This observation is the starting point for developing a methodology for identifying and addressing excessive variability.

[32] Since contract arbitrations are conducted on a last best offer basis and the outcome of contract arbitration proceedings cannot become public, only the formula arbitration can provide guidance on the application of the standard to participants in the fisheries.

Application of the last component to be considered by the arbitrator—the "highest arbitrated price" from the previous season—also requires some interpretation. This "highest arbitrated price" will have been derived from binding arbitration proceeding between a specific harvester (or group of harvesters) and a specific processor in the previous season. The arbitrated price will likely depend on several factors, including not only the historic division of revenues, but also the specific circumstances and terms of delivery. As such, the price should not necessarily be viewed as a reflection of the overall conditions in the fishery and markets. This limitation is evident in the evolution of this provision. As first proposed, the provision would have applied the highest arbitrated price to all arbitrated deliveries in a fishery. Although never agreed upon, the arbitration workgroup considered a modification that would have applied the highest price to all arbitrated deliveries with an adjustment, if needed, to accommodate specific terms of delivery. The analysis of the provision noted this shortcoming and its potential to complicate (or frustrate) realization of the intended benefit of applying the highest price to all deliveries. To arrive at fair price for each arbitrated delivery could require revisiting each decision, considering the conditions of the delivery and determining an appropriate adjustment to the arbitration outcome (see NPFMC/NMFS (2004b) at 395-6). In addition, application of an arbitrated price to deliveries of others would be patently unfair, since the persons involved in the delivery would not have been a party to the arbitration proceeding. In finalizing the arbitration program, the Council chose not to adopt a system that would apply the highest arbitrated price to other deliveries, instead electing to modify the provision to require consideration of the highest arbitrated price the following year in development of the price formula by the formula arbitrator. This lower emphasis recognizes the potential for a highest arbitrated price to reveal changing trends in the market or fishery, while also recognizing its potential to be inappropriate (or unfair) to simply apply the price to all deliveries.

As with most indicators, consideration of the highest arbitrated price by the formula arbitrator requires discretion and should be in the context of the delivery and the arbitration program, including the arbitration standard. As noted earlier, the binding arbitration proceedings are conducted on a "last, best offer" basis, under which the arbitrator is limited to choosing one of the offers of the competing parties. Under this structure, it is likely that the decision of the contract arbitrator is not the "best" price, but is only the better of the two offered prices. Taking the decision out of the context of its competing offer (and the circumstances surrounding the dispute) would seem to give inappropriate weight to the decision. Given these limitations, it seems appropriate for the formula arbitrator to be given adequate information concerning the issues in a proceeding and the opportunity to consider whether the outcome of the dispute should affect the application of the standard to landings in the fishery, as a whole.[33]

So, if the highest arbitrated price is an indicator of a trend that should be considered under the standard, then the formula arbitrator may be right to grant extra weight to that price in development of the formula. For example, if the highest arbitrated price is based on a product or market development that is known and available to all participants in a fishery, it may be appropriate to adjust the formula price upwards. On the other hand, if the highest arbitrated price arises from an effort by a processor to time deliveries to serve a specific limited market, which increases harvest costs for the harvester, it may be inappropriate to make any adjustment to the price formula based on the highest arbitrated price.

Confidentiality requirements for arbitration results also complicate consideration of the highest arbitrated price. Under the terms of the program, parties to an arbitration proceeding and arbitrators are generally prohibited from revealing the information and terms of any arbitration to others (80 CFR 680.20(g)). As a

[33] Having the formula arbitrator consider the 'highest arbitrated price' in context of the standard should also relieve possible pressures on contract arbitrators to consider the situation of persons that are not party to the specific binding proceeding when making their decisions. A contract arbitrator that knows his decision will affect all prices in a fishery in the following year may feel some duty to come to a decision that is appropriate for all landings, as opposed to a decision that is appropriate for the parties to the dispute.

result, the incorporation of the highest arbitrated price into the price formula cannot be explained in explicit terms. Instead, the justification for an adjustment must be explained in general terms with reference to the standard. Providing explicit explanations for adjustment likely provides stability and predictability, as unexplained adjustments to the formula may lead to greater uncertainty and more contentious negotiations.

Overall, the arbitration workgroup intended the standard as contributing to economic stability in the program fisheries by effectively "preserving the balance of interests" between the harvesting and processing sectors (Workgroup on Binding Arbitration, 2002). Achieving this balance requires the consideration of factors that historically affected the division of revenues. Once this balance is established, changes in fisheries and production that evolve after implementation of the program can be accommodated through equitable division of the benefits arising from those changes. This two-staged process is intended to arrive at a stable pricing relationship that may be adapted to changes in the program fisheries. Given the complexity of the standard, the evolution of the price formula that has occurred over the first three years of the program is not surprising. Over time, the formula should be expected to stabilize, as both the method and result of the arbitrator's application of the standard become acceptable to the parties.

8.7.3.4 Procedure for development of the price formula

A second aspect of the price formula that may be problematic is the process by which it is developed. To produce the formula, the arbitrator considers information submitted by participants in both sectors. However, the process by which these submissions should be conducted is not specified in regulation (although certain limitations on the sharing of information are specified).[34] In the second and third year of the program, the formula arbitrator has developed a "formal" process for submission of comments and interactions with the arbitrator. The arbitrator also responds in writing to each written comment to convey the rationale behind the formula. While these actions have reduced the concerns of participants that one sector has greater access to the arbitrator and more influence on the formula, both sectors remain somewhat dissatisfied with some aspects of the process by which the formula is developed. For example, while communications concerning appropriate data sources for establishing the historic first wholesale/ex vessel price relationship have been provided under the process suggested by the arbitrator, each sector remains concerned that the other may derive a competitive advantage through the timing of communications. In addition, the moderate changes in the formula from year-to-year have contributed to some instability in harvester/processor relationships in the fishery.

Considering the stability that would be generated by the development of an accepted historic first wholesale/ex vessel price relationship in the formula report, it could benefit participants to use a more structured process for the consideration of data and specification of that relationship (particularly until the price relationship is well accepted). For example, the two arbitration organizations, representatives of participants from the different sectors, and the proposed formula arbitrator could develop by agreement a process for the submission and consideration of data and the specification of the formula (e.g., simple average v. linear regressions). A process for the review and rebuttal of data submissions and the structure of the formula could be proposed to ensure that both sectors have adequate opportunity to confront data submitted by the opposing sector.[35] Although this process will likely be more time consuming and involved than the current system for the development of the formula report, it could result in greater acceptance of the historic price relationship and provide greater stability in future negotiations. A better

[34] For example, the arbitrator/analyst is not permitted to disclose non-public information or the source of that information. In addition, information must be on activities that occurred at least 3 months prior to submission 80 CFR 680.20(e) and (f).

[35] It should be noted that any such review process will need to stipulate aggregation of data to protect the confidentiality interests of the participants.

accepted formula will also allow participants to focus on some of the more challenging pricing issues that are likely to arise under the arbitration standard.

Greater structure to the arbitration process could also aid in the resolution of other pricing issues by the arbitration system. Addressing variability of prices across processors, inventory holding times, and product and market development in a manner that is accepted by participants in the fisheries will require a process that effectively considers the interests of both sectors, as well as variation across participants in the sectors. Although these issues may not be ripe for consideration in the formula until the broader issue of arriving at an acceptable historic first wholesale/ex vessel price relationship, the development of a process for addressing these issues through the non-binding formula (or notes accompanying the formula) could improve the acceptance of the arbitration program by participants.

In addition to general information submitted by industry participants, the formula arbitrator must also have access to the previous year's binding arbitration outcomes to consider the "highest arbitrated price" in developing the formula. In the first year of the program, the formula arbitrator received only the two bids and the contract arbitrator's decision on the the winning offer. This information is insufficient for the formula arbitrator to discern the justification for the decision and accord the decision reasonable and appropriate weight. To address this shortcoming, NOAA Fisheries has agreed to provide the formula arbitrator with all arbitration submittals of the parties. These submittals contain supporting arguments advanced by the participants and should enable the formula arbitrator to understand the terms at issue and the circumstances surrounding the dispute, as well as compare the two offers.[36] Providing the formula arbitrator with this information also has the advantage of ensuring that the contract arbitration's decision is given appropriate weight (in light of the broader standard) in the following year's formula.

8.7.4 Share matching and initiation of binding arbitration

A critical aspect of the program is the process by which Class A IFQ/IPQ are matched and binding arbitration proceedings are initiated. The one-to-one relationship between Class A IFQ and IPQ raises the importance of making available information concerning uncommitted shares and establishing an efficient system for matching those shares and initiating arbitration, in the event a negotiated settlement of delivery terms cannot be reached. This section evaluates the operation of the system for matching shares and initiating arbitration under the program.

The system of negotiated and unilateral matching of shares is intended to facilitate the orderly commitment of Class A IFQ deliveries to processors holding IPQ. Coordinated with share matching is the process for initiating a binding arbitration proceeding. The regulatory process for matching Class A IFQ to IPQ begins on the issuance of those shares. For the first 5 days after shares are received, holders of Class A IFQ can, by negotiated agreement, commit their shares to holders of unused IPQ. A commitment need not settle all terms of delivery, but prevents either share holder from committing their shares to a different person. After this period of negotiated commitments, holders of Class A IFQ may unilaterally commit their shares to the holder of uncommitted IPQ. In addition, at any time during the first 10 days after the period of negotiated commitments, a holder of Class A IFQ that has committed those shares to an IPQ holder may unilaterally initiate an arbitration proceeding to settle outstanding terms of delivery.[37] Alternatively, the parties may agree to take a 'lengthy season approach' to arbitration, under which any

[36] NOAA Fisheries has suggested that administrative complexity could be reduced if the formula arbitrator is provided these submittals by the arbitration organizations. If the Council elects to develop an amendment package for this program, NOAA Fisheries would likely suggest that the package include an amendment to address this administrative issue.

[37] This structure, under which a harvester may unilaterally commit deliveries and initiate arbitration, effectively allows a Class A IFQ holder to compel an IPQ holder to accept deliveries at the arbitrated price. IPQ holders cannot compel an IFQ holder to commit to deliveries,.

arbitration proceeding is delayed until a specific time during the season. The lengthy season approach must be adopted prior to the season opening (which under the current timelines for some fisheries occurs prior to the end of the period for initiating arbitration). If the parties disagree on whether to adopt the lengthy season approach (or on the timing of arbitration under that approach) the parties may arbitrate either of those issues. By the end of the 10-day period, if a holder of Class A IFQ has not either initiated a proceeding or adopted the 'lengthy season approach,' the ability to access the arbitration system is effectively forfeited.[38] To date, arbitration has been used twice to resolve issues related to the use of the lengthy season approach. These procedural actions have involved eligibility for arbitration under the lengthy season approach and the timing of arbitration under the lengthy season approach.

The short time period during which shares must be matched and arbitration actions initiated has raised concerns among some participants. Table 8-6 hows the compressed time frame under which share holders are required to either negotiate terms of deliveries or arbitrate those terms under the current TAC setting schedule. Within this time frame, harvesters and processors must match shares and either settle terms of delivery for those landings or commence arbitration for all Class A IFQ and IPQ in the two primary fisheries (the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries) and several small secondary fisheries (the Western and Eastern Bering Sea *C. bairdi* fisheries and the St. Matthew Island blue king crab and Pribilof red and blue king crab fisheries).[39] In considering these time pressures, it should be borne in mind that most of the fishing and processing activity in the king crab fisheries occurs in late October and November. Consequently, not only must participants concern themselves with share matching and negotiations, but they also must prepare facilities, vessels, gear, processing lines and position vessels and crews for those fisheries. It should also be considered that the St. Matthews blue king crab and Pribilof red and blue king crab fisheries have not been open since the program was implemented. If these fisheries were to open, their TAC announcements and IFQ/IPQ issuance would coincide with the TAC announcement and share issuances in the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries, adding further time pressures to share holders wishing to rely on the arbitration system.

[38] During the first year of the program, an inconsistency between the allocation of IFQ and IPQ and the timeline in the regulations for share matching and initiation of arbitration prevented participants in the program fisheries from using the arbitration system as intended. In the original regulation, the timeline for share matching and initiation of arbitration proceedings was relative to the season opening in a fishery. Holders of Class A share IFQ could unilaterally commit landings to a holder of uncommitted IPQ any time less than 25 days prior to the season opening. In addition, IFQ holders were required to initiate binding arbitration between 25 days and 15 days before the season opening. To allow the incorporation of annual survey data to be incorporated into the annual stock assessment and TAC setting processes, the TAC announcements in the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries were made fewer than 15 days prior to the season opening. This late issuance of IFQ and IPQ prevented participants from share matching and initiating arbitration within the specified time periods. IFQ holders and IPQ holders addressed this shortcoming by agreeing to delay the arbitration process under the "lengthy season approach". By the end of the first year, the Council had amended the timeline to allow unilateral share matching any time more than 5 days after the issuance of IFQ and IPQ and to permit initiation of arbitration any time more than 5 days and less than 15 days after the issuance of IFQ and IPQ.

[39] The Bering Sea *C. bairdi* fishery is divided into two fisheries, one east of 166° W longitude (the Eastern Bering Sea *C.bairdi* fishery) and one west of 166° W longitude (the Western Bering Sea *C. bairdi* fishery).

Table 8-6 Approximate schedule for share matching and arbitration, 2006-2007

Fishery	Due Date for Market Report and Price Formula	TAC Announcement	IFQ/IPQ Issuance/Start - negotiated commitment period	End - negotiated commitments/Start - unilateral IFQ commitments/Start - initiation of arbitration actions	Season opening - End period to agree to lengthy season approach	End - arbitration initiation period
Bristol Bay red king crab	August 26	September 29	October 6	October 11	October 15	October 21
Bering Sea *C. opilio*	August 26	September 29	October 6	October 11	October 15	October 21
Eastern Bering Sea *C. bairdi*	August 26	September 29	October 6	October 11	October 15	October 21
Western Bering Sea *C. bairdi*	August 26	September 29	October 6	October 11	October 15	October 21
Aleutian Islands golden king crab	June 26	July 18	August 6	August 11	August 15	August 21

Recognizing the necessity of share matching and the importance of market timing, the workgroup that developed the arbitration system sought to have a system that would have delivery terms (including prices) decided prior to or early in the season. To meet that objective, share matching, negotiation, and the initiation of arbitration had to occur in the preseason. The starting point for share matching and negotiations is, by necessity, the issuance of IFQ and IPQ.[40] Since the IFQ and IPQ issuance cannot be made without the TAC, the TAC announcement constrains the time for share matching and negotiations. An earlier TAC announcement would allow the periods for negotiation, share commitment, and arbitration initiation to be extended back from the seasoning opening; however, TAC announcements likely cannot be made noticeably earlier than their current dates given the timing of stock surveys and the need to complete stock assessment models based on the most recent survey data. Annual stock surveys are conducted in the late summer of each year. Under the current schedule, analysts who produce stock assessments and TACs have little time to complete modeling needed for the fall fisheries. In addition, many participants in the fisheries believe that preseason negotiations cannot fully resolve price issues because markets for the season's production are not known.

In the first three years of the program, all participants who have used the binding arbitration process have relied on the lengthy season approach, whereby arbitration proceedings are delayed until a specific time during the season. Use of this approach has relieved the time pressure under the standard arbitration timeline and has allowed participants to negotiate with more complete market information. Given that participants from both sectors see the lengthy season approach as the only meaningful access to arbitration, the Council could consider providing an alternative to the existing structure by extending the deadline for initiation of arbitration (and removing the lengthy season approach).[41] Determining the appropriate deadline for initiation of arbitration is likely best decided after receiving input of both sectors and will require consideration of several different factors. First, the deadline should allow ample time for participants to resolve share matching, schedule fishing, and to make reasonable efforts to complete negotiations. Second, the deadline should not extend indefinitely, but should balance the interests of processors (who may wish to finalize contracts) with the interests of harvesters (who may wish to extend

[40] Class B IFQ are issued only to QS holders that have no affiliation with an IPQ holder to ensure that the negotiating leverage realized through those shares is realized by independent share holders. Affiliation is determined on an annual basis, to ensure that up to date ownership information is used for assessing affiliations. Since the total Class B IFQ issuance is 10 percent of the IFQ pool on an annual basis, the specific portion of each QS holder's allocation that will be Class B IFQ is not known with certainty until IFQ are issued. Consequently, participants that wish to pre-plan their share matches cannot do so with certainty until IFQ are issued.

[41] This extension would only move the deadline for initiating arbitration. Most participants believe that the share matching timeline is effective. The extension also would not limit the ability of harvesters to initiate arbitration any time after matching shares with a processor. Maintaining access to the arbitration system early in the season is important for harvesters because they may need to use arbitration for scheduling deliveries.

the end date to ensure all first wholesale market information are available for use in the arbitration). Balancing these interests requires that the deadline be set late enough in the season so that the general condition of first wholesale markets are known, but not so late that processors are unable to complete their financial books for the season.[42] Given a reasonable opportunity, it is likely that industry could agree on an arbitration timeline that balances these interests.

Extending the time for initiating arbitration could also affect the interests of the parties. Under the current arbitration system, each processor is limited to a single arbitration proceeding in each season. Allowing multiple proceedings with each processor as a part of an extended timeline could be costly to all participants. It should also be kept in mind that many of the harvest share holders are in a single Fishermen's Collective Marketing Act cooperative, the Inter-Cooperative Exchange, under which all members share information and negotiate collectively.[43] Although technically not a share holder or party to the proceedings, allowing members of this organization to participate in multiple arbitration proceedings with a processor may be inconsistent with the intent of allowing each person a single arbitration opportunity, as it would effectively allow this single representative body multiple attempts at arbitration.

The harvester arbitration organization has developed an internet-based system for matching shares—sharematch.com—to facilitate real time commitment of shares and the timely exchange of information concerning uncommitted shares. While this system has benefited participants by creating a single forum for commitment of shares, achieving its objective requires timely information concerning share holdings, commitments, and transfers. The current system of transfers requires submission of original notarized signatures of both parties to the transfer to Restricted Access Management (RAM) offices in Juneau. RAM has expedited transfers by accepting facsimile transmittals for inter-cooperative transfers.[44] However, given the tight timeline for matching shares to facilitate participation in the arbitration system, time lags in the agency administration of transfers may prevent access to the arbitration system for some share holders. RAM staff is working with industry to develop a more efficient system to administer transfers on the web. Once active, this system will greatly benefit participants' share matching by expediting transfers.

8.7.4.1 Contract Arbitration

During the first year of the program, two binding arbitration proceedings occurred. Both concerned deliveries in the Bering Sea *C. opilio* fishery, with one proceeding also resolving terms for landings in the Bering Sea *C. bairdi* fishery. In the second year of the program, three arbitration proceedings were brought to resolve terms for landings in the Bering Sea *C. opilio,* Bering Sea *C. bairdi* and Bristol Bay red king crab fisheries. In the third year, no proceedings were brought.

All proceedings to date arose under the lengthy season approach to arbitration, occurring in the spring, more than 6 months after the original deadline for initiation of arbitration proceedings in these fisheries.

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[42] Harvesters may feel little pressure to resolve ex vessel prices prior to all market information being available because they likely will have received a large majority of their payments at the time of landing. To date, the binding arbitration process has been used only to determine the amount of any payments beyond the minimum price paid at the time of landing.

[43] The Fishermen's Collective Marketing Act (FCMA) provides fishermen with an exemption to prohibitions on collective negotiation of prices. The Inter-Cooperative Exchange (ICE) includes members of several of the harvest cooperatives formed under the program. ICE represents holders of approximately 70 percent of the unaffiliated QS in the fisheries.

[44] Intra-cooperative transfers of shares and custom processing arrangements, which do not require agency administration, have mitigated this problem. Other transfers can leave share holders uncertain concerning appropriate parties for share matching during the administration of the transfer.

As noted earlier, delaying the proceedings provided participants with the opportunity to complete share matching and preparation for the season and allowed them to assess market conditions prevailing at the time of fishing and sale of products from the fisheries. The delay also allowed parties to reach reasonable settlements, thereby avoiding the cost burden of the proceedings. In all the proceedings, harvesters were represented by the Inter-Cooperative Exchange.[45] While confidentiality rules prevent disclosure of substantive price information from the proceedings, it can be reported that harvesters prevailed in all arbitration proceedings concerning ex vessel prices.[46]

Share holders in the program fisheries, as well as arbitration organizations, have raised some concerns with respect to the binding proceedings. The discussion that follows separates substantive issues (arising out of interpretation and application of the arbitration standard) from procedural issues (arising from under the process for arbitration).

8.7.4.1.1 Application of the arbitration standard in binding arbitration

As discussed above, the arbitration standard delineates the principle objective of both the formula arbitrator and contract arbitrator as establishing an ex vessel price that preserves the historic division of revenues in the fishery. However, the respective roles of the arbitrators in meeting that common objective differ. The formula arbitrator's role is to apply the standard to the overall relationship between harvesters and processors in the fishery; the contract arbitrator's role is to apply the standard to a delivery or set of deliveries from one or more specific harvesters to a specific processor.

As with the formula arbitrator, the contract arbitrator is directed to consider other relevant factors when establishing a price that preserves the historic division of revenues. Two possible means of assessing the influence of these factors are suggested by the arbitration workgroup that developed the standard and the EIS analysis of the arbitration standard. First, in determining the ex vessel price that preserves the historic division of first wholesale revenues, the arbitrator can consider whether any of the listed factors affected that division (Workgroup on Binding Arbitration, 2002a). For example, some participants contend that the division of revenues reflected in ex vessel prices is influenced by delivery location and total harvest levels. Consideration of listed factors in this manner is consistent with maintaining the preservation of the division of first wholesale prices as the primary role of the arbitrator.

Second, the workgroup and analysis suggested the listed factors may be considered to the extent that they concern events that occurred subsequent to implementation of the rationalization program (Workgroup on Binding Arbitration, 2002a; NPFMC/NMFS, 2004a, p. 4-162). Changes in market conditions, product forms, and production processes that occur subsequent to implementation would all seem to be within the scope of this consideration. In general, the standard suggests that these factors are to be considered while maintaining the overall objective of preserving the historic division of first wholesale revenues. For example, considering ex vessel prices for Class A IFQ, Class B IFQ, and C share IFQ landings should not compel an arbitrator to match any of those prices in an arbitration finding, but instead consider whether those prices provide some indication of trends in production or the fishery that should weigh on an arbitration finding. For example, a comparatively low price offer for a Class A IFQ delivery by a processor could indicate that either the processor is not offering a reasonable price given market

[45] Under the rationalization program, IFQ holders may form "harvest cooperatives" that serve the exclusive purpose of coordinating catch of the allocations of their members. Under antitrust law, harvesters that intend to negotiate ex vessel prices collectively must comply with the requirements of the FCMA. Because of their different purposes, the limitations on and requirements for forming cooperatives under the FCMA differ from those of the rationalization program. As a result, IFQ holders in different harvest cooperatives have been able to organize under the FCMA to collectively negotiate prices by meeting the requirements of the FCMA.

[46] Processors have prevailed in arbitration of procedural matters, such as eligibility to arbitrate and timing of arbitration.

conditions or that the processor disputes the historic division of revenues suggested by other processor offers.[47] In the first instance, an arbitrator could be asked to decide whether it is reasonable under the standard for the processor to be compelled to pay a division of revenues based on the first wholesale price received by other processors that achieved greater market success. Such a finding could be justified if the processor is perceived by the arbitrator to have not made appropriate production and marketing efforts.[48] In the second instance, the processor could be trying to pay a lower price based on its perception that harvesters have received a lower portion of first wholesale revenues in the fishery. The contract arbitrator's finding may hinge on an assessment of the historic division of first wholesale revenues and whether the lower price is warranted under that standard,.[49]

While the above discussion of the standard addresses some of the pricing issues that may arise in the program fisheries, it does not adequately address the complexity (or multidimensionality) of delivery terms and negotiations. In the first three years of the program, some participants have struggled to interpret the standard and its application to their circumstances. The novelty of the arbitration system and the absence of information from the few binding proceedings that have occurred have contributed to this anxiety.[50] Some representatives of participants to arbitration proceedings assert that they were nonplussed by the outcomes. The level of predictability of the proceedings is expected to increase over time. However, given the complexity of issues that could be faced by the arbitrator, it is possible that some outcomes may not be fully predictable.

Some of the more complex negotiation issues to date relate to factors beyond the basic consideration of the historic division of revenues. One such issue is whether the historic division of revenues has differed between the North and South regions. This issue was central to the disputes in the first year arbitration proceedings. Given that the arbitration standard explicitly directs the arbitrator to consider delivery

[47] This is akin to suggesting that in implementing the standard, the contract arbitrator must decide whether the first wholesale price to which the division is applied is the first wholesale price of the specific processor to which a delivery is made or the average first wholesale price in the fishery (or some combination of the two). The standard, on its face, gives no indication of which of these two prices should be used to derive an ex vessel price for a delivery. The EIS analysis of the last best offer arbitration suggests that effective administration of the arbitration standard requires that consideration be given to the broader market:

> *The separation of IPQ holders in the process could limit the effectiveness of the system in protecting IFQ holders that deliver to low revenue IPQ holders. To create incentives for each IPQ holder to increase revenues, an arbitrator will need to consider the performance of the IPQ holder with respect to all processors in the fishery (including any that do not hold IPQs). A revenue dividing pricing formula that considers only the revenues of the participating IPQ holder might reduce the incentive for low revenue IPQ holders to improve revenues. On the other hand, a revenue dividing formula that has a component that weights the performance of all processors in a fishery could be used to create an incentive for an IPQ holder to be competitive with others in the industry. The potential of this system to incorporate a fleet wide component into the arbitrated price depends on the degree to which participants incorporate industry performance into final offers and whether arbitrators have access to information from the industry as a whole that is necessary to validate those offers* (NPFMC/NMFS, 2004b at 393).

[48] On the other hand, if a processor took reasonable risks in the market but experienced a drop in revenues, the arbitrator may find that the processor should not bear the entire burden of its attempt to pursue the most valuable market. This finding would likely depend on the specific relationship between harvesters and processors and whether harvesters would have shared in the benefits, had the processor achieved better results in the market. In short, the arbitrator should take into account the overall market and the harvester/processor relationship.

[49] Some harvesters have been frustrated that processors are unwilling to simply match higher prices offered by other processors, as happened in the pre-rationalization fisheries. Given the extended season and isolation of each processor in the arbitration system, it is not surprising that processors are reluctant to quickly match offers of competitors.

[50] Under the arbitration system no information from the arbitration proceedings can be shared among non-participants.

location in applying the 'historic division of revenues,' the consideration of the appropriateness of differentiating North and South pricing is within the scope of the arbitrator's authority; however, a more structured and expansive process for consideration of this issue in the development of the formula report could reduce the level of dispute. Several arguments have been advanced by processors to support their contention that a price differential should be acknowledged. Some processors have argued that operating costs are substantially higher in the North region, and, therefore, lower ex vessel prices in the North are justified to maintain production efficiencies and the financial health of processors in the region. In addition, some processors contend that the consolidation of harvester shares on fewer vessels has caused inefficiencies in processing by extending processing activities over a longer period. This consolidation is argued to have had the same effect as a larger TAC, under which harvesters have historically benefited from delivering in the North, and, consequently, were willing to accept a lower price than in the South. Under the standard, the arbitrator is directed to consider production efficiency (given the limitations of the management structure) and the financial health of the both the harvesting and processing sectors, as well as TAC size effects, when applying the historic division of revenues standard. Again, the breadth of considerations under the standard appears to permit the arbitrator to consider these arguments. Whether such arguments are compelling (or determinative of the arbitration outcome) is likely to depend on the circumstances.[51]

8.7.4.1.2 Process for binding arbitration

This section describes and evaluates the process used once an IFQ holder has initiated a binding arbitration proceeding. The first step in that process occurs simultaneously with the initiation of the arbitration proceeding. At that time, the IFQ holder that initiated the proceeding selects a contract arbitrator to preside over the arbitration from the pool of jointly selected contract arbitrators. Some participants believe that authorizing the IFQ holder to select the arbitrator creates a harvester advantage in the proceeding.[52] In addition, IFQ holders in all binding arbitration proceedings to date have been represented by the Inter-Cooperative Exchange. At times, the Inter-Cooperative Exchange has selected the same arbitrator to preside over consecutive proceedings. This common selection could have potential strategic effects by allowing the harvest representatives to gauge the arbitrator's response to their arguments in the first proceeding.

In considering whether any potential advantage arising out of this arbitrator selection process merits correction, one should carefully consider the rationale for the current process, the overall needs of the system, and the fairness of the current rule. The extent of any potential advantage is limited by the joint selection of the pool of arbitrators by PQS holders. Since the pool is selected jointly, the risk of a biased arbitrator is limited. While an arbitrator that is perceived to be overly receptive to the arguments of one side could provide an advantage in one year, the other sector could eliminate that arbitrator from the pool in the next year. Under the current rule, the pool of contract arbitrators is selected at least 50 days prior to the season. The selection of a single arbitrator from the pool by one side is an efficient mechanism for expediting the schedule for arbitration proceedings. Under the standard arbitration schedule, proceedings are intended to be resolved prior to the season, to limit the potential for disruption of operations during

[51] An interesting aspect of the program is the interaction of the formula arbitrator's annual report and the binding arbitration proceedings presided over by the contract arbitrator. By providing the formula arbitrator with the submissions from the binding proceedings, the formula arbitrator can provide some guidance on factors at issue in the prior year's binding proceedings. Less structured than a formal record of opinion from the binding process (which has been suggested by some participants), this informal feedback creates a flexible system providing some level of reliability concerning the application of the standard.

[52] Both the arbitration workgroup and Council proposed that all arbitrators be selected jointly (NPFMC, 2004; Work Group on Binding Arbitration, 2003). Whether the joint selection of the pool of arbitrators alone satisfies that directive is debatable.

the season. On the other hand, the need for an expedited process could be questioned though, since proceedings have typically used the lengthy season approach.

A possible alternative to selection of the arbitrator by the harvesters initiating the proceeding is a joint selection process. Typically, such a system would require either agreement of the parties to the proceeding or a tiered selection process. Joint selection by the parties could delay the start of proceedings, if the parties were unable to quickly reach agreement or if a delay was used strategically to gain an advantage in the proceeding. Alternatively, a tiered process could be used under which each party selects an arbitrator who together must agree on a third arbitrator. This third arbitrator would preside over the proceeding. Such a system would likely result in a brief delay in the start of proceedings, the importance of which would depend on the fishery and nature of the dispute. In addition, this process would be slightly more cumbersome and costly by involving two additional parties in the selection process.

Beyond the selection of the arbitrator, much of the regulations governing the binding arbitration process are general. Some of the dissention between harvester and processors has centered on this lack of specificity. Much of the remainder of this section describes areas of the arbitration process that some participants believe require additional definition. In considering whether adding that definition is appropriate, the Council should consider the degree to which that definition could provide or be used to advantage specific participants in the arbitration process and the extent to which that definition could constrain the process. Defining a specific rule to address a current concern could constrain the ability of participants to modify that rule should it become obsolete in the future. In development of the arbitration system, the Council sought to provide industry with a flexible system that could be efficiently administered by participants (through the arbitration organizations who represent them). The Council reinforced this principle in a recent action to amend the regulations to specifically provide the arbitration administrators (i.e., arbitration organizations, arbitrators, and third party data providers) with the authority to adopt procedures and make administrative decisions in addition to those specified in the regulations, provided those procedures and decisions are not inconsistent with any regulations. As such, any change in the regulatory change in the arbitration process initiated by the Council should consider the potential to constrain the potential for participants to adapt the system as needed in the future.

The regulation provides that the arbitrator should meet with the participants as soon as possible after the arbitration is initiated to schedule the proceeding (50 CFR 680.20(h)(3)(vii)). In addition, the regulation directs the contract arbitrator to meet with the parties to determine the terms that must be included in the last best offer submissions, which may be collectively submitted by harvesters that are members of an FCMA cooperative (50 CFR 680.20(h)(3)(viii) and (xi)).[53] The arbitrator is limited to selecting from the two last best offers (50 CFR 680.20(h)(3)(viii) and (xi)). The arbitrator's finding must be delivered to the parties within 5 days of submission of the offers (or within 10 days of submission, if the arbitration takes place at least 15 days prior to the season opening, which is an impossibility under the current timelines) (50 CFR 680.20(h)(3)(xi)). Beyond these specific requirements, the arbitration procedure is undefined by the regulation. With the exception of quality and performance disputes, participants in the fishery (and in arbitration proceedings) can seek remedies only through civil law. Furthermore, the regulations do not provide a process for appealing an arbitration decision.

The Council's recent amendment is intended to resolve some of these concerns. While arbitrators generally have the authority to make determinations of whether procedural requirements for arbitration

[53] The regulation identifies several price structures that may be included in the terms of last best offers (see 80 CFR 680.20(h)(3)(viii)). The rule also refers to the last best offers as defining the "terms of delivery" (see 80 CFR 680.20(h)(3)(ix)). This statement that the last best offers define the terms of delivery, together with the breadth of factors that must be considered under the standard, clearly imply that any and all terms of delivery may be specified in an offer and decided in an arbitration proceeding.

have been met (i.e., procedural arbitrability), the amendment is intended to clarify that an arbitrator has the authority to determine whether harvesters properly initiated or joined a proceeding to arbitrate. Likewise, the action is intended to address concerns of whether the arbitrator may decide if parties properly agreed to the lengthy season approach (i.e., did the parties have an agreement to arbitrate using the lengthy season approach).[54]

Some participants have also raised concerns that the relatively short time period during which proceedings occurred provided little opportunity to explore the validity of data presented by the opposing party. In addition, the process used is asserted to have provided no opportunity to cross examine concerning evidence presented by the opposing party. It has been suggested that the arbitrator should disallow use of data (or other evidence) that are not presented at time that allows reasonable review by the opposing party and should draw a negative presumption concerning data that should be available to a party that the party chooses not to present. The Council's recent amendment should clarify that the arbitrator has the ability to adopt a process to allow parties time to assess the validity of data (and other evidence) presented by the opposing party and to ask questions concerning those data (and evidence). In most instances, the arbitrator is likely in the best position to determine consequences for failing to present data or presenting data in an untimely manner.

In addition, some participants have argued that the contract arbitrators should be required to provide opinions supporting all arbitration decisions. These opinions could serve as precedents for future actions or could provide a basis for the decision to be scrutinized in any judicial review initiated by dissatisfied parties. The development of opinions and judicial review could provide additional information to parties concerning the operation of the system and may increase predictability of the system. On the other hand, these opinions and reviews could contribute to the adversarial nature of the process. As with other changes in the program, the potential of these changes to alter the negotiating positions of participants should be considered.

Persons favoring arbitration as a means of resolving disputes often do so, in part, for its finality. As such, arbitration decisions are typically subject to limited judicial review. In most instances, the grounds for appeals of arbitration outcomes are defined to be limited to cases of fraud, impartiality, or misconduct (see Section 23, RUAA and Section 10, FAA). Courts, however, have allowed for arbitration systems to expand judicial review (see Gateway Tech. Inc. v. MCI Telecommunications Corp., 64 F.3d 993 (5th Cir. 1995) and Lapine Tech. Corp. v. Kyocera Corp., 130 F.3d 884 (9th Cir. 1997)). The scope of judicial review is often greater for "compulsory arbitration" under which parties are required to participate in an arbitration system for public policy reasons (such as to avoid teacher or firefighter strikes). These systems typically mandate evidentiary records from the arbitration proceeding and written decisions (see Nolan-Haley, 2001).

As with other aspects of this system, the Council should consider the overall effects of the arbitrator providing supporting opinions for decisions and creating for expanded judicial review of outcomes. Leaving aside antitrust considerations[55] (which are certain to be raised by a system of arbitration opinions and an appeals process) the implications of such a system should be assessed. A potential benefit of the

[54] It is possible that the arbitrator's authority to make this decision would be upheld absent the recent amendment. While the existence of an agreement to arbitrate is typically decided by courts (see Section 6, Revised Uniform Arbitration Act (RUAA) of 2000 and Section 4, Federal Arbitration Act (FAA)), in at least one instance where the parties submitted the issue to the arbitrator, the arbitrator's finding was found to govern (see First Options of Chicago, Inc v. Kaplan, 514 U.S. 938, (1995)).

[55] The current position of NOAA General Counsel and the Justice Department is that any information from these individual proceedings must remain confidential to limit the potential for anticompetitive activities. Some participants in both sectors have expressed their opinion that the release of this information at the end of a season would add certainty to the arbitration process without creating increasing any risk of anticompetitive behavior.

arbitrator providing a basis for the outcome is that participants could develop a better understanding of the application of the standard, at least by that arbitrator. If the decision is not subject to expanded judicial review (and is not precedential), the need for and benefit from the opinion is likely minimal, as it may not even provide guidance to parties to the arbitration.[56]

If judicial review of the arbitrator's findings are expanded, standards for review would need to be developed (i.e., under what conditions would a decision be reversed). While a system of arbitrator opinions and expanded judicial review could provide a venue to contest outcomes perceived to be unfair, the system would also decrease finality of outcomes. The need for early and final resolution of disputes was deemed important in the development of the arbitration program. Also, persons dissatisfied with the outcome of an arbitration proceeding could use the threat of judicial review to leverage different terms than those specified by the arbitrator. Using judicial review (or the threat of seeking judicial review) strategically is clearly beyond the intended scope of the arbitration system as developed by the Council. In addition, a system of opinions and expanded judicial review could also add substantially to the costs of the system.

Under a system of precedential outcomes (in which arbitrators provide reasoned opinions for all decisions), opinions could be used to further clarify application of the standard for all participants. Although this might provide clarity of the standard, the establishment of a precedent could hurt fishery participants that are not a party to the arbitration, who might be bound by the precedent in the future. Considering the importance of the standard to arbitration outcomes, it is possible that any review of an arbitration outcome would draw most participants in each sector to submit briefs, since they would be concerned that the interpretation of the standard that determined the outcome of the review would be applied to them in the future. Such a system of judicial review and precedents would likely add substantial complexity to the system, which is already perceived by participants as overly complex.

The potential benefits of such a system of arbitration opinions and expanded judicial review, with respect to both arbitration outcomes and development of the interpretation of the standard, should be weighed against the current system. In the current system, arbitration outcomes are perceived as final.[57] It is possible that an arbitrator could misinterpret the standard, in which case, the parties to the arbitration would be left to meet the terms of the outcome for that year.[58] The finality of the decision, however, would effectively move participants past negotiation of terms to performance of terms. If necessary, the participants could make efforts to remove the arbitrator from the pool of contract arbitrators in the following year. In the current system, the evolution of the interpretation of the arbitration standard is realized through the annual reports of the formula arbitrator and the exchange of information between the formula arbitrator and contract arbitrators. The formula arbitrator is required to consider the highest arbitrated outcome from the previous year; the contract arbitrator is required to consider the price formula generated by the formula arbitrator. In the long run, this annual process could provide some of the desired certainty and predictability with respect to interpretation of the arbitration standard. Unfortunately, this

[56] It is possible that the arbitration organizations (or the arbitrators) under the existing rule (including the amendment allowing procedural changes not inconsistent with regulation) could develop a process to provide some feedback to participants from a proceeding. Some participants in the system might favor such a process, as it could aid their understanding of arbitration outcomes. For consistency, it might be best to develop such a process through the arbitration organizations, after discussion of that process with both sectors and contract arbitrators.

[57] It is important to note that since no judicial challenges of arbitration outcomes have occurred, it is possible that a future challenge could bring into question the finality of arbitration outcomes depending on the outcome of that challenge.

[58] Whether the last best offer format of the arbitration is likely to exacerbate errors is not known.

feedback takes place only once annually, extending the time over which interpretation of the standard is likely to evolve and be clarified.[59]

Some participants have suggested that current regulations that prohibit release of arbitration outcomes indefinitely (intended to prevent anticompetitive behavior) is overly restrictive. They argue that making the outcomes public at the end of the season would increase predictability of the arbitration system. Moreover, these participants believe that the information creates no potential for anticompetitive behavior because the information is no longer current at that point. The information, however, could provide participants with information concerning the application of the standard that would increase understanding of arbitration outcomes in the future. Whether such a release could be used for anticompetitive purposes should be fully examined prior to changing the current limitation.

As an alternative to a system of written opinions and full scale review, some participants have suggested that each arbitrator could hold an informal conference with the parties to the proceeding at the end of the season to review the arbitration outcome and its basis. The meeting would be intended to lead to greater acceptance of the outcomes by participants. While the meetings could have the intended effect, the use of such a procedure should be approached with caution. There is some risk that meetings of this type could lead to less acceptance of findings, in the event that the arbitrator's findings are not consistent with the parties expectations or opinions. At the extreme, the meetings could lead dissatisfied parties to attempt appeals of findings. Because of the risks posed by these meetings, the development of these debriefing meetings should be carefully considered.

8.7.5 Additional Delivery Negotiation Issues

This section reviews issues related to price negotiations under the program that do not fall clearly into one of the above sections that should be considered in assessing whether the program is meeting expectations.

8.7.5.1 Delivery Timing

During the first few years of the program, participants have resolved delivery schedule issues without resorting to the arbitration system. This resolution of these issues has occurred despite Delivery timing (particularly in remote locations) and its effects on processing and fishing operations have caused concern among the fleet and processors. With the expansion of the fishing season from a few days or weeks to several months, timing of deliveries has become critical to realizing production efficiencies for both sectors. Positioning vessels and crews for harvesting and processing in the fisheries, who then may be required to sit idle can add substantially to the operational costs. To control production efficiency losses some processors have adopted negotiation positions that penalize deliveries outside of identified windows (or, from another perspective, reward harvesters for deliveries within those identified windows). Although in some instances these positions have been thought to be heavy-handed, they are a reflection of the reality that extending operations over a longer period of time can add substantially to costs, particularly in plants in the North region with little opportunity to process catch from non-crab fisheries during the crab season.[60] Coordination of deliveries is therefore critical to realizing benefits under the program. The organization of fishing in cooperatives has aided the sectors in addressing this issue by providing improved coordination among harvesters.

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[59] It is possible that a more structured process for submission of information to the formula arbitrator could increase certainty by improving feedback to the arbitrator from participants during the development of the annual report.

[60] Some harvesters delivering in the North region have expressed concern with delivery scheduling and waiting to offload. It is unclear the extent to which these issues are caused by the unanticipated circumstances in that region (i.e., the processor fire or ice conditions). As processing consolidates in the North region (as might be expected with the new exemption of custom processing from the processor share use caps), it is possible that scheduling complications in the North could be exacerbated.

Complicating delivery schedules is the dependence of harvesters and processors on other fisheries. Many of the large processors in the crab fisheries also have interests in the Bering Sea pollock fisheries. Since the roe season in that fishery coincides with the Bering Sea *C. opilio* fishery, processors have had to juggle production across the two fisheries. In some instances, crab fishermen have been less than satisfied with the priority given crab landings. On the other side, many crab fishermen also participate in Pacific cod fisheries. Recent high cod prices, together with the flexibility offered by the share allocations in the rationalization program, have induced increased participation of harvesters in the fall and winter Pacific cod fisheries. In some instances, processors have been frustrated by harvesters' reluctance to accommodate their delivery timing preferences due to conflicts with Pacific cod fishing.[61] These conflicts with other fisheries are likely to continue in the future as differences in delivery preferences persist.

Given the individual scheduling preferences of harvesters and processors, delivery timing issues are by necessity complex. Yet, if participants believe these issues require resolution by an arbitrator, it is likely that an arbitrator could reasonably consider the different interests and provide an arbitrated outcome. Likely, each of the last best offers would balance price against delivery preferences. Across the first few years of the program, participants have resolved delivery schedule issues without need to resort to the arbitration system.

In the first few years of the program, the challenge of achieving coordination has been exacerbated because of uncontrollable events. In all three years of the program, unanticipated ice conditions slowed fishing in the Bering Sea *C. opilio* fishery. Both sectors were burdened by the costs of standing by until conditions improved. In the second year, a fire that disabled one processing platform intended to operate in the North region caused substantial rescheduling of landings. Although the fire affected only a single platform, almost all processors were affected because of custom processing arrangements and attempts to move landings at other platforms in both the North and South to mitigate added operational costs which can be attributed to the disabled platform. These processing capacity problems were compounded by ice conditions in the fishery. Difficulties redistributing deliveries have been compounded by the rigidity of the regionalized Class A IFQ/IPQ matching requirements and the application of those limitations to such a large portion of the harvest share pool. Given the share matching structure, movement of a landing requires the share holders (the Class A IFQ holder and the IPQ holder) to find both available Class A IFQ and available IPQ with consistent regional designations or the harvester to use Class B IFQ. Given that the system requires full share matching in the preseason to accommodate the arbitration structure, redistributing deliveries using Class A IFQ must involve both holder of the substituting Class A IFQ and the holder of the substituting IPQ. Alternatively, Class B IFQ could be used to resolve these delivery coordination conflicts; however, use of Class B IFQ for this purpose could obviate their use by harvesters for additional negotiating leverage or to achieve operational efficiencies.

To help alleviate the complications arising from unforeseen circumstances preventing deliveries in a region, the Council has directed staff to prepare a discussion paper concerning possible options to address the need for "an exemption from the regional delivery requirements". This paper will discuss the use of civil contracts between harvesters, processors, and the designee of the community that would be affected by the waiver of a regional landing requirement. The civil contracts are intended to facilitate, clarify and streamline the process that may result in an exemption from regional landing requirements by NMFS. The process could require the holder of the IFQ for which the exemption is sought to submit an affidavit attesting to certain conditions under which the exemption is granted.

[61] Some harvesters also have questioned whether delays in completing crab negotiations were used strategically to allow other harvesters time to complete cod harvests prior to the fleet beginning crab fishing.

8.7.5.2 Harvester standdowns

One of the primary expectations of the Council in advancing the arbitration program was that early season harvester standdowns. Prior to implementation of the program, harvesters periodically organized fleetwide standdowns, delaying the start of fishing at the season opening, to induce processors to offer a higher price (NPFMC/NMFS, 2004b). By providing an arbitration option to harvesters it was thought that standdowns, which may result in costly delays in deliveries of products to markets, could be avoided. Under the program, harvesters that are members of the Inter-Cooperative Exchange have organized standdowns in a few instances. These standdowns have targeted select processors that the group believed had offered an inadequate minimum price to be paid at the time of landing for Class A IFQ deliveries. In these instances, harvesters maintained the right to arbitrate under the lengthy season approach; therefore, the delays in fishing complemented any negotiating leverage derived from the arbitration system. The harvesters focused the standdowns on the price paid at the time of landing (prior to any adjustments based on the first wholesale price received for the crab). This price is important to both sectors because it serves as a minimum price, which, under most pricing arrangements, is subject to an upward adjustment, depending on the price received by the processor when the crab is sold.

From the harvesters' perspective, the use of delays in fishing to induce processors to offer a higher minimum price serves a few purposes. By achieving a satisfactory minimum price, harvesters reach a level of confidence to begin fishing, even if all pricing issues are not resolved. This enables production from the fishery to begin for markets that are time sensitive, most importantly the winter red king crab market in Japan.[62] The higher minimum prices under this structure are also argued by harvesters to provide a signal to the market in general. Some participants believe that the first wholesale price often reflects the ex vessel price. They argue that improving ex vessel prices (even recognizing that those are minimum prices) sends a signal of the strength of the market to sellers. Whether the use of delays in fishing in this manner is detrimental depends on one's position in the fishery and whether these market effects actually occur. If first wholesale markets are boosted by the higher price at landing, it is possible that both sectors could benefit.

8.7.5.2.1 Pricing structure and its effects on incentives and risk

Under the pricing structure used by most participants in the fishery, harvesters receive a payment at landing that is the minimum ex vessel price that may be later supplemented based on the market price received for the crab production. This pricing arrangement is largely a function of the arbitration standard, which specifies that ex vessel prices should preserve the historic division of first wholesale revenues.[63] To maintain that division of revenues, harvesters receive a specific portion of the revenues from crab products sold into the market. This arrangement has a few affects on both the incentives and risk exposure of participants in the fisheries.

Prior to implementation of the program, participants negotiated in the preseason, usually arriving at a single dollar price that often applied to all landings in the fishery (NPFMC/NMFS, 2004b). Under this pricing structure, all risk shifted to the processor on receipt of the harvest; the processor bore all post delivery costs, including handling, shipping, and storage costs, and received all benefits arising from its production and market decisions. So, a processor's incentive to achieve success in the market was not distorted by any sharing of either the costs borne or benefits reaped from its decisions.

[62] Most harvesters realize that substantial delays in fishing could jeopardize the potential for their harvests to serve that market, which may limit their ability to leverage their position with fishing standdowns. Since these negotiations settle only the minimum price, it is unlikely that harvesters will standdown for a period that constrains a processors ability to serve high valued markets.

[63] The initial price formula developed for the golden king crab fisheries suggested this approach to pricing based on the arbitrators' interpretation of the arbitration standard (NEI, 2005).

Under the structure adopted for most landings currently, harvesters typically receive a minimum payment at delivery, which is supplemented by a share of first wholesale revenues in excess of a threshold amount based on that minimum price. The processor continues to bear all post delivery costs and any risk of loss for sales that generate revenues that would result in an ex vessel price below the minimum price based on the sharing agreement. Under the new pricing arrangements, the processors' risk may be less than under the former pricing structure. Under the former structure the processor bore all market risk after delivery. Under the new structure, the processors risk is reduced to the extent that the minimum price is discounted in comparison to the single dollar price that would have been accepted without the sharing arrangement; however, harvesters share the benefits in the event that the first wholesale revenues for sales results in a higher final price than the single dollar price that would have been accepted on delivery. This pricing structure may reduce the processor's market risk by shifting part of that risk to harvesters. The degree to which risk is shifted depends on two factors: the minimum price (and the difference between that minimum price and the single dollar price that would have been accepted with no revenue sharing) and the sharing of the revenues in excess of the threshold amount.

A concern among participants is that the current pricing arrangement may affect market decisions and benefits derived from the program fisheries. If prices are final on delivery, a processor's activities in the market are determined by its perception of the net benefit arising from those activities. Under the current arrangement, the processor will only weigh its share of the benefits against any post delivery costs. This can create an incentive for the processor to sell sooner, as it attempts to reduce its risk and maximize its expected gain. At the extreme, a processor could pre-sell all of its production (i.e., contract for its sale prior to the season) to remove all risk. Although this practice may seem inappropriate, in some circumstances it may benefit all parties (i.e., if market prices fall, a pre-season sale could bring the best price). Yet, the potential distortion of market incentives could be problematic in some circumstances.

Given that current market decisions arise out of a pricing structure in which benefits after delivery are shared among processors and harvesters, contract negotiations may be the best way to address the perceived problem. Parties could agree to a price that represents a lower portion of the realized first wholesale revenues in exchange for a higher minimum price on landing, shifting risk to the processor and firming up the processor's incentive to more aggressively pursue the best market opportunities. Alternatively, it is possible that parties with an established relationship could agree to greater market risk (or even cost) sharing with a lower minimum price. A relationship able to support this type of arrangement takes time to develop and may not develop in some instances. In addition, harvesters must feel confident that the processor will make appropriate efforts in pursuing market opportunities.[64]

As with other more subtle contractual issues, this issue could be overshadowed in arbitration proceedings, especially if the historical price formula is still disputed. Even if the issue is central to an arbitration proceeding, the arbitrator will need to weigh the different interests appropriately in making a decision (i.e., balance the costs of holding inventory against the potential higher price that could be obtained by waiting to sell the product). The degree of uncertainty concerning market conditions and expectations make this a particularly challenging issue for an arbitrator. In any case, the participants in the fishery and the Council should be attentive to this issue in assessing the success of the program in the long run. The issue, however, does not lend itself to a simple solution, given the division of revenues standard.

[64] It is important to recognize that the "historical division of revenues" standard is derived from average market success (or the average first wholesale price). While it is reasonable to insist that processors make legitimate efforts to pursue good markets, it is likely not reasonable to insist that processors pay a division based on the highest first wholesale price.

8.7.5.3 Complexity, Cooperatives, and the Inter-Cooperative Exchange

Among the greatest frustrations of participants (particularly harvesters) in the fisheries is the complexity of the program. Yet, the information needs for effective price negotiations in the fisheries would increase under any rationalization program, as participants resolve delivery and market timing issues, which are absent in limited entry derby fishery. Some participants perceive that the arbitration system adds to these information demands through an arbitration standard dependent on market pricing that accommodates the circumstances of delivery and participants. To address these complexities, many harvesters have organized their harvest activities in cooperatives, with much of the communications concerning fishing schedules being undertaken by the cooperative leadership.[65] In addition, most cooperative leaders participate in the Inter-Cooperative Exchange, which represents its members in the arbitration process. Information sharing is one of the primary roles served by these coordinated efforts. Participants in the Inter-Cooperative Exchange are permitted to exchange information obtained from negotiations with each individual processor. Consequently, the Inter-Cooperative Exchange is likely to have more complete information about competing processors' activities than the processor with whom it is negotiating. Costs of acquiring information and negotiation are also reduced by consolidation of this activity in a single entity.

The organization of activities in cooperatives and the Inter-Cooperative Exchange has engendered some controversy. Some harvesters are frustrated that these representative entities have distanced them from decision making in the fishery. These frustrations to some extent are self imposed, as harvesters have voluntarily elected to enter cooperatives and the Inter-Cooperative Exchange and agreed to the structure of those organizations. Direct relationships with processors would be the best way to overcome this distance. Processors share some of the harvest sector's frustration, as they find themselves negotiating with representatives of harvesters, as opposed to the harvesters themselves. As with harvesters, the most effective way for processors to overcome this distance is through better direct relationships with harvesters. Some fishermen were frustrated by strong positions taken by processors during first year negotiations. For example, some processors offered higher minimum prices in exchange for waivers of arbitration rights. Harvesters perceived these offers as unfair and processors have discontinued this practice. More direct harvester/processor relationships must be built on trust, which could take time to develop. The potential for these more direct relationships will also increase over time, as the effects of the arbitration process become more certain and predictable.

In the first three years of the program, it is not surprising that participants have adopted an adversarial approach in negotiations, as they attempt to influence the interpretation of the arbitration standard and the development of that process. Some harvesters and processors have suggested that the processor-by-processor negotiations have contributed to the confrontational nature of negotiations. Harvesters are frustrated that processors are reluctant to match high price offers, while processors are frustrated that harvesters believe a single price (equal to the highest price paid by any processor) is appropriate. The extended time available for negotiations and arbitration (particularly under the lengthy season approach) has likely compounded this frustration.

Notwithstanding any future efforts on the part of individual harvesters and processors to engage in more direct negotiation, cooperatives are likely to continue to have a large role in fleet coordination. Given the complexity of coordinating landings in the rationalized fishery (particularly the compounding of that complexity with A share/IPQ landing requirements), cooperatives are likely to be important for coordinating timing of fishing and landings. The need for the inter-cooperative exchange depends, in large part, on the extent to which participants develop relationships under which harvesters perceive little

[65] Some harvesters have expressed concern that delivery scheduling within the fleet is complicated by efforts of some harvesters (and cooperatives) to use scheduling to gain a competitive advantage over other members of the fleet.

advantage from their membership. In the near future, the entity seems very likely to continue in its current role. In the long run, it is possible that its role may evolve to primarily information sharing, with a less prominent role in negotiations. This evolution depends on the extent to which the arbitration system develops predictability and harvesters perceive that they are able to achieve reasonable success in direct negotiations with processors.

8.7.5.4 Costs of Cooperatives and Arbitration

There is also some concern that the costs of participation in the arbitration system program are excessive. Arbitration administration costs, cooperative membership fees, costs associated with the Inter-Cooperative Exchange, and arbitration organization fees all reduce net revenues from the program fisheries.

Over the first three years of the program, the annual costs of the arbitration organizations and arbitration administration have declined as the administrative aspects of the arbitration system become more established and consolidated. The arbitration organization for harvesters that have no processor affiliation (i.e., independent harvesters) charges each member $500.[66] Costs of membership for the processor and affiliated harvester organization are not known, but are likely to be greater on a per member basis because the sector has fewer share holders over which to disburse costs.

By regulation, arbitration administrative expenses are split evenly between the harvester and processing sectors. Processors advance the costs, recouping the harvesters' half of the expenses through an assessment on landings. In the first year of the program, harvesters were assessed a penny per pound to cover their half of the expenses (approximately $225,000), which combined with an equal contribution by processors resulted in approximately $450,500 to cover the arbitration administration costs. These charges greatly exceeded the the first year actual arbitration administration costs (approximately $162,000). The remainder was applied to the second year's arbitration administration costs; therefore, harvesters paid no fee for arbitration administrative expenses in that year. In the third year, a landing charge of one-half penny per pound was assessed on all harvests. This amount (together with excess funds from previous seasons) was adequate to cover the costs of the arbitration system in the third year. Considering the first year's experience, it is likely that administrative costs of the arbitration program will remain below one cent per pound (including processor contributions) in the future.[67]

Cooperative memberships have also increased costs for a large portion of the fleet. These groups are likely beneficial under any rationalization for coordination of harvest activity. Yet, a portion of the activities (and costs) of cooperatives in this program arise from the added need to match Class A IFQ to IPQ. Information concerning these costs are currently unavailable on the magnitude of these costs is available at this time.[68]

In addition, to harvest cooperatives, many harvesters bear indirect costs through their cooperative's memberships in the Inter-Cooperative Exchange. Many harvesters view participation in the Inter-Cooperative Exchange as necessary and beneficial at this time. Membership is reported to be stimulated by both the complexity of the arbitration system and the relatively large portion of the harvest allocation that is subject to the IPQ landing requirements and arbitration. Many fishermen believe that accountants

[66] Because of the different information needs of non-affiliated harvesters and the need to limit flow of that information to affiliated harvesters, separate arbitration organizations are mandated by regulation.

[67] Processors are not permitted to participate collectively in arbitration. Consequently, each processor must fully fund its own participation in arbitration.

[68] Economic data reports include information on cooperative costs. Once issues concerning the quality and confidentiality of data in those reports have been adequately addressed, information concerning cooperative costs may be available.

and lawyers are necessary to guide negotiations due to the complexity of the system and the expense of gathering market information needed for effective negotiation. The structure of the Inter-Cooperative Exchange has helped distribute its costs through general membership dues based on share holdings. Members are charged these dues regardless of whether their shares are subject to specific negotiation disputes or arbitration.[69] The exact level of these charges is confidential; however, considering the relatively small landing fees that fund the arbitration system's administration, it seems reasonable for harvesters to join the Inter-Cooperative Exchange (at its current membership level) if they believe the organization increases ex vessel prices by even a few cents per pound.

Notwithstanding that the inter-cooperative exchange may be a cost effective organization, concerns have been raised that some harvesters who are not members of the Inter-Cooperative Exchange engage "free ride"—approaching a processor independently after the Inter-Cooperative Exchange has completed negotiations, and obtaining its settled price, without paying for membership in the Inter-Cooperative Exchange. Processors may encourage this behavior, if they believe that inducing more harvesters to leave the Inter-Cooperative Exchange reduces its funding and effectiveness. Along the same lines, processors may wish to induce persons to leave the Inter-Cooperative Exchange if they believe that negotiations with the cooperative are contentious or harm their relationships with their fleets.

8.8 Pricing and terms of Class B IFQ and C share IFQ deliveries

Since 90 percent of the annual IFQ allocation is made up of A shares, the distribution of benefits between harvesters and processors under the rationalization program has in large part depended on the distribution of benefits from landings of Class A IFQ. In developing the program, however, the Council included 10 percent of the annual IFQ allocation as B shares, which may be landed with any processor. To ensure that the benefit of the B share allocation to independent harvesters is not diminished by vertical integration, B shares are issued only to QS holders to the extent of their independence of processor affiliation.[70]

In the first year of the program, harvesters had some difficulty adjusting to the IPQ landing requirements on Class A IFQ. These complications led many harvesters to use Class B IFQ to address logistical complications arising because of the landing limitations on Class A IFQ.[71] Since that time, many harvesters have adapted to the program and used their cooperative associations to pool Class B IFQ to be marketed separately from Class A IFQ. As a result, it is believed that most harvesters have been able to develop some competition for their Class B IFQ landings.

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[69] Given the negotiation strategy of using one processor's offer to induce other processors to match the price, this distribution of charges is generally perceived as fair and beneficial by Inter-Cooperative Exchange members. The incentive to arbitrate, in turn, is likely affected if costs are shared by persons who are not party to the arbitration. To the extent that success in arbitration boosts prices from other processors (either through the feedback of the price formula in the following year or through the cooperative's reputation for successful negotiation), non-parties who are members of the Inter-Cooperative Exchange likely benefit from those proceedings.

[70] Affiliation under the regulation exists in the case of either functional control of the QS holder or common ownership in excess of 10 percent (50 CFR 680.2). QS holders receive Class A IFQ in an amount equal to the IPQ allocation of their affiliates, with any remainder subject to the Class A IFQ/Class B IFQ split.

[71] In some cases, harvesters landed small amounts of Class B IFQ with deliveries of Class A IFQ, effectively rounding out the trip. These harvesters believed that it is more efficient to fully harvest and deliver their Class A IFQ allocations with a minor overage that is covered by Class B IFQ, rather than risk an minor underage that might require an additional delivery to a processor. Harvesters clearly gain some efficiencies from this practice, but it does limit their ability to competitively market Class B IFQ landings. In other cases, harvesters used almost exclusively Class B IFQ to cover deadloss. Both of these practices are believed to have declined since the first year of the program.

Data distinguishing ex vessel prices by IFQ type are not currently available.[72] Anecdotal evidence, however, suggests that harvesters have been able to gain a premium on landings of Class B and C share IFQ catch over landings Class A IFQ catch. These premiums are said to range from approximately 5 cents to approximately 20 cents, with variation across fisheries, processors, and time (including within seasons).[73] Premiums are thought to have been at a low during the first year of the program, when crab product markets were particularly weak. Processors, concerned about their weak position in the market, were generally less willing to buy crab to add to existing inventories. In addition, harvesters becoming familiar with the program were likely less well-prepared to coordinate activities to generate competition for Class B and C share IFQ catches. In the second and third years, markets have improved and harvesters are said to have become better organized, stimulating more competition for Class B and C share IFQ landings. The magnitude of premiums are said to vary across processors and through the seasons. In some cases, the premiums are thought to be raised when a processor has identified a specific market for its product. Although premiums are believed to increase with the value of the crab species—Bristol Bay red king crab receiving the greatest premium and Bering Sea *C. opilio* receiving the smallest—exceptions exist with processor market opportunities. The magnitude of the premium also depends on the price for Class A IFQ catches. If those prices change in the future (with changes in the price formula or its application), the magnitude of the premium on Class B and C share IFQ will also change.

In addition to anecdotal price information, several sources of evidence suggest that harvesters have developed competition for Class B and C share IFQ landings. In many cases, harvesters have been able to make deliveries of crab harvested exclusively with Class B and C share IFQ (see Table 8-7). The data suggest that harvesters have increasingly coordinated the harvest of allocations to allow deliveries of Class B and C share IFQ harvests independent of harvests of Class A IFQ. In the third year of the program, in excess of 60 percent of Class B and C share IFQ harvests were delivered independent of Class A IFQ harvests. In addition, the size of these deliveries has increased substantially since the first year of the program, suggesting that harvesters are achieving greater efficiency in the harvest of these shares. The growth in the percentage of the Class B and C share IFQ pools that are delivered separately from Class A IFQ landings suggest that harvesters have been able to negotiate separate delivery terms for these shares. Although these deliveries suggest that competition has been generated for these landings, other data may also suggest competition.

[72] The only currently available data showing price by share type are elandings data collected by NOAA Fisheries. These data are collected at the time of landing and do not include any post-landing adjustments or bonuses, which are reported to be an important part of pricing under current practices. Since the first year of the program, Economic Data Reports have included ex vessel price by IFQ Class, but those data are currently undergoing a review and are unavailable for use at this time.

[73] The difference between ex vessel prices for Class A IFQ landings and Class B and C share IFQ landings are likely the best available information for valuing IPQ and PQS. The value of an annual IPQ pound is the difference between the Class A IFQ/IPQ landings price and Class B and C share IFQ landings price. The value of PQS is the discounted stream of savings on the yielded IPQ ex vessel price payments as compared to price payments for the same quantity of Class B or C share IFQ landings. As with QS, PQS values may be discounted from these levels to accommodate TAC and market uncertainties.

Table 8-7 Deliveries of crab harvested exclusively with Class B and C share IFQ (2005-2006 through 2007-2008).

Fishery	Season	Total number of deliveries	Total pounds landed	Total B/C IFQ** landed	Deliveries of B/C IFQ exclusively					
					Number of deliveries	Percent of deliveries	Total pounds delivered	Percent of B/C IFQ pool	Average delivery	Median delivery
Bristol Bay red king crab	2005-2006	228	15,725,723	1,968,154	25	11.0	593,484	30.2	23,739	15,282
	2006-2007	168	13,248,036	1,663,571	22	13.1	488,638	29.4	22,211	6,109
	2007-2008	219	17,497,740	2,220,327	33	15.1	1,360,461	61.3	41,226	38,209
Bering Sea *C. opilio*	2005-2006	257	30,233,056	3,830,350	19	7.4	1,202,393	31.4	63,284	31,301
	2006-2007	228	29,710,449	3,775,748	33	14.5	2,345,567	62.1	71,078	57,299
	2007-2008	392	51,627,697	6,602,252	59	15.1	4,693,859	71.1	79,557	69,718
Eastern Aleutian Islands golden king crab	2005-2006	28	2,442,550	308,474	2	7.1	*	*	*	
	2006-2007	24	2,565,435	320,223	2	8.3	*	*	*	*
	2007-2008	27	2,564,271	322,581	1	3.7	*	*	*	*
Eastern Bering Sea *C. bairdi*	2006-2007	51	1,214,997	129,288	8	15.7	3,010	2.3	376	102
	2007-2008	50	1,365,796	179,568	7	14.0	145,065	80.8	20,724	18,360
Western Aleutian Islands golden king crab	2005-2006	19	1,266,167	163,226	2	10.5	*	*	*	*
	2006-2007	9	880,286	162,106	0	0.0	0	0.0	0	0
	2007-2008	16	1,126,051	163,214	3	18.8	48,066	29.4	16,022	11,851
Western Bering Sea *C. bairdi*	2005-2006	68	759,073	65,861	17	25.0	12,148	18.4	715	311
	2006-2007	55	611,417	62,597	12	21.8	6,556	10.5	546	38
	2007-2008	43	457,193	36,653	5	11.6	24,276	66.2	4,855	7,278

Source: RAM IFQ landings database.
* withheld for confidentiality.
** includes Class B IFQ and C share IFQ landings.

Examining buyers of Class B and C share IFQ catches and the extent to which buyers of those catches purchase larger portions of the Class B and C share IFQ catches than Class A IFQ catches suggest that some processors are aggressively competing for landings of Class B and C share IFQ catch (see Table 8-8). In the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries, more persons have purchased Class B and C share IFQ catches than Class A IFQ catches. This difference suggests both competition for Class B and C share IFQ landing and the entry to the fisheries of persons through purchases of Class B and C share IFQ landings. Examining processors who purchased a greater share of the Class B and C share IFQ landings than the Class A IFQ landings also suggests that a few buyers have competed for these landings. In both the Bristol Bay red king crab and the Bering Sea *C. opilio* fisheries, a large portion of the Class B and C share IFQ catches have been purchased by a few buyers who have purchased a small share of the Class A IFQ catches. In all cases, the poundage of Class A IFQ catches purchased by these buyers has exceeded their purchases of Class A IFQ catches. This differential in the distribution of landings suggests that harvesters have been able to stimulate competition for these Class B and C share IFQ catches.

Table 8-8 Purchases of IFQ landings by share type (2005-2006 through 2007-2008).

Fishery	Season	Class A IFQ landings		B/C* IFQ landings		Buyers purchasing a greater percent of B/C IFQ pool than of the Class A pool				
		Number of buyers	Total pounds landed	Number of buyers	Total pounds landed	Number of buyers	Percent of Class A IFQ pool purchased	Percent of B/C IFQ pool purchased	Pounds of Class A IFQ landings purchased	Pounds of B/C IFQ landings purchased
Bristol Bay red king crab	2005 - 2006	9	13,757,569	10	1,968,154	4	18.2	62.3	2,505,097	1,226,332
	2006 - 2007	10	11,584,465	12	1,661,730	5	27.6	54.3	3,200,529	902,304
	2007 - 2008	13	15,277,413	15	2,220,327	6	18.6	86.8	2,838,886	1,928,226
Bering Sea *C. opilio*	2005 - 2006	9	26,402,706	10	3,830,350	5	32.5	59.6	8,579,616	2,281,550
	2006 - 2007	12	25,934,701	14	3,772,320	5	13.3	73.8	3,454,996	2,782,536
	2007 - 2008	11	45,025,445	15	6,602,252	7	13.1	71.2	5,914,751	4,699,000

Source: RAM IFQ database.
* includes Class B IFQ and C share IFQ.
Data for other fisheries cannot be shown because of confidentiality protections.

In the smaller fisheries, data concerning the differences in purchases of Class B and C share IFQ catches and Class A IFQ catches cannot be revealed because of confidentiality protections; however, the number of buyers of catches by share type can be revealed. In only the Eastern Bering Sea *C. bairdi* fishery have more persons purchased Class B or C share IFQ catches than Class A IFQ catches. In all other fisheries, the same number of persons have purchased catches from these two different share types. The absence of

buyers of only Class B and C share IFQ catches does not mean that harvesters have not generated competition for these landings, but raises the question of whether persons who do not have IPQ will have the ability to enter these fisheries. Given the relatively small TACs in these fisheries, these fisheries are less likely to support processor entry in any case. In all fisheries, only a few buyers have purchased a greater percentage of the Class B and C share IFQ catches than Class A IFQ catches. These numbers suggest that to some extent harvesters have directed landings to persons willing to pay the most for those catches in these fisheries. The extent of competition cannot be discerned.

Table 8-9 Buyers of catches by share type and fishery (2005-2006 through 2007 2008)

Fishery	Season	Number of buyers of landings of		Number of buyers buying a lesser percent of the Class A IFQ landings than B/C IFQ landings
		Class A IFQ	B/C* IFQ	
Eastern Aleutian Islands golden king crab	2005 - 2006	4	4	2
	2006 - 2007	5	5	1
	2007 - 2008	3	3	1
Eastern Bering Sea *C. bairdi*	2006 - 2007	7	8	3
	2007 - 2008	6	7	2
Western Aleutian Islands golden king crab	2005 - 2006	4	4	2
	2006 - 2007	4	4	1
	2007 - 2008	3	3	1
Western Bering Sea *C. bairdi*	2005 - 2006	7	7	4
	2006 - 2007	8	8	4
	2007 - 2008	7	7	2

Source: RAM IFQ database.
* includes Class B IFQ and C share IFQ.

In addition to data shortcomings, several other factors complicate any consideration of the degree to which the 10 percent Class B IFQ and 3 percent C share IFQ allocations create a competitive market. In considering the extent of competition for Class B and C share IFQ landings, it is important to recognize that the predominance of Class A IFQ/IPQ landings in the fisheries. As should be anticipated, with a large majority of the catch subject to the IPQ landing limitations (and potentially the arbitration system), it is possible that available markets for landings of Class B and C share IFQ are limited. Three factors could contribute to this reduction in competition: choices of IFQ holders to use Class B and C share IFQ to achieve harvester production efficiencies (instead of attempting to market those IFQ competitively), any loss of incentive to pursue product market opportunities arising from the Class A IFQ/IPQ allocations and arbitration system, and any disincentive for entry arising from the magnitude of the Class A IFQ/IPQ allocation.

Although less prevalent in the second and third years of the program, some harvesters are believed to have elected to use Class B and C share IFQ to improve harvesting production efficiencies, making those IFQ unavailable for competitive marketing. Driven by IFQ holders decisions, this use of shares will limit the extent of competition for landings of Class B and C share IFQ. Harvesters may realize efficiencies in harvesting by using Class B and C IFQ harvests to supplement a partial delivery of Class A IFQ harvests, reducing the need for an additional trip to harvest (and independently market) the Class B and C IFQ catch. Also, when making Class A IFQ harvests, some harvesters avoid underages that would require an additional trip, knowing that Class B and C shares can be used to cover any Class A IFQ harvest overage. These uses of Class B and C shares clearly benefit harvesters, but detract from the use of Class B and C

shares to pursue competitive markets; and harvesters adopting this practice may be better off, particularly with Class A IFQ landings bringing prices relatively close to Class B and C share landings.

The Class A IFQ/IPQ share allocations effects on processor entry could also reduce competition for Class B and C share IFQ landings. To enter a fishery at all a processor likely must purchase some minimum level of landings. With the large share of the TAC committed to IPQ holders as Class A IFQ, it is possible that some possible entrants view the Class B and C share IFQ pool as too small to support their entry. In other words, although some processors have entered the fishery through purchase of Class B and C share IFQ landings, that pool of landings may be too small to support entry by all processors that wish to enter. So, it is possible that Class B and C share IFQ ex vessel prices are somewhat dampened by the election of potential processors not to enter the market for these landings. It is important to consider that this reduction in entry and competition is an expected effect that arises from the Class A IFQ/IPQ allocations. The Class A IFQ/IPQ pool is intended to protect investments of existing processors, in a manner similar to the protection of harvester investments by IFQ. In addition, entry to processing in the crab fisheries is challenging in any case and is likely limited by the nature of the fisheries. The remote processing locations and limited TACs require that a processor have processing activities in other fisheries (including groundfish fisheries) to support processing investments. So, reductions in competition for Class B and C share IFQ landings arise not only from the Class A IFQ allocations in the fishery, but also from the characteristics of the fisheries themselves.

Competition for Class B and C share IFQ landings may also be inhibited to the extent that the allocations under the program inhibit product developments. A few competing factors shed light on whether the program's share allocations have inhibited product developments. In the second and third years of the program, one processor that holds no PQS has been active in the processing sector through the purchase of Class B and C share IFQ landings and has leased IPQ. This processor has developed relatively high quality red and golden king products, choosing to separate legs during primary production, rather than producing bulk packs of sections that are later separated during secondary processing. The development of these products exclusively by a processor without PQS could be interpreted to suggest that PQS may be inhibiting product development. On the other hand, these production developments might be most efficiently adopted by an entering processor. The advantage of an entering processor may be greatest when the market is relatively small. The entering processor may be able to have all of its production go to this small market, whereas an existing processor with larger production amounts may need to maintain two lines of production to adapt to a small niche market. Juggling production and personnel across two lines by an existing processor could increase production costs. An entering processor may be able to configure its production line from scratch. Modification of existing lines may be more costly and may not worth the tradeoff for a larger processor with an existing line and larger scale production, particularly for development of a small niche market. In addition, examining world markets should also shed light on whether the product developments are lagging in the program fisheries. If products are being developed elsewhere that are neglected here, the share allocations under the program may be creating a disincentive for innovation. To date, no evidence of such a lag has been suggested.

The potential for institutional disincentives to limit the motivation for PQS holders to aggressively pursue new markets suggests that continued attention should be given to the prospect of market developments in applying the arbitration standard. As such, it important that both formula arbitrators and contract arbitrators look beyond production in program fisheries to fisheries throughout the world when considering whether processors are making reasonable efforts to pursue available market opportunities. When undertaking this consideration, arbitrators should consider the potential for the development of markets, as well as gauging reasonable efforts, expenditures, and investments to pursue those markets given a processor's existing production and PQS holdings. Costly revamping of production might be an unreasonable expectation for potential markets that may not succeed. On the other hand, processors might be expected to make minor and experimental production changes that could be used to explore the

potential for new products and markets. In applying the arbitration standard, it should be expected that a processor recoups its additional costs for these production changes prior to being expected to share any added production revenues with harvesters. It should be noted that if a harvester bore additional harvest costs to enable the processor to diversify its production, the harvester should be expected to recoup these costs prior to the processor realizing added gains from the production.

9 ENTRY OPPORTUNITIES

This section examines entry opportunities to the crab fisheries and how those opportunities changed under the rationalization program. The section begins with a brief discussion of harvester entry opportunities under the License Limitation Program, which preceded the rationalization program, which is followed by a discussion of entry opportunities under the rationalization program. The section then goes on to discuss entry to the processing sector under the LLP and the rationalization program.

9.1 Entry to the harvest sector under the LLP

Entry into the fisheries under the LLP occurred primarily in two different ways. Some persons with access to considerable capital were able to enter through the purchase of an LLP license and vessel. Since the fisheries were greatly overcapitalized, some lenders were reluctant to extend financing for entry to the fisheries. In addition, historically low GHLs in the early 2000s, made investments to the fishery less attractive. The nature of the fisheries also increase the risk associated with entry. In brief derby seasons of a few days or weeks, poor catch rates and vessel breakdowns could result in no or little revenues for the season. New entrants dependent on revenues from the fisheries for their vessel payments faced greater risks under this derby management as they competed with others for a share of the GHL.

In the years leading up to the rationalization program, the cost of full scale entry of this sort was generally dependent on the history associated with the license and vessel purchase. Most persons anticipated the history-based harvest allocations under the rationalization program (and under the buyback), so prices of licenses and vessels were typically dependent on catch histories. Few transactions occurred in the years leading up to the program, as many persons sought to retain holdings until the rationalization program was implemented (see Table 9-1).

Table 9-1 Transfers of crab LLP licenses (2002-2004).

Year	Number of transfers							
	Total	Bristol Bay red king crab	Bering Sea *C. opilio* and *C. bairdi*	Pribilof red and blue king crab	St. Matthew Island blue king crab	Aleutian Island red king crab	Aleutian Island golden king crab	Catcher processor
2002	1	1	1	0	1	0	0	0
2003	3	3	3	1	0	1	2	2
2004	1	1	0	0	0	0	0	0

Source: NMFS RAM LLP license file.
Includes only transfers with change of named license holder.

An alternative method of entry was open to some captains and crew in the fisheries. The typical progression in the fisheries was for crewmembers to worked their way up to become skippers. With most vessels employing approximately 5 deck crew, the opportunity for advancement to skipper was limited. Some long term captains who sought to enter the fisheries were able to convince the vessel owner/license holders they worked for to sell them an interest in the operation. Persons entering the fishery in this

manner, typically had strong long term relationships with their employers (i.e., the vessel owner), sharing in the oversight of annual maintenance and upkeep of the vessel. This progression from skipper to vessel owner was also available only to a few skippers, who had strong relationships with a vessel owner who was interested in sharing an interest in the vessel. Some vessel owners were unwilling to accept investments in the years leading up to the rationalization program, anticipating history based allocations under the program. As a consequence of the distribution of harvest privileges and stock conditions in the fisheries, entry opportunities were limited under the LLP.

9.2 Entry to the harvest sector under the rationalization program

Since the crab fisheries were greatly overcapitalized on implementation of the rationalization program, any absence of entry to the fisheries in the first few years of the program is fully expected. The restructuring of harvest privileges under the rationalization program has changed the nature of entry opportunities substantially. Entry can occur through the purchase of harvesting QS without ownership of an interest in a vessel or its supporting license. Annual IFQs can then be fished liberally through leasing arrangements. Since QS are divisible, gradual entry into the program fisheries is permitted. The cost of entry is determined by QS prices, which depend on TACs, crab markets and other factors.

QS can be purchased directly from QS owners or through brokers. The market for crab QS has tended to be less fluid than that for sablefish or halibut QS because crab QS holdings are more concentrated and the relatively new market is continuing to develop. Since much of the share concentration resulted from the initial allocation of QS, the thin market is largely a reflection of the historic distribution of interests in the fisheries. The more industrial nature of the fishery, with larger investments in vessels, has also contributed to concentration of interests. With this concentration, few transactions take place and most transactions for owner QS tend to be large, requiring substantial access to capital (see Table 9-2). The average transaction for owner QS (based on available price information and the average transfer size) exceeded $300,000 in the Bering Sea *C. opilio* fishery in the first two years of the program. At the extreme, in the second year of the program, the average owner QS transaction in the Bristol Bay red king crab was slightly less than $1 million. Although these large QS purchases are subject to risks associated with TAC fluctuations, they have substantially less risk than the purchase of licenses and vessels under the LLP.

Full scale entry requires ownership of a vessel in addition to this quota acquisition. Yet, cooperative harvest of IFQ and leasing create an opportunity for a more gradual entry without a vessel. A person could lease IFQ yielded by their IFQ over a period of years, then acquire a vessel to achieve full scale entry. The separation of accessible harvest privileges from vessel ownership also allow persons to enter by purchasing a vessel without QS. Through the leasing market a person able to run an effective vessel operation may be able to enter the fishery without substantial QS holdings. As under the LLP, opportunities for full scale entry opportunities to the fisheries are limited and remain costly. Yet, the divisibility of interests in the rationalization program allows more paths of entry and may reduce risk depending on the method of entry chosen.

Table 9-2 QS transfers and estimated transfer costs (2005-2006 to 2007-2008)

Crab Fishing Year	Fishery	Sector	Price per QS unit*	Total QS units transferred**	Number of transfers	Average QS units transferred	Average cost of transfer ($)
2005 - 2006	Bristol Bay red king crab	CVC	0.72	1,434,287	24	59,762	43,029
		CVO	0.56	15,337,188	24	639,050	357,868
	Bering Sea *C. opilio*	CVC	0.24	3,082,755	30	102,759	24,662
		CVO	0.39	40,969,076	44	931,115	363,135
	Bering Sea *C. bairdi*	CVC	0.19	563,706	18	31,317	5,950
		CVO	0.29	11,870,491	20	593,525	172,122
2006 - 2007	Bristol Bay red king crab	CVC	0.68	1,237,670	27	45,840	31,171
		CVO	1.2	28,744,461	35	821,270	985,524
	Bering Sea *C. opilio*	CVC	0.19	3,049,661	36	84,713	16,095
		CVO	0.26	60,901,248	50	1,218,025	316,686
	Bering Sea *C. bairdi*	CVC	0.11	181,990	4	45,498	5,005
	Eastern Bering Sea *C. bairdi*	CVC	0.05	491,486	20	24,574	1,229
		CVO	0.07	17,195,877	33	521,087	36,476
	St. Matthew Island blue king crab	CVC	0.17	79,301	11	7,209	1,226
	Western Bering Sea *C. bairdi*	CVC	0.03	491,486	20	24,574	737
		CVO	0.08	17,195,877	32	537,371	42,990
2007 - 2008	Bristol Bay red king crab	CVO	0.94	4,734,563	16	295,910	278,156
	Bering Sea *C. opilio*	CVO	0.27	18,434,596	23	801,504	216,406
	Eastern Bering Sea C. bairdi	CVO	0.06	2,886,182	9	320,687	19,241

Notes: Includes only transfers through November of 2007. All transfers of Bering Sea *C. bairdi* occurred prior to division of those allocations into two areas and therefore include ransfers of both Eastern and Western Bering Sea *C.bairdi* . The crab fishing year begins on July 1 and ends on June 30. A portion of these transfers included accompanying IFQ for the current season.
Source: Restricted Access Management, NOAA Fisheries.
* Based on transfers for which price information are available and may be released.
** Includes all transfers in this season of this fishery and sector.

While large scale entry is challenging, C share QS have opened new avenues for small scale entry by eligible crew. C share QS typically sell for less than owner QS, in part, because of the active participant requirements applicable to C shares. The relatively low caps on C share QS holdings and the small percentage of the total harvest share allocation made up of C shares, limit the ability of persons to consolidate large C share QS holdings. As a result, C shares transfers must be of relatively small amounts of QS, which are likely to be more affordable, particularly to crew, who may have less access to capital. Available transfer information from the first three years of the program suggests that the average transfer in all fisheries is valued at less than $50,000. Notwithstanding these relatively small scale transactions, some crew report that access to capital remains problematic, as the federal loan program has yet to be launched.

One way to examine entry to the harvest sector is to estimate the acquisition of QS by persons who did not receive an initial allocation. Two types of entrants could be considered: entrants who acquire shares in a fishery in which they hold no shares and entrants who acquire shares who hold shares in none of the program fisheries. Considering owner QS first, data suggest that entrants of either type have acquired approximately 10 percent of the owner QS in most fisheries (see Table 9-3). As many as 17 new holders, who did not receive an initial allocation in any fishery have acquired QS in the first three years of the program. Yet, given that many persons hold owner QS indirectly, through corporations or partnerships, it is likely that a portion of this suggested entry is simply restructuring of holdings of persons who received allocations.

Table 9-3 New holders of owner QS since the initial allocation

Fishery	New QS holder in the fishery			New QS holder in all fisheries		
	Number of entrants	QS units acquired	Percent of QS pool acquired	Number of entrants	QS units acquired	Percent of QS pool acquired
Bristol Bay red king crab	27	47,822,236	12.3	17	37,472,319	9.6
Bering Sea *C. opilio*	27	101,712,035	10.4	17	84,322,232	8.7
Eastern Aleutian Islands golden king crab	1	1,021,237	10.5	1	1,021,237	10.5
Eastern Bering Sea *C. bairdi*	17	18,449,875	9.5	17	18,449,875	9.5
Pribililof red and blue king crab	10	2,806,769	9.6	4	2,215,703	7.6
St. Matthew Island blue king crab	17	3,048,882	10.4	8	1,988,321	6.8
Western Aleutian Islands golden king crab	2	879,760	2.3	2	879,760	2.3
Western Aleutian Islands red king crab	6	9,054,708	15.6	3	8,822,797	15.2
Western Bering Sea *C. bairdi*	17	18,482,166	9.5	17	18,482,166	9.5

Source: RAM QS database.

Since C share QS may only be held by individuals data may better illustrate the extent of new entry (see Table 9-4). Yet, since some entering C share holders may hold owner QS indirectly, estimates of entry may be misleading. Although C shares improve the opportunity for entry, few persons have entered the fisheries through C share acquisition since the initial allocation. The few persons that have entered the fisheries have acquired relatively large holdings of C shares, with the average entrant in most fisheries exceeding one-half of one percent of the C share QS pool. In the Western Aleutian Islands golden king crab fishery, the one new entrant acquired in excess of 5 percent of the C share QS pool. Given that only a few vessels participate in that fishery, the large share acquisition is not surprising.

Table 9-4 New holders of C share QS since the initial allocation

Fishery	New C share QS holder in the fishery			New C share QS holder in all fisheries		
	Number of entrants	QS units acquired	Percent of QS pool acquired	Number of entrants	QS units acquired	Percent of QS pool acquired
Bristol Bay red king crab	14	1,077,535	9.0	5	315,487	2.6
Bering Sea *C. opilio*	11	2,303,296	7.6	5	1,127,003	3.7
Eastern Aleutian Islands golden king crab	0	0	0.0	0	0	0.0
Eastern Bering Sea *C. bairdi*	6	153,660	2.6	6	153,660	2.6
Pribililof red and blue king crab	1	27,116	3.0	0	0	0.0
St. Matthew Island blue king crab	8	108,660	12.1	1	13,137	1.5
Western Aleutian Islands golden king crab	1	75,643	6.3	0	0	0.0
Western Aleutian Islands red king crab	0	0	0.0	0	0	0.0
Western Bering Sea *C. bairdi*	6	153,660	2.6	6	153,660	2.6

Source: RAM QS database.

9.3 Entry to the processing sector

Unlike the harvest sector, entry to the processing sector was not limited under the LLP. As a result, processor participation fluctuated greatly in the years leading up to the implementation of the rationalization program. In the early 1990s more than 50 processors operated in the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries. Under lower GHLs in the late 1990s and early 2000s, processing participation dropped to fewer than 20 plants in those fisheries.

Both prior to and since implementation of the rationalization program, entry to the processing sector as only a crab processor was very challenging. Processors that also process groundfish are able to keep plants operating for a greater period of time, spreading capital costs across larger scale production. Consequently, entry to the processing sector is affected by a processor's potential to enter groundfish fisheries and secure a portion of that production. With groundfish processing fully capitalized, entry

opportunities in the crab processing sector are also limited. In addition, to the extent that other management programs (such as the AFA Bering Sea pollock cooperative program, Bering Sea and Aleutian Island cod sector allocations, and the Amendment 80 cooperative program) directly or indirectly limit the ability of processors to enter those fisheries, entry to the crab fisheries is more constrained, regardless of the limits on entry created by the crab management program.

Share holdings data suggest that a few processors have entered the fisheries, since implementation of the program. In some instances, this suggested entry has arisen from simple changes in the structure of holdings. In at least one case, however, a substantial interest has been acquired by a new entrant. Although that entrant has not processed landings directly, the lease of those shares has supported processing by an entering processing platform.

Table 9-5 New holders of PQS since the initial allocation

Fishery	New PQS holder in the fishery			New PQS holder in all fisheries		
	Number of entrants	QS units acquired	Percent of QS pool acquired	Number of entrants	QS units acquired	Percent of QS pool acquired
Bristol Bay red king crab	3	53,867,976	14.1	2	51,756,662	13.6
Bering Sea *C. opilio*	4	86,194,722	8.6	2	84,798,627	8.5
Eastern Aleutian Islands golden king crab	3	1,365,308	25.2	2	1,272,608	23.4
Eastern Bering Sea *C. bairdi*	1	3,676,006	1.8	1	3,676,006	1.8
Pribililof red and blue king crab	1	4,155,008	13.9	0	0	0.0
St. Matthew Island blue king crab	2	2,397,581	8.0	1	12,955	0.0
Western Aleutian Islands golden king crab	2	2,269,884	8.1	1	2,165,711	7.8
Western Aleutian Islands red king crab	2	19,415,902	32.3	1	3,248,567	5.4
Western Bering Sea *C. bairdi*	1	3,676,006	1.8	1	3,676,006	1.8

Source: RAM PQS database.

In addition to entry as PQS or IPQ holders, processors may also enter the fishery through purchases of landings of Class B or C share IFQ crab. Entry as a processor acquiring IPQ annually or purchasing landings of Class B or C share IFQ crab can reduce risk, since acquisitions are annual (representing no longer term investment as PQS). These annual purchases will not subject the new entrant to risks such as annual TAC changes or long term changes in product markets.

In a few instances, processors are believed to have entered the fishery through purchases of Class B and C share IFQ landings (see Table 8-9). As expected by the small portion of the IFQ pool composed of these shares, entry has been relatively small scale. In these cases, the entering processors have been active in other fisheries historically, supplementing those activities with processing of crab. The potential of any of these entrants to expand operations depends on their willingness to continue to compete for Class B and C share IFQ landings and to acquire PQS to sustain that participation.

10 MONITORING AND ENFORCEMENT

The system of share-based fishing established by the program includes several fishing privileges and obligations that must be oversee by NOAA Fisheries managers and enforcement. Several aspects of participation in the program must be monitored to ensure compliance with the regulatory requirements. These requirements present extensive and unique challenges to NOAA Fisheries Office of Law Enforcement.

Several sets of accounts authorizing fishing and processing activities must be monitored. Using plant observers and electronic reporting, landings can be attributed to the appropriate accounts. To date, only a few, minor overages have occurred under the program (see Table 4-4). Overall, managers and enforcement believe that fishing and processing activities are in compliance with the allocation of privileges for those activities as intended by the program.

Beyond oversight of fishing and processing activities, several other aspects of the program and its allocations must be monitored by NOAA Fisheries. Limits are imposed on harvester share holdings, the amount of shares that may harvested by a single vessel, and the amount of shares that may be held by or processed by a processor. Overseeing these limitations can pose several challenges to managers and enforcement personnel. Correctly applying limits on owner QS and PQS requires full knowledge of all indirect holdings of those shares. Ownership of interests in the crab fisheries is often indirect with many persons holding overlapping interests in a variety of different fisheries. These overlapping indirect interests create a complex web that must be fully assessed to ensure compliance with limits on share holdings. Similarly, to fully ensure compliance with limits on processing activity and processing share holdings require that use of shares and plant level processing activity be fully monitored. With the prevalence of custom processing in the fisheries, full monitoring requires tracking of production, as well as knowledge of indirect ownership of both shares and plants. These interests in share holdings and use (which includes ownership or processed products), and processing plants require a multifaceted approach to monitoring use caps in the processing sector. Monitoring of activities and share holdings in a relatively static environment is extremely challenging; periodic changes in interests of persons, adds to the task of maintaining currency in the monitoring of accounts requiring ever greater time and staffing investments. Although the limited number of participants in the crab fisheries helps reduce the burden of these tasks, monitoring of the different limitations on ownership interests is a formidable challenge for NOAA Fisheries. C share IFQ active participation requirements also present a monitoring challenge. These requirements are monitored through a system of affidavits. Verification of affidavits could be problematic, in the event that assertions in those affidavits are questioned.

The program also contains spatial limitations on landing of catch and processing. Current record keeping requirement for floating processors may not adequately track locations for purposes of ensuring complete monitoring of these requirements. Regional processing requirements limit processing of certain IPQ to designated geographic areas. On a finer scale, community rights of first refusal are triggered by the use of IPQ outside the community protected by that right. Although no controversies or disputes have arisen over whether processing of IPQ has complied with regional requirements or has triggered the right of first refusal, no formal record of processing location is made that could be used to establish the location of processing. In the absence of these records, monitoring compliance with the requirements is more challenging.

Some aspects of the program have effectively created systems of self monitoring that have relieved monitoring and enforcement burdens. The arbitration system is administered through a series of contracts that are subject to civil enforcement by the participants in that system. Participants and their representatives are required to comply with application, record keeping, and record submission requirements under the arbitration system. Despite the complexity of the system, to date, participants have generally complied with these various requirements, allowing those aspects of the program to function as intended. The system of harvest cooperatives has also reduced monitoring burdens by consolidating annual IFQ allocations into fewer accounts, effectively shifting a portion of the oversight of those accounts to harvest sector share holders. Cooperative allocations also reduce NOAA Fisheries' transfer administration burden since intra-cooperative transfers are managed within the cooperative.

11 MANAGEMENT COSTS AND COST RECOVERY

Under the Council motion adopting the program and the MSA, NOAA Fisheries collects fees to pay for the costs of management (including enforcement) arising out of the program. These costs are the incremental costs that are incurred due to the implementation of the program. The fee is charged as a percentage of the ex vessel value of each landing. The fee is split equally between harvesters and processors, with processors responsible for collecting the fee and making payment to NOAA Fisheries. Catcher processors, who catch and process their catch, do not split the fee, but pay the full amount directly to NOAA Fisheries. Fees are limited to no more than 3 percent of the ex vessel value of the fishery in a crab fishing year. At the start of each season, NOAA Fisheries publishes a fee percentage in the Federal Register, based on the previous year's ex vessel prices and management and enforcement costs. NOAA Fisheries typically publishes the fee percentage in July or early August, in time for participants in the Aleutian Islands golden king crab fishery to collect fees on their first landing.

Market and stock uncertainties, as well as variation in management costs, mean that the fees may not precisely cover management costs. TAC announcements for the largest fisheries (Bristol Bay red king crab, and Bering Sea *C. opilio*) are not made until after the fee percentage is set. In addition, ex vessel prices will fluctuate with market conditions, so the basis that the fee percentage is applied to will change throughout the season. Further uncertain arises because the fee percentage must be set before fees have been fully paid for the prior season. Fees are due by June 30 (the end of the crab fishing year) but many processors delay payment for at least one month. NOAA Fisheries cannot assess penalties until at least 30 days after a payment is due. For example, although NOAA Fisheries collected more than the amount required to cover program costs for the 2007-2008 season, the specific amount of fees collected was not fully known prior to the publication of the fee percentage notice for the 2008-2009 season. Because of these uncertainties, a formulaic approach to setting the fee percentage is used. Regulations require that NOAA Fisheries establish the fee percentage based on the prior year's costs and exvessel values, instead of projections which can be highly subjective.

Although, NOAA Fisheries cannot adjust the fee percentage at the end of a season, regulations require that any debit or credit to the fee collection account must be carried forward and applied toward the fee percentage calculations for future years. Because fee collection for the 2007-2008 season exceeded costs, NOAA Fisheries will have to subtract the remaining balance from the estimated costs, prior to calculating the fee percentage for the 2009-2010 season (effectively reducing the fee percentage for the 2009-2010 season).

For the first three years of the program the fee percentage was set at the maximum level, 3 percent of ex vessel value. NOAA Fisheries has lowered the fee percentage for the 2008-2009 season to 1.05 percent of ex vessel value, primarily because the 2007-2008 costs were about half of their levels in prior years. Lower costs were realized through staffing vacancies, multi-year contracts included in prior year costs, and more efficient use of staff time as NOAA Fisheries staff developed familiarity with the program.

Although some program costs have fluctuated in the first three years of the program, most categories of management costs have declined (see Table 11-1). These declines, together with the large TAC increases and strengthening markets in the third year of the program led to the decline in the fee percentage in the fourth year of the program.

Table 11-1 Management costs and cost recovery fees (2005-2006 through 2007-2008.

Office	Restricted Access Management	Sustainable Fisheries	Operations Management and Information	General Counsel	Appeals	Office of Law Enforcement	Office of Law Enforcement and Joint Enforcement Agreement	ADF&G (State)	Alaska Fisheries Science Center	Pacific States Marine Fisheries Commission	Total
Primary source of expenditures	Quota management	Regulations	Cost accounting	Legal guidance	Appeals	General Enforcement	Joint enforcement (with State of Alaska)	Extended Jurisdiction/Observers/ CDQ	Economic Data Reporting	Economic Data Reporting/Joint Electronic Reporting	
2005/2006	$ 945,969	$ 912,615	$ 8,580	$ 89,077	$ 6,800	$ 398,502	$ 516,519	$ 864,614	$ 83,703	$ 444,500	$ 4,270,881
Percent of total costs	22.15%	21.37%	0.20%	2.09%	0.16%	9.33%	12.09%	20.24%	1.96%	10.41%	100.00%
Fees for cost recovery (3% fee)											$ 3,124,999
% of costs recovered											73%
2006/2007	$ 541,158	$ 189,519	$ 35,848	$ 34,536	$ 122,547	$ 1,602,073	$ 162,608	$ 824,008	$ 106,397	$ 321,148	$ 3,939,841
% of total costs	13.74%	4.81%	0.91%	0.88%	3.11%	40.66%	4.13%	20.91%	2.70%	8.15%	100.00%
Fees for cost recovery (3% fee)											$ 3,045,344
% of costs recovered											77%
2007/2008	$ 233,146	$ 94,310	$ 34,117	$ 30,642	$ 47,466	$ 568,647	$ -	$ 725,405	$ 111,725	$ 288,300	$ 2,133,758
% of total costs	10.93%	4.42%	1.60%	1.44%	2.22%	26.65%	0.00%	34.00%	5.24%	13.51%	100.00%
Fees for cost recovery (3% fee)											$ 6,517,204
% of costs recovered											305%

2008/2009 - Fee Percentage set at 1.05 % of ex vessel value

12 FISHING VESSEL SAFETY

12.1 Fatalities in BSAI crab fisheries

Commercial fishing is one of the most dangerous jobs in the United States, and the BSAI crab fisheries are particularly hazardous because harvesting of crab species generally takes place during the winter when air and water temperatures are colder; high winds, snow, sleet, and ice are more prevalent; daylight hours shorter; and high seas are more common (National Institute for Occupational Safety and Health, 1997). In addition, crabbing fishing gear consists of steel pots weighing up to 800 pounds each, which require cranes and hydraulics for setting, retrieval, and stowage. Lines also pose a substantial risk to inattentive crew. Crab pots stacked on deck can severely compromise vessel stability, especially if accompanied by icing conditions. The derby-style BSAI crab fisheries contributed to these dangers by often encouraging participants to fish in unsafe weather conditions, work continuously for long periods without rest, and possibly overload their vessels with pots (National Institute for Occupational Safety and Health, 1997).

Between 1991 and 1996, a total of 61 fatalities occurred in Alaska's crab fisheries, accounting for 42% of all commercial fishing-related fatalities in the state (National Institute for Occupational Safety and Health, 1997). During this period, the average annual fatality rate in the shellfish (primarily crab) fisheries in Alaska was 356/100,000/year, 50 times the overall U.S. occupational fatality rate of 7.0/100,000/year. Since the early 1990s, however, the number of fatalities in the BSAI crab fisheries has shown an overall downward trend (see Table 12-1).

Table 12-1 Fatalities in the Bering Sea and Aleutian Islands crab fisheries, 1990–2008

	Years prior to implementation of the rationalization program										Seasons under the rationalization program		
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	2007-2008
Number of fatalities	10	1	3	7	0	1	0	1	0	6	0	0	0

Source: Lincoln (2007) and USCG Marine Safety Detachment Kodiak

Several factors have contributed to the decline in fatalities in the Being Sea and Aleutian Island crab fisheries. A progression of safety measures beginning in the early 1990s were implemented by the USCG. In particular, these safety requirements contributed to a substantial increase in the percentage of

the commercial fishermen surviving vessel sinking and capsizing. National Institute for Occupational Safety and Health (NIOSH) found that in Alaska, the number of vessels lost per year has stayed relatively constant, but the survival rate for those onboard increased from 73% in 1991 to 93% in 1998 (Lincoln, 2007).

These data suggest that the Commercial Fishing Industry Vessel Safety Act (CFIVSA) of 1988 improved survivability (Lincoln and Conway, 1999). Provisions of the CFIVSA implemented in the early 1990s required the USCG to issue new regulations for safety equipment and operating procedures for fishing, fish tender and fish processing vessels. As a result of this legislation vessels are better equipped with Emergency Position Indicating Radio Beacons (EPIRBs), life rafts, side-band radios, and survival suits. Moreover, emergency drill instructor training and mandatory monthly drills are required of all fishing vessels. In addition, the CFIVSA enabled the USCG to establish the Voluntary Dockside Examination (VDE) Program in 1992 (Medlicott, 2002). If vessels pass a safety inspection by the USCG or Coast Guard Auxiliary they are issued a dockside exam decal. In 1998, the NPFMC initiated a regulation that made the VDE or some other documentation of compliance with USCG regulations mandatory for all vessels carrying observers (Cullenberg, 2002). Furthermore, since 2005, each vessel participating in the crab fisheries has had to receive a dockside exam decal from the USCG before it is issued a fishing license by the Alaska Commercial Fisheries Entry Commission and allowed to fish in the crab fisheries in each season.

The success of the CFIVSA suggested that further improvements in safety could be made through efforts to prevent vessel loss. In Alaska, the USCG responded by implementing the vessel stability check program in 1999. The program identifies and corrects safety and stability hazards known to exist on vessels participating in Bering Sea and Aleutian Island crab fisheries. These fisheries were selected for the program because they had the highest fatality rate of any fisheries in the state. Each vessel participating in one of the two major crab fisheries (historically in October and January) is checked by the USCG prior to its participation to ensure the vessel meets basic stability and loading standards. A NIOSH evaluation of the stability check program showed a decline in fatalities in the Bering Sea and Aleutian Island crab fisheries from an annual average of 7.2 fatalities in the ten years preceding the program's implementation to 1.2 per year in the years since its implementation through 2007 (Lincoln, 2007).

To further improve safety, prior to rationalization the USCG stationed a helicopter-equipped cutter on the fishing grounds during the two major crab seasons and stationed an emergency response helicopter at Cold Bay during the Bristol Bay red king crab season (in October), and at St. Paul during the Bering Sea *C. opilio* season (in January). This practice has continued under the rationalization program, but the timing of deployments is undergoing changes with the extension of crab fishing seasons and evolving needs in other fisheries. The long seasons pose a financial challenge to the USCG, as it restructures its rescue equipment and crew deployments. Also prior to implementation of the program, the USCG and State of Alaska signed an agreement in 2001 allowing the Alaska Department of Fish and Game to delay opening a BSAI crab fishery for up to 48 hours to let bad weather pass if the USCG's ability to conduct search-and-rescue missions is significantly impaired.

12.2 Effects of the program on fishing vessel safety

The downturn in fatalities in BSAI crab fisheries began before the implementation of the rationalization program in 2005. In the first three years of the program, there have been no fatal events in the program fisheries. However, it is not possible to ascertain with certainty the extent to which the program contributed to the improved safety record in the fisheries.

Prior to implementation of the rationalization program, vessels could suffer reduced catches if they chose to delay fishing because of bad weather. Fishery participants report that the exclusive allocations under

the program have reduced the pressure to risk unsafe weather or sea conditions by removing the need to compete for a share of the available catch of crab. In the first year of the program, for example, some boats chose to remain in port or other secure areas for three days after the Bristol Bay red king crab season opened because of bad weather. The vessels left for the fishing grounds only after weather and sea conditions improved. The gain in vessel safety from this season opening standdown under the program may have been limited by the aforementioned policy of delaying opening a fishery for up to 48 hours to allow storms to pass.

In addition to affecting captains' decisions to fish or not on a given day, the program has affected decisions made on the grounds that enhance safety in the program fisheries. In particular, captains allow crews to get more rest during fishing trips. Prior to rationalization, compression of fishing activity during a season to just a few days in a race-for-fish scenario meant that crewmembers worked around the clock, which created extreme fatigue and increased the likelihood of accidents (Matulich, 2008). The exclusive allocations and extended season under the program have allowed captains to slow fishing, thereby allowing crews more (and more regular) rest than in the derby fishery. Vessels stop working during this rest period and "jog" in a safe, low fuel consumption mode or transit between strings of pots. By reducing fatigue among crewmembers, this daily sleep can be critical to crew safety.

Under the rationalization program, vessels are also more likely to suspend fishing on the grounds during periods of bad weather. Crews typically rest during these periods, while the vessel jogs or transits slowly between fishing areas. Some participants have reported that vessels may choose to time deliveries or not leave the dock after making a delivery to avoid severe weather. These practices have an added advantage, since crab in on-board tanks can be damaged or stressed by severe weather, resulting in higher deadloss.

On the other hand, some factors may limit the ability of harvesters to take full advantage of opportunities to fish at a slower pace to reduce crew fatigue and to avoid fishing in dangerous weather. These factors include a continued desire to minimize days at sea and persistence of the work ethic of individuals who have been historically employed largely because of their ability to work fast for long periods of time. The effects of these factors on fishing practices may subside over time, particularly if high fuel prices induce participants to slow their fishing to save on operating costs.

It is also important to note that delivery contracts between vessels and processing plants still exist and may pressure a captain to complete deliveries by a certain date to avoid ex vessel price reductions. Crab processing is labor intensive, and timing of deliveries is important for processors in order to reduce the costs to processors of keeping crews on hand, standing by to process crab. In some cases, market demands may impose time pressures on harvesters and processors. The Japanese market for king crab, which is the most important market for Bristol Bay red king crab, has a particularly strong seasonal component. The vast majority of sales of king crab take place around and before the year end holidays (Sackton, 2007a). In order to maintain this traditional Japanese end-of-year gift giving market, Alaska processors must have the crab delivered by harvesters by mid-November (Herrmann and Greenberg, 2006). While these time pressures may lead to more aggressive harvest schedules, harvesters have used these time pressures to their advantage in price negotiations. Specifically, some harvesters have organized standdowns to extract a higher price from processors. Although processors still vigorously negotiate delivery schedules in the preseason, they have become more accommodating of harvester delays inseason to the extent that those delays arose from safety concerns expressed by captains.

Fleet contraction may also have contributed to safety in the program fisheries through several ancillary effects. Prior to implementation of the program many marginally productive vessels participated in the fisheries. Vessel owners continued to fish their vessels to maintain their historic interests in the crab fisheries and to maintain some revenue stream to support loan payments and vessel and gear maintenance. The overall poor profitability of the highly capitalized fisheries with relatively low TACs may have

economically forced some owners to postpone needed vessel maintenance. Fleet contraction resulted in the removal of many of these marginal vessels from the fleet. In addition, the higher revenues per vessel in the fishery may have increased the availability of funds for vessel maintenance. Fleet contraction also resulted in a decrease in the number of and catch of smaller vessels, which can be more readily overwhelmed by heavy sea conditions (see Table 12-2 and Table 12-3).

Table 12-2 Catch by vessel length in the Bristol Bay red king crab and Bering Sea *C. opilio* fisheries (2001 through 2007-2008)

Fishery	Season	Vessels less than 85 feet LOA			Vessels greater than or equal to 85 feet LOA and less than 100 feet LOA			Vessels greater than or equal to 100 feet LOA and less than 125 feet LOA			Vessels greater than or equal to 125 feet LOA		
		Number of vessels	Harvests		Number of vessels	Harvests		Number of vessels	Harvests		Number of vessels	Harvests	
			in pounds	as a percent of total harvests		in pounds	as a percent of total harvests		in pounds	as a percent of total harvests		in pounds	as a percent of total harvests
Bristol Bay red king crab	2001	10	160,491	2.1	45	1,114,990	14.5	107	3,382,283	44.0	68	3,023,342	39.4
	2002	12	274,123	3.1	47	1,520,342	17.3	111	3,914,558	44.6	71	3,061,325	34.9
	2003	14	382,110	2.7	50	2,277,265	16.0	112	5,848,643	41.1	74	5,729,357	40.2
	2004	15	366,134	2.6	49	2,208,933	15.9	115	6,366,532	45.8	72	4,947,448	35.6
	2005-2006	1	*	*	12	*	*	45	6,471,954	39.3	31	8,378,643	50.9
	2006-2007	2	*	*	13	*	*	39	5,553,331	40.0	27	6,627,815	47.8
	2007-2008	1	*	*	11	*	*	36	7,786,012	42.5	26	8,569,799	46.8
Bering Sea *C. opilio*	2001	6	356,254	1.6	38	2,547,796	11.1	94	8,648,476	37.7	69	11,388,178	49.6
	2002	4	302,559	1.0	35	3,730,703	12.6	87	12,529,356	42.3	64	13,047,084	44.1
	2003	3	394,264	1.6	42	4,333,115	17.1	84	10,859,325	42.7	61	9,823,418	38.7
	2004	5	279,963	1.3	32	2,852,864	13.0	88	9,320,915	42.5	64	9,485,751	43.2
	2005	4	263,500	1.2	28	3,555,960	15.7	83	10,735,190	47.4	52	8,101,127	35.8
	2005-2006				9	2,546,765	7.7	37	11,811,936	35.5	32	18,889,308	56.8
	2006-2007				10	4,025,321	12.3	32	10,598,626	32.5	28	18,035,201	55.2
	2007-2008				10	6,073,006	10.7	39	24,301,061	42.8	29	26,348,333	46.5

Sources: ADFG fishtickets and NMFS RAM catch data (for 2005-2006, 2006-2007, and 2007-2008)

Table 12-3 Participation by vessel length in the Aleutian Island golden king crab and Bering Sea *C. bairdi* fisheries (2001-2002 through 2007-2008)

Fishery	Season	Vessels less than 85 feet LOA	Vessels greater than or equal to 85 feet LOA and less than 100 feet LOA	Vessels greater than or equal to 100 feet LOA and less than 125 feet LOA	Vessels greater than or equal to 125 feet LOA
Eastern Aleutian Island golden king crab	2001-2002	0	3	9	7
	2002-2003	0	3	9	7
	2003-2004	0	3	8	7
	2004-2005	0	3	9	8
	2005-2006	0	0	3	4
	2006-2007	0	0	2	4
	2007-2008	0	0	2	2
Eastern Bering Sea *C. bairdi*	2006-2007	0	5	17	14
	2007-2008	1	3	10	6
Western Aleutian Island golden king crab	2001-2002	0	0	3	6
	2002-2003	0	0	3	3
	2003-2004	0	0	3	3
	2004-2005	0	0	3	3
	2005-2006	0	0	1	2
	2006-2007	0	0	1	2
	2007-2008	0	0	1	2
Western Bering Sea *C. bairdi*	2005-2006	0	5	20	18
	2006-2007	0	5	15	16
	2007-2008	0	6	14	7

Sources: ADFG fishtickets and NMFS RAM catch data (for 2005-2006, 2006-2007, and 2007-2008)

Some participants also believe that fleet consolidation has contributed to safety in the fisheries by improving crew skills and professionalism. In the years leading up to the rationalization program, crews

in the fisheries would actively fish crab for only a few weeks each year.[74] Under the program, most crews are active in the crab fisheries for a period of months. This extended employment provides crew with more (and more regular) experience deploying and hauling gear. Although some turnover occurs, most crews reportedly have more continuity under rationalization. This lower turnover (including reduced movement among vessels) allows crew to better learn to work together as teams and learn the crew practices of a particular boat as well as acquire a better understanding of safety equipment and practices. Other participants in the fisheries, however, have expressed concern that it may have become more difficult to hire and keep qualified crew because experienced crewmembers are unwilling to work under the extended seasons under the program.

Certain procedural aspects of the program have also been criticized for compromising vessel safety. Most prevalent are assertions that the regional landing requirement has created a situation where captains have less flexibility to take sea conditions into account when deciding where to deliver crab. Processors in the North region are especially sensitive to delivery schedules, since processing crews are positioned in the Pribilofs (the only North communities with crab processing) exclusively to process crab. Unexpected circumstances in the Bering Sea *C. opilio* fishery, together with the more rigidly scheduled deliveries are argued to have led some vessels to take greater risks in all of the first three years of the program. Each year, ice in and around St. Paul harbor delayed deliveries, sometimes for several days. In the spring of 2007, icing problems were compounded by a disabling fire on one of the two floating processors scheduled to operate in the North region. With limited processing capacity scheduled for the North region, deliveries were delayed, and, at one point, three crab vessels were trapped in the ice temporarily outside St. Paul harbor.

While travelling through ice no doubt poses threats to fishing vessels and crews. Vessels are not only at greater risk of loss, but also may suffer hull, propeller, and rudder damage. In some instances, this damage may not be easily detectable. The extent to which the North region landing requirement or processor scheduling under the rationalization program have contributed to these safety risks is uncertain. Prior to implementation of the rationalization program, vessels periodically became trapped in the ice during the Bering Sea *C. opilio* season, particularly when attempting deliveries to St. Paul. In addition, most harvesters prefer to deliver catch in the Bering Sea *C. opilio* fishery to the Pribilofs to avoid the travel costs associated with deliveries to the South. Lastly, ice conditions that cause problems for deliveries to the Pribilofs are frequently accompanied by icing problems on the grounds. To the extent that harvesters are unable to make deliveries to St. Paul for an extended period, they may be unable to continue fishing. Harvesters unable to fish, however, may need to offload any crab onboard to avoid deadloss. In addition, it is possible that this issue could be addressed if a satisfactory provision for emergency relief from regionalization can be developed to alleviate risks associated with regional landing requirements.

It is also important to note that where permissible program constraints that pose safety risks have been removed. For example, safety concerns led to exemptions to the 'cooling off' provision, which required IPQ to be used in the "community of origin" (or community of the processing history that led to the initial allocation of those processing quota shares) during the first two years of the program. In both of those years, PQS holders petitioned NOAA Fisheries for an exemption from the limitation of the 'cooling off' period, claiming unavoidable circumstances prevented their processing of shares in the City of St. George. In both years, NOAA Fisheries granted the exemption concluding that an unavoidable circumstance prevented processing in the St. George harbor. Specifically, NOAA Fisheries found that

[74] Prior to rationalization some vessels fished Pacific cod before and after the shorter seasons, extending their pot fishing seasons. Although the Pacific cod fisheries allow crews to practice deploying and hauling gear. Many vessels in the crab fisheries have continued to fish in the Pacific cod fisheries since implementation of the rationalization program.

storm damage to the breakwater at the harbor in St. George prevented safe entry of processing vessels to the St. George harbor. With no other location available to safely process in St. George, NOAA Fisheries granted the waiver of the 'cooling off' requirement.

13 BIOLOGICAL MANAGEMENT ISSUES

This section discusses the effects of the crab rationalization program and resulting changes in fishing patterns as they affect crab mortality and population sustainability, and the biological management of the crab stocks.

13.1 Crab fishery harvest

Catch in excess of the harvest targets was difficult to prevent in the derby-style fisheries that predated the crab rationalization program. Even with good in-season assessment and catch reporting, catches can change rapidly and a large efficient fleet can quickly surpass a harvest target when they locate high concentrations of crab. Between 2000 and 2004, the guideline harvest level for Bristol Bay red king crab was exceeded in two out of five years; the GHL for eastern Bering Sea *C. opilio* was exceeded in four out of five years; and the GHL for Aleutian Islands golden king crab was exceeded in two out of five years (NPFMC 2007). Since the implementation of the crab rationalization program, the total allowable catch (TAC) for these target fisheries has never been exceeded (Table 13-1). The Bering Sea *C. bairdi* fishery has not been open for directed fishing since 1996, and the fishery was closed under a rebuilding plan from 1999 through the 2005 season. Only the western portion of the fishery opened in 2005-2006, as the TAC calculated under the harvest strategy was below the minimum threshold TAC for the eastern portion. Since then, IFQs have been separately allocated to the Eastern and Western *C. bairdi* fisheries, and consequently the minimum TAC threshold has been eliminated, so that both Western and Eastern fisheries are open.

Table 13-1 Guideline harvest level, or total allowable catch, and harvest, for crab fisheries, 2000-2008, in millions of pounds

Season	Bristol Bay red king crab		Bering Sea *C. opilio*		Aleutian Islands golden king crab		Bering Sea *C. bairdi*	
	GHL/TAC	Harvest	GHL/TAC	Harvest	GHL/TAC	Harvest	GHL/TAC	Harvest
2000 - 2001	8.4	8.2	27.3	25.3	5.7	6.0		
2001 - 2002	7.2	8.4	31	32.7	5.7	5.9		
2002 - 2003	9.3	9.6	25.8	28.5	5.7	5.5	Closed	
2003 - 2004	15.7	15.7	20.8	23.9	5.7	5.7		
2004 - 2005	15.4	15.3	20.9	24.8	5.7	5.6		
2005 - 2006	18.3	18.3	37.2	36.8	5.7	5.5	1.6	1.0
2006 - 2007	15.5	15.4	36.6	36.4	5.13[a]	4.7	3.0	2.1
2007 - 2008[a]	18.3	18.3	56.7	56.7	5.1	4.9	5.1	1.9

[a]TAC and harvest is for IFQ fishery only.
Source: NPFMC 2007.

13.2 Deadloss

Deadloss is the amount of dead crab landed at the dock. All deadloss is discarded, because it cannot be sold. As long as all deadloss is landed, it is an economic problem rather than a biological problem, because deadloss is deducted from the TAC. Deadloss is exacerbated when vessels are not able to off-load quickly, due to longer trips or backups at the dock, and fewer crab survive the wait in the tank.

Deadloss in the Bristol Bay red king crab and the Aleutian Islands golden king crab fisheries has decreased post-rationalization, compared to the seasons immediately preceding implementation of the program (Table 13-2). In the Bering Sea *C. opilio* fishery, the rate of deadloss is comparable to that which occurred in the two most recent years before rationalization.

Table 13-2 Deadloss in the crab fisheries, 2000-2008

Fishery	Season	Catch** (in pounds)	Deadloss* (in pounds)	Deadloss per pound of catch
Bristol Bay red king crab	2000	7,468,240	32,118	0.004
	2001	7,681,106	57,294	0.007
	2002	8,770,348	32,177	0.004
	2003	14,237,375	228,270	0.016
	2004	13,889,047	160,563	0.012
	2005 - 2006	16,472,400	77,507	0.005
	2006 - 2007	13,887,531	98,720	0.007
	2007 - 2008	18,324,046	131,954	0.007
Bering Sea *C. opilio*	2001	22,940,704	429,884	0.019
	2002	29,609,702	585,288	0.020
	2003	25,410,122	662,409	0.026
	2004	21,939,493	224,377	0.010
	2005	22,655,777	224,139	0.010
	2005 - 2006	33,248,009	322,594	0.010
	2006 - 2007	32,699,911	379,132	0.012
	2007 - 2008	56,722,400	500,156	0.009
Eastern Aleutian Islands golden king crab	2000 - 2001	3,086,890	55,999	0.018
	2001 - 2002	3,128,409	50,030	0.016
	2002 - 2003	2,765,436	55,425	0.020
	2003 - 2004	2,900,247	76,006	0.026
	2004 - 2005	2,846,273	43,576	0.015
	2005 - 2006	2,569,209	23,791	0.009
	2006 - 2007	2,692,009	31,311	0.012
	2007 - 2008	2,690,377	21,042	0.008
Western Aleutian Islands golden king crab	2000 - 2001	2,902,518	53,158	0.018
	2001 - 2002	2,693,221	43,519	0.016
	2002 - 2003	2,605,237	32,101	0.012
	2003 - 2004	2,637,161	49,321	0.019
	2004 - 2005	2,639,862	43,560	0.017
	2005 - 2006	2,382,468	26,500	0.011
	2006 - 2007	2,002,186	19,768	0.010
	2007 - 2008	2,246,040	23,183	0.010

Sources: *ADFG Annual Management Report and **fishtickets and **NMFS RAM catch data (for 2005-2006, 2006-2007, and 2007-2008)

13.3 Crab bycatch and discards

13.3.1 High grading

High grading is the sorting through legal crab for the most valuable (typically the largest and cleanest) crab, and discard of the remaining legal crab to ensure that only the highest-priced portion of the catch is landed and counted against the IFQ. Some of this discarded crab dies. This can lead to additional fishing mortality of legal males in excess of IFQ allocations. Highgrading is an environmental concern because it may alter stock composition and hinder the reproductive capabilities by removing only the largest, cleanest crab. The large, clean crab are thought to be the most successful at mating. High grading may

also affect mortality of female and sublegal crab, if more pot lifts are required to catch the TAC. High grading is driven by market forces and preferences for clean-shelled crab, as processors may pay less for or refuse to accept dirty crab. Also, fishermen discard damaged crab that may die in the tank, because the dead crab decrease the survival rate of the live crab around them.

During the first year under rationalization of the Bristol Bay red king crab fishery, the number of legal male crabs captured during the fishery and subsequently discarded was dramatically higher than discard rates in previous years (Table 13-3), and represented approximately 20 percent of legal male red king crab caught. ADF&G identified concerns about resource sustainability under their harvest strategy, given these levels of discards. The discards were linked to the shell condition of the crab (Barnard and Pengilly 2006); the 2005 NOAA Fisheries survey found a notably higher proportion of old shell condition crab (40 percent) than had occurred in previous years. A high incidence of old shell crab in the catch (and the lower price that crab would fetch) was likely a key contributor to the widespread high grading.

In an effort to address the biological concerns raised by ADF&G, industry instituted a number of voluntary proposals to address the issue of discards. Under the organization of the Pacific Northwest Crab Industry Advisory Committee (PNCIAC), a number of proposed solutions were offered in a discussion paper, and subsequently adopted by PNCIAC members (PNCIAC 2006). Crab industry harvesters, processors, and cooperative members pledged to adopt a series of strategies and tactics to address discards of legal and non-legal crab. Industry members agreed to improve retention of legal size crab to the level of the pre-rationalized fishery in the years 1999-2004, and to reduce bycatch of females and sublegal males. In addition, beginning in the 2006-2007 season, most harvesters and processors changed their pricing structure to reflect their support for a full retention policy, and moved to a single price that does not distinguish for shell condition, in order to remove the incentive to high grade.

ADF&G reacted to the 2005-2006 discard issue by downwardly adjusting the TAC determination for the 2006-2007 season, thus resulting in an economic penalty for the share holders in that season. As discarding of legal males did not occur on a similar scale in 2006-2007, no further downward adjustment was made for the 2007-2008 season (Vining and Zheng 2008).

High grading and increased in discard rates have not been an issue in fisheries or seasons, other than the 2005-2006 Bristol Bay red king crab season (Table 13-3). New shell condition is particularly important in the Bering Sea *C bairdi* and Bering Sea *C. opilio* fisheries, and in addition the *C. opilio* fishery has a strong selectivity for males with a 4 inch or greater carapace width, due to processors standards for delivered crab, although the legal size is 3.1 inch carapace width. However, the harvest strategies for both fisheries account for these selectivities and the resulting bycatch in setting the harvest rate (NMFS 2004).

Table 13-3 Bycatch in the crab fisheries, 2000 through 2007-2008 (Bristol Bay red king crab, Bering Sea *C. opilio*) and 2005-2006 though 2007-2008 (Aleutian Islands golden king crab, Bering Sea *C. bairdi*)

Fishery	Season	Total bycatch (in pounds)		
		Legal, non-retained	Sublegal	Female
Bristol Bay red king crab	2000	24,773	3,985,628	439,745
	2001	67,022	3,759,015	1,190,144
	2002	138,355	4,707,986	71,016
	2003	247,602	9,393,910	3,377,311
	2004	160,724	4,033,506	1,373,949
	2005 - 2006	4,602,011	8,543,364	3,543,455
	2006 - 2007	94,905	1,853,035	221,506
	2007 - 2008	45,651	3,554,052	830,882
Bering Sea *C. opilio*	2001	6,248,154	112,440	5,546
	2002	7,473,653	99,376	3,742
	2003	15,923,087	297,104	32,580
	2004	19,989,353	384,528	9,670
	2005	5,398,033	85,558	3,475
	2005 - 2006	10,434,115	196,584	12,826
	2006 - 2007	17,777,807	507,809	10,272
	2007 - 2008	21,820,036	549,861	157,270
Eastern Aleutian Islands golden king crab	2005 - 2006	17,691	202,329	118,969
	2006 - 2007	19,210	219,463	202,924
	2007 - 2008	20,697	199,897	127,616
Western Aleutian Islands golden king crab	2005 - 2006	11,881	301,343	257,468
	2006 - 2007	6,012	256,059	281,018
	2007 - 2008	4,614	335,255	414,134
Bering Sea *C. bairdi*	2005 - 2006	3,926	540,582	69,206
	2006 - 2007	22,225	1,348,877	392,236
	2007 - 2008	39,517	5,270,165	370,532

Sources: NPFMC 2007 (2000-2005); Barnard and Burt 2007 (2005/2006); Barnard and Burt 2008 (2006/2007); ADFG (2007/2008)

13.3.2 Rail dumping

Rail dumping is the practice of emptying captured pots at the rail before they can be brought on deck and sorted. Because the catch is not brought on deck, it is not possible to track the contents of rail dumped pots in terms of the number, size, and sex of the captured crab. Pre-rationalization, rail dumping would occur when vessels were left with pots soaking after the season had ended, which occurred if fewer than 24 hours notice of a closure was provided. These short notices occurred occasionally in the Bristol Bay red king crab fishery prior to implementation of the program. On those occasions, it is believed a the number of fishing pots left on the grounds that were rail dumped were at least comparable to current rail dumping levels. Under the rationalization program, rail dumping has been practiced by some vessels when retrieving their pots in order to avoid the risk of exceeding their available IFQ, and the penalties that would result from such overages.

Rail dumping has occurred in all the crab fisheries. Observers attempt to estimate the number of rail dumped pots, although they cannot track their contents. The proportion of rail dumped pots, as compared to total harvested pot lifts and rail dumped pots, ranges from 0.3 percent to 2.6 percent, and is variable by season within each fishery (Table 13-4). Although it is not possible to know the contents of the emptied pots, as they are not observed, an estimate could be made using the average annual catch per unit effort and crab weight for the fishery. For the Bristol Bay red king crab fishery in 2006-2007, if an average

catch per unit effort (34 crab per pot) and crab weight (6.3 pounds) is applied to each pot, the total amount of legal male crab dumped would equal approximately 375,000 pounds. For legal male crab that are brought on deck and then discarded, a 20 percent mortality rate is assumed for purposes of assessment and calculated in the TAC setting process. The mortality rate for rail dumped crab could well be lower, however, as the crab are not subject to additional handling on deck. Because rail dumped crab are not brought on deck and accounted for, any mortality associated with the practice is not currently considered in the stock assessment or TAC setting process. As the fishery evolves cooperative fishing arrangements may reduce rail dumping, as vessel level overages are addressed by transfers

Table 13-4 Estimated rail dumped pots in the crab fisheries, 2005-2006 through 2007-2008

Fishery	Season	Rail dumped pots*	Rail dumped pots as a percent of total pot lifts
Bristol Bay red king crab	2005 - 2006	NA	NA
	2006 - 2007	1,745	2.6
	2007 - 2008	813	1.2
Bering Sea *C. opilio*	2005 - 2006	600	0.9
	2006 - 2007	1,581	2.4
	2007 - 2008	1,057	1.6
Aleutian Islands golden king crab	2005 - 2006	243	0.4
	2006 - 2007	1,193	1.8
	2007 - 2008	527	0.8
Bering Sea *C. bairdi*	2005 - 2006	NA	NA
	2006 - 2007	216	0.3
	2007 - 2008	142	0.2

Source: ADFG.

13.3.3 Handling mortality

In addition to the direct loss from retained catch, harvesting also reduces stock abundance due to bycatch mortality. Large numbers of crabs are handled and discarded during crab fisheries due to restrictions on size, sex, season, and target species. Handling mortality reduces future recruitment to the fishery by reducing both survival of pre-recruits and effective spawning biomass due to deaths of mature females and sublegal males (NMFS 2004). The time of year when crab are harvested affects the crab survival rate. Fishing seasons are designed to close during seasons of molting or mating of crab to avoid additional mortality during these biologically-sensitive periods. Estimates of total catch for TAC determination include a calculation for mortality of crab that is brought on deck, sorted, and then discarded. The mortality calculation is based on experimental studies of crab survival, and for Bristol Bay red king crab, the mortality rate is assumed to be 20 percent; for *C. opilio*, 50 percent.

Under rationalization, the season length has extended considerably, thereby slowing the pace of fishing and allowing fishermen to improve fishing methods, including sorting of catch by the gear and sorting on deck. To some extent, these changes may affect handling mortality. Additionally, evidence indicates that crabs captured in extremely cold and windy weather suffer higher rates of handling mortality (NMFS 2004). Under rationalization, fishermen have more flexibility about when to fish, and for safety reasons are more likely to choose not to fish in the extreme weather conditions that may have been necessary before rationalization. While it is possible that some of these considerations may have affected handling

mortality under the program, ADF&G currently has no plans to reevaluate the handling mortality percentages.

13.3.4 Soak times and catch per unit effort

Experimental studies have shown that longer soak times, in conjunction with the required pot escape mechanisms, are likely to increase the proportion of legal versus non-legal crabs caught in the fishery (Barnard and Pengilly 2006). Catch per unit effort is also dependent on other factors as well: the size-sex distribution of the crab population, where fishing is conducted relative to the spatial distribution of non-legal and legal crabs, and the sorting of legal crabs for retention or non-retention.

Soak times in the Bristol Bay red king crab fishery have lengthened in the years leading up to implementation of the program from an average of 18 hours in 1999 to an average of 31 hours in 2004. Soak times have increase further since the program was implemented averaging 65 hours and 51 hours, respectively, in the first two seasons of the program (Bowers et al 2008). Over this same period, catch per unit effort has increased from an average of 18 legal male crab per pot lift (2000-2005) to an average of 25, 34, and 28 legal crab per pot lift, respectively, in the first three seasons of the program. For the *C. opilio* fishery, the average soak time in the 2004 and 2005 season was 21 hours, and increased to 65 hours and 63 hours, respectively, in the 2005-2006 and 2006-2007 seasons (Bowers et al 2008). Catch per unit effort averaged 189 legal male crab per pot lift in the 2004 and 2005 seasons, and 204, 332, and 349, respectively, in the first three seasons of the program. Anecdotal reports note that the catch per unit effort in the 2005-2006 season was likely affected by the extent of sea ice which kept fishermen off the most productive grounds during much of the season.

While a definite correlation between extended soak times and legal male catch exists, Table 13-3 appears to indicate that the levels of sublegal and female catch under the rationalization program remain within the range of bycatch levels from previous years.

13.3.5 Lost pots and ghost fishing

Mortality is also caused by ghost fishing of lost crab pots. Mortality of crab caused by ghost fishing is difficult to estimate with precision given existing information, but studies have shown that unbaited crab pots continue to catch crabs, and pots are subject to rebaiting due to capture of other fish and crab. The impact of ghost fishing on crab stocks remains unknown. Pre-rationalization, it has been estimated that 10 percent to 20 percent of crab pots were lost each year (NPFMC 2007), although lack of observer coverage precluded accurate recording. All pots currently fished in Bering Sea crab fisheries contain degradable escape mechanisms allow catch to escape after an extended period of time to reduce ghost fishing.

Although pot limits were increased from 200 or 250 pots allowed per vessel, depending on vessel length, to 450 pots per vessel in the Bristol Bay red king crab and Bering Sea *C. bairdi* and *C. opilio* fisheries, under the rationalization program, in practice, the average number of pots fished per vessel remains less than that allowed pre-rationalization (see Table 4-22) Combined with the decrease in the number of vessels participating in the crab fisheries, this means that overall there is less gear on the fishing grounds post-rationalization. Although the pots are used more frequently during a fishing season, the higher catch per unit effort under rationalization still results in an overall reduction in gear.

In the last two years, records of lost pots indicate that they have represented approximately 1 to 1.4 percent of total registered pots in the Bristol Bay red king crab fishery, and between 2 and 6 percent of total registered pots in the Bering Sea *C. bairdi* and *C. opilio* fisheries were lost (Table 13-5). One factor that may affect the rate of lost gear in these latter fisheries is the longer fishing season. Longer soak times mean that the time between setting and retrieving the gear is extended, and combined with the three to

four month season, increase the risk of a change in the weather and unforeseen encroachment of sea ice preventing the vessel from successfully retrieving its gear.

In the Aleutian Islands golden king crab fishery, the depths and steep bottom topography of the inter-island passes necessitate the use of longline pot gear, which is the only legal gear type. There are fewer participants in these fisheries as a result of rationalization, and fewer pots overall are registered in the fishery, although the number of pots per vessel has increased substantially. ADFG records of lost pots represent 1 percent or less of the total registered pots in the fishery in the last two years.

Table 13-5 Lost pots by fishery (2006-7 though 2007-2008)

Fishery	Season	Lost pots
Bristol Bay red king crab	2006 - 2007	154
	2007 - 2008	167
Bering Sea *C. opilio*	2006 - 2007	228
	2007 - 2008	599
Aleutian Islands golden king crab	2006 - 2007	135
	2007 - 2008	37
Bering Sea *C. bairdi*	2006 - 2007	88
	2007 - 2008	175

Sources: ADFG

13.3.6 Season length, temporal and spatial dispersion

Under the program, the season length for the fisheries has lengthened considerably (see Table 4-18 and Table 4-19). In the years leading up to the implementation of the program, the Bristol Bay red king crab fishery lasted at most 3 to 4 days, opening on October 15. Under the program, the fishery opens on the same date, with most of the harvest is completed by mid-November, although some landings continued through the season closing on January 15. The Bering Sea *C. opilio* fishery has spread out over the full seven months of its opening, although much of the harvest is still caught during the traditional period of the fishery in late January and early February. Although Bering Sea *C. bairdi* had a small directed fishery, most of the harvest was incidental to the *C. opilio* fishery in the western portion, or the Bristol Bay red king crab fishery in the eastern portion. The Eastern Aleutian Islands golden king crab fishery is primarily prosecuted between August and December, while the western Aleutian Islands fishery extends through the May 15 closure.

Longer seasons benefit the crab stocks by reducing the pressure associated with derby-style fishing, and allowing time for improving handling methods and sorting of crab at sea which should improve the survivability of crab bycatch.

Under the program, the spatial distribution of catch in the Bristol Bay red king crab fishery has diversified. In 2003, while landings were reported in 15 statistical areas (plus some miscellaneous landings), but the vast majority of catch came from only four areas (ADFG 2004). In 2006-2007, catch was reported in 12 statistical areas (plus some miscellaneous landings), with 90 percent of total pot lifts and total harvest occurring in seven statistical areas (extending out from the popular fishing grounds of 2003) (Bowers et al. 2008). Dispersing the fishery both geographically and temporally will reduce any localized fishing pressure impacts on the crab stocks.

For the Bering Sea *C. opilio* fishery, the majority of fishery catch occurs in the southern portion of the *C. opilio* range, even in years when ice cover did not restrict the fishery from moving farther north. In 2003 and 2004, 66 percent and 78 percent of the catch, respectively, was south of 58.5° N. (Turnock and Rugolo 2007); the same pattern is apparent in the last three years. Under rationalization, harvest location has shifted to the southeast, however. A high percentage of the catch is taken out of statistical areas to the west of the Pribilof Islands, one of which accounted for the statistical area with the greatest effort in 2005-2006 season (approximately 16 percent of that season's total harvest), and four of which accounted for 74 percent of the total harvest for 2006-2007 (Bowers et al 2008). These statistical areas represented a relatively small percentage of the overall *C. opilio* harvest in 2003 (14 percent of the total harvest, ADFG 2004).

Fishing effort in the eastern Aleutian Islands golden king crab fishery focused primarily around Yunaska Island, and the Islands of Four Mountains, and in Seguam and Amukta Passes. In the western Aleutian Islands, the golden king crab fishery was prosecuted around the Delarof Islands, Amchitka Pass, and the Petrel Bank. Because of the small number of vessels participating in these fisheries, most of the landings information is confidential, both pre- and post-rationalization.

14 SIDEBOARD LIMITS IN OTHER FISHERIES

Recognizing that a change to a share-based management program may provide opportunities for participants to alter their behavior to increase participation in other fisheries, the Council typically considers sideboards to limit participants in the share-based fishery to their historic participation levels in other fisheries. In adopting the rationalization program, the Council imposed sideboards on harvesters receiving QS allocations. The Council is currently considering revisions to these sideboards, as well as new sideboards on the processing of Pacific cod by processors that received PQS allocations.

14.1 Harvester sideboards

Knowing that the harvesters in the crab fisheries may alter fishing patterns to increase catch in other fisheries, the Council included sideboard limits on catches of Gulf of Alaska groundfish and Gulf of Alaska Pacific cod for vessels and licenses with Bering Sea *C. opilio* history that contributed to an initial QS allocation. Sideboards under the program also prohibit participation in the Pacific cod fisheries by vessels that contributed to for Bering Sea *C. opilio* quota that landed less than 50 metric tons of groundfish harvested in the Gulf during the Bering Sea *C. opilio* qualifying period (January 1, 1996, and December 31, 2000). In addition, vessels with limited Bering Sea *C. opilio* catch (i.e., less than 100,000 qualifying pounds) and show sufficient Gulf Pacific cod dependence (i.e., more than 500 metric tons of Gulf Pacific cod during *C. opilio* qualifying period) are exempt from the Gulf Pacific cod sideboard limits. Sideboard limits are based on Gulf groundfish and Gulf Pacific cod retained catch of crab vessels subject to the limits during the *C. opilio* qualifying period. The sideboard restrictions apply in the State of Alaska parallel groundfish fisheries to vessels with a Federal Fisheries Permit or LLP license. Since LLPs can move among vessels, it is possible that the sideboard limits on a vessel could differ from those associated with the license assigned to that vessel. In these cases, the more restrictive sideboard is applied.

Figure 14-1 provides a diagram of the structure of these sideboard limits. Since vessels participating in the American Fisheries Act are already subject to sideboards in Gulf groundfish fisheries, those vessels are exempt from these crab program sideboards.

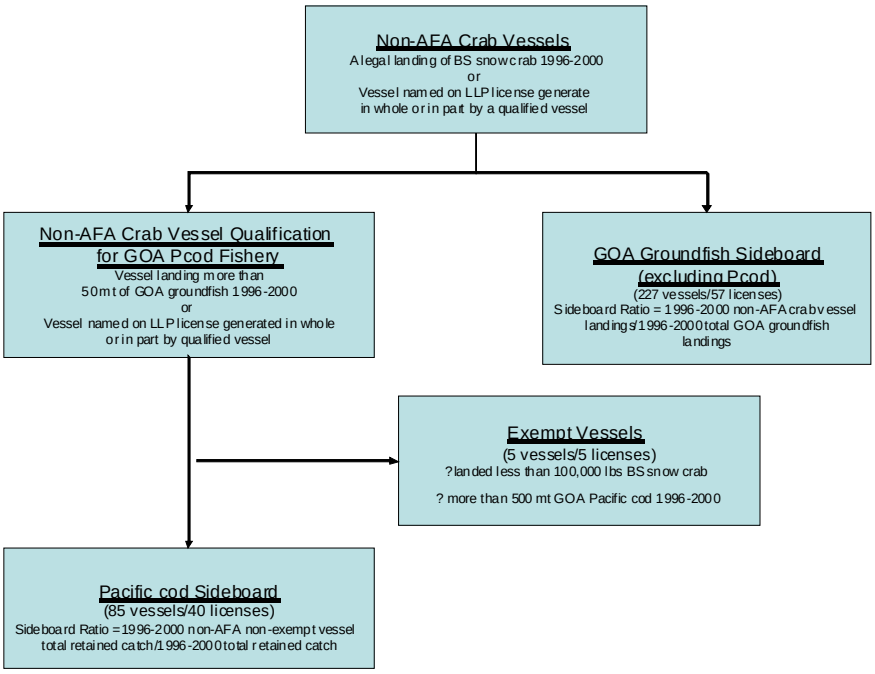

Figure 14-1 Diagram of non-AFA crab vessel sideboard program for the GOA

Under the program, 227 non-AFA crab vessels contributed to an initial allocation of Bering Sea *C. opilio* QS and are subject to the Gulf groundfish sideboard limits; 137 of these vessels are prohibited from fishing for Gulf Pacific cod; 85 vessels are subject to the Gulf Pacific cod sideboard limits; and 5 vessels are exempt from the Gulf Pacific cod sideboard limits. Also, 57 groundfish LLP licenses originated on non-AFA crab vessels and are subject to the Gulf groundfish sideboard limits; 12 of these licenses are prohibited from use for directed fishing in the Gulf Pacific cod fisheries; 40 licenses are subject to the Gulf Pacific cod sideboard limits; and 5 licenses are exempt from the GOA Pacific cod sideboard limits.

NOAA Fisheries manages the sideboard limits by setting a single sideboard cap for each Gulf groundfish species (including Pacific cod). That amount is then available to all qualified vessels subject to the cap, on a seasonal basis. All targeted or incidental catch of sideboard species made by a vessel subject to the limits is deducted from the sideboard limit. NOAA Fisheries closes directed fisheries to vessels subject to the limit when it deems that sideboard amounts are inadequate to support directed fishing and projected incidental catch in other directed fisheries. NOAA Fisheries has prohibited directed fishing by vessels subject to the sideboard in all fisheries except the Western Gulf pollock fishery and the Central Gulf and Western Gulf Pacific cod fisheries because the sideboard limits are deemed inadequate to support directed fishing.

Table 14-1 provides annual total catch of GOA Pacific cod, pollock, and other groundfish from 1995 to 2007 for non-AFA crab vessels that are subject to the GOA sideboard limits. Prior to implementation of the crab sideboard limits, total catch of GOA Pacific cod by the sideboarded non-AFA crab vessels ranged from 2,301 mt to 10,724 mt. During the 2006 fishing year, the GOA Pacific cod sideboard catch was 5,037 mt, while the limit was 3,615 mt. The reason the 2006 sideboard catch exceeded the sideboard limit was due to the sideboard regulations being implemented in March 2006, after the A season was completed.

Table 14-1 Total catch (mt) of Non-AFA crab vessels limited to sideboard limits

Year	Pacific Cod	Pollock	Other Groundfish
1995	3,293	62	66
1996	2,556	760	2
1997	2,422	580	5
1998	3,377	1,495	98
1999	6,962	1,328	45
2000	10,724	1,374	50
2001	2,301	2,547	109
2002	3,073	1,923	81
2003	4,384	1,296	173
2004	5,313	920	112
2005	5,128	2,539	80
2006	5,037	2,258	204
2007	*	1,711	61

Source: non_afa_snow_crab_cvs.xls and non_afa_snow_crab_cp5.xls from ADF&G fish tickets for catcher vessels and blend data/catch accounting for catcher processors. Data does not include State water Pacific cod catch and sablefish and halibut IFQ bycatch of Pacific cod IFQ fisheries.

Table 14-2 provides a brief summary of the Western and Central Gulf Pacific cod sideboard fishery closures during 2006 and 2007. In both areas during the A season the sideboard limit was reached in early February resulting in closure of the fishery. The B season sideboard fishery was also closed prior to the end of that fishing season, as a result of the sideboard catch reaching the limit.

Table 14-2 Sideboard fishery closure dates for Western and Central GOA Pacific cod during 2006 and 2007

Area	Season	Inshore		Offshore	
		2006	2007	2006	2007
Western GOA	A	2 Mar (TAC)	18 Feb (TAC)	19 Feb (TAC)	14 Feb (TAC)
	B	1 Sep (TAC)	14 Oct (TAC)	12 Oct (TAC)	
Central GOA	A	28 Feb (TAC)	24 Jan (TAC)	19 Feb (TAC)	14 Feb (TAC)
	B	1 Sep (TAC)	11 Oct (TAC)		

Source: NMFS

Table 14-3 provides counts of the non-AFA crab vessels, by sideboard category in the Gulf Pacific cod fishery from 1995 to 2007. The number of Pacific cod exempt non-AFA crab vessels ranged between 4 and 5 during this period. For Pacific cod prohibited non-AFA crab vessels, the numbers ranged from 15 vessels in 1995, to 2 vessels in 1997.[75] For Pacific cod sideboard non-AFA crab vessels, the vessel numbers ranged from 15 in 1997 to 60 in 2000. Since implementation of the sideboards on the non-AFA crab vessels, only 22 vessels recorded GOA Pacific cod catch. Finally, the number of other vessels that caught Gulf Pacific cod has ranged from 476 in 1995, to 258 in 2006.

[75] Note that the two Pacific cod prohibited vessels fishing in the 2006 and 2007 sideboard fishery due to the vessel appealing its sideboard restriction. While the vessels appeal their sideboard restriction, the vessels was not limited by Pacific cod sideboards.

Table 14-3 Number of vessels fishing in the GOA Pacific cod fishery by sideboard category

Year	Pacific Cod Exempt Vessels	Pacific Cod Prohibited Vessels	Pacific Cod Sideboard Vessels	Other Pacific Cod Vessels
1995	4	15	42	476
1996	5	8	28	414
1997	4	2	15	419
1998	4	6	26	412
1999	5	8	35	383
2000	5	11	60	399
2001	5	3	25	348
2002	4	7	20	287
2003	4	3	20	265
2004	4	6	21	281
2005	4	8	18	260
2006	4	6	22	258
2007	4	2	22	276

Source: non_afa_snow_crab_cvs.xls and non_afa_snow_crab_cp5.xls from ADF&G fish tickets for catcher vessels and blend data/catch accounting for catcher processors.

Table 14-4 provides Gulf Pacific cod catch for non-AFA crab vessels by sideboard category, while Table 14-5 provides annual percent of Gulf Pacific cod caught by each vessel group. Overall, the total catch of Gulf Pacific cod has declined during the 1995 to 2007 period. In 1995, the combined catch of Gulf Pacific cod by all vessels was 68,182 mt, while the combined catch in 2004 was 34,353 mt. However, catch of Gulf Pacific cod by non-AFA crab vessels does not follow this trend; rather the decline in catch appears to be limited to the other Pacific cod vessels. For the Pacific cod exempt non-AFA crab vessels, on average their percent of the total GOA Pacific cod catch is 3.5 percent, with a catch range of 2,762 mt in 1996 to 1,016 mt in 2001. For non-AFA crab vessels prohibited from targeting GOA Pacific cod, on average their percent of the total GOA Pacific cod catch is 1.3 percent, with catch ranging from 53 mt in 1998, to 1,632 mt in 2005. Since sideboard regulations were not implemented until March 2006, these vessels were permitted to participate in the 2006 fisheries. For the non-AFA crab vessels that are restricted by Pacific cod sideboards, on average their percent of the total Gulf Pacific cod catch was 8.7 percent, with catch ranging from 2,422 mt in 1997, to 10,724 mt in 2000. In more recent years, catch for this group of vessels has ranged from 3,000 mt to 5,000 mt. Finally, non-crab vessels on average account for 86.6 percent of all Gulf Pacific cod catch, which ranged from 65,214 mt in 1997, to 25,383 mt in 2005.

Table 14-4 GOA Pacific cod catch (mt) of non-AFA crab vessels by sideboard category

Year	Pacific Cod Exempt Vessel Catch	Pacific Cod Prohibited Vessel Catch	Pacific Cod Sideboard Vessel Catch	Other Pacific Cod Vessel Catch	Total Catch
1995	2,141	358	3,293	62,389	68,182
1996	2,762	62	2,556	63,447	68,827
1997	1,710	*	*	65,214	69,357
1998	2,508	53	3,377	57,470	63,409
1999	2,488	689	6,962	57,624	67,764
2000	1,388	429	10,724	41,456	53,997
2001	1,016	1,163	2,301	37,255	41,735
2002	1,077	1,142	3,073	35,429	40,721
2003	1,317	570	4,384	33,884	40,154
2004	1,080	563	5,313	34,768	41,724
2005	2,210	1,632	5,128	25,383	34,353
2006	1,807	1,434	5,037	28,186	36,464
2007	1,567	*	*	33,107	38,144

Source: non_afa_snow_crab_cvs.xls and non_afa_snow_crab_cp5.xls from ADF&G fish tickets for catcher vessels and blend data/catch accounting for catcher processors. Data does not include State water Pacific cod catch and sablefish and halibut IFQ bycatch of Pacific cod.

*Concealed for confidentiality

Table 14-5 Percent of GOA Pacific cod catch by sideboard category

Year	Pacific Cod Exempt Vessel Percent of Total Catch	Pacific Cod Prohibited Vessel Percent of Total Catch	Pacific Cod Sideboard Vessel Percent of Total Catch	Other Pacific Cod Vessels Percent of Total Catch
1995	3.1%	0.5%	4.8%	91.5%
1996	4.0%	0.1%	3.7%	92.2%
1997	2.5%	*	*	94.0%
1998	4.0%	0.1%	5.3%	90.6%
1999	3.7%	1.0%	10.3%	85.0%
2000	2.6%	0.8%	19.9%	76.8%
2001	2.4%	2.8%	5.5%	89.3%
2002	2.6%	2.8%	7.5%	87.0%
2003	3.3%	1.4%	10.9%	84.4%
2004	2.6%	1.3%	12.7%	83.3%
2005	6.4%	4.8%	14.9%	73.9%
2006	5.0%	3.9%	13.8%	77.3%
2007	4.1%	*	*	86.8%
Average	**3.5%**	**1.3%**	**8.7%**	**86.6%**

Source: non_afa_snow_crab_cvs.xls and non_afa_snow_crab_cp5.xls from ADF&G fish tickets for catcher vessels and blend data/catch accounting for catcher processors. Data does not include State water Pacific cod catch and sablefish and halibut IFQ bycatch of Pacific cod.

*Concealed for confidentiality

The Council is currently considering an amendment package to modify harvester sideboards under the program. These changes are intended to relieve vessels with strong historic dependence on non-crab fisheries from the limitations of the sideboards. The proposed alternatives would extend the sideboard exemptions to additional vessels.

14.2 Processor sideboard limitations

At the time of adopting the program, the Council elected not to adopt any processor sideboard limitations. Since that time, the Council has received public testimony suggesting that capital freed up as a result of the crab program could encroach on processor participants in the Aleutian Island Pacific cod fisheries. The Council is currently considering alternatives that would limit processors that contributed to allocations of PQS in the Bering Sea *C. opilio* fishery to their historic processing participation levels with the intent of protecting processors in the Aleutian Island Pacific cod fisheries.

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APPENDIX A

BSAI CRAB RATIONALIZATION 3-YEAR REVIEW
DRAFT SOCIAL IMPACT ASSESSMENT

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1.0
INTRODUCTION AND SUMMARY OF FINDINGS

1.1 OVERVIEW AND APPROACH

For the purposes of this social impact assessment, a two-pronged approach to analyzing the community or regional components of changes associated with the implementation of Bering Sea and Aleutian Islands (BSAI) crab rationalization was utilized. First, tables based on existing quantitative fishery information were developed to identify patterns of participation in the various components of the fishery. These tables, presenting data on an annual basis from 1998 through 2007, are quite large and are presented in Attachment 1. Summary tables are presented in Section 1.2 along with accompanying narrative. This analysis focuses on fishery sectors (harvesters, catcher processors, and processors) and contrasts average annual participation indictors for pre- and post-rationalization implementation years over the span of 1998 through 2006–2007. There are, however, substantial limitations on the data that can be utilized for these purposes, based on confidentiality restrictions. A prime example of this is where a community is the site of a single processor, or even two or three processors. No information can be disclosed about the volume and value of crab landings in those communities. This, obviously, severely limits quantitative discussions of the impacts of the rationalization program. In short, the frame of reference or unit of analysis for the discussion in this section is the individual sector, and the analysis looks at how pre- and post-rationalization changes are differentially distributed across communities and regions within this framework. The practicalities of data limitations, however, serve to restrict this discussion. This discussion is also supplemented with information on changes that have occurred in the geographic distribution of unique quota holders and quota units by sector between the initial allocation and the 2008/2009 seasons.

The second approach to producing a comprehensive social impact assessment involved selecting a subset of BSAI crab communities for characterization to describe the range, direction, and order of magnitude of social and community level impacts associated with the relevant crab fisheries. The approach of using a subset of communities rather than attempting detailed characterization of all of the communities in the region(s) involved was chosen due to the practicalities of time and resource constraints. The total set of communities engaged in the fishery is numerous and far-flung. Communities (and types of impacts) vary based upon the type of engagement of the individual community in the fishery, whether it is through being home port of a portion of the catcher vessel fleet, being the location of shore-based processing, being the base of catcher processor or floating processor ownership or activity, or being the location of fishery support sector businesses. In short, this second approach uses the community or region as the frame of reference or unit of analysis (as opposed to the fishery sector as in the first approach). This approach examines, within the community or region, the local nature of engagement or dependence on the fishery in terms of the various sectors present in the community and the relationship of those sectors (in terms of size and composition, among other factors) to the rest of the local social and economic context. This approach then qualitatively explores the social and community impacts that have resulted from the rationalization-associated changes to the locally present sectors in combination with other community-specific attributes and socioeconomic characteristics.

Chosen for this community-level analysis were those Alaskan communities characterized in the pre-implementation BSAI crab rationalization social impact assessment. These are Unalaska/ Dutch Harbor, Akutan, King Cove, Kodiak, Sand Point, Adak, St. Paul, and St. George. A community-by-community summary of the social impacts of BSAI crab rationalization for each of these communities is presented in Section 1.3. This summary is derived from detailed community profiling efforts, the results of which are in part included in this analysis and in part included in another document incorporated by reference.

Pre-rationalization crab fishery-oriented profiles for each of these communities were developed for the *BSAI Crab Fisheries Final Environmental Impact Statement Social Impact Assessment* (NOAA 2004, Appendix 3[1]). Updated, detailed profiles with a focus on crab dependence and BSAI crab rationalization impacts are provided in this document for four of these communities. These are Unalaska/Dutch Harbor (Section 2.1), Akutan (Section 2,2), King Cove (Section 2.3), and Kodiak (Section 2.4). These profiles were updated through fieldwork and they explicitly build upon the profiles of these communities developed for (1) the pre-rationalization crab social impact analysis referenced above and (2) those contained in *Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak* (EDAW 2005). The latter of these profile efforts, also produced prior to the implementation of BSAI crab rationalization, was jointly funded by the North Pacific Fishery Management Council (NPFMC) and the North Pacific Research Board (NPRB). In addition to the information that has been updated in this document, these (EDAW 2005) profiles contain quantitative characterization of each of the community's local commercial fishing harvest sector, including detailed information on an annual basis, from 1995 through 2002, of local vessel characteristics, distribution of permit holders, catch and earnings estimates, and landings inside and outside of the community, along with an analysis of the spatial distribution of fishing effort of the local fleet. As updating this information is effort intensive and not central to the current BSAI crab rationalization 3-year review-oriented community analysis, it has not been updated in the community profiles included in this document, but this information is readily available[2] for review in the original document.

Updated, post-BSAI crab rationalization profiles for the other four communities central to the current analysis (Sand Point, Adak, St. Paul, and St. George) were completed in June 2008 under the title *Comprehensive Baseline Commercial Fishing Community Engagement and Dependency Profiles: Adak, St. George, St. Paul, and Sand Point, Alaska* (EDAW 2008). These profiles, funded by the NPFMC (Contract NEPA-1-06) and the NPRB (Project 640), explicitly built upon the community profiles contained in the *BSAI Crab Fisheries Final Environmental Impact Statement Social Impact Assessment* (NOAA 2004, Appendix 3), and contain, as part of the overall description of each commercial fishery-related sector in the community and where relevant, information on community-specific effects of crab rationalization. As these comprehensive profiles are readily available[3] for review, and have recently been distributed to the NPFMC at its constituent bodies, they are incorporated by reference rather than reproduced in this document.

[1] Available at http://alaskafisheries.noaa.gov/sustainablefisheries/crab/eis/#final.

[2] Available at http://www.fakr.noaa.gov/npfmc/current_issues/crab/crabcoop.htm and then selecting Community Profiles 08/08 Volume 1: Unalaska, Akutan, King Cove, Kodiak.

[3] Available at http://www.fakr.noaa.gov/npfmc/current_issues/crab/crabcoop.htm and then selecting Community Profiles 08/08 Volume 2: Sand Point, Adak, St. Paul, St. George.

1.2 QUANTITATIVE PARTICIPATION DESCRIPTION BY COMMUNITY

The data used to develop the tables in this section cover the span of years from 1998 through the 2006/2007 crab seasons and are derived from Alaska Department of Fish and Game (ADFG) fish ticket data and Alaska Commercial Fisheries Entry Commission (CFEC) gross revenues data. Following an introductory table in the first subsection below, the comparative information presented in this section is largely focused on the Bristol Bay red king crab and Bering Sea snow crab fisheries, as participation in the other rationalized BSAI crab fisheries was concentrated in a relatively few communities, and/or limited to a shorter span of years by fishery closures, as described in Section 1.3. For harvester data, pre-rationalization annual averages displayed in the tables in this section are based on annual data from 1998 through 2004 for the Bristol Bay red king crab fishery and from 1998 through 2005 Bering Sea snow crab fishery. Post-rationalization averages are based on annual data from the 2005/2006 and 2006/2007 seasonal data for both fisheries.

1.2.1 Harvest Trends by Crab Fishery

Table 1-1 displays information on overall harvest trends for catcher vessels within the rationalized crab fisheries on an annual average basis for the pre- and post-rationalization years covered by these data (1998–2007). The post-rationalization consolidation of the fleet is apparent for all four fisheries that were open prior to the implementation of rationalization, although the Eastern Aleutian Islands (EAI) golden king crab and Western Aleutian Island (WAI) golden king crab fisheries are far smaller, and much less important economically, than the Bristol Bay red king crab and Bering Sea snow crab fisheries, in terms of dollars and jobs generated. Also apparent from the table is the increase in average annual value of harvest per vessel post-rationalization compared to the average annual figure for the pre-rationalization years covered.

Table 1-1. Harvest Averages by BSAI Crab Fishery, Pre- and Post-Rationalization

Fishery	1998–2004/05 Annual Average† (Pre-Rationalization)	2005/06–2006/07 Annual Average (Post-Rationalization)
Pounds		
Bristol Bay Red	11,165,019	15,266,528
Bering Sea Snow	72,912,463	32,954,553
Eastern Aleutian Golden	3,045,172	2,629,232
Western Aleutian Golden	**	**
Bering Tanner East	na	719,416
Bering Tanner West	na	625,014
Value		
Bristol Bay Red	$52,936,158	$61,625,275
Bering Sea Snow	$72,593,203	$42,705,762
Eastern Aleutian Golden	$9,318,065	$6,029,850
Western Aleutian Golden	**	**
Bering Tanner East	na	$1,007,068
Bering Tanner West	na	$882,910

Table 1-1. (continued)

Fishery	1998–2004/05 Annual Average† (Pre-Rationalization)	2005/06–2006/07 Annual Average (Post-Rationalization)
Vessels		
Bristol Bay Red	249	85
Bering Sea Snow	206	74
Eastern Aleutian Golden	17	7
Western Aleutian Golden	8	3
Bering Tanner East	na	22
Bering Tanner West	na	40
Average Value per Pound		
Bristol Bay Red	$4.74	$4.04
Bering Sea Snow	$1.00	$1.30
Eastern Aleutian Golden	$3.06	$2.29
Western Aleutian Golden	**	**
Bering Tanner East	na	$1.40
Bering Tanner West	na	$1.41
Average Value per Vessel		
Bristol Bay Red	$212,230	$725,003
Bering Sea Snow	$353,252	$581,031
Eastern Aleutian Golden	$548,121	$927,669
Western Aleutian Golden	**	**
Bering Tanner East	na	$46,840
Bering Tanner West	na	$22,073

† Pre-rationalization averages include years through 2004 for the Bristol Bay red king crab and EAI golden king crab fisheries and through 2005 for the Bering Sea snow crab and WAI golden king crab fisheries.

**Computation suppressed due to confidentiality of primary data.

Source: Alaska Department of Fish and Game 2008; Alaska Commercial Fisheries Entry Commission 2008.

1.2.2 Local Community Fleet Participation

Table 1-2 provides information on the average annual distribution of the Bristol Bay red king crab and the Bering Sea snow crab fleets, by community, both pre- and post-rationalization (full distribution by community by year, in absolute and percentage terms, is shown in Tables A1-2a and A1-2b in Attachment 1). As shown, the annual average participation in the Bristol Bay red king crab fishery dropped from 244 vessels pre-rationalization to 82 vessels post-rationalization, while the analogous drop was from 200 to 70 vessels in the Bering Sea snow crab fishery. Within Alaska, while the fleet size in every subregion declined with rationalization, Kodiak had more vessels participating in both fisheries on an annual average, both pre- and post-rationalization, than all other communities in the state combined. Following rationalization, the percent vessels participating from Southeast and Aleutian region communities declined, while the percent of vessels participating from Kodiak and the South-Central region increased. Outside of Alaska, vessels owned by residents of the Seattle Consolidated Metropolitan Statistical Area (CMSA) alone made up over half of the fleet (and vessels owned by Washington residents as a whole made up over 60 percent of the fleet) in both the Bristol Bay red king crab fishery and the Bering Sea snow crab fisheries both pre- and post-rationalization, although percentages declined slightly post-rationalization (both for the Seattle CMSA and Washington as a whole).

Table 1-2. Bristol Bay Red King Crab and Bering Sea Snow Crab Vessel Count by Community, Annual Averages Pre- and Post-Rationalization

State	Subarea	Community	Bristol Bay Red King Crab				Bering Sea Snow Crab			
			1998–2004 Annual Average (Pre-Rationalization)		2005/06–2006/07 Annual Average (Post-Rationalization)		1998–2005 Annual Average (Pre-Rationalization)		2005/06–2006/07 Annual Average (Post-Rationalization)	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent
Alaska	South-Central	Anchorage	4.9	2.0%	3.5	4.3%	4.8	2.4%	3.0	4.3%
		Big Lake	0.1	0.1%	0.0	0.0%	0.1	0.1%	0.0	0.0%
		Cordova	2.1	0.9%	0.0	0.0%	1.8	0.9%	0.0	0.0%
		Kenai	0.6	0.2%	0.0	0.0%	0.6	0.3%	0.0	0.0%
		Homer	6.9	2.8%	3.0	3.7%	6.4	3.2%	2.5	3.6%
		Seldovia	1.0	0.4%	0.5	0.6%	1.0	0.5%	1.0	1.4%
		South-Central Subtotal	*15.6*	*6.4%*	*7.0*	*8.5%*	*14.6*	*7.3%*	*6.5*	*9.3%*
	Southeast	Ketchikan	1.0	0.4%	0.5	0.6%	1.1	0.6%	0.5	0.7%
		Petersburg	2.0	0.8%	0.0	0.0%	2.0	1.0%	0.0	0.0%
		Sitka	1.7	0.7%	0.0	0.0%	1.6	0.8%	0.0	0.0%
		Yakutat	0.9	0.4%	0.0	0.0%	0.8	0.4%	0.0	0.0%
		Southeast Subtotal	*5.6*	*2.3%*	*0.5*	*0.6%*	*5.5*	*2.7%*	*0.5*	*0.7%*
	Aleutians	Unalaska/Dutch Harbor	2.4	1.0%	0.0	0.0%	2.0	1.0%	0.5	0.7%
		King Cove	2.4	1.0%	1.0	1.2%	1.4	0.7%	0.0	0.0%
		Sand Point	0.7	0.3%	0.0	0.0%	0.3	0.1%	0.0	0.0%
		Aleutians Subtotal	*5.6*	*2.3%*	*1.0*	*1.2%*	*3.6*	*1.8%*	*0.5*	*0.7%*
	All Subregions (non-Kodiak)		*26.7*	*10.9%*	*8.5*	*10.4%*	*23.8*	*11.8%*	*7.5*	*10.7%*
	Kodiak	Kodiak	33.6	13.7%	12.5	15.2%	26.1	13.0%	10.0	14.3%
	Alaska Total		**60.3**	**24.7%**	**21.0**	**25.6%**	**49.9**	**24.9%**	**17.5**	**25.0%**
Washington	Seattle CMSA		139.3	57.0%	45.0	54.9%	110.9	55.3%	41.0	58.6%
	Other Washington		18.6	7.6%	6.0	7.3%	16.6	8.3%	2.5	3.6%
	Washington Total		**157.9**	**64.6%**	**51.0**	**62.2%**	**127.5**	**63.6%**	**43.5**	**62.1%**
Oregon	**Oregon Total**		**20.0**	**8.2%**	**8.5**	**10.4%**	**17.5**	**8.7%**	**7.5**	**10.7%**
Other U.S.	**Other U.S. Total**		**6.3**	**2.6%**	**1.5**	**1.8%**	**5.6**	**2.8%**	**1.5**	**2.1%**
All States	**All States Total**		**244.4**	**100.0%**	**82.0**	**100.0%**	**200.5**	**100.0%**	**70.0**	**100.0%**

Source: Alaska Department of Fish and Game 2008.

1.2.3 Catcher Vessel Crab Harvest Volume and Value by Community

Confidentiality restrictions effectively preclude the display of pre- and post-rationalization comparative harvest volume and value data for all communities and regions within Alaska except for Kodiak, due to the small number of vessels participating in the fisheries from most communities, particularly post-rationalization. Within Alaska but outside of Kodiak, totals could be shown for either all of Alaska exclusive of Kodiak (allowing a state total) or the South-Central region, but not both. The option allowing a state total was chosen to allow comparisons between vessels from different states. In the case of Washington communities, confidentiality restrictions allowed the display of data for vessels from the Seattle CMSA or all of Washington, but not both, due to the low number vessels participating in the post-rationalization Bering Sea snow crab fishery that are owned outside of Seattle. Again, the option that allowed a state total to be shown was selected. Table 1-3 displays catcher vessel average annual harvest by volume (absolute and percentage) both pre- and post-rationalization. Table 1-4 provides similar information for value of harvest. (Tables A1-3a, A1-3b, A1-4a, and A1-4b in Attachment 1 provide analogous information on a year-by-year basis.)

As shown in Table 1-3, the percentage of average annual total harvest was slightly higher for Kodiak-owned vessels post-rationalization than during the pre-rationalization years displayed in both the Bristol Bay red king crab and the Bering Sea snow crab fisheries. For Alaska-owned vessels as a whole, annual average percentages of harvest were higher post-rationalization than were annual averages pre-rationalization, with larger gains seen in the Bering Sea snow crab fishery than in the Bristol Bay red king crab fishery. In absolute terms, annual average volume for Bristol Bay red king crab was higher and Bering Sea snow crab was lower in the post-rationalization era compared to the pre-rationalization era shown, but this was a function of guideline harvest levels (GHLs) or total allowable catch (TAC) rather than a function of rationalization. As shown in Table 1-4, values tracked with volumes for Kodiak and Alaska vessels in general, and the annual average percentage of value of the Bristol Bay red king crab fishery was essentially the same pre- and post-rationalization for all Alaska vessels combined, while the average annual percentage of value for Bering Sea snow crab increased following rationalization. Outside of Alaska, the largest shift in annual average value was seen with the lower percentage of total value of the post-rationalization Bering Sea snow crab fishery harvested by Washington vessels (approximately 57 percent of the total fishery catcher vessel harvest compared to approximately 68 percent of the total fishery catcher vessel harvest).

BSAI crab vessels vary in their relative dependency on crab as vessels participate in a wide range of other fisheries. Table 1-5 displays diversity information by volume of harvest by species on an average annual basis during both pre- and post-rationalization years. Due to confidentiality restrictions, the only Alaska community for which a community total may be disclosed is Kodiak. Table 1-6 provides parallel information displayed by value rather than by volume of harvest. (Tables A1-5a, A1-5b, A1-6a, and A1-6b in Attachment 1 provide analogous volume and value information on a year-by-year basis.) The relatively lower annual average percentage of dependence on crab seen in the post-rationalization years is largely, if not entirely, attributable to the sharp decline in the Bering Sea snow crab fishery that occurred partway through the span of pre-rationalization years in the tables (with the inclusion of the much higher volume and value years at the beginning of the pre-rationalization time period covered serving to skew the pre-rationalization average upward).

Table 1-3. Bristol Bay Red King Crab and Bering Sea Snow Crab Catcher Vessel Harvest Volume by Community, Annual Averages Pre- and Post-Rationalization

State	Subarea	Bristol Bay Red King Crab				Bering Sea Snow Crab			
		1998–2004 Annual Average (Pre-Rationalization)		2005/06–2006/07 Annual Average (Post-Rationalization)		1998–2005 Annual Average (Pre-Rationalization)		2005/06–2006/07 Annual Average (Post-Rationalization)	
		Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent
Alaska	Kodiak	1,264,878	11.6%	1,761,449	12.0%	7,779,921	10.8%	3,418,655	11.2%
	All Subregions (non-Kodiak)	1,074,714	9.9%	1,444,199	9.9%	6,900,964	9.6%	4,606,254	15.2%
	Alaska Total	*2,339,592*	*21.5%*	*3,205,648*	*21.9%*	*14,680,885*	*20.4%*	*8,024,909*	*26.4%*
Washington		*7,324,873*	*67.4%*	*9,610,467*	*65.6%*	*49,303,450*	*68.6%*	*17,536,395*	*57.7%*
Oregon and Other U.S.		*1,199,228*	*11.0%*	*1,827,851*	*12.5%*	*7,889,859*	*11.0%*	*4,828,897*	*15.9%*
All States Total		**10,863,694**	**100.0%**	**14,643,966**	**100.0%**	**71,874,194**	**100.0%**	**30,390,201**	**100.0%**

Source: Alaska Department of Fish and Game 2008.

Table 1-4. Bristol Bay Red King Crab and Bering Sea Snow Crab Catcher Vessel Harvest Value by Community, Annual Averages Pre- and Post-Rationalization

State	Subarea	Bristol Bay Red King Crab				Bering Sea Snow Crab			
		1998–2004 Annual Average (Pre-Rationalization)		2005/06–2006/07 Annual Average (Post-Rationalization)		1998–2005 Annual Average (Pre-Rationalization)		2005/06–2006/07 Annual Average (Post-Rationalization)	
		Dollars	**Percent**	**Dollars**	**Percent**	**Dollars**	**Percent**	**Dollars**	**Percent**
Alaska	Kodiak	6,159,936	12.0%	7,262,272	12.2%	8,028,114	11.3%	4,563,630	11.5%
	All Subregions (non-Kodiak)	5,131,131	10.0%	5,755,764	9.7%	6,813,280	9.6%	6,308,094	15.9%
	Alaska Total	*11,291,068*	*22.0%*	*13,018,037*	*21.9%*	*14,841,394*	*20.9%*	*10,871,724*	*27.4%*
Washington		*34,498,714*	*67.1%*	*38,849,347*	*65.5%*	*48,054,282*	*67.8%*	*22,584,127*	*57.0%*
Oregon and Other U.S.		*5,633,244*	*11.0%*	*7,476,595*	*12.6%*	*7,997,653*	*11.3%*	*6,192,369*	*15.6%*
All States Total		**51,423,025**	**100.0%**	**59,343,978**	**100.0%**	**70,893,329**	**100.0%**	**39,648,220**	**100.0%**

Source: Alaska Department of Fish and Game 2008; Alaska Commercial Fisheries Entry Commission 2008.

Table 1-5. BSAI Crab Vessel Harvest Diversity, Annual Averages by Volume, Pre- and Post-Rationalization

State	Subarea	Species	1998–2004 Annual Average (Pre-Rationalization)		2006–2007 Annual Average (Post-Rationalization)	
			Pounds	Percent	Pounds	Percent
Alaska	Kodiak	Rationalized Crab	10,451,526	15.5%	5,742,230	8.7%
		Non-Rationalized Crab	447,933	0.7%	234,136	0.4%
		Groundfish	53,445,845	79.1%	56,333,420	85.3%
		Salmon	493,693	0.7%	1,415,512	2.1%
		Herring	7,776	0.0%	0	0.0%
		Halibut	2,562,982	3.8%	1,918,763	2.9%
		Other Species	125,516	0.2%	419,091	0.6%
	All Subregions (non-Kodiak)	Rationalized Crab	8,681,349	40.8%	7,045,570	31.9%
		Non-Rationalized Crab	1,013,875	4.8%	999,144	4.5%
		Groundfish	9,614,351	45.1%	10,536,496	47.6%
		Salmon	1,367,665	6.4%	3,285,880	14.9%
		Herring	0	0.0%	0	0.0%
		Halibut	604,033	2.8%	228,431	1.0%
		Other Species	19,806	0.1%	23,472	0.1%
	Alaska Total	*Rationalized Crab*	*19,132,875*	*21.5%*	*12,787,800*	*14.5%*
		Non-Rationalized Crab	*1,461,807*	*1.6%*	*1,233,280*	*1.4%*
		Groundfish	*63,060,196*	*71.0%*	*66,869,916*	*75.8%*
		Salmon	*1,861,358*	*2.1%*	*4,701,392*	*5.3%*
		Herring	*7,776*	*0.0%*	*0*	*0.0%*
		Halibut	*3,167,015*	*3.6%*	*2,147,194*	*2.4%*
		Other Species	*145,322*	*0.2%*	*442,563*	*0.5%*
Washington Total		*Rationalized Crab*	*64,573,740*	*9.4%*	*30,222,412*	*4.5%*
		Non-Rationalized Crab	*3,394,836*	*0.5%*	*4,333,172*	*0.6%*
		Groundfish	*618,204,704*	*89.9%*	*631,794,291*	*94.5%*
		Salmon	*996,219*	*0.1%*	*1,202,356*	*0.2%*
		Herring	*357*	*0.0%*	*0*	*0.0%*
		Halibut	*294,240*	*0.0%*	*217,270*	*0.0%*
		Other Species	*416,638*	*0.1%*	*471,755*	*0.1%*
Oregon and Other U.S. Total		*Rationalized Crab*	*11,326,657*	*16.2%*	*7,731,253*	*11.4%*
		Non-Rationalized Crab	*397,725*	*0.6%*	*285,184*	*0.4%*
		Groundfish	*56,241,348*	*80.5%*	*59,000,705*	*87.1%*
		Salmon	*960*	*0.0%*	*0*	*0.0%*
		Herring	*14,323*	*0.0%*	*0*	*0.0%*
		Halibut	*1,755,442*	*2.5%*	*579,399*	*0.9%*
		Other Species	*89,305*	*0.1%*	*124,493*	*0.2%*
All States Total		**Rationalized Crab**	**95,033,272**	**11.2%**	**50,741,464**	**6.2%**
		Non-Rationalized Crab	**5,254,368**	**0.6%**	**5,851,635**	**0.7%**
		Groundfish	**737,506,248**	**87.1%**	**757,664,912**	**91.9%**
		Salmon	**2,858,536**	**0.3%**	**5,903,747**	**0.7%**
		Herring	**22,455**	**0.0%**	**0**	**0.0%**
		Halibut	**5,216,698**	**0.6%**	**2,943,863**	**0.4%**
		Other Species	**651,264**	**0.1%**	**1,038,810**	**0.1%**

Source: Alaska Department of Fish and Game 2008.

Table 1-6. BSAI Crab Vessel Harvest Diversity, Annual Averages by Value, Pre- and Post-Rationalization

State	Subarea	Species	1998–2004 Annual Average (Pre-Rationalization)		2006–2007 Annual Average (Post-Rationalization)	
			Dollars	Percent	Dollars	Percent
Alaska	Kodiak	Rationalized Crab	$16,622,377	51.2%	$13,753,859	44.6%
		Non-Rationalized Crab	$1,048,228	3.2%	$554,840	1.8%
		Groundfish	$8,879,572	27.3%	$12,503,690	40.5%
		Salmon	$37,984	0.1%	$307,643	1.0%
		Herring	$1,641	0.0%	$0	0.0%
		Halibut	$5,833,142	18.0%	$3,680,356	11.9%
		Other Species	$57,222	0.2%	$64,474	0.2%
	All Subregions (non-Kodiak)	Rationalized Crab	$12,419,350	68.8%	$15,945,432	67.6%
		Non-Rationalized Crab	$1,909,248	10.6%	$2,509,563	10.6%
		Groundfish	$2,200,633	12.2%	$3,691,689	15.7%
		Salmon	$196,990	1.1%	$577,797	2.5%
		Herring	$0	0.0%	$0	0.0%
		Halibut	$1,318,515	7.3%	$842,388	3.6%
		Other Species	$7,353	0.0%	$8,266	0.0%
	Alaska Total	*Rationalized Crab*	*$29,041,727*	*57.5%*	*$29,699,291*	*54.6%*
		Non-Rationalized Crab	*$2,957,476*	*5.9%*	*$3,064,404*	*5.6%*
		Groundfish	*$11,080,205*	*21.9%*	*$16,195,379*	*29.7%*
		Salmon	*$234,974*	*0.5%*	*$885,440*	*1.6%*
		Herring	*$1,641*	*0.0%*	*$0*	*0.0%*
		Halibut	*$7,151,657*	*14.2%*	*$4,522,744*	*8.3%*
		Other Species	*$64,575*	*0.1%*	*$72,740*	*0.1%*
Washington Total		*Rationalized Crab*	*$94,767,912*	*55.3%*	*$65,338,375*	*39.3%*
		Non-Rationalized Crab	*$7,488,813*	*4.4%*	*$9,803,889*	*5.9%*
		Groundfish	*$68,134,897*	*39.8%*	*$90,198,015*	*54.2%*
		Salmon	*$255,427*	*0.1%*	*$276,216*	*0.2%*
		Herring	*$19*	*0.0%*	*$0*	*0.0%*
		Halibut	*$664,906*	*0.4%*	*$817,693*	*0.5%*
		Other Species	*$29,227*	*0.0%*	*$27,825*	*0.0%*
Oregon and Other U.S. Total		*Rationalized Crab*	*$18,770,029*	*60.0%*	*$15,296,342*	*53.4%*
		Non-Rationalized Crab	*$813,264*	*2.6%*	*$558,583*	*2.0%*
		Groundfish	*$7,693,051*	*24.6%*	*$10,555,787*	*36.9%*
		Salmon	*$1,070*	*0.0%*	*$0*	*0.0%*
		Herring	*$3,251*	*0.0%*	*$0*	*0.0%*
		Halibut	*$4,003,088*	*12.8%*	*$2,191,107*	*7.6%*
		Other Species	*$18,878*	*0.1%*	*$42,225*	*0.1%*
All States Total		**Rationalized Crab**	**$142,579,668**	**56.3%**	**$110,334,008**	**44.2%**
		Non-Rationalized Crab	**$11,259,553**	**4.4%**	**$13,426,876**	**5.4%**
		Groundfish	**$86,908,154**	**34.3%**	**$116,949,181**	**46.9%**
		Salmon	**$491,472**	**0.2%**	**$1,161,655**	**0.5%**
		Herring	**$4,910**	**0.0%**	**$0**	**0.0%**
		Halibut	**$11,819,652**	**4.7%**	**$7,531,544**	**3.0%**
		Other Species	**$112,680**	**0.0%**	**$142,790**	**0.1%**

Source: Alaska Department of Fish and Game 2008.

1.2.4 Local Community Processor Participation

As shown in Table 1-7, processors are relatively concentrated in a few communities, but community data for processing are known to be less than complete due to a lack of processing location data for a number of floating catcher processors and inshore stationary floating processors. (Tables A1-5a and A1-5b in Attachment 1 provide analogous information on a year-by-year basis.) Prior to rationalization, only Unalaska/Dutch Harbor shows an annual average of more than one processor for each year for each species before and after rationalization within the span of years covered. Besides Unalaska, only Kodiak and King Cove show an annual average of more than one processor pre- and post-rationalization for both Bristol Bay red king and Bering Sea snow crab, but Akutan shows consistent involvement of one processor with both fisheries, and St. Paul shows consistent involvement of one processor in the Bering Sea snow crab fishery for all of the years involved. Besides Unalaska, Adak is the only community that shows up processing WAI golden king crab both pre- and post-rationalization; besides Unalaska, Akutan is the only community that shows up as processing EAI golden king crab both pre- and post-rationalization. Again, due to known shortcomings in these data from the exclusion of at least some floating processors and inshore stationary floating processors that should be associated with specific communities, please refer to the more detailed community profiles for a characterization of mobile processors, if any, that are regularly associated with a particular community.

1.2.5 Processor Volume and Value by Community

Due to the low number of processors, confidentiality restrictions preclude the disclosure of community-specific volume or value information for every community except Unalaska/Dutch Harbor, simply based on the number of active processors. Even in that case, the desire to show a more complete analysis of the distribution of processing of A, B, and C share quota requires lumping of Unalaska/Dutch Harbor data with Akutan data. As noted in the Unalaska/Dutch Harbor summary below, however, it can be qualitatively stated that Unalaska did increase its processing market share on an annual average basis post- rationalization compared to pre-rationalization for the years covered by the data.

As described elsewhere in the 3-year review, the geographic distribution of B and C share processing compared to A share processing has varied by year and fishery over the three years of the program. Due to confidentiality considerations, however, that discussion lumps Unalaska/ Dutch Harbor and Akutan together, as well as King Cove and Kodiak together, so no information is available on an individual community basis. Overall, however, in the Bristol Bay red king crab fishery, over the first 3 years of the program, B and C share processing has tended to track relatively closely with A share processing in terms of distribution across communities, except for B share processing in the 2007/2008 season, which tended to be more aggregated in Akutan and Unalaska (and less aggregated in King Cove and Kodiak) than either A or C share processing. For the Bering Sea snow crab fishery, proportionally far more B share processing (between 67.2 percent and 89.3 percent of Individual Processor Quota [IPQ] pool) and C share processing (between 70.3 percent and 87.4 percent of IPQ pool) has tended to take place in Unalaska and Akutan than has A share processing (between 34.1 percent and 46.1 percent of share type) across the 3 years of the program; similar comparisons cannot be consistently made for King Cove and Kodiak combined because of confidentiality restrictions.

Table 1-7. BSAI Crab Processor Count by Community, Annual Averages Pre- and Post-Rationalization

Subarea	Community	Bristol Bay Red King Crab				Bering Sea Snow Crab				EAI Golden King Crab				WAI Golden King Crab			
		1998–2004 Annual Average (Pre-Rationalization)		2006–2007 Annual Average (Post-Rationalization)		1998–2004 Annual Average (Pre-Rationalization)		2006–2007 Annual Average (Post-Rationalization)		1998–2004 Annual Average (Pre-Rationalization)		2006–2007 Annual Average (Post-Rationalization)		1998–2004 Annual Average (Pre-Rationalization)		2006–2007 Annual Average (Post-Rationalization)	
		Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
South-Central	Cordova	0.0	0.0%	0.0	0.0%	0.1	0.3%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%
	Ninilchik	0.0	0.0%	0.0	0.0%	0.1	0.3%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%
	Wasilla	0.0	0.0%	0.0	0.0%	0.1	0.3%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%
	South-Central Total	*0.0*	*0.0%*	*0.0*	*0.0%*	*0.4*	*1.3%*	*0.0*	*0.0%*	*0.0*	*0.0%*	*0*	*0.0%*	*0.0*	*0.0%*	*0.0*	0.0%
Southeast	Sitka	0.0	0.0%	0.5	3.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%
Aleutians	Adak	0.1	0.4%	0.0	0.0%	0.1	0.3%	0.0	0.0%	0.9	18.0%	0	0.0%	1.9	28.4%	1.5	25.0%
	Akutan	1.0	3.9%	1.0	6.1%	0.9	3.0%	1.0	4.3%	0.1	2.0%	0.5	9.1%	0.0	0.0%	0.0	0.0%
	Unalaska/Dutch Harbor	6.1	23.6%	4.5	27.3%	6.6	21.6%	7.5	31.9%	3.6	72.0%	3.5	63.6%	2.9	43.3%	2.0	33.3%
	King Cove	1.4	5.4%	2.0	12.1%	1.1	3.6%	1.0	4.3%	0.0	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%
	Sand Point	0.4	1.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%
	St. Paul	0.4	1.5%	1.0	6.1%	2.0	6.6%	1.5	6.4%	0.0	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%
	Aleutians Total	*9.4*	*36.3%*	*8.5*	*51.5%*	*10.7*	*35.1%*	*11.0*	*46.8%*	*4.6*	*92.0%*	*4*	*72.7%*	*4.8*	*71.6%*	*3.5*	58.3%
Kodiak	Kodiak	4.4	17.0%	3.0	18.2%	1.9	6.2%	2.0	8.5%	0.0	0.0%	0	0.0%	0.0	0.0%	0.0	0.0%
Floating Catcher Processors		5.4	20.8%	3.5	21.2%	5.1	16.7%	4.0	17.0%	0.0	0.0%	1	18.2%	1.0	14.9%	1.0	16.7%
Inshore Stationary Floating Processors		2.6	10.0%	1.0	6.1%	4.4	14.4%	6.5	27.7%	0.0	0.0%	0.5	9.1%	0.0	0.0%	1.5	25.0%
Unknown		4.1	15.8%	0.0	0.0%	8.0	26.2%	0.0	0.0%	0.4	8.0%	0	0.0%	0.9	13.4%	0.0	0.0%
Total All Areas		**25.9**	**100.0%**	**16.5**	**100.0%**	**30.5**	**100.0%**	**23.5**	**100.0%**	**5.0**	**100.0%**	**5.5**	**100.0%**	**6.7**	**100.0%**	**6.0**	100.0%

Note: Not all percentages add up due to rounding introduced in computing pre- and post-rationalization averages.
Source: Alaska Department of Fish and Game 2008.

1.2.6 Quota Share Distribution by Community

Initial allocations of quota share by community for catcher vessel operator, catcher vessel captain/crew, catcher processor owner, and catcher processor captain/crew shares, along with the distribution of those share types as of the Individual Fishing Quota (IFQ) allocation process for the 2008/2009 season are discussed in the individual community summaries below. This information is also presented in tabular form in Attachment 1 (Tables A1-8 through A1-11).

Social impacts related to changes in the distribution of processing effort have been isolated to a few communities.

- As noted in the Adak community summary below, a locally substantial amount of crab was processed in Adak after the close of the rationalization allocation qualifying period, but prior to the implementation of crab rationalization itself. From a community perspective, the crab rationalization program served to impede what was at the time a growth area for local processing.

- As discussed in the St. George community summary below, crab processing occurred in St. George during the rationalization allocation qualifying period, but had exited the community prior to the implementation of the crab rationalization. Crab rationalization—and specifically the community protection feature of regionalization—has, so far, served to bring crab processing local public revenue benefits back to St. George (via St. Paul on an annual agreement basis), but not processing itself. Importantly, however, no long-term revenue agreement is in place for the City of St. George.

- As described in the Kodiak community profile below, changes in ownership structure of one locally operating crab plant (Ocean Beauty) resulted in that plant no longer being able to process their A share crab, but institutional arrangements were made under the auspices of the rationalization program that have served to retain the processing quota in Kodiak, where it has been utilized by two other local processors.

- With the owners of UniSea coming to have ownership interest in the Unalaska-based processor shares initially allocated to Royal Aleutian Seafoods following the implementation of crab rationalization, ownership divestiture of some Unalaska-based shares of EAI golden king crab was required. Acquired by a third party, these shares have been leased to Harbor Crown Seafoods, which has helped to foster the growth of a relatively new processing entrant to the BSAI crab fisheries while retaining the processing of those shares in Unalaska.

- More recently, an increase in common ownership between several processors (including Westward Seafoods, Peter Pan Seafoods, and Alyeska Seafoods) triggered the requirement for divestiture of some crab processor quota among the group, which could have included processor quota share moving from either King Cove, Unalaska, or both. A recent Council amendment on custom processing, however, has apparently allowed an agreement to be reached that will retain a stable level for processor quota level for King Cove. In this case, King Cove-based processor shares of Bristol Bay red king crab are being transferred to Aleutia with the intention that they will continue to be processed in the community in the future. In the case of Unalaska, the species at issue were EAI

golden king crab and WAI golden king crab. These shares are apparently being transferred to the Aleutian Pribilof Islands Community Development Association (APICDA) CDQ group, with the approval of local EAI golden king crab right of first refusal holders from Unalaska (with there being no right of first refusal for WAI golden king crab). Initial indications are that these shares may be processed in Atka, another APICDA community, in the future. This would represent the only known case of processor shares moving between communities via the right of first refusal process following BSAI crab rationalization.

1.3 SUMMARY OF SOCIAL IMPACTS OF BSAI CRAB RATIONALIZATION BY COMMUNITY

As noted in Section 1.1, a more comprehensive discussion of community level impacts may be found in the individual community profiles included in this document (Unalaska/Dutch Harbor, Akutan, King Cove, and Kodiak) or those incorporated by reference (Sand Point, Adak, St. Paul, and St. George [EDAW 2008]). The following summaries follow the order of issue discussion in the referenced profiles, and include harvesting, processing, support service, and local governance and revenue considerations. In general, the changes associated with rationalization have not been occurring in a vacuum. While crab fleet consolidation has been an issue for a number of different direct and indirect reasons as noted in the summaries below, this consolidation has occurred during a time when Alaska community fleets in general have been getting smaller, as shown in Table 1-8. While rationalization has not largely been seen as resulting in adverse social impacts regarding processing and local governance and revenue considerations (with few exceptions as noted below), support service businesses in a number of communities have also reported a longer-term trend of decline, variously attributed to rationalization in other fisheries or changes in fishery market demands, among other factors. The specific social impacts attributed to crab rationalization in each community are largely a function of the size and structure of the specific community, the nature and intensity of the community engagement in the crab fishery, and the relative level of dependence of the particular community on the crab fishery.

1.3.1 Unalaska/Dutch Harbor

Harvesting

- **Vessels** – According to the BSAI crab fishery 1998–2008 dataset[4] the number of Unalaska-owned vessels participating in the Bristol Bay red king crab fishery declined from four to one in the years immediately preceding the implementation of BSAI crab rationalization, and no locally owned vessels have participated in the fishery since rationalization. In the Bering Sea snow crab fishery, the number of locally owned vessels declined from three to one in the years leading up to rationalization, and one locally owned vessel participated in this fishery in the first year under the rationalized fishery, but none did so in the second year. No other Unalaska-owned vessels have participated in any of the now-rationalized crab fisheries in recent years, either before or after rationalization. This apparent absence of current, direct participation of Unalaska-owned vessels in the rationalized BSAI crab fisheries is consistent with information developed during interviews for this project. Though a large fishing port, Unalaska is home to a

[4] Crab rationalization community analysis dataset, NPFMC, 2008.

Table 1-8. Total Number of Local Commercial Fishing Vessels by Community by Year (All Fisheries)

Community	Year												
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Adak						2	4	3	3	7	6	6	4
Akutan	6	5	7	5	8	6	6	6	5	4	6	4	4
King Cove	134	130	126	119	111	104	90	80	79	77	75	77	63
Kodiak	743	723	743	698	699	711	655	604	582	575	523	483	477
St. George	12	10	12	12	12	11	11	14	7	6	3	3	3
St. Paul	29	31	27	29	27	28	27	25	24	16	15	16	17
Sand Point	250	242	232	232	227	229	218	192	169	163	155	145	143
Unalaska	72	64	62	53	48	44	45	44	38	55	53	40	43

Source: Alaska Commercial Fisheries Entry Commission 2008.

relatively small-scale residential fleet, and the local fleet, virtually out of the fishery prior to rationalization, has been largely unaffected by BSAI crab rationalization itself. Of the five unique vessels with ownership attributed to Unalaska residents that show up in the 1998–2007 crab rationalization database as having fished for even one season over that span of time for either Bristol Bay red king crab or Bering Sea snow crab, four of those vessels remain active in commercial fishing (and thus presumably continue to generate at least some level of economic benefit, even if they have exited the rationalized crab fisheries).

Among the now-rationalized crab fisheries that have been open in recent years,[5] two Unalaska vessel owners qualified for initial catcher vessel owner quota share allocations in each of the Bristol Bay Red (south), Bering Tanner East, and Bering Tanner West fisheries, while one Unalaska vessel owner qualified for an initial catcher vessel owner quota share allocation in each of the Bering Sea snow crab (north) and Bering Sea snow crab (south) fisheries. These numbers, and the percentage of overall quota shares held, were the same for the 2008/2009 IFQ allocation as they were for the initial allocation. (Two Unalaska vessel owners also were initially allocated, and still hold, catcher vessel owner shares in the Pribilof blue and red king crab fisheries, and one Unalaska vessel owner holds catcher vessel owner shares in each of the St. Matthews blue king crab north and St. Matthews blue king crab south fisheries, although these fisheries are not open at present.)

- **Crew –** Although good quantitative data are unavailable, Unalaska historically has had few resident crab crew members, just as it has had few resident crab vessel owners, especially when viewed in contrast to its importance as a service and processing port for the BSAI crab fisheries. Only one local resident qualified for initial catcher vessel captain/crew share allocations in each of the Bristol Bay red king crab (south), Bering Sea snow crab (north), and Bering Sea snow crab (south) fisheries. Initial allocations of catcher vessel captain/crew quota shares were received by two Unalaska residents each in the Bering Tanner East and Bering Tanner West fisheries. No other captain/crew quota shares were received by local residents for any other active BSAI crab fisheries. As of the 2008/2009 season IFQ allocation process, the number of Unalaska residents holding Bering Tanner East and Bering Tanner West catcher vessel captain/crew quota (and the amount held) remained unchanged from the initial allocation, while the Bristol Bay red king crab (south), Bering Sea snow crab (north), and Bering Sea snow crab (south) catcher vessel captain/crew holdings each increased by one Unalaska resident each (to a total of two resident holders each). (Among the currently closed fisheries, one Unalaska resident received an initial catcher vessel captain/crew quota share allocation in the Pribilof blue and red king crab fishery [south]; that level of ownership was unchanged as of the 2008/2009 season IFQ allocation process.) Unlike at least two of the other major port communities, King Cove and Kodiak, local crew job loss as a result of the consolidation of the crab fleet that accompanied BSAI crab rationalization is not a salient issue in Unalaska/Dutch Harbor.

[5] Pribilof blue and red king crab fisheries (north and south) and the WAI red king crab fishery have been closed for a number of years, including the 3 years post-implementation of rationalization, and are not expected to reopen in the near future. The St. Matthews blue king crab fisheries (north and south) have also been closed for a number of years, including the 3 years since the implementation of rationalization, but it is considered more likely that this fishery will open in the foreseeable future than the other currently closed but rationalized crab fisheries.

Processing

- Unalaska is home to several shore processors of BSAI crab (including Alyeska, Harbor Crown, UniSea, and Westward Seafoods) and is annually the site of crab processing aboard mobile processing platforms (including those operated by Icicle Seafoods). A relatively high volume processor of BSAI crab in Unalaska, Royal Aleutian Seafoods, was purchased by another processor following the implementation of rationalization and its quota is now run by two different plants in the community but has remained in Unalaska. Overall, since the implementation of crab rationalization, Unalaska plants have generally processed a larger overall percentage of several crab fisheries than before rationalization was implemented. For example, in 2006 and 2007, Unalaska plants, on average, processed roughly 10.5 percent more of the total Bristol Bay red king crab fishery than was the annual average of processing for the years 1998–2004 (with 2005 being excluded as a transition year for community totals), but it is important to note that there was considerable year-to-year variability in the years leading up to rationalization. In general, Unalaska plants processed somewhat less than half of all Bristol Bay red king crab prior to rationalization and somewhat more than half following rationalization. For the Bering Sea snow crab fishery, that pattern is somewhat different, as Unalaska processors, as a group, built market share over the period 1998 through 2002 and subsequent processing levels, as a percentage of total processing, are little changed since that time (although comparing a 1998 to 2004 average with a 2006–2007 annual average would appear to show the community gaining about 9.7 percent of the total fishery processing during this time). While there was displacement of workers with the closure of the Royal Aleutian plant, crab processing at this plant was typically done with a temporary infusion of nonlocal resident workers. From a community social impact perspective, Unalaska would not appear to have experienced adverse impacts linked to processing as a result of BSAI crab rationalization. As noted in Section 1.2.6, however, there has been some movement of EIA golden king crab and WAI golden king crab Unalaska-based processor quota out of the community as a result of processor ownership changes.

Support Services

- Unalaska has the most developed fishery support service sector in the BSAI region. One general trend among the diverse vessel support businesses in the community prior to crab rationalization, however, was a drop-off in peak seasonal demand that was widely attributed to the earlier occurring pollock co-op rationalization and shortened crab seasons, coupled with a decline in harvest levels in the opilio fishery. In general, as described in the Unalaska community profile, seasonal support service sector employment, which used to be quite substantial for many businesses, has declined over a number of years, as have overtime earnings for support service employees in a number of subsectors, while full-time, year-round employment has tended to remain stable if not increase among existing businesses. While no data are available to allow for a systematic quantitative analysis, interview data gathered for this project suggest that the impacts of crab rationalization has varied widely by individual business, even for businesses within the same support service subsector, based on business structure and relative dependency on the crab fishery *per se*. Local grocery suppliers to the fleet report that crab rationalization impacts have been either minor or offset by other factors, but there has

been turnover in businesses in the sector overall. Some marine supply and hardware businesses reported that they have not yet recovered from a decline in crab related revenues, but this sector has also seen a new (post-rationalization) entrant. Within the hydraulics sector, at least one business has reported consistent year-over-year growth for many years, but there has also been a post-rationalization consolidation with the closure of one of the three pre-rationalization providers (although, according to the former owner of the now-closed business, crab rationalization related declines were offset by gains in other fisheries before the business was closed for other reasons). Among welding and ship repair businesses, revenues have generally increased over time, as has employment at all but one entity, but a number of these gains have come from diversifying the businesses as opposed to growth within existing types of offerings. Among the 3 major local sellers of marine fuels, one reported that crab rationalization caused a significant declines in sales, another reported essentially no impacts, and the third was somewhere in between. Impacts among lodging and food and beverage providers attributable to crab rationalization are difficult to gauge because of recent changes in market share in this sector, including changes in business ownership (along with one new entrant) and consolidation of other businesses. The local housing market is strong, with essentially no vacancies in the community, a quite different situation than was seen after the rationalization of the pollock fishery.

Local Governance and Revenues

- Local fishery-derived revenues have continued to grow over time and the percentage of General Fund revenue attributed to direct fishery sources has fluctuated between approximately 39 and 46 percent over the last 10 years with no clear pattern to those fluctuations. Harbor-specific revenues grew annually over the period 2000 through 2006, but were relatively flat from 2006 through 2007. There are no known adverse impacts to public revenues in Unalaska related to BSAI crab rationalization.

1.3.2 Akutan

Harvesting

- **Vessels** – According to the BSAI crab fishery 1998–2008 dataset, no vessels owned by Akutan residents participated in the BSAI crab fisheries that have been rationalized either in the years leading up to rationalization (covered by the dataset) or in the years following rationalization. No Akutan vessel owners qualified for an initial allocation of owner quota shares. Akutan is a member community of the APICDA Community Development Quota (CDQ) group, which has ownership interest in two vessels that harvest rationalized crab.

- **Crew** – An earlier study (Knapp and Lowe 2007) reported that as a result of rationalization, four Akutan residents lost crab crew jobs (out of five Akutan residents who were actively crewing prior to rationalization). Interviews for this study suggest that crab crew jobs are still available to Akutan residents on an ongoing basis through APICDA, and, if less frequently, on an opportunistic basis through vessels calling on the local processor. Interviews suggest, however, that these post-rationalization crew jobs may well be less attractive to local residents than pre-rationalization crew jobs due to (1)

longer seasons that make crab crewing less compatible with other fishing and nonfishing opportunities in the community that are considered an important part of an integrated employment and income strategy (and preferred family/social arrangements) and (2) less ability to make a relatively high financial return per day of fishing effort invested away from the community. No Akutan residents qualified for an initial allocation of captain/crew quota shares.

Processing

- Akutan is home to a large processing operation (Trident Seafoods) that was a major crab processing plant prior to rationalization and has remained so post-rationalization. Confidentiality restrictions do not allow disclosure of processing volumes or values. Given the lack of processor quota movement from the community, however, it is assumed that net processing volumes as a percentage of total fishery quota processed have not changed substantially. According to interviews with Akutan community leaders, no long-term residents of the community work at the plant other than a few individuals who came to the community for employment at the plant, a situation that existed prior to rationalization.

Support Services

- Akutan has little in the way of fishery support services compared to other major fishing ports, and those businesses that do exist are owned by a very few entities. Although an earlier report (Knapp and Lowe 2007) reported that one local business estimated a loss in revenue during the first year post-rationalization, more recent interviews for this project suggest that this particular business is not experiencing adverse long-term effects from rationalization. Interviews with other business owners would suggest that BSAI crab rationalization has not had a substantial impact on their enterprises.

Local Governance and Revenues

- Detailed information on fish taxes cannot be disclosed, but local tax revenues as a whole have increased from 2004 to 2005 and then again from 2005 to 2006. Following a sharp decrease from 2002 to 2003 (prior to rationalization) total operating revenues have increased on an annual basis.

1.3.3 King Cove

Harvesting

- **Vessels –** According to the BSAI crab fishery 1998–2008 dataset, only one vessel owned by King Cove residents participated in the Bristol Bay red king crab fishery in the year immediately prior to the implementation of rationalization, and none participated in the Bering Sea snow crab fishery in the 2 years immediately prior to the implementation of rationalization. No locally owned vessels participated in the Bering Tanner East or Bering Tanner West fisheries in the years covered by the BSAI crab fishery 1998–2008 dataset. The one Bristol Bay red king crab vessel remains the only locally owned vessel active in the rationalized BSAI fisheries, both according to the BSAI crab fishery 1998–

2008 dataset and interviews conducted for this project. Of the five unique vessels with ownership attributed to King Cove residents that show up in the 1998–2007 crab rationalization database as having fished for even one season over that span of time for either Bristol Bay red king crab or Bering Sea snow crab, three of those vessels remain active in commercial fishing according to the dataset and another one of the five is known from field interviews to have remained active in commercial fishing (and thus four of the five presumably continue to generate at least some level of economic benefit, even if all but one have exited the rationalized crab fisheries).

According to the quota share dataset and interviews conducted for this project, only one King Cove vessel owner qualified for an initial allocation of catcher vessel owner quota shares in any of the rationalized crab fisheries. According to the dataset, initial allocation quota share in King Cove was received for the Bristol Bay red king crab (south), Bering Sea snow crab (south), Bering Tanner East, and Bering Tanner West fisheries (with each held by one person). Also according to the quota share dataset, for the 2008/2009 season, in addition to the level of unique holders of quota seen in the initial allocation, a second unique resident of King Cove has obtained Bristol Bay red king crab (south) vessel owner quota, and one individual resident now owns some Bering Sea snow crab (north) vessel owner quota, diversifying, if modestly, the rationalized crab fishery vessel quota ownership base in the community. (Among the currently closed BSAI rationalized crab fisheries, two King Cove residents hold catcher vessel owner quota shares in the Pribilof blue and red king crab fisheries.)

- **Crew** – While the King Cove locally owned fleet, with one exception, did not engage in BSAI crab fisheries immediately prior to rationalization, King Cove residents did crew on a number of vessels owned by individuals from outside of the community, and especially on a limited number of vessels that, while owned outside of the community, regularly spent time in King Cove. An earlier study (Knapp and Lowe 2007) reported that about 20 King Cove residents lost crab fishing jobs in the 2006/2007 season as a result of crab rationalization. While this is difficult to quantify with precision, based on the fact participation of individuals varied from year to year for a number of reasons, this estimate is generally consistent with information developed in 2004 pre- and 2008 post-rationalization implementation interviews for the current study effort. Essentially, while opportunities for crewing within the local fleet were very limited—and had become more so in recent years as a result of the separate crab vessel buy-back program and previously occurring changes, including the timing of fishing seasons, that tended to limit direct participation of local vessels—pre-rationalization crewing on crab vessels from outside of the community nonetheless represented a significant source of employment and income for King Cove residents in a way and to a degree not seen in post-rationalization crabbing. As a non-CDQ community, King Cove residents do not have the degree of alternative access to post-rationalization crab crew jobs that is seen in a CDQ community such as Akutan. Information from multiple interviews with individuals from a variety of sectors in the community suggest that loss of crab crew jobs in King Cove was and is a serious social impact of rationalization. Again, like Akutan, however, it may be the case in King Cove that post-rationalization crew jobs, even when available, are less attractive than pre-rationalization crew jobs for the same reasons described in the Akutan summary.

According to interview data gathered for this project and according to at least one other study (including Knapp and Lowe 2007), a total of three King Cove residents qualified for an initial allocation of captain/crew quota shares in any of the rationalized BSAI fisheries. According to the quota allocation dataset, however, a total of four unique King Cove residents received initial allocations of C shares in the Bristol Bay red king crab fishery (south), while initial allocations were made to three individuals in each of the Bering Sea snow, Bering Tanner East, and Bering Tanner West crab fisheries. (Among the currently closed BSAI rationalized crab fisheries, two King Cove residents each were initially allocated vessel captain/crew quota shares in the Pribilof blue and red king crab [north], Pribilof blue and red king crab [south], and St. Matthews blue [north] fisheries, and one resident was initially allocated captain/crew quota shares in the St. Matthews blue [south] fishery. As of the 2008/2009 IFQ allocation process, the number of King Cove resident captain/crew quota shareholders had declined by one in each of the St. Matthews blue king crab fisheries, but otherwise had remained constant among the closed fisheries.)

Processing

- King Cove is home to a large processing operation (Peter Pan Seafoods) that was a major crab processing plant prior to rationalization and has remained so post-rationalization. Confidentiality restrictions do not allow disclosure of processing volumes or values. Given the lack of processor quota movement from the community, however, it is assumed that net processing volumes as a percentage of total fishery quota processed have not changed substantially. Further, according to interviews with plant management, employment levels and the annual activity fluctuations at the plant have remained consistent with the patterns seen before rationalization was implemented. According to interviews, no long-term residents of the community work at the plant other than a few individuals who came to the community for employment at the plant, a situation that existed prior to rationalization. As noted in Section 1.2.6, however, changing processor ownership patterns have resulted in the transfer of some King Cove-based processor quota from Peter Pan Seafoods to Aleutia, a regional (Aleutians East Borough [AEB]) based entity, although it is intended these shares will be processed in King Cove in the future.

Support Services

- An earlier study analyzed confidential sales tax information from eight King Cove businesses and concluded that it was difficult to see any clear negative effect of crab rationalization on sales, with one noted exception (Knapp and Lowe 2007). Interviews conducted for this project with a variety of support service providers suggest that there is a commonly held perception that there have been declines in business related to the loss of crab crew jobs by local residents and associated income that is respent in the community by those residents. Further, the consolidation of the fleet, in turn, has resulted in both fewer vessels to service and fewer people coming into King Cove from outside of the community (and spending money in the community). While individual quantitative business information is not available, the owners of a number of one- or two-person businesses, such the local cab company, a filter business, a welding operation, and a dive operation, report that business has been off as a result of crab fleet consolidation. For

some of these businesses, and others like them, quantification of impacts and attribution to any one cause would be particularly difficult as, in most cases, their owners split their efforts between multiple business ventures, and in other cases pursue opportunities in more than one community during the year. For other businesses, another complexity is introduced as businesses have diversified or otherwise adapted to changing circumstances. For example, the two larger general stores in the community have experienced opposite fortunes in the years following crab rationalization, reportedly due to a shift in market share between the businesses, which, in one of the two cases, (along with any other natural growth) has served to offset whatever crab-related decline may have otherwise been experienced. In another example, the owner of the local business that includes pot hauling and vessel watch, among other services, reports that while pot hauling revenue has declined sharply following rationalization, increases in revenue from boat watch services have offset those declines. Of the two bars in the community, the owner of one reported that business has been off as a result of a decrease in crab-related activity, but management of the other reports that business has been improved during these same years and returns are up post-rationalization due to changes in business practices. In short, the local economy of King Cove, like other communities, is dynamic and individual businesses (and individual business owners), even within the same service sector, adapt to changing circumstances in a number of different ways. With an increased economic vitality associated with gains in other locally important fisheries, isolating conditions that would exist but for BSAI crab rationalization is all the more problematic.

Local Governance and Revenues

- Details on local fish tax revenues cannot be disclosed. Local tax revenues have increased annually since 2002, following a sharp decline between 2000 and 2002, such that by 2008, local leadership characterized the financial situation of the community as being as strong and as healthy as it has ever been, a clear reversal of what was experienced early in the decade. While harbor-specific revenues were apparently adversely affected by decreases in activity associated with BSAI crab rationalization during the first year post-program implementation, and the annual revenue related to pot transfers remains lower than in the years immediately preceding crab rationalization, moorage revenues specifically and harbor revenues in general have returned to, if not exceeded, pre-rationalization levels.

1.3.4 Kodiak

Harvesting

- **Vessels** – According to the BSAI crab fishery 1998–2008 dataset, in the years leading up to the implementation of BSAI crab rationalization, an annual average of 33.6 and 26.1 vessels owned by Kodiak residents participated in the Bristol Bay red king crab and Bering Sea snow crab fisheries, respectively. In the 2 years post-rationalization for which data are available, these annual averages dropped to 12.5 for the Bristol Bay red king crab fishery and 10 for the Bering Sea snow crab fishery, decreases of 63 percent and 62 percent, respectively. In absolute numbers, there were fewer Kodiak-owned vessels in both fisheries in the second year of rationalization (2006/2007) than there were in the first year (2005/2006). (Bristol Bay red king crab Kodiak-owned vessels dropped

from 14 to 11 and Bering Sea snow crab vessels dropped from 11 to 9.) Compared to vessels owned by residents of other communities, the annual average percentage of the total harvest attributed to Kodiak vessels increased in post-rationalization years compared to all vessels in both fisheries. (According to the BSAI crab fishery 1998–2008 dataset, Kodiak-owned vessels accounted for approximately 11.6 percent of the total annual average Bristol Bay red king crab harvest in the pre-rationalization years covered by the dataset and approximately 12.0 percent in the post-rationalization years covered by the dataset; the analogous figures for the Bering Sea snow crab fishery were 10.8 percent and 11.2 percent, respectively.) Kodiak vessel owners were unique among all Alaska vessel owners in having harvested EAI golden king crab and WAI golden king crab in the years prior to rationalization that are covered by the BSAI crab fishery 1998–2008 dataset, although none have participated in these fisheries in the two post-rationalization years for which data are available. While no Kodiak-owned vessels participated in the Bering Tanner East or Bering Tanner West fisheries during the pre-rationalization years covered by the BSAI crab fishery 1998–2008 dataset, five Kodiak-owned vessels participated in the Bering Tanner East in the 2006/2007 season (out of seven vessels participating from all of Alaska) and six and two Kodiak-owned vessels participated in the Bering Tanner West fisheries in the 2005/2006 and 2006/2007 seasons, respectively (with eight vessels from all of Alaska participating in each of those fisheries in those years). Of the 50 unique vessels with ownership attributed to Kodiak residents that show up in the 1998–2007 crab rationalization database as having fished for even one season over that span of time for any of the currently open and rationalized BSAI crab fisheries, 27 of those vessels are shown in the database as remaining active in commercial fishing (and thus presumably continue to generate at least some level of economic benefit, even if they have exited the rationalized crab fisheries).

In terms of initial quota allocations, the unique number of Kodiak residents receiving catcher vessel owner allocations in each of the fisheries are as follows: 1 for Bristol Bay red king crab (north), 20 for Bristol Bay red king crab (south), 19 for Bering Sea snow crab (north), 14 for Bering Sea snow crab (south), 1 for EAI golden king crab, 1 for WAI golden king crab (unregionalized), 1 for WAI golden king crab (west), and 21 each for Bering Tanner East and West. With the exception of the EAI and WAI golden king crab fisheries, which remained the same with 1 local catcher vessel owner quota holder each, in the 2008/2009 fisheries, there were more unique Kodiak owners of catcher vessel owner quota and a higher percentage of total fishery catcher vessel owner quota owned by Kodiak residents than was the case under the initial allocation. Comparing the number of 2008/2009 season unique Kodiak resident owners of catcher vessel owner quota with the number of residents owning quota under the initial allocation, Kodiak resident ownership increased from 1 to 6 in the Bristol Bay red king crab (north) fishery; from 20 to 26 in the Bristol Bay red king crab fishery (south); from 19 to 26 in the Bering Sea snow crab (north) fishery; from 14 to 20 in the Bering Sea snow crab (south) fishery; from 21 to 23 in the Bering Tanner East fishery; and from 21 to 25 in the Bering Tanner West fishery. Comparing 2008/2009 IFQ distribution to the distribution of initial quota share allocations, Kodiak catcher vessel owner IFQ as a percent of the total fishery catcher vessel owner quota increased from 5.7 to 8.1 percent of the Bristol Bay red king crab (north) fishery; from 8.5 percent to 10.1 percent of the Bristol Bay red king crab fishery (south); from 10.6 percent to 12.6 percent of the Bering Sea snow crab (north) fishery; from 7.1 to 7.9 percent of the Bering Sea snow crab (south) fishery; from 10.9

percent to 11.2 percent of the Bering Tanner East fishery; and from 10.9 percent to 11.4 percent of the Bering Tanner West fishery. (Among the BSAI crab fisheries that are currently not open, multiple Kodiak vessel owners qualified for initial allocations in each of the closed fisheries. Between the initial allocation and the 2008/2009 season IFQ allocation process, the number of unique Kodiak individuals holding catcher vessel owner quota share and the percentage of overall quota held increased for each of these fisheries, with the exception of the WAI red king crab fishery, where Kodiak holdings remained constant.)

- **Crew –** Crew job loss associated with the fleet consolidation that accompanied BSAI crab rationalization is the main direct social impact issue for Kodiak as it was for King Cove. Kodiak, as home to the largest local fleet engaged in the now-rationalized BSAI crab fisheries, was the community that experienced the greatest absolute reduction in the number of local vessels participating in the fisheries. While some of these vessels have remained in the community and continue to generate some economic activity for support service businesses and, in some cases, for crew in other fisheries, and the local vessels remaining in the BSAI crab fisheries have increased the Kodiak fleet harvest share of those fisheries, this has not benefited quite a few former crew members. Kodiak, with the largest residential commercial fishing fleet in the state, arguably has more alternate crew opportunities for ex-crab crew members in other fisheries than does any other community, and with the remaining largest BSAI crab fleet in the state arguably has more ongoing opportunities for those individuals looking to continue participation in the fishery than is the case in any other Alaska community. However, interviews suggest that these post-rationalization crew jobs may well be less attractive to local residents than pre-rationalization crew jobs for the same reasons noted in the Akutan discussion (i.e., due to [1] longer seasons that make crab crewing less compatible with other fishing and non-fishing opportunities in the community that are considered an important part of an integrated employment and income strategy [and preferred family/social arrangements] and [2] less ability to make a relatively high financial return per day of fishing effort invested away from the community).

  In terms of catcher vessel captain/crew initial quota allocations, the unique number of Kodiak residents receiving allocations in each of the fisheries is as follows: 3 for Bristol Bay red king crab (north), 20 for Bristol Bay red king crab (south), 17 for Bering Sea snow crab (north), 11 for Bering Sea snow crab (south), 20 for Bering Tanner East, and 20 for Bering Tanner West. Between the initial allocation and the 2008/2009 IFQ allocation, the number of unique individuals holding Bristol Bay red king crab (north) quota has not increased, but the proportion of total C share quota held by Kodiak residents increased (from 17.5 percent to 20.2 percent); for Bristol Bay red (south), both the number of quota holders increased (from 20 to 23) as did the percentage of total C share quota held by Kodiak residents (from 8.6 to 10.5 percent). For Bering Sea snow crab (north), the number of Kodiak C share quota holders declined (from 17 to 14) as did the percentage of total fishery C share quota held by community residents (from 15.8 to 14.1 percent); for Bering Sea snow crab (south), the number of Kodiak C share quota holders remained the same, but the percent of total fishery C share quota declined (from 5.6 percent to 4.4 percent). For the Bering Tanner East fishery, Kodiak C share quota holders increased by one (from 20 to 21), while the number of Bering Tanner West Kodiak C share quota holders remained constant; in both fisheries the percentage of total

fishery C share quota held by Kodiak residents increased from 11.6 percent to 13.5 percent). (Among the rationalized fisheries that are not currently open, a few Kodiak residents received catcher vessel captain/crew share initial allocations in both north and south Pribilof blue and red king crab fisheries and north and south St. Matthews blue king crab fisheries, but these numbers, small to begin with, have declined between the initial allocation and the 2008/2009 seasonal IFQ allocation for these fisheries. Because these fisheries are closed, however, no present impacts have occurred.)

Processing

- According to the BSAI crab fishery 1998–2008 dataset, in the years leading up to the implementation of BSAI crab rationalization, between one and eight Kodiak plants processed Bristol Bay red king crab and between one and four Kodiak plants processed Bering Sea snow crab in any given year. Post-implementation of BSAI crab rationalization, four and two Kodiak plants have been processing Bristol Bay red king crab and Bering Sea snow crab, respectively, according to the dataset, but interview data would suggest that only three plants (Ocean Beauty Seafoods, Alaska Pacific Seafoods, and Alaska Fresh Seafoods) are actually processing any BSAI rationalized crab as a targeted activity. Due to confidentiality restrictions, processing volumes and values for these species for Kodiak cannot be disclosed. Given the lack of processor quota movement from the community, however, it is assumed that net processing volumes as a percentage of total fishery quota processed have not changed substantially. Further, according to interview data, processing employment levels at the processors were not adversely affected by BSAI crab rationalization. Unlike other communities profiled, Kodiak processors mainly utilize a local resident processing workforce.

Support Services

- An earlier study (Knapp 2006) included an analysis of sales tax information from a total of 12 Kodiak marine supply and service businesses and concluded that BSAI crab rationalization "has cut into the sales of some Kodiak businesses which supply and service the crab fleet—but there has been no obvious major decline for marine supply and service companies since rationalization began." Interviews conducted for this project with a variety of support service providers in Kodiak, like those in King Cove, suggest that there is a commonly held perception that there have been declines in business related to the loss of crab crew jobs by local residents and associated income that is respent in the community by those residents, but the interviews largely support the findings of the earlier study. Further, as was the case for King Cove support businesses, the consolidation of the fleet, in turn, has resulted in fewer vessels to service. Whereas in King Cove this fleet consolidation meant fewer people (and their spending) affiliated with outside vessels coming through the community, BSAI crab vessels in Kodiak pre- and post-rationalization largely were and are Kodiak vessels.

  An updated analysis of the sales information of 12 businesses included in the earlier study showed that 1 business had closed in the meantime (in December 2006) but that among the remaining 11 businesses, sales were increased for 9 of the 11 businesses when comparing the fourth quarter of 2007 (the most recent fourth quarter) to the fourth quarter of 2004 (the last fourth quarter prior to rationalization); analogous figures for the first

quarter of 2008 (the most recent first quarter) to the first quarter of 2005 (the last first quarter prior to rationalization) show sales increases for 10 of the 11 remaining businesses. Drawing conclusions from point-in-time data is challenging, however, and while overall there do not appear to be substantial BSAI crab rationalization social impacts generated from the support service sector for the community as a whole, data from interviews suggest a complex situation, similar to that seen in King Cove but on a larger scale. That is, a number of businesses have adapted to changing conditions and have absorbed declines related to BSAI crab rationalization by focusing on other opportunities. Whether these businesses would have been better off but for BSAI crab rationalization remains an open question, but clearly rationalization was seen as a disruption in business operations for a number of these firms and some more than others. For example, among three major marine supply businesses, one reported virtually no direct impacts, but they reportedly did experience indirect impacts through a decrease in spending by former crab crew members on gear for other fisheries. Another reported initial declines followed by an adaptation to new conditions, while a third reported being hit hard with both a loss of direct sales and a loss of indirect sales through a decline in crew spending. Neither of the larger hydraulics businesses reported an impact to the bottom line of the firm, but at least one reportedly picked up market share from another Kodiak firm that went out of business. Other firms, such as the largest local welding firm, reported that BSAI crab rationalization had an adverse impact, but that the levels of employment at the firm had already experienced a steep decline prior to the implementation of rationalization. Still other firms reported a loss in sales related to the consolidation of the crab fleet but these have not been large enough to make a significant difference in the bottom line of the business, such as the largest local grocery store, while others reported that after taking an initial hit, an adjustment of business practices helped in recovery, such as was the case with the primary marine electronics supplier. In short, the local economy of Kodiak, like other communities, is dynamic and individual businesses, and individual business owners, even within the same service sector, adapt to changing circumstances in a number of different ways.

Local Governance and Revenues

- Detailed information on local fish tax revenues related to BSAI crab cannot be disclosed. Local operating revenues generated by taxes have increased each year since 2001; shared fish show a more complex pattern. Although all subsequent years are higher than the figure for 2003, the state shared fish tax revenues for 2004 were higher than those for 2005 and 2006, but lower than those for 2007. Kodiak Island Borough fish tax revenues showed an annual decline from 2002 to 2004 but have shown an annual increase from 2004 through 2007. Kodiak harbor revenues have shown annual increases from 2004 to 2007.

1.3.5 Sand Point

Harvesting

- **Vessels** – According to the BSAI crab fishery 1998–2008 dataset, one vessel owned by a Sand Point resident fished in the Bristol Bay red king crab fishery five of the seven seasons leading up to BSAI crab rationalization, but it has not participated in the fishery

following rationalization. This same vessel also participated in the Bering Sea snow crab fishery in two of the three seasons between 1998 and 2000 but has not participated in that fishery since that time. This vessel has remained in Sand Point and is active in other fisheries. According to interview information gathered for this project, two other vessels considered by residents to be locally owned (but shown in the BSAI crab fishery dataset as owned in Washington state) fished both Bristol Bay red king crab and Bering Sea snow crab in the years leading up to rationalization and both are still actively in these fisheries. One other vessel with Washington ownership but ties to Sand Point has apparently fished its BSAI crab quota off other vessels since rationalization, although it has remained active in other fisheries around Sand Point. Another vessel that formerly fished BSAI crab, had Washington-based ownership, and had ties to Sand Point has reportedly fished its quota off other vessels since rationalization and has left Sand Point altogether. According to the quota share dataset, only one Sand Point vessel owner qualified for an initial allocation of catcher vessel owner quota shares in the Bering Tanner East fishery and one qualified for quota shares in the Bering Tanner West fishery; no other Sand Point vessel owners qualified for initial allocation in any of the other rationalized fisheries that have been open in recent years. Also according to the quota share dataset, as of the 2008/2009 season IFQ allocation, no Sand Point residents are catcher vessel quota holders in any of the BSAI rationalized crab fisheries with current openings. (One Sand Point vessel owner did qualify for an initial allocation of Pribilof blue and red king crab catcher vessel owner shares and the level of local ownership has remained constant as of the 2008/2009 season IFQ allocation process, but this fishery has not been open for several years.)

- **Crew** – Interviews conducted for this project suggest that one crab vessel with an all-Sand Point crew and another vessel that hired at least some local crew members left the BSAI crab fisheries as a result of consolidation following rationalization. A few local fishermen also seasonally crewed on other Bering Sea crab vessels, according to interviews, such that estimates by a number of local fishermen and local government personnel suggest that perhaps six to eight seasonal crab crew positions were lost that were normally filled by Sand Point residents, but the actual number of residents directly affected as former crew members may be closer to a dozen, as different individuals would occupy these positions from year to year. Some of these individuals are now cod fishing in the winter out of Sand Point, but there has been a decline in earning potential compared to the level of effort associated with the switch from crab to cod fisheries. Despite the losses in seasonal crew positions and the loss of a few vessels from outside of the community that would spend at least some time moored in Sand Point, the overall assessment by both local community and AEB leadership is that Sand Point was relatively little affected by BSAI crab rationalization (especially when compared to neighboring King Cove). According to the quota allocation dataset, there was only one initial allocation of captain/crew quota shares for a Sand Point resident in the active BSAI rationalized crab fisheries, and that was in the Bristol Bay Red (south) fishery. This level of share ownership (and relative share allocation) was unchanged as of the 2008/2009 seasonal IFQ allocation. (One Sand Point resident did qualify for an initial allocation of Pribilof blue and red king crab catcher vessel captain/crew shares and the level of local ownership has remained constant as of the 2008/2009 season IFQ allocation process, but this fishery has not been open for several years.)

Processing

- Sand Point is home to both a large local processing operation (Trident Seafoods) and a local buying station (Peter Pan Seafoods). While the local processing operation did process at least some Bristol Bay red king crab from 2002 to 2004, according to the BSAI crab dataset, no Bristol Bay red king crab was processed in the earlier years covered by this dataset (back to 1998), nor has any Bristol Bay red king crab been processed at the plant since the implementation of BSAI rationalization. Further, no other species of rationalized BSAI crab was processed at the plant in any of the years covered by the dataset prior to or after rationalization (1998 through 2007). The discontinuation of processing of Bristol Bay red king crab reportedly did affect seasonal worker demand for at least a brief period, but changes in pollock product form has created an offsetting need for additional processors during this time.

Support Services

- Sand Point has a fishery support service industry of a scale comparable to that seen in King Cove, which is to say intermediately between the larger communities of Unalaska and Kodiak and the smaller communities of Akutan, Adak, St. George, and St. Paul. Local support businesses include small-scale welding, mechanical, and shipwright services; general and hardware/marine supply stores; lodging and restaurants; and a variety of enterprises pursued by the Shumagin Corporation, the local Alaska Native Claims Settlement Act (ANCSA) village corporation. While the Shumagin Corporation in particular has felt the impact of a slow-down in business related to a drop-off in activities prior to pre-rationalization crab seasons when a portion of the fleet would await openers in the community, according to borough and local officials, historically Sand Point has been characterized by flexibility and the ability to adapt to fishery conditions that may fluctuate on a shorter- or longer-term basis. While limited access to investment capital has resulted in a little less flexibility in recent years, the customer base for fishery support services is affected more by the larger economic forces surrounding the salmon and halibut fisheries than the BSAI crab fisheries.

Local Governance and Revenues

- Detailed information on local fish taxes cannot be disclosed, but Sand Point local tax revenues as a whole have fluctuated dramatically in recent years, from as low as $287,282 in 1999 to as high as about $1.25 million in 2006 and 2007. As an example of the volatility of this revenue source, local tax revenue dropped from close to $1 million in 2004 to under $500,000 in 2005 before rebounding past $1 million in 2006 and 2007. Overall total operating revenues have not shown the same degree of variability, however, and between 2004 and 2007 they ranged from $2.4 million and $2.9 million.

1.3.6 Adak

Harvesting

- **Vessels** – According to the BSAI crab fishery 1998–2008 dataset and interviews conducted for this project, no vessels owned by Adak residents participated in the BSAI

crab fisheries that have been rationalized either in the years leading up to the rationalization or the years following rationalization. No Adak vessel owners qualified for an initial allocation of catcher vessel owner quota shares. Adak is not a member of a CDQ group and does not have any ownership interest in any crabbing vessels.

- **Crew –** No vessels local to Adak are large enough to participate in the BSAI crab fishery directly, and interviews with local residents suggest that obtaining a crew position on a crab vessel outside the community is not a viable employment alternative. No Adak residents qualified for an initial allocation of captain/crew quota shares in any of the rationalized BSAI crab fisheries.

Processing

- Adak is home to one onshore processing operation (Adak Fisheries), which, among crab fisheries, is primarily engaged in WAI golden king crab processing. Although the plant did not qualify for an initial allocation of processor quota based on processing history during the program qualifying years, the plant did process a locally significant amount of crab in the interval of years following the close of the qualifying period, but prior to the implementation of the rationalization program itself. Although specific figures are confidential, interviews with plant management would suggest that the implementation of crab rationalization and the accompanying lack of ability to process crab at the levels seen just prior to rationalization were a substantial impact both to this individual business operation and to the local economy of Adak. Although a community enhancement feature of the BSAI crab rationalization program provided an initial allocation of 60,000 pounds of brown crab processor quota to the plant and a 250,000-pound WAI golden king crab harvester community quota to the community, this level of allocation was not great enough and effectively "turned the lights off on crab in the community," according to processor management.

Support Services

- As a newly reconstituted civilian community, Adak is in the process of developing support service capabilities for the fishing fleet. One challenge has been that, according to local business owners, vessels that have fished in the Adak area in past years are used to being self-sufficient and may not realize that supplies and services are now available locally or, even if they do have an awareness of availability, still have established relationships elsewhere. This is true of the larger crab vessels in the area, some of which have started to refuel in Adak. Crew transfers for crab vessels are also increasing in Adak, as Alaska Airlines is able to provide relatively well-scheduled service to Adak's former military airport.

Local Governance and Revenues

- Detailed information on revenue from fish taxes cannot be disclosed, but local tax revenues have decreased since 2003, when there was a peak of just over $792,000. Since then, tax revenues have steadily decreased to over $642,000 in 2005 and $589,000 in 2006. The total revenue for 2006 ($1,890,285) marks the lowest total revenue since 2002

($1,236,726), which was the first year Adak provided municipal revenue information to the State, and is less than two-thirds of the revenue seen in the preceding 3 years.

- Adak is also the beneficiary of a direct allocation program designed to increase community benefits from the BSAI crab rationalization program. A WAI golden king crab allocation to Adak, approved by the NPFMC and later mandated by congressional action, took effect in 2005. The allocation is made to a nonprofit entity representing the City of Adak and has yielded mixed results to date. The City did derive at least some modest revenue from the lease of the allocated quota during the first year of the program. No vessels were interested in leasing quota with a royalty obligation during the second year of the program due to poor prices, however, so the Adak community quota was given to a vessel, royalty free, with the stipulation that the crab harvested under the allocation would be delivered to Adak. By the third year of the program, however, a standard 20 percent of value lease royalty payments to the community entity were reportedly again collected.

1.3.7 St. Paul

Harvesting

- **Vessels** – According to the BSAI crab fishery 1998–2008 dataset and interviews conducted for this project, no vessels owned by St. Paul residents participated in the BSAI crab fisheries that have been rationalized either in the years leading up to rationalization or the years following rationalization. No St. Paul vessel owners qualified for an initial allocation of catcher vessel owner quota shares, nor have they acquired them in subsequent years. St. Paul is the only member community of the Central Bering Sea Fishermen's Association (CBSFA), a CDQ group, which owns (through a subsidiary [MSDH LLC]) percentages of four vessels that harvest rationalized crab and retains BSAI crab harvester quota originally associated with two previously owned vessels.

- **Crew** – In terms of direct participation, local fishermen are almost exclusively engaged in the halibut fishery. With CBSFA investments in four crab vessels, St. Paul residents interested in obtaining a crew position on a crab vessel have ready access though the CBSFA. Officials from CBSFA report, however, that this is not common because of (1) the relative ability of halibut fishermen to receive income throughout the year due to a phased payment for the halibut harvest that continues through the fall and winter, and (2) relatively ample alternate employment opportunities on-island during typical crabbing months. No St. Paul residents qualified for an initial allocation of captain/crew quota shares, nor have they acquired them in subsequent years.

Processing

- St. Paul is home to one large onshore processing operation (Trident Seafoods), which was a major crab processing plant prior to rationalization and has remained so post-rationalization. St. Paul has also been the site of a number of mobile processing operations over the years either inside the harbor (with larger operations including UniSea and Icicle) or in the area but outside the harbor (including Norquest and a number of others) as the nature of the fishery and its economic incentives dictated. While the floating processors do not typically employ any St. Paul residents, a handful of long-term

residents are employed at the Trident shoreplant. These employees typically work the entire year, which includes the BSAI crab season in the fall and winter months, and the halibut season in the spring and summer months.

An overriding concern of St. Paul entities has been that if changes in the crab fishery through the BSAI crab rationalization program itself or another "crab crash" were to result in the closure of the onshore plant and processing moving away from St. Paul, the results would be devastating for two primary reasons. First, local fiscal revenues depend heavily on fish taxes. Second, the current processing infrastructure and capacity allow the local halibut fishery, a mainstay of household income, to be economically viable. In the current environment, Trident Seafoods processes crab and locally caught halibut and the concern is that, absent the crab fishery, the local halibut fishery is not large enough to support local processing activity. BSAI crab rationalization, with its northern region share designation, is seen in the community as an essential component in a viable local economy. In other words, the regionalization feature of crab rationalization is seen to have worked from the perspective of St. Paul.

Support Services

- The 1999–2000 downturn in BSAI crab GHLs is now looked at as a crab crash in hindsight and has generally affected the community of St. Paul negatively with lower stocks affecting taxes, CBSFA investments, and the viability of support services. More recently, however, BSAI crab rationalization has resulted in stabilizing the season. With a longer season, vessels remaining in the fishery are likely to purchase more fuel and supplies locally than was the case prior to rationalization. Residents generally feel that the community has benefited from crab rationalization and the establishment of a north region harvester and processor quota shares, although a number of residents have been adversely affected by co-occurring conditions that resulted in the official determination by the National Marine Fisheries Service (NMFS) of the continuation in 2005 and 2006 of a "commercial fishery failure" for the Bering Sea opilio crab fishery. A few enterprises, such as crab gear storage, have seen some decline in revenues more directly linked to crab rationalization.

Local Governance and Revenues

- Detailed information on fish taxes cannot be disclosed, but the local tax revenues as a whole have increased since crab rationalization has been implemented. From a peak tax base in 1999 of over $3 million, local taxes decreased sharply in 2000 and have been between $731,000 and $917,000 for the years of 2000–2004. For the years 2005 and 2006, however, the local taxes have been over $929,000, with total revenues for St. Paul in 2005 and 2006 higher than any year since 2000.

1.3.8 St. George

Harvesting

- **Vessels** – According to the BSAI crab fishery 1998–2008 dataset, no vessels owned by St. George residents participated in the BSAI crab fisheries that have been rationalized

either in the years leading up to rationalization or the years following rationalization. No St. George vessel owners qualified for an initial allocation of owner quota shares, nor have they acquired them in subsequent years. Like Akutan, St. George is a member community of the APICDA CDQ group, which has ownership interest in two vessels that harvest rationalized crab.

- **Crew –** As was the case for St. Paul, St. George fishermen are exclusively or nearly exclusively focused on the halibut fishery and are not directly involved in crab fishing in any way. As a member community of APICDA, St. George residents interested in crewing on a crab vessel do have the opportunity to apply for a position on those vessels owned by APICA. However, information gathered during fieldwork in 2007 suggests that this is not regularly practiced. No St. George residents qualified for an initial allocation of captain/crew quota shares, nor have they acquired them in subsequent years.

Processing

- During a number of years within the BSAI crab rationalization qualifying period when crab stocks (and quota) were large, smaller inshore floating processors operated in St. George harbor, but with relatively depressed crab stocks such operations have reportedly not been economically viable. In the years immediately preceding BSAI crab rationalization, St. George saw no local crab processing, nor has St. George seen local processing in the years following the implementation of BSAI crab rationalization. North region designated processor quota that was historically accrued in St. George has been processed in St. Paul since the implementation of the rationalization program.

Support Services

- Of all of the communities covered in this section, the support service (and general) economy of St. George is arguably the least robust, having scaled back considerably since the crab crash and the termination of local seafood processing. There are no fishery support services aside from marine fuel sales at the harbor and crab pot storage, both of which experienced a steep decline in the years immediately prior to rationalization due to decreased GHLs. Damage to the harbor exacerbated the situation, making navigation of the turns difficult for larger crab vessels and leading many of these vessels to refuel and/or store crab pots in St. Paul instead of St. George.

Local Governance and Revenues

- Detailed information on fish taxes cannot be disclosed, and official records suggest that St. George taxes have equaled $0 since 2004, but it is known through interview data that an agreement is made yearly between St. George and St. Paul to share fish taxes earned on processor quota historically accrued in St. George but actually currently processed in St. Paul. While never formalized, the processing entity in St. Paul (either Trident or Icicle) communicates to St. Paul how much of each community's quota has been processed. St. Paul then calculates the fish tax associated with the St. George quota history and transfers 90 percent of that total to the St. George government. As described by the St. Paul city manager, this agreement is seen as a win/win situation for each community, as St. George is able to gather some taxes from its crab quota, while St. Paul

strengthens its ties and improves its relationship with neighboring St. George. Essentially, while the regionalization feature of the BSAI crab rationalization program has not, to date, served to retain (or reinstate) crab processing in St. George, it has served to direct revenues to the community that likely otherwise would have gone elsewhere. Importantly, however, no long-term agreement is in place to assure continued public revenue returns to St. George. In general, total revenues have decreased markedly since the days of crab processing in the community. The total of all revenues shows annual declines (except for a pause in 2000–2001) from $2.6 million in 1999 to $536,674 in 2005, before increasing to $835,657 in 2006.

1.3.9 Other Alaska Communities

Beyond the communities listed individually in Sections 1.3.1 through 1.3.8, other Alaska communities are engaged in the rationalized BSAI crab fisheries in a number of different ways. As noted in Section 1.2, over the 10-year period of 1998 through 2006/2007, catcher vessels participating in the now-rationalized crab fisheries were owned by individuals or entities in 14 different communities. As discussed in that section, however, none of these communities, with the exception of Kodiak, have had a sufficient number of vessels post-rationalization fleet consolidation to allow disclosure of harvest, such that pre- and post-rationalization harvest comparisons cannot be made. In terms of initial catcher vessel owner quota allocations, only 10 Alaska communities had any residents receive quota. In addition to the communities whose residents received catcher vessel owner quota as already noted in the above summaries (Unalaska/Dutch Harbor, King Cove, Kodiak, and Sand Point), the other communities are Anchorage, Dillingham, Homer, Petersburg, Seldovia, and Yakutat. Of these, only Anchorage, Dillingham, Homer, and Petersburg had more than one resident receiving initial catcher vessel owner quota allocation for any individual rationalized BSAI crab fishery. Within the rationalized crab fisheries that have been open in the years immediately preceding rationalization, or in the post-rationalization years, eight unique Anchorage residents were issued initial quota allocations in each of the Bristol Bay red king crab (south), Bering Sea snow crab (north) and Bering Sea snow crab (south), and Bering Sea Tanner[6] fisheries, which was the highest concentration of quota in any Alaska community outside of Kodiak.

As shown in the tables in Section 1.2, Anchorage catcher vessel owner quota holders have increased markedly since the initial allocation as measured by IFQ allocations for the 2008/2009 season, both in terms of absolute numbers and the relative percentage of total catcher vessel owners quota held for several of the fisheries, while Dillingham still has no more than two resident catcher vessel owner quota holders, and Seldovia and Yakutat have no more than one resident catcher vessel owner quota holder in any one of the rationalized fisheries. As of the 2008/2009 season, Homer has up to five catcher vessel owner quota holders in some of the fisheries (but only up to four in currently open fisheries), while Petersburg has up to three. Anchorage, with far fewer initial allocation catcher vessel owner quota holders than Kodiak is now approaching Kodiak in the total number of quota holders in some of the fisheries (e.g., 23 Anchorage catcher vessel owner quota holders in the Bristol Bay red king crab [south] fishery

[6] After an initial allocation of Bering Sea Tanner shares, the fishery was split into Bering Tanner East and Bering Tanner West fisheries during the first year of the program, but some transfers occurred prior to this change. Six Anchorage residents received initial allocations in the redesignated Bering Tanner East and six received allocations in the Bering Tanner West fisheries.

versus 26 Kodiak owners), and clearly has seen disproportionate aggregation of quota compared to other communities.

In terms of the catcher vessel captain/crew quota share initial allocations, 12 Alaska communities had residents who received C share allocations. In addition to the communities whose residents received an initial allocation of C share quota as already noted in the above summaries (Unalaska/Dutch Harbor, King Cove, Kodiak, and Sand Point), these are Anchorage, Homer, Kenai, Petersburg, Sitka, Soldotna, Valdez, and Wasilla). Of these, none had more than one resident receive C share quota in any individual fishery except for Anchorage and Homer. As of the 2008/2009 season, neither Sitka nor Valdez had any remaining C share quota holders (except for one Valdez resident holder of St. Matthews blue king crab shares, a currently closed fishery) while Cordova was added to the list with one quota holder in six of the fisheries or designated fishery regions (of which two, St. Matthews blue north and St. Matthews blue south, are currently closed); all of the other communities (besides Anchorage and Homer) remained at no more than one resident C share quota holder in any individual fishery. Except for an increase of one holder of Bristol Bay red king crab (south) C shares, the number of unique C share owners in Anchorage has either remained the same or declined in each of the rationalized crab fisheries since the initial allocation, a very different pattern than is seen for ownership of catcher vessel owner quota shares. In the case of Homer, there have been increases of one to five owners of C shares in the Bristol Bay red king crab (south) and both the Bering Sea snow crab (north) and the Bering Sea snow crab (south) fisheries.

It is known that catcher vessel crab crew members were and are dispersed among multiple Alaska communities as well. Given the lack of reliable crew information, however, it is not possible to say whether the patterns directly mirror those for vessel participation, catcher vessel owner quota distribution, or catcher vessel captain/crew quota distribution, or follow their own pattern.

Among Alaska communities, BSAI rationalized crab catcher processor owner quota is held exclusively by Anchorage residents. At the time of initial allocations, there was one unique catcher processor owner quota holder in each of the Bristol Bay red king crab, Bering Sea snow crab, Bering Tanner East, and Bering Tanner West fisheries, with quota holdings ranging between 3.5 and 4.4 percent of the total catcher processor owner quota for these fisheries (the balance being held in Washington state). As of the 2008/2009 season IFQ allocations, there were two unique Anchorage resident holders of catcher processor owner quota in the Bristol Bay red king crab, Bering Tanner East, and Bering Tanner West fisheries, and three in the Bering Sea snow crab fishery, with quota holdings ranging between 7.0 percent to 9.1 percent of the total catcher processor owner quota for these fisheries (again with the balance being held in Washington state). Catcher processor captain/crew quota within Alaska was and is exclusively concentrated in Anchorage and Kodiak. There is one Anchorage resident catcher processor captain/crew quota holder in each of the Bering Tanner East and Bering Tanner West fisheries; Anchorage holdings are 5.2 percent of the total catcher processor captain/crew holdings for each fishery and this figure was the same in the initial allocation as for the 2008/2009 season IFQ allocation. Two Kodiak residents received initial allocations of catcher processor captain/crew quota for the Bristol Bay red king crab fishery and while that number was the same for the 2008/2009 season IFQ allocation, the percentage of the total catcher processor captain/crew quota for the overall fishery declined from 10.9 percent to 0.3 percent between the initial allocation and the 2008/2009 season IFQ allocation. All catcher processor captain/crew quota

other than that held by residents of Anchorage and Kodiak is held by residents of Washington State or residents of states other than Alaska, Washington, and Oregon.

CDQ communities represent another type of engagement with rationalized BSAI crab fisheries. In general, CDQ entities benefited from the implementation of crab rationalization due to the increase in CDQ quota share in the initial allocations. Details of the impacts of the implementation of the BSAI crab rationalization program on CDQ groups are discussed elsewhere in this 3-year post-implementation review. Additionally, as noted in Section 1.2.6, APICDA has gained some processor quota for EIA and WAI golden king crab as a result of processor ownership changes, with the result that formerly Unalaska-based shares may be processed in Atka in the future.

One other community, False Pass, is known to have experienced at least some other types of impacts related to crab rationalization. A small community (population 64 in 2000 according to the U.S. Census and estimated to be 46 in 2007) on Unimak Island in the AEB, False Pass does provide some support to commercial fishing fleets through a local fueling operation and a pot storage business, the latter of which is owned by the Isanotski Corporation, the local ANCSA village corporation. According to an earlier study (Knapp and Lowe, 2007), the pot storage business experienced a decrease in sales of $29,820 between fiscal year (FY) 2005 and FY 2006. According to an interview with a senior corporation leader for this project, the pot storage business is currently (2008) losing money but is kept open because it provides employment for a local resident corporation shareholder (although this person is working fewer hours and has a lower income from the business than was the case prior to rationalization). There has also been a decrease in city revenues from a decline in the number of pots moving across the city dock that has accompanied crab rationalization. According to the mayor, additional revenues accrued to the City of False Pass in past years from a floating processor processing red king crab within the city limits, but that reportedly has not occurred in recent years.

1.3.10 Seattle and Other Non-Alaska Communities

As described in the Seattle community profile in the *BSAI Crab Fisheries Final Environmental Impact Statement Social Impact Assessment* (NOAA 2004, Appendix 3), Seattle is the community most engaged in the BSAI crab fisheries, if gauged by the sheer number of locally owned vessels participating in the fisheries as a whole. As described earlier, post-rationalization volume or value harvest data for the Seattle CMSA cannot be broken out separately from the data for the communities in the rest of the state of Washington due to data confidentiality restrictions (based on the low number of vessels from elsewhere in Washington participating in the individual fisheries). With the single exception of the Bristol Bay red king crab fishery (at five vessels), during the 2006/2007 season no more than two vessels owned by Washington residents outside of the Seattle CMSA participated in any of the other BSAI rationalized crab fisheries.

As described above, the Seattle fleet did experience consolidation similar in proportion to that seen for the crab fleet as a whole, and annual average harvest values, as a proportion of the total harvest values, were relatively unchanged pre- and post-rationalization for Washington vessels in the Bristol Bay red king crab fishery. For the Bering Sea snow crab fishery, however, particularly in 2006/2007, Washington vessels did not harvest as high of a proportion of the total fishery than was previously the case (but still accounted for slightly over half of the total fishery

harvest even in 2006/2007, down from an average of about two-thirds of the annual harvest in the years leading up to rationalization).

As detailed in earlier community profiles, Seattle is the location of regional if not company headquarters for a number of the processing firms engaged in the BSAI crab fisheries. It is also a major support service center for the fleet, both in terms of providing services directly and as the headquarters for a number of firms that provide support services out of Alaskan ports. While no adverse social impacts related to changes in processing firms under rationalization are known, the consolidation of the fleet likely affected a range of Seattle-based support businesses. As described in the earlier community profile, crab fishery support activity takes a variety of forms and does not appear to be concentrated in any one area of Seattle. As a result, no localized social impacts resulting from BSAI crab rationalization are thought to have occurred, although clearly fewer crab crew jobs formerly filled by Seattle residents are available and at least some volume of Seattle-based or Seattle-managed support service work associated with the crab fleet has been lost.

According to information contained in the *BSAI Crab Fisheries Final Environmental Impact Statement Social Impact Assessment* (NOAA 2004, Appendix 3), communities in Oregon participated in the pre-rationalization BSAI crab fisheries primarily through ownership of catcher vessels. Following the implementation of rationalization, the number of Oregon vessels participating declined sharply (as shown in detail in Table A1-2 in Attachment 1). Due to parallel sharp declines in participation of vessels from elsewhere in the United States (that is, outside of Alaska, Washington, and Oregon), confidentiality restrictions allowed for a display of either Oregon vessel information (but not a fishery total) or a combined Oregon and other U.S. total (allowing a fishery total to be displayed), but not both. In this case, the option of showing of fishery total was selected due to its greater utility in showing overall fisheries trends. Although this limits the analysis specifically for Oregon, the known previous patterns of crab fishery engagement and limited interaction with industry participants would suggest that no substantial social impacts accrued to Oregon communities as a result of BSAI crab rationalization, although it is likely that some crew job loss did occur.

1.4 OTHER ISSUES

The pre-rationalization *BSAI Crab Fisheries Final Environmental Impact Statement Social Impact Assessment* (NOAA 2004, Appendix 3) identified a number of other, less direct, potential social impact issues that could be anticipated to accompany crab rationalization. These included skipper and crew issues, processing employment, changes in harvester and processor relationships, community preclusion issues, and community divisiveness.

- Skipper and crew issues have proven to be among the most problematic of crab rationalization social impact issues for at least a few communities, including King Cove and Kodiak, but they appear to be less of a concern in most other Alaska communities, based on a number of factors, including a relative lack of historical participation in the harvest sector of the fishery or continuing access to post-rationalization crew positions through CDQ entities, among others. Beyond quota equity concerns, crew employment has been seen by at least some as less attractive post-rationalization than it was pre-rationalization for the reasons described above. A stand-alone analysis of the

restructuring of crab crew opportunities in the BSAI crab fisheries is being completed as a separate part of the 3-year review process.

- Processing employment has not proven to be a salient issue due, at least in part, to the transient nature of most crab-specific processing employment and/or the changed nature of processing under a rationalized system.

- Concerns over changes in harvester and processor relationships appear to have mitigated at least to a degree by the arbitration system that has been implemented under rationalization, as discussed elsewhere.

- Community preclusion issues remain a concern for at least some communities, with the cost of obtaining processor quota shares (or the effective unavailability of processor quota shares) being perceived as a potential bar to future entry or, in the case of Adak, future expansion (or a return to levels seen immediately prior to rationalization).

- Crab rationalization remains a divisive issue within and between communities. The basic structure of crab rationalization runs counter to strongly held opinions on the desired future state of fishery management for some communities, or groups associated with some communities. A number of people and organizations remain fundamentally philosophically opposed to rationalization programs independent of apparent material benefits from the program. Particularly philosophically troubling to some is the perceived inequity of benefit that derives to absentee ownership through the quota leasing process, especially when the economic return to crew members for the harvest of those shares has been dramatically reduced.

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CHAPTER 2.0
UPDATED COMMUNITY PROFILES

As noted in Chapter 1, as part of this crab rationalization social impact assessment effort, fishery community profiles for a number of BSAI crab communities have been updated to describe the range, direction, and order of magnitude of social and community level impacts associated with the relevant crab fisheries on a community-by-community basis. Chosen for this community-level analysis were those Alaskan communities characterized in the pre-implementation crab rationalization social impact assessment (NOAA 2004, Appendix 3). These are Unalaska/Dutch Harbor, Akutan, King Cove, Kodiak, Sand Point, Adak, St. Paul, and St. George.

Also as noted in Chapter 1, updated, post-BSAI crab rationalization profiles for four of these communities (Sand Point, Adak, St. Paul, and St. George) were completed in June 2008 under the title *Comprehensive Baseline Commercial Fishing Community Engagement and Dependency Profiles: Adak, St. George, St. Paul, and Sand Point, Alaska* (EDAW 2008). Post-crab rationalization fieldwork was conducted in each of these communities and each of these profiles contains information on community-specific effects of crab rationalization. As these comprehensive profiles are readily available[7] for review, and have recently been distributed to the NPFMC at its constituent bodies, they are incorporated here by reference rather than reproduced in this document. Key findings from these profile efforts have been summarized in Chapter 1.

In this chapter, updated fishery community profiles with a focus on crab dependence and BSAI crab rationalization impacts are presented for Unalaska/Dutch Harbor, Akutan, King Cove, and Kodiak. As noted in Chapter 1, the earlier (pre-rationalization) produced *Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak* (EDAW 2005) provide the building blocks for this effort. The updates contained in this document follow the organizational structure of the earlier profiles, which, in turn, built upon the pre-implementation crab rationalization social impact assessment (NOAA 2004, Appendix 3). Brief fieldwork was conducted in each of these communities as part of the update process. In-person interviews took place in Unalaska/Dutch Harbor on May 11-12 and May 14-16, 2008, and in Akutan on May 13, 2008. Fieldwork in King Cove took place May 17-21, 2008. Fieldwork in Kodiak took place June 23-28, 2008. Phone contacts and interview follow-ups with entities from each of the communities occurred both before and after fieldwork. In general, field efforts focused on two major undertakings. First was re-contacting entities interviewed during pre-rationalization social impact assessment work to provide a framework for direct pre- and post-rationalization comparisons to the extent feasible. This was also done, in part, to help control for recall bias. Second was updating community context information relevant to understanding the relation of the overall community socioeconomic structure to local harvesting, processing, and support service sectors, as well as local government entities and revenues, associated with fisheries activities in general and the relevant crab fisheries in particular.

[7] Available at http://www.fakr.noaa.gov/npfmc/current_issues/crab/crabcoop.htm and then selecting Community Profiles 08/08 Volume 2: Sand Point, Adak, St. Paul, St. George.

2.1 UNALASKA/DUTCH HARBOR

Unalaska is located approximately 800 miles southwest of Anchorage and 1,700 miles northwest of Seattle. Unalaska is the eleventh largest city in Alaska, with a reported year-round population of just over 4,000. Dutch Harbor is the official name of the city's port and is also often applied to the portion of the city of Unalaska located on Amaknak Island, which is connected by bridge to the rest of the community on Unalaska Island. The geographic feature of Dutch Harbor itself, along with Amaknak Island, is fully contained within the municipal boundaries of the city of Unalaska, which encompasses 115.8 square miles of land and 98.6 square miles of water. Not part of an organized borough, Unalaska falls within the Aleutians West Census Area.

The Unalaska region of the Aleutians experiences a cool, wet, and windy maritime climate. Typical winter temperatures hover around freezing with January temperatures ranging from 25 to 35° F. Typical summertime temperatures range from 43 to 53° F. Average annual precipitation is 57.7 inches. Wind, light rain, and fog are common in the summer, but the wettest conditions generally occur October through December. Moderate to high winds occur throughout the year. The mean wind speed is 17 miles per hour (mph) with a prevailing wind direction of south-southeast. High winds can occur during the winter and have been recorded up to 172 mph (December 26, 1988).

2.1.1 Overview

Unalaska is in a unique position with respect to the Bering Sea and Aleutian Islands (BSAI) fisheries. It is the site of both the most intense direct and indirect fishery economic sector activity among all the communities in the region. More BSAI crab and groundfish are processed in Unalaska than in any other port, and the support service sector is developed to a greater degree in Unalaska than any other community on the Bering Sea. As a result, Unalaska is a community whose economy is strongly tied to Bering Sea commercial fisheries in general, as well as to several individual fisheries. Incorporated as a First Class City in 1942, Unalaska has been variously described as a growing, developing, and maturing community. Whatever descriptor is chosen, during the span of years since the development of the crab fishery, Unalaska has seen a great deal of community development. The changes that have accompanied this development are both obvious and subtle.

2.1.2 Community Demographics

Unalaska is a demographically complex community. Prehistorically and historically a traditional Aleut village, contemporary Unalaska has a diverse population that saw a great deal of growth in the last quarter of the twentieth century. This growth and diversification was directly attributable to the commercial fishing industry.

2.1.2.1 Total Population

It has always been difficult to ascertain total population figures for Unalaska or, to state it more accurately, it is difficult to interpret and compare time series figures given for the population of Unalaska. Over the years, Unalaska has been a "less than permanent" home to many individuals whose length of stay in the community has varied. Some individuals may stay in Unalaska only a fishing season or two; others may stay for many years before moving on. These individuals

have been counted in different ways, or not counted at all, in a number of censuses. Caution must therefore be used in interpreting total population figures from various sources.[8] Table 2.1-1 provides census figures for each decade from 1900 through 2000. As shown, the population only exceeded 400 in one census year (1900) and did not surpass 300 in any census year from the turn of the century up until 1980 (while noting that these data do not take into account the thousands of military personnel stationed in and around the community during World War II when Unalaska was a significant base for both Army and Navy forces). The growth seen from 1980 onward can be directly traced to the development of the contemporary commercial fishery processing and support activity that has its roots in the Bering Sea crab fishery and subsequently diversified into other fisheries in general and the pollock fishery, which has proven to be a local economic mainstay, in particular.

Table 2.1-1. Unalaska Population by Decade, 1890–2000

Year	Population
1890	317
1900	428
1910	281
1920	299
1930	226
1940	298
1950	173
1960	218
1970	178*
1980	1,322
1990	3,089
2000	4,178

*Other sources put the 1970 census figure at 342 residents.
Source: Historic data from Alaska Department of Community and Economic Development, 2000 data from U.S. Census Bureau.

Table 2.1-2 provides local population counts on an annual basis for the years 1990 through 2006. As shown, since 1993, the population remained over 4,000 until 2006, when it returned to 1991–1992 levels. With the ebb and flow of processing activities, annual population fluctuations are common.

[8] As an example, one can find different counts by the City of Unalaska, the Alaska Department of Labor, the Alaska Department of Community and Regional Affairs (more recently the Department of Community and Economic Development), and the U.S. Census for various recent years. While one might assume that the U.S. Census Bureau data would be more rigorous than other efforts, it appears that this may not be the case at least for some years. Concerning the 1970 census, for example, a community leader considered a solid source has written that census "was done by the census taker from memory, sitting at home, and it was not accurate to any degree" (Impact Assessment 1987:64). Some sources list the 1970 census population as 342, while other sources list it as 178. U.S. Census Bureau correspondence from the period (Fay 1972) confirms the official figure as 178, but questions remain regarding whether the census did or did not include short-term residents or transient workers who were present at the time. In 1972, the Alaska Department of Labor apparently tried unsuccessfully to "correct" the census number to a total count of 336 (Fay 1972).

Table 2.1-2. Unalaska Annual Population, 1990–2003

Year	Population
1990	3,089
1991	3,450
1992	3,825
1993	4,317
1994	4,317
1995	4,083
1996	4,087
1997	4,251
1998	4,285
1999	4,178
2000	4,283
2001	4,283
2002	4,051
2003	4,388
2004	4,366
2005	4,297
2006	3,940

*Counts are taken/calculated in July of each year and are utilized as the official community count for the following fiscal year (e.g., the 1990 count was taken in July 1990 and appears as the community population for Fiscal Year 1991 in city documents).

Source: City of Unalaska spreadsheets, supplied by Unalaska City School District, December 2001 and December 2004; and Finance Department, May 2008.

While the total population of Unalaska has grown considerably from the early fishery boom years, the contemporary community maintains a relatively high transient population. This transient population includes workers at shore processing plants, although this particular population segment is notably less transient as the nature of the business of the shore plants has changed. Once characterized by rapid turnover during the king crab processing boom in the late 1970s, the local pattern evolved to more-or-less year-round processing during the early years of full-scale pollock processing. The current pattern has marked peaks and valleys coinciding primarily with the pollock A and B seasons, which themselves overlap with other seasons that generate a substantial amount of processing activity (e.g., the cod and opilio processing that occurs around and during pollock A season). Outside of these peaks, plants typically employ a "core crew" of year-round individuals who process lower volume species that are harvested at other times of the year in addition to maintaining the plant.

In addition to the resident population, there are also a number of individuals who may be thought of as a "floating population" or "additional service population" associated with the community. These individuals are from catcher vessels, catcher processors, and floating processors that work the Bering Sea and Aleutian Islands area and call on Unalaska for resupply or otherwise constitute a population that may utilize services provided out of Unalaska in one form or another (e.g., potential patients for emergency medical services care). Table 2.1-3 provides an estimate of the direct fisheries harvesting and processing component of this floating population for 2007. Although these estimated 5,633 individuals are not true residents of Unalaska, this "floating" or "additional service" population does have an impact on the community. They are associated with business and revenue generated in and for the city, and with services required of the city. There is

Table 2.1-3. Estimates of Direct Fisheries Related "Floating Population" of the Community of Unalaska, 2007

Vessel Type	Estimated number of vessels[1]	Average crew size[2]	Floating population
Floating Processors			
Motherships	3	133	399
Inshore Floating Processors	3	100	300
Trawlers			
Catcher Vessels	115	4.5	517.5
Catcher/Processors - Surimi/Fillet[3]	17	101	1,717
Catcher/Processors - Head & Gut[3]	23	35	805
Longline			
Catcher Vessels	20	5	100
Catcher/Processors	38	16	608
Crab/Pot			
Catcher Vessels	195	5.5	1,072.5
Catcher/Processors[4]	8	11	88
Jig	13	2	26
Total Direct Fisheries-Related Floating Population			5,633

[1] Vessel counts include all vessels with landings in the BSAI during 2007. However, catcher vessel counts exclude vessels that had only Individual Fishing Quota (IFQ) halibut and sablefish landings.

[2] All catcher processor crew figures are full-time equivalents (FTEs) are based on observer data. Estimates of employment on catcher vessels and are based on crew-size factors for each vessel class, based on previous studies and interviews with knowledgeable members of the industry.

[3] Trawl catcher processor production data are from 2007 Weekly Production Reports. The surimi/fillet trawl catcher processor category includes 8 primarily surimi-oriented vessels with an average crew size of 108 and 9 primarily fillet-oriented vessels with an average crew size of 79.

[4] Includes 7 catcher processors with 2006/07 BSAI federal crab catcher processor permits, and 1 additional catcher processor with groundfish landings only.

Note also that table does not include over 200 halibut and sablefish IFQ hook-and-line vessels that work in the Bering Sea, as the large majority of these are part of local small boat fleets and the residents of Unalaska who participate in this fishery would already be counted in the standard Unalaska population counts.

Source: NPFMC; ADFG Fish Tickets (2007 Catcher Vessel counts); NMFS Weekly Production Reports (2007 Catcher Processor and Mothership Counts and production data).

also a potentially large number of other infrequent or "floating" visitors associated with the port. Some of these are more or less directly fishery related, such as the crews on domestic and international cargo vessels that have company facilities in the community, freighters affiliated with specific seafood companies, and independent trampers. (While there are no current estimates available, in 1990 the cargo vessel freighter/tramper component of a floating population was estimated at 8,750 individuals, derived from an assumed 350 vessels with an average crew size of 25 [Professional Growth Systems, Inc. 1990:12]. The current validity of this estimate is unknown.) Additionally, there are various other transient vessels that may or may not be directly affiliated with the fishery, such as barges, cruise ships, and ferries, that call on the community of Unalaska and the Port of Dutch Harbor and add to an effective service population or floating population for the community. While the calculation of such a population is less than straightforward, whatever the actual numbers are for any given season or year, it is the case that Unalaska services a floating population that is very large in relation to its resident population base, and a great number of these individuals are directly or indirectly associated with commercial fisheries.

The characterization of Unalaska's "nontransient" population has its own challenges, as the nature of the community has changed over the years. Discussion and analytical categorization of the less transient portions of the Unalaska population differ in various publications on the community. "Permanent" residents of the community have been described as those individuals for whom Unalaska is their community of orientation, independent of their employment status. "Semipermanent" or "long-term transient" residents have been described as those individuals for whom Unalaska is now their community of residence, but for whom residency decisions are based virtually exclusively on employment criteria. In other words, a "permanent" resident is an individual who considers Unalaska "home" and is highly unlikely to move from the community due to termination of a particular job. These individuals tend to remain in the community and seek other employment if a specific job ends, and they also typically remain in the community after their retirement from the labor force. A "semipermanent" or "long-term transient" resident, on the other hand, is an individual who typically has moved to Unalaska for a particular employment opportunity and is more likely than not to leave the community if that specific employment opportunity is terminated for any reason. These individuals may indeed remain in the community for a number of years, but their residency decision-making process is predicated on Unalaska being first and foremost a worksite. Obviously, the categories "permanent" and "semipermanent" or "long-term transient" resident are not precise terms, nor do they necessarily correspond to administrative/regulatory decisions about "official" residency (e.g., whether one is classified as an "Alaska resident" for employment statistical reporting or taxation purposes) nor do they correspond to U.S. Census Bureau count methodology,[9] but they are analytically useful where they conform to specific orientations toward the community that serve to shape community politics, development objectives, community perception, etc. While distinctions are often drawn between the processing-associated population in the community and other residents of the community, several persons interviewed were quick to point out that a number of those in management positions at the processing plants are active in the community in leadership roles,

[9] The technical classification of residency has been a contentious issue in recent years specifically with respect to the fishing industry-related workforce. In terms of U.S. Census Bureau methodology, the first U.S. decennial census in 1790 established the concept of "usual residence" as the main principle in determining where people were to be counted. This concept has been followed in all subsequent censuses. Usual residence has been defined as the place where the person lives and sleeps most of the time and is not necessarily the same as the person's voting or legal residence. Also, noncitizens who are living in the United States are included, regardless of their immigration status. The State of Alaska uses a specific set of criteria for determining residents of the state (i.e., those who qualify for Permanent Fund dividends). According to the state publication *Nonresidents Working in Alaska* (Alaska Department of Labor and Workforce Development 2001), using these criteria, the highest concentration of non-Alaska resident workers are found in the southwest region of Alaska and were primarily engaged in seafood processing. According to this document, 70.9 percent of the workers in this sector in Alaska were not state residents. Of the top private sector employers of non-state resident workers within the "manufacturing" sector, all five were seafood processing firms with ties to the Alaska Peninsula/Aleutian Islands region, if not Unalaska itself. These firms (in alphabetical order) were Icicle Seafoods, Peter Pan Seafoods, Inc., Trident Seafoods Corporation, UniSea, Inc., and Wards Cove Packing Company, Inc. Of the combined total of 11,006 workers reported for these firms, 8,669 individuals or 78.77 percent of the total number of workers were not classified as Alaska residents. The workforce at the individual firms ranged between 71 and 86 percent non-Alaska resident. The relative importance of state resident classification has been the subject of heated debate during recent North Pacific Fishery Management Council (NPFMC) management decision-making processes (for example, during the series of Inshore/Offshore decisions), but in practical terms for the purposes of a social impact assessment, the nature of interaction and relationship between these workers and their worksite community appears to depend more on living quarters configuration (i.e., industrial enclave style or more integrated with the rest of the community), work schedules, and individual decisions regarding the allocation of personal time, among other factors, than it does on formal state residency status for originally non-local workers—whether they be from elsewhere in Alaska or from another state.

and that a number of other leaders in the community who currently hold positions in nonprocessing economic sectors originally came to the community for processing-related employment and then subsequently transitioned to other employment. This type of transition does not appear to occur as frequently among nonmanagement workers within the processing sector but clearly does occur to some degree.

2.1.2.2 Ethnicity

Unalaska may be described as a plural or complex community in terms of the ethnic composition of its population. Although Unalaska was traditionally an Aleut community, the ethnic composition has changed with people moving into the community on both a short-term and long-term basis. Not surprisingly, in the latter half of this century, population fluctuations have coincided with periods of resource exploitation and scarcity.[10] For example, the economic and demographic expansion associated with the king crab boom in the late 1970s and early 1980s brought many non-Aleuts to Unalaska, including Euroamericans, Filipinos, Vietnamese, Koreans, and Hispanics. The Euroamerican population shows a distinct change over the years, comprising around 30 percent of the population in 1970, over 60 percent in 1980 and 1990, and then back to 44 percent in 2000. The growth of the Asian/Pacific Islander population (over 30 percent by 2000) is closely associated with the increasingly residential nature of the seafood processing sector workforce. Further, the specific makeup of the local processing workforce also varies at least over the short term with world events that result in economically or politically based immigration to the United States, as processing work often represents a means of entry into the American employment economy for recently arrived individuals. An example of a (so far) short-term fluctuation has been a reported increase in the number of processing workers from eastern African nations in the early 2000s. The ethnic composition of Unalaska's population for the census years 1970, 1980, 1990, and 2000 appears in Table 2.1-4.

Apart from the World War II years, prior to the growth of the current commercial fisheries-based economy that traces its present configuration back to 1970s, Unalaska was traditionally an Aleut community. With the growth of the non-Aleut population, Aleut representation in the political and other public social arenas declined significantly. For example, in the early 1970s, Aleut individuals were in the majority on the city council; by the early 1980s, only one city council person was Aleut (IAI 1987:65). If one looks at Aleuts (or Alaska Natives) as a percentage of the total population, the change over the period of 1970 through 1990 is striking.

In 1970, Aleut individuals made up slightly over 60 percent of the total community population (and Alaska Natives accounted for a total of 63 percent of the population). In 1980, Alaska Natives, including Aleuts, accounted for 15 percent of the population; by 1990, Aleuts comprised only 7 percent of the total community population (with Alaska Natives as a whole accounting for 8 percent of the population). Overall representation was similar in 2000. This population shift is largely attributable to fisheries and fisheries-related economic development and associated

[10] The most dramatic population shift of this century, however, was brought about by World War II. The story of the war, and the implications for the Aleut population of Unalaska and the other Aleut communities of Unalaska Island, is too complex and profound for treatment in this limited community profile. It may be fairly stated, however, that the events associated with World War II, including the Aleut evacuation and the consolidation of the outlying villages, forever changed the community and Aleut sociocultural structure.

Table 2.1-4. Ethnic Composition of Unalaska's Population: 1970, 1980, 1990, and 2000

Race/Ethnicity	1970		1980		1990		2000	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
White	56	31.0%	848	64.1%	1,917	62.1%	1,893	44.2%
Black or African American	0	0.0%	19	1.5%	63	2.0%	157	3.7%
Native American/Alaskan	113	63.4%	200	15.1%	259	8.4%	330	7.7%
Aleut	107	60.1%	--	--	223	7.2%	--	--
Eskimo	5	2.8%	--	--	5	0.2%	--	--
American Indian	1	0.5%	--	--	31	1.0%	--	--
Asian/Pacific Islander*	--	--	--	--	593	19.2%	1,336	31.2%
Other**	9	5.6%	255	19.3%	257	8.3%	567	13.2%
Total	178	100%	1,322	100%	3,089	100%	4,283	100%
Hispanic***	NA	NA	NA	NA	394	12.7%	551	12.9%

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 24) and Asian (pop 1,312)

** In the 2000 census, this category was Some Other Race (pop 399) and two or more races (pop 168).

*** "Hispanic" is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Source: 1970 data, University of Alaska, 1973; 1980, 1990, and 2000 data, U.S. Census Bureau 1990, 2000.

immigration. The fact that there is a "core" Aleut population of the community with a historical continuity to the past also has implications for contemporary fishery management issues. These include the activities of the Unalaska Native Fisherman's Association and active local involvement in the regional Community Development Quota (CDQ) program. While neither of these undertakings excludes non-Aleuts, Aleut individuals are disproportionately actively involved (relative to their overall representation in the community population).

During recent field interviews for this project and other North Pacific Fishery Management Council (NPFMC) projects, a number of persons, including local governmental officials and individuals from various private sector enterprises, commented that it appeared to them that there were fewer long-term residents overall in the community in the post-2000 period than in the preceding years, although there are no hard data available to verify this. Speculation included that with the apparent slowdown in the local support service economy that was either initiated or accelerated by the American Fisheries Act (AFA) related cessation of the race for fish within the pollock fishery, there has been some out-migration among the permanent population (along with the nonappearance of some former seasonal regulars in the community). Again, there is no quantitative information available to check this speculation. Anecdotal evidence earlier cited by interviewees includes less participation in city-sponsored recreational sports (e.g., the basketball league has seen a drop in the number of teams), but a softness in the housing market that followed AFA groundfish rationalization had all but disappeared by the time of fieldwork for this project (2008).

2.1.2.3 Age and Sex

In the recent past, and particularly with the population growth seen in association with the development of the commercial fishing industry, Unalaska's population has had more men than women. Historically, this has been attributed to the importance of the fishing industry in bringing in transient laborers, most of whom were young males. Table 2.1-5 portrays the changes in proportion of males and females in the population for the years 1970, 1980, 1990, and 2000.

Table 2.1-5. Population by Age and Sex, Unalaska: 1970, 1980, 1990, and 2000

Attribute	1970		1980		1990		2000	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Male	98	55%	858	65%	2,194	71%	2,830	66%
Female	80	45%	464	35%	895	29%	1,453	34%
Total	178	100%	1,322	100%	3,089	100%	4,283	100%
Median Age	26.3 years		26.8 years		30.3 years		36.5 years	

Source: 1970 data, University of Alaska 1973; 1980, 1990, and 2000 data, U.S. Census Bureau 1990, 2000.

Census data from the period 1970 through 1990 showed a climb in median age from 26.3 years to 30.3 years and then a further jump to 36.5 years in 2000. This is commonly attributed to the relative size of the workforce in comparison to resident families. That is, there is quite a large proportion of adult residents included in the census counts who are not raising children in the community, thereby raising the median age. On the other hand, what the median age information does not portray is that older age bracket residents (i.e., those individuals typically past their "working years") tend to be underrepresented in Unalaska compared to the general population, as few non-lifetime residents of the community choose to stay in Unalaska in their retirement years.

School district enrollment figures are presented in Table 2.1-6. This is another indicator of the changing nature of Unalaska's population over the time period portrayed. One can see in the enrollment figures, for example, the enrollment decline that followed the economic decline of the fishing industry in the early 1980s, following the crash of locally important king crab stocks. Enrollments generally increased from the late 1980s to the late 1990s before dipping for a few years and then increasing again to around 400 students annually from 2003 to 2008, reflecting two trends, according to school staff. One is the overall growth of the community, and the other is the increase in the number of people who are making Unalaska home for their families.[11] In late 2001, the school was significantly expanded, including construction of a new elementary school/ administrative offices structure on a noncontiguous portion of the campus. The issue of whether to proceed with the expansion during a time when community population was experiencing a plateau if not decline, and a leveling off of student population in particular, was the subject of debate and a highly contested ballot measure in the community, with the decision to proceed with the expansion passing by a handful of votes. In subsequent years, enrollments have again increased, with 2004 to 2006 enrollment levels being nearly triple that seen at the low point in the mid-1980s. Enrollment figures for 2007 and 2008 were steady if slightly lower than the 2004 to 2006 figures, and while school counts in general are relatively stable for the most recent 6 years (2000 to 2008), according to school administrators, there is still quite a bit of

[11] The community of Unalaska still does, however, rank behind a number of other major Alaska communities in population to enrollment ratios. Using October 2007 average daily membership and the 2006 DCEC certified population figures, Unalaska has a population to enrollment ratio of 10.16:1. Anchorage, Bristol Bay, Cordova, Craig, Dillingham, Kodiak, Valdez, and Yakutat all have ratios less than 6:1, and Kenai has a ratio of just over 6:1. If Unalaska were to match the average of these other comparison communities, enrollment would be at approximately 744 rather than 388 (Unalaska City School District, May 2008, personal communication). This divergence of population and enrollments balance is another indicator that, while things are changing, Unalaska remains more of a "work site" than a community of rooted residence for a comparatively large proportion of its residents.

Table 2.1-6. Unalaska City School District Enrollment, Fiscal Years 1978–2005

Fiscal Year	School Enrollment
FY 1978	133
FY 1979	140
FY 1980	200
FY 1981	186
FY 1982	191
FY 1983	151
FY 1984	140
FY 1985	140
FY 1986	137
FY 1987	159
FY 1988	153
FY 1989	188
FY 1990	204
FY 1991	258
FY 1992	304
FY 1993	330
FY 1994	359
FY 1995	356
FY 1996	353
FY 1997	375
FY 1998	380
FY 1999	353
FY 2000	352
FY 2001	352
FY 2002	369
FY 2003	393
FY 2004	399
FY 2005	399
FY 2006	398
FY 2007	386
FY 2008	388

Note: Fiscal year designation refers to the calendar year in which the school year ended (e.g., FY 1978 refers to the 1977–1978 school year).
Source: Spreadsheet supplied by Unalaska City School District, May 2008.

turnover that occurs within these numbers as a result of families moving into and out of the community tied, in part, to fluctuations in the fishing industry and fishing-related sectors of the economy. Within a given year, attendance also varies based on fishery cycles to that extent that some processing families visit families overseas during those periods when the plants shut down, which do not always coincide with the school calendar. Another example of the local commitment to the local educational system, however, was provided by a school district employee who noted that local contributions provide approximately 46 percent of the school's general fund, not including special appropriations from the city that totaled an additional $879,000 in fiscal year (FY) 2008.

The link between the fisheries and school population can in part be seen through a categorization of the employment, by sector, of parents of Unalaska schoolchildren as ascertained by the Unalaska School District for the 2000, 2002, 2004, and 2006 school years and shown in Table 2.1-7. Information shown is for the parent designated as the "primary wage earner."[12] As shown, the largest single sector for the primary wage earners has varied from year to year, but it is important to note that "fish processing" and "fishing support" when added together accounted for a large percentage each year. According to school staff, the assignment of individual employers/entities to the various categories (especially the "fishing support" category) is not exact (it is a judgment call made by the school administrator) but gives an indication of the relative strength of ties of the different sectors to the school population. (Unalaska is very different in this respect from other major processing communities in the region. In Akutan and King Cove, for example, there are few if any students at either school who come from processing worker families.)

Table 2.1-7. Parent Employment by Sector, Unalaska City School District, Fiscal Years 2000, 2002, 2004, and 2006

Parent Employment Sector	2000		2002		2004		2006	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Fish Processing	62	17.66%	77	21.04%	96	25.33%	80	20.10%
Fishing Support	63	17.95%	55	15.03%	52	13.72%	78	19.60%
Retail/Restaurant/Services	58	16.52%	61	16.67%	73	19.26%	76	19.10%
Unemployed/Self-Employed	12	3.42%	14	3.83%	20	5.28%	22	5.53%
Government/Public	101	28.77%	123	33.61%	90	23.75%	102	25.63%
Transportation/Freight	55	15.67%	36	9.84%	48	12.66%	40	10.05%
Total	351	100.00%	366	100.00%	379	100.00%	398	100.00%

Source: Unalaska City School District Spreadsheet, May 2008.

In terms of ethnicity of students, the attributes of the FY 2008 enrolled students vary somewhat from the general population as gauged by the 2000 census. Hispanic representation was virtually equal, but Asian/Pacific Islander individuals were a larger component of the school enrollment than of the general population (35 versus 31 percent, respectively). Alaska Native/American Indian individuals made up 18 percent of the school population, but only about 8 percent of the general population (consistent with the observation that Alaska Natives tend to make up a disproportionately large percentage of the lifetime residents of the community), while white individuals made up 33 percent of the school population and 44 percent of the total population (suggesting disproportionate labor migration into the community). As of FY 2008, 37 percent of the school's students (145 of 387 students) were classified as having "limited English proficiency."[13] According to earlier (2004) interviews with school staff, the Unalaska City School District was (then) recently named in a poll as one of the top 100 school districts in the country and placed first in the state in exit exam scores, which spurred an increase in enrollment of students from smaller villages in the region. For the most part, these were individuals who chose to stay with relatives in Unalaska to take advantage of the local educational opportunities.

[12] The school did track employment for both parents for the 2004 school year, but has not done so for other years.

[13] The "limited English proficiency" classification has replaced "English as a second language" classification as a standard measure of language use and proficiency as it is a more direct measure of potential linguistic challenges in the classroom.

2.1.2.4 Housing Types and Population Segments

Another reflection of the diversity of the community and the distribution of different subpopulations within the community may be seen in the population differentiation by housing type. Group housing in the community is largely associated with the seafood processing workforce. As shown in Table 2.1-8, 52 percent of the population lived in group housing in 1990 and 51 percent of the population did so in 2000.

Table 2.1-8. Group Quarters Housing Information, Unalaska, 1990 and 2000

Year	Total Population	Group Quarters Population		Non-Group Quarters Population	
		Number	Percent of Total Population	Number	Percent of Total Population
1990	3,089	1,614	52.25%	1,475	47.75%
2000	4,283	2,192	51.18%	2,091	48.82%

Source: U.S. Census Bureau 1990, 2000.

The population residing in group housing in the community is demographically quite different from the population of the community in non-group housing. Table 2.1-9 provides information on group housing and ethnicity for Unalaska for 1990 and Table 2.1-10 provides similar information for 2000. In 1990, the total minority population proportion was substantially higher in group quarters (49 percent) than in non-group quarters (31 percent). In 2000, the total minority population in group quarters was 72 percent, with the analogous figure being 45 percent in the non-group quarters population. Beyond a general growth of minority populations from 1990 to 2000 as a proportion of population in both types of housing (and a greater difference between housing types in 2000 than in 1990), the minority population distribution between and within housing types changed substantially in the 1990 through 2000 period. For example, "white" residents of Unalaska comprised 54 percent of the group quarters population in 1990, but only 30 percent in 2000 (and declined, to a lesser but still substantial degree, from 71 percent to 59 percent of the population within non-group quarters housing). Although demographic categories changed somewhat between the 1990 and 2000 census, some relatively large changes

Table 2.1-9. Ethnicity and Group Quarters Housing Information, Unalaska, 1990

Race/Ethnicity	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	1,917	62.06%	870	53.90%	1,047	70.98%
Black or African American	63	2.04%	55	3.41%	8	0.54%
American Indian, Eskimo, Aleut	259	8.38%	20	1.24%	239	16.20%
Asian or Pacific Islander	593	19.20%	434	26.89%	159	10.78%
Other race	257	8.32%	235	14.56%	22	1.49%
Total Population	3,089	100.00%	1,614	100.00%	1,475	100.00%
Hispanic origin, any race	394	12.75%	337	20.88%	57	3.86%
Total Minority Population	1,252	40.53%	795	49.26%	457	30.98%
Total Non-Minority Population (White Non-Hispanic)	1,837	59.47%	819	50.74%	1,018	69.02%

Source: U.S. Census Bureau 1990.

Table 2.1-10. Ethnicity and Group Quarters Housing Information, Unalaska, 2000

Race/Ethnicity	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	1,893	44.19%	665	30.34%	1,228	58.73%
Black or African American	157	3.67%	146	6.66%	11	0.53%
Alaska Native/Native American	330	7.71%	62	2.83%	268	12.82%
Native Hawaiian/Other Pacific Islander	24	0.56%	22	1.00%	2	0.10%
Asian	1,312	30.63%	931	42.47%	381	18.22%
Some Other Race	399	9.32%	318	14.51%	81	3.87%
Two Or More Races	168	3.92%	48	2.19%	120	5.74%
Unknown	0	0%	0	0%	0	0%
Total	4,283	100.00%	2,192	100.00%	2,091	100.00%
Hispanic*	551	12.86%	372	16.97%	179	8.56%
Total Minority Population	2,503	58.44%	1,568	71.53%	935	44.72%
Total Non-Minority Population (White Alone, Not Hispanic or Latino)	1,780	41.56%	624	28.47%	1,156	55.28%

* "Hispanic" is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Source: U.S. Census Bureau 2000.

are readily apparent. For example, in 1990, the "Asian or Pacific Islander" category accounted for 27 percent of group quarters population but had risen to 42 percent by 2000. In general, in 2000 Unalaska had a substantially greater minority population in absolute and relative terms than it did in 1990, and this is readily apparent within the group quarters population that is largely associated with seafood processing workers.

Household types in Unalaska vary by population segment, although this has changed in recent years. In the early 1990s, it was a truism that virtually all permanent residents lived in single-family dwellings, whereas short-term workers lived in group housing at worksites or, in a lesser number of cases, in single dwellings or duplexes leased by employers. This pattern has changed somewhat over the years with the construction of a number of multi-unit complexes not associated with particular employers. It is still the case, however, that seafood company processing workers tend to live in housing at the worksite and longer-term workers at the shoreplants tend to live in company housing adjacent to worksites. One seafood processor, however, owns multi-family dwellings in what is otherwise primarily a single-family residential area, so its workforce tends to be differently distributed geographically than other workforces. In the past, some residents of the community have drawn the distinction, with respect to processing firms, that one is not fully a resident of the community unless one has a private residence in the community (i.e., that the "test" of "real" residency is tied to whether one lives in company-provided housing). This distinction breaks down, however, when one examines the issue on a detailed level, as a number of companies (and not just seafood firms) provide or subsidize housing for employees in Unalaska both adjacent to and separate from their worksite locations. Also, the persons living in such residences may, in fact, stay in the community for considerable lengths of time (outstaying many in "private" residences) and become centrally involved in community life. Still, in various political arenas, at least in the not-too-distant past, one could

hear claims made for the virtue of particular points of view based on whether individuals own homes and pay property taxes in the community.

Unalaska's housing market *per se* has changed in the recent past. Through the mid-1980s and the 1990s, housing was at a premium in the community, with virtually zero vacancy rates and waiting lists for rental opportunities. According to city staff, however, by 2000, housing and rental prices had not appreciably dropped; however, demand has slackened considerably such that there are no longer waiting lists maintained by some of the larger housing owners. According to the City of Unalaska appraiser and planning staff at the time, home sales were slower than in the past, and there was some concern about declines in value, but those concerns had not yet been realized. Also according to the city, although rental demand was off, rents had not yet begun to drop in response to decrease in demand. This "softening" of the housing market was, at the time, directly attributed by most to then-recent changes in the local fishery, including the slowing of the "race for fish" in the pollock fishery that was made possible by the AFA and the formation of co-ops, among other fishery-related factors. A housing market survey conducted by the city and completed May 2003 (City of Unalaska Planning Department Spreadsheet) showed mixed changes in housing costs between 2000 and 2003. The most recent residential housing rent survey completed for the city (MacSwain Associates, June 2007) found very few vacant dwelling units in the community (1 two-bedroom apartment and 3 two-bedroom apartments) and that, in general, demand for residential housing is greater than the available supply. Survey respondents indicated that tenant expenses varied from one property type to another, but a majority of apartment rents required the tenant to pay for water, sewer, electricity, telephone, and cable, while landlords typically paid for heat. In contrast, a majority of single-family residential dwelling and duplex rental agreements stipulate that the tenant pay all utilities. Survey respondents indicated an overall vacancy rate of less than 2 percent with a wait list of potential tenants the norm.

The information contained in the 2007 housing rent survey, as well as information obtained during interviews in May 2008, would indicate that any softening of the housing market associated with earlier (AFA) fishery rationalization efforts has dissipated and would further suggest that BSAI crab rationalization itself did not result in a softening of the Unalaska housing market or, if it did, other market forces have offset this effect.

Another recent change in housing mentioned in earlier (2004) interviews is that companies (other than the major seafood processors) are less likely to supply housing for workers than was the case in the past. This is reportedly due to there being more housing available in the community, such that companies do not feel forced to tie up housing units for the entire year to be able to meet employee housing needs during peak demand periods, and the fact that support sector businesses are using many fewer seasonal employees than in the past. While there are no systematic data available to document this common assertion, the City of Unalaska has discontinued holding long-term housing leases, which formerly was a common practice due to the local housing shortage.

Table 2.1-11 displays basic information on community housing, households, families, and median household and family income for Unalaska in 2000. The figure for vacant housing units is consistent with anecdotal evidence regarding market demand softening.

Table 2.1-11. Selected Household Information, Unalaska, 2000

Community	Total Housing Units	Vacant Housing Units	Total House-holds	Average Persons per House-hold	Median House-hold Income	Family House-holds	Average Family Size	Median Family Income
Unalaska	988	154	834	2.51	$69,539	476	3.27	$80,829

Source: U.S. Census Bureau 2000.

2.1.3 Local Economy and Links to Commercial Fisheries

In the late 1970s and early 1980s Unalaska prospered significantly from the king crab fishery. The crab boom resulted in a dramatic increase in both the volume of landings and the number of processors in town. In the mid-1970s there were from 90 to 100 commercial vessels regularly fishing the Bering Sea. By 1979 the number had jumped to between 250 and 280, an increase so dramatic that it was difficult for skippers to find crew members. The king crab fishery subsequently declined precipitously and fishermen and processors alike diversified their businesses in order to survive economically. One of the avenues of diversification was the pollock fishery, which proved an economic mainstay for the community in subsequent years. While truly local vessels are comparatively few and of a relatively small scale, local processing plants are large and receive landings from vessels from elsewhere in Alaska and from the Pacific Northwest (and at least a few from further afield). Economic activity in the community is cyclic, with busy periods coinciding with major fishery openings and closings. Table 2.1-12 provides a list of dates of openings as of 2008 for the major commercial fisheries in the area.

Table 2.1-13 shows the volume and value of fish landed at Unalaska over the period 1977 through 2006. This span encompasses the high years of the king crab fishery in the late 1970s and the growth of the pollock fishery thereafter, along with many other fisheries changes over the years. Average value per pound is an artificial figure in that it combines a number of different variables, but it is useful for an overall look at how volume and value have varied over the years (particularly as pollock, a relatively high volume, low value per unit species grew in importance as a component of the community processing base). As shown, Unalaska has ranked as the number one U.S. port in volume of landings since 1992 and ranked first in value of landings from 1988 to 1999.[14] In 2000, Unalaska dropped to second in value of landings behind New Bedford, Massachusetts, and has remained there in the subsequent years.[15]

[14] If ports in U.S. territories are included, Unalaska/Dutch Harbor ranks second behind Pago Pago in American Samoa for at least some of these years. As the center of the U.S. flag tuna fishery, value of landings at that port in 1998 (approximately $232 million) more than doubled Unalaska/Dutch Harbor's total for that same year, the last full year for which data are available (NMFS 2001b).

[15] In 2006, New Bedford value of landings totaled $281.4 million on a much lower volume (168.3 million pounds) than landed in Unalaska.

Table 2.1-12. Bering Sea/Aleutian Islands Major Fisheries Openings, 2008

Species	Opening
Eastern Aleutians Bairdi Tanner Crab	January 15
Opilio Tanner Crab	January 15
Brown King Crab	August 15
Bairdi Tanner Crab	October 15
Bristol Bay Red King Crab	October 15
Pribilof Blue King Crab	October 15
St. Matthew Blue King Crab	October 15
Pribilof Red King Crab	October 15
Foot/Bait Herring	July 15
Halibut IFQ	March 10
Sablefish IFQ	March 10
Pollock AFA Inshore 'A'	January 20
Pollock AFA Inshore 'B'	June 10
Pollock Catcher Processor 'A'	January 20
Pollock Catcher Processor 'B'	June 10
Pollock Mothership 'A'	January 20
Pollock Mothership 'B'	June 10
Atka Mackeral Eastern 'A'	January 20
Atka Mackeral Eastern 'B'	September 1
Atka Mackeral Central 'A'	January 20
Atka Mackeral Central 'B'	September 1
Atka Mackeral Western 'A'	January 20
Aka Mackeral Western 'B'	September 1
Pacific Cod Catcher Processor (trawl) 'A'	January 20
Pacific Cod Catcher Processor (trawl) 'B'	April 1
Pacific Cod Catcher Processor (trawl) 'C'	June 10
Pacific Cod Catcher Vessel (trawl) 'A'	January 20
Pacific Cod Catcher Vessel (trawl) 'B'	April 1
Pacific Cod Catcher Vessel (trawl) 'C'	June 10
Pacific Cod Catcher Processor (hook & line) 'A'	January 1
Pacific Cod Catcher Processor (hook & line) 'B'	June 10
Pacific Cod Catcher Vessel (hook & line) 'A'	January 1
Pacific Cod Catcher Vessel (hook & line) 'B'	June 10
Pacific Cod (pot) 'A'	January 1
Pacific Cod (pot) 'B'	September 1

Note: "Hook & line" is also commonly known as "longline."
Source: Adapted from International Port of Dutch Harbor facilities and services poster, 2008.

Table 2.1-13. Volume and Value of Fish Landed at Unalaska, 1977–2006

Year	Volume		Value		Average Value ($/lb)*
	Millions of Pounds	U.S. Ranking	Millions of Dollars	U.S. Ranking	
1977	100.5	-	61.4	-	0.61
1978	125.8	-	99.7	-	0.79
1979	136.8	-	92.7	-	0.68
1980	136.5	3	91.3	10	0.67
1981	73.0	5	57.6	11	0.79
1982	47.0	6	47.8	14	1.02
1983	48.9	9	36.4	15	0.74
1984	46.9	20	20.3	13	0.43
1985	106.3	18	21.3	8	0.20
1986	88.3	9	37.2	10	0.42
1987	128.2	4	62.7	8	0.49
1988	337.3	3	100.9	1	0.30
1989	504.3	2	107.4	1	0.21
1990	509.9	2	126.2	1	0.25
1991	731.7	2	130.6	1	0.18
1992	736.0	1	194.0	1	0.26
1993	793.9	1	161.2	1	0.20
1994	699.6	1	224.1	1	0.32
1995	684.6	1	146.2	1	0.21
1996	579.0	1	118.7	1	0.20
1997	587.8	1	122.6	1	0.21
1998	597.1	1	110.0	1	0.18
1999	678.3	1	140.8	1	0.21
2000	699.8	1	124.9	2	0.18
2001	834.5	1	129.4	2	0.15
2002	908.1	1	136.1	2	0.15
2003	908.7	1	156.9	2	0.17
2004	886.8	1	167.4	2	0.19
2005	887.6	1	166.1	2	0.19
2006	911.3	1	165.2	2	0.18

*Average value derived from volume and value data.
Source: 1977–1979 data from NMFS data as cited in IAI 1991; 1980–1996 data from NMFS data cited in City of Unalaska FY 97 Annual Report (December 1997); 1997–2006 data via personal communication from NMFS Fisheries Statistics and Economics Division, Silver Spring, MD (accessed 5/28/08 through NMFS Website http://www.st.nmfs.gov/st1/ commercial/landings/ lport_hist.html).

The commercial fishery/seafood industry provides a very large component of the employment base in Unalaska. According to the City of Unalaska, in 2006 the top three employers in the community, together accounting for over half of all employment in the city, were all seafood processing firms, a pattern unchanged from 2000 (Table 2.1-14). When other seafood firms (such as Harbor Crown Seafoods) are added, along with firms primarily dependent upon the fisheries, such as stevedoring (including Pacific Stevedoring and Dutch Harbor Services) and shipping (American President Lines, among others), the dependency of Unalaska employment on the fishing industry is even more apparent.

Table 2.1-14. Unalaska Principal Employers, 2000 and 2006

Employer	2000			2006		
	Number of Employees	Rank	Percentage of Total City Employment	Number of Employees	Rank	Percentage of Total City Employment
Unisea, Inc.	688	1	29%	819	1	26%
Westward Seafoods, Inc.	349	2	15%	665	2	21%
Alyeska Seafoods, Inc.	194	3	8%	229	3	7%
City of Unalaska	162	5	7%	178	4	6%
Pacific Stevedoring, Inc.				80	5	3%
Harbor Crown Seafoods, Inc.				78	6	3%
American President Lines, Ltd.	61	9	3%	75	7	2%
Unalaska City School	68	8	3%	73	8	2%
Safeway, dba Eagle Quality Centers				51	9	2%
Dutch Harbor Services, Inc.				48	10	2%
Petro Star, Inc. dba North Pacific Fuel	182	4	8%			
Western Pioneer, dba Alaska Ship Supply	100	6	4%			
Royal Aleutian Seafood	89	7	4%			
Western Power and Equipment	33	10	1%			
Total, top ten employers	**1,926**		**82%**	**2,296**		**74%**

Note: dba = doing business as
Source: City of Unalaska Comprehensive Annual Financial Report, 2007, based on Alaska Department of Labor, Research and Analysis Section average monthly employment, calendar years 2006 and 2000.

Beyond employment, fishing and fishing support define a substantial portion of the identity of the community, and fishing-related issues extend into many other areas of community life. An example of the engagement of the community with the direct and fisheries support sectors and vice versa may be seen in the individuals who have filled city council and mayoral positions in recent years, a number of whom have been employees of local processing firms or businesses heavily reliant on the fishing industry. As of 2008, of the combined seven mayor and city council positions, two are filled with individuals who are employed by or have ownership interest in local processing companies, one is filled by a support service business owner largely reliant on the fishing fleet, and another manages a business that does a significant volume of business with local commercial fishery sectors.

Table 2.1-15 provides summary data on employment and poverty from the 2000 census. As shown, there was virtually no unemployment in 1990, but over 11 percent unemployment in 2000. These numbers should be treated with some caution, however, as it may well be the case that persons counted as unemployed included seafood processing workers temporarily idled between seasons. While this unemployment may have been "real" in the sense that processing workers were present and not actively working when the census was taken, it is most likely an artifact of the timing of the census as processing workers are not typically present in the community when the plant is idle for any extended period of time. That is, under normal conditions, there are no unemployed seafood processing workers present in the community (by design). These workers are transported to and from the community by their employer to meet labor demand at the plant. As part of the employment agreement, seafood processors typically provide room and board for workers, so it is uneconomic to have idled workers at the site unless the plant downtime is relatively brief (i.e., the cost of housing and feeding the employees during the idle interval does not exceed transportation, recruiting, training, and other costs associated

with sending workers out and bringing them back in, including some level of turnover that always occurs in these situations). This pattern has changed somewhat in recent years as at least some seafood processing employees choose to remain on-site during slack periods, according to processing company staff. These individuals enjoy the benefits of living in company housing, and the company enjoys the benefit of having an on-call labor pool available for intermittent small processing runs and a reduction of transportation expenses and logistical challenges involved in bringing people in at the start of a new season.

Table 2.1-15. Employment and Poverty Information, Unalaska, 1990 and 2000

Year	Total Persons Employed	Unemployed	Percent Unemployment	Percent Adults Not Working	Not Seeking Employment	Percent Poverty
1990	2518	26	1.0%	7.8%	186	15.3%
2000	2675	414	11.1%	27.93%	625	12.5%

Source: U.S. Census Bureau 1990, 2000.

The following discussion of the fishing industry is divided into the harvesting and processing sectors, as each has significance for the Unalaska economy and community. A third section provides information on fishing industry support services.

2.1.3.1 Harvesting

Community Harvester Quantitative Description

An earlier North Pacific Research Board (NPRB)/NPFMC funded community profile effort, *Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak, Alaska* (EDAW 2005), included a quantitative characterization of the Unalaska local commercial fishing harvest sector, including detailed information on an annual basis, from 1995 through 2002, of local vessel characteristics, distribution of permit holders, catch and earnings estimates, and landings inside and outside of the community, along with an analysis of the spatial distribution of fishing effort of the local fleet. As updating this information is effort intensive and not central to the current BSAI crab rationalization 3-year review-oriented community analysis, it has not been updated for or included in this community profile. Rather, the more qualitatively oriented and BSAI crab rationalization focused discussion in the next section has been updated.

In regard to local engagement in the BSAI crab fisheries, according to the BSAI crab fishery 1998–2008 dataset,[16] the number of Unalaska-owned vessels participating in the Bristol Bay red king crab fishery declined from four to one in the years immediately preceding the implementation of BSAI crab rationalization, and no locally owned vessels have participated in the fishery since rationalization. In the Bering Sea snow crab fishery, the number of locally owned vessels appearing in the data declined from three to one in the years leading up to rationalization, and one locally owned vessel participated in this fishery in the first year under the rationalized fishery, but none did so in the second year. No other Unalaska-owned vessels

[16] Crab rationalization community analysis dataset compiled from ADFC fish ticket and CFEC gross revenues data and used to generate the tabular data in Chapter 1 and Attachment 1.

have participated in any of the now-rationalized crab fisheries in recent years, either before or after rationalization. This apparent absence of current, direct participation of Unalaska-owned vessels in the rationalized BSAI crab fisheries is consistent with information developed during interviews for this project, and even the low level of prior participation described in the data would appear to overstate participation when compared to information gathered during interviews. (That is, at least some of the vessels that are designated as owned by Unalaska residents in the data are not owned [or crewed] by individuals thought of as full-time community residents by a number of knowledgeable individuals interviewed for this project.) Though a large fishing port, Unalaska is home to a relatively small-scale residential fleet and the local fleet, virtually out of the BSAI crab fisheries prior to rationalization, has been largely unaffected by BSAI crab rationalization itself, at least in terms of direct impacts.

Among the now-rationalized crab fisheries that have been open in recent years,[17] two vessel owners listed as Unalaska residents in the data qualified for initial catcher vessel owner quota share allocations in each of the Bristol Bay Red (south), Bering Tanner East, and Bering Tanner West fisheries, while one vessel owner listed as residing in Unalaska qualified for an initial catcher vessel owner quota share allocation in each of the Bering Sea snow crab (north) and Bering Sea snow crab (south) fisheries. These numbers, and the percentage of overall quota shares held, were the same for the 2008/2009 season Individual Fishing Quota (IFQ) allocation as they were for the initial allocation. (Two vessel owners listed as Unalaska residents were also were initially allocated, and still hold, catcher vessel owner shares in the Pribilof blue and red king crab fisheries, and one vessel owner listed as an Unalaska resident holds catcher vessel owner shares in each of the St. Matthews blue king crab north and St. Matthews blue king crab south fisheries, although these fisheries are not open at present.)

Communities also directly benefit from the harvest sector through participation of residents as crew members as well as through the engagement of vessel owners and permit holders. Beginning in 2000, the Commercial Fisheries Entry Commission (CFEC) has produced estimates of crew members by community, based on the number of permit holders in the community, plus the community residents who have applied for a Crew Member License with the Alaska Department of Fish and Game (ADFG). To the extent that the number of permits held by local residents is apparently overstated (as discussed in detail in an earlier profile [EDAW 2005]), so will the number of local crew positions be overstated, so caution should be exercised when using these data. Table 2.1-16 provides estimates of crew members for Unalaska for all commercial fisheries for the years 2000 through 2006.

[17] Pribilof blue and red king crab fisheries (north and south) and the WAI red king crab fishery have been closed for a number of years, including the 3 years post-implementation of rationalization, and are not expected to reopen in the near future. The St. Matthews blue king crab fisheries (north and south), have also been closed for a number of years, including the 3 years since the implementation of rationalization, but it is considered more likely that this fishery will open in the foreseeable future than the other fisheries currently closed but rationalized crab fisheries.

Table 2.1-16. Estimated Number of Permit Holders and Crew Members from Unalaska/Dutch Harbor 2000–2006

Year	Permit Holders	Crew Members	Total
2000	50	163	213
2001	CFEC did not develop this report for 2001		
2002	53	158	211
2003	54	187	241
2004	58	185	243
2005	64	185	249
2006	47	188	235

Note: The number of permit holders local to Unalaska/Dutch Harbor is likely overstated (see text), which will result in an overstatement of local crew member estimates.
Source: CFEC permit holder and crew member counts by census area and city of residence report, accessed via www.cfec.state.ak.us/Mnu_Summary_Info.htm.

Although good quantitative data are unavailable, Unalaska historically has had few resident crab crew members, just as it has had few resident crab vessel owners, especially when viewed in contrast to its importance as a service and processing port for the BSAI crab fisheries. According to the BSAI crab rationalization database, only one local resident qualified for initial catcher vessel captain/crew share allocations in each of the Bristol Bay red king crab (south), Bering Sea snow crab (north), and Bering Sea snow crab (south) fisheries. Initial allocations of catcher vessel captain/crew quota share were received by two Unalaska residents each in the Bering Tanner East and Bering Tanner West fisheries. No other captain/crew quota shares were received by local residents for any other active BSAI crab fisheries. As of the 2008/2009 season IFQ allocation process, the number of Unalaska residents holding Bering Tanner East and Bering Tanner West catcher vessel captain/crew quota (and the amount held) remained unchanged from the initial allocation, while the Bristol Bay red king crab (south), Bering Sea snow crab (north), and Bering Sea snow crab (south) catcher vessel captain/crew holdings each increased by one Unalaska resident each (to a total of two resident holders each). (Among the currently closed fisheries, one Unalaska resident received an initial catcher vessel captain/crew quota share allocation in the Pribilof blue and red king crab fishery [south]; that level of ownership was unchanged as of the 2008/2009 season IFQ allocation process.) According to multiple interviews with knowledgeable community residents, no full-time Unalaska residents have been known to crew on BSAI crab vessels in recent years, either before or after the implementation of rationalization. Unlike at least two of the other major port communities, King Cove and Kodiak, local crew job loss as a result of the consolidation of the crab fleet that accompanied BSAI crab rationalization is not a salient issue in Unalaska/Dutch Harbor.

Unalaska did not qualify as a CDQ community, but it is an ex-officio member of the Aleutian Pribilof Island Community Development Association (APICDA) CDQ group. This group partners with both an onshore and offshore entity and offers training programs in Unalaska. Though Unalaska is not formally a CDQ community, according to interview data it is in fact where multiple APICDA training and other programs are run because of the size of the population it services in the community. Although theoretically the increase in CDQ quota under both the AFA and, more recently, BSAI crab rationalization, hurt the community as a non-CDQ participant, in the case of the AFA the simultaneously occurring increase in onshore quota appears to have made up the difference. Further, given that CDQ partnerships with onshore and offshore sector participants directly or indirectly benefit the community through either local

economic activity or payment of taxes in one form or another, the consequences of the CDQ quota increase on Unalaska were likely minor. In the case of BSAI crab rationalization, proportionately more crab appears to have been processed in Unalaska following rationalization, on average, than in the years leading up to rationalization, so the increase in CDQ quota does not appear to have adversely affected Unalaska in this case either.

Community Fleet Characterization

The vast majority of fish landed in Unalaska both in terms of volume and value is landed by vessels from outside of the community. Unalaska is at once both an industrial-scale fishing community and a small boat fleet town. It is home to a greater concentration of processing and catcher vessel activity than any other Alaskan community, but its residential fleet is much smaller than the fleets of some other fishing communities with much smaller populations within the same region (e.g., King Cove and Sand Point). The following discussion is divided into small and large vessel subsections.

Small Vessel Fleet

A portion of the local small vessel fleet, among them vessels ranging from 18 to 68 feet in length, is represented by the Unalaska Native Fisherman's Association. Active membership in the association varies widely from year to year based on current fishery issues. This association is open to Natives and non-Natives alike, but there is a requirement that members must live in the community 8 months per year. The association maintains a majority of Alaska Native board members in order to retain access to a number of funding sources. This entity, with financial support of the regional CDQ group, represents the interests of Unalaska small boat fishermen before the NPFMC by underwriting travel expenses for local representatives to attend the meetings.

As noted earlier, there is no direct participation in the rationalized BSAI crab fisheries by vessels owned by local residents. Local resident-owned vessels also do not participate in the pollock fishery, which is a dominant local fishery in terms of local processing and revenues generated for the community, but the vessels do participate in the local cod, halibut, and crab fisheries on a small scale (including the Eastern Aleutian District bairdi fishery, which has been open for a least a few seasons recently after having otherwise been closed for many years). A frequently noted problem in developing markets and long-term relationships with the larger processing entities in the community, however, is that the locally based fleet consists of vessels that are small by Bering Sea standards. In practical terms this means that they are more weather dependent than larger vessels and have a smaller delivery capacity per trip. These factors make it difficult for larger plants to accommodate what are, by necessity, relatively small and (in most cases) sporadic deliveries.

According to interviews conducted for this project in 2008, knowledgeable local residents estimated that less than a half-dozen local individuals made a relatively large proportion of their living from commercial fishing as either an owner/skipper or crew. Typically three to five specific individuals were listed as falling into this category, representing a slight increase in listings over those listed in interviews conducted in 2004, but only between one and three of these individuals reportedly relies exclusively on fishing as an income source or is otherwise characterized as a full-time fisherman. Other Unalaska residents engaged in commercial fishing

do so as a supplement to other primary income-producing employment. Commercial fishing for small boat owners in Unalaska is generally one part of a (variable) multiple-income source strategy of "piecing together a living." In the words of one long-time local vessel owner, "you could do it [support a family off of local commercial fishing] when I was young, but if I had to support a family now, I would have to be a longshoreman." According to interview data gathered in 2008, one case was described where a current Unalaska resident lost a BSAI crew job due to fleet consolidation and, as an alternative source of fishing income, bought a local small vessel, increasing the active small boat fleet. According to an individual generally perceived to be the most active of local fishermen, there are more lucrative opportunities for Unalaska residents in the small boat fleet than as crew on crab vessels at present, and the local small boat fleet in 2008 is more vibrant than it has been in recent years.

Detailed qualitative and quantitative description information on Unalaska's small boat fleet current through 2004 is contained in an earlier produced profile (EDAW 2005). As this information is not central to the analysis of BSAI crab rationalization, it is not reproduced in this document.

Large Vessel Fleet

The large vessels from outside of the community that are associated with the individual shoreplants in Unalaska are discussed in overview in the processor section. Ownership patterns of the large catcher vessels have been changing in recent years, and this is making the local versus outside fleet dynamic somewhat more complex. This is more obvious within the groundfish fishery (and the pollock fishery specifically) than it is within the crab fishery. Within the pollock fishery, one of the trends in recent years has been the dramatic increase in ownership and/or control (through third-party entities with some type of business relationship to the processors) of pollock harvest vessels by the shoreplants in Unalaska. Prior to this pattern of acquisition, it was accurate to say that no permanent residents of Unalaska were involved in the pollock fishery as vessel owners, nor were any vessels homeported out of Unalaska in the sense of being the community of residence for the skipper and crew. Further detailed information on the relationship of larger pollock vessels to the community is provided in an earlier community profile (EDAW 2005) and is not reproduced here. For the large vessel crab fleet, currently (2008) no active vessels in the rationalized BSAI crab fisheries are owned by Unalaska residents. According to the BSAI crab rationalization database, three vessels owned by Unalaska residents have participated in the rationalized fisheries in either the 4 years immediately preceding rationalization or any of the years following rationalization. Of these, one appears in only one fishery and in only 1 year and is otherwise listed in the data as having Pacific Northwest ownership. The other two vessels, while listed as owned in Unalaska, are not, according to interviews with knowledgeable local residents, owned by individuals who are actually full-time residents of the community. Further, according to multiple interview sources, no full-time Unalaska residents are currently crewing in the rationalized BSAI crab fisheries.

2.1.3.2 Processing

Community Processor Quantitative Description

An earlier NPRB/NPFMC funded community profile effort, *Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak, Alaska*

(EDAW 2005), included a quantitative characterization of the Unalaska local commercial processing sector, including detailed information on an annual basis, from 1995 through 2002, of the number of active processors, species processed, pounds purchased, ex-vessel values, and wholesale values by species, processing value added, and relative dependency by species. As updating this information is effort intensive and not central to the current BSAI crab rationalization 3-year review-oriented community analysis, it has not been updated or included in this community profile. Rather, the more qualitatively oriented and BSAI crab rationalization focused discussion in the next section has been updated.

Community Processing Characterization

In terms of links to the community, it is important to note that shoreplants have long been a part of the community. Among the large plants in the community, the facility now operating as Alyeska Seafoods was originally constructed by Pan Alaska Seafoods in the early 1960s, UniSea began local operations in 1975, Icicle Seafoods has been processing locally since 1987, and Westward Seafoods was locally established in 1990. That is not to say that relationships between the plants and other interests in the community have not been strained at times, but in Unalaska a number of the longer-term residents working at the plants, especially management level personnel, are actively involved in the community and serve in various elected, appointed, and volunteer leadership capacities with the City of Unalaska and numerous community organizations. For example, at different times in recent years the mayor's position and one or more of the city council positions were filled by persons employed by processors. This level of social integration sharply differentiates Unalaska from other major fishing ports in the region, such as Akutan and King Cove.

There still is, however, a transient underpinning to the local processing industry, with very few, if any, processing workers at the larger plants being recruited from the local residential labor pool. In this sense, Unalaska is similar to Akutan or King Cove, and unlike Kodiak, which does draw processing workers from the community. That is not to say the nature of "transientness" hasn't changed markedly over the years in Unalaska, with worker stays in the community becoming longer with more stable processing levels. During the boom-and-bust years, the length of local residency of the workforce employed in seafood processing was inversely related to the vitality of the local industry in general. For example, in 1982, at the height of processing capacity for king crab, turnover tended to be high. Like today, there were no local residents other than some individuals in management positions, and the reasons cited for that fact at the time included working conditions, pay rate, and long work hours. At that time, workers were hired out of the Pacific Northwest, typically Seattle, and were flown to Unalaska to work on a 6-month contract basis. Some have done away with such contracts and hire workers for an indefinite period of time with incentives for longevity; others hire more out of the Alaska labor pool than in the past.

Several other factors influencing local hires in periods of fluctuation should be noted. First, under boom conditions there is a range of available employment options for local residents outside of the less appealing processing jobs. Second, when there is a downturn in hires at the local processing plants, virtually the entire workforce at the individual plants consists of returning workers, obviating the need for new hires. Even when 6-month contracts were most common, there was always a core of returning workers. Third, setting aside the lack of long-term resident hires, Unalaska is seldom the "point of hire" for processing workers for individuals

who are newly arrived to the community. That is to say, people do not come to Unalaska for processing work unless they have already secured a position. It is far too expensive to fly out to the community on the off chance they might gain employment, particularly at relatively low-paying jobs, especially as there is seldom housing available in the community and that which does come available is relatively expensive. Fourth, it should be noted that a lack of local hires does not apply to all positions with the seafood companies. Management positions at nearly all of the seafood companies (as well as with the major fisheries support sector companies) are occupied by individuals who, if not originally from the community, have at least become long-time residents of the community or the region. In a number of ways, the processing industry is a "small circle" in terms of managers, and individuals who have worked for more than one company and have gained 10 to 20 years of experience in the community and the region are not uncommon. Individual owners and, in the case of "permanently" moored floating processors, even the plants themselves may come and go, but individuals in upper level management positions tend to remain in the business and in the area.

Very few, if any, lifetime residents of the community work at the shoreplants at any given time. There are a number of reasons commonly cited for this, but the most common dynamic involves the high cost of living in the community. Costs are such that it is nearly impossible for a local resident to take an entry-level job at one of the plants, and better paying jobs at the plant are typically filled by individuals who have "worked their way up" within the company. Further, according to interview data, local residents who have tried working at the plants have found that entry-level position work schedules, involving very long hours for extended periods during processing peaks, are not compatible with an active involvement in community and family life outside of the plant.

In general, the pace of processing at the larger plants has changed with a rationalization approach to fishery management, with initial changes being evident following the changes the AFA brought to pollock processing. Earlier (2004) interviews with processing plant personnel suggest that a major operational impact experienced by the community of Unalaska since the passage of AFA and the formation of the co-op system has been a slowing down and spreading out of pollock processing activity. While some plants reported minor changes in numbers of personnel associated with pollock processing operations, for the most part employment levels have stayed almost the same, given the need for a full complement of staff to run the plants. What has changed is that, according to senior plant personnel, workers are working less hours per day and working for longer periods than was the case at the end of the derby fishery era. Workers are reportedly earning perhaps slightly more than in past seasons, but it is taking them more days of processing to do so, given the shorter workdays. This has had some impact on personnel recruiting, as there are some processing workers who want to come to the community for a relatively brief period of time and maximize the number of hours worked during that time. This strategy allows them to return to their home communities with more money while being away from family and friends for a shorter period of time. Plant personnel also note that recruiting for processing workers has been more difficult during those times when there is a relatively strong economy in the Lower 48 (the contiguous states).

Plant personnel also note that there is still a "race" interval during pollock processing under AFA conditions, and that occurs during roe season. Roe is at optimal quality for only a relatively short period, so there is a premium placed on maximizing return within that relatively short window. Further, non-roe pollock are also harvested to target maximum returns based on quality

of fish, but those windows are much larger than the roe window. In general, however, the AFA is cited by local residents as being the centerpiece of a number of changes in fisheries management that have in turn changed the community, through changes in the processing sector and the support services sector.

One change within shoreplants as a result of co-op/AFA-related conditions has been the addition of additional pollock products to the processing mix. During open access when highest throughput was the goal, the returns on a number of specialty products were not worth the time (and opportunity costs) that such production would take. Some plants that concentrated heavily on surimi are now producing pollock fillets. Fillets are more labor intensive to produce than surimi, and so theoretically would result in more employment at the plants, but in practice plant operations typically split their labor forces between a "surimi side" and a "seafood side" of operations; producing pollock fillets means a diversion of some pollock to the "seafood side" of the operation. (Further detailed information on impacts on processors specific to the rationalization of groundfish under AFA as well as Steller sea lion-related issues may be found in an earlier profile of the community [EDAW 2005]).

Recent (2008) interviews would suggest that BSAI crab rationalization has had an impact on plant processor workforce dynamics similar to that seen with AFA pollock rationalization, but with one main difference: the last few years of crab processing prior to the implementation of the rationalization took place at plants that were already rationalized with respect to pollock processing. This meant that plant schedules could be adjusted to more easily accommodate crab processing, especially during very short seasons or during low quota years. At least two of the major AFA plants reported that they discontinued use of dedicated crews for crab processing in post-AFA years, but prior to crab rationalization, because of increased flexibility of operations coupled with a sharp decline in crab volume, such that pollock seafood side products picked up some of the slack, with workers switching to processing other species as they become available. The combination of balancing seafood with surimi production, and adding fillet and other product capacity makes comparing workforces between years with quite different circumstances like "comparing apples and oranges" in the words of one plant manager, but overall, the level of processor employment change directly related to AFA does not appear to have had a significant impact on the community of Unalaska. With BSAI crab rationalization, there has not been the degree of increase in crab product diversity that there was with AFA pollock rationalization, but at least some product diversification has occurred. Changes in workforce dynamics associated with crab rationalization have reportedly been similar to those seen earlier during the rationalization of the pollock fishery.

Current Operations

The plants that currently operate in Unalaska can be grouped into three different categories: the three large multi-species plants (UniSea, Alyeska, and Westward), a mobile processor operator (Icicle), and two smaller specialty processors (Prime Alaska and Harbor Crown). The large multi-species plants are all AFA-qualified groundfish plants, and all process a wide range of species. Another plant that processed a significant amount of BSAI crab prior to rationalization (Royal Aleutian Seafoods) has been sold and its quota consolidated with another processor following the implementation of crab rationalization.

UniSea has a large multi-species plant in the community (which is the focus of UniSea operations for the state, having discontinued its former crab processing operation in St. Paul). At present (2008), when fully operational, UniSea has had upwards of 1,400 workers in Unalaska, including processing, direct support, and other business functions, an increase of about 200 over the previous 4 years. At present (2008), the number of direct processing workers (not including support or other business unit personnel) peaks at around 1,200 during pollock A season, and then again between 680 and 700 during pollock B season. During these periods, of course, many other products are run by the plant, but groundfish operations serve as the main driver for overall employment and activity levels. The increase of about 300 workers during A season in the years since crab rationalization, for example, is attributed primarily to diversification of pollock products, with an emphasis on producing more labor-intensive fillets. During the slow season in May and June, activities focus on maintenance and fabrication as well as running halibut and black cod. As B season trails off there is a step down in workers through king crab season, followed by a very slow period from late November through December. UniSea does provide idled processing workers with room and board during the slow winter time if they choose to remain in the community for the upcoming season. During the lowest point in December there are still approximately 300 to 360 workers on-site, including about 160 processors who are available to process intermittent deliveries but who also help with offseason maintenance.

Like other AFA plants, UniSea adjusts its operations around the schedule of crab deliveries, though these have changed since crab rationalization in 2005. Prior to rationalization, during the overlap of opilio with pollock roe and cod season, rather than bring in a pulse of workers just to do crab, labor-intensive value-added products for groundfish were suspended during this period to the extent it made sense to do so (making adjustments for the high-value, short-lived pollock roe season). Post-rationalization, this general pattern of balancing processor assignments and adjusting product mix accordingly during A season still holds, but on a reduced scale with the greater predictability of crab deliveries and the longer seasons. The change in crab volume produced by UniSea pre- and post-crab rationalization was also influenced by UniSea's acquisition of Royal Aleutian Seafoods, a major crab producer, post-rationalization. The three main crab species run currently are opilio, Bristol Bay red king, brown king, and bairdi crab, with some other species run in lesser amounts. Prior to rationalization, for the fall Bristol Bay red king crab season, pollock operations were moved forward to "create a hole" for crab processing, with the unrationalized crab fisheries impacting the flow of other, even rationalized operations. Brown king crab processing is described as "more hit and miss" such that it can be handled with resident crews without much juggling between species. Processing of pollock itself has changed in recent years, with a de-emphasis on surimi to the point where it is almost a secondary product, due to changes in demand and the growth of production in other areas of the world. During a recent B season, for example, UniSea management reported that production was approximately 80 percent fillets and 20 percent surimi, but product mix also depends on current market demands. UniSea also reports that it has sharpened its processing focus in recent years. For example, as of 2008 UniSea had not run salmon, produced salt cod, or sold fish oil for quite a few years and had quit processing herring when the season shifted to conflict with other core operations. These changes all occurred prior to crab rationalization, but according to management, operations are now directed toward growing the value-added portion of the business, as facilitated by rationalization fishery management approaches. As pollock rationalization under AFA resulted in a more diversified product mix with increased recovery rates, so has crab rationalization according to UniSea management. For example, tail sections are now being recovered and sent to market as crab medallions. UniSea also starting delivering

fresh crab products in 2007 and reportedly doubled its output of fresh product in 2008. UniSea is also exploring restarting salmon operations during 2008.

Alyeska Seafoods takes a slightly different approach to balancing crab and pollock operations. In the several years immediately prior to crab rationalization, the plant basically shut down pollock processing for a 2-day period during the peak of king crab, but otherwise did crab processing as "hole" in groundfish processing (as did UniSea at that time). During the longer overlap with opilio season the plant could not afford to shut down pollock production, so Alyeska changed its pollock product mix to less labor-intensive product forms. Prior to rationalization, Alyeska had not run the more sporadic brown king crab for a number of years. Post-crab rationalization, balancing operations is reportedly more efficient than pre-rationalization, but there are spillover effects on other operations when large deliveries occur. At present (2008) for example, when the plant is "hit" with large amounts of trawl cod or opilio, pollock operations are switched to a less labor-intensive product mix (e.g., surimi versus fillets), with the specific change driven by market conditions, such as during part of 2008 when the surimi price was essentially the same as the fillet price. The regular crew of about 80 full-time personnel is augmented with seasonal workers, with peak worker numbers for the plant constrained by housing capacity (but less so than in the past due to the relatively recent acquisition of additional housing space through purchase of Carl's Commercial property, which included a bunkhouse). At present (2008) approximately 430 workers are typically on-site during the January through March period, when pot cod, opilio, pollock, and trawl cod largely fuel operations, but 2008 saw a highest-ever 450 workers on-site. A second peak is seen from July through October, when between 340 and 350 workers are on-site, driven largely by the pollock B season occurring on top of other operations. With crab rationalization there is no longer a dedicated crab processing crew at the plant, with workers shifted between product lines more fluidly. Slow periods now (2008) occur between April and early June and again from November through December when the 80 or so full-time, year-round employees at the plant rotate out on vacations, leaving approximately 50 to 60 employees present on the site at any one time. According to senior plant management, processor return rates have continued to improve in recent years, with B season return rates between 98 and 100 percent, and A season rates varying between 82 and 87 percent.

While Alyeska traditionally had been a diverse, multi-species plant running a wide variety of products from pollock, Pacific cod, black cod, halibut, herring, and salmon, among others, in recent years it has not processed black cod, halibut, or salmon. Like other large plants in Unalaska, product mixes have changed in recent years, as the emphasis on surimi has declined with changes in the market and as other opportunities have presented themselves as a result of the pollock co-op system. For Alyeska, these changes have included the addition of pollock fillet machines. In terms of product mixes facilitated by crab rationalization, plant management characterizes this as a process that is still evolving. Alyeska has flown out some fresh crab, but reports that there are still logistical challenges inherent in doing so from Unalaska. Alyeska has also added capacity to run 20-pound crab packs as well as the more standard 40-pound packs but reportedly has found less demand for the smaller packs, especially for opilio, than might have been anticipated, making the increased cost per pound for labor, packaging, and shipping less attractive. According to plant management, the greatest difference in crab processing post-rationalization versus pre-rationalization is the ability to improve upon product quality, whatever the product form.

One other change in Alyeska local operations in the post-crab rationalization era is not directly tied to processing (or rationalization) itself. Alyeska, through one of its parent companies, opened the Alyeska Trading Company store on-site in 2006, as described in the support services section below.

Westward Seafoods is a high-volume groundfish plant and a high-capacity crab plant that, according to senior plant staff, essentially runs every species of BSAI crab other than hair crab. The number of processing personnel on-site varies by season, with approximately 700 seafood and pollock processing workers and about 150 to 175 maintenance, office, galley, and housing workers present in 2008 during the January through March period during pollock, opilio, and cod activity. The number of processing workers during this period has increased in recent years due to an increased emphasis on labor-intensive pollock fillet production, with an average pollock shift growing from around 80 to 90 workers in earlier years to about 200 workers now (2008). From mid-April through June, the local workforce is down to approximately 250 people on-site, including about 80 processors (one shift), and activities during this time include the halibut and sablefish IFQ fisheries. From July through the end of October, approximately 700 seafood and pollock processing personnel and 150 support personnel are back on-site for the bait, herring, pollock, and brown and red king crab fisheries, among others. From November and especially December through the end of the year, local employment is at its ebb, with about 125 to 175 personnel on-site engaged in cleanup, maintenance, and some relatively low-volume processing, including brown crab and pot cod. About 125 people work steadily at the plant through the entire year.

Crab processing at Westward occurs intermittently through the year with season openings. Crab processing is characterized as part of the core business at Westward, and in recent years crab processing capacity has been increased along with crab-related dock expansion projects and an increase in storage areas for pots and other gear. As for crab-specific processing employment, approximately 130 processors per shift are needed to run the three crab lines at their designed capacity and a core crew within the overall processing labor pool is dedicated to crab processing, with supplemental help assigned from other crews as needed. For the intermittent or lower volume crab fisheries, other seafood processing workers handle crab processing without the need for dedicated crab crew. As for processing changes directly attributable to crab rationalization, local senior management notes that there have been increased challenges associated with keeping processing crews on for longer seasons while still having to maintain high hourly through-put rates when deliveries do occur. Unlike some other plants, Westward reportedly does not set terms and conditions, including a set schedule, for crab vessels delivering to the plant, so there is a greater degree of uncertainty in timing of crab processing over a much longer season compared to pre-rationalization conditions. Rationalization has increased product forms as, according to senior plant management, they are currently (2008) running 11 different crab product forms.

Local Icicle Seafoods operations have yet a different focus from the other local processors. According to interview information in 2008, the pattern of local operations is little changed from that described during 2004 interviews. Icicle does not have a local shoreplant facility, but two of the company's mobile processors, *Bering Star* and *Arctic Star*, typically operate for at least part of the year in Unalaska. Typically, if one vessel is in the community it operates tied up to a dock at the northern end of Dutch Harbor, and if both vessels are in town at the same time, the second vessel processes in the Wide Bay portion of the Unalaska Bay. Icicle normally has a mobile processor in the community from January through April processing cod and opilio (before it

leaves to participate in the Togiak herring and Bristol Bay salmon fisheries) and again from July through mid-November to run cod and king crab. During any given year, one of the mobile processors will follow fisheries from southeast Alaska to the Pribilofs. Unalaska does not see an influx of Icicle employees in the same way it does for other processors, as the employees tend to follow mobile Icicle operations, and employees can be shifted between company barges, floaters, and shore facilities as needed. The number of processing workers utilized on *Bering Star* and *Arctic Star* when they are in Unalaska varies by the vessel and the season. *Bering Star* typically operates with a crew of around 90 to 100 when it is in the community, while *Arctic Star* uses about 50 to 60 workers per shift for cod and around 90 to 100 workers for crab, plus an additional 6 to 8 maintenance personnel, with peaks reported in past years of around 150 workers, depending on a number of variables. Icicle's floater *Northern Victor*, which processes in Beaver Inlet, does not operate within the city of Unalaska but is supported out of the community. *Discovery Star*, which also operates in the region, focuses on herring and salmon.

Prime Alaska Seafoods is a small processing operation with facilities on the "Little South America" portion of Amaknak Island and an ice house facility on a finger dock in the inner harbor on the portion of UniSea holdings that were formerly part of the Royal Aleutian facility, but it does not have its own dock space. At present (2008), Prime Alaska does not have any year-round employees but rather operates seasonally. A typical yearly cycle involves salt cod and milt operations during A season from late January through early March, and then again from early June until early to mid-October (during each of which an average of six processing workers are typically employed). These operations are undertaken in conjunction with UniSea. Additionally, Prime Alaska processes fresh halibut from approximately the last week of May through August each year (during which time about 10 processing workers are employed 1 or 2 days per week, if enough people can be found). All products are shipped as fresh container loads as Prime Alaska does not have freezer facilities.

The pattern of Prime Alaska working with both processors and harvesters, focusing mostly on producing custom products in conjunction with a larger processor as well as on its own halibut fresh products, has been in place for a number of years. According to its owner, Prime Alaska attempted to add freezing capacity to the operation to take advantage of older halibut in addition to servicing the fresh market, but within weeks of installing this capacity was forced to relocate its facilities from the former Western Pioneer dock on Dutch Harbor to its current location because a sale of the property terminated its lease. Movement of the entire facility was problematic, which resulted in lost processing time (essentially two seasons), a loss of freezing capability (such that no frozen product has been shipped for several years), and, with the necessity of recontracting for shipping, increased shipping costs. The combined effects of these factors created adverse economic conditions from which the operation has not yet recovered. Relatively little of Prime Alaska's halibut is purchased from local IFQ holders, with more coming from the small boats operating out of Homer and Kodiak. While Prime Alaska did include crab in its operational mix in earlier years, it was no longer active in crab processing at the time of crab rationalization. This reportedly was been more a decision based on wishing to maintain other cooperative business relationships with larger crab processors in town rather than strictly crab economics *per se*, but the difficulties of a small operation making money on a very short season were also noted by the owner at the time. In terms of competition with larger processing entities, maintaining good relations with other firms is seen as important, and while "there is always enough fish for someone of this size" there are cost challenges with doing business in Unalaska. Before crab rationalization, the owner anticipated that an increase in time

that crab would be available under rationalization and a change in dynamics of processor relations might have influenced Prime Alaska to reinitiate crab processing, but to date this has not happened. While according to the owner as of 2008 crab rationalization had neither helped nor hurt Prime Alaska as an operation, it was noted that rationalization can function to make it harder for a small operation to obtain limited amounts of crab from vessels. Under race-for-fish conditions, if a number of vessels were queued up to deliver to a larger processor, reportedly it was easier to get a waiting vessel to offload a portion of the catch to a small processor while otherwise experiencing down time while waiting to offload in the harbor. Under rationalized conditions, however, crab boats no longer queue up and wait, so there is little or no incentive for a vessel to leave its main processor while in town in order to deliver part of a load to a smaller processor, reportedly making it more difficult for a small processor to get the pounds that it needs to be economically efficient. An inherent structural challenge with crab rationalization was also noted to be the administrative expenses associated with very small quota allocations and the inability to economically ship crab in amounts that would equal less than a full shipping container. Other (non-crab rationalization) challenges reportedly faced by small processors attempting to diversify in Unalaska are an effective shortage of rockfish in amounts large enough to be economically worthwhile as a separate undertaking, due to the area management structure, difficulty competing in price for cod with very high-volume local operations, shipping costs for processing materials such as salt, and rising energy costs (both fuel and power).

Photo courtesy of Gregory Family

Harbor Crown Seafoods

Harbor Crown Seafoods, established in the summer of 2003, is the newest entrant into the Unalaska processing sector. This operation is located in the "sub dock" area complex on Amaknak Island, a central portion of which is the site of a former vessel repair facility that discontinued operations several years ago. Holdings leased from the Ounalashka Corporation are composed of several buildings including, among others, the sub dock shipway and building; a machine shop (that is currently unused); a bunkhouse; a galley; and a portion of the Dutch Harbor Mall, the former location of Osterman Fish, a small processor in the community that focused on "fresh and live" markets. Harbor Crown ran its first product in the Dutch Harbor Mall facility in 2003 before acquiring access to the sub dock area in 2004. Cod was first run in the sub dock complex in 2005, with crab first run in its current facilities in the fall of 2006. Harbor Crown currently (2008) runs gray cod, sablefish, halibut, brown and red king crab, blue crab (when available), and bairdi and opilio crab. All of the rationalized crab species that Harbor Crown runs as its own crab are either B or C share crab, as the processor did not qualify for a Processor Quota (PQ) allocation under the BSAI crab rationalization program. Additionally, however, Harbor Crown is currently (2008) leasing PQ allocation for Unalaska-based shares of Eastern Aleutian Islands (EAI) golden king crab that became available to a third party through a divestiture required when the owners of UniSea acquired quota initially allocated to Royal Aleutian Seafoods.

Common fish products for Harbor Crown include head and gut gray cod, and head and gut halibut (fillets are not produced, according to management, due to a lack of experienced cutters). A particular crab niche is individually cut crab legs (other than opilio) in 20-pound single leg packs. According to local management, Harbor Crown tends to pay harvesters more for king

crab than do other local processors, as it cannot compete without doing single leg packs with a grading system (that is, cluster packs would be a money loser for the operation). Harbor Crown typically arranges crab deliveries through co-ops but also takes deliveries from individual vessels *Time Bandit* and *Northwestern*.

In terms of an annual round for Harbor Crown, during the January through March period that encompasses A season, between 120 and 130 processors are on-site, along with a seven-person engineering crew, a seven-person dock crew, a couple of office staff including the housing manager, plus an operations manager. When operations slow after A season, approximately 21 processors remain on-site until mid-August and the combined dock and engineering crew drops from around 14 to around 5 individuals. Around August 17 brown crab king processing starts up, followed by cod around the first of September, at which time there will be two shifts of 35 processors running, for a total of 70 processors on-site. This level of activity typically continues through mid-December with red king crab processing. During the last 2 weeks of December there is a minimal crew on-site performing some maintenance work while the plant is otherwise shut down. Some galley staff members are also working during this time as some other employees do stay on the site in company facilities during this time even though they are not actively working. Although there are bunkhouse facilities on-site, during the 2008 A season Harbor Crown rented supplemental rooms at UniSea when its workforce exceeded its own housing capacity.

Harbor Crown processing workers are often recruited in Anchorage. According to local management, recruiting efforts have taken place in Seattle and elsewhere in the Pacific Northwest, but those have been less successful. Plant management also reports that a number of processors are hired from among those who have been let go from other plants in the community. The plant is characterized as somewhat different from the large plants in the community based on a relative lack of automation, meaning that work can be physically difficult, especially during the long shifts of peak seasons.

While Harbor Crown represents a new processing entrant into the rationalized crab fisheries, Unalaska did lose one major crab processor following the implementation of rationalization, with the closure of the local Royal Aleutian Seafoods plant following the acquisition of Royal Aleutian's crab processor quota shares by the owners of UniSea. As noted above, while most of this quota is run by UniSea itself, some divestiture of EAI golden king crab quota was required, which ultimately has been retained in Unalaska and processed at the Harbor Crown facility. Royal Aleutian was unique among processors in Unalaska as its operations focus almost exclusively on crab, although the plant also did run some halibut in the summer. It was the only major community-based crab processor in the region that was not an AFA-qualified company, and it ran no pollock or codfish. As a result, there were very sharply defined pulse seasons at the plant. According to 2004 interviews, in the years immediately prior to crab rationalization opilio crab was run in mid-January at the plant, providing about 5 to 8 days of work for about 300 people. In mid-August, there were approximately 2 weeks of brown king crab work for around 130 processors. In mid-October there were about 5 to 8 days of work on red king crab for around 200 processors. Reportedly these three species made up the vast majority of processing at the plant, although it did run "a smattering" of other crab species along with frozen and head and gut halibut and black cod, with fish processing during the summer providing employment for between 10 and 20 workers. In addition to the surge of workers brought in for the peak seasons, according to management interviews in 2004 there was a core group of about a half-dozen

workers at the plant "who have been here for years" with a total of about 15 to 20 people who are characterized as always being in the community, despite the fact that work is not always available at the plant. During times when work was not available at Royal Aleutian, these individuals reportedly picked up short-term work doing a variety of things in the community, including stevedoring and longshoring. With seasons being so short, management reported that it was a major challenge to find an effective workforce to bring to the community. Rather than attracting people as a primary job, they characterized it as being more like "paying for an Alaska adventure" to get people to come for the brief processing periods. With the shortening of seasons also came a drop in the rate of return of workers, from around 80 percent for the half-dozen years leading up to 2000 to perhaps 50 percent by 2004. These seasonal changes resulted in a change in recruiting approach, with the company coming to target "professional migrant workers" who over the course of a year may have processed salmon elsewhere in Alaska and worked in agriculture in California.

Royal Aleutian did benefit to some degree by crab caps on AFA processors, taking deliveries from over-cap vessels. Royal Aleutian was also somewhat different from the other local plants in the degree to which it bought from local small boat fishermen, an ability it had due at least in part to its different scale of operations. Given the structure of the business, Royal Aleutian also reportedly bought proportionally more goods and services locally than the larger plants, although at the time UniSea was also noted in the community as purchasing more locally than the others. Given the lack of dock space compared to other processors, the Royal Aleutian-related fleet also used proportionally more Unalaska dock space during the off seasons, and the processor underwrote this vessel expense.

While the closure of the Royal Aleutian plant eliminated a number of jobs in the community, the large majority of these jobs were filled by very short-term transient workers. In the meantime, employment levels increased at both UniSea and Harbor Crown Seafoods, the two processors that currently run processor quota that was initially allocated to Royal Aleutian, so there is no apparent net processing job loss in the community. The post-rationalization employment history of specific former core workers at the Royal Aleutian plant is unknown, but interviews would suggest that the growth of Harbor Crown has provided at least some parallel opportunities post-rationalization.

At least a few small-scale firms in the community are not processors but handle and ship seafood from Unalaska as well. The most visible of these is Aleutian Fresh Seafoods. With a small store in the airport complex, Aleutian Fresh buys product from the local processors and ships primarily direct to consumers, although some shipments are made to restaurants as well. The business employs two full-time people and opened its airport store in 2005, although the company had been selling primarily scallops and crab for a number of years prior to that out of a second office (co-located with Mike's Fire Equipment and Western Alaska Appliances) in the community. Sales are typically generated online and by word of mouth, and peak around the Thanksgiving and Christmas holidays. Locally generated orders can be picked up at the airport as well as shipped direct. In addition to seafood products, Aleutian Fresh also sells a number of miscellaneous seafood-related items.

2.1.3.3 Support Services

Unalaska is unique among Alaska coastal communities in the degree to which it provides support services for the Bering Sea fisheries. One long-time resident noting the lack of a sizable truly local fleet stated that "this is a service town, not a fishing town." As described in detail in the Inshore/Offshore-1 community profile (IAI 1991), Unalaska serves as an important support port for several different sectors or subsectors of the pollock fishery, including harvesters (including a wide range of vessel classes), inshore processors (including shoreside and floating processors), and offshore processors (including processor/motherships and catcher/processors). This same pattern holds true for the crab fishery and the other major fisheries of the area.

The Ounalashka Corporation, the local Unalaska village Alaska Native Claims Settlement Act (ANCSA) corporation, is in a unique position with respect to functioning as a support service entity to the fishing industry. By far the largest land owner in and around the community, the corporation leases land to some fishery support businesses, such as American President Lines and Horizon Lines, which represent the corporation's largest leases, as well to at least one of the seafood processors themselves, Harbor Crown Seafoods. Other seafood processing plants with larger geographic footprints in the community, Aleyska, UniSea, and Westward, all own their own land, as these parcels were in private hands prior to the passage of ANCSA in 1971. In a departure from strategies pursued in the past, the Ounalashka Corporation currently focuses on leasing land rather than direct participation in specific business ventures. This reliance on leasing (and longer-term leasing specifically) has reportedly served to insulate the corporation somewhat from the drastic swings in fortune that can accompany changes in fishing conditions year to year that, in turn, can and do impact direct fishery support businesses. In terms of impacts of BSAI crab rationalization in particular, interviews with corporation leadership suggest that the Ounalashka Corporation has seen few if any direct changes to their business. For example, the corporation leases land for crab pot storage rather than operating a crab pot storage business, such that lease returns have been unchanged despite a drop in pot storage itself. In general, business has been characterized as steadier under rationalization conditions, and there is currently (2008) a waiting list for corporation-owned housing.

Other support services include a wide range of companies, including such diverse services as accounting and bookkeeping, banking, construction and engineering, diesel sales and service, electrical and electronics services, freight forwarding, hydraulic services, logistical support, marine pilots/tugs, maritime agencies, gear replacement and repair, vessel repair, stevedoring, vehicle rentals, warehousing, and welding, among others. There is no other community in the region with this type of development and capacity to support the various fishery sectors in the Bering Sea.

Shoreplant Support

In general, in the way of support services, there is little direct supply of the main shoreplants in the community. This is especially true of the large combined pollock and crab-oriented shoreplants, by far the largest plants in the community. These are large enough entities that it is more efficient to supply most on-site needs directly from outside of the community. These plants all feature an "industrial enclave" style development to some degree, but this varies from operation to operation. Plants may purchase some regular items such as rain gear and boots for processors locally that they do not want to keep in inventory, but major purchases may be limited

to fuel sales. Large-volume supplies, such as packaging materials and food, are commonly purchased "down south" and shipped direct. Individual processing plant workers do patronize local businesses to some extent, although this is limited by the fact that they are supplied furnished housing and meals by the processors. Nonetheless, this trade is important to some of the retail stores in the community. As noted below, some of the stores in the community carry specialty ethnic foods for this trade and at least one of the larger stores draws part-time workers from the processing labor pool during the off-seasons. The smaller processing operations in Unalaska have proportionally more local purchases of goods and services in the community than do the large operations.

According to interviews conducted in 2004, the single major non-pollock crab processor in the community, Royal Aleutian, noted that because of the scale of their operation they did buy most services in town, but that with the overall decline in the support service sector of the economy they had seen "about a half dozen" of their vendors leave the community in previous years. This is the only processor that has ceased operations during the post-BSAI crab rationalization era in Unalaska. In the meantime, Harbor Crown Seafoods has ramped up operations in the community, including crab processing. It is not known, however, how the level of local purchases of support services has varied between these two operations.

Vessel Support

There are numerous businesses within a variety of subsectors in Unalaska that are oriented toward supporting catcher vessels or, to a lesser degree, catcher processor vessels for a significant amount of their business. These include such diverse enterprises as vessel grocery supply, marine supplies/hardware, hydraulics, marine electric, marine electronics, mechanical services, welding and ship repair, and fuel provision, among others.

One general trend among the diverse vessel support businesses is a change in the nature of demand for services that has accompanied the way fisheries have been rationalized in recent years along with changing harvest levels. With the decline in opilio processing levels several years ago, which occurred simultaneously with a decrease in the race for fish with rationalization in the centrally important pollock fishery, there was a drop-off in peak demand for vessel-related support services. The amount of this drop-off at any particular business depended on a number of different factors, including the relative reliance on crab and trawl fleet support. According to one service supply business manager, in general co-op systems should help out support businesses in the long run, because even if overall there are fewer vessels to service, it is the less efficient vessels that drop out, leaving more predictability and more secure players. The flip side of this perspective, put forward by other some other support service business owners, is that it is precisely the inefficient vessels that need the most service in a place like Unalaska. In practice, a good portion of the support business in Unalaska has been built on inefficiencies, as according to one manager "this was Unalaska business." Like many of the support service businesses contacted, the common pattern for his business was to have a limited staff of year-round personnel and to ramp up capacity during peak periods by bringing in temporary or seasonal staff from "Outside" (i.e., from the Lower 48). This is true both for vessel-oriented service firms that are parts of larger regional or national entities as well as for more locally based firms (and of the latter there are very few). The implementation of crab rationalization has been seen as a continuation of the trend of change for support businesses that has been experienced for several years, and particularly since the implementation of pollock co-ops.

Compared to the pre-AFA era, there have been employment cutbacks in nearly all of the businesses contacted in this subsector that have remained in the community from this earlier era, either in the form of having fewer year-round personnel or in hiring fewer seasonal hires for peak demand, and in all cases a cutting back of overtime hours for staff. One specific firm contacted is at half the level of employment that was typical in pre-co-op circumstances, and this was not an unusual case. One local business manager captured a common sentiment regarding the cutbacks and the quality of the jobs remaining in the community, however, with the observation that with the cutback "we have been trading money for sanity." In the words of another business owner, during the days of the race for fish "I didn't know I was crisis oriented" and in the time passing since crisis mode he has had to find other ways of making the business work. In this particular case of a locally owned vessel support business, survival has meant diversifying away from relying on the fishing industry nearly exclusively by performing similar services for land-based businesses (and adding new marine-oriented services) and away from relying on Unalaska as a nearly exclusive geographic base of revenue by taking his services to the region and beyond. One social change that has accompanied these business changes in the support sector is that the pace of business has been more sustainable, and with the predictability of a more consistent business year. This has permitted something resembling a "normal life" for business owners, managers, and workers, which, in turn, has apparently fostered more people bringing their families to the community.

Another common problem with these businesses is inventory, and this has changed somewhat under both AFA and, later, crab co-op conditions (again, depending on how relatively dependent a business is on trawl-specific or crab-specific trade). Under race for fish conditions, carrying a larger than normal relative to overall volume of sales inventory was necessary due to the need to have virtually everything possible on hand instantly during the fishing season, as downtime for vessels off of the fishing grounds meant unacceptable opportunity losses, and vessels were willing to pay whatever it took to get them back on the grounds as quickly as possible; time was worth more than the cost of urgent repairs. As the race for fish went away, it was much more efficient to order specialty parts express shipped in from the Lower 48 (typically Seattle) if needed than to try and stock everything in Unalaska.

According to interviews conducted in 2004, firms engaged in supporting the crab fishery, depending on the composition of the overall business base of these firms, had already been hit more or less hard by the decline in the crab quota prior to the implementation of the rationalization program. According to one business manager, with the loss of income to crab vessels prior to rationalization, he saw his crab vessel support business drop off 50 percent as a number of vessel owners were reportedly not spending money on preventative maintenance and those who were performing work were slower to pay their bills. Subsequently, changes in season lengths, and especially the fleet consolidation that accompanied crab rationalization, affected crab-dependent businesses in a number of different ways, depending on the nature of services performed. For example, some vessel preparation work needs to be done once per season, no matter whether it is a short or a long season. On the other hand, some work is directly related to intensity of use such as the "number of turns" on hydraulic equipment. One support service business owner observed that crab seasons in the years leading up to rationalization had become so short as to be "almost inconsequential" for his business, although when he started, the local crab and shrimp fisheries were the base of his business.

With the trawl fleet, the slowing down of the race for fish under AFA co-op conditions meant that the trawlers are spreading their business differently in the community, according to support business owners. Not only is less money being spent overall because of the relative lack of urgency, "now money managers are involved" in looking at relative value between providers and "shopping work around" rather than consistently using a single vendor. While similar changes have theoretically occurred with crab rationalization, in practice the decline in business due to shortened crab seasons prior to rationalization, and the previously occurring impacts related to pollock rationalization, have tended to make the impacts of crab rationalization itself less dramatic, according to a number of support business owners.

Another common observation of the support sector within the community is that while the relatively longer pollock and crab seasons are good for the community as a whole, a number of entrepreneurial businesses have folded, and the redundancy among (or the range of choices among) service providers has been reduced. The flip side of this is that, according to one fishing business manager, they can be more selective in their purchasing of services, and "everything no longer needs to be at a premium price in Dutch Harbor."

No systematic information exists on the vessel support service sector in the community. The following business characterizations were derived from limited field interviews conducted over a brief period of time. It was not possible to contact all support service businesses in the community, and these sketches are intended to convey the types and nature of these businesses in the community, and their links to the fisheries, not provide an exhaustive inventory of Unalaska support service businesses. For this analysis a premium was placed on recontacting those businesses included in pre-rationalization community profile characterization to facilitate a description of changes over the course of rationalization. While this occurred in most cases, it was not always possible due to schedule constraints. In some other instances, current management staff had a limited perspective on changes in the business over time due to management turnover.

General Stores and Grocery Supply

At present (2008) there are a total of five enterprises that have been supplying groceries to vessels as a substantial portion of their business, including two specialty operations (Peterkin Distribution and Highliner Food Services), a more general ship supply store that also provides groceries (Alaska Ship Supply), and two larger general stores/supermarkets (Eagle Quality Centers and Alaska Commercial Company [AC]). In recent years one general store has left the market (Carl's Commercial) and a small grocery store (Alyeska Trading Company) has subsequently opened near the site, but the latter is not involved in supplying vessels as are the larger stores.

Highliner Food Services, which has been in the community since the 1990s, is a wholesale grocer whose primary business (approximately 90 percent) is supplying commercial fishery customers. The 10 percent of nonfishery sales includes less than 1 percent retail, with the balance going to local restaurants. The fishery-related 90 percent is divided between local processors, catcher vessels, and American Seafoods catcher processors (of which about 30 percent goes shoreside and 70 percent goes to catcher vessels or catcher processors). Highliner Food Services also derives a significant portion of their business from a freight forwarding service. Orders made through their Seattle office allow the Dutch Harbor/Unalaska operation to

facilitate the handling of larger orders ($80,000+) than would be financially and logistically practicable given the size of the local facility. The service also allows the local facility to avoid the additional expense or loss of revenue through extended periods of large over- or understock. The value of typical locally placed orders filled on-site ranges from $10,000 to $15,000. For this reason, Highliner Food Services tends to market their services to larger vessels in the different fleets. According to 2008 interviews, business has grown in recent years and Highliner has increased its local market share. According to 2004 interviews, Highliner had one local manager and two employees; as of 2008 the business had five full-time local employees. The company reportedly has not been affected by crab rationalization as the business remains focused on larger vessels.

Peterkin Distribution has also been in the community since the 1990s and is a wholesale grocer whose sales are largely directed toward the fishing industry. Approximately 90 percent of sales were characterized as commercial fishing related in 2004 interviews, a figure that was confirmed in 2008 but was noted as fluctuating by season during the year. Overall the business is described as primarily serving larger vessels, supplemented with a modest amount of local shore business, including some restaurant supply. Peterkin Distribution, unlike Highliner Services, fills all orders locally. According to 2004 interviews, Peterkin Distribution had 1 manager and 4 employees, but as of 2008 had between 6 and 10 full-time employees during the year. Local management characterized Peterkin Distribution as experiencing no impacts as a result of crab rationalization, as crab vessels, due to their smaller scale, are typically not a part of the Peterkin customer base.

The Alaska Ship Supply grocery operation, part of a larger store with multiple departments, is similar in some operational characteristics to Highliner or Peterkin such as in typical commercial vessel orders, although it is more "user friendly" to the public by means of facilitating walk-in trade. Unlike the true warehouse orientation of Highliner or Peterkin, Alaska Ship Supply resembles a bulk item wholesale/retail store, and it has been in the community since the early 1980s. According to management interviews in 2004, the vast majority (95 percent) of the Alaska Ship Supply grocery operation's business was commercial vessel related. In general, business at the time was described as generally good and more consistent over the preceding few years than in the more distant past, due in part to the longer fishing seasons (that have accompanied rationalization). Employment levels have remained steady throughout the year, but with existing staff working greater hours during peak times and fewer hours during the slow times.

The two large grocery/general stores within Unalaska, Eagle Quality Centers and AC, share a number of characteristics, selling a variety of products as well as groceries, including clothing, electronics, and durable goods. There are a number of differences in emphasis between the two as well, as noted by store managers in 2004, where AC stocks a variety of furniture and firearms, while Eagle sells sportfishing gear, over-the-counter medicines, and jewelry. Eagle also contains a deli-bakery, coffee counter, and a large video/DVD selection for rent and for sale. AC tends to have a greater variety of nongrocery products given its history as a general store; thus, overall, nongrocery items account for a larger proportion of their business than is the case at Eagle. Eagle competes for business primarily based on variety and price of groceries and correspondingly has a larger market share for groceries. Nongrocery products in Eagle are primarily stocked for convenience, to allow customers to the extent feasible to shop "under one roof."

In terms of direct fishery-related business, according to earlier (2004) interviews the AC and Eagle stores both have local processing workers as a client segment. Common services include cashing paychecks and money order services. Beyond that there are a few differences in types of business attributable to the processing workers. Eagle management reports that processors tend to buy electronics and other consumer goods/personal items, but not much in the way of groceries. At the AC store, processing worker sales often include electronic goods, CDs, sheets, towels, and pillows, but also enough in the way of grocery sales to justify the store creating an "ethnic" food aisle, catering to specific regions or countries of origin of processing workers.

Both large grocery/general stores also supply groceries to fishing vessels. In 2004, AC management estimated sales to vessels as accounting for perhaps 50 to 60 percent of its grocery sales and it was not unusual for one of their three regular longline vessel customers to call ahead and order five to eight pallets worth of groceries costing between $10,000 and $14,000 per order. This varies, however, by relative amount of port calls and the length of the fishing season with the type and nature of groceries purchased also depending to a degree on the particular cook on the boat. AC also serves small vessels, but these are more "just filling a lot of carts" as opposed to bulk orders and, while important, are not a large percentage of the business. At the time of field interviews in 2008, AC had recently experienced a turnover in local management, such that updated information was not available. It is known, however, that employment levels were virtually the same in 2008 as they were in 2004 (20 to 21 full-time staff). All are full-time during the peak seasons (but with no overtime), and vacations are taken during off-seasons.

According to local management, at present (2008), Eagle management estimates that about 33 percent of its grocery business is attributable to commercial fishery business, with about 20 percent of its overall business being directly attributable to vessels themselves. The overall dependency figure is unchanged from that offered in 2004 interviews. Eagle has, however, seen a change in its staff mix in recent years. According to interviews with management in 2004, relatively few staff were full-time (the manager and senior staff), but in 2008, according to senior management, the staff of 49 employees is split about 70 percent full-time and 30 percent part-time.

According to interviews for previous projects, Eagle facilitates vessel orders by offers of free delivery and boxing if a list is sent by the vessel and offers "streamlined retail" as opposed to wholesale service. Interviews for previous projects also suggested that more processing workers are working part-time in the store during off-seasons instead of leaving the island than in the past, and in general it is considered easier to retain staff given the increased stability of the community as the fishing seasons have come to have fewer sharp peaks and valleys of activity. Crab rationalization was noted in 2008 interviews as continuing the trend of less pronounced peaks and valleys of activity for the store. According to store management, crab rationalization has made Eagle's business cycle more predictable and has not resulted in noticeable adverse impacts to the business.

Another general store in Unalaska, Carl's Commercial, closed in recent years (during the post-crab rationalization era). Carl's was a long-standing institution in the community, having operated under the same ownership since 1961, and one that traced it roots back to the Russian-American days, through the original AC outlet in Unalaska, and the Northern Commercial Company. The store offered groceries, hardware, furniture, appliances, and a range of household goods, and was part of a larger set of businesses that included a 32-room hotel and bar. Located

near the Alyeska Seafoods plant, this was for a number of years the only store on the Unalaska Island side of the community (following the close of the Aleutian Mercantile). According to interviews with store management for earlier profile efforts, approximately 30 percent of the hotel business, 25 to 30 percent of the store business, and around 60 percent of the bar business were attributed to commercial fishing-related activity. Recently, the owner of Carl's (who prior to opening the store in Unalaska had stores in Sanak and King Cove), sold his holdings in Unalaska and moved to Sand Point, opening a Carl's in that community in January 2007. The Unalaska Carl's store, bar, and hotel were shut down upon the sale (as opposed to reopening under different ownership), effectively further consolidating the local bar and hotel businesses among other existing entities.

The Alyeska Trading Company store opened for business on the Aleyska Seafoods processing site in downtown Unalaska in December 2006. It was initially designed as a small convenience store primarily for Alyeska employees following the closure of nearby Carl's Commercial, as no other stores existed on the Unalaska side of the community. In response to more general community demand, however, the store was expanded during the winter of 2007–2008, increasing both its size and range of inventory. The store is operated by the store division of Ward's Cove, one of the parent companies of Aleyska Seafoods, and is now (2008) essentially a small grocery and general store.

Photo courtesy of Gregory Family

Alyeska Trading Company Store at lower left

Two relatively small Asian specialty stores have also opened in the community in recent years. Metro Manila Asian Foods is located in the sub dock area and Dutch Harbor Asia Oriental Grocery is located across the street in the Dutch Harbor Mall.

Photo courtesy of Gregory Family

Metro Manila Asian Foods

Marine Supply and Hardware

Another type of vessel support enterprise is composed of marine supply and hardware stores. Examples of this type of business in Unalaska are LFS, Net Systems, Alaska Ship Supply, and Pacific Hardware. LFS supplies marine hardware and clothing, including a full range of foul-weather gear. According to store management, approximately 80 percent of sales are related to buoys, lines, and other marine hardware, with clothing comprising the remainder, with this split between the two holding consistent over time. LFS services a number of different fleets that spend at least some time in Unalaska, except that the larger factory trawlers tend to be self-contained, carrying their own equipment and supplies for any given season. In interviews in 2004, LFS management noted that sales levels and patterns have

Photo courtesy of Gregory Family

Dutch Harbor Asia Oriental Grocery

been consistent over the preceding few years (with January through April and September through October busy), and this had its benefits. While more concentrated sales periods previously experienced allowed the business to hold inventory for a shorter period, this has to be measured against a steadier, more consistent volume of business. According to local management, BSAI crab rationalization did change the business cycle somewhat as October is no longer a peak month. Further, according to 2008 interviews, prior to rationalization the crab fleet accounted for about 30 percent of the local business volume, but with rationalization, crab-related sales declined about 65 percent, as LFS sales tend to be driven by the number of vessels participating in the fishery rather than overall fishery volumes. As of 2008, LFS had three full-time and one part-time employee in Unalaska year-round. Staffing levels have remained stable since before crab rationalization was implemented, but overtime earnings of workers have reportedly declined.

Net Systems is a marine hardware supplier with a fully equipped wire shop, capable of performing a range of fabrication and repair work. They also sell some personal supplies/clothing for fishermen. Net Systems has been in Unalaska since the late 1980s. According to interviews conducted in 2004, about 80 percent of the business was connected to trawlers, with crabbers making up most of the rest. Local management reports that they used to be busier for wire, but this still continues to be their niche. Business is heaviest just before pollock A and B seasons, though some boats gear up in Seattle as opposed to Unalaska. Local employment has increased from four persons in 2004 to five full-time staff as of 2008, all of whom live year-round in Unalaska. According to 2008 interviews, with rationalization, crab-related sales are now down to about 10 percent of the business, although there has not been much of a change in inventory. Ocean Safety Systems, which had earlier been spun off from the local Net Systems business as its own enterprise, was reportedly hit especially hard by crab rationalization and as of April 2007 was taken back in by the local Net Systems operation.

Alaska Ship Supply, a grocery supplier as noted above, also has a large hardware and marine supply store. While the bulk of this part of the business is marine oriented, they do stock auto parts as well. According to 2004 interviews, this business is particularly busy the last 10 days in December, all through January, February, and March, and then again September through October. As of 2004, this portion of the business employed five people steadily throughout the year.

Pacific Hardware opened in Unalaska in March 2008 and is a small business that supplies gear for commercial fishing vessels. As the business established post-crab rationalization, it did not experience any rationalization-related impacts.

Photo courtesy of Gregory Family

Pacific Hardware

Hydraulics

There are also currently (2008) two hydraulics businesses in Unalaska: Rapp Hydema and Hydra-Pro. Rapp Hydema provides repair service and installs hydraulic deck machinery, winches, pump systems, and hydraulic motor drives. Products are fitted for a variety of vessels (fishing, research, tug, and barge), but in Unalaska the work is fishing orientated (mainly trawlers, with some tugs). Though the shop is open year-round in Unalaska, larger jobs will go to their repair shop in

Seattle unless they need to be made on an emergency basis. As part of a much larger company, Rapp Hydema manufactures and produces their own equipment. The company has been in Unalaska since the late 1980s, and while the level of activity is characterized as "pretty busy all the time now," according to interviews conducted in 2004, there are distinct peaks just before and during the major seasons. As of 2008, local staff included a manager, a secretary, a machinist, a mechanic, and a helper, with additional individuals brought in from Seattle during peak seasons as required.

Hydra-Pro is a hydraulic sales and repair business (and manufacturer's agent) that attributes 98 percent of their business to fishing industry, with both boats and processors as clients. Hydra-Pro has been in Unalaska since 1998. The business handles particular makes of trawl electronics systems, to provide a synergistic service to many of the boats utilizing Hydra-Pro for winch and hydraulic systems services. Hydra-Pro typically has a total of six staff locally, but as of interviews in 2008, not all positions were currently filled. Rationalization in general has smoothed out peaks and valleys at the business, which has resulted in lower inventory needs, improved cash flow, and ultimately a reduced cost of doing business. According to local management, crab-related business has declined by more than half since the implementation of crab rationalization, but overall Hydra-Pro attempts to keep their customer base broad over all types of vessels and the overall business has grown every year since it opened. Although bottom line revenues for the operation may not have declined, crab was viewed as a nice "bump" in business at the end of the year and employees enjoyed the overtime earnings.

Until recently, Unalaska was served by a third hydraulics entity, Hanson Hydraulics, that closed shop in the post-crab rationalization era. It was differentiated from the other hydraulics providers, however, in that it was also one of three machine shops in Unalaska (along with Magone Marine and Alpha Welding; a fourth shop, formerly utilized by Walashek Marine, was not then and is not now active). Formerly a part of Marco, Hanson Hydraulics became independent following the withdrawal of Marco from the community. At the time of earlier interviews (2004), the owner of Hanson Hydraulics reported that between 50 and 60 percent of the business was associated specifically with the crab fleet. While the closure of Hanson Hydraulics was cited by a number of other interviewees in Unalaska as having resulted at least in part from crab rationalization, a follow-up interview with the former owner (who no longer lives in Unalaska) suggested a more complex situation. While crab rationalization did lower crab revenues to the business, a coincident growth of local Pacific cod-related activity, which requires a considerable amount of hydraulics support, made up for those declines, such that there was no net decrease in business (but there was no net increase either). Rather, what prompted the closure of the business, according to the former owner, was a combination of owner age, a desire to have a better work schedule, and a perception that there would be future rationalization in the cod fishery that would result in a net decrease in business.

Electrical and Electronics

Electrical and electronics support firms are also relatively well represented in Unalaska, in the form of Harris Electric, Sea Technology Company (also known as STC), and Lunde North. Harris Electric specializes in the repair of marine electrical systems and electronics. According to 2004 interviews, with 95 to 98 percent of the business attributable to commercial fishing, management reports that they can basically "repair anything on a commercial fishing vessel." In business locally since 1986, current work is spread across all fleets (depending on season). In

general, the last week of December and then the months of January and February are busy, before business slows down in March. July through October is another busy period, before things slow down again at the end of the year. According to 2008 interviews, Harris in recent years had four full-time employees on-site at any given time, though only the manager and administrative person live in the community, with the remaining staff rotating in and out 6 weeks at a time. Local management reports, however, that crab rationalization has resulted in less overtime for employees, which is a detriment for people rotating into the community who want to maximize their earnings while on the road. Overall, management staff reports that crab rationalization may have decreased business by about 10 percent, but that the remaining vessels are the more successful vessels (and are better customers).

STC has a business similar in structure to Harris Electric, specializing in the repair of marine electrical systems and electronics, with about 95 percent of the business commercial fishery related. According to 2004 interviews, at any give time there would be one to five employees on-site, but all continually rotated up to the community from their base in Seattle. As of 2008, STC had two full-time, year-round employees in Unalaska, supplemented with employees from Seattle to provide an average of five employees on-site during peak periods, which are in January and June in advance of pollock A and B seasons. According to local management, with the consolidation of the crab fleet that accompanied rationalization, STC went from servicing about 10 crab boats down to 1, but for the overall business, this was "a drop in the bucket" and revenues have been made up with other business. An important growth area for STC has been the tug and transportation industry.

Lunde North specializes in the installation and repair of marine electronics, with approximately 90 percent of the business attributable to commercial fishing, with the remainder coming from computer installation and repair. Lunde North has been in Unalaska since the mid-1980s. Work is spread among the different fishing fleets, although work on pollock vessels is more common given the size of vessel and nature of the electronics on board. As of interviews in 2004, crab boat work had been declining in preceding years, as pollock work has picked up. According to interviews in 2008, local management reported that crab was perhaps one-third of the business prior to rationalization, but only about 10 percent post-rationalization, a drop from which the business had not yet fully recovered, although business related to factory long liners has increased in recent years. According to 2004 interviews, Lunde typically has two technicians working in the community, though a third will be added during busy periods.

Mechanical

NC Machinery is a supplier of mechanical work in Unalaska, specializing in service and sales CAT engines and equipment. An estimated 75 to 80 percent of their local business is characterized as directly related to commercial fishing, with the balance comprising public clients, including utilities. Of the fishing-related component of the business, approximately 30 percent of the demand is shore based and 70 percent is fleet based. This business has a long history in the community prior to becoming NC Machinery in 1985. Within the fisheries component of the business, they service all segments of the fleet. As of 2004, NC had 13 employees in Unalaska, but only 2 were local residents and the remaining 11 rotated in from elsewhere in Alaska and the Lower-48 (and are generally not working when not in the rotation. As of 2008, 3 employees are local residents (a receptionist and 2 parts personnel), 13 technicians rotate into the community, and 2 branch managers also rotate in to fill local positions. While a

move away from an Olympic fishery system in pollock resulted in a more consistent level of business, there are still busy and slow periods. According to 2004 interviews, the busiest periods occurred from mid-November through end of January, and then again from June into the fall, but the slow periods were characterized as "filling in more now." According to 2008 interviews, crab rationalization did result in a drop in crab-related business, but the company successfully looked elsewhere for revenues. According to local management, as of 2008, service levels and revenues have been relatively flat over the past 5 years, as the company has not experienced losses, but has not had the desired growth either. Crab rationalization has reportedly also resulted in increased employee turnover, as with a decline in overtime opportunities, it is less attractive for outside employees to rotate into Unalaska than was previously the case. NC Machinery is a business that relies on skilled labor, which is not locally available. This has been challenge for the firm, which has had to create other assignments to allow employees to earn overtime, such as assigning them to SBX (defense x-band radar) related work in Adak and Hawaii, so that overall staying with the firm, including rotations into Unalaska, remains attractive.

Welding and Ship Repair

Welding and ship repair enterprises represent another type of vessel support service in Unalaska. These include Waterfront Welding, Harbor Welding, Alpha Welding, Mac Enterprises, and Magone Marine. Waterfront Welding does marine/boat welding but is also a supplier of welding products and marine refrigeration supplies and service, and it is a steel reseller that does occasional fabrication. The business has been in Unalaska since the late 1970s. As of 2004, the business had seven employees during peak periods and two during the off-peak times, and was characterized as servicing trawl, longline, and crab vessels (but saw little business from factory trawlers that tend to be more self-contained). Following pollock rationalization, Waterfront personnel observed that the longer pollock seasons meant that vessels stayed in the community longer, providing work for support businesses, rather than heading to Seattle between seasons. As of 2008, the business had three full-time, year-round employees but only typically added one helper during busy times. Waterfront supplied crab vessels with welding gases and steel fittings, and this segment of the business declined with rationalization. While some vessels have stayed in the community longer, boosting individual vessel business, this reportedly has not offset the volume lost with fleet consolidation. The business has reportedly evened out, however, with revenues related to construction projects. Overall, sales are characterized as up in recent years, although rising costs and expenses have meant that revenues have stayed essentially flat in real terms.

Harbor Welding specializes in ship repair welding and diving. While in business under its current name for only a few years, the owner of the firm has been working in the community since the late 1980s. As of 2004, the firm employed three people year-round, with a total of six employees during peak times, with August through November, and January through February being the busiest times. As of 2008, six employees worked for the firm year-round. Overall, approximately 80 percent of the business is estimated to be commercial fleet related, with some processor-related diving as well. Typically, commercial fishing vessels working out of Unalaska are hauled out in Seattle every 2 to 3 years, and Harbor Welding business is related to the maintenance in between these haul-outs. Typical jobs would involve the replacement of leaking pipes or diving to cut lines off wheels. While work can involve all types of boats, more business is typically associated with longline vessels than any other type. With high fuel prices, bigger

jobs are being done locally because of the expense of taking vessels to Seattle. According to the owner, crab rationalization has had no impact on the business as Harbor Welding is not big enough to have been affected and has to turn work down.

Alpha Welding specializes in sheet metal work, computerized cutting, and fabrication and works on all types of vessels regardless of season. According to interviews in 2004, an estimated 80 percent of the business was related to commercial fishing of that portion, and about 50 percent came from groundfish vessels. The 20 percent nonfishing business tended to be related to public entities and was reportedly increasing year to year, with emergency jobs being common. Alpha Welding has been under current management since 2001 but has been an entity in the community since 1990. As of 2004, a workforce of 6 employees was typical, but this fluctuated between 5 and 10 during the year. Work remained busy most of the year, with particular peaks 2 weeks before major seasons and during the month of February. A steadier work flow is preferable particularly given that high costs of steel and fuel have played much more of a role in the business as of late. Previously, job costs were based predominantly on labor charges, but as of 2004 materials formed a large part of any job bid/cost estimate. Another factor is the changing quality of the vessels within all fleets—with the more professional/reliable management of newer, higher quality boats and subsequently lower numbers of "junkers," there has been a decrease in the number of repair jobs needed. During the time of field interviews in 2008, the owner of Alpha Welding was unavailable to provide an update of operations. According to an informed business associate, however, the owner of Alpha Welding had anticipated potential impacts from the consolidation of the crab fleet that could logically be foreseen to accompany rationalization, such that the company was able to pre-adapt to rationalization conditions and avoid any substantial impacts.

Mac Enterprises is described by its owner as a three-part business, including diving and underwater welding, above water welding, and boat watch services, with three employees in addition to the owner. According to interviews in 2004, boat watch services provided about 50 percent of the income for the business, and above water welding was seen as limiting to the rest of the business because of taking away time from underwater welding tasks. Vessel watch work had grown with the changes in seasons, as trawl vessels tended to stay in the community between pollock A and B seasons, except for those years when they headed to a shipyard. At that time (2004), Mac Enterprises was responsible for watching between 50 to 70 vessels in the November to December slow period, and given the limited dock space in the community, this required active management of those vessels. Mac Enterprises was then and remains now (2008) the only business in Unalaska providing watch service for more than a handful of vessels or as a full-time undertaking.

According to a 2008 interview with the owner, when it was apparent that crab rationalization could have an adverse impact on Mac Enterprises due to fleet consolidation, the business was proactive in making changes to avoid having those vessel losses hurt the business overall, including instituting a raise in rates for services across the board, which had not been done in several years. Further, the business diversified by purchasing a 43-foot fiberglass twin diesel vessel that is now used for a variety of charters, including National Oceanic and Atmospheric Administration (NOAA) research, environmental contracts, Umnak and Akutan reclamation work, adventure travel, freight and fuel delivery to Nikolski, and occasionally surface service to Akutan when air service is not available. At present (2008), the boat watch service component of the business still accounts for about half of overall business revenues, with a base of about 50

steady customers. Despite consolidation in the various fleets, in recent years remaining vessels are perceived to be spending more time overall in the community (including more trawl vessels staying in the community between B and A seasons). The diving and welding component of the business is described as more steady since crab rationalization. Overall, Mac Enterprises employs three full-time individuals and two to three additional divers/welders/watchmen as seasonal needs dictate. Overall, any negative impacts of crab rationalization on the business are seen as having been offset by other factors.

Magone Marine is a business whose owner formerly described their operation in Unalaska as a "wet dry dock," including welding, machining, fabrication, repair, and related services. When the company started many years ago, crab and shrimp vessels were the main focus of the business, but as of interviews conducted in 2004 (prior to rationalization) crab-related business was "almost inconsequential" given how short the seasons had become. As a result of this and other changes in the fisheries, Magone has diversified into wreck removal, vessel salvage, shipping equipment, and related undertakings as marine repair was a "mere shadow of what it used to be." More recently, Magone Marine acquired a dry dock, which was put into operation in the community in October 2007. Put into operation primarily to service fishing vessels, the largest vessel accommodated by the 200-foot dry dock as of 2008 was 156 feet long. The next closest dry dock to Unalaska is located in Seward, and it is assumed that with rationalization and increased costs of fuel that more vessels will stay longer in Unalaska and require more vessel work while they are in the community. Employment at the business has increased in recent years, from an estimated 25 people to a constant crew of between 40 and 42 year-round in 2008, with seasonal employees bringing the total up to 50 employees during the peak summer salvage period. While the business used to be locally focused, it now includes salvage work "within a thousand-mile radius."

Fuel Sales

Fuel sales are another type of locally provided support for the catcher vessel fleet. Marine fuel services in Unalaska are provided by, among others, Delta Western, North Pacific Fuel, and Offshore Systems, Inc. (OSI). Delta Western supplies fuel to vessels and local land-based clients and according to interview information from 2004 an estimated 85 to 90 percent of total sales volume was attributed to commercial fishing vessels with the remainder being mostly heating fuel for the community. In 2004, Delta had a local staff of nine, including two administrative personnel. Staff levels were not increased during busy times (except employees take vacations during the slow periods), but additional employees were reportedly sometimes added for specific repair and/or maintenance work. There have apparently been comparable levels of employment at the facility in more recent years as well. According to local management, all fishing fleets are served, depending on the season. This business has been in operation since the 1980s, utilizing facilities that date back decades, and it has retained its name despite a corporate takeover in 2000. Busy times include January to mid-April and late June to September with the end of October through the end of December very slow periods, but like many other support service businesses, the peaks and valleys have been less dramatic in more recent years than was previously the case. As of 2008, peaks were characterized as "not as busy," but valleys were described as "just as dead." Overall, sales volumes were described as going down over the years, with a generally "less demand for energy at the dock." With crab rationalization, fewer vessels were seen at the dock, but those that remained active have fished longer, increasing fuel

sales per vessel. Revenue has also declined through a drop in crab pot storage at the facility. Delta does also supply fuel by barge to other communities via the local facilities.

North Pacific Fuel is similar to Delta Western in a number of respects, but in addition to marine and direct sales to local clients, there is also a North Pacific Fuel gas station in the community. North Pacific Fuel has tank farms and provides marine fuel service at four locations in the community, including the former Petro Marine facility on Dutch Harbor; the city dock; the Crowley Marine facility in Captains Bay; and the Westward Seafoods dock, also in Captains Bay. The former Petro Marine facility largely services harvest vessels, with crab vessels representing a significant portion of sales. Sales at the city dock include larger vessels, such as factory trawlers and U.S. Coast Guard cutters. This facility also services a good portion of the pollock harvester fleet. The Crowley facility (leased by North Pacific Fuel) is characterized as North Pacific Fuel's most versatile facility, servicing all types of vessels, in all size ranges, in all fisheries. In addition to having the capacity to do factory trawler offloads like the city dock, this facility also has crab gear storage capacity and other services available. The Westward facility services the processor's powerhouse as well as the Westward fishing fleet. In general, local management attributes approximately 85 to 90 percent of all North Pacific Fuel business as being fisheries related, with the balance being made up of some sales to cruise ships, U.S. Coast Guard and NOAA vessels, tugs, and the occasional tramper vessel, among others. North Pacific Fuel management personnel noted that, in recent years, the changes in fishery conditions have had an impact on employee hiring and retention. Pre-pollock rationalization, workers would come to the community expecting to work a lot of overtime during a relatively short season. With the lengthening of the fishing seasons has come longer work periods, but with less overtime, and getting workers to stay in the community for extended periods of time has proved a challenge. BSAI crab rationalization has reportedly continued this trend and while local management reports that employment levels have remained constant, employee turnover has increased and overall revenues are down significantly as a result of crab fleet consolidation. According to 2008 interview information, crab vessels prior to rationalization accounted for perhaps 40 percent of North Pacific Fuel marine fuel sales, but post-rationalization account for only perhaps 15 percent of sales. Local employment at present (2008) includes 25 full-time employees, with 18 at the fuel facilities and 6 at the gas station.

OSI operates a relatively large facility in Captains Bay that provides a significant amount of support directly related to the offshore fleet, including fuel. Catcher processors use warehousing services, and refuel and resupply when they are in the community to do a full or partial offload of product. Additionally, catcher processors typically need a range of expediting, freight management, and logistical support services through Unalaska to keep operating in the Bering Sea. This is true for both crab and groundfish catcher-processor vessels. For groundfish vessels, this basic pattern has not changed in the post-AFA era, but the volume of local work is down significantly due to both the reduction in the catcher-processor fleet and the slackening of the pace of fishing following implementation of the AFA. According to local management (in 2008), the crab fleet only accounted for a "minor" amount of the total volume of fuel sales at OSI both prior to and following the implementation of crab rationalization, such that crab rationalization has not had a substantial impact on the business.

One fishery management change that has had a specific impact on local fuel sales was the implementation of the Steller sea lion restrictions in 2000. These restrictions have meant an increase in fuel sales due to longer vessel trips to the open fishing grounds. This, coupled with

co-occurring high fuel prices, has meant higher costs to the catcher vessel (and the catcher-processor) fleet. While the fuel sales businesses have benefited (as has the municipality of Unalaska through tax on the fuel sales), the vessels and shoreplants (because of the higher cost of fuel they are purchasing) have been hurt.

Other Services

There are a number of other businesses in the community that support various aspects of fishing operations. These include such direct services as gear storage and bait sales, and less direct support services such as lodging, food and beverage services, vehicle rental businesses, and the like. These businesses all derive a substantial portion of their revenues from fishing-related activities. With a consolidation of the crab fleet, there has been a decrease in crab-specific business volume for a number businesses, but how individual businesses have fared with this community-level decrease has varied widely from business to business, based on varying business structures and adaptive strategies as well as a range of other factors not directly related to the crab fishery, such as growth of the cod fishery. The following sections summarize some of the types of impacts seen at these various businesses.

Gear Storage

There are a number of firms in the community that store gear for a wide range of fisheries. With the consolidation of the fleet with crab rationalization, demand for pot storage in particular is down in the community. One of the main independent local companies that hauled and stored pots in the years prior to rationalization was sold to a larger, more diversified firm shortly before rationalization. Pots are currently stored at all three major marine fuel service providers in the community as well as at some of the shipping enterprise facilities. Some pot storage occurs at processors, and other boats store pots on Ounalashka Corporation lands, hauling them with their own trucks. Overall, pot storage is down, but impacts apparently have been spread among a number of multi-service providers.

Bait Sales

The primary commercial bait business in Unalaska operates out of the Harbor Cold Storage facility. Within the crab fishery, this business supplies all of the vessels that fish for Westward, UniSea, and Icicle Seafoods, among others, along with a couple of crab catcher processors. Among changes in the business brought about by crab rationalization has been the stretching out of sales over time, as before rationalization all of the crab bait tended to be sold in a period of 2 weeks to 1 month. According to the local management, however, total bait sales depend more on the quota than the number of vessels participating in the fishery for any given season. Depending on quota levels, crab bait sales may make up between 25 and 40 percent of total bait sales for the business. This makes it difficult to isolate whatever the impacts of crab rationalization itself may have been because quotas have risen even as fleets have shrunk. Further, this business has increased their market share in recent years by obtaining new customers. To date (2008), according to local management, the reduction in the number of crab vessels has not had an impact on the bait business, but again a number of forces are in play, including a targeted strategy to increase market share by obtaining UniSea and Westward as customers around 2006 (both of which formerly bought their own bait and stored it on site).

Lodging, and Food and Beverage Services

Among the less direct services, there have been a number of changes in the community during the span of years since the implementation of crab rationalization. For example, there has been consolidation of lodging services in the community. UniSea still owns and operates the Grand Aleutian Hotel, but Carl's Hotel in the downtown Unalaska area is no longer in business (with this closure occurring as a part of the overall closure of the Carl's Commercial complex, when the owner of that enterprise sold his Unalaska holdings to move to Sand Point and opened a store in that community). One change in recent years at the Grand Aleutian has been their marketing of the community to sports fishermen, and a "pulling back" on tourism marketing efforts in general. While the hotel used to promote sports fishing packages, it no longer does so due to an inability to deliver a product of consistent value to clients, based on charters frequently being weathered out or otherwise canceled due to a lack of sufficient capacity in a shrinking local sport charter fleet. Without active marketing, however, there has been at least a modest increase in local tourism business related to the exposure of the community on the "Deadliest Catch" television series, and there is some tourism lodging associated with birding and other natural resource-related trips, along with interest in Aleut cultural and World War II historic sites. According to UniSea senior hospitality staff, however, the lodging business was and is still centered on commercial fishery, construction project, and government agency-related demand rather than tourism or other recreational endeavors. The UniSea Inn is currently (2008) being remodeled and when completed will have a bar, restaurant, sushi bar, liquor store, and hotel operating on the premises, the latter including approximately 45 rooms, of which 25 will be available for rent to the general public. UniSea reports that its hospitality employment, covering lodging, food, and beverage services, has increased since the implementation of crab rationalization, but that consolidation of service providers in the community has likely played a substantial role in that increase. Otherwise, according to UniSea management, the impact of BSAI crab rationalization on hospitality services in the community has been similar to what was seen following AFA-related rationalization, with a slowing in demand during peak seasons and a more predictable yearly business cycle.

Photo courtesy of Gregory Family

Former Latitudes and Elbow Room Bar

There have been a number of changes in food and beverage service businesses in the community since the implementation of BSAI crab rationalization. In addition to the bar in the former Carl's Commercial complex closing, the Elbow Room, a bar in downtown Unalaska, is no longer open. Prior to going out of business, ownership of the bar, controlled by a local family, passed from one generation of owners to the next (and essentially from one owner to multiple owners), with the recipient generation apparently not interested in continuing the family ownership of the enterprise. These individuals then sold the business to another set of owners who changed the name of the business to Latitudes. Reportedly, there were differences of opinion among the newest owners over the direction of the business, with the eventual outcome being the sale of the business's beverage license to UniSea and closure of the bar. The beverage license sale to UniSea resulted in a larger portion of the overall community beverage licenses being held by that company, which currently (2008) operates beverage service in the Grand Aleutian and is in the process of renovating a

restaurant and bar in the UniSea Inn. While some in the community point to the closure of the Elbow Room specifically as an indication of changes in support sector businesses that have accompanied crab rationalization, especially because of historical association of the Elbow Room with crab fishermen in the local heyday of that fishery, the history of its ownership transfer and sale is complex and may have as much to do with the timing of ownership succession as any other factor. There have been other food and beverage transitions on the Unalaska side of the community since the implementation of crab rationalization as well. Tino's, a local Mexican restaurant/steakhouse, changed hands in recent years and reopened under the name The 3 Amigos. An entirely new restaurant, the Crab Pot, owned by a lifetime local resident, opened in January 2008 in the downtown area of the community in a building constructed in part from what were previously residential structures. The building in the downtown area that used to house Stormy's restaurant remains vacant, although it was used by at least one other restaurant (owned by the current owners of the Peking Restaurant) following the closure of Stormy's itself, with the last closure apparently occurring in 2004.

Photo courtesy of Gregory Family

3 Amigos Restaurant

Photo courtesy of Gregory Family

The Crab Pot Restaurant

On the Amaknak side of the community, there has been more continuity of food and beverage services over the crab rationalization era. In addition to the food and beverage service at the Grand Aleutian, these services are available at the Airport Restaurant and Lounge located in the airport terminal, the Peking Restaurant in the sub dock complex, and Amelia's just off the airport road near the Eagle store complex. This relative ownership stability is attributed to a number of factors. For example, the continued success of Amelia's is attributed by some to a loyal customer base, some of the members of which have known the owner since she first came to the community to work for a processor many years ago. On the other hand, while ownership has remained constant, the owner of the Airport Restaurant and Lounge reported that while currently (2008) business is steadier during the course of the year, it is still down from its overall peak prior to crab rationalization. The Peking Restaurant has been operating in the same location since the 1980s but has had different owners over time. The owner of the Peking Restaurant in 2008 (who acquired it prior to BSAI crab rationalization) expressed more concern with potential market share loss as a result of the ongoing renovation and expansion of the nearby UniSea Inn restaurant than with changes that were attributable to crab rationalization itself. With Peking Restaurant business estimated at being 20 percent local residents and the balance fishermen and processors, however, a loss of fishermen has been felt in terms of overall revenue. According to an estimate made by the owner during a 2008 interview, crab fishery-related business is now estimated to account for 20 to 25 percent of the business, whereas before rationalization it could have made up to 35 to 40 percent of the business. Further, a good share of the business depends on its free delivery service, and with increases in the price of fuel, this has cut into business profitability. Like so many other sectors or subsectors, business outcomes in recent years have been mixed among local food and beverage enterprises as a result of multiple factors being in

play, including internal shifts in market share, which makes attributing particular changes to crab rationalization to any particular business difficult if not impossible.

Vehicle Rentals

There are two main vehicle rental companies in Unalaska, Northport Rentals and B.C. Rentals, both of which have offices at the airport. As of 2008, Northport had six full-time and four part-time employees in the community, including two seasonal workers. According to local management, although revenues are not broken out by client segment so no quantitative information is available to illustrate trends, Northport's business has been diversified enough with rentals to construction enterprises and other businesses from other fishery segments, that the potential impacts from a loss of volume related to crab fleet consolidation have been more than offset by other factors. The company has reportedly continued to grow through the years, likely due to market share growth as well as through overall business development growth. According to local management at B.C. Rentals, however, crab rationalization has resulted in an overall decline in business revenues for that firm. B.C. Rentals typically employs 10 full-time people during A and B seasons and has about 7 full-time employees during the slow seasons. Although quantitative information broken out by customer type is not available, the owner reports that business has declined significantly. While B.C Rentals counted perhaps 100 crab vessels among their customers prior to rationalization, post-rationalization this number has dropped to perhaps 60, with 20 to 30 vehicles rented per day at the most during the busy periods for crab now that the seasons are more spread out. In sum, the impacts of crab rationalization on the rental vehicle business in the community are mixed, in part due to other factors of growth as well as an apparent shift in market share between existing businesses in the sector.

Beyond impacts to any particular type of "other" support business sectors, individuals in multiple interviews made the point that, all things being equal, the loss of crab crew member spending has had different impacts in the community than did pollock crew member spending when that fishery rationalized. During interviews with a number of business owners, crews on pollock trawlers were typically characterized as complying with the zero tolerance policy for alcohol and either working aboard the vessel or catching up on sleep aboard the vessel while in the community. Crab crew, on the other hand, are typically characterized as having historically been of a different nature, spending more time out in the yards, buying gear, patronizing local stores and bars, and generally more actively interacting with the community while in port. Interviewees have offered the observation, however, that with changing conditions brought about by rationalization, crab fishing is becoming more businesslike than was previously the case, and this may have subtle effects on the nature of crab crew-related returns to Unalaska support service businesses.

Shipping

Shipping seafood products is also a major business sector in the community. In addition to the two main shipping lines that move seafood product from the community, American President Lines and Horizon Lines, there are a number of other entities that service different niches. Coastal provides domestic coastal freighter service and provides services to communities that cannot be serviced by larger vessels operated by some others. Northland and Samson provide tug and barge service, with Northland interlinking with the Pribilofs and Bristol Bay, and Samson linking to Sand Point and King Cove, among others. These firms also can serve

communities with lesser port facilities and feed product to larger operations in Unalaska for transhipment elsewhere. (Western Pioneer, a firm that served the community for many years, has more recently sold its vessels and no longer is in the freight business.)

Unalaska has the westernmost container terminals in the state, and the community is strategically located on the Great Circle Route between northern Asia and the west coast of the United States, which is why it has become a major transhipment point. Seafood products from Bristol Bay, Akutan, and other seafood processing facilities in the region (and beyond) move by tug and barge to Unalaska where they are typically transhipped to container ships or other vessels destined for their ultimate marketplace. In addition to container ships, freight movements to and from the community are also handled by tug and barge sets and small coastal freighters for domestic movements, and foreign break-bulk freighters capable of holding frozen product, often called trampers, that are primarily engaged in moving seafood products to foreign countries (Northern Economics 2004).

Shipping in Unalaska did change with groundfish fishery rationalization under AFA, with the largest difference attributed to the fact that processors can now much more closely time their operations and shipping needs and can thus optimize their range of shipping choices. This opens up a range of options not readily available under race for fish conditions. For example, processing entities can more easily arrange for scheduled transfers directly to trampers rather than having to always use available locally established shipping firms to transfer product. Of course, shipping choices ultimately depend on product mix, destination, and cost efficiencies, but clearly local shipping-related entities have felt impacts directly as a result of fishery structure changes. There are also indications that shoreside plants have shifted to a greater emphasis on tramper shipments relative to containerized shipments, but no quantitative information is available to verify this assertion. According to one shipping company manager, a major recent change in shipping has been movement to unitized cargo loading. Whereas, in the past, trampers were used because they were fast and containers were used because they were good quality, unitized cargo loading has meant that tramper-shipped goods can equal the same quality as container-shipped goods. Other larger-scale factors also play into shipping decisions, from post-9/11 security requirements that limit where trampers can tie up at the various seafood processing plants, to fluctuating market forces that include domestic and overseas demand for seafood and international currency markets that determine the relative strength of the dollar.

Changes brought about by AFA conditions several years ago are still affecting the community. An earlier community profile (EDAW 2005) reported changing patterns whereby an increased ability to schedule both onshore- and offshore-related landings changed the nature of shipping out of the community, with a higher proportion of work going to nonunion longshoremen in recent years. Co-op conditions have pushed inventories up because of increased recovery rates and diversification of product mix, meaning there has been some increase in demand for cold storage, berthing, dockside services, and so on. As described in the next section, there is currently (2008) a large construction project going on the community to address this need, particularly for the offshore fleet. At the same time the two largest established shipping firms were seeing changes in their market share or customer base, two more private dock/shipping facilities emerged in the community, one at the old East Point plant location and another in Captain's Bay. There also appears to be proportionately more offshore-related volume going across municipal docks than was the case in the past, and city revenue from dockage and wharfage has risen in general. These two factors reinforce the general observation that shipping-

related business is becoming less concentrated among the formerly dominant local entities and more widespread among various smaller entities.

According to interviews conducted for this project in 2008, crab rationalization did not involve the same degree of change among local shipping industry participants as seen in the earlier groundfish rationalization, for several reasons. These include the rationalization-related changes that had already taken place (essentially preadapting shippers to rationalization in other fisheries), the lower volume of crab shipping compared to groundfish shipping, and the lack of complexity of internal fishery sectors (and therefore variety of shipping strategies) compared to the onshore and offshore sectors seen in groundfish fisheries. One shipping manager also suggested that the shipping of crab remains primarily driven by overall crab quota than by other changes in the fishery, such as the length of the season, although other interviewees suggested that since rationalization there has been an increase in fresh product flown out from the community.

Stevedoring

Another type of support service provided in the community for both the inshore and offshore fleet is stevedoring services. While some shoreplants typically do not use stevedores in loading operations across their docks, or the demand is lower for stevedoring because of containerized product, hatch gangs are used for loading product "over the side" to trampers for shipment from Unalaska. Stevedoring jobs are relatively high-paying, and much valued in the community, though the work is not steady for most of the persons engaged in it. What does make this labor opportunity particularly valued is the fact that long-term locals, including lifetime residents, may qualify for, and provide a viable labor pool for, these positions without having to go through minimum-wage entry positions first. There are also union and nonunion laborers alike who come to the community during the busy seasons to take advantage of the opportunities available in the community. According to union representatives, however, with fishery rationalization in general, including BSAI crab rationalization, there has been a lesser need to bring in individuals from outside of the community as the resident workforce is equipped to handle a lower level of effort that occurs over a longer period of time as compared to short, peak efforts. Among local shipping firms, APL and Horizon are served by the union, Northland has their own crew, while Pacific Stevedores serves trampers and other shipping entities that call on the community and assists Samson with trucking and supplemental labor.

Pacific Stevedoring has American Seafoods and Glacier Seafoods as its primary local clients and is the largest private, nonprocessing employer in the community with upwards of 300 employees during the peak seasons of January through April and July through mid-October. During off-seasons, Pacific Stevedoring employs between 60 and 100 individuals in the community. Pacific Stevedoring historically has done little work with the crab industry due to the relatively low volume generated by that sector and because crab is a relatively sensitive product that is more conducive to container rather than bulk shipping. As a result, Pacific Stevedoring, according to local management, has been

Photo courtesy of Gregory Family

Dutch Harbor Ports Construction Site

unaffected by crab rationalization. Pacific Stevedoring is currently (2008) managing a local harbor construction project for Dutch Harbor Ports, funded by American Seafoods and Glacier Seafoods, that is being built by West Construction. With a planned 970 feet of continuous dock and a large cold storage capacity, the facility is designed primarily for offshore fishing sector support but will be capable of supporting all fleets. The facility will also have dry storage, but this capacity is considered of secondary importance due to the existence of dry storage capacity available for lease from the Ounalashka Corporation.

Remote Operations Support

There are also providers in Unalaska who support inshore processing entities that are operating far outside of the community. For example, the firm (Icicle Seafoods), which owns the floating processor in Beaver Inlet (*Northern Victor*), has a local Unalaska representative who supports that operation. (When a second floater was operating in Beaver Inlet, this entity had an office in Unalaska that, among other functions, supported that operation.) Similarly, the company that owns and operates the large shoreplant in Akutan (Trident) has a support office in Unalaska because of their logistical support needs, which cannot be managed directly from Akutan.

Offshore vessels are supported by a number of entities in the community as well. American Seafoods, a large catcher-processor company, has an office and one employee in Unalaska, down from seven employees under the pre-AFA Olympic system. Transhipments of product are made in Unalaska, which has also served as a logistical support base and a port for crew changes. As noted earlier, American Seafoods is presently (2008) involved with a large dock and cold storage capacity improvement project. As the major partner in the project, they will have priority for transshipment at the new facility, which will have the ability to efficiently offload product from catcher processors direct to trampers. American Seafoods at present has their own equipment for offloads but used Pacific Stevedoring services rather than employing their own local warehousemen. At present, American Seafoods rents four Ounalashka Corporation warehouses for dry storage. OSI also provides a range of fleet support services for vessels for other at-sea processing firms as well for catcher vessels.

In addition to these types of support, there is a range of businesses in the community that handle a variety of expediting, logistical, and ship agent tasks. Though typically small in terms of the number of employees involved, this type of business does provide income for a number of local residents.

Summary

In general, the recent changes experienced by support service sector businesses in Unalaska have gone to the heart of the paradox of the Unalaska support service economy. This portion of the local economy was historically dependent to a large degree on the economic inefficiency of the commercial fishing industry. To the extent that rationalization has made different fisheries more efficient, it also allowed vessel and facility owners to be more efficient in their purchase of support services. In general, this has meant a decline in peak season local support service activity, employment, and revenue levels. There are no systematic data available to quantify the amount of this decline, but it has clearly been significant for a number of the businesses in this sector over time, beginning with pollock rationalization and continuing through crab rationalization. Overall, peak demand is lower, the pace of business is slower, money has

become at least as important a consideration as time, and businesses do not need the same level of inventory and staff as in the past. In general, direct fishery businesses in the community, as well as the municipality itself, have seen substantial gain with rationalization, but the support service impacts have been more mixed.

2.1.3.4 Other Local Business/Service Activity

Tourism

There is interest in continuing to develop tourism in the community, with new draws in the last decade or so associated with an increased local National Park Service presence and the opening of the Museum of the Aleutians. In 1996 the footprint of historic Fort Schwatka at Ulakta Head on Mt. Ballyhoo on Amaknak Island was designated as the Aleutian World War II National Historic Area within the national park system, and the Aerology Building at the airport has been refurbished as a visitor and interpretive center.[18] The Museum of the Aleutians opened in 1999 and is the only archaeological research and museum storage facility in the region.[19] The structure of the building itself incorporates a time line representing Aleut peoples prior to western contact, the era of Russian influence, the post-Russian era, and World War II, and features both permanent and temporary exhibits illustrating aspects of life, events, and the arts in the region over time. Other types of birding, hiking, kayaking, and camping opportunities draw some tourism interest, as does visitation at the Russian Orthodox Church of the Holy Ascension, also known as the Holy Ascension Cathedral, which is listed in the National Register of Historic Places.[20]

The local sport charter fishing sector became established and experienced a surge in popularity in the mid-1990s when world record sport halibut were caught locally in 1995 and 1996, with the latter fish, at 459 pounds, still representing the world record. According to earlier (2004) interviews with sector participants, in the mid-2000s there were still a total of five local charter businesses, of which three were characterized as proactive business operations and two others that were characterized as less continuously active or more opportunistic participants. According to one charter owner, however, business had hit a plateau as the average size of halibut decreased somewhat and no new records were produced, and changing halibut subsistence and charter regulations have apparently had a hand in limiting growth as well. In 2004, no local derby, normally a vehicle for promoting local charter fishing, was held, apparently due to contentious gear issues, among other factors. As of 2008, according to local interviews, only one individual was still running fishing charters on a more-or-less regular basis. Reportedly, some owners previously involved in charter fishing are picking up the slack in business by doing nonfishing charters, including marine tours, and some long-range charters (for a variety of customers including government agencies, universities, and other research; or publication-oriented entities,

[18] The land and facilities of the Aleutian World War II National Historic Area are owned and managed by the Ounalashka Corporation, with technical assistance provided by the National Park Service.

[19] A private, nonprofit corporation, the Museum of the Aleutians is run by a board with seats occupied by representatives of the City of Unalaska, the Qawalangin Tribe, the Ounalashka Corporation, the Aleut Corporation, and the public at-large.

[20] Consecrated in 1825 by Ivan Veniaminov, a famous Russian clergyman and the first bishop of Alaska, the original church was completed in 1826 and forms the central portion of the existing structure that was expanded significantly in 1894. Considered the first Russian Orthodox church in the United States, it was listed in the National Park Service administered National Register in 1970, rededicated in 1996 after a major restoration, and today retains a large collection of religious artifacts and icons.

such as National Geographic, as well as private individuals), along with some small-scale freight hauling to Akutan and outlying areas. According to one charter operator, 95 to 98 percent of his business used to be composed of fishermen; now birders account for about 30 percent of the business. None of the sportfishing charter operations in Unalaska, even in the busy years, were full-time businesses or the primary source of income for their operators given the very short season, with business being characterized as "dead" before mid-June, busy during July, and fair during August before dropping off completely in mid-September. Beyond charter services *per se*, there was also one enterprise in the community at the time of previous interviews (2004) that ran a remote salmon fish camp in addition to offering traditional vessel charters; more recently that enterprise has not been active. According to several sources, local hotels no longer actively promote sport fishing as a draw in the community because of the lack of reliable access to successful fishing opportunities, due to frequent inclement weather and a lack of a steady base of charter operators, such that it has proven difficult to meet customers' relatively high expectations, given the expense and logistical challenges of getting in and out of the community.

Cruise ships represent another type of tourism activity in the community, and the local Convention and Visitors Bureau and Ounalashka Corporation management estimates that there have been approximately 7 to 10 cruise ships per year calling on the community in recent years. One cruise ship specializing in ecological tours made a total of four calls in 2004. The Alaska state ferry system also brings some level of tourism to the community during the April though October service window. While cruise ships and the ferries do bring individuals into the community who then patronize other businesses, such as a couple of land-based tour operations, the overall economic impact of this type of activity is very modest.

Air Travel

Air travel can be a challenge for getting into and out of Unalaska, particularly during peak seasons, and the high cost and inconvenience of transportation make the development of a tourism sector challenging for local businesses. According to 2008 interviews with local government officials, the scheduled carrier that serves the community (Pen Air) had instituted a "community access seat" policy that gave local residents a better chance at being able to obtain seats during crowded periods, especially for rebooking for flights that had been canceled. Table 2.1-17 provides information on passenger counts at the community airport for the period 1995 through 2007. As shown, the total number of passengers for this span of years peaked in 1996, and counts for the years after 2000 are lower than any of the years 1995 through 2000. With the slowdown in the race for fish that accompanied AFA, direct fishery-related passenger transportation demand apparently also declined to some degree, although clearly demand was falling off prior to AFA.[21] Any further impact of BSAI crab rationalization on passenger counts is not apparent in the data. Counts in the first quarters of 2006, 2007, and 2008 (the latter of which was 14,676 [not shown in the table]), when most opilio activity is seen, were higher than 2003 and 2004 counts, if lower than analogous 2005 counts. Counts for the last quarters of 2005, 2006, and 2007, when most king crab activity takes place, were all higher than the analogous count for 2004, and 2 of the 3 years were higher than any fourth quarter after 2000.

[21] Coupled with these conditions was a decrease in level service caused by a then-recent discontinuation of regular jet service to the community (which itself followed a decrease in service frequency). According to long-time community residents, this has had an impact on a range of services in the community (such as the price and availability of a variety of food at stores), as well as mail and freight. Although talks have reportedly taken place, Unalaska today (2008) remains without regularly scheduled jet service.

Table 2.1-17. City of Unalaska, Port of Dutch Harbor Airport Passenger Count by Quarter, 1995–2007

Quarter	Calendar Year												
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
January-March	16,122	20,380	15,992	20,919	15,672	16,461	14,696	15,466	14,027	13,994	15,751	14,850	14,991
April-June	17,209	16,615	15,772	13,683	14,556	16,480	13,988	14,351	14,259	13,522	15,380	15,808	16,061
July-September	18,015	17,105	16,041	12,909	16,312	15,906	16,086	15,502	14,853	14,835	14,517	14,281	15,436
October-December	13,171	13,323	15,380	15,863	13,740	12,596	13,612	13,512	12,130	13,975	13,443	12,321	13,317
Total	64,517	67,423	63,185	63,374	60,280	61,443	58,382	58,831	55,269	56,326	59,091	57,260	59,805

Note: Data in the table represent a total of enplaned and deplaned passengers, not "round trips" by single individuals (e.g., if 9,000 passengers got off planes in Unalaska during a particular quarter and 7,000 passengers boarded planes in Unalaska during that same quarter, the quarterly passenger count would be 16,000).

Source: Adapted from spreadsheet supplied by City of Unalaska Finance Department, 2008. Data were originally configured in fiscal not calendar year format.

Other Businesses

Unalaska continues to support a much wider range of nonfisheries-related businesses as well as fisheries support-related businesses than any other community in the Aleutian/Pribilofs region. According to interviews conducted in 2004, however, business conditions were changing with a general slowdown in the nonfisheries sectors of the economy, a trend at least partially related to then-recent rationalization of the pollock fishery under AFA as well as a co-occurring decline in the crab fishery sector. A number of businesses that served the general public closed around this time, and examples of these businesses, including an office supply store, an auto parts store, a vehicle rental firm, and a bowling alley, were frequently cited during interviews. Also noted at this time was the reduction in the number of more direct fishery support businesses that were needed for peak demand times. In this case, it is not that types of services are no longer available, it is more that there is less of a choice of providers of those services. During a 2004 interview, one landlord reported having lost a net company, an electrical firm, a hydraulic firm, and a restaurant all out of a single building. While this is an unusual if not unique case, it does illustrate the range of enterprises (and types of fleet support businesses) that went out of business around that time, and whose demise was attributed, at least in part, to earlier (pollock) rationalization conditions (in combination with a downturn in the vitality of at least some other fisheries, including the crab fishery). As noted in the above discussions, additional businesses have closed during the crab rationalization era, both in direct fishery support and other sectors, although a number of other businesses have opened at this same time, including a grocery/general store, two small specialty grocery stores, a restaurant, an auto repair business, an auto parts store, a marine hardware store, and a new apartment complex, among others. There is also increased local construction activity through a major upgrade of "the bridge to the other side" as well as a private harbor improvement project.

Health Care

As noted earlier, some community services are utilized by a nonresident "floating population" associated with vessels working the BSAI area. One of these services is the local clinic, and this fact is reflected in their slogan: "Serving Unalaska, the Aleutian Islands, and the Bering Sea." Formerly classified as a "rural health center" the clinic is now designated as a "community health center" for federal funding purposes and has been since it obtained a full-time doctor in September 2002. This marked the first time in recent years the community had access to physician care by appointment (other then through rotating doctors from outside of the community). In recent years, the clinic has increased its total number of primary service providers, but not the number of full-time equivalent positions. At present (2008) the clinic has four physician positions (including three part-time) and three mid-level provider positions (including two full-time and one part-time). An additional position combines care and administrative functions, such that, typically, a total of seven individuals occupy a total of 3.25 clinical positions. At any one time there are five providers on-site, although the clinic can and has gotten by with four positions on-site when necessary. An additional four medical assistants were added to the clinic budget in 2003. In practice, since that time there have been a total of seven persons providing medical assistant services, including three part-time volunteers, allowing the clinic to run between four and five medical assistants at a time. Most of these individuals are qualified Emergency Medical Technicians as well and are in the call rotation for emergency services. Other service provision personnel include the school nurse, who works at the clinic 1 day per week; two behavioral heath counselors; and a full-time dentist position that

was added in 2004. Additional local clinical services are available for Alaska Native residents and are provided independent of the clinic entity itself (both on- and off-site) via programs administered by the regional Aleutian Pribilof Islands Association; this staff includes a physician's assistant, a community heath aide, and two community outreach workers, along with social service providers. The clinic also provides Head Start program screening and telepharmacy services (for Alaska Natives only). Table 2.1-18 presents selected patient statistics for FY 1999 through FY 2007.

Recently, there have been changes in the way care is being offered at the clinic that is attributed both to changes in clinic staffing and services and to changes in local fishery-related demand, including those associated with the implementation of BSAI crab rationalization. Beginning in 2007, the clinic changed to a team approach to urgent care, splitting providers into an urgent care team and an appointment/clinical side team, with the goal being that the appointment/clinical side team could keep the clinic running to meet the service needs of the residential population on an appointment-driven basis, even during peak fishery demand times. While patients had all been seen on the same day of presentation (if conditions warranted) even before this change, the advantage of the team approach is that appointments can be scheduled and kept in a way that was not possible before. This approach was first implemented during the 2007 A season and so far has been successfully used during the 2007 B and 2008 A seasons as well. Prior to this change, the clinic did not even accept appointments during the A season peak, essentially meaning that residential health care, except for emergencies, was put on hold for several weeks while the peak fishery activity played itself out. Prior to the change in approach, appointments typically were available during B seasons (unlike during A seasons), but it was not unusual for some of those appointments to get dropped. This approach has reportedly been of benefit to staff as well, with less hectic conditions during peak fishery activity times.

Unalaska Department of Public Safety

The Unalaska Department of Public Safety provides a range of services to the community. In addition to a director, department personnel include 9 law enforcement officers, 4 sergeants, 1 supervisor, 5 officers assigned to the jail, 5 dispatchers, 1 animal control officer, 1 department of motor vehicles person, 1 emergency medical services coordinator, 1 fire chief, and 2 paid firefighters, for a total of 31 paid employees, supplemented by approximately 50 fire/emergency medical service volunteers. In terms of using public safety statistics to examine the relationship between changes in fishery management approaches and social disruption in the community, according to the Director of Public Safety, there is a consistency problem in using department statistical reporting over time to analyze public safety conditions for nearly all statistical categories. These inconsistencies could arise and have arisen from a number of factors, including a different emphasis on the value of recording statistics over time, the influence of varying staffing levels on statistics, and the differing foci of different administrations over time, among others. According to current management, however, one consistently recorded indicator that may be of use is criminal intakes, or the number of individual booked into the Unalaska jail. Table 2.1-19 provides information on the number of inmates per month FY 1998 through FY 2007. (The figures in this table represent unique individuals booked into the jail in a given month, not the number of person-days spent in the facility.) As can be seen, there are marked variations from month to month and some general patterns that can be seen to recur over some spans of years. It is the perception of senior management that when large opilio seasons overlapped with large pollock A seasons, and there were large but short king crab seasons in the

Table 2.1-18. Unalaska/Dutch Harbor Community Medical Center, Iliuliuk Family and Health Services, Selected Patient Statistics and Total Revenues, FY 1999–FY 2007

Patient Services/ Visits	Fiscal Year								
	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Office Visits	7,024	6,835	8,279	7,945	9,347	9,369	11,050	10,549	10,269
Medivacs*	55	68	40	41	466	393	688	1,192	581
Emergencies	541	428	393	548	443	592	644	707	673
Ambulance Runs	141	162	181	212	176	161	168	200	229
X-Rays	2,665	2,439	2,820	3,162	3,000	2,612	2,620	2,897	3,083
Patients Registered	9,517	9,585	9,833	9.458	10,666	11,363	13,548	12,728	12,428
Unique Patient Counts				4,466	4,813	4,804	4,957	4,959	4,628
Total Patient Services Revenues	$2,303,331	$2,191,606	$2,633,776	$3,047,226	$3,104,923	$3,428,721	$4,374,767	$4,910,945	$4,831,251

*During 2002 the clinic converted to a new practice management system, changing the medivac category to include medivac services or all services related to medivacable patients rather than actual medivacs. As a result, numbers before and after 2002 are not comparable.

Source: Iliuliuk Family and Health Services - Unalaska/Dutch Harbor Community Medical Center spreadsheet/personal communication S. Handforth-Kome, January 2002, June 2004, and May 2008.

Table 2.1-19. City of Unalaska Department of Public Safety, Number of Inmates by Month FY 1998–FY 2007

Month	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
July	38	26	26	29	29	21	28	39	43	33
August	41	26	29	23	33	51	53	25	43	44
September	34	34	29	24	37	36	35	28	22	38
October	60	49	34	39	51	55	53	42	47	34
November	35	47	15	23	32	35	25	32	31	34
December	36	25	10	21	22	23	27	31	28	22
January	37	37	23	24	25	48	47	34	28	36
February	42	44	46	31	58	38	57	36	33	55
March	53	48	39	33	45	40	62	25	43	44
April	39	24	57	32	40	31	37	24	23	28
May	35	31	26	27	27	38	19	32	20	41
June	33	36	30	15	21	37	36	43	34	34
Total	**483**	**427**	**364**	**321**	**420**	**453**	**479**	**391**	**395**	**443**
Average	**40.25**	**35.58**	**30.33**	**26.75**	**35.00**	**37.75**	**39.92**	**32.58**	**32.92**	**36.92**

Notes: These figures represent individual bookings, with one entry per person. A person may spend up to 30 days in the facility.
Source: Unalaska Department of Public Safety spreadsheets supplied May 2008.

fall, the jail was more full and when seasons stopped, the jail "would empty out." (A typical scenario might be crew members getting into trouble in the community after getting paid and spending money at the bars.) Further, it is the perception of department management that fishery rationalization in general has had the effect of attenuating the peaks and valleys of crime in the community—seasonal fluctuations continue to occur, but not at the pronounced levels of prior years. These patterns are not immediately clear from the intake data, because of a good deal of year-to-year variability, but in most years a peak in the February through March period can be seen, as can a peak in or around October (with a third peak seen in the summer some years). According to the director, conditions at present (2008) are easier on staff with not having to deal with the high spikes in activity, with the only down side being jail maintenance is more difficult as there is almost always at least someone in jail. In prior years, there would be more extended periods when the jail would be empty of inmates; according to the director during 2007 there were only 3 days during the year when there was not an inmate in the facility. Again, according to the director, there has not been much change in the number of inmates or the number of crimes committed in the community; rather, the pattern of distribution has become more even as a result of rationalization in general and BSAI crab rationalization in particular.

Federal Entities

Another change in the local community context noted by multiple interviewees is an increased federal presence in the community. While having nowhere near the presence as in, for example, Kodiak, the U.S. Coast Guard now has a detachment in the community (after the community had lobbied for many years for an increased local presence given the importance of commercial fishing in the community and region). There are also now U.S. Customs and Immigration and Naturalization Service personnel and offices in the community.

2.1.4 Local Governance and Revenues

Table 2.1-20 provides information on Unalaska municipal revenues as summarized by the Alaska Department of Economic and Community Development. This information parallels the information presented for the other study communities.

Unalaska derives a significant portion of its municipal revenues from fishery-related activities. Table 2.1-21 presents a more detailed breakdown of General Fund revenues by source for the City of Unalaska. This provides a sense of scale for the different revenue sources for the General Fund. Table 2.1-22 provides a breakout of selected fisheries-related General Fund revenue sources. These include the local raw fish sales tax (first instituted in FY 1987), the intergovernmental fisheries business tax, and the fisheries resource landing tax (first appearing on city statements in FY 1996).[22] As shown, while there has been year-to-year variability, Unalaska fishery-related revenues have generally continued to grow over time.

Table 2.1-23 provides information on direct fishery General Fund revenue as a percent of all General Fund revenue for the City of Unalaska for FY 2000 through FY 2007. As shown, this figure has varied between 39 percent and 46 percent over this time span.

[22] All of these numbers must be interpreted with some caution when going beyond a general level, such as when attempting to establish direct links to particular fishing seasons. In some cases, the figures reflect when the money was received by the municipality, and for others they reflect when the transactions from which the revenue derives actually took place (i.e., in accounting terms, the difference between cash-based accounting versus an accrual-based accounting). For example, local fish taxes are paid on the 15th of the month following the month in which the sales transactions took place. An adjustment is taken at the end of the fiscal year, however, to attribute those revenues to the periods where the sales took place. So, for local fish taxes, it is easy to see the link between seasons and revenues (keeping in mind the distinction between calendar and fiscal years). In the case of revenues deriving from the State of Alaska, however, the shared fish taxes are paid for the calendar year by the processors to the state in March of the following year. The State then pays the shared portions out to the local entities in the August-September timeframe. So, for example, ex-vessel value paid by processors in calendar year 2000 is taxed in March 2001. The State then pays the boroughs and cities their share calling it "FY2001 Taxes" in August 2001. This means that a single sales event that is subject to both local and state fish taxes can show up as revenue to the City of Unalaska in two separate fiscal years (and, because of the divergence of calendar and fiscal years as the basis for accounting, the spread between accrual and appearance on reports can essentially be two fiscal years [e.g., shared taxes accrued in January 2000 received in September 2001 would have been based on sales that took place in FY 2000, but it would show up as revenue during FY 2002]). To further complicate time series analysis, the City of Unalaska has changed accounting procedures in recent years, such that shared taxes have effectively shifted the periods during which they appear in financial statements, making comparability between years less than straightforward. Before the city's FY 2000, the fisheries business tax collected by the State for calendar year 1998 was booked in FY 1999. Under the method currently in place, that revenue would be recorded in FY 2000. This means that the FY 1999 and FY 2000 fisheries business tax figures reflected in Table 2.1-22 are the same revenue (they are not exactly equal due to a second, smaller payment from the State to communities in unincorporated boroughs that falls into a different time period). In practical terms, this means that detailed fishing season-specific time series analysis is not possible using commonly published data, but that trend information is readily apparent at the individual revenue source level. In terms of fiscal impacts to municipalities, it is a truism that when revenue is received is more important than when fish are landed, but clearly much other economic activity (and important revenue generation) takes place at the time of landings.

Table 2.1-20. Unalaska Municipal Revenues, 1999–2006

Revenue Source	1999	2000	2001	2002	2003	2004	2005	2006
Local Operating Revenue								
Taxes	$11,853,490	$12,775,775	$12,974,407	$13,191,320	$13,957,188	$15,336,539	$15,738,380	$17,260,109
License/Permits	$13,687	$22,018	$0	$18,235	$18,610	$0	$0	$0
Service Charges	$566,459	$586,947	$1,278,988	$617,823	$650,198	$897,644	$1,343,231	$1,469,827
Enterprise	$10,925,442	$11,955,169	$11,838,447	$12,582,856	$13,377,296	$14,539,680	$16,640,254	$19,665,502
Other Local Revenue	$2,793,052	$2,351,981	$4,320,367	$3,777,529	$3,059,837	$1,305,535	$2,110,591	$2,885,921
Total Local Operating Revenues	$26,152,130	$27,691,890	$30,412,209	$30,187,763	$31,063,129	$32,079,398	$35,832,456	$41,281,359
Outside Operating Revenues								
Federal Operating	$336,193	$193,065	$171,089	$963,821	$321,496	$421,434	$906,024	$872,554
State Revenue Sharing	$201,088	$129,402	$103,053	$106,462	$106,094	$0	$0	$0
State Municipal Assistance	$125,281	$83,312	$72,457	$78,721	$79,220	$0	$0	$0
State Fish Tax Sharing	$5,164,608	$4,708,573	$6,062,468	$6,179,983	$7,021,677	$5,870,296	$7,535,735	$7,183,470
Other State Revenue	$1,083,384	$1,073,143	$1,092,958	$557,030	$0	$340,426	$0	$0
Other Intergovernmental	$0	$0	$150,464	$231,831	$1,114,823	$0	$0	$0
State/Federal Education Funds	$2,303,157	$2,453,287	$2,424,152	$2,660,994	$3,729,094	$3,266,372	$3,434,915	$3,542,899
Total Outside Revenues	$9,213,711	$8,640,782	$10,076,641	$10,778,842	$12,372,404	$9,898,528	$11,876,674	$11,598,923
Total Operating Revenues	$35,365,841	$36,332,672	$40,488,850	$40,966,605	$43,435,533	$41,977,926	$47,709,130	$52,880,282
Operating Revenue per Capita	$8,465	$8,483	$9,453	$10,113	$9,899	$9,614	$11,102	$13,421
State/Federal Capital Project Revenues	$217,144	$6,828,094	$309,012	$6,976,007	$0	$32,601	$514,033	$550,555
Total All Revenues	**$35,582,985**	**$43,160,766**	**$40,797,862**	**$47,942,612**	**$43,435,533**	**$42,010,527**	**$48,223,163**	**$53,430,837**
Total All Revenues (2006 Constant Dollars)	**$43,058,402**	**$50,529,677**	**$46,468,073**	**$53,725,573**	**$47,590,236**	**$44,834,951**	**$49,778,749**	**$53,430,837**

Source: Personal communication, DCED, spreadsheet supplied July 2008.

Table 2.1-21. City of Unalaska General Fund, Fiscal Years 1998–2007

Revenues	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Real Property Tax	2,521,746	2,698,454	2,690,560	2,748,920	2,761,870	2,745,607	2,977,042	2,788,421	2,779,242	2,812,590
Personal Property Tax	1,164,363	1,120,957	1,202,265	1,116,369	1,141,598	1,146,305	1,221,300	1,207,222	1,214,105	1,360,267
Raw Fish Sales Tax	2,641,124	2,513,500	3,410,717	3,065,220	3,329,131	3,662,646	4,190,128	3,873,868	4,188,063	4,076,762
General Sales Tax	3,533,123	3,254,403	3,242,284	3,610,653	3,471,559	3,900,356	4,220,411	5,065,219	6,008,072	6,297,674
Other Taxes	439,735	516,863	509,434	524,195	563,576	89,808	44,510	92,071	66,592	61,033
Subtotal, local taxes	**10,300,091**	**10,104,177**	**11,055,260**	**11,065,357**	**11,267,734**	**11,544,722**	**12,653,391**	**13,026,801**	**14,256,074**	**14,608,326**
Intergovernmental State of AK	**6,030,119**	**6,306,064**	**5,640,942**	**6,949,345**	**7,958,632**	**9,291,087**	**7,943,406**	**9,620,414**	**9,635,884**	**11,084,591**
Charges for Services	278,703	282,778	279,159	300,809	356,449	367,364	360,732	371,500	371,807	304,496
Permits & Licenses	19,546	13,687	22,018	20,265	18,235	18,610	20,725	19,957	18,700	20,623
Miscellaneous	2,407,515	2,099,082	1,954,352	3,436,551	3,078,965	40,499	335,064			61,905
Interest Earnings						2,778,566	370,195	5,203,848	1,855,708	4,165,524
Other Financing Sources	386,895	273,416	461,817	398,153	172,440	346,390	39,881	37,358	100,000	545,943
Subtotal Other	**3,092,659**	**2,668,963**	**2,717,346**	**4,155,778**	**3,626,089**	**3,551,429**	**1,126,597**	**5,632,663**	**2,346,215**	**5,098,491**
Total General Revenue Funds	**19,422,869**	**19,079,204**	**19,413,548**	**22,170,480**	**22,852,455**	**24,387,238**	**21,723,394**	**28,279,878**	**26,238,173**	**30,791,408**

Source: City of Unalaska Finance Department spreadsheet, 2001; Personal communication with John Voss, City Finance Director, 2001, 2002; City of Unalaska Finance Department spreadsheet, 2008.

Table 2.1-22. City of Unalaska Selected Fisheries-Related General Fund Revenues (in dollars), Fiscal Years 1991–2007

Fiscal Year	Selected Fishery Revenue Source			Three Source Total
	Local Raw Fish Sales Tax	State Fisheries Business Tax	State Fisheries Resource Landing Tax	
FY 1991	$2,851,008	$2,067,793	$0	$4,918,801
FY 1992	$3,681,908	$2,475,197	$0	$6,157,105
FY 1993	$3,131,661	$3,581,134	$0	$6,712,795
FY 1994	$2,641,802	$2,770,321	$0	$5,412,123
FY 1995	$3,340,512	$2,364,847	$0	$5,705,359
FY 1996	$2,212,833	$2,828,570	$2,637,708	$7,679,111
FY 1997	$2,641,645	$2,071,914	$3,015,804	$7,729,363
FY 1998	$2,641,124	$2,424,747	$2,604,706	$7,670,577
FY 1999	$2,513,500	$2,424,787	$2,739,821	$7,678,108
FY 2000	$3,410,717	$2,483,670	$2,224,903	$8,119,290
FY 2001	$3,065,220	$3,249,218	$2,813,250	$9,127,688
FY 2002	$3,329,131	$3,179,799	$3,000,184	$9,509,114
FY 2003	$3,662,646	$2,838,537	$4,183,140	$10,684,323
FY 2004	$4,190,128	$3,272,188	$2,598,108	$10,060,424
FY 2005	$3,873,868	$3,659,452	$3,876,283	$11,409,603
FY 2006	$4,188,063	$3,446,660	$3,736,810	$11,371,533
FY 2007	$4,076,762	$4,281,211	$4,357,759	$12,715,732

Source: City of Unalaska Finance Department spreadsheet originally supplied in 2001 and updated December 2004 and May 2008.

Table 2.1-23. City of Unalaska General Fund Revenue and Direct Fishery Revenue as a Percentage of Total General Fund Revenues, FY 2000–FY 2007

Year	Local Taxes	Inter-governmental	Other	Grand Total All Revenue	Direct Fishery Revenue Total*	Direct Fishery Revenue as a Percent of All Revenue
FY 1998	$10,300,091	$6,030,119	$3,092,659	$19,422,869	$7,670,577	39.49%
FY 1999	$10,104,177	$6,306,064	$2,668,963	$19,079,204	$7,678,108	40.24%
FY 2000	$11,055,260	$5,640,942	$2,717,346	$19,413,548	$8,119,290	41.82%
FY 2001	$11,065,357	$6,949,345	$4,155,778	$22,170,480	$9,127,688	41.17%
FY 2002	$11,267,734	$7,958,632	$3,626,089	$22,852,455	$9,509,114	41.61%
FY 2003	$11,544,722	$9,291,087	$3,551,429	$24,387,238	$10,684,323	43.81%
FY 2004	$12,653,391	$7,943,406	$1,126,597	$21,723,394	$10,060,424	46.31%
FY 2005	$13,026,801	$9,620,414	$5,632,663	$28,279,878	$11,409,603	40.35%
FY 2006	$14,256,074	$9,635,884	$2,346,215	$26,238,173	$11,371,533	43.34%
FY 2007	$14,608,325	$11,084,591	$5,098,491	$30,791,407	$12,715,732	41.30%

* For this table, "Direct Fishery Revenue" is defined as being composed of Unalaska municipal raw seafood tax and intergovernmental revenues accruing to Unalaska from the state fisheries business tax and the state fisheries resource landing taxes (see Table 2.1-22). It does not include any fisheries influence on other revenue sources.
Source: Derived from City of Unalaska Finance Department spreadsheets supplied December 2004 and May 2008.

Harbor Department

Beyond direct fishery landings related revenues, Unalaska also derives revenues from a number of different activities, including port and harbor activity. Unalaska's harbor, the Port of Dutch Harbor, has seen some changes in utilization as a result of the implementation of BSAI crab rationalization. According to the ports and harbors director and the harbormaster, the most obvious change can be seen prior to the openings of seasons. When BSAI crab was still managed as a derby type of fishery, crab vessels would tie up in the community for tank inspections just prior to openings. With the number of vessels involved, "there were boats anchoring everywhere," which became a safety issue, causing the harbor department to create a "container ship safety fairway" for the safe transit of large vessels. With the implementation of BSAI crab rationalization, and the accompanying consolidation of the fleet and the spreading out of harvest effort, this is reportedly no longer an issue.

According to the director of ports and harbors, rationalization of fisheries in general has had an impact on harbor revenues, but the larger change in revenue accompanied groundfish fishery changes, not crab fishery changes. Information on ports revenue from FY 2000 through FY 2007 is presented in Table 2.1-24. As shown, total revenues increased each year during this period, with the exception of FY 2007. Crab vessels that utilize city facilities currently tend to utilize the Spit Dock and one of two moorage facilities on the light cargo dock. While revenues from the Spit Dock decreased substantially in 2007, this was primarily attributed by port staff to a large portion of the facility being closed for rebuilding rather any fishery-related cause. There has, however, been a decrease in use of the city's light cargo dock for pot movement, one of the primary purposes of that facility when it was originally designed. Vessels have the choice of moving pots across a number of different docks in the community, including private docks, but number of pots moved across the city's light cargo dock decreased from 17,768 in 2004 to 4,694 in 2005, further dropping to 1,485 and 1,067 in 2006 and 2007, respectively (personal communication, Unalaska harbor staff, 2008).

Table 2.1-24. City of Unalaska Ports Revenue FY 2000–FY 2007

	Unalaska Marine Center Dock	Spit Dock	Small Boat Harbor	Cargo Dock	Other Revenue & Fees	Total
FY 2000	$2,325,996	$489,130	$91,349		$120,827	$3,027,302
FY 2001	$2,616,894	$539,429	$88,714	$77,212	$92,915	$3,415,164
FY 2002	$2,884,269	$496,508	$87,889	$57,270	$116,273	$3,642,209
FY 2003	$3,090,519	$553,386	$90,663	$104,832	$23,253	$3,862,653
FY 2004	$3,361,385	$552,891	$102,901	$68,692	$30,284	$4,116,153
FY 2005	$3,335,908	$588,934	$112,003	$173,325	$39,011	$4,249,181
FY 2006	$3,399,500	$460,141	$118,261	$473,302	$59,607	$4,510,811
FY 2007	$3,731,656	$332,233	$102,014	$226,035	$33,366	$4,425,304

Note: All docks and the small boat harbor revenues include docking/moorage and utility fees. The Unalaska Marine Center dock and cargo dock also include wharfage fees and rental fees.
Source: City of Unalaska Finance Department spreadsheet supplied May 2008.

According to harbor department management, however, even with BSAI crab rationalization, the community still could use more dock space in general, and more space for crab vessels in particular. There is a small boat harbor planned for "Little South America" on Amaknak Island, with the breakwater construction currently (2008) out to bid, that will be able to accommodate vessels up to 150 feet and is primarily designed for the crab fleet. According to senior harbor management, it is difficult to ascertain an accurate level of demand for dock space, as vessels needing dock space do not just show up in the community on the chance that space will be available. Rather, they talk with each other and if there is no space available, they make alternate plans often without ever contacting the port. Harbor staffing levels have been steady over the past several years, with a director, a harbormaster, six officers, and two office staff.

2.2 AKUTAN

Akutan is located on Akutan Island in the eastern Aleutian Islands, one of the Krenitzin Islands of the Fox Island group. The community is approximately 35 miles east of Unalaska and 766 air miles southwest of Anchorage. Akutan is surrounded by steep, rugged mountains reaching over 2,000 feet in height. The village sits on a narrow bench of flat, treeless terrain. The small harbor is ice-free year-round. Akutan began in 1878 as a fur storage and trading port for the Western Fur & Trading Company. The company's agent established a commercial cod fishing and processing business that quickly attracted Aleut residents of nearby settlements to the community. A Russian Orthodox church and school were built in 1878, over a decade after Alaska became a U.S. Territory, and the Alexander Nevsky Chapel replaced the original church structure in 1918. The roots of commercial fishing in this area apparently include a local saltery that operated in the late 1800s. The Pacific Whaling Company built a whale processing station up Akutan Bay from the village site in 1912 and it operated as the only whaling station in the Aleutians until it closed in 1939. According to local interviews, there was little commercial activity in the area between the closing of the whaling station and 1948, when the processors, including Deep Sea Fisheries, first began using the bay for floating processing operations. Incorporated in 1979, the city of Akutan encompasses 32.4 square miles of land and 8.7 square miles of water.

Akutan lies in the maritime climate zone, with mild winters and cool summers. Mean temperatures range from 22 to 55° F. Precipitation averages 28 inches per year. High winds and storms are frequent in the winter, and fog is common in the summer.

2.2.1 Overview

Akutan is incorporated as a Second Class City, and, like King Cove, is part of an organized borough (the Aleutians East Borough [AEB]). Unlike Unalaska and King Cove, Akutan is a Community Development Quota (CDQ) community. The main processor in Akutan is Trident Seafoods, which has a large shoreplant in the community. In a number of recent years, Trident has also had floating processing capacity in Akutan Bay, as a result of the purchase and relocation of *Arctic Enterprise* from Beaver Inlet on Unalaska Island. In the past, seasonal processing by other mobile processing entities has also commonly taken place in the bay for various species. However, for at least the past half-dozen years, Trident has been the only processor in Akutan, reportedly in part because seasonal processing with floaters is less economically viable than in the past.

Akutan is a unique community in terms of its relationship to the Bering Sea commercial fisheries. It is the site of one of the largest shoreplants in the region, but it is also the site of a village that is geographically, demographically, socially, and historically distinct from the shoreplant. This "duality" of structure has had marked consequences for the relationship of Akutan to the Bering Sea commercial fisheries. One example of this may be found in Akutan's status as a CDQ community. Initially (in 1992), Akutan was (along with two other AEB communities, King Cove and Sand Point, as well as nearby Unalaska) deemed not eligible for participation in the CDQ program based upon the fact that the community was home to "previously developed harvesting or processing capability sufficient to support substantial groundfish participation in the BSAI …" though they met other qualifying criteria.

The Akutan Traditional Council initiated action to show that the community of Akutan, *per se*, was separate and distinct from the seafood processing plant some distance away from the residential concentration of the community site, that interactions between the community and the plant were of a limited nature, and that the plant was not incorporated in the fabric of the community such that little opportunity existed for Akutan residents to participate meaningfully in the Bering Sea pollock fishery (i.e., it was argued that the plant was essentially an industrial enclave or worksite separate and distinct from the traditional community of Akutan and that few, if any, Akutan residents worked at the plant). With the support of the Aleutian Pribilof Islands Community Development Association (APICDA) and others, Akutan was successful in a subsequent attempt to become a CDQ community and obtained that status in 1996, joining the APICDA CDQ group. This action highlights the fundamentally different nature of Akutan and Unalaska. Akutan, while deriving economic benefits from the presence of a large shoreplant near the community proper, has in many ways not integrated large-scale commercial fishing activity with the daily life of the community. As result, Akutan is the only community in the region that is both a direct major/developed participant in the fishery and a CDQ community.

2.2.2 Community Demographics

Akutan is a community that traces its roots to commercial fishing, fur trading, and whaling. In terms of the population components of the community, and the relationship between local commercial fishery-related workers and the rest of the population, Akutan is unlike Unalaska, King Cove, or Sand Point. Compared to King Cove and Sand Point, other AEB communities with a single large shore processing plant, Akutan's local processing plant is more of an enclave type of operation than the plants in those communities. In the not-too-distant past, it was decidedly unlike Unalaska, which features plants with a range of "separateness" from the community, as there was little social integration of at least some longer-term plant employees into the social fabric of the community, but this has been changing in recent years in Akutan, as outlined in the community processor characterization discussion below.

2.2.2.1 Total Population

Table 2.2-1 provides figures for the community total population by decade from 1880 through 2000. While U.S. Census figures show Akutan had a population of 589 in 1990 and 713 in 2000, the Traditional Council considered the 2000 "local" resident population of the community to be around 80 persons, the same figure estimated by senior City of Akutan staff in 2008, with the balance being considered "nonresident employees" of the seafood plant. This definition, obviously, differs from census, state, and electoral definitions of residency but is reflective of an observed social reality of Akutan. Figures for recent years are known to include processing workers, but it is not clear in earlier years how and if fisheries or other commercial enterprise related workers were counted.

Table 2.2-1. Akutan Population by Decade, 1880–2000

Year	Population
1880	65
1890	80
1900	60
1910	0
1920	66
1930	71
1940	80
1950	86
1960	107
1970	101
1980	169
1990	589
2000	713

Source: Historic data from Alaska Department of Community and Economic Development, 2000 data from U.S. Census Bureau.

2.2.2.2 Ethnicity

The residents of the village of Akutan, proper, are almost all Aleut. The influence of the commercial fishery-related workers on the ethnic composition of the total population of the community, however, may be seen in Table 2.2-2. As shown, less than 16 percent of the population in 2000 was Native American/Alaska Native.

Table 2.2-2. Ethnic Composition of Population Akutan: 1990 and 2000

Race/Ethnicity	1990		2000	
	Number	Percent	Number	Percent
White	227	38.5%	168	23.6%
Black or African American	6	1.0%	15	2.2%
Native American/Alaska Native	80	13.6%	112	15.7%
Asian/Pacific Islands*	247	41.9%	277	38.9%
Other**	29	4.9%	141	19.7%
Total	589	100%	713	100%
Hispanic***	45	7.6%	148	20.8%

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 2) and Asian (pop 275)

** In the 2000 census, this category was Some Other Race (pop 130) and Two or More Races (pop 11).

*** "Hispanic" is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Source: U.S. Census Bureau 1990, 2000.

2.2.2.3 Age and Sex

Table 2.2-3 shows the population composition of Akutan by sex in 1990 and 2000. As shown, the population structure is clearly indicative of a male-dominated industrial site rather than a typical residential community.

Table 2.2-3. Population Composition by Sex, Akutan: 1990 and 2000

	1990		2000	
	Number	**Percent**	**Number**	**Percent**
Male	449	76%	549	77%
Female	140	24%	164	23%
Total	589	100%	713	100%
Median Age	NA		40.2 years	

Source: U.S. Census Bureau 1990, 2000.

Table 2.2-4 provides information on school enrollments in Akutan over the period 1991 to 2008. As shown, there has been considerable year-to-year fluctuation over this time, and enrollments have been lower in recent years than in the earlier years in this time span. Enrollment for the 2007–2008 school year was less than one-half the enrollment of the 1992–1993 school year, the peak enrollment year for the time span shown.

Table 2.2-4. Akutan School Enrollment, FY 1991–2008

Fiscal Year	Student Count
1991	22
1992	24
1993	29
1994	21
1995	24
1996	20
1997	27
1998	23
1999	20
2000	15
2001	15
2002	16
2003	18
2004	14
2005	14
2006	11
2007	11
2008	14

Note: Year designation notes the calendar year in school year ended (e.g., 2003 refers to the 2002–2003 school year).
Source: Adapted from spreadsheet supplied by Aleutians East Borough School District, July 2008.

2.2.2.4 Housing Types and Population Segments

Group housing in the community is almost exclusively associated with the seafood processing workforce. As shown in Table 2.2-5, in 1990 fully 85 percent of the population lived in group quarters and only 15 percent did not. As seen in this same table, in 2000 an even greater percentage of the total population lived in group quarters (89 percent versus 11 percent not in group quarters).

Table 2.2-5. Group Quarters Housing Information, Akutan, 1990 and 2000

Year	Total Population	Group Quarters Population		Non-Group Quarters Population	
		Number	Percent of Total Population	Number	Percent of Total Population
1990	589	501	85.06%	88	14.94%
2000	713	638	89.48%	75	10.52%

Source: U.S. Census Bureau 1990, 2000.

Table 2.2-6 provides information on group housing and ethnicity for Akutan for 1990, and similar information for 2000 is presented in Table 2.2-7. Group housing in the community is almost exclusively associated with the processing workforce and non-group housing almost exclusively associated with long-term (non-processing-related) residents. Approximately 85 percent of the population lived in group housing in 1990, which represents the extreme of the major fishing ports in this region. In 2000, this figure was over 89 percent. Also as shown, the ethnic composition of the group and non-group-housing segments were markedly different, with the non-group-housing population being predominately Alaska Native (83 percent and 87 percent in 1990 and 2000, respectively), and the group housing population having little Alaska Native/Native American representation (1 percent in 1990, 7 percent in 2000). Like Unalaska, overall minority population representation was higher in absolute and relative terms in the community as a whole and in both group and non-group quarters in 2000 than in 1990.

Table 2.2-6. Ethnicity and Group Quarters Housing Information, Akutan, 1990

Race/Ethnicity	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	227	37.52%	212	42.32%	15	17.05%
Black or African American	6	0.99%	6	1.20%	0	0.00%
American Indian, Eskimo, Aleut	80	13.22%	7	1.40%	73	82.95%
Asian or Pacific Islander	247	40.83%	247	49.30%	0	0.00%
Other race	29	4.79%	29	5.79%	0	0.00%
Total Population	589	100.00%	501	100.00%	88	100.00%
Hispanic origin, any race	45	7.44%	45	8.98%	0	0.00%
Total Minority Population	342	56.53%	298	59.48%	73	82.95%
Total Nonminority Population (White Non-Hispanic)	247	40.83%	203	40.52%	15	17.05%

Source: U.S. Census Bureau 1990.

Table 2.2-7. Ethnicity and Group Quarters Housing Information, Akutan, 2000

Race/Ethnicity	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	168	23.56%	158	24.76%	10	13.33%
Black or African American	15	2.10%	15	2.35%	0	0%
Alaska Native/Native American	112	15.71%	47	7.37%	65	86.66%
Native Hawaiian/Other Pacific Islander	2	0.28%	2	0.31%	0	0%
Asian	275	38.57%	275	43.10%	0	0%
Some Other Race	130	18.23%	130	20.38%	0	0%
Two Or More Races	11	1.54%	11	1.72%	0	0%
Unknown	0	0%	0	0%	0	0%
Total	713	100.00%	638	100.00%	75	100.00%
Hispanic*	148	20.76%	148	23.20%	0	0%
Total Minority Population	561	78.68%	496	77.74%	65	86.66%
Total Nonminority Population (White Alone, Not Hispanic or Latino)	152	21.32%	142	22.26%	10	13.33%

* "Hispanic" is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Source: U.S. Census Bureau 2000.

Table 2.2-8 displays basic information on community housing, households, families, and median household and family income for Akutan in 2000. These figures underline the fact that Akutan, outside of the processing-related population, is a very small community.

Table 2.2-8. Selected Household Information, Akutan, 2000

Community	Total Housing Units	Vacant Housing Units	Total House-holds	Average Persons per House-hold	Median House-hold Income	Family House-holds	Average Family Size	Median Family Income
Akutan	38	4	34	2.21	$33,750	18	3	$43,125

Source: U.S. Census Bureau 2000.

2.2.3 Local Economy and Links to Commercial Fisheries

The community of Akutan participates in commercial fisheries a number of different ways: through locally owned small vessel harvesting, participation in the CDQ program, having a major seafood processing plant located in the community, and providing limited support services to the fishery in the community. Overall, the private sector economy of the community, exclusive of the local processor, is very limited. It would appear that private sector business ownership is highly concentrated among a very few entities, and the business operating structure has been stable since before crab rationalization was implemented (2004), with the exception of the community's café. The Akutan Corporation owns and operates the Bayview Plaza Hotel and the Salmonberry Inn. The McGlashan store, while named after the original owner of the store in

Akutan, is also owned by the Akutan Corporation. Pelkey's Dive Service, operated by two private individuals in the community, and the Roadhouse Tavern, another privately owned enterprise in the community, are not linked to the Akutan Corporation. The one change in recent years related to the café operating in the community. While the Grab a Dab Café operated in the early 2000s, it went out of business before 2004 (as, according to senior city staff, it was no longer economically viable as a café open to the public with the loss of a key subsidy for electricity). In June 2007 a new café, operated on a lease basis by the same entity that operates the Unalaska airport café, opened in a newly completed Akutan Corporation-owned building.

Table 2.2-9 provides information on employment and poverty status for the community of Akutan for 1990 and 2000. These data paint a very different picture in 2000 than was seen in 1990, and a working knowledge of the fishing industry would seem to indicate the 2000 data are anomalous. For example, in 2000 the U.S. Census lists a total of 505 unemployed persons in Akutan. Given that the traditional village of Akutan consists of less than 100 persons (including all age groups, not just adults in the labor pool who could qualify as employed or unemployed), the overwhelming majority of persons enumerated as unemployed must have been idled seafood processing workers. While this unemployment may have been "real" in the sense that processing workers were present and not actively working when the census was taken, it is most likely an artifact of the timing of the census as processing workers are not typically present in the community when the plant is idle for any extended period of time. That is, under normal conditions, there are no unemployed seafood processing workers present in the community (by design). These workers are transported to and from the community by their employer to meet labor demand at the plant.

Table 2.2-9. Employment and Poverty Information, Akutan, 1990 and 2000

Year	Total Persons Employed	Unemployed	Percent Unemployment	Percent Adults Not Working	Not Seeking Employment	Percent Poverty
1990	527	2	0.4%	7.4%	40	16.6%
2000	97	505	78.9%	84.84%	38	45.5%

Source: U.S. Census Bureau 1990, 2000.

As part of the employment agreement, seafood processors typically provide room and board for workers, so it is uneconomic to have idled workers at the site unless the plant downtime is relatively brief (i.e., the cost of housing and feeding the employees during the idle interval does not exceed transportation, recruiting, training, and other costs associated with sending workers out and bringing them back in, including some level of turnover that always occurs in these situations). One set of circumstances that does result in idled workers at the plant, however, is triggered by a transportation bottleneck. After the plant shuts down (or substantially reduces its workforce) following a busy period, not all of the workers can be flown out of the community at once. According to city staff interviewed for a previous project, it is not unusual to be able to move only 10 to 20 workers per day due to aircraft capacity. Weather may also cause delays.

2.2.3.1 Harvesting

Community Harvester Quantitative Description

An earlier North Pacific Research Board/North Pacific Fishery Management Council (NPRB/NPFMC) funded community profile effort, *Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak, Alaska* (EDAW 2005), included a quantitative characterization of the Akutan local commercial fishing harvest sector, including detailed information on an annual basis, from 1995 through 2002, of local vessel characteristics, distribution of permit holders, catch and earnings estimates, and landings inside and outside of the community, along with an analysis of the spatial distribution of fishing effort of the local fleet. As updating this information is effort intensive and not central to the current Bering Sea/Aleutian Islands (BSAI) crab rationalization 3-year review-oriented community analysis, it has not been updated for this community profile. Rather, the more qualitatively oriented and BSAI crab rationalization focused discussion in the next section has been updated.

Communities also directly benefit from the harvest sector through participation of residents as crew members as well as the through the engagement of vessel owners and permit holders. Beginning in 2000, the Commercial Fisheries Entrance Commission (CFEC) has produced estimates of crew members by community, based on the number of permit holders in the community, plus the community residents who have applied for a Crew Member License with the Alaska Department of Fish and Game. Table 2.2-10 provides estimates of crew members for Akutan for the years 2000 through 2006. These data should be only taken as a rough indicator of the level of involvement of community members, but they do indicate that a substantial proportion of the total population of the community is engaged in commercial fisheries.

Table 2.2-10. Estimated Number of Permit Holders and Crew Members from Akutan 2000-2006

Year	Permit Holders	Crew Members	Total
2000	6	15	21
2001	CFEC did not develop this report for 2001		
2002	7	15	22
2003	10	15	25
2004	9	13	22
2005	9	8	17
2006	8	13	21

Source: CFEC permit holder and crew member counts by census area and city of residence report, accessed via www.cfec.state.ak.us/Mnu_Summary_Info.htm.

Community Harvester Characterization

Akutan has a local fishermen's association that is a subsidiary of APICDA. With a five-member board and an overall membership fluctuating between 13 and 18 members as of 2008 according to association leadership, the association receives a $20,000 yearly grant from APICDA to foster participation in fishery management and development processes. General membership fees are

$25 per year, with membership rolled into whatever gear loans members have taken, if applicable.

The vast majority of catch landed in Akutan (that is, at the Trident plant in Akutan) comes off of vessels from outside of the community. While there is a "local" non-CDQ commercial fishery, it is of a small scale, pursued out of open skiffs. In the early 1990s, the local plant reported taking deliveries of groundfish from approximately 12 small skiff-type vessels from the village of Akutan itself, but participation in this type of enterprise is not well documented. Since that time, several larger vessels were added to the local fleet, but there has been turnover among these larger vessels in recent years. During fieldwork in 2002, plant managers reported about the same overall level of activity as in the past, with two local residents in particular, fishing out of a 28-foot and a 24-foot vessel, respectively, singled out as consistently making regular deliveries of halibut and black rockfish over time, and the rest making sporadic deliveries.

Photo by Vera Pelkey

Akutan Fishing Vessels

In 2008, according to multiple interviews, including the vessel owners, there is one 42-foot fiberglass vessel in the community (*Daybreak*), one 35-foot aluminum vessel (*Aleutian Vista*), and one 32-foot fiberglass vessel (*High Roller*), with the rest of the local fleet being composed of skiffs under 20 feet (the 24-foot and 28-foot vessels active in 2002 are still in the community, but no longer actively fished). Reportedly, all local Individual Fishing Quota (IFQ) halibut, currently (2008) held by seven local residents is fished off of the three larger vessels in the community (supplemented by one vessel from outside the community), with none of the smaller local vessels being actively engaged in commercial fisheries. (The fourth vessel that is used to fish locally held halibut IFQ, *Midnight Sun*, is similar to *High Roller*. It is owned by an Akutan resident, although the vessel spends much of the year outside of the community.)

Further, as of 2008, according to local city, Akutan Corporation, and APICDA CDQ group leadership, there has been a narrowing of commercial fishery focus as no local commercial fisheries are being pursued by the Akutan resident small boat fleet except for IFQ halibut. (According to local fisheries representatives, Akutan sought to qualify for community IFQ purchase, but it did not do so because of its formal classification as a Bering Sea [as opposed to Gulf of Alaska] community for fishery regulatory purposes, despite pursuing fisheries that are, at least in part, physically in the Gulf of Alaska.) All halibut caught by the local small vessel fleet is delivered to the Akutan Trident plant. While this was not a major source of fish for the plant, given its overall scale of operations, it has been an important source of income for local fishermen. While no individuals who fish only in the local resident fleet make their livings exclusively from fishing, local fishermen do depend to varying degrees on fishing as a part of an integrated income strategy in a community that has relatively limited employment and income opportunities. In characterizing the small scale of local fisheries, one of the most active local fishermen stated that "our piece is a line that divides other communities," but this individual also expressed that it is important to keep a critical mass of vessels active in the community as with no quick response U.S. Coast Guard capabilities in the immediate area of the community, having other fishing vessels around is what allows Akutan fishermen to fish safely.

The local resident small boat fleet operates out of the Simeon M. Vincler skiff moorage, the first phase of which was completed in 2002. With the opening of this facility, moorage was easier for local vessels that previously were hauled up on the beach and also allowed for easy of use of vessels too large to easily beach haul. A second phase of the moorage, adding another hook and small float to deflect waves from the direction of the seaplane ramp and increase capacity, was completed in 2005. (This moorage facility was originally constructed with funding from a number of different sources, including APICDA contributions and opilio fishery disaster funds that came to the community through the borough; the second phase was funded by the City of Akutan, the borough, and the state.) While the facility was designed for skiffs up to 28 feet in length, it is currently (2008) being used by the largest local vessels (including the 42-foot vessel) in the resident fleet, although *High Roller* currently winters in the more protected and larger Sand Point harbor and it is likely that *Aleutian Vista* will also winter outside of the community in future years as well.

While the current (2008) vessels in the local fleet are all privately owned by local residents, reportedly the first vessel over 30 feet fished by local community residents was the APICDA vessel *Aleutian Pribilof No. 4* (commonly known as *AP-4*). At times (early 2000s), most, but not all, local IFQ holders had their IFQ fished off of *AP-4*. The advantage of *AP-4* over smaller local vessels was that it can go out in rougher weather and stay out longer. For at least some resident permit holders, these advantages were offset by the need to pay for the boat, skipper, and expenses, leaving less return than they felt they could get fishing out of their own skiffs. *AP-4* operated under a lease arrangement that included a CDQ group grant to the local fishermen's association (which had approximately 14 members and was formed specifically to qualify for CDQ grants). Using this grant as seed money, the operation of the vessel was predicated on a share basis, including earmarking a 15 percent share to the boat and another 15 share for the skipper. According to field interviews at the time, the skipper share did not provide the individual involved with sufficient income to be a full-time commercial fisherman, such that it remained the case that no local harvesters are full-time fishermen.

Following the experience with *AP-4*, which no longer operates in the community, two local residents jointly acquired 42-foot *Daybreak*, and another individual acquired both 35-foot *Aleutian Vista* (which was formerly *AP-3*) and 32-foot *High Roller*. According to APICDA officials, APICDA was involved in providing loans to facilitate building of the residential fleet capacity. According to one individual with vessel ownership interest, the structure of the IFQ program itself has served to influence the composition of the local fleet. With IFQ class sizes transitioning at 36-foot vessels, the 42-foot vessel was acquired to participate in the larger class size fishery component.

There is local interest in diversifying the focus of the local fleet. One local resident was reported to have jigged for cod in 2004 and while APICDA owns jig gear, this was not used during 2004 due to poor winter weather conditions, nor is it now (2008) in use. Apparently *AP-4* was used to try bairdi fishing in 2003, but this attempt was not repeated in 2004. *Daybreak* has to date (2008) tested out jig gear for feasibility but has not yet made significant deliveries of anything other than halibut. *Aleutian Vista* is recently enough acquired that it has not yet (2008) fished out of the community, but its owner intends it primarily to fish cod and serve as a halibut back-up to his primary halibut vessel *High Roller*. *High Roller* to date (2008) has focused locally on halibut, but it has done limited feasibility testing to explore the black cod long line fishery. One local fisherman reports having pursued black bass in the area before that fishery was closed due

to stock issues and the state water black cod fishery before gear conflicts that were contributed to, in part, by storage rules for crab pots reportedly made that undertaking untenable. This same individual reports that there have also been conflicts between local jigging and the small boat pot fishery, such that though there are resources that could be pursued, there are a number of impediments to doing so, for at least some of the fisheries. Currently under study is the potential for development of a local red salmon fishery, under a proposal put forth by a local resident that has reportedly garnered some interest at the AEB and APICDA. In concept, such an early fishery could have eastern Aleutian sockeye potentially to the market in advance of the popular early Copper River salmon, but with the caveat that, if successfully implemented, it would be classed as an intercept fishery, subject to tight harvest parameters to prevent overfishing and provide for both biological stock maintenance and the continued vitality of existing fisheries. According to local fishermen, a Commissioner's Permit has been issued for sampling, and the project proponent is currently looking for a vessel to fill the permit between May and July 2008. Overall, however, cod is more widely viewed as a potential developing local fishery in terms of providing future opportunities for young Akutan residents.

Local Akutan residents do participate in other commercial fisheries as crew members. According to field interviews prior to crab rationalization, in 2004 there were three local residents working on the Prowler factory longline boats (*Prowler*, *Bering Prowler*, and *Ocean Prowler*, which are owned 20 percent each by APICDA) fish for cod and for IFQ black cod, two were deckhands on the Trident trawl fleet, and about six individuals worked as crew fishing for king or opilio crab. These were characterized as overall numbers of individuals involved, rather than individuals involved during any one season or any one year, with participation being intermittent for a number of these fishermen. A post-rationalization study prepared for the Aleutians East Borough "identified four Akutan residents who lost crab fishing jobs due to crab rationalization out of five who were actively crabbing" (Knapp and Lowe 2007:81). Information gained during less intensive field interviews for this project in May 2008 painted a somewhat different picture. According to field interviews conducted in 2008, only three residents were actively crewing on commercial fishing vessels larger than those in the local fleet. One individual, who lives outside of Akutan for the large majority of the year, was serving as the first mate on one of the vessels (which is 20 percent owned by APICDA) in the Prowler factory longliner fleet that utilizes hook and line gear in the cod fisheries (and does not pursue crab). This fisherman had been working with the Prowler fleet for 10 years as of 2008 and essentially had not been living in Akutan for 2 years.

Another local individual, who is a full-time Akutan resident, has most recently crewed on *Barbara J* and formerly crewed on *Farwest Leader* (both of which are 50 percent owned by APICDA and 50 percent owned by Trident, and pursue both crab and pot cod; there is also similar joint ownership of *Golden Dawn*, a pollock trawl vessel). According to this fisherman, crab seasons are less attractive with rationalization because longer seasons mean less time away from the community and a reduced ability to participate in other ventures, including other fisheries, without a significant added income return. This individual has a stated desire of developing local fishing opportunities to the point where crab fishing on vessels from outside of the community would no longer be as attractive as fishing locally.

The third Akutan resident was identified by local officials or fishery representatives as actively crewing on vessels from outside the community and not available for interviewing at the time of the May 2008 fieldwork (unlike the other two) as he was fishing herring in Togiak, but this

individual was characterized as fishing off of the same vessel for a number of years. At least two other individual Akutan residents were characterized as fishing on a fill-in basis on other vessels by local city, Akutan Corporation, and APICDA representatives, while another individual who used to crew out of Akutan has more recently moved to Sand Point. The current level of Akutan resident crewing participation in the crab fisheries specifically is characterized as being lower than many years ago (which was characterized higher than the immediate pre-rationalization years), but this decline was in part attributed to a "graying" of those interested in participating in a fishery that is physically demanding and extracts a toll even on young fishermen, among a number of other factors.

According to both local leaders and senior APICDA leadership, however, if Akutan residents wish to crew on crab or other larger commercial vessels, they have a resource in APICDA—and specifically in APICDA and Trident partnerships—that is not as immediately available to residents of some other non-CDQ communities in the region, such as King Cove. According to senior APICDA leadership, if an Akutan resident (or other APICDA community resident) wishes to crew on these vessels, they can be accommodated. If openings were not immediately available, current crew would not be displaced, but the local resident would be hired to back-fill positions that came open as a result of normal crew turnover, a not uncommon situation.

In the past, Akutan residents have also obtained crew positions on outside crab boats when they found themselves in Akutan short of crew. Historically, crew jobs on BSAI crab vessels were often obtained through social networking with the vessel's skipper or owners, and not having vessels owned or homeported in a community could be a relative disadvantage to local residents seeking crew positions (as has reportedly been seen in King Cove since the implementation of BSAI crab rationalization). In the case of Akutan, however, crewmembers from the community reportedly worked on a more opportunistic than a continuous basis, and one of the ways that these opportunities came up was the occasional times that outside crab vessel crew members were either voluntarily or involuntarily separated from the vessel while in Akutan, at which time local residents would be sought to back-fill the positions for the remainder of the season. With a relatively large number of vessels delivering to the local plant, and the challenges created by Akutan's transportation system to getting outside crew members into the community on a rapid turnaround basis, these opportunities were apparently fairly frequent relative to the size of the local labor pool interested in filling these positions. Reportedly, these opportunities have still continued to arise under crab rationalization conditions, if on a less frequent basis, although reportedly the jobs are now less attractive to Akutan residents due to (1) longer seasons, which make BSAI crab crew employment less compatible with other opportunities in the community, including local fishing and construction, considered important parts of an integrated employment and income strategy as well as preferred family situations (i.e., local employment interspersed with short periods of time away from the community rather than long periods of employment away from the community that interfere with ability to take advantage of local opportunities); and, (2) less ability to make a high financial return per day of fishing effort invested away from the community.

The Akutan delivery fleet for the single processor, including "outside" vessels, was characterized by processing company management for a previous project in 2004 as comprising the following components:

- About 20 "large" boats have capacities of 500,000 to 1,000,000 pounds, mainly fishing pollock, and primarily with Seattle-area ownership (although they spend most of their time in and around Akutan).
- About 20 "smaller" boats have capacities of 150,000 to 300,000 pounds, mainly fishing pollock and cod, and primarily with Kodiak and Newport ownership.
- The crab boat fleet has little overlap with the groundfish fleet (and much less than was the case in the past). A few of the biggest crab boats also fish groundfish, but Trident's fishermen generally seem to specialize in one or the other. Crab boats are a mixture of Kodiak and Seattle-area boats, and the increased specialization in crab or groundfish may be due to the American Fisheries Act, sideboards, and relative stock sizes. This degree of specialization was the only change in the nature of Trident's delivery fleet in recent years that was described by Trident representatives.
- There is a truly local fleet, composed of skiffs and the three larger vessels noted previously.

As a CDQ community, the community of Akutan has access to the BSAI commercial fishery resources independently of direct participation in the fishery. Akutan, like the other CDQ communities, has benefited from the increase under the American Fisheries Act (AFA) from 7.5 percent to 10 percent of each BSAI groundfish Total Allowable Catch (TAC) (except for the fixed gear sablefish TACs, of which CDQ communities receive 20 percent for the eastern Bering Sea and the Aleutian Islands areas). Also, like other CDQ communities, Akutan benefited from the increase under crab rationalization from 7.5 percent to 10 percent CDQ allocation of relevant BSAI crab species. APICDA, including the community of Akutan, has participated in the crab fishery via acquiring partial (50 percent) ownership interest in two crab harvest vessels, *Barbara J* and *Farwest Leader*. In general, APICDA has substantial investments in both harvesting and processing sectors of the BSAI fishery.

2.2.3.2 Processing

Community Processor Quantitative Description

An earlier NPRB/NPFMC funded community profile effort, *Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak, Alaska* (EDAW 2005), included a quantitative characterization of local community commercial processing sectors, including detailed information on an annual basis, from 1995 through 2002, of the number of active processors, species processed, pounds purchased, ex-vessel values, wholesale values by species; processing value added; and relative dependency by species. As updating this information is effort intensive and not central to the current BSAI crab rationalization 3-year review-oriented community analysis, it has not been updated for this community profile. Further, in the case of Akutan, no quantitative information can be released due to confidentiality restrictions based on the limited number of sector participants. Rather, the more qualitatively oriented and BSAI crab rationalization focused discussion in the next section has been updated.

Community Processor Characterization

Trident Seafoods operates the major shore processing facility in the community of Akutan. Trident first opened a shoreplant in the community in the summer of 1982, but the original structure was destroyed by fire in the summer of 1983. The plant was rebuilt later that year, and major expansions occurred in the 1990s.

Like the large processing plants in Unalaska, the Trident Akutan plant is an AFA-qualified plant with its own pollock co-op. Also like the large Unalaska plants, it is a multispecies processing facility, and it accounts for a significant amount of regional crab processing as well as groundfish processing. Specific figures are confidential, but as a high-value species crab is important to the overall operation of the plant (although pollock is still the prime mover in terms of labor requirements and overall economic operations).

In terms of the processing labor force, no update was available in 2008. According to interview data from 2004, there had been little change reported in overall size, seasonal patterns, or composition in recent years. Pollock was still the driving force for Akutan employment dynamics. During periods when both pollock and crab may have required significant effort (primarily opilio season), the pollock product mix could be adjusted to less labor-intensive forms (surimi instead of fillets). The same labor force would then be used for all operations, adjusted as necessary in size by sending people out of Akutan as the need for labor decreased once the pollock season was over.

In addition to its shore facility, according to interview information gathered in 2004, Trident operated floating processor *Arctic Enterprise* in Akutan Bay since its purchase several years before. Previously operated in Beaver Inlet on Unalaska Island, it was the only floater operating in Akutan Bay on an ongoing basis as of 2004. While multiple floaters used to be common, according to city officials this changed due to environmental constraints (as well as changing fishery economics). Around 1990, the U.S. Environmental Protection Agency (EPA) declared the inner portion of Akutan Bay an "impaired water body" with the result that floaters could not operate in that area. According to city officials, the bay has subsequently moved up on EPA's water quality scale as restrictions placed on Trident have improved conditions, but the inner bay remains off limits to any further processing, and floaters have not returned in number. *Arctic Enterprise* has operated outside of this inner bay area, but still within Akutan Bay itself. According to city officials, other mobile processing capacity for crab was brought in by Trident in the years prior to rationalization to help with finishing up during crab seasons.

According to interviews of community residents, no long-term local residents work at the processing plant, despite the fact that the company offers a "town premium" wage. This is reportedly due to the long workdays, which can exceed 16 hours during peak times. The very thing that makes processing attractive to many nonlocals—the ability to earn quite a bit of money working very long hours over the course of a few weeks or months—makes in unattractive to locals who have obligations outside of the workplace. According to one resident, it is difficult to have a family if you work 12-hour days, much less longer days.

In terms of the relationship between the plant and the community, social interactions between Trident employees and the other residents of the community are somewhat limited because the Trident site is more or less an industrial enclave and is separated from the village proper by

Russian Orthodox church-owned land (part of which the city leases for a warehouse and a ball field), the sea plane ramp, and coastal bluffs. Access and interaction have changed at least to some degree in recent years, however, due to several factors. First was the opening of a beach level road connecting the seaplane ramp (which is connected to the residential community by road and a boardwalk system that is used by both pedestrians and all-terrain vehicles) to the Trident site. Prior to this road being built, the plant could be reached from the community only by boat or by a hiking trail that traversed coastal bluffs so steep that one section of the trail had a fixed rope to assist walkers. A second factor was the construction by Trident of a nondenominational church and gymnasium/community building that is utilized by plant workers and local residents alike.[23] This building houses a modest-sized church, attached living quarters for a minister and family members, and a full-sized gym. (Because the gym has "church windows," it is sometimes mistaken for a very large church.) The building is located adjacent to the seaplane ramp on privately owned land and the gym in particular attracts individuals from both the plant and the community, fostering social interaction. (The school gym, which used to draw plant workers for recreational activities, is now only used by children, according to city staff, as it requires a supervisor during open recreation, whereas, at the Trident church/gym, supervision is provided by the resident minister's family.) A third factor was the opening of the Akutan community library, museum, and recreation center located within the village itself that also draws patrons from both the plant and the rest of the community. The availability of computers at this facility is reportedly very popular with both processing workers and fishermen passing through the community. As in years past, plant workers make incidental purchases at the village store, cash checks, and frequent the Roadhouse tavern adjacent to the community that is also patronized by village residents.

Another change in recent years in terms of the social interaction between the Trident facility and the village proper has been the integration of some long-term Trident personnel into the fabric of the community. In the not-too-distant past, this was not reported to occur and for many years no Trident employees lived in the residential portion of the community, and no residents from the village proper worked at the plant. Not long ago, however, one Trident manager married into the community and lived in the village for a while before he and his family moved to another community. More recently, a second Trident worker married a local, moved into the village proper, and left Trident employment for other local employment. Further, a Trident manager who had been working at the local plant for many years was elected to the city council in 2002 and reelected in 2004; this same individual has also been engaged in the larger community over the years through service in the local EPA Indian General Assistance Program (IGAP) community group and has otherwise assisted the community through his involvement in local emergency planning efforts. While no Trident personnel are currently (2008) serving on the city council, when reapportionment opened up a second Akutan seat on the AEB Assembly, a long-time local Trident manager was elected to fill that position (with the other position currently [2008] filled by the Akutan mayor). He and at least a few other long-term employees living at the plant site now consider Akutan their primary residence. (In Akutan, as elsewhere in Alaska,

[23] According to city officials, Aleut residents of the community have remained members of the Russian Orthodox faith and view the Trident-built church as somewhat of an outside institution, considering the Russian Orthodox church to be the only Akutan church. Reportedly the Trident-built structure is typically referred to by long-term residents of the community as "the Trident Church" or simply "the gym," with the latter designation highlighting the local importance of having access to a full-size gym where residents can participate in basketball games, a very popular participation sport. The nondenominational church operations are overseen by a committee that hires the minister and oversees operations, and this committee is reportedly not a local institution.

individuals are eligible to vote in local elections after 30 days of residence and city officials report that about one-third of local voters are Trident employees.)

These various types of significant social integration, unknown in the past, are apparently becoming more common over time. While housing and land use factors will likely mean that there will not be the same degree of social integration between the community and the processing industry in Akutan that is seen in Unalaska, it is occurring in the community on a smaller scale. City officials do report that in the mid-1990s, two women from the community did work at the plant for approximately 2 years, but found it difficult to maintain a family life and arrange for child care given the long hours inherent in processing work during busy seasons. Trident is viewed as continuing to be open to hiring local community residents, but on the whole processing employment is seen as being very difficult to balance with family responsibilities.

In terms of local CDQ involvement in processing, unlike their participation in the groundfish fisheries, APICDA-owned processing capacity does not have a history of BSAI crab processing, according to interviews with APICDA staff. APICDA partners with Trident for its CDQ crab processing, which has been most commonly processed in Akutan but is also sometimes processed in St. Paul or on a floater, depending on quota size and fishing conditions. Trident serves as a custom processor for this CDQ crab. Also according to APICDA staff, APICDA partners with factory trawler (F/T) *Starbound* (of which it owns 20 percent) and one or more Trident catcher-processors for CDQ pollock, and Trident's share of the CDQ pollock has usually been processed by the Akutan plant, while most of APICDA's share has been processed by F/T *Starbound*. According to the APICDA website, APICDA halibut CDQ is primarily harvested by small vessels based out of its member communities, while APICDA sablefish CDQ is typically harvested by its own vessels in the Bering Sea. Aleutian Islands APICDA CDQ is typically contracted to F/V *Aleutian Spray* and delivered to the APICDA member community Atka (and Atka Pride Seafoods) for processing (APICDA 2008). Other APICDA CDQ species are harvested and processed primarily through non-Trident enterprises.

2.2.3.3 Support Services

Akutan differs sharply from nearby Unalaska in terms of opportunity to provide a support base for the commercial fishery. Akutan does not have a boat harbor, other than a small skiff moorage facility, or an airport in the community, with air service limited to amphibious aircraft servicing the community out of Unalaska. There is also very little privately held land available for development in or around the community (outside of lands held by the local Akutan Corporation).

There has been investment by APICDA in the local skiff mooring basin that helps local residents keep their vessels in the water, and APICDA was involved with obtaining a trailer that could handle up to 45-foot vessels to facilitate getting local small boats in and out of the water, but the trailer proved to be little-used and was subsequently shipped to St. George where it could be more effective. Other than the very small boat facility, there is no boat harbor in the community, although this has been in planning for a number of years. The Final Environmental Impact Statement has been completed and Record of Decision has been signed for this project, which includes a 12-acre basin that would accommodate up to 58 vessels (which would service the larger locally owned fishing vessels and the outside vessels delivering to the local processing plant, among others), but funding is still (2008) being completed and construction remains in the

future. According to earlier interviews, APICDA has also reportedly earmarked matching funds in the range of $1 million to be used when development of the boat harbor has begun. While these plans exist, the situation at present is that beyond the limited services provided by the plant, essentially no opportunity exists in Akutan to provide a support base for other major commercial fisheries. Indeed, alternative economic opportunities of any kind are extremely limited. As characterized by one fisherman (in 2008), in Akutan, "you either fish or do construction."

The only direct fishery support business in the community at present (2008) is Pelkey's Dive Service, which involves the two owners plus a couple of helpers on occasion. This operation caters in part to fishing vessels, changing zincs and clearing fouled propellers, among other services. Originally introduced to the dive business by an individual diving for Trident in the early 1980s, Trident has reportedly continued to steer local business their way. This business has also performed underwater maintenance on the main town outfall and the freshwater line since the mid-1980s but is not a full-time enterprise. The owners of this company are also involved in marine pilot work, as well as enterprises that are not directly fishing or marine support oriented. According to a post-rationalization study prepared for the AEB, "one fishery support business reported a loss in revenue due to crab rationalization. The owner of a dive service estimated an annual loss of $10,000 in the [first] post-rationalization season" (Knapp and Lowe 2007:81). When interviewed for this project in May 2008 after 3 years of rationalization, one of the owners of this company reported that overall there has been some decrease in crab vessel-related revenue and a fluctuation in the overall annual cycle of dive work due to rationalization, but that overall the business (including the volume of diving) and revenue (which is one of a suite of entrepreneurial pursuits, including fishing, for both partners) was characterized as not being dramatically different than it was pre-rationalization, although it may take longer in a given year to achieve the same financial return. When asked in 2008 specifically about the reported dip in dive revenues the first year post-rationalization, the owner reported that the decrease in revenues seen in the first post-rationalization year was due primarily to several factors not directly related to rationalization, including travel outside of the community by one of the owners, involvement of a nonowner filling in for the absent owner, and a focus at the time by the business owners on other, non-dive-related, projects. How much of the difference in reported short-term outcomes for the business is a function of differences in recollections over time is unknown, but it is apparent that three years after the implementation of the BSAI crab rationalization program, at least one of the owners of the business perceives that rationalization has not had long-term adverse impacts on the business. As an indicator of overall continuing local dive business opportunities, one of the owners of operation reported that in recent years they have been in the position of turning down additional dive work for the Trident plant.

There are other enterprises in Akutan that derive benefits from the fishery in less direct ways. The Akutan Corporation does derive economic benefits from the local shoreplant through sales of goods and services to local seafood plant employees at the community store the corporation owns and operates. Processing workers utilize the store for check cashing purposes, for which they are charged a 10 percent cashing fee. According to corporation management, sales to processing workers commonly include rice, canned foods, and microwavable foods, with processing worker business accounting for perhaps 20 to 25 percent of the overall store business, while fishing vessels account for perhaps another 10 percent, which has been consistent pre- and post-crab rationalization. The corporation also encourages store sales to vessels by offering 10 percent boat case lot discounts. According to corporation staff, although vessels tend to ship in their own supplies, or re-supply at the Trident plant, some of the vessels do make local purchases

if Trident runs out of supplies or if direct shipped goods do not make it in due to adverse weather conditions.

Despite being the major landowner in the community, however, the Akutan Corporation does not derive substantial leasing income from the local seafood processor. Prior to Alaska Native Claims Settlement Act (ANCSA), a private individual outside of the community obtained ownership of three parcels of land: the parcel on which the processing plant is located, a parcel across the bay from the community that is the site of a pot dock, and a parcel near the head of the bay that was the historic site of the local whaling station. Although according to city officials these lands changed hands in the late 1990s, they have remained in private ownership outside of the community. Until recently, the only land leased by the Akutan Corporation to the seafood processor was the antennae site on the hill above the processing facility. In 2004, however, Trident began leasing 67 acres of corporation land on the hillsides near the plant as an "impact area" lease. This lease arrangement was necessitated by plant emission levels exceeding a threshold determined in part by the existing footprint of the plant.

The Akutan Corporation does derive at least some income from direct and indirect fisheries-related activity through its ownership of the Bayview Hotel and the Salmonberry Inn. The Bayview Hotel, a six-room facility of which two rooms are larger apartment-style accommodations, does see some business from such groups as marine pilots or fisheries observers, particularly when space is not available at the processing plant. (This facility also derives business from Caterpillar mechanics and electricians in the community on a short-term basis, as well as transient health care- or school-related personnel.) In 2007–2008 this facility underwent a refurbishment project (following an Akutan Corporation buy-out of a partnership that involved a Unalaska-based entity) that required hiring an additional four employees at the peak and as of May 2008 still accounted for one construction position over the usual facility employment level.

The Salmonberry Inn is a former processing bunkhouse facility that was obtained in a land swap with Trident in a straight-up exchange for land contiguous with the main Trident facility. Currently (2008) configured for 34 beds, the facility derives processing-related business, particularly when the processing activity ramps up during both A and B seasons, when Trident leases the facility for a combined total of 3 to 4 months of the year. In the past, this has been characterized a more-or-less break even operation for the Akutan Corporation, but it does provide economic activity and an augmented level of employment.

The Akutan Corporation also built the local post office building and utilizes the lease income for other enterprises. This may be considered partially related to commercial fishery, as postal service demand does feel the influence of commercial fishing activities. (The Akutan Corporation, as part of a coalition involving a few other Aleutian-Pribilof region communities along with a village in Alaska's interior, is also a participant in a cattle ranching operation on nearby Akun Island, which is also the planned site of a new airport for Akutan that has received a Record of Decision on its environmental documents but is not yet funded.)

Most recently, the Akutan Corporation built and leased out the operations of the Bayview Café, a restaurant that is patronized an estimated 75 percent by Trident processing workers and has a menu that includes Asian cuisine. Opened in June 2007, the Akutan Corporation desired the restaurant to remain open year-round, but it was closed during April and May 2008, which was

partly attributed to transportation bottlenecks. This business brings three employees into the community from Unalaska when it is operating and it also typically employs one Akutan resident as a delivery person, with a second local hire added during especially busy periods at peak fishing activity times. According to senior Akutan Corporation staff, the café has been a positive influence on the community as it serves as a business and work ethic model for community youth, who spend time at the business and have positive interactions with the operators.

Another business in the community that derives income from fishery-related activity is the Roadhouse tavern. Owned by private individuals from Akutan who are no longer physically resident in the community, this business regularly draws patrons from both the processing plant workforce and the community itself. According to a family member, the Roadhouse was opened in 1964 and continues to be operated by members of the same family, with about 25 to 30 percent of the business volume attributable directly to commercial fishing activity, but which indirectly accounts for much more as it does for other local businesses. As of 2008, the tavern employed three Akutan residents full-time, and an additional two local residents had been through required alcohol training classes and were available on a part-time as-needed basis for peak periods. According to the tavern operator, crab rationalization and the changing of the seasons have not made a significant difference in the business over the course of a typical year.

Akutan Bay has also been the site of some transfer of product from at least one mothership to cargo vessels in recent years, but very little if any local business has resulted from these types of activities.

Akutan is a small enough community that nearly the complete range of employment can be characterized. Among permanent, long-term community residents, the large majority of employment is linked to the public sector. Of these residents, the largest employer is the City of Akutan, which as of 2008 accounted for 10 salaried positions and 3 permanent part-time positions, up 1 each from 2004 pre-crab rationalization levels, along with up to 20 hourly variable part-time workers who may get at least some work during the year. The Traditional Council accounts for another two full-time positions, and the IGAP environmental watch function accounts for two full-time (an increase of one over 2004 levels) and one part-time position. Health care-related employment includes three full-time clinic workers (including a community health practitioner, one mid-level practitioner, and one technician), along with one person who administers a number of health and social service programs, such as a range of programs encompassed by the Rural Alaska Community Action Program, Inc. (RurAL CAP), and a suicide prevention program, among others. (The clinic is owned by the City of Akutan, leased to the Indian Health Service, and operated by the Eastern Aleutian Tribes.) Local employment specific to the school is limited to a teacher's aide position. Other employment includes six positions with the Akutan Corporation (three full-time jobs, including two office workers and one weekday store employee, along with three part-time jobs, including a weekend store employee, hotel service, and a maintenance position), and one local position with APICDA. Project-related employment of limited duration is also important in the community and in 2007–2008 has included construction of a new city administration building, construction of the new café, construction of an Aleutian Housing Authority four-plex, and the refurbishment of the hotel, plus ongoing water/sewer project work. Additional work is slated for a new city garage for the fire department, the funding for which was obtained through an Aleutian/Pribilof Islands Association grant.

The only unambiguously private sector employment among permanent community residents is related to the dive business previously noted (which does not provide steady work), along with limited employment at the tavern, and an estimated three to four individuals who intermittently pick up stevedoring or longshore work, moving containers and working on barges and trampers. As noted previously, the Trident plant does not currently (2008) draw any workers from the permanent village resident labor pool. Additional local employment that typically draws from other than permanent, long-term residents includes teaching positions at the school, a mid-level practitioner position at the clinic, and a pastor's position at the Trident nondenominational church.

One recent change as of 2008 is the ability of CDQ to invest 20 percent of royalties in nonfishery businesses within the region. The impact of this change remains to be fully seen in Akutan, but it is noted as a positive fisheries-related change.

2.2.4 Local Governance and Revenues

In addition to benefits derived from an AEB 2 percent fish tax, the community benefits from municipal revenues deriving from a local 1 percent raw fish tax on landings made in the community. These revenues, of course, are dependent on price as well as volume of landings, which are, in turn, linked to relevant TACs/Guideline Harvest Levels (GHLs). Table 2.2-11 presents information on Akutan municipal revenues for 1999 through 2006 from the Department of Community and Economic Development (DCED). As with other communities in the region, fish taxes have varied considerably from year to year, but more detailed information on local fish taxes cannot be presented due to confidentiality restrictions, given that there is but a single processor in the community. Clearly, however, fish taxes are a large proportion of local revenue, as processing is virtually the only industrial activity in the community. Akutan also receives revenue from Fisheries Resource Landing taxes, but these revenues have been characterized in the past by city management as being "not very large amounts." Akutan does not have a local sales tax or property tax.

Unlike a number of other communities, the City of Akutan does not derive revenues from sales of water, power, wastewater, or other similar services to the seafood processing plant in the community. At the time of its construction, the plant was physically isolated from the community and thus was built as a completely self-contained facility. Although a road link to the community was subsequently established, the way services are provided to the plant has not changed. Trident does currently (2008) lease 21 acres from the City of Akutan where it stores shipping containers. As part of the lands between the processor and the community, the status of this lease is exceptionally complicated, as previous land ownership and leasing rights within this area involved such entities as the Bureau of Indian Affairs, a previous seafood processing enterprise, the Akutan Corporation, and the City of Akutan. After several years of working the relationship out, Trident currently pays a lease that is considered fair market rate to the city, which the city then turns over to the Akutan Corporation. Current or planned developments on other portions of this land that do or will have a reversion clause include the Trident nondenominational church and some planned housing. The area used for shipping activities is designated for continuing use under a renewable lease, and future plans include building/ expansion of a dock and related structures, which likely will result in increased city revenues in the long run.

Table 2.2-11. Akutan Municipal Revenues, 1999–2006

Revenue Source	1999	2000	2001	2002	2003	2004	2005	2006
Local Operating Revenue								
Taxes	$430,095	$559,219	$647,147	$614,300	$749,782	$713,568	$784,220	$894,985
License/Permits	$0	$0	$0	$0	$0	$0	$0	$0
Service Charges	$51,488	$56,392	$103,103	$79,303	$19,013	$38,307	$56,440	$57,486
Enterprise	$216,493	$266,416	$166,042	$334,749	$333,636	$404,824	$346,321	$361,482
Other Local Revenue	$96,016	$127,420	$182,224	$116,482	$99,201	$121,220	$129,449	$453,003
Total Local Operating Revenues	$794,092	$1,009,447	$1,098,516	$1,144,834	$1,201,632	$1,277,919	$1,316,430	$1,766,956
Outside Operating Revenues								
Federal Operating	$0	$0	$25,370	$0	$31,451	$0	$29,000	$0
State Revenue Sharing	$25,969	$24,986	$24,987	$24,987	$25,614	$0	$0	$0
State Municipal Assistance	$7,650	$6,813	$7,523	$7,523	$12,612	$0	$0	$0
State Fish Tax Sharing	$558,663	$654,402	$756,180	$720,466	$183,340	$794,261	$924,104	$918,998
Other State Revenue	$50,025	$6,300	$6,300	$0	$0	$40,000	$67,188	$14,932
Other Intergovernmental	$0	$2,537	$0	$139,994	$0	$0	$112,000	$0
State/Federal Education Funds	$0	$0	$0	$0	$0	$0	$0	$0
Total Outside Revenues	$642,307	$695,038	$820,360	$892,970	$253,017	$834,261	$1,132,292	$933,930
Total Operating Revenues	$1,436,399	$1,704,485	$1,918,876	$2,037,804	$1,454,649	$2,112,180	$2,448,722	$2,700,886
Operating Revenue per Capita	$3,521	$4,011	$2,691	$2,724	$1,848	$2,739	$3,167	$3,644
State/Federal Capital Project Revenues	$0	$0	$56,647	$408,219	$0	$220,627	$215,299	$141,410
Total All Revenues	$1,436,399	$1,704,485	$1,975,523	$2,446,023	$1,454,649	$2,332,807	$2,664,021	$2,842,296
Total All Revenues (2006 Constant Dollars)	$1,738,163	$1,995,495	$2,250,087	$2,741,069	$1,593,789	$2,489,645	$2,749,957	$2,842,296

Source: Personal communication, DCED, spreadsheet supplied July 2008.

As noted above, there are two major governmental infrastructure projects in the planning stages for Akutan. The first is an airport to be constructed on nearby Akun Island, which would be connected to the community of Akutan via hovercraft service, which, according to plans, would be the same AEB-owned vessel that is currently in service on the Cold Bay to King Cove link. According to senior AEB staff, contracts for the airport facility may be let as early as 2009. The other major project, the new Akutan small boat harbor, is also in the planning stage, but is on a longer time horizon with funding less secure to date (2008). Either of these projects has the potential to provide significant employment and income opportunities to Akutan residents.

2.3 KING COVE

King Cove is located on a sand spit fronting Deer Passage and Deer Island on the south side of the Alaska Peninsula near its western tip. Often referred to by residents and others in the region simply as "the Cove," King Cove is about 18 miles southeast of the community of Cold Bay, 75 miles west of Sand Point, and 625 miles southwest of Anchorage. Although there are numerous pre-contact sites throughout the area, the contemporary community of King Cove traces its name to the 1880s when English immigrant Robert King married a local woman, became a trapper and sea otter hunter, and moved with his family to the cove. The present structure of the community can be traced to 1911 when Pacific American Fisheries built a salmon cannery on the present-day town site. According to local sources, early population growth was precipitated by the plant, as Aleut and Yupik Alaskans came to work at the cannery along with Japanese and Chinese workers brought in by the company, with Scandinavian fishermen following. The cannery operated continuously between 1911 and 1976, when it was partially destroyed by fire. This plant operated under the name Pacific Alaska Fisheries before it became part of Peter Pan Seafoods (PPSF). The adoption of the 200-mile Exclusive Economic Zone fisheries limit spurred rebuilding. Incorporated in 1949, King Cove encompasses 25.3 square miles of land and 4.5 square miles of water. It is a part of an organized borough (the Aleutians East Borough [AEB]).

King Cove lies in the maritime climate zone with temperatures averaging 25 to 55° F, though extremes range from -9 to 76° F. Snowfall averages 52 inches, and total annual precipitation is 33 inches. Fog, common during summer, and high winds during winter, can limit accessibility.

2.3.1 Overview

Early permanent residents of King Cove were Scandinavian, Euroamerican, and Aleut fishermen, with an estimated half of the founding families consisting of a European father and an Aleut mother. For a number of decades, the community was primarily involved in the commercial salmon fisheries of the area, but with the decline of the salmon fishery, processing in the community has diversified into other species, including both Gulf of Alaska and Bering Sea fisheries, and both Bering Sea crab and groundfish have come to be important components of local processing operations. The shore processor in King Cove is now PPSF, and the plant processes salmon, crab, and halibut, along with pollock, Pacific cod, and other groundfish. Other species, such as herring, are processed occasionally. At present (2008) there is also a salmon co-op that purchases salmon on the Alaska Peninsula, with processing taking place on a floating processor, but typically this floating processor operates on the fishing grounds, not in the community itself.

King Cove, in some respects, is like and unlike both Unalaska and Akutan. Like Unalaska (and unlike Akutan), King Cove is incorporated as a First Class City, but like Akutan (and unlike Unalaska) it is part of an organized borough. Like Unalaska (and unlike Akutan), King Cove is not a CDQ community. Like Akutan (and unlike Unalaska), King Cove is a one-processor town, with some historical attributes of a "company town." King Cove is a historical commercial fishing community that has had processing facilities as part of the community for decades, like Unalaska; however, unlike Unalaska it has long had a significant residential commercial fishing fleet that delivers to the local seafood processors.

2.3.2 Community Demographics

King Cove is a community that traces its founding directly to commercial fishing. Unlike Unalaska, it developed around a commercial fish processing plant and did not grow from an existing traditional Aleut village. The contemporary community is ethnically heterogeneous, but much greater diversity is found among the population components associated with fish processing and support services than for those associated with other economic activities such as fish harvesting, government, or education. While the fish processing employment force does display continuity from year to year, the local perception is that the employees are much more transient than other King Cove residents and are not considered truly "local" residents as are those with other occupations and who do not live in company housing. Reportedly, the city council is dominated by, if not exclusively composed of, individuals who commercially fish for at least a portion of their living. As of 2008, four of the six members of the King Cove city council were commercial fishermen (though most if not all of these individuals also engaged in other entrepreneurial pursuits in the community). Of the two other city council members, one is the owner of one of the local stores and the other is a retired PPSF employee.

2.3.2.1 Total Population

Historically, King Cove has seen a large influx of non-resident fish tenders, seafood processing workers, fishers, and crew members each summer due to local salmon fisheries. With the increased importance of crab, followed by cod and pollock in the winter, a second employment/population peak has been seen in more recent years. Table 2.3-1 provides figures for community total population by decade from 1940 through 2000. These figures clearly include some processing workers but do not represent the numbers of persons present in the community during peak processing periods.

Table 2.3-1. King Cove Population by Decade, 1940–2000

Year	Population
1940	135
1950	162
1960	290
1970	283
1980	460
1990	451
2000	792

Source: Historical data from Alaska Department of Community and Economic Development, 2000 data from U.S. Census Bureau.

2.3.2.2 Ethnicity

The ethnic diversity of population associated with an imported fish processing workforce is evident in Table 2.3-2. King Cove differs from other established major commercial fishing communities in the region, however, in that the percentage of its Alaska Native population

component has increased at the same time as the community total population increased significantly. As shown in the table, the total population of the community grew by about 76 percent between 1990 and 2000. During this same time, the Alaska Native component of the population grew by 109 percent, increasing from 39 to 47 percent of the total population. It is likely that this represents population consolidation from smaller regional communities, as well as the natural increase of the excess of births over deaths.

Table 2.3-2. Ethnic Composition of Population King Cove, 1990 and 2000

Race/Ethnicity	1990		2000	
	Number	Percent	Number	Percent
White	127	28.2%	119	15.0%
Black or African American	6	1.3%	13	1.6%
Native American/Alaskan	177	39.2%	370	46.7%
Asian/Pacific Islands*	125	27.7%	213	26.9%
Other**	16	3.5%	77	9.7%
Total	451	100%	792	100%
Hispanic***	53	11.8%	59	7.4%

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 1) and Asian (pop 212).
** In the 2000 census, this category was Some Other Race (pop 47) and Two or more races (pop 30).
*** "Hispanic" is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).
Source: U.S. Census Bureau 1990, 2000.

2.3.2.3 Age and Sex

Table 2.3-3 provides information on age and the male/female ratio of King Cove's population. As shown, the community population is predominantly male. This is consistent with a significant proportion of the overall population being composed of a transient male-dominated processing workforce, although the male-female imbalance was somewhat less in 2000 than in 1990.

Table 2.3-3. Population by Age and Sex, King Cove: 1990 and 2000

Attribute	1990		2000	
	Number	Percent	Number	Percent
Male	292	65%	472	60%
Female	159	35%	320	40%
Total	451	100%	792	100%
Median Age	NA		34.9 years	

Source: U.S. Census Bureau 1990, 2000.

King Cove school enrollment figures obtained from the AEB School District 1991 through 2008 are displayed in Table 2.3-4, along with enrollment figures obtained from the school itself for a subset of those years. While enrollment figures from these two different sources vary somewhat, the overall trends are consistent between the two sources. As shown, there was a peak of enrollments in the mid-1990s, and a subsequent decline, with the most recent data available showing a current student population of less than two-thirds the size of the peak student population during this time period.

Table 2.3-4. King Cove City School Enrollment, FY 1991–2008

Fiscal Year	Student Count (District)	Student Count (Local)
1991	148	NA
1992	150	NA
1993	157	NA
1994	159	NA
1995	154	162
1996	139	150
1997	143	143
1998	142	130
1999	129	133
2000	112	115
2001	124	122
2002	119	116
2003	105	103
2004	103	105
2005	100	102
2006	93	99
2007	90	100
2008	100	101

Note: Year designation notes the calendar year in school year ended (e.g., 2003 refers to the 2002–2003 school year).
Source(s): District numbers adapted from spreadsheet supplied by Aleutians East Borough School District, July 2008. Local numbers from manual tabulation supplied by King Cove school staff, September 2002, October 2004, and May 2008.

It is difficult to assign causality of the drop in student counts to any specific fishery or other economic conditions, but clearly the overall difficult economic conditions of some previous years have been cited as the reason for declining enrollments, but an improvement in economic conditions in more recent years has not seen a rebound in enrollments. Enrollments appear to have plateaued since 2003 (which corresponds to the end of the most recent stretch of particularly difficult times for the community) rather than continuing to decline.

With declining enrollments and overall funding challenges in the early 2000s, the King Cove school combined grades 1 and 2, as well as 3 and 4, and 5 and 6. Budget difficulties also

brought about the recent elimination of two teaching positions. As some funding is based on a student count basis, continuing declines in enrollment also meant a number of budget cuts. Beyond combination classrooms and cuts in teaching positions, the school also restructured other services it provided, such as the lunch program, and some specialty classes and certified counseling services were discontinued (although some counseling remained available). As economic conditions have improved, budgets and staffing levels have stabilized and a number of programs have been restored or expanded. Given the continuing importance of maintaining enrollments, however, potential candidates for various positions in the community who have children are particularly valued.

Photo by Della Trumble

King Cove School

In the King Cove school elementary grades, a total of four teachers in 2008 were assigned to grades 1 through 6. In the everyday teaching environment, students are grouped by levels of attainment rather than strictly by age-determined grade groupings, so unlike in some previous years (such during 2004, when a previous round of crab rationalization-related fieldwork took place and the community was dealing with difficult budgetary choices following a series of off years in a number of the local fisheries), the strategy of combination of grades is not as evident today with 1.5 grade levels per teacher (or less if the elementary school-level special education teacher is included in the computation). In the high school division of the school, at present (2008), a total of seven teachers are assigned to six grade levels, for a teacher-to-grade level ratio of better than 1. According to the school principal in 2008, all core classes in King Cove are taught by teachers classified as "highly qualified" under the federal administration's "no child left behind" program standards. The current school administration also points to a number of benchmarks of achievement of current students in the school, including the award of a Gates Millennium Scholarship (of which there were reportedly about 20 in Alaska), and awards through the University of Alaska Anchorage's (UAA) Scholars Program.

Despite these academic achievements, school leadership reports that it can be difficult to motivate students in King Cove to work to excel in school and focus on an academically oriented career when school-aged minors can make $30,000 to $40,000 per summer (outside of the regular academic year) by participating in the local salmon fishery. With local fisheries enjoying a period of relative stability in 2008 compared to a number of recent previous years, this can be a powerful post-high school career draw for students, but during the 2007–2008 there was only one reported incident of a student taking time off from school to participate in a commercial fishing season.

A local offering of a limited range of high school classes also reportedly provided an impediment to keeping students motivated, so the school has turned to a number of "distance learning" opportunities where students can participate in classes offered elsewhere via real-time video link. For example, during the 2007–2008 academic year, a total of six King Cove students enrolled in distance learning classes offered through UAA, and one student in 2006–2007 and one in 2007–2008 enrolled in limited-space classes in the Rural Alaska Honors Institute offered through the University of Alaska Fairbanks (UAF), and another two or three students will be enrolling in

distance classes offered by UAF in the summer of 2008. In the fall of the 2008–2009 academic year, distance learning advanced placement classes will also be available at the school as offered through the University of North Carolina. Future plans also call for the distance learning feed of advanced placement classes through the Anchorage school district. Further, the King Cove school during the 2008–2009 academic year will be the site of origin of distance learning classes that will be fed to AEB schools in Akutan, False Pass, and Cold Bay. According to school staff, of the seven high school students graduating in 2008, either three or four will be attending college in the fall, while the others are already gainfully employed in the community.

As with many other rural Alaska schools, the high school basketball program is followed closely by members of the community and having a strong program also serves as a "hook" to incentivize at least some students to remain in school to have playing opportunities. During the 2007–2008 school year, the King Cove boy's basketball team reached the state tournament for the first time in about a dozen years, eventually finishing third in the state in their category while, according to school staff, drawing between 400 and 500 fans between current and former community residents and friends while on the road. Interaction between the basketball team and the community occurs on the court with scrimmages between the T-Jacks boys high school team and the "Hometown Heroes," a team composed of alumni and others in the community and scrimmages between the Rookies girls high school team and the "Lady Legends," a team also composed of alumni and others in the community. These scrimmages occur once or twice every couple of weeks on Thursdays at the gymnasium in the old school building.

Despite the relatively large overall employment at the local seafood processor, according to school staff as of 2008 only one processing family had children (in this case three children) enrolled in the King Cove school for the entirety of the year. At different times during the year, however, a total of three or four children of processing workers were enrolled in the elementary grades and two children of processing workers were enrolled in the secondary grades, representing a total of three to four families with parents who worked as processors at the PPSF plant that had children in the local school. None of these students were classified as "limited English proficiency" students, although the children of at least one of these families were bilingual. Having children of processing workers attend school in King Cove is a relatively new phenomenon. According to interview data gathered in 2004, no children of processing employees attended the school. This was reportedly due to the high cost of living in the community, which made it impractical to bring a family to King Cove on typical processing wages other than for those in management positions, and even then some of these positions provided less than year-round jobs in the community. (Although summer managers have been reported to sometimes bring families in seasonally, this has had no impact on school attendance.) Housing was, and remains, in short supply in the community, especially during peak processing seasons. Overall, according to senior school staff, the social impact in King Cove of having people from a variety of cultures working at the PPSF plant is quite limited, given that interactions between PPSF workers and other community members are fairly limited, with a few exceptions, such as sometimes in Sunday morning church services and at adult recreation nights at the gymnasium at the old school.

In terms of overall cultural diversity, senior school staff characterize the school as currently (2008) being "fairly culturally sterile" with no obvious ties to Aleut culture, such as having artifacts in the school, having elders giving guest talks, or having Aleut language use being taught. According to school officials, however, there are plans to invite elders to the school in

the 2008–2009 school year, and expanding the use of some Aleut language terms that have already begun to be used in the school in limited instances.

According to school staff, one child of a King Cove family is currently attending the Mt. Edgecumbe school (in Sitka) as an alternative to high school in King Cove, and another student recently returned to high school in King Cove from that institution. Mt. Edgecumbe is discussed at times by parents and students in the region as being a place where students can have access to more academic resources than may be the case in smaller communities. There also has been movement of students between schools within the AEB, and reportedly this has happened on at least an occasion or two in the past to help schools achieve minimum attendance figures to avoid funding cuts or closure (in addition to other, more typical relocations related to parent's employment opportunities or extended family considerations). According to senior school staff, while approximately a half-dozen King Cove high school graduates are currently (2008) enrolled in college, it has been a number of years since any King Cove school alumni have graduated from college.

2.3.2.4 Housing Types and Population Segments

Group housing in the community is largely associated with the seafood processing workforce. As shown in Table 2.3-5, 42 percent of the population lived in group housing in 1990 and 38 percent of the population did so in 2000.

Table 2.3-5. Group Quarters Housing Information, King Cove, 1990 and 2000

Year	Total Population	Group Quarters Population		Non-Group Quarters Population	
		Number	Percent of Total Population	Number	Percent of Total Population
1990	451	189	41.91%	262	58.09%
2000	792	299	37.75%	493	62.25%

Source: U.S. Census Bureau 1990, 2000.

Table 2.3-6 provides information on group housing and ethnicity for King Cove in 1990, and similar information for 2000 is presented in Table 2.3-7. As with Unalaska and Akutan (and Sand Point), group housing in the community is largely associated with the processing workforce. The distribution of ethnicity between housing types is striking. In 1990, the Alaska Natives/Native Americans comprised 67 percent of the non-group quarters population in the community, and the analogous figure for 2000 was 75 percent. For both 1990 and 2000, however, there was only one Alaska Native/Native American individual living in group quarters in the community (about one-half of 1 percent of the total group quarters population). Shifts in ethnic populations are also apparent between 1990 and 2000, with the "Asian" group comprising over 64 percent of the group quarters population in 2000, up substantially from 1990. The "White" component of the population was smaller in absolute and relative terms in 2000 than in 1990 for the community as a whole and in group quarters. Among non-group quarters residents, the number of "White" residents was larger in 2000 than in 1990 but still represented a smaller proportion of the non-group quarters population in 2000 than in 1990.

Table 2.3-6. Ethnicity and Group Quarters Housing Information, King Cove, 1990

Race/Ethnicity	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	127	28.16%	57	30.16%	70	26.72%
Black or African American	6	1.33%	6	3.17%	0	0.00%
American Indian, Eskimo, Aleut	177	39.25%	1	0.53%	176	67.18%
Asian or Pacific Islander	125	27.72%	109	57.67%	16	6.11%
Other race	16	3.55%	16	8.47%	0	0.00%
Total Population	451	100.00%	189	100.00%	262	100.00%
Hispanic origin, any race	53	11.75%	53	28.04%	0	0.00%
Total Minority Population	331	73.39%	139	73.54%	192	73.28%
Total Non-Minority Population (White Non-Hispanic)	120	26.61%	50	26.46%	70	26.72%

Source: U.S. Census Bureau 1990.

Table 2.3-7. Ethnicity and Group Quarters Housing Information, King Cove, 2000

Race/Ethnicity	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	119	15.02%	37	12.37%	82	16.63%
Black or African American	13	1.64%	0	0%	0	0%
Alaska Native/Native American	370	46.72%	1	0.33%	369	74.85%
Native Hawaiian/Other Pacific Islander	1	0.13%	0	0%	0	0%
Asian	212	26.77%	192	64.21%	20	4.06%
Some Other Race	47	5.93%	0	0%	0	0%
Two Or More Races	30	3.79%	0	0%	0	0%
Unknown	0	0%	69	23.07%	22	4.46%
Total	792	100.00%	299	100.00%	493	100.00%
Hispanic*	59	74.49%	52	17.39%	7	1.42%
Total Minority Population	679	85.73%	268	89.63%	411	83.37%
Total Non-Minority Population (White Alone, Not Hispanic or Latino)	113	14.27%	31	10.37%	82	16.63%

* "Hispanic" is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).
Source: U.S. Census Bureau 2000.

Table 2.3-8 displays basic information on community housing, households, families, and median household and family income for King Cove in 2000.

Table 2.3-8. Selected Household Information, King Cove, 2000

Community	Total Housing Units	Vacant Housing Units	Total House-holds	Average Persons Per House-hold	Median House-hold Income	Family House-holds	Average Family Size	Median Family Income
King Cove	207	37	170	2.9	$45,893	117	3.53	$47,188

Source: U.S. Census Bureau 2000.

2.3.3 Local Economy and Links to Commercial Fisheries

In terms of employment, a study conducted in the late 1990s related to proposed harbor improvements concluded that more than 80 percent of King Cove's workforce was employed full time in the commercial fishery (USACE 1997). Fishing employment was followed by local government (borough and local) and then by private businesses. These results need to be interpreted in context, however, as this report ranked seafood processing after each of these other employers in terms of local employment, meaning that the vast majority of the workforce at the shoreplant was either not counted as community residents under the study methodology or the study was conducted during an off-season time when most workers were not present in the community. Also, commercial fishermen are self-employed and difficult to enumerate, and thus are often not well represented in employment discussions. Thus, the 80 percent employment "dependency" of the local economy on the commercial fishing sector is probably underestimated.

The King Cove economy in general is cyclical, due largely to its strong relationship to fishing and fish processing. In recent years, because of a number of factors, including but not limited to relatively low salmon prices (or price increases that reportedly did not pace increased costs, including fuel costs), the community has experienced adverse local effects from a number of fisheries-related downturns as well as non-fisheries-related events. Given that many of the factors cited for these effects are regional and cumulative in nature (low fish prices, Steller sea lion protection measures, competition from farmed fish, Area M restrictions, crew job loss with crab rationalization, and other management and resource concerns), it is possible that King Cove has grown in size because of population movement from smaller regional communities in even worse economic shape. This dynamic is likely to continue but is not, however, likely to strengthen the local economy.

One indirect source of fisheries income in the community in past years has been temporary emergency relief funding. People participating in fisheries negatively affected by the imposition of measures to protect Steller sea lions and to promote the recovery of Steller sea lion populations received compensation funds allocated by Congress. Those in the region affected by a crash in the opilio fisheries similarly received one-time relief funding. In the case of King Cove, these types of temporary funding in recent years have typically been used almost immediately in the form of relief credits for individual residents to offset utility bills and service fees, such as harbor moorage fees, as well as by the city government to offset operating deficits, such that these funds have not been utilized for capital construction of fisheries infrastructure in King Cove as occurred in some other regional communities.

Subsistence continues to play an important role in the household economies for some families in the community. Joint production opportunities, where commercial gear or fishing vessels are used for subsistence pursuits, were mentioned by community residents as being important. For example, in interviews conducted for pre-crab rationalization community characterization in 2001, one vessel captain reported running to good hunting grounds following tendering activities in the Shumagin Islands, thereby saving fuel costs, while another example was given of fishermen bird hunting when out tending pots. Where stand-alone costs are unavoidable, some fishermen have reported that costs were made more manageable by having several families involved to spread out the out-of-pocket expenditures. At least some individuals who are out near productive hunting grounds in the course of commercial fishing have also acted as designated hunters for others in the community to further reduce overall subsistence costs and increase productivity. During interviews in 2008, local hunters noted that caribou hunting in the area had been closed by the state due to herd population concerns, but that other hunting opportunities, such as moose that are typically found to the east around Pavlof Bay, and waterfowl, found throughout the area, remained robust, as well as subsistence fishing opportunities. Local subsistence fishing, like local subsistence hunting, is reportedly sometimes pursued as a joint production activity in addition to being an important stand-alone activity in its own right, such as when a vessel or gear that is used for commercial fishing is also used for subsistence fishing at a separate time, or where fish are retained for subsistence use out of what is otherwise a commercial harvest.

Table 2.3-9 provides summary information on employment, unemployment, and poverty levels in King Cove for 1990 and 2000. As shown, all indicators are higher in 2000 than they were in 1990.

Table 2.3-9. Employment and Poverty Information, King Cove, 1990 and 2000

Year	Total Persons Employed	Unemployed	Percent Unemployment	Percent Adults Not Working	Not Seeking Employment	Percent Poverty
1990	276	5	1.8%	24.0%	82	10.0%
2000	450	31	4.7%	31.50%	176	11.9%

Source: U.S. Census Bureau 1990, 2000.

2.3.3.1 Harvesting

Community Harvester Quantitative Description

An earlier North Pacific Research Board/North Pacific Fishery Management Council (NPRB/NPFMC) funded community profile effort, *Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak, Alaska* (EDAW 2005), included a quantitative characterization of the King Cove local commercial fishing harvest sector, including detailed information on an annual basis, from 1995 through 2002, of local vessel characteristics, distribution of permit holders, catch and earnings estimates, and landings inside and outside of the community, along with an analysis of the spatial distribution of fishing effort of the local fleet. As updating this information is effort intensive and not central to the current Bering Sea and Aleutian Islands (BSAI) crab rationalization 3-year review-oriented

community analysis, it has not been updated for this community profile. Rather, the more qualitatively oriented and BSAI crab rationalization focused discussion in the next section has been updated.

Communities also directly benefit from the harvest sector through participation of residents as crew members as well as through the engagement of vessel owners and permit holders. Beginning in 2000, the CFEC has produced estimates of crew members by community, based on the number of permit holders in the community, plus the community residents who have applied for a Crew Member License with the Alaska Department of Fish and Game (ADFG). Table 2.3-10 provides estimates of crew members for King Cove for the years 2000 through 2006. As shown, the total number of permit holders plus crew members is a substantial proportion of the community's population, indicative of the central place of fishing in the community and the fact that even individuals with steady employment in other economic sectors often take part in fishing at least on a part-time or episodic basis.

Table 2.3-10. Estimated Number of Permit Holders and Crew Members from King Cove 2000-2006

Year	Permit Holders	Crew Members	Total
2000	62	165	227
2001	CFEC did not develop this report for 2001		
2002	55	108	163
2003	54	110	164
2004	54	120	174
2005	57	73	130
2006	55	116	171

Source: CFEC permit holder and crew member counts by census area and city of residence report, accessed via www.cfec.state.ak.us/Mnu_Summary_Info.htm.

Community Harvester Characterization

King Cove, as already noted, has a sizable residential fleet. Local vessels deliver primarily to the King Cove PPSF shoreplant, but outside vessels deliver to this plant as well. Outside vessels also provide income and employment opportunities for King Cove residents, both in terms of support service opportunities (as discussed in a subsequent section) and, to a limited degree, in terms of direct fishery participation employment, although both have been affected to differing extents by the implementation of BSAI crab rationalization, as noted below.

The local residential fleet in King Cove as a whole is primarily focused on salmon, with a secondary focus on cod. Within the overall fleet, however, there are several different types of vessels with different operational foci. According to local fishermen and the harbormaster, there are currently (2008) three vessels owned by long-term community residents that are greater than 58 feet, and two of these have transitioned to local ownership since the implementation of BSAI crab rationalization.

According to interviews with local fishermen, *Northern Spirit* (at 95 feet) was the only locally owned vessel larger than 58 feet in King Cove immediately prior to crab rationalization. It is

also the single locally owned vessel that currently (2008) participates in and received an initial allocation of catcher vessel quota ("A" shares and "B" shares) for the fisheries involving rationalized species of BSAI crab, although its pattern of participation has changed since rationalization. While in at least some former years it participated in both the Bristol Bay red king crab and the opilio crab fisheries, in recent years it has not participated in the opilio fishery. Prior to crab rationalization, *Northern Spirit* was the locally owned vessel larger than the 58-foot-limit boats that trawls, and that remains the case at present (2008).

Also according to local interviews, *Denali* (at 82 feet) and *Gayla Maureen* (at 95 feet) are former BSAI crab vessels that were owned outside of the community prior to rationalization, but were both captained and primarily crewed as BSAI crab vessels by King Cove residents and operationally based in the community immediately prior to rationalization. Further, at least one local King Cove resident had a minority ownership interest in one of these vessels prior to rationalization. Since rationalization, both vessels left the rationalized BSAI crab fisheries, and both were purchased by their King Cove resident captains. Both vessels reportedly now tender out of King Cove and both continue to provide crew opportunities for local residents, but in fewer numbers (reportedly two rather than three or four positions each) and not in the Bering Sea crab fishery (in which crew positions have historically been more lucrative, on average, than have been crew positions on local tendering vessels). The current (post-rationalization) owners of both *Denali* and *Gayla Maureen* received at least some level of allocation of captain/crew shares ("C" shares) of BSAI crab under rationalization, but both are reported to be currently (2008) leasing out those shares (to Kodiak-based operations) rather than fishing them directly, apparently due, at least in part, to logistical challenges inherent in trying to directly fish and/or market relatively small blocks of quota. Besides these two individuals and the captain of *Northern Spirit*, who is the son of the owner of *Northern Spirit*, no other King Cove residents received initial allocations of "C" shares under the BSAI crab rationalization program.

Three other vessels with apparent local ownership ties to King Cove also show up in the BSAI crab fishery 1998–2008 dataset[24] utilized for the quantitative portion of this 3-year crab rationalization review, but none of these vessels qualified for initial allocations of quota under the rationalization program. One of these vessels, confirmed by interviews with local fishermen in 2008 to truly be owned by a local King Cove resident and still participating in a range of other fisheries, is shown in the data as only making Bristol Bay red king crab landings among the rationalized BSAI crab species, and then in only one of the years during the 1998–2008 period. Another of these vessels, also confirmed by interviews with local fishermen in 2008 to be truly owned by a local King Cove resident, is shown in the data as having participated in both the Bristol Bay red king crab and opilio crab BSAI fisheries for the years 1998 through 2001, but local fishermen report that this vessel was first sold to an individual from outside the community and then subsequently left the BSAI crab fisheries through the crab vessel buy-back program prior to the institution of the crab rationalization program. A third vessel is shown in the 1998–2008 dataset as being locally owned and participating in the Bristol Bay red king crab fishery from 1998 to 2000 and from 2002 to 2003, and in the opilio fishery from 1998 to 2003. This vessel, however, was identified by King Cove fishermen during 2008 interviews as a vessel that spent time in King Cove but that was never owned by a local King Cove resident (which points out that there are some inconsistencies in ownership location reporting in the existing data, but these are, nonetheless, the best available data), and the same vessel is shown in the BSAI crab

[24] Crab rationalization community analysis dataset, NPFMC, 2008.

fishery 1998–2008 dataset as having Seattle ownership and participating in BSAI crab fisheries in 2004 and 2005.

According to interviews with local fishermen (in both 2004 and 2008), in the years leading up to BSAI crab rationalization, two other BSAI crab vessels, *McKinley* and *Entrance Point*, spent a considerable amount of time in King Cove and had common ownership interests with the entity that owned majority interest in *Denali* and *Gayla Maureen*. While *McKinley* was reported by King Cove fishermen as captained and crewed by non-locals (apparently primarily from the Pacific Northwest), *Entrance Point* was captained by a Kodiak resident and regularly offered BSAI crab fishing crew opportunities to King Cove residents. Both *McKinley* and *Entrance Point* are reported as no longer participating in the rationalized BSAI crab fisheries. According to King Cove residents, both have changed ownership since rationalization and *McKinley* is currently (2008) pursuing East Coast fisheries, while *Entrance Point* is salmon tendering for its new owner outside of King Cove. According to local fishermen, prior to BSAI crab rationalization at least a couple of Sand Point-owned vessels also delivered crab to the King Cove PPSF plant.

It would appear that the drop-off in crab vessels owned or skippered by residents of King Cove has had the effect of limiting the access of potential crew members in King Cove to active boats, reducing opportunities for obtaining crew jobs. It is a truism within the fishery that crew is often hired through a social networking process with either (or both) the owner and the skipper. In this way, removal from the BSAI crab fishery of locally owned or skipper vessels (as well as vessels that spent a good deal of time in the community and that would hire local crew for at least some seasons) has served to limit the ease with which potential crew members could match up with a boat (and for whom recommendations based on extended personal knowledge could be given). As a non-CDQ community, King Cove residents do not have the built-in network for learning about and obtaining crew positions aboard CDQ group-owned vessels, such as that described for Akutan residents in that community profile. According to some King Cove fishermen, CDQs have made their position worse with respect to direct participation in the BSAI crab fisheries following crab rationalization, as the CDQs have gotten a larger portion of the overall quota (reducing the amount available to non-CDQ participants) and, due to this increase, are in a stronger economic position than non-CDQ boats to compete economically with non-CDQ boats in terms of direct harvest rather than leasing of quota (which, in turn, potentially impacts the number of overall crew jobs available). Further, it would appear that BSAI crab crew jobs are now less attractive for at least some King Cove residents than was the case prior to crab rationalization, due to the commitment required to fish longer seasons and the lower economic return per day spent away from the community, which limits the desirability of these jobs as part of an integrated, multiactivity strategy of piecing together a year-round living in the community through a variety of activities, including, but not limited to, participation in local fisheries.

A total of five vessels are currently (2008) reported by local fishermen and PPSF plant personnel as tendering for the PPSF plant in King Cove. These include three locally owned vessels, *Northern Spirit* and *Denali*, which tender salmon only, and *Gayla Maureen*, which tenders both salmon and cod. A fourth vessel, *Cape Denby*, tenders both salmon and cod, hires two local crew, and spends the year in King Cove, but its owners live in Southeast Alaska. The fifth vessel, *Island Trader*, also tenders both salmon and cod and typically hires two local crew members, but it is based out of Squaw Harbor near Sand Point. Its owners spend part of the year at the former PPSF site in Squaw Harbor and part of the year elsewhere in Alaska. Among these

tendering vessels, *Northern Spirit* also currently (2008) fishes the local pot cod fishery and *Denali* fishes the Dungeness crab fishery.

The next largest vessels owned by residents of King Cove community, according to fishermen interviews, are a group of 58-foot-limit seiners. These include *Just In Case, Aleut Mistress, Pacific Quest, Lady Lee Dawn,* and *Northern Dream.* All of these vessels typically fish salmon, trawl for cod, and pot for cod, except for *Northern Dream*, which does not trawl for cod. There are also reportedly three locally owned vessels in the approximately 53-foot range, *Northern Star* and *Desiree Dawn*, both of which typically seine for salmon and pot fish for cod, and *Aleut Sun*, which typically focuses on salmon seining. According to interview data, no other locally owned vessels exceed 50 feet in length.

In addition to the versatile local 50-foot or longer vessels, there are numerous smaller commercial vessels owned by community residents, including a number of seiners in the 42- to 44-foot range that participate in a range of fisheries, and an array of smaller vessels that have a particular focus on salmon, and drift or gill set netting as gear specialties. A number of the smaller vessels also pot for cod. The smaller vessels are, of course, somewhat less flexible in their gear options and more constrained by weather and sea conditions than the larger vessels. In recent years, local salmon fishing effort has continued to be constrained by Area M measures designed to lessen Yukon-Kuskokwim stock intercept potential by staggering openings, reducing quota, and providing smaller fishing windows than would otherwise be the case.

According to local fishermen, the annual round for larger local harvest vessels in King Cove in recent years has included bottom trawling for cod starting around the third week of January and lasting through the first week of March, although dates in a given year can be influenced by a number of factors, such as storms. Typically following a 1-week break, the vessels switch to cod pot fishing in state waters, which normally ends somewhere in mid- to late March. Early June sees salmon activity start, which lasts through August. The autumn season has, in recent years, been a kind of "doldrums" for local activity, with only a few boats participating in the pot fishery, although 2007, with reportedly five local boats participating, was a relatively high participation season. In recent years local vessels have reportedly not participated in the October trawling season, apparently due to lack of promise of adequate returns and quick bycatch-related area closures. Currently (2008), local fishermen report that locally owned vessels are participating in the jig fishery, although there are still outside boats that work near the community, staying in the area after salmon season.

According to local fishermen, three local vessels did qualify to fish Pollock; however, currently (2008) none are doing so. Seattle-owned *Hot Spur* fishes locally for pollock, however, and the vessel reported remains in King Cove year-round and also stores its gear in the community. *Alaska Lady*, formerly a locally owned vessel, stayed year-round in the community and fished pollock and cod, but reportedly had not done so in previous recent years. A third vessel, *Equinox*, another vessel owned by individuals outside of the community, also fishes pollock locally and leases a gear locker in the community year-round, but this vessel does not currently (2008) remain in the community year-round.

Also according to local fishermen, only one King Cove resident qualified for a substantial initial allocation of Individual Fishing Quota (IFQ) halibut (due to the particulars of the qualification parameters and conflicts with local fisheries during those years), but since the allocation others

have acquired IFQ, so there are now at least several local fishermen who do fish halibut in some quantity (with knowledgeable individuals estimating that three or so individuals have larger quotas than others, but that seven or eight individuals altogether have at least some reasonable amount). Also, according to local fishermen, few locals qualified for sablefish IFQs, and those who did have subsequently sold their IFQs, such that no local residents are currently (2008) fishing sablefish.

With respect to crab, beyond the one locally owned relatively large vessel that fishes Bering Sea crab with a local crew (captain plus four crew for a total of five persons on board), three other local boats (58-footers) reportedly did qualify for the Pribilof crab fisheries, but although two current King Cove residents still hold shares in these fisheries, neither is active in these fisheries at present (2008). Conditions are extremely difficult for these relatively small vessels, and one of these vessels was lost in the mid-1990s, with the loss of one life. Many more small vessels reportedly have fished the local Tanner crab fishery during the years that it was open. Additionally, before seasons were changed several years prior to crab rationalization from the fall to the winter, a time of year much less favorable for fishing by small vessels, several King Cove boats in the 58-foot class were also reported to have fished in the Bering Sea crab fisheries, but did not do so after the change.

Prior to crab rationalization there was significant local direct crew participation in the Bering Sea crab fisheries on non-locally owned vessels in addition to previously noted *Denali*, *Gayla Maureen*, and *Entrance Point*. In addition to these three vessels, in 2004, prior to rationalization, local fishermen estimated that about a half-dozen to a dozen other King Cove residents crewed aboard outside BSAI crab boats in any given season in recent preceding years (but apparently no King Cove residents crewed on other outside vessels in other large vessel fisheries). As of 2008, local fishermen stated that only one King Cove resident was actively crewing on any BSAI crab boat[25] other than locally owned *Northern Spirit*. Further, as of 2008, no local residents were known to be crewing on outside boats in any other larger vessel fishery, with the exception of the previously mentioned two residents crewing on each of locally operating tenders *Cape Denby* and *Island Trader*. Other local residents do fish seasonally, typically with relatively small-scale operations, in the Bristol Bay commercial salmon fisheries.

Prior to rationalization, outside crab vessels and their crew opportunities became known to King Cove residents in a variety of ways. Many vessels spent at least some time in the community before and after crab seasons. According to interviews in 2004, an estimated 40 to 50 outside vessels were storing crab pots in the community (with a 2008 estimate by the owner of the local crab pot hauling business suggesting that at the peak of activity prior to rationalization, between 65 and 80 BSAI crab vessels per year were storing gear in the community). Other outside crab vessels became known to locals (and vice versa) when they acted as tenders during other fisheries. Individuals who crewed on these outside boats pre-rationalization included, among others, owners of King Cove local fleet vessels.

The City of King Cove sponsored a community development survey in 2006 (Cordova Consulting n.d.) that was designed in part to "gather information regarding the effects of the recently established crab rationalization rules." Two questions on the survey were specifically directed toward obtaining information on participation of household members in the Bristol Bay

[25] The *Tempo Sea*.

red king crab, Bering Sea opilio, and other Bering Sea or Aleutians crab fisheries in the season before and the season after rationalization was implemented, and a third question was directed toward whether there were differences in how members of the household were paid for crab fishing in the first year post-rationalization compared to other years. The information from this survey was then utilized in a post-rationalization study prepared by the Institute for Social and Economic Research (ISER), University of Alaska Anchorage, for the Aleutians East Borough (Knapp and Lowe 2007). As summarized in the latter study, the number of households reporting at least one member participating in the Bristol Bay red king crab fishery declined from 19 in the last year pre-rationalization to 6 in the first year post-rationalization, with analogous declines from 17 to 5 in the Bering Sea opilio fishery and from 27 to 19 in other Bering Sea or Aleutians crab fisheries (where the number of households responding was 136). The Knapp and Lowe study also utilized other methodological approaches to estimating crab rationalization-related King Cove job losses and provided an additional estimate,

> *… developed through key informant interviews, that 20 King Cove residents lost crab fishing jobs in the 2005-06 season as a result of rationalization. This estimate is based on a count of specific individuals who would probably have fished for BSAI crab in 2006 if the crab fisheries had not been rationalized, based on their past participation in these fisheries. This estimate does not distinguish between jobs lost in the Bristol Bay Red King Crab fishery and the Bering Sea Snow Crab fishery. Most of these individuals who lost jobs would probably have fished in both fisheries.*

The estimate provided in the ISER study is consistent with information developed in 2004 pre- and 2008 post-rationalization interviews for the current study effort. Essentially, while only one locally owned vessel fished crab in the BSAI fisheries immediately prior to rationalization, crewing on crab vessels pre-rationalization nonetheless represented a significant source of employment and income for King Cove residents in a way and to a degree not seen in post-rationalization crabbing. Additional local employment and income associated with activities related to crab from outside King Cove are outlined in the support services discussion below.

The crew makeup on local commercial fishing vessels reportedly varies widely by season. Among the 58-foot boats, four crew members are typically used in the winter and summer fisheries (skipper/owner plus three), with one exception where one local 58-footer uses a crew of three in the summer (skipper/owner plus two). While crew numbers tend to remain steady across seasons, crew composition reportedly does not. Winter fishing seasons typically involve what could be termed "professional" crew, while summer crew tends to comprise family members, including minors. This, apparently, is a viable strategy for at least two reasons. First, school-aged children are not available to crew on vessels during the school year. Second, economic returns have been low enough during a number of summer salmon seasons in recent years that it has been difficult at times to get nonfamily crew (and, of course, hiring family crew during tough times helps household economies). In interviews conducted in 2004, some community members volunteered the opinion that during a prolonged ebb in the local fisheries economy family members had bumped others from crew positions and that during the winter fisheries older crew had bumped younger ones as positions became tighter and/or relatively more valuable. Others volunteered that younger crew in general were being used more than in the past (to reduce costs and to get the job done when sufficient money was not available to pay crew consistent with past practices), more young women were involved in particular, and more children were fishing than

ever before. Systematic follow-up information has not been collected to verify or elaborate on these earlier reported trends, but the general differences between winter and summer crews were again noted in 2008 interviews.

According to 2001 and 2004 interviews, and confirmed in 2008 interviews, King Cove and Sand Point vessels have reportedly competed for some of the same fishing grounds in recent years, particularly during cod trawling near Sanak Island (which is roughly 50 miles south-southwest of King Cove and roughly 100 miles southwest of Sand Point, as the crow flies). Steller sea lion protection measures near Sand Point have reportedly had the effect of shifting local fleet effort into areas farther to the southwest, including areas earlier targeted primarily by the King Cove fleet, and more heavily concentrating effort than was the case in the past. The areas to the east as well as north of Sanak Island see significant trawl activity, and then the areas within state waters around the island see pot cod activity following the federal trawl effort. Sand Point vessels have felt the impacts related to the Steller sea lion protection measure of a 3-mile no-trawl zone around the Lookout Point haul-out as well as the 1-mile transit-only zone around Clubbing Rocks, but these are relatively small exclusion areas compared to those in the Sand Point fleet's typical operating areas (e.g., Castle Rock, Bird Island, and Chernabura Island, among others). In 2008 King Cove interviews, additional overlap between the fishing grounds utilized by King Cove and Sand Point residents was noted in the salmon fishery, as reportedly Sand Point set netters have been more frequently encountered by King Cove fishermen in the Pavlof Bay area on the south side of the Alaska Peninsula, where King Cove fishermen have reportedly often worked the east side of the bay near Cape Tolstoi (which is roughly 30 miles to the east of King Cove [past Belkofski Bay, Volcano Bay, and Long Beach] and roughly 40 miles to the west of Sand Point).

Local vessels deliver primarily or exclusively to the processor in King Cove, with few exceptions. While not typical, deliveries reportedly may be made in Sand Point for a number of reasons, including bad weather (the run between the two communities may take 8 to 9 hours in a typical vessel). Cod may also be delivered to Sand Point if the vessel is in the area, or salmon may be delivered there if the plant in King Cove does not want it for whatever reason.

Salmon delivery patterns have changed over the years, as fishermen report in the past it was not uncommon to deliver to buyers on the grounds or to other cash buyers near the community. According to local fishermen, however, these buyers "got tired of being used as a wedge" to get higher prices when the bulk of deliveries still went to the PPSF shoreplant. One fisherman noted that by not making sure that the cash buyers had a sufficient volume of salmon, the fishermen themselves cut out other potentially competitive outlets for selling their catch. Another locally active, knowledgeable fisherman, however, attributed the local decline of cash buyers to larger fishery economic dynamics. According to this individual, in the 1980s the local chum fishery was at a peak at the same time that Arctic-Yukon-Kuskokwim (AYK) fisheries, which include relatively modest commercial fisheries but large subsistence fisheries, were in serious decline, such that significant Area M restrictions were placed on local salmon fisheries, altering the economics of King Cove area salmon fisheries, a situation that continues to present (2008). These changes apparently made the economic returns for cash buyers substantially less than was previously the case. Additionally, although conditions have improved since the first implementation of Area M restrictions, apparently the overall market has not rebounded to the point where cash buying is lucrative enough to entice a significant number of operations back to the region.

The fact that King Cove fishermen basically have a single outlet for local fish sales makes for some level of discomfort due to the effective degree of dependency of the fleet (and the community, for that matter) on a single company. According to at least some fishermen, the price set for some species influences the price given for other species, a situation that is markedly unfavorable to fishermen focusing on the species feeling the downward price influence. There is also some frustration among some fishermen in the community that PPSF directs fishing in a way that is not always favorable to local fleet interests. It is not surprising that a lack of competition would be troubling to local fishermen, and that the relationship between a fishing-dependent community and the local processor could become strained at times. Often seemingly cooperative behaviors can have a double-edged sword quality to them. For example, while the processor has in the past helped boats out financially during lean times, this has had the impact of creating greater indebtedness to the processor, which is then a cause for resentment. It is also reported that during the especially lean times in previous years, local vessel owners made charges to the boat for groceries and supplies that were needed for their households, increasing the debt load to the processor. This type of commingling of business and household economies is, of course, one of the potential drawbacks of small family-owned businesses, and it makes the relationship to the processor even more pervasive. The fact that the processor is foreign owned is also cause for speculation amongst fishermen regarding pricing and delivery policies.

At least a few local King Cove salmon fishermen do, however, currently (2008) deliver salmon to a co-op rather than to the PPSF plant. This co-op, according to a knowledgeable King Cove resident, has about 30 to 35 fisherman members, of whom about 4 are from King Cove and 2 from Sand Point (and at least 1 from elsewhere in Alaska), with the balance (estimated to be around 75 percent of the membership) being from the Lower 48, particularly from the Gig Harbor, Anacortes, and Puyallup Harbor areas of Washington state, the area from where the co-op is managed. This co-op charters a salmon catcher/processor to take direct deliveries from catcher vessels on the fishing grounds themselves, eliminating the expenses of runs to the plant, decreasing the number of times fish are handled by avoiding tendering, and decreasing the total time between harvesting and processing of product. This allows the co-op to pay a premium for fish, reported to have been in the neighborhood of 5 to 10 cents per pound above PPSF King Cove prices in recent seasons. The number of King Cove residents in the co-op is relatively limited, however, reportedly because a fisherman has to be a gillnetter to join the co-op and must have refrigerated sea water capability on board (which only a few gillnetters in King Cove have) to meet quality control and handling standards. The co-op is set up as a cost-sharing and profit-sharing organization, such that members receive payments throughout the year and costs and profits are trued-up, rather than as a single payment as those who deliver to traditional processors receive.

According to one of the active local co-op participants, beyond PPSF and the co-op, there are no other options for King Cove fishermen to deliver salmon in volume. The Aleutian Pribilof Islands Community Development Association (APICDA) has in the past sent out tenders from their False Pass plant, but that plant has not been open in recent years (although a new plant in that community is due to open this summer [2008]). Regionally based Aleutia[26] (for whom PPSF does custom packing) represents a potential additional market as well, but takes a relatively small volume of hand-picked, high-end fish on slush ice, mostly from Sand Point vessels.

[26] Described in the Sand Point section of another set of recently produced community profiles (EDAW 2008).

Most vessels delivering to PPSF are indeed relatively small in size and relatively local to King Cove. While focused primarily on salmon, most of these boats may also deliver other fish, such as cod and halibut. In 2008, salmon strikes reportedly had not been seen in several years, despite not being uncommon in the more distant past. (With what are perceived as chronically depressed salmon prices in general, local fishermen have noted with some irony that disaster relief funding was quickly made available to opilio fishermen following a couple of very bad years.)

Boats that deliver BSAI pollock in King Cove are all nonlocal, either from Kodiak or the Pacific Northwest (mainly Seattle). According to senior plant staff, in the not-too-distant past, virtually all of the Gulf of Alaska pollock delivered at the plant was from King Cove or Sand Point vessels; however, more recently, vessels from outside the immediate region have made up nearly half of local Gulf pollock deliveries.

With one exception (*Northern Spirit*), BSAI crab boats that deliver to the local plant are from outside the community, typically from Kodiak or the Pacific Northwest. Some of the Pacific Northwest crab boats are moored in King Cove or other Alaskan ports, and King Cove continues to seek to attract these vessels to moor in the community. King Cove completed a major phase of the expansion of its large boat harbor in 2002 and has subsequently (2007) made power available, but as of 2008 was still in the process of making fresh water available in that portion of the harbor.

Harvest value and volume figures for crab vessels specifically owned by residents of King Cove cannot be discussed because the vessels are too few in number to meet confidentiality requirements. Those from Sand Point are similarly too few to discuss by community, but for the era immediately prior to BSAI crab rationalization, combining the data from the two communities resolves this problem, and the two fleets do share many characteristics. As reported in a previous study (EDAW 2005), for the period 1991 through 2000, the number of vessels fishing from these two communities averaged seven vessels for Bristol Bay red king crab, five vessels for opilio crab, six vessels for Tanner crab, nine vessels for Pribilof red or blue king crab, and less than one vessel for Dutch Harbor brown crab. Much of this crab would probably have been delivered to the PPSF processing plant in King Cove, although for some of the more distant fisheries, deliveries would be made to other plants (shore or floating) that may or may not be operated by PPSF. For the 1991 through 2000 period, 30 different vessels owned by residents of the two communities participated in the BSAI crab fisheries, and most (17, with 2 unknown) were 58 feet or less in length. These were multifishery/salmon boats and are limited in the BSAI crab fisheries by weather and sea conditions. Still, for these vessels BSAI crab contributed 68 percent of the value of their catch, with opilio as the most significant single fishery. For the combined fleet of those communities as a whole, BSAI crab contributed only 18 percent of the total value of the harvest. Larger vessels are clearly preferable for BSAI fisheries, however, as of the seven vessels from these communities active in the fisheries in 2000, five were over 58 feet in length. Many of the smaller vessels have dropped out of the BSAI fisheries, even prior to rationalization, and most if not all of the then more-recent entrants were over 58 feet in length. No similar data can be discussed for the post-crab rationalization period as there are too few vessels in either King Cove or Sand Point, or the two communities combined, to allow a separate discussion due to confidentiality restrictions.

2.3.3.2 Processing

Community Processor Quantitative Description

An earlier NPRB/NPFMC funded community profile effort, *Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak, Alaska* (EDAW 2005), included a quantitative characterization of local community commercial processing sectors, including detailed information on an annual basis, from 1995 through 2002, of the number of active processors, species processed, pounds purchased, ex-vessel values, wholesale values by species, processing value added, and relative dependency by species. As updating this information is effort intensive and not central to the current BSAI crab rationalization 3-year review-oriented community analysis, it has not been updated for this community profile. Further, in the case of King Cove, no quantitative information can be released due to confidentiality restrictions based on the limited number of sector participants. Rather, the more qualitatively oriented and BSAI crab rationalization focused discussion in the next section has been updated.

Community Processor Characterization

The PPSF King Cove shore plant was built around the local salmon fisheries and, like the common name in the community suggests, the plant was and still is a "cannery," although specific product form varies in importance from year to year with changes in markets, such that in addition to canned salmon, the facility produces a variety of fresh and frozen salmon products. Though historically a salmon plant, the PPSF King Cove plant over the years added crab as a strong secondary species, followed by halibut, and then cod and pollock. PPSF representatives report that they have designed their local processing operations primarily around serving the smaller range of the catcher vessel fleet, and the fishery around the Pribilof Islands (Schwarzmiller and Sterling, personal communication, 2002).

Today (2008), in addition to salmon, the King Cove plant also processes a significant volume of both opilio and red king crab. It also has developed significant groundfish processing capability, with Pacific cod and pollock as the predominant groundfish species. Substantial amounts of cod are supplied from both the Gulf of Alaska and the BSAI regions. Pollock is also taken from both BSAI and Gulf of Alaska fisheries and a range of product forms are produced, including block as well as surimi, mince, and shatter pack fillets. The PPSF plant also still processes halibut on a regular basis, and herring and other species less often, but the relative importance of halibut is reportedly somewhat less than in the past, as halibut has been cited as an example of the dislocations that can result from a rationalization program. PPSF was only one of several regional processors that report that the institution of halibut IFQs reduced their profit margin on halibut to such a degree that processing volumes were substantially reduced, and this was a stated condition for King Cove in particular.

Through time, the King Cove plant has maintained a diversity of processing, with interspecies dynamics being somewhat fluid. Over the years, the distribution and peak of employment effort at the plant have fluctuated in response to both stock changes and management changes, with an example of the latter being implementation of the American Fisheries Act (AFA) and the BSAI crab rationalization. Detailed production figures, however, cannot be disclosed because of confidentiality restrictions. In general, however, it can be stated that King Cove is somewhat

unique among the four key regional groundfish ports of Unalaska, Akutan, King Cove, and Sand Point as it has a relatively higher dependency on Pacific cod among the various species of groundfish landed than is seen at the other plants, and a relatively equal balance between Pacific cod and pollock, but the relative dependence of the plants on different groundfish species has varied over time and with stock fluctuations. In King Cove, Gulf of Alaska pollock is obtained from the local small boat fleet as well as from a small number of outside boats, but BSAI pollock is obtained exclusively from larger-capacity nonresident boats. In 2008, local plant personnel estimated that around 20 percent of the cod delivered to the plant comes from Lower 48 boats, with the remaining 80 percent coming from King Cove and Sand Point vessels.

The current (as of 2008) annual cycle of the plant is relatively consistent with a pattern that that has been in place for several years. The year begins with the fixed gear opening on January 1, with the first deliveries of pot cod arriving in the community between January 5 and 10. Crab-related activity has changed in recent years, but the first opilio deliveries still occur in mid-January. The preseason crab-related activities that used to occur in King Cove in earlier January prior to BSAI crab rationalization (in 2005), however, do not occur at the levels seen prior to rationalization, as crab efforts in general have slowed in pace. Also, the seasons have been extended since rationalization was implemented and vessels have been coordinating with the processor by means of fishing plans to optimize efficiency and economic returns. In the years immediately prior to rationalization, crab vessels often made only one or two total deliveries in King Cove, while if the fishing was "scratchy" the season would extend to 3 weeks or so. In 2008, however, the bulk of opilio deliveries was not finished until the end of March. Following opilio crab activity, crab crews and vessels still tend to leave the community quickly, unless they fish IFQs.

Around January 20, trawl seasons open up for Bering Sea pollock and cod, as well as for Western Gulf of Alaska cod and pollock. The King Cove plant schedules deliveries of Bering Sea pollock after the Gulf fisheries can be prosecuted, something that co-op conditions facilitate, to allow the plant to optimize their work on the other fisheries. Depending on season particulars, early season deliveries of Bering Sea cod may be taken, even if pollock is not, but boats may wait for fish to school up at the end of January. Western Gulf pollock activity may only last about a week, while Bering Sea pollock may last through the end of February. Pollock is a comparatively new species for the plant and, as a result, the plant has relatively little pollock activity compared to large plants in, for example, Akutan and Unalaska (due to lack of qualifying history when the management of that fishery changed under the AFA). After trawl season in the Gulf, there is a 1-week stand-down, followed by the state cod fixed gear fishery, with most local activity related to that fishery lasting about 3 weeks to the end of March or so. The 15 percent hold-back for jig gear in this fishery, if fishing is slow, may last until the first week of May.

There are reportedly few halibut IFQ landings (or sablefish IFQ landings either) apparently due to lack of ability to pay the prices given at ports that are more accessible to the road system and have better capabilities to quickly move fresh product. Some flatfish are also processed at the plant, but there are apparently challenges in that market as well.

Summer activity at the plant begins early in June with the June 7 opening of salmon season and the June 10 opening of Bering Sea AFA inshore pollock B season. July is relatively slow for salmon, except in years of large abundance of Bristol Bay salmon. In those situations, Bristol Bay salmon is canned in King Cove. August typically picks up again with the pink salmon runs,

and August 20 is also the time of C season pollock opening in the Gulf of Alaska. Scheduling flexibility brought about by AFA co-op conditions also allows the plant to maintain at least some activity to help tide over the slow times in midsummer. If local runs are particularly weak, which happens infrequently, PPSF may tender pink salmon out of Kodiak and other areas, balancing operations and adjusting supply to capacity in King Cove and Valdez. In some years, there has been limited local activity related to the Dutch Harbor July 15 herring food/bait opening, but this is dependent on the plant's bait needs.

On September 1, the last 40 percent of cod is released, but there has been little activity in King Cove related to this opener as fishing has not been especially productive recently. Crab activity resumes with preparation for the October 15 Bristol Bay red king crab opening, but, like opilio seasons, the level of local activity in the days leading up to this opening has fallen off dramatically since the implementation of BSAI crab rationalization. Immediately prior to rationalization, Bristol Bay red king crab season had become a one-delivery fishing season for King Cove, with the season lasting from 3 to 5 days. In 2007, most of the Bristol Bay red king crab was completed over the course of a month. IFQ activity lasts through mid-November, and then from mid-November to January 1, activity at the plant is confined to maintenance operations.

Employment levels at the plant vary considerably by season, but the overall cycle has remained relatively stable for a number of years. According to detailed information obtained from the plant in the course of a previous study, over the 5-year period from 1998 through 2002, employment peaks were seen from late January through March, with most weeks at or near 500 total employees on-site. Secondary peaks of approximately 400 or somewhat more employees were common from mid-June through mid-August, but this was more variable, with some weeks in some years hitting 500 or more, and some weeks in other years being considerably less than 400 during this same period. On-site employee counts drop to about 30 persons during the year-end maintenance work. Employee counts between the winter and summer busy seasons vary considerably from week to week and year to year, from the mid-100s up to near peak levels, depending on the variability of activity associated with particular species fisheries in any given year. According to an interview with senior plant management, this pattern has remained consistent through 2008.

With the slowing down and spreading out of crab seasons since BSAI crab rationalization, the number of workers present on-site has not change appreciably, but the number of workers dedicated to crab at any one time has. For example, where opilio may have been run 24 hours per day during race-for-fish conditions, in more recent years there may be one shift running crab rather than two during the local opilio processing window. As the PPSF plant is a multispecies, multiproduct form operation, the plant has the ability to adjust product forms for different species, which vary in their labor intensity to produce, during busy times in other fisheries. In addition to direct processing employees and physical plant staff, the core management and administrative staff at the plant include desk/clerical, fisherman's accounting, payroll, office manager, plant manager, production manager, housing, and chief engineer positions.

PPSF owns most of the land in and around its immediate complex in King Cove, and housing is provided for workers on-site. PPSF also leases space in the Fleets Inn, a hotel operated by the King Cove Corporation (KCC), the King Cove village Alaska Native Claims Settlement Act (ANCSA) Native Corporation, within easy walking distance of the PPSF facility. The vast

majority of workers at the plant are transient with respect to establishing a long-term residence in King Cove, but according to senior plant staff several families have established roots in the community. In general, however, it is reportedly hard to establish a family in the community or move a family to the community on processing wages (except for quite senior positions).

In terms of integration with the community economic and social context at large, the plant at King Cove is quite different from those in Unalaska/Dutch Harbor. As noted, compared to King Cove, the growth of commercial seafood processing in Unalaska/Dutch Harbor is a relatively recent development (at least in terms of continuity of operations at specific facilities). The King Cove processor has longstanding relationships with the local catcher fleet, which, in turn, is the source of most employment in the community (among permanent residents). This is a sharp contrast to Unalaska. Unalaska is the site of multiple shoreplants and has a much more "industrial" fishery than does King Cove. This is not a consistent pattern, however, as the Bering Sea pollock delivered to King Cove is not fished by the local small boat fleet, and Bering Sea crab delivered locally is largely delivered by outside boats (but with significant local involvement, as outlined previously). Despite the long-term stable relationship between the community of King Cove and its single processor, however, the direct ties to the wider social context of the community are less evident in King Cove than in Unalaska where, for example, senior processor personnel serve on the city council and numerous other boards and community committees. Certainly the fact that there is but a single processor in the community influences processor, local fleet, and community relations, but exactly how this serves to structure or shape relationships is a complex matter.

Changes associated with the restructuring of the groundfish fishery under AFA have been felt in King Cove. The processor in King Cove is qualified as an AFA (BSAI pollock) processor and benefits from a Co-op Processor Endorsement, as five catcher vessels did deliver at least 80 percent of their inshore pollock to the King Cove plant during the AFA-qualifying period. The King Cove plant is relatively well located to process BSAI pollock and Gulf of Alaska pollock. Pollock product mix varies somewhat from other AFA plants, with surimi being a comparatively recent addition. Product mix at any particular time depends on market conditions, or, to a lesser degree competing labor needs at the plant, such that surimi may be a product of first choice or it may be run to maximize utilization of pollock that would otherwise produce less than optimum fillets.

According to interview information developed before crab rationalization was in place, crab deliveries and processing in King Cove were reduced in some of the years leading up to rationalization, due primarily to a reduction in quotas related to reduced stocks. AFA sideboard caps on BSAI crab also limited the amount of such crab that could be processed by the King Cove plant. This required that the processor charter an uncapped floater (otherwise employed during crabbing in the Pribilofs) to process additional crab while moored near King Cove. Otherwise, production in King Cove would have essentially been limited to the amount processed in previous years (as adjusted for other allocations). PPSF representatives reported that this, in fact, represented a production level lower than in previous years and would have required that they limit the number of boats from which they bought crab. To service these boats and maintain market share, PPSF took the step of chartering *Steller Sea* as a crab processor. Given the then-present low crab stocks and associated low Guideline Harvest Levels, PPSF representatives reported that they could physically process all the crab their associated fleet harvested in the King Cove shoreplant, but that this would not have been equitable to

the Pribilofs (and may not have been possible under the AFA crab caps). Certainly the use of *Steller Sea* in the Pribilofs helped maintain/increase PPSF's market share in the crab fisheries in that area. With the implementation of BSAI crab rationalization, however, AFA crab sideboard caps are no longer an issue for King Cove plant production.

According to interviews conducted at the time, prior to crab rationalization some of the crab boats delivering to the PPSF processing plant would participate in other fisheries (fishing for cod and halibut, tendering for salmon and herring), although most would fish only crab for PPSF and tender in other fisheries as their primary revenue sources. In interviews conducted in the years immediately prior to crab rationalization, PPSF representatives estimated that about 30 crab boats had delivered to them in the previous few years, but earlier years reportedly saw more crabbers delivering to the community. Also in the years immediately prior to rationalization, most, if not all, BSAI crab fisheries had effectively become "one or two trip" fisheries from the King Cove perspective. Immediately prior to rationalization, the PPSF crab fleet was composed mostly of independent catcher vessels, with a mixture of sizes and with owners from a variety of communities. Crab boats local to either King Cove or Sand Point tended to cluster at the lower end of the size range of this fleet, whereas Kodiak and Pacific Northwest crab boats were larger. Prior to BSAI crab rationalization, the King Cove plant did take deliveries from vessels fishing in what is now the North Region rationalization area, but, according to plant management, for vessels to make that long of a run for in-season deliveries, the processor needed to provide incentives for them to do so (as opposed to last load of the season deliveries, which were logistically easier for vessels headed home from the fishing grounds). Since rationalization, only one locally (King Cove) owned vessel participates in the rationalized BSAI crab fisheries and this vessel tenders salmon as well, as discussed elsewhere. According to PPSF management, in the 2007 Bristol Bay red king crab season about 15 vessels delivered crab to the King Cove plant, while in the 2008 opilio season, about 20 vessels delivered crab to the plant.

According to local plant management, in the years leading up to crab rationalization *Steller Sea* typically came to the King Cove area to "help clean up" at the end of crab season. When *Steller Sea* processed locally, it sometimes did so outside of the city limits of King Cove. By processing outside the city limits, revenues from local fish taxes did not accrue to the City of King Cove but fish taxes are still paid to the AEB (and, of course, the State of Alaska). According to plant personnel, this was important to stay competitive in price with Unalaska/Dutch Harbor (which had only a local 2 percent fish tax and no borough tax), and Kodiak (which had no local fish tax [although the local 1.5 percent severance tax was essentially a functional equivalent]), as fish taxes show up as deductions from the price paid to fishermen. Processing location, however, also depended on weather and logistics, which according to plant management meant that some processing did take place within the city limits. With rationalization, however, the shore plant in King Cove has been able to process all of the crab delivered locally. According to PPSF management, in 2006 and 2007, the King Cove shore plant ran all of PPSF's Bristol Bay red king crab. In 2007, *Steller Sea* custom processed all of PPSF's northern shares of opilio, while in 2008 the Trident St. Paul plant custom processed PPSF's northern shares of opilio.

While other floating processors used to come into King Cove itself, apparently none have done so for quite a number of years. When not on crab in the Pribilofs or King Cove, *Steller Sea* is out on the fishing grounds following the fleet in a variety of fisheries, including salmon in Bristol Bay, Sand Point, and Squaw Harbor, among others, and ranging from the Ketchikan area in Southeast Alaska to Dutch Harbor to the west along the Aleutian Chain.

PPSF also has a presence in several other locations within the AEB, including Sand Point, False Pass, and Port Moller. PPSF has a "support station" in Sand Point, consisting of a dock, a bunkhouse, and accounting support for fishermen. Services provided at this site include facilitating crew settlements, stock room services, pot storage, and tendering, with fish purchased in Sand Point tendered to the PPSF plant in King Cove. The PPSF facility in Sand Point is described in detail in a set of earlier produced community profiles (EDAW 2008).

PPSF also provides fuel sales at a former site of a shore plant in the community of False Pass on Unimak Island, about 50 miles west of King Cove. This fuel facility employs one local False Pass resident and, according to the Alaska Department of Community and Regional Affairs community database,[27] has a tank storage capacity of 321,700 gallons. There is, however, no longer a PPSF support station in False Pass similar to the one in Sand Point, as was the case a number of years ago, nor is there any longer a full shoreplant facility in the community, such as the one that operated in False Pass from 1917 until 1981, when it was destroyed by fire and not rebuilt. According to PPSF management, as of 2008 fuel sales at the False Pass facility have not changed substantially since the implementation of crab rationalization, although according to City of False Pass leadership local fish tax revenues are down due to floating crab processors no longer operating in the community since rationalization. Also, according to Isanotski Corporation (the local False Pass ANCSA Alaska Native corporation) leadership, crab gear storage rental in False Pass is down significantly since the crab rationalization when into effect (as described in Section 1.3.9).

PPSF has another facility at Port Moller, about 100 miles northeast of King Cove and about 50 miles north of Sand Point, on the north side of the Alaska Peninsula. This plant processes salmon and only operates seasonally (May through September). According to the PPSF website,[28] during peak production there is a crew of 140 on-site and the site is self-sufficient, providing for all housing, food, electricity, water, and other supplies needed by the operation. Unlike False Pass, and the other communities described in this document, Port Moller does not have year-round population.

2.3.3.3 Support Services

When viewed from one perspective, King Cove has little in the way of a fisheries support service sector, and in this manner the community, though a major processing port, differs markedly from Unalaska or Kodiak. For example, in King Cove, the lone shoreplant has historically provided a variety of fleet support services that the plants in Unalaska no longer have to provide with the development of a support sector. From another perspective, however, outside of public works, tribal, and school employment, there is arguably little in the way of local employment that is not directly linked back to supporting the fishing sector of the economy.

Beyond scale issues, the King Cove support services economic sector is also quite different from that of Unalaska, as it does not have enterprises related to the groundfish offshore sector (nor does the community otherwise derive direct revenues from the offshore sector).

[27] http://www.dced.state.ak.us/dca/commdb/CF_BLOCK.cfm, accessed 6/5/08.
[28] http://www.ppsf.com/facilities/index.aspx, accessed 6/5/08.

Direct fishery support services that do exist in King Cove include shipping, air transportation, marine transportation, and taxi services; marine and other fuel sales; gear hauling and storage (including crab pot hauling and crab pot storage) and vessel watch services; marine mechanical and specialty supply services; welding services; vessel supply services and local stores; diving and vessel charter services; bar and restaurant services; lodging services; and range of services provided by the KCC. Additionally, two locally based tribal entities, the Agdaagux Tribe and the Belkofski Tribe, provide a range of services to the community, with the former being directly involved in a range of substantial infrastructure projects. There is also some other limited private sector business activities that are more indirectly related to fishing support in the community, and there are a number of public service sectors that derive a portion of their service population and demand from fisheries-related activities including recreation, clinic, and public safety services. Each of these local support sector components is discussed in this section.

In terms of a general characterization of crab rationalization impacts on local businesses, an earlier study (Knapp and Lowe 2007) examined confidential sales tax data for eight King Cove businesses and compared information from the second and third quarters of the 2 years prior to rationalization and the first 2 years post-rationalization. As a group, combined sales increased about 6 percent. Five of the eight businesses saw an increase in sales; one experienced a decrease of less than 10 percent, and two experienced a decrease of more than 10 percent. This study concluded that it was difficult to see any clear negative effect of crab rationalization on the sales of King Cove businesses "with the clear exception of one company which is very dependent on the crab fishery and which experienced a dramatic reduction in sales" (Knapp and Lowe 2007:76).

Shipping, Air Transportation, Marine Transportation, and Taxi Services

The level and type of transportation services provided to the community are directly related to fisheries demand. Barge service is provided to the community by Coastal Transportation on a weekly basis out of Seattle throughout the year, except during the especially slow period when the local processor is essentially shut down during last half of November and all of December, at which time the barge only comes approximately once every 2 weeks. Additional barge service is provided to the community by Sampson Tug approximately twice per month during most of the year, and more frequently during the summer months.

Air service to the community has become more problematic in recent years since regular jet service by Alaska Airlines was discontinued between Anchorage and Cold Bay. Since that time, relatively small turboprop aircraft operated by PenAir have provided the scheduled passenger service between Anchorage to Cold Bay, and yet smaller prop aircraft have typically been used on the scheduled passenger service between Cold Bay and King Cove. This has resulted in local residents having a more difficult time getting seats in and out of King Cove during peak times when sport hunters and fishermen are coming into the area (primarily around Cold Bay, the first major bay to the west of King Cove along the Alaska Peninsula, which is the site of the community of the same name) as well as during peak fishing and processing times, especially if weather complicates the schedule, although community leadership reports that in recent years PPSF has been chartering more flights during busy processor movement periods to help ease the flow. Most recently, the hovercraft link between Cold Bay and King Cove (described in the local governance and revenues section, below) has also been used to transport processing workers and others during peak movement periods, again helping, to a degree, relieve air

passenger congesting difficulties. Further, the situation on the flights on the critical Anchorage–Cold Bay segment has reportedly improved since PenAir is now (2008) routinely using Saab 340 aircraft rather than Metros for this run. Despite these efforts, however, freight and baggage are being reported by community leadership as being more commonly bumped in favor of passengers than was the case in the past, and getting airline seats into and out of the community on a consistent basis still remains problematic during some stretches of the year. The King Cove airport is located approximately 4.5 miles from the downtown area of the community. PenAir does have a shuttle van that it uses primarily for freight hauling, but residents generally get rides to and from the airport with friends or family or from the local taxi service. PPSF also has a van that it uses for airport cargo and passenger (employee) transportation.

Photo by Della Trumble

Hovercraft arriving in King Cove

While the local economy is, in part, constrained by relative isolation on the transportation system, during fieldwork in 2004 a number of individuals in the community ventured the opinion that a then-planned combination road/hovercraft transportation project that would link King Cove to Cold Bay offered hope of new economic opportunities. As of 2008, the road/hovercraft link was operational, but no longer operating on a scheduled basis, as discussed in the local governance and revenues section below.

Passenger and vehicle ferry service is also available, although only seasonally, in King Cove. Alaska state ferry *M/V Tustumena*, a part of the Alaska Marine Highway System, calls on the community from May through September each year, although service was being reduced from twice per month in 2007 to once per month in 2008. Additionally, hovercraft service links King Cove to Cold Bay as described in the local governance and revenues section, below.

Taxi services are another type of business that derives benefit from local fisheries activity. There is currently (2008) only one active taxi service, My Cab, in King Cove, operated by a husband and wife couple. At the time of pre-crab rationalization fieldwork (October 2004), there were reportedly at least a couple of other individuals in the community who have had taxi licenses and ran their services during the higher-demand periods associated with seasonal fishing activities, but they were not active at that time. Started in 2003, My Cab is reported at present serving mostly local residents, but one of the owners reported that prior to BSAI crab rationalization, when the crab fleet was in the community was one of the busiest times of the year for the business, when fishermen would frequently hire a cab to go to the store or to the bar. Now (2008), one of the owners reports that business is much more evenly distributed throughout the year and characterized the situation by saying "there are no busy times, only slow times," with those slow times described as occurring during April and May and then again during the latter part of November and all of December. The rest of the year was characterized as "pretty steady" for the cab business. While more boats are being moored in the harbor now (2008) than since the first years immediately after the implementation of BSAI crab rationalization (see the harbor discussion below under local governance and revenues), according to one of the operators of the cab company, this has not translated into more business for the cab company, as crews are now characterized as spending less money in town as they tend to leave the community immediately after mooring, at times on the same day they arrive.

Beside fishermen, one of the owners of My Cab reported that some fishing industry-related taxi service demand comes from processing workers at the PPSF plant, but only perhaps one trip per month when the weather is bad, typically for trips to the Alaska Commercial Company store or the bar. There is reportedly no activity related to tourism or sport hunting and fishing by outsiders in the community (in contrast to nearby Cold Bay), with the exception of one local fisherman, now retired, who does take bear hunters out to remote hunting locations during spring and fall bear seasons that each occur every other year. Typically evenings, when people are attending bingo on Wednesday and Sundays, and patronizing the bars on all days of the week, result in more taxi demand than other times of the day. According to one of the owners, it would not be possible to make a living off of the taxi business on the volume of business that is generated in the daytime alone. The bar-related business means that the taxis run late, getting the bartenders to their homes around 3:30 a.m. and getting themselves home by 4:00 a.m. or so. The couple that runs My Cab, like the owners/operators of a number of other businesses in King Cove, pursue a diversified income strategy, which in this case has recently involved having the husband seasonally run a salmon tendering vessel, during which time the wife focuses more on running the taxi business. Due to fuel expenses, cab rates increased in 2008 from the $5 in-town flat rate and the $15 town-to-airport flat rate that had been steady for quite a number of years. At present (2008), in-town rates are a flat $7, while fare to the airport is $17 one-way for a single and $12 one-way per person for groups. A flat $30 per head, one-way, is charged for taxi service to the hovercraft landing.

Marine and Other Fuel Sales

Marine fuel services in the community are currently (2008) provided exclusively by PPSF. PPSF is also the only supplier for everyday vehicle fuel needs in the community. The City of King Cove in recent years built a fuel tank farm on city-owned uplands near the harbor, but at present (2008) this is being utilized for nonmarine applications only (such as fuel for the local conventional power plant, the AEB-operated hovercraft that links King Cove to Cold Bay, and sales to the local fuel truck distribution enterprise that supplies the home heating fuel market). While the city has installed and previously operated a pipeline connecting this tank farm with the city's steel dock in the harbor in order to provide fuel sales to vessels, as of 2008 no marine fuel sales had taken place for several years after it became apparent that marine fuel demand could quickly exceed existing tank farm storage capacity, leaving too little fuel available for other critical local demands. This pipeline and capability will likely be reactivated in the future, but only after an expansion of the tank farm. (Initially it was contemplated that the city's marine fuel sales venture would also involve the KCC, but according to KCC leadership this was not adequately cost-effective from its perspective, so it is not involved in the activity. Further, in the initial phases of planning it was anticipated that the city would partner with industry to operate the tank farm and distribution system but, as implemented, the city is directly operating the facility.)

There is also a one-person private fuel delivery service business, Newman Oil Sales, that has been operating for several years in the community (spanning the pre- and post-crab rationalization eras) that supplies residences and other buildings by truck. This service purchases the fuel locally (from both the city tank farm and PPSF) and charges a mark-up per gallon to cover the cost of service and delivery. While this business itself is less directly linked to supporting the fishing sector of the economy than some others, like a number of the other support type of businesses in the community, the owner of this business also commercially fishes

and in this way fishing directly ties back into the household economy of the owners of even seemingly stand-alone business enterprises.

Gear Hauling, Storage, and Vessel Watch Services

Crab pot hauling in King Cove is provided by a family business (Mack Trucking). Although there were some others competing in the market in the early years of the business, it has been the only such business in the community for many years. Originally a single-person operation, this enterprise is run by the son of the founder. Different equipment configurations have been tried over the years, including a boom and truck system that could handle two pots per haul, to the present system where bobcats shift the pots and a flatbed with a four-pot capacity makes the hauls. With the present configuration, about 500 pots per day can be handled by a single operator. Prior to crab rationalization, this business did experience a temporary decline when pot storage opportunities opened up in False Pass and St. Paul, but according to the owner in 2004 (before crab rationalization was implemented) business had rebuilt to the levels seen before storage started in False Pass and St. Paul for a number of reasons, including King Cove being more convenient to the fleet than St. Paul due to occasional inability to access stored gear there in some weather/ice/sea conditions.

According to information collected in 2004 from the owner of Mack Trucking, prior to crab rationalization about 10,000 crab/cod pots in the community were moved and stored over the course of a year, with some pots being used for multiple seasons. When pots were going out at the start of a crab season the load could typically be handled by one employee, as vessel crews would be working on the pots as they arrived at the dock and so there was a limitation on how fast they could be loaded on board (but sometimes up to 1,100 pots per day were handled in the last 3 or so days immediately preceding season openers, which required supplemental help from one or two persons). At the end of the season, however, several extra drivers were needed to handle the flow from vessels going into storage all at once. As of 2008 (post-rationalization), this business had a single employee (the owner) and the number of crab pots moved per season had dropped substantially, with an estimated 3,500 crab/cod pots moved over the course of a year, some multiple times. According to the owner, for the most recent (2007–2008) Bristol Bay red king crab season, about 1,800 pots were moved before the season and about 1,000 were moved after the season (with about 800 pots remaining out of storage in King Cove for subsequent use during the opilio season) and for the most recent (2007–2008) opilio season another 1,800 pots were moved from storage, with a total of between 2,500 and 3,000 being moved back into storage following the close of the opilio season. Pots are also hauled for cod fishing seasons by the business, but with a 60-pot limit per vessel and only 20 or so vessels fishing locally, this fishery involves roughly 1,200 pots total and has been relative constant in recent years.

In addition to pot hauling, Mack Trucking also has hauled seine gear in the past, but as of 2008 this service is primarily handled by the City of King Cove. Mack Trucking also provides truck and skiff rental services, as well as boat watching services, as described below. Bush Truck and Equipment Rentals, operated by another local resident who is otherwise employed in the community, also rents out trucks, but the owner reports doing so as "more of a hobby" and to help people out rather than a separate business venture.

There is also some local employment related to vessel watch services for commercial fishing vessels. Boat owners from outside the community who moor their vessels in the harbor will hire local individuals to act as watchmen and to handle any emergencies that may arise. Fees for this service are reported to be in the $35 per day range as of 2008 (and unchanged since at least 2004). The large majority of this work in King Cove in 2008 is done by the owner of Mack Trucking (although there are at least two other individuals who derive at least a minimal amount of income from this work). While there was a drop-off in this business immediately following crab rationalization, consolidation of the crab fleet, and a drop in local crab vessel mooring, in subsequent years, according to the owner of Mack Trucking, the business has built back up to and surpassed previous levels with a local increase trawler mooring (essentially paralleling the drop and recovery of harbor revenues described in the local governance and revenues section below [Section 2.3.4]). Overall, the owner of Mack Trucking reported that as of 2008, while crab pot hauling revenue was down, this was offset by increases in boat watching revenues as well as increases in return on his local fishing efforts. Annual revenues in all of these activities, however, are subject to fluctuation due to a wide range of variables, such as ice conditions, fuel costs, quota, fish price, and weather.

Pot storage is another fishery support service offered in King Cove. Crab and cod pots are stored on lands owned by the KCC, PPSF, and City of King Cove. The KCC pot storage area is across the road from the harbor, between MC's bar and the AC store, and in the area of the gravel pit. According to the owner of the local pot hauling business, the active pots stored on this land are typically owned by local residents (who are also shareholders of the KCC) and are most often moved by those local vessel owners rather than by the pot hauling business. According to KCC leadership, the KCC is not currently (2008) charging for pot storage on its lands and has not for at least 2 fiscal years. PPSF provides pot storage space as a service to vessels that deliver to the plant and does not charge the vessels for this service. The City of King Cove has a modest pot storage area on the beach between the Travel Lift and the T-dock, and specifically uses pot storage as a directed revenue source, along with pot transfers across its docks (which includes all pots being loaded and unloaded in the community, regardless of where they are stored) as described in the local governance and revenues section below. Most of the city land on the immediate beach area in the harbor, however, is used for boat storage as opposed to pot storage. As free pot storage is available to vessels delivering to PPSF, and otherwise, at least for the time being, to local residents on KCC lands, typically the only vessels that store pots on city lands are vessels from outside the community that do not deliver locally but that, rather, use the city's harbor facilities as a staging area for more distant fisheries.

Marine Mechanical and Specialty Supply Services

Marine mechanical services are provided in King Cove by a one-man operation (J&L Marine Repair), supplemented with temporary local hires for larger jobs. This individual, who first came to King Cove to work in 1968, is a generalist, and in addition to handling mechanical repairs, he also does some hydraulic work (as do PPSF engineers/mechanics) as well as some electrical work. PPSF typically has one electrician on-site, but outside of these individuals, there are no vessel systems support personnel in King Cove. Some specialty personnel, such as radar technicians, do come through the community, but reportedly on a very infrequent basis.

Housing for the J&L Marine Repair mechanic is supplied through PPSF and is retained by this individual on a year-round basis, even through he is not continuously in the community.

Currently (2008), this individual, whose home is in Anchorage, is in King Cove approximately 5 months annually, with the balance of the year spent working in other coastal Alaska (or even sometimes Pacific Northwest) fishing communities (when not at home). This individual does not have a shop or other permanent dedicated workspace in King Cove, as most work is done aboard the vessels themselves, with tools stored at PPSF. Further, this individual reports that he essentially has the full use of all PPSF facilities whenever needed. According to this business owner, BSAI crab rationalization has had a direct impact on his business due to the consolidation of the fleet. Crab vessels were reportedly easier to work on (as they tended to be more roomy in the spaces where this individual worked) and tended to have more favorable business attitudes and practices, such as not being as concerned about costs and more prompt to pay, on average, than the average vessels in other fishery fleets. Since BSAI crab rationalization, while there has been no shortage of work for the business (due to a regional shortage of qualified marine mechanical, hydraulic, and electrical personnel), according to the business owner it has to accept more work (such as a larger number of smaller jobs) to make up, at least in part, for the loss of revenue that accompanied the consolidation of the crab fleet and the end of race-for-fish conditions.

A related fishery support business in the community is marine filter sales, a business that is a sort of partnership between the J&L Marine Repair mechanic and another business person in the community. While this was originally part of the mechanic's business *per se*, it became too large a volume of sales to adequately handle along with the main mechanical business. This business sells oil, fuel, and air filters to the vessels, along with a few other products of secondary importance, such as engine cleaner. At present (2008), the business does not have a permanent building but has had plans in the works for several years to build a shop near the harbor that would house both the mechanic's operation and the filter/support business. This would potentially allow for some expansion of the business through having predictable hours in a known location (at present customers call for service over the radio) as well as provide tool storage and workspace out of the weather. In 2004, prior to crab rationalization, the managing partner of the filter business estimated that crab vessels account for about 75 percent of filter sales, while the remaining 25 percent goes to the local fleet. Whereas crab vessels tended to order filters in case lots (for their main and auxiliary engines and generators), local small vessel owners tended to pick up individual filters from stock on hand. In 2008 this same owner reported that sales indeed initially declined precipitously due crab rationalization and its associated fleet consolidation and, while it has built back to a level an estimated 25 to 30 percent below annual averages pre-rationalization, it has not yet fully recovered. While the number of vessels spending time in the community has increased again since a low during the first year of rationalization (reportedly due to comparatively affordable mooring rates in King Cove and the high cost of fuel for vessels to run back to Pacific Northwest home ports between seasons), with the lack of race-for-fish conditions, these vessels apparently now (2008) more frequently stock up on filters and related parts directly themselves rather than purchasing them in King Cove.

PPSF also acts as a vessel support business through their "storeroom" marine hardware facility. Open to the public, not just those who have other business with PPSF, this represents the only source of a range of marine hardware in the community.

Welding Services

There are two one-man welding businesses in the community that do marine work as well. In 2004, immediately prior to crab rationalization, one of these, Warren Wilson Welding (WWW) had begun to be run as a full-time business by a former commercial fisherman, while the other continued to be run as a part-time/secondary business or source of income by an active fisherman. More recently, however, WWW has become a part-time business, according to its owner, due to slow periods during the year that were attributed at least in part to a drop in volume of work related to the consolidation of crab vessels under the rationalized fishery. At present, the owner of WWW balances an airport job he started in 2007 with his welding business, while the other welder in the community characterizes his work as consisting of spill-over jobs that come up when the owner of WWW is out of town or otherwise not available. The less active welder also made the observation that the remaining vessels in the fleet tend to be the better maintained vessels, requiring relatively less work in King Cove than the average vessel in the pre-rationalized crab fleet. Further, there is less demand for pot racks under rationalized conditions and there is less damage to be repaired on pots and launchers than was formerly the case. Both businesses continue to derive work from the fishing fleet, including outside vessels that spend a portion of the year in the community.

Vessel Supply Services and Local Stores

Vessel supply-related business is a significant part of the local support service economy. At present (2004), there are four stores in the community. Two of these are larger, more general purpose stores and two are specialty operations.

Of the two smaller stores, one is run by PPSF (the Peter Pan Seafoods Convenience Store [locally known informally as the "C Store"]) on its premises and, while it is open to the public, it essentially functions as a convenience store for its employees, stocking a variety of food items as well as a limited selection of clothing, plus boots, rain gear, and other processing (and to a lesser extent fishing) work-related items. The other small store, Rams General Store, is currently (2008) open from 6:00 p.m. until 10:00 p.m. most of the year, staying open an hour later during the summer months. It essentially functions as a convenience store for the Rams Creek and Deer Island subdivision residential neighborhoods[29] that were built approximately a mile away from the main downtown area of the community beginning in the early 1980s, as well an after-hours store for the whole community. Under its current ownership for approximately 5 years, it is typically staffed by one individual at a time, with these workers drawn from the family of its

[29] The neighborhood constructed first among these two, closer to the downtown area, is known alternately and informally in King Cove as Rams Creek, Rams I, and Old Rams. This subdivision is the location of the new clinic, diesel-fueled power plant, and school, all of which were built within the last few years, many years after most of the residential units in this area, as well as the community center building. The second neighborhood constructed of the two, Deer Island, is also known in the community as Rams II or New Rams. In addition to residences, this neighborhood contains the offices of the AEB Finance Department and those of the Agdaagux Tribe. The City Shop is located between the two neighborhoods, and the town landfill is located well beyond the Deer Island subdivision, traveling away from the developed portion of the community. In addition to having some homes located away from the downtown area along the road to the airport, King Cove has another residential area that is encompassed neither by the downtown area or the Rams Creek or Deer Island subdivisions. A number of homes are located across King Cove Lagoon from the downtown area. This area was reportedly originally a 150-acre area homesteaded by a local family, and apparently most home owners in this area are descendants of the original owner.

owner. According to one of the family members who often works at the store, no outside crabbers ever visited the store pre- or post-crab rationalization implementation.

The two large stores in King Cove, John Gould & Sons Company, Inc. (commonly referred to locally as "Gould's store" or simply "Gould's") and the Alaska Commercial Company (commonly referred to as the "the AC store" or simply the "AC"), carry a range of goods and derive a substantial portion of their business from the fishing industry. These stores are reported to vary in the nature and level of engagement with the fishery.

Gould's store is a family-owned business that was started in King Cove in 1939, moved into its present building in 1993, and is currently (2008) owned by a son of the founder and run by a grandson of the founder. In addition to functioning as a general store to the community, Gould's also derives business from grocery sales to fishing vessels (and includes delivery to the vessel as a free service) as well as the sales of various supplies. Gould's also has the community's sole "package liquor" store and sells a range of household furnishings and appliances.

During an interview in 2004, the owner of Gould's estimated that between 20 and 30 percent of the overall business was attributable to sales to commercial fishing vessels, with the balance being made up of sales to the local community as a whole. Of the overall vessel sales, an estimated 30 to 35 percent was attributable to crab vessels in particular, with crab vessel sales typically involving fresh items, such as fresh produce, eggs, and milk (whereas cod, halibut, and sablefish vessels tend to buy more groceries, stay in the community longer, and buy more locally in general). When crab vessels were required to spend more time in the community with tank inspections or even in the event of a strike, the upturn in business was seen over a longer period of time. As of 2008, however, the owner estimated that crab vessel-related sales had shrunk to a fraction of the levels seen prior to the fleet consolidation that occurred with the implementation of crab rationalization, such that the store now only receives orders from a "handful" of boats (estimated to be between five and seven per year). While individual crab boats are seen in the community for longer periods of time, due to the lengthening of seasons under rationalization, this increase in interactions with a smaller number of vessels does not reportedly make up for the losses associated with the decrease in the number of vessels, especially for grocery sales, as "fewer guys can't consume as much" as the larger number of crew members prior to rationalization. Further, according to the owner of Gould's, with increasing predictable seasons in the rationalized BSAI crab fishery, more vessels are ordering goods shipped up directly from Seattle and dropped off for vessel pick-up at PPSF, rather than shopping through local stores.

Gould's store is located near the PPSF processing plant (and is closer to the plant than the AC store), and processing workers do constitute a portion of the business on a daily basis. Popular items with processing workers are reported as ethnic foods, soups, videos, CDs, tapes, and local souvenir clothing, along with personal care items.

According to store management, in 2008 Gould's was facing challenges not only because of a loss of fishery-related business (attributable, in part, to a drop-off in direct vessel sales from the reduction of the crab fleet and, less directly, due to a loss of crab vessel crew jobs by members of the community who would have otherwise spent more money locally), but also due to a loss of general store market share to the AC. This loss of market share includes fishing vessel-specific business, reportedly exacerbated by the relative proximity of the AC store to the harbor and, in the case of local fishermen, a reported phenomena that, in store sales, the family tends to follow

the skipper (that is, general family shopping tends to occur where fishing-related shopping by a skipper family member takes place). Market share has also reportedly been lost to more individuals directly shipping in goods from big-box stores and other suppliers from outside the community than was the case in earlier years.

Employment at the store is currently (2008) mostly family, with four full-time positions held by family members and up to two full-time positions held by others, with an additional three variable part-time positions that are also held by nonfamily members. This is roughly the same level of employment noted in 2004 (pre-crab rationalization) interviews, but still down significantly from a total of 14 to 15 employees in earlier years.

When things get busier during peak fishing seasons, the store strategy is to attempt to use management and administrative staff to help with sales rather than to try to hire and train temporary staff. According to the store owner, the business climate in King Cove has been and continues to be a challenging one. Finding and retaining full-time employees from a relatively modest labor pool is reported to be difficult, especially when a substantial number of local residents want to take time off to participate in local commercial fisheries. According to information gathered during earlier (2001 and 2004) interviews, when fishing seasons are good, the store receives larger fishing-related orders, but during leaner seasons proportionally more palletized goods reportedly come in from Seattle for delivery to the vessels. The store also reports that during lean times there are greater problems collecting accounts receivable from the community as outside bills that are perceived to have a greater impact on credit ratings tend to be paid more quickly.

Goods for the store typically come in by barge, with Coastal Transportation providing primary service to the community as noted above. (PPSF also moves cargo in and out of the community but typically does not provide shipping services to other businesses, including Gould's.) Gould's store is currently (2008) open Monday through Saturdays from 10:00 a.m. through 7:00 p.m. and on Sundays from noon until 4:00 p.m.

The AC store is a comparatively new entrant into the community, having taken over the lease on a KCC building previously used as a ship supply type of store by Western Pioneer. Prior to transition to the AC store, Western Pioneer did transition from a more strictly supply store toward selling case lot groceries (which required rezoning from industrial to commercial). Perhaps because of its location closer to the harbor, this store is reported to derive a larger proportion of their business from outside vessels as well as fishing-related business in general than the other large store in the community. While the store carries a wide variety of goods, including furniture, clothing, sporting goods, hardware, and the various and sundry items that are commonly found in typical general stores in rural Alaska, groceries remain the main business line of the store.

In terms of the relative importance of commercial fishing to the business base of operation, the manager of the AC store when interviewed in 2004 (prior to the implementation of BSAI crab rationalization) stated that outside vessels, primarily crab vessels, accounted for roughly 40 percent of the overall business of the store, but that things were changing with shorter crab seasons, however, as it was reportedly easier to resupply out of Seattle for very short seasons than it was for longer ones. Crew on these vessels also apparently purchased more "nice to have" and not just "need to have" items during good seasons, and less turnover of crews, all

things being equal, meant a lesser volume of (nongrocery) sales as well. Shorter and less lucrative seasons also reportedly translated into a lower volume of sales related to sprucing up vessels, as all but the most essential investments are deferred (meaning drop in sales is greater than the linear drop in activity). By the time of 2008 interviews, the manager of the AC store estimated that outside vessels activity was down (from 40 percent) to roughly 10 percent of the store's business base, and that for crab vessels in particular, the store "was lucky if they even buy groceries" now.

Local commercial fishing accounts for another large segment of the business at the AC store, but, according to the manager, it is not possible to differentiate that part of the business from the general residential community trade, due to the family nature of most local catcher vessel operations. Unlike some communities, in earlier (2004) interviews, processing personnel in King Cove were reported to constitute a significant portion of local store sales, accounting for roughly 40 percent of nonfood sales, with music sales comprising a marked proportion of these sales. Items such as rugs to personalize company living quarters, and hot plates and other small appliances were important as well. By 2008, however, this business segment was also of lesser importance to the overall business as reportedly due to a number of factors (including a reduction of overtime pay with the implementation of rationalized fisheries, including the BSAI crab fishery), more processing crew members were saving more of their earnings and sending them back to their permanent home communities rather than spending them in King Cove. In 2004, some items, such as sportfishing gear, reportedly would not be stocked if not for processing personnel, but by 2008, the sportfishing market had shifted to a more local resident base and locals, including a number of lifetime residents, took up the use of rod and reel for some fishing, including trout. Sales of goods to processing workers for shipment to families overseas, such as hardware and clothing, were also reported to be common in 2004 (with a steady stream of new business deriving from new customers due to processor worker personnel turnover) and are reported to be less so in 2008, with increases in shipping costs, combined with the already noted decreased overtime and increased savings trends, making these types of purchases less popular than in the past.

In terms of an annual cycle, the AC store manager in 2008 reported that a number changes have occurred in recent years. While in 2004, interview data suggested that the January crab openings represented a "big push" for the store and provided a bit of an operating cushion for much of the rest of the year, which had become all the more important in the face of other fishery declines. After the crab season there was a low, with another pickup seen related to cod activity in March and April. In 2008, January fishing (and the related revenues in the store) was described as scratchy, with a increase in February that then lasts through April. During late April and the month of May, activity at the store now (2008) typically slows, such that inventory is normally taken and general store improvement projects are also undertaken at this time. Although there is some halibut fishery-related business during this time, fishery-related activity does not increase again by a substantial amount until around June first, when salmon-related business starts to bring a number of pulses of activity during the summer months. In 2004 interviews, fall fishing-related business was described as very slow in the previous years until the crabbers came again in October for a couple of weeks, after which the year finished out with a slow period. By 2008, however, fall business had picked up with increased local crab fishery activity, as well as back-to-school, Halloween, Thanksgiving, Christmas, and New Year's holiday-related sales. On balance, according to the store manager in 2008, despite the various shifts in busy and slow periods and the specific decline of BSAI crab vessel-related business with the consolidation of

the fleet that accompanied rationalization, business at the AC had remained relatively stable and had been more on "an even keel" throughout the year, experiencing at least modest annual growth in revenues for the past several years, including the span of years post-crab rationalization implementation. This, however, was reportedly due at least in part to a gain in market share of local general store trade relative to the other large store in town, not necessarily an overall gain in sector sales in the community as a whole, although relatively strong local performance in both the local salmon and cod fisheries has been beneficial as well.

Employment at the AC store has fluctuated between five and six individuals in recent years. In 2008, this total included three full-time individuals. After a number of years of not hiring temporary workers for the summer due to relatively poor local salmon seasons, in 2008 and the previous few years AC has hired a couple of school-age part-time employees during school summer vacation as extra stocking help. As in previous years, the store manager reports that fluctuations in the fisheries can be seen not only in the volume of business at the store, but also in the number of customers using welfare benefits for purchases, although the latter is not always directly correlated to fishing conditions (but, more likely, a combination of fishing conditions and alternative employment opportunities). During the particularly low period for the salmon fisheries in 2002, the manager estimated that there were between 30 and 40 cases of use of benefits whereas there has only been a single case 5 years prior to that. As of the fall of 2004, given an upswing in local fisheries, the local manager reported that there were only about five families using benefits for purchases at the store. As of 2008, about 10 families were estimated to be using food stamps to assist with purchases, and larger number of customers were also utilizing Women-Infant-Children benefits. At present (2008) the AC store is open 9:00 a.m. to 8:00 p.m., Monday through Saturday, and noon to 4:00 p.m. on Sundays.

Diving and Vessel Charter Services

There are very few other miscellaneous income sources in the community related to vessel services. An example of this very small-scale type of service is the individual in the community who on occasion provides diving services to vessels to inspect hulls, clear propellers, or the like. According to this individual, local volume of dive business has declined since crab rationalization and as of 2006 he began contracting for dive work outside of the community, which to date (2008) has included work in Cold Bay, Anchorage, and Adak. As is common in King Cove, this individual also pursues a diversified income strategy, which in this specific case includes commercial fishing in the summers and work at the Cold Bay power plant in the winters.

Some King Cove vessel owners also derive some income chartering their vessels. These charters can include runs to Cold Bay or other locations to move crew or parts for vessels when weather closes down air transportation or other logistical arrangements are simply less efficient. There are also occasional opportunities to charter for research efforts by various governmental agencies or contractors for educational or private sector ventures. During fieldwork in May 2008, geologic research was being done out of the King Cove harbor on plate boundary tectonics and volcanic activity, but this was being largely carried out via a helicopter that was brought into the community for this effort.

Bar and Restaurant Services

There are two bars in the community, MC's and the Last Hook Off, and each derives a substantial portion of its business from fishing-related patronage, but they vary in the nature of their engagement with that sector. MC's is characterized more as a "fisherman's bar" and is located inland immediately across the road from the boat harbor. The popularity of MC's with fishermen can be seen in the tradition of crew writing out the names of their vessels with marker pens on dollar bills, one letter per bill to spell out the name, and putting these on the wall inside the bar. MC's does derive business from permanent local residents as well, but reportedly more so for pull-tabs, pool tournaments, and special events than as a steady business base. Processing workers from the local seafood plant also make up some of MC's business base, although currently (2008) they are not specifically targeted as a clientele segment as in some previous years, except for some special events. (While under its current ownership it has been operating year-round since before crab rationalization, under previous ownership it was reportedly essentially run as a one-person or small family operation and was closed periods when that owner, currently a resident of Adak, was out of the community, typically during non-peak fishing seasons.) MC's bar currently (2008) opens at 8:00 p.m. and closes at 3:00 a.m. (or earlier if a lack of activity dictates), year-round (except it reportedly opens earlier on Super Bowl Sunday).

Prior to rationalization, MC's bar saw marked crab season-related activity peaks during the October/November and January/February periods (with the latter period overlapping with strong cod and pollock activity). In 2004, prior to rationalization, the owner estimated that crab fishing-related sales made up roughly 30 percent of the overall yearly sales. Also prior to rationalization, November (after crab) and December were characterized as slow months due to little fishing activity but, perhaps paradoxically, May through July, at the peak of salmon season, was also very slow as salmon is primarily a local fishery, and while theoretically generating a lot of economic activity, locals were actually out on the fishing grounds rather than spending earnings in the community. The overall pattern of activity at the bar has reportedly changed somewhat since crab rationalization. According to the owner, currently (2008), slow periods are similar, with June and July still being the lowest activity months of the year, with November and December also being slow. Peaks, however, have changed. January and February are still (as of 2008) active months, but not at the levels seen prior to crab rationalization, as cod vessels tend to stay out longer than crab vessels, and the number of crab vessels and crew members coming through town has declined (primarily due to consolidation, but also, to a far lesser degree, the decision by at least a few vessels to switch gear storage from King Cove to False Pass to save run time and fuel costs). September and October are busy months, with October being the peak month of the year, as there is in an infusion of cash and activity in the community with the end of local salmon fisheries and the gearing up for fall fisheries.

Like some of the other support businesses in the community (particularly the stores), MC's used to derive additional business prior to rationalization when it was not uncommon for the preseason gearing-up stay of the crab fleet in the community to be extended by a strike (such as a year not long before rationalization when there were an estimated 90+ vessels in the harbor for a 2-week strike period), but strikes have not occurred since rationalization. Employment at the bar has increased somewhat since crab rationalization. In 2004, the owner characterized employment ranging between two and three positions during the year, but currently (2008) the bar employs three full-time bartenders and a fourth person to help with management and

cleaning. Part of this increase is more apparent than real, however, as at least one of these positions essentially replaces a role the owner used to play.

Like a number of other owners of businesses in the community who were dependent to a substantial degree on the crab fishery prior to rationalization, and who remain somewhat dependent on the crab fishery post-rationalization, the owner of MC's had and has diversified sources of income beyond the single business at hand. Prior to crab rationalization this individual had other local employment and partial ownership interest in another fisheries-related support business in King Cove; while no longer (2008) having other local employment, this individual still retains ownership interest in the other local fisheries support service business and has diversified business ownership outside of the community through acquisition of the Bearfoot Inn in Cold Bay in early 2006. With the completion of a combined road/hovercraft surface link between King Cove and Cold Bay in recent years, the economies of the two communities are perhaps more closely tied than in the past (although the private sector economy in Cold Bay remains relatively small due to a disproportionate local level of federal, and to a lesser degree state, agency activities). Formerly the Weathered Inn, the Bearfoot Inn represents a suite of businesses including a hotel, bar, liquor store, and grocery, the latter of which services the communities of Nelson Lagoon, False Pass, and Port Moller through "bush orders," further creating economic ties on a subregional basis. All of the Bearfoot Inn businesses cater to sports hunters and fishermen, transient government workers on assignment in Cold Bay, and others connected through Cold Bay as a transportation hub (where it is not unusual to be weathered in during some times of the year). For MC's in King Cove, like for a number of other businesses, while commercial fishing-related business is a mainstay, the vagaries of commercial fishing conditions in recent years do not make for a necessarily solid or exclusive base for many business owners specifically, or local household economies in general.

The second bar in King Cove, the Last Hook Off, is run by the KCC and is located in the KCC building that also houses the Fleets Inn, KCC offices, and a restaurant. The Last Hook Off bar has not been as closely associated with any particular harvest activity as the other bar, but apparently draws more clientele from the nearby processing plant, and it too benefits from increased activity related to the various annual peaks in harvest activities that bring an influx of personnel (and money) to the community. Like MC's, the Last Hook Off has a couple of pool tables and sells pull-tabs. According to KCC leadership, the bar is currently (2008) operating at financial break-even or slightly better status after a number of years of lower financial performance (including several years pre-crab rationalization, which included peak crab season-associated business pulses). The Last Hook Off bar, like MC's bar, typically operates daily from 8:00 p.m. to 3:00 a.m. (closing earlier if a lack of activity dictates), year-round.

At present (2008) there is a single independently run restaurant in the community, King Cove China, which opens at noon and closes at 1:00 a.m. and 3:00 a.m. daily. Located in a leased space in the KCC building, King Cove China is run by a married Korean American couple originally from outside of the community and serves burgers, sandwiches, and chicken and seafood baskets in addition to a variety of Chinese food. This business has been in operation for several years.

The PPSF cafeteria-style galley or mess hall, while designed to service its own labor force, is also open to the public for meals three times a day (from 6:45 a.m. to 8:00 a.m., from 11:45 a.m. to 1:00 p.m., and from 4:45 p.m. until 6:00 p.m.). All meals are available for a flat fee of $10.00 per meal ticket, which may be obtained at the PPSF office.

In past years, King Cove had a pizza and submarine sandwiches restaurant (Uptown Pizza) but at present (2008) this entity reportedly only supplies an occasional pizza for a special event but is otherwise not open, and another former bakery/burger/ice cream shop (A&E's) that operated only seasonally has permanently closed and the building is being converted to residential use. In June 2007, however, another establishment, Jane's Java Jungle, opened. This small business, located on the boardwalk next to the KCC building, serves espresso drinks, Italian sodas, and smoothies and is currently (2008) open Monday through Friday 10:00 a.m. to 5:00 p.m., opening a half-hour later on Saturdays, and operating noon to 5:00 p.m. on Sundays. Operated by a single individual, usually the owner, extra help is added during especially busy periods of the year.

Photo by Della Trumble

Jane's Java Jungle

Lodging Services

The KCC runs the Fleets Inn, a 12-room hotel in the building that also houses its office, the Last Hook Off bar, and the King Cove China restaurant. Currently (2008) a total of six of the rooms of the Fleets Inn, representing half if its capacity, are leased for half of the year by PPSF for company employees during peak processing seasons, typically from January into April and again from June into August. Additional rooms are rented by the processor in overflow situations and not infrequently by other fisheries-related guests, with another block of demand including school district and AEB government-related activities. During the years immediately prior to crab rationalization, PPSF leased an apartment building on a long-term basis from the KCC but more recently has purchased this building from the KCC (otherwise PPSF owns its own land and facilities and formerly did not lease, nor does it currently lease, other lands or structures from the KCC).

Beyond the Fleets Inn, there are limited opportunities for short-term lodging available to the general public in King Cove. One of these is the Salmonberry Bed and Breakfast (B&B), operated by a local couple. According to one of the owners of this business, the Salmonberry B&B opened for business in October 2006. Guest facilities essentially consist of an extra bedroom in a family residence, with guests sharing other common areas of the house with the resident family. With an estimated occupancy of approximately 100 nights per year, and located near the new King Cove School and King Cove Clinic, this B&B typically draws professionals as its clientele, including transient health care providers as well as school district personnel. There is one other B&B in the community run by an individual resident who also utilizes a spare room in their home for guests. Both B&Bs typically attract customers through word of mouth, as King Cove sees little in the way of travel-based tourism. Other short-term lodging is sometimes available in the community as the owner of one of the local apartment buildings will rent out apartments on a short-term basis if they are not currently being utilized by individuals with longer term leases.

Other KCC Support Services

Beyond the Last Hook Off bar and Fleets Inn operations, the KCC is involved in a range of local enterprises that effectively function as fishery support services. The KCC derives lease income

from the building it constructed for use as a Post Office and its building that is currently (2008) occupied by the AC store. Sand and gravel sales represent another KCC local business activity, the products of which have recently been used for a range of local construction and infrastructure projects, such as road and airport upgrades. Formerly operated through a lease arrangement, sand and gravel have been sold directly by the KCC since the expiration of the previous lease in mid-2007, according to KCC leadership. The KCC land used for sand and gravel operations also provides some of the KCC's crab pot storage capacity, although the KCC currently (2008) is not actively charging or collecting fees for this service. The KCC formerly owned the Russell Creek hatchery facilities in Cold Bay but more recently sold these facilities to a private individual (who is not a King Cove resident) who reportedly may be interested in developing a lodge on the site.

A second ANCSA Native Village Corporation, the Belkofski Corporation, is also based in King Cove. Shares of the Belkofski Corporation are held by former residents of (or descendents of former residents of) the nearby village site of Belkofski. The Belkofski Corporation is not actively involved in business ventures in King Cove, according to a corporation board member, nor is it apparently now (2008) otherwise active in the community (although, as described below, the Belkofski Tribe, whose membership overlaps with the shareholders of Belkofski Corporation, is involved with undertakings and provides some employment in King Cove). According to KCC leadership, however, the KCC is interested in discussing combining forces in some manner with the Belkofski Corporation (which has many fewer shareholders than the KCC) to pursue business opportunities, but this has not yet come to fruition.

The KCC currently (2008) employs a total of seven local residents (down from a total of nine in 2004), all of whom are part-time employees with the exception of the full-time KCC president. The part-time employees include three bartenders, one janitor, one maintenance worker, and two individuals who help in the office.

Agdaagux and Belkofski Tribal Operations

The Agdaagux Tribe, which represents the traditional Alaska Native government of King Cove, has a membership of about 730 members as of 2008, according to an estimate of a local tribal official, most of whom live in King Cove. The Agdaagux Tribe provides six full-time and two part-time employment positions in King Cove on an ongoing basis as of 2008, a level of employment that apparently has been relatively steady for several years (including a number of years prior to BSAI crab rationalization). The Agdaagux Tribe is involved in providing a variety of social services on an ongoing basis to the community through the administration of a variety of Bureau of Indian Affairs (BIA) and other programs, encompassing such diverse areas as child and elderly welfare programs, general and energy assistance, and alcohol and domestic violence programs. Tribal staff have previously reported that demands for social services have varied with the vitality of local fisheries, where declines in the economic vitality of local commercial fishing have led to marked increases in the demand for a range of their social services. According to a local tribal official interviewed in 2008, the types of jump in the demand for social services sometimes seen in conjunction with periodic declines in local salmon fisheries in particular were not seen in conjunction with BSAI crab rationalization, and while the community itself was not hurt "too badly" by crab rationalization, a number of people were directly affected by crew job losses (perceived by this official to be eight or nine individuals). According to this same tribal official, the local impacts of BSAI crab rationalization that might have led to an

increase in social service demand were offset, at least to some degree, by an increase in financial returns in the local cod fishery during the same time period.

The Agdaagux Tribe (and others in the region, through the Eastern Aleutian Tribes organization) is also involved in community clinic ownership and service provision. While many of these services are utilized primarily by long-term residents of the community, the clinic also sees service demand from the outside commercial fishing fleet, as described in separate clinic services discussion below.

The Agdaagux Tribe has also been involved in building community infrastructure through the administration of BIA road-building funds, with one relatively recently (2004) completed project being improvement and paving of the roadway from the community to the airport, to better support local transportation needs (including servicing fishing and other local economic activities, as well as serving general residential transportation needs). An earlier reported advantage of running the road funding through the BIA rather than other entities is that the agency has more effective local hire provisions than other entities; this, in the case of the airport road upgrade and paving project, resulted in training and employment for about a dozen local residents at its peak. At present (2008) the Agdaagux Tribe has no major construction projects underway, but it has worked with the City of King Cove to secure funding for a downtown area roadway improvement project, which will include paving. Scheduled to begin in the summer of 2008, this $6-million-plus project is expected to run through 2009 and provide significant local construction employment.

There is also a second tribal entity in the community, the Belkofski Tribe. Belkofski Bay, the first major bay to the east of King Cove along the south side of the Alaska Peninsula, was the site of Belkofski village. Though still used as a base for subsistence activities, the village site, located on the east side of the bay facing Belkofski Bay to the west and the Gulf of Alaska to the south, is no longer occupied year-round. Tribal staff estimate that the Belkofski Tribe currently (2008) has between 60 and 65 members, with more members in King Cove than in any other community. With offices in the KCC building, the Belkofski Tribe has (as of 2008) three full-time employees in King Cove, including a director of environmental programs, an environmental assistant, and an administrative employee. (A fourth position, an office receptionist, is currently vacant.) The current (2008) major undertaking of the Belkofski Tribe is the environmental cleanup of the Belkofski village site, which has experienced environmental impacts from oil, asbestos, and lead paint, among others. In King Cove itself, the Belkofski Tribe is also involved to a degree with environmental issues, according to office staff, providing some support to the Agdaagux Tribe in their recycling program and addressing indoor air quality issues, primarily mold related, for their members' homes in King Cove, as well as homes of Agdaagux Tribe members to a lesser degree. The Belkofski Tribe also sells pull-tabs out of their office in King Cove on weekdays. One Belkofski Tribe staff member offered the observation that BSAI crab rationalization has negatively affected their tribal members, as well as others in King Cove, by adding to cumulative family hardships exacerbated by rising fuel prices, through the loss of crab vessel crew jobs and income. While both local salmon and cod fisheries are perceived as becoming stronger recently, reportedly the simultaneously occurring rise in the cost of fuel and, in the case of cod, bait have increased expenses to the point where at least some of the potentially offsetting gains in these fisheries (that would counterbalance the loss of crab-related infusion of income into the community) have been negated.

Other Local Business and Service Provision Activities

Other Private Sector Businesses

Between the fishing harvest and processing sector employment noted in earlier sections, and the support service sector employment noted above in this section, according to multiple community contacts from all sectors, there were few other private sector-type jobs in King Cove. These did include some locally based work with larger entities, such as telecommunications work [TelAlaska] and airline agent work [PenAir], along with some small-scale locally based work. An example of the latter is an individual who essentially has a one-man construction business, although he does occasionally hire workers on a temporary basis. While this individual has engaged in commercial fishing in the past, he reports that currently (2008) there is more money to be made in local construction work and that there is no shortage of this type of local work for a business of his size, such that he has turned down a number of small jobs recently. In general, however, the King Cove private sector economy is very limited and public sector jobs, though still a mainstay of local employment, have reportedly declined overall in recent years, both for permanent positions (to a much lesser degree) and more limited-term positions related to local government-sponsored capital improvement or other governmental infrastructure projects (to a much greater degree). Few state or federal government-related positions of any type are typically available in King Cove, and consistent, long-term state or federal government-related jobs are even more rare, with the exception of some work at the local branch of the Post Office.

Community Centers and Recreation

While not a support business, the City of King Cove has recently converted the old clinic building (a city-owned structure on PPSF land leased by the city for a nominal amount) to a community resource facility (the "Community Co-op") that houses a workout area (furnished largely with donated equipment), a resource room with internet connections, an artists/local crafts store, a second-hand store, and an elder's resource room that is intended to house local historical resources. This facility functions both as a community-related and fishery-related transient population resource. In recent years, there has reportedly been less community interaction with outside fishery and processing workers in city-sponsored recreational sports events than in years past, but basketball competitions still draw participants from all sectors of the community. While there has recently been a new school built in the Rams Creek part of the community, well removed from the downtown portion of the community, the gymnasium in the former school facility, adjacent to the PPSF facility, is operated by the City of King Cove Recreation Department for community recreation. The recreation department also operates a teen center adjacent to the old school building downtown, and a community center near the new school site. The community center is the location for a variety of community and private special events, such as weddings, that draw participants from all sectors of the community, and it is also the location for local Boys and Girls Club activities. The community center is also rented twice weekly by the Andaagux Tribe for bingo. (There is also a long-established Women's Club in the community, a nonprofit entity that sponsors community 4th of July and Christmas holiday special events, among other civic activities, and funds its activities through pull-tab sales as well as donations.)

King Cove Clinic

The King Cove clinic, which moved to a new building in the Rams Creek area of the community in the early 2000s, is a designated community health clinic operated by the Eastern Aleutian Tribes that serves everyone who is in the community. In its new location, the clinic (along with school and community center) is now located in the tsunami safe zone (and all three are designated as evacuation centers and have back-up electrical generation capacity).

Clinic management staff report that while no summary service statistics are available locally, current (2008) demand for services does tend to peak during busy fishing times, although the level and timing for fishing-related services appear to have changed from what was reported in earlier (2004) interviews. According to clinic staff, in the days leading up to openings, the clinic sees walk-ins from outside the community who have forgotten their medications and need refills before going out fishing. Once a given season starts, there are a number of injuries that could be characterized as being akin to sports injuries, where individuals who have not been performing hard physical labor go out without proper preparation and end up with strains and sprains. These types of injuries are reportedly seen for all of the fishing seasons, as are "repetitive motion" types of injuries. Processing worker injuries also increase at peak times and may carry the added challenge for clinic workers of dealing with individuals of different cultures who may speak very little English. Slow periods at the clinic now occur in the April–May period and again in December, but most winter complaints seen at the clinic are upper respiratory infections rather than acute injuries (although a range of injuries, mostly minor, associated with processing workers working very long shifts during high volume processing times still occurs).

Also according to interviews conducted in 2004 (pre-BSAI crab rationalization), other types of injuries are associated with the "live hard" ethic shown by people headed out for the more intense fisheries, such as the Bering Sea crab fisheries, where this burst of objectively dangerous activity may be accompanied by binge drinking while in port. According to clinic management in 2008, however, there was only one major injury from a boat seen during the past year and most crab boats whose names appeared in earlier years' billing records are no longer seen in town, much less associated with an increase in clinic services demand. On the contrary, according to clinic management staff, at present (2008) BSAI crab seasons no longer create noticeable changes in the level of service demand at the clinic. Prior to rationalization, clinic staff reported there was always some business associated with the crabbers who came to town, but in 2008 the person in charge of the billing department could not recall any clinic services associated with any outside crab boats in more recent years. This has impacted clinic revenues, as injured or sick crew from crab vessels were typically covered by workers compensation and had income levels high enough that they did not qualify for reduced fees under the clinic's sliding scale system. Care provided in these cases was thus not "adjusted off" the clinic's books, and full charges were assessed and normally promptly paid, even if the crew members merely had the flu.

Quality of care also feels the impact of fishing seasons, especially when patients need to be transported to Anchorage. According to interview information gathered in 2004, during peak times when the transportation system is at maximum capacity, a patient may have to wait 5 to 7 days to get an available seat on a commercial plane out of the community, or alternately spend $25,000 or more on a medivac, and according to clinic staff this situation was still the same in 2008. A roadway/hovercraft combination link has recently become available and can be of

notable assistance in getting medivac patients from King Cove to Cold Bay, which, with its much larger and more sophisticated airport facility, is both served by chartered "life flight" services (unlike King Cove) and more reliably served by regular air carriers than is King Cove. However, during the winter of 2007–2008, environmental conditions (such as temperature below a certain threshold and wind speeds above another threshold) delayed the hovercraft in getting patients into the life flight system at Cold Bay. In cases such as these, some of the larger local commercial fishing vessels, if available, can be used to get patients to Cold Bay.

Whatever demand commercial fishing-related services place on clinic staff and resources, however, the provision of services to transient fishermen and locally based processing workers is economically important to the operation. Whereas local residents are typically covered by Indian Health Service benefits, which provide a minimal level of revenue to the clinic, others are typically not beneficiaries of this system and pay for services directly or through private sector insurance companies.

Current (2008) King Cove clinic staff include a permanent nurse practitioner, a substance abuse/licensed behavioral health clinician, a behavioral health wellness coordinator, a masters level social worker, and two community health aides, all of whom are full-time. Additional *locum tenens*[30] staff, provided by the Eastern Aleutian Tribes (typically a nurse practitioner or a physician's assistant), will fill in on a short-term basis if the clinic is short-staffed due to leaves-of-absence or unfilled positions. As the regularly assigned nurse practitioner is on-call 24 hours a day, 7 days a week, *locums* staff can also provide periodically needed case load relief. Another 10 support staff, all of whom but 2 are full-time, support King Cove operations and also travel to other Eastern Aleutian Tribes operated clinics in the region. Other local employment at the clinic includes three front desk personnel, three administrative/billing personnel, one elder's program coordinator, and one part-time maintenance person and one part-time janitor.

Additionally, Alaska Native patients are seen by clinical personnel from the Alaska Native Medical Center who rotate into the community (and who see patients at the clinic, but who are not funded through the community health center), including a medical doctor/general practitioner and a dentist, both of whom typically visit King Cove twice per year, and an ophthalmologist, who typically visits the community once per year. In the past, the Eastern Aleutian Tribes did base a doctor and a dentist out of the King Cove clinic but reportedly found it financially infeasible to sustain over the long term. The clinic has been successful in getting some non-Native patients seen by a transient dentist in the community, but the clinic has not been able to meet its desire of retaining a full-time dentist in the community. Non-Native residents can only obtain to access physician care if they travel outside King Cove. Alaska Native residents who also need to be referred to physicians outside of the community cannot do so without restrictions on the severity of the need (it cannot be a minor issue) and a limit on the number of referrals or appointments, unless the patient is willing to incur additional, out-of-pocket costs.

Public Safety Services

The King Cove Department of Public Safety provides local law enforcement services, fire prevention and suppression services, and emergency medical services to the community of King

[30] Literally "place-holder," the term is used in medical and some other professional settings for a person who temporarily fulfills the duties of another.

Cove. The department continues to provide 24-hour/365-day coverage to the community, but the depth of coverage is determined by the city budget and has varied over recent years. At present (2008) the department, in addition to the full-time director/police chief, is staffed by three full-time police officers, and one person who combines a part-time position as the chief of fire and rescue services with a part-time position as a dispatcher into full-time employment with the department. Additionally, the department trains and oversees 16 volunteer firefighters and 10 emergency medical service volunteers.

According to the director of public safety, while there were more calls for law enforcement services during the peak BSAI crab seasons prior to crab rationalization, and the reduction in these calls and associated community disruption has been a relief to department personnel, police service demand and levels of crime have, in his experience, been more related to general community unemployment levels than to activity levels in any given fishery. According to the director, crimes in King Cove tend to occur when people are not working, which increases the number of individuals dealing with both depression and alcohol abuse, which, in turn, results in more domestic violence and family problems.

Both the director of the department and the head of fire and rescue services reported during interviews in 2008 that fishing industry-related demand for services has also been reduced in recent years due to PPSF using a better physical (medical) and drug screening process for prospective employees prior to bringing them to King Cove than was the case in earlier years. Although the community population still nearly doubles when PPSF is operating at peak processing capacity, processing-related service demand has reportedly dropped off substantially compared to the years prior to the implementation of the improved screening process. According to public safety department personnel, this combined with changes in BSAI crab rationalization *per se* has resulted in less service demand, less stress on department personnel (especially as they worked longer shifts during peak periods as it was impractical to add temporary, adequately trained personnel), and better public safety conditions in the community in general. Further reductions in service calls have also reportedly resulted from vessel-related changes to the BSAI crab fishery from rationalization. Not only do larger numbers of crews not have as much time on their hands in the community prior to season openings (especially when strikes would occur), but additionally boat captains are now apparently less likely to condone or ignore disruptive behaviors by their crew members in the community that may result in the loss of a crew member, as the fishery has reportedly become more business-like under rationalization conditions. According to the public safety director, crime associated with crab vessels is typically no longer seen in the community as crews "don't fool around" in town; rather, they are only in King Cove prior to their individual vessel start of fishing, and they are more interested in making money and exiting the community quickly after their quota is caught than extending their stay in the community.

Demand for police services is reported by department leadership as more steady in recent years, but peaks and valleys of activity still occur with bear problems in the summertime, with things quieter when local residents are out on the fishing grounds during salmon and cod seasons and during late November and all of December, when PPSF is essentially shut down. Spikes in law enforcement activity that still do occur during the year are reported to occur at the end of fishing seasons when people have additional money to spend.

According to the fire and rescue services supervisor during interviews in 2008, these functions used to average about 24 calls per year or an average of 2 calls per month prior to the implementation of improved PPSF worker screening and the implementation of crab rationalization, which occurred during the same time period. Now the volume of calls has declined to an average of less than one per month; at the time of interviews in May, 2008, there had been no calls for either fire or rescue/emergency medical services in the previous 2 months. The fire chief/emergency medical services director reported that when he first came to the community in 1995 (as a Village Public Safety Officer, rather than as a city department employee, and doing more fire/rescue than law enforcement work), there were typically two structural fires per year and between one and two vehicle or boat fires per year. In contrast, in 2007, there was reportedly only one structural fire and no vehicle or vessel fires responded to by the department. While the ratio of emergency medical service calls specifically are still reported to vary as a function of the number of PPSF workers on-site (particularly as they make up such a large proportion of the total community population at peak processing periods), rescue/emergency medical calls have, like law enforcement calls, been seen to drop drastically with the improvements in PPSF worker screening, with fewer calls in particular related to more elderly workers in general and cardiac cases in particular. Busy times are now (2008) characterized as one call per month. Additionally, with the improved PPSF worker screening, the ratio of PPSF related to other community service rescue/emergency medical service calls has been in the direction of a more permanent community resident focus.

2.3.4 Local Governance and Revenues

2.3.4.1 City of King Cove

As discussed in the introduction, revenues derived from commercial fisheries landings in King Cove are integral to the overall economy of the AEB. In this section, community rather than borough revenues are presented. King Cove municipal revenues for 1999 through 2006 as summarized by the Department of Community and Economic Development (DCED) are shown in Table 2.3-11. As shown in the table, total revenues rebounded in 2006 following 3 years that were lower than what was seen in preceding years.

According to both the mayor and the city administrator, current (2008) City of King Cove employment in the community includes:

- 4 full-time positions in the Police Department
- 4 full-time positions with the Harbor Department
- 3 full-time positions with the Electric Department
- 6 full-time positions at the City Shop
- 2 full-time administration positions (Clerk and Finance)
- 1 full-time and multiple variable part-time positions with the Recreation Department

Additionally, the City of King Cove employs a city administrator and an administration manager who are based in Anchorage.

In terms of its overall financial situation, according to the city administrator, King Cove is (2008) "as strong and as healthy now as it has ever been." This represents a substantial turn-around from conditions in the early 2000s when pre-crab rationalization baseline information

Table 2.3-11. King Cove Municipal Revenues, 1999 – 2006

Revenue Source	1999	2000	2001	2002	2003	2004	2005	2006
Local Operating Revenue								
Taxes	$1,011,597	$1,165,613	$806,691	$649,373	$926,188	$1,322,258	$1,458,416	$1,772,433
License/Permits	$2,558	$400	$0	$1,650	$850	$700	$1,820	$32,064
Service Charges	$353,608	$352,848	$70,268	$133,064	$303,212	$92,076	$125,088	$121,079
Enterprise	$882,537	$934,065	$1,208,444	$1,318,137	$1,225,156	$1,212,930	$1,353,797	$1,334,530
Other Local Revenue	$73,020	$124,881	$130,987	$180,680	$34,079	$76,914	$15,939	$53,040
Total Local Operating Revenues	$2,323,320	$2,577,807	$2,216,390	$2,282,904	$2,489,485	$2,704,878	$2,955,060	$3,313,146
Outside Operating Revenues								
Federal Operating	$12,685	$14,518	$40,730	$238,456	$31,729	$0	$0	$140,272
State Revenue Sharing	$29,546	$26,857	$25,885	$25,881	$26,020	$0	$0	$0
State Municipal Assistance	$23,209	$14,034	$12,305	$12,715	$14,910	$0	$0	$0
State Fish Tax Sharing	$257,555	$313,467	$465,413	$341,627	$460,245	$236,098	$358,133	$404,313
Other State Revenue	$112,536	$10,686	$11,643	$12,143	$12,146	$54,807	$162,525	$84,253
Other Intergovernmental	$0	$0	$0	$0	$0	$0	$0	$0
State/Federal Education Funds	$0	$0	$0	$0	$0	$0	$0	$0
Total Outside Revenues	$435,541	$379,562	$555,976	$630,822	$545,050	$290,905	$520,658	$628,838
Total Operating Revenues	$2,758,851	$2,957,369	$2,772,366	$2,913,726	$3,034,535	$2,995,783	$3,475,718	$3,941,984
Operating Revenue per Capita	$3,993	$4,407	$3,500	$3,670	$4,117	$4,143	$4,807	$4,884
State/Federal Capital Project Revenues	$1,017,254	$662,967	$1,134,262	$718,406	$294,907	$81,601	$36,334	$289,949
Total All Revenues	$3,776,105	$3,620,336	$3,906,628	$3,632,132	$3,329,442	$3,077,384	$3,512,052	$4,231,933
Total All Revenues (2006 Constant Dollars)	$4,569,404	$4,238,442	$4,449,583	$4,070,249	$3,647,910	$3,284,281	$3,625,344	$4,231,933

Source: DCED personal communication, spreadsheet supplied July 2008.

was collected in the community. At that time (2002), there has been an overall decline in revenue of 24 percent from fiscal year (FY) 2000 to FY 2002 (moving from approximately $1.7 million to about $1.3 million), which meant that the city was significantly short of budget during that period and was forced to make payroll cuts, including cutting one police officer and one harbor employee. At that time, the City of King Cove also deficit funded the general fund from savings as an emergency measure and, along with local residents, the city received Steller sea lion protection-related relief funds that helped fill the gap in revenue. In 2002, the city administrator stated that even with $175,000 worth of budget reductions, the city was still $250,000 short and would have been over $300,000 short were it not for the Steller sea lion relief funds. Within 2 years, however, revenues had rebounded and cut positions were restored in 2004. Municipal employment has reportedly remained relatively steady since that time. According to the mayor, the city is no longer in a deficit position, and all funds except perhaps the electric fund are in the black and there is at least $1 million in the city's permanent fund. Water and sewer funds, though currently (2008) behind expected performance according to city staff, will be back on track when automatic reapportionment occurs in the near future.

According to the senior city staff, while the harbor fund is also "not the shining star it should be" at present (2008), this is being addressed through an increased focus on administration and collections (which has proved challenging for delinquent accounts), as well as a planned 35 percent rate increase, as detailed below. According to the city administrator, the harbor fund was subsidized by $75,000 from the general fund in FY 2004 and by $100,000 per year from FY 2005 through FY 2008, and is scheduled to be subsidized by $150,000 in FY 2009. This level of subsidy, according to city leadership, is not unwarranted to help the harbor get on its feet in the next few years, given the level of revenue that goes into the general fund in the form of fish taxes (that are, in turn, based on activities that rely to a degree on the harbor infrastructure and services). According to senior city staff, there is now extra momentum to get harbor funding in order to qualify for a desired $3 million in state funding to rebuild that old boat harbor. To do so, the harbor fund will need to be healthy and show that it essentially will be in a sustainable position that would allow locally financed rebuilding efforts on a 30-year cycle.

2.3.4.2 Fishery-Related City Revenues

Local taxes in King Cove consist of a 4 percent[31] general tax on sales, and a 2 percent city raw fish tax (in addition to the 2 percent borough raw fish tax, combined with the 1 percent Alaska seafood marketing institute tax, fish landed in King Cove are taxed at combined, local, borough, and state total rate of 5 percent). Based on data supplied by the City of King Cove Finance Department[32] from FY 2002 to present (FY 2008) about 60 to 70 percent of the city's general fund budget has come from sales taxes on an annual basis. According to the city administrator, of the sales tax totals, in a typical year roughly two-thirds derive from fish taxes, and one-third derives from general sales taxes. In earlier years, the city characterized fish taxes as being split out approximately one-third from salmon, one-third from crab, and one-third from groundfish, but since FY 2002 or so, the typical annual proportion attributable to salmon has declined somewhat, while the proportion associated with groundfish (including halibut and sablefish as well as cod and pollock) has increased, although there continues to be variation on a year-to-year basis. Because the community has only one processor, detailed information on local fish taxes

[31] King Cove increased its tax on general sales from 3 percent to 4 percent, effective May, 2003.
[32] Finance Department spreadsheet, June 2008.

obtained from the community is not presented here due to confidentiality concerns.[33] In addition to local fish taxes, the city also receives annual revenue from the state fish tax refund and the state extraterritorial fish tax (with the former a much larger revenue source than the latter), and the benefits that derive from AEB fish taxes, as described elsewhere.

There are no local property taxes on the seafood processing facilities or any other properties within the community. The City of King Cove recently instituted a fisheries business impact tax, with 2004 being the first full year of its implementation. In the absence of property or similar taxes, the fisheries business impact tax intended to provide revenue to offset, at least in part, the cost of increased demand on city general services generated by PPSF that are not otherwise adequately covered by specific fees or the current level of sales taxes, such as the cost of an increased level of law enforcement services over and above what would be needed for the residential community itself, among others. As originally conceived, the first 10 million pounds of processed product would be tax free and beyond that, the first 60 million pounds would be taxed at a rate to yield revenue of $200,000 at the upper volume, with an annual revenue cap kicking in at that point. As instituted, however, this has been flat tax and applied only to PPSF. According to the city administrator, while the flat rate is currently (2008) set at $100,000 per year, the amount had dipped to $75,000 per year in 2006 and 2007 after being set at $100,000 per year at its inception. Institution of this revenue source represents a marked departure from the way revenue was previously derived from local processing.

Beyond sales and fish taxes, the community derives fisheries-related revenue from a number of different sources. Local taxes on fuel sales, a strong source of revenues in some communities, have only recently begun to be paid in King Cove. PPSF, the only marine fuel sales outlet in the community, began paying sales tax on fuel sales in 2002. Fuel sales are subject to the local 4 percent tax on general sales and in 2002, after not collecting the tax for an unknown period of time, PPSF agreed to reconcile an apparent lack of payment of taxes on local fuel sales in previous years with a one-time assessment of $100,000 payable to the city in $25,000 installments per year spread over 4 years.

In 2003, the City of King Cove moved from simple flat rate to volume-related water charges for PPSF, which uses approximately 80 percent of the system load. The water rates were set at 90 cents per thousand gallons and are resulting in approximately $185,000 in revenue to the city per year on a steady basis (as of 2008) for a 225-million-gallon service requirement. The city also provides sewer services to the plant at a flat rate of $2,000 per month, year-round, for a total of $24,000 annually. (According to senior city staff, sewer services fees were not collected from PPSF for some unknown period of time prior to the late 1990s; in this case, payment for services for the years prior to active collection was not sought by the city.) Solid waste service revenues from the PPSF facility vary by the volume of waste generated, but city staff reports monthly revenues from this source have varied between approximately $3,000 and $8,000 per month in recent years, with the FY 2008 total anticipated to be approximately $45,000. The solid waste fees, however, are tied to a flat rate per number of truck trips reported (through the honor system) per month, not actual volume of waste. The amount charged per trip is set by city ordinance, which has not been adjusted since PPSF reportedly purchased a truck with approximately three times the capacity of the old truck in or around 2006, with which it now

[33] Detailed fish tax revenue information for the community was, however, presented in written form by the City during public testimony on crab rationalization issues before the NPFMC at the October 2002 meetings.

makes trips to the landfill approximately weekly. The city is currently (2008) in the process of expanding the landfill through acquiring an additional 5 acres of adjacent land from the KCC and upgrading the burn-box technology at the landfill, which will both reduce the end volume of waste and have less of an environmental impact footprint than the current facility. This approximately $1 million expansion and improvement project is being funded 85 percent by the state and 15 percent by the city. According to city staff, when these improvements are put in place, the city will review the fee structure for landfill use.

At present (2008), PPSF generates all of its own power independently, as does the City of King Cove, but both parties are reportedly interested in configuring the system to allow for the purchases of surplus power in either direction in the future. The city operates the Delta Creek hydroelectric generating facility in the summer months (after spring break-up and before fall freezes), which, at a capacity of 800 kilowatts, is large enough to allow the city to seasonally shut down its conventionally fueled power plant when the hydroelectric plant is fully operational. According to senior city staff, the hydroelectric plant has met as much as 60 percent of the community's residential demand in a year, but in recent years the balance between demand met by hydroelectric and conventional generation has been about even. The city would ultimately like to be able to supply the power needs of all local users, including PPSF, and has embarked on a program of increasing its overall generation capacity. The city has recently (2008) completed a new conventional (diesel-fueled) power plant with a 2.2-megawatt capacity in the Rams Creek area near the new school building to replace its existing conventional plant. This new plant is now undergoing testing and will fully come on line following the summer 2008 hydroelectric season. Waste heat from the new power plant will also be utilized to help heat the new nearby school facility. Between the new diesel-fired plant and the existing Delta Creek hydroelectric facility, the city will have a 3-megawatt generation capacity, and a current demand level of roughly 1 megawatt, leaving an additional 2 megawatts available for other potential users. City officials are hopeful that if an agreement can be reached with PPSF on power sharing, this will have a positive impact on overall business relations between the two entities. As part of an overall system upgrade, the city is also planning to install a new 500-kilowatt diesel "Cat" generator in a shipping container ("conex box") in the harbor and is currently seeking funding for a planned second hydroelectric power plant, which would have a 500-kilowatt capacity and be located in the Waterfall Creek area.

Photo by Della Trumble

New Conventional Power Plant

2.3.4.3 Harbor-Specific Revenues

The city also derives revenue from a number of different fishing-related activities and services in its harbor and adjacent uplands. The city's small boat harbor is designed for vessels up to approximately 60 feet in length and has a total of 62 slips, but larger vessels are sometimes moored at the T-dock in the small boat harbor to better protect them from weather than is possible in at least parts of the larger boat harbor. There are two other docks inside the small boat harbor besides the T-dock, the "bulkhead" or "crane" dock (which is outfitted but not currently [2008] utilized for marine fuel deliveries), and the "approach" or "wood" dock. Another dock, the ferry dock, is located outside of the small boat harbor itself and effectively

forms one edge of the large boat harbor. The small boat harbor is able to supply its tenants with both power and fresh water.

The city's large boat harbor, named the Robert E. "Babe" Newman Harbor, has to date (2008) accommodated vessels up to the 150- to 160-foot range, and has a total of 43 slips. Given that the vessels that have been utilizing this harbor have been longer, on average, than anticipated in the original design, at present typically three vessels are berthed in a number of areas where the original design layout foresaw four vessels being tied up, functionally reducing the maximum number of vessels that can effectively utilize the harbor. The large boat harbor was recently (June 2007) upgraded to supply power to its tenants but does not yet have fresh water service capabilities. The addition of power, however, which has occurred post-crab rationalization, has reportedly been a large factor (in combination with relatively modest mooring rates when compared to other harbors inside or outside of the region regularly used by the BSAI and western Gulf of Alaska commercial fishing fleets) in attracting vessels to the harbor following a precipitous decline in moorings in the first year of crab rationalization.

The City also generates harbor revenues through a variety of harbor fees, including:

- annual moorage (which includes slip moorage and/or on the beach storage on blocks on harbor land);
- quarterly moorage;
- transient moorage;
- ferry tie-up;
- travel lift (used to haul vessels);
- forklift (used to haul seine nets);
- locker use/rental (40 lockers are available in a city building by the city fuel tank farm [and the AC store] and are typically used for net storage);
- skiffs (storage for skiffs hauled out on the beach);
- wharfage (for movement of cargo over the dock, typically from barges);
- pot movement across the dock;
- storage space rental (typically for container vans and the like);
- net loft use (located in the same building as net storage);
- grid use (for vessels that are left to rest up on blocks by the dock as the tide recedes [rather than hauled out] for maintenance, such as prop repair); and
- a few miscellaneous activities (and late fees and sales tax).

Table 2.3-12 provides annual total harbor fee revenues for FY 2002 through FY 2008, from two different sources. First, there are statistics kept by the Harbor Department itself, and these are currently available for FY 2004 through FY 2008. The city finance department also keeps harbor revenue figures that are available as of the time of this writing from FY 2002 through FY 2008 (partial). It is important to note, however, that there are substantial differences between totals from the two sources, such that it is difficult to generalize about the potential impacts of BSAI crab rationalization based on (1) there only being 2 years of pre-rationalization data in the case of Harbor Department data[34] (when there appears to be a great deal of year-to-year

[34] Data from the Harbor Department apparently do not exist in useable form prior to November, 2002 (part way through the second quarter of FY 2003). The consistency and comparability of the existing data that do exist from FY 2003 is less than optimum as well.

Table 2.3-12. King Cove Harbor Fee Revenues, FY 2004 – FY 2007 plus FY 2008 (partial)

Fiscal Year	Grand Total, Harbor Fee Revenues [1]	Total, Harbor and Port Revenues [2]
FY 2002	Not available	$252,750
FY 2003	Not available	$265,540
FY 2004	$223,881.69	$220,614
FY 2005	$298,458.35	$245,506
FY 2006	$272,621.63	$298,979
FY 2007	$263,110.63	$257,572
FY 2008	$305,398.88	$313,000*

[1] Harbor revenue spreadsheets provided by King Cove Harbormaster, May and July 2008

[2] Revenue and expenditure spreadsheets provided by King Cove Finance Department, June 2008.

*Note: FY 2008 figure from the Finance Department based on actuals for the fiscal year through May 2008 and a projection for June 2008)

variability as shown in the Finance Department data for the several years leading up to crab rationalization) and (2) the differences between the two data sources in the last year pre-rationalization are greater than what might be construed (at least partially) as the impacts of rationalization in the post-implementation years in the Harbor Department data. In the case of the Harbor Department data, while there was a drop in revenues from the year immediately preceding BSAI crab rationalization (FY 2005) in the 2 years following that was not made up until the third year post-implementation (FY 2008), all post-rationalization years exceeded the total for the year 2 years prior to the implementation of rationalization (FY 2004). Finance department data would indicate that harbor revenues from all three post-rationalization years exceeded the revenue total from the year immediately prior to rationalization. Clearly, based on interviews with multiple sources, however, there was a large change in at least concentrated use of the harbor prior to BSAI crab openings pre-rationalization versus what was seen after rationalization; how to quantify these changes based on existing data seems more problematic.

Current and planned King Cove harbor rates for selected categories are shown in Table 2.3-13. Other rates, such as pot storage, currently (2008) set at 25 cents per pot per month, are also expected to increase by 35 percent when the new rates are implemented. The new rates are planned to be effective as of the late summer or early fall of 2008.

Table 2.3-13. King Cove Harbor Current Fees and Planned Increase, 2008

Service	Current Fee	Increased (35%) Fee
Fork Lift	$50 per hour	$67.50 per hour
Travel Lift	$13 per foot	$17.55 per foot
Lockers	$528 per year	$712.80 per year
Net Loft	$5 per day	$6.75 per day
Pots	$1.50 per pot	$2.00 per pot
Wharfage	$4 per ton	$5.40 per ton
Storage	$.10 per square foot	$.14 per square foot
Pot Storage	$.25 per pot per month	$.34 per pot per month
Moorage under 61 feet	$.80 per square foot	$1.08 per square foot
Moorage over 61 feet	$30 per foot	$40.50 per foot

Source: Spreadsheet provided by King Cove Harbormaster, May 2008.

Specific BSAI crab fishery-related revenues, according to the King Cove Harbormaster, show up primarily in moorage, pot movement charges, and pot storage fees. As BSAI crab vessels are relatively large, the moorage fees of $30 per foot for vessels over 60 feet apply. Crab (and cod) pots that move across city-owned docks in either direction are charged at a rate of $1.50 per one-way trip (all pots in King Cove move across either the city-owned "T" dock or the city-owned ferry dock—even those from PPSF-affiliated vessels that are going to be stored on PPSF property and those from KCC shareholder-owned vessels that are going be stored on KCC property), and pot storage fees of 25 cents per pot per month on city-owned land are also applicable. Table 2.3-14 presents selected BSAI crab fishery-influenced King Cove harbor fee revenues for the period FY 2004 through FY 2008.

Table 2.3-14. Selected King Cove Harbor Revenues, FY 2004 to FY 2008 (Harbor Department Statistics)

	Annual Moorage	Quarterly Moorage	Transient Moorage	Subtotal Quarterly + Transient Moorage	Subtotal All Moorage (annual + quarterly + transient)	Pots In/Out	Other	Total
FY04	$51,232	$21,386	$45,900	$67,286	$118,518	$22,032	$83,332	$233,882
FY05	$77,435	$23,030	$56,005	$79,035	$156,470	$30,564	$111,425	$298,458
FY06	$60,309	$20,646	$55,943	$76,589	$136,898	$11,798	$123,926	$272,622
FY07	$69,827	$35,180	$52,134	$87,314	$157,140	$12,288	$93,682	$263,111
FY08	$67,846	$48,135	$51,710	$99,845	$167,691	$17,437	$120,271	$305,399

Note: "Other" category includes ferry tie-up, travel lift, forklift, lockers, skiffs, wharfage, storage space rent, net loft, grid use, miscellaneous, late fees, and sales tax.

Source: City of King Cove, Harbor Department supplied spreadsheets, May and July 2008.

In terms of moorage, according the King Cove Harbormaster, revenues from outside crab vessels are seen in both transient and quarterly moorage fees. According to spreadsheets supplied by the Harbor Department, transient moorage revenue was virtually unchanged from the year prior to the implementation of BSAI crab rationalization (FY 2005) to the first year of rationalization (FY 2006), but declined by about $4,000 in the second year (FY 2007) or about 1.5 percent of the total harbor revenues for that year. The revenue from transient moorage in the third year post-rationalization (FY 2008) was about the same as transient revenue in the second year post-rationalization (FY 2007). Quarterly moorage totals alone, or combined quarterly with transient moorage totals, however, show a different pattern. Quarterly moorage by itself decreased in the first year post-rationalization (while transient moorage was remaining steady), such that quarterly moorage alone, and the combined quarterly moorage plus transient moorage total was less than seen in the last pre-rationalization year. However, quarterly moorage increased in the second year post-rationalization (while transient moorage decreased)—and the combined total of quarterly moorage and transient moorage increased during this second year—such that in the second year post-rationalization (FY 2007) quarterly moorage (and quarterly plus transient moorage) totals exceeded immediate pre-rationalization (FY 2005) totals. This increase continued into the third year post-rationalization (FY 2008), such that quarterly moorage revenue alone was more than twice as high as the revenue seen in the last pre-rationalization year (FY 2005) and combined transient and quarterly moorage for FY 2008 showed an increase of about

26 percent over FY 2005 totals. Total moorage, including annual, quarterly, and transient moorage, showed a change (increase) of about 7 percent between the FY 2005 total and the FY 2008 total, although a decrease of about 12 percent was seen in FY 2006 before recovery occurred in FY 2007 and continued through FY 2008. It is important to note again, however, caution must be taken when comparing year-to-year changes based on a single baseline year. In the case of moorage revenue, FY 2005 was a high year compared to FY 2004. In every category except quarterly moorage in FY 2006 only, moorage revenues in each category in each post-rationalization year exceeded moorage revenues from FY 2004.

If combined transient and quarterly mooring revenues are essentially a wash (or a gain), post-BSAI crab rationalization, pot movement paints a different picture. Based on Harbor Department supplied data, revenues from pots (both crab and cod pots) moving in and out of the harbor were substantially lower in each post-rationalization year compared to the year immediately prior to rationalization (by $18,700, $18,300, and $13,127) during the first 3 years post-crab rationalization (FY 2006–FY 2008), respectively, when compared to the same figure for the year immediately prior to the implementation of crab rationalization (FY 2005). This decline represents about 7 percent of total harbor revenues for FY 2006 and FY 2007, and about 4 percent for FY 2008. At a rate of $1.50 per pot, these revenues would suggest that there were a total of 20,376 pot one-way trips across the dock (with some pots moving in and out of storage more than once per year) in FY 2005, with only 7,865, 8,192, and 11,625 one-way trips across the dock in FY 2006, FY 2007, and FY 2008, respectively. According to the harbormaster, however, some caution must be used in interpretation of these figures as the harbor does not capture an estimated 20 percent of all trips (and related revenues) associated with pot movement.

As was the case with overall harbor revenues, however, Harbor Department-supplied data most closely linked with crab fishery activity show a somewhat different pattern, or tell a somewhat different story, than do Finance Department supplied data for those same categories. Table 2.3-15 displays Finance Department data for moorage and pots in/out for a longer time span than is available from the Harbor Department. Unfortunately, for the sake of this analysis, Finance Department data do not break out transient, quarterly, and annual moorage but, rather, give a single total for all moorage types for the year. These data, however, show a dip in moorage revenues from FY 2003 to FY 2004 that is greater than any post-rationalization year dip, and in general show that FY 2006 moorage revenues (the first year of BSAI crab rationalization) were higher than any of the previous years shown. After a dip in FY 2007, FY 2008 moorage revenues are projected (based on 11 months of actual revenues and 1 month of projected revenues) to exceed the moorage revenues of any of the pre-rationalization years shown. Also, these Finance Department data paint a somewhat different picture of crab pot in/out revenues than do the Harbor Department data, where revenues from FY 2003 and FY 2004 were substantially below a run-up (about an 80 percent increase) to levels seen in the 2 years immediately prior to BSAI crab rationalization (FY 2004 and FY 2005), followed by a drop of about 60 percent in revenues immediately post-rationalization (FY 2006), before returning in FY 2008 to levels that are about the same as seen in FY 2002 and FY 2003.

Table 2.3-15. Selected King Cove Harbor Revenues, FY 2004 to FY 2008 (Finance Department Statistics)

	Moorage	Pot Storage*	All Other	Total
FY02	$150,458	$16,536	$85,756	$252,750
FY03	$151,003	$16,678	$97,859	$265,540
FY04	$98,771	$29,610	$92,233	$220,614
FY05	$124,422	$30,269	$90,815	$245,506
FY06	$170,167	$11,645	$117,167	$298,979
FY07	$138,282	$10,883	$108,407	$257,572
FY08**	$165,000	$17,000	$131,000	$313,000

*Note: "Pot Storage" category in Finance Department data appears to be same as the "Pots In/Out" category in Harbor Department data.
** FY 2008 data are based on actuals through May 2008 and projection for June 2008
Source: Revenue and expenditure spreadsheets provided by King Cove Finance Department, June 2008.

An earlier study on the impacts of BSAI crab rationalization on King Cove, Akutan, and False Pass (Knapp and Lowe 2007) provided an analysis of selected King Cove harbor fees (transient moorage and pot in/out fees) by quarter from Harbor Department source data to link those fees to specific times of the year where BSAI crab-related activities typically occurred (January through March for the opilio-related activities and October through December for Bristol Bay red king crab-related activities). There are some indications that this approach has both advantages and disadvantages, based on some consistency issues within the harbor data themselves regarding when activities occur and when they show up in the data. Taking pot in/out fees as an example, in FY 06, there are no fees recorded for the months of January 2006 and March 2006, although it is known that pot movements did occur during these months, such that it is highly likely that data are missing (or recorded in other months, including months outside the quarter in question). In FY 07, pot in/out fees were higher in April 2007 than in either February or March of that year, suggesting that recordation of fees associated with the opilio season either lagged behind the season, or the actual activities associated with a longer rationalized opilio season carried over into the next quarter of the year (which, in the earlier analysis, was not considered as part of the opilio season activity window). Further, although there is otherwise every indication that more crab pots moved in King Cove in January through March 2005 (pre-rationalization) than in January through March 2008 (the third year post-rationalization), pot in-out revenues for January through March 2008 ($11,128) easily exceeded those for January through March 2005 ($9,499), suggesting that data were inconsistently collected, cod pot movements have increased while crab movements have decreased—which would confound the utility of data for crab analysis [as the data do not distinguish between crab and cod pots]—and/or that some other factor or factors are at work that make year-to-year quarterly comparisons for pot in/out data problematic. Also problematic is the absence of comparable pre-rationalization data of a time depth greater than 2 years, so the differing patterns seen between the Harbor Department data and the Finance Department data cannot be cross-checked, or annual fisheries variability accounted for internal to the Harbor Department dataset itself.

For transient moorage, there may be other issues that confound the utility of year-to-year quarterly fee total comparisons for the purposes of BSAI crab rationalization analysis, including the input offered by the harbormaster that BSAI crab-related moorage fees would show up in

quarterly moorage fees as well as (monthly) transient moorage fees (and/or that with the longer seasons that have occurred with crab rationalization, there may have been some shift between the two categories, although given the number of vessels involved, intuitively it would seem that there would be an overall drop in combined transient and quarterly crab vessel-related revenues, given the reduced size of the fleet post-rationalization). Further, however, there are shifts of transient moorage revenues between quarters that are not readily explainable. For example, transient moorage revenues in the October 2004 through December 2004 pre-rationalization period were substantially higher ($17,250) than the analogous post-rationalization period of October through December 2005 ($5,910). However, in 2005, the transient mooring revenues were up by a greater amount in the preceding quarter (July through September) compared to the same time frame in the previous year, for reasons that are not clear. Further, in October 2004, transient mooring fees were more than twice as high for any other month October through March of any year FY 2005 through FY 2008, but there were no transient moorage fees recorded in the previous month (September 2004) or the following month (November 2004), which are the only zero-fee months during this 4-year span. These zero-fee months could be attributable to typical pre-crab rationalization patterns or it could be an issue of timing of recordation, potentially moving fees that should have been attributed to a different quarter than the October to December quarter, which would, in part, account for the very large gain seen in July though September 2005 compared to July through September 2004 as well as a part of the precipitous drop seen in October through December 2005 compared to October through December 2004. These data are difficult to interpret because of the absence of analogous context data from earlier years. Clearly, there were impacts of BSAI crab rationalization felt in King Cove harbor; quantifying those effects is not straightforward with the available data.

2.3.4.4 Upcoming Projects

There are three upcoming projects currently in the planning stage that involve the city that will result in improved local infrastructure and represent additional local economic and employment opportunities in the near future. These include a downtown paving project, a harbor improvement project, and a hydroelectric power system upgrade.

The first project involves the paving of city streets in the downtown area of King Cove. Originally scheduled for the summer of 2008, fuel costs and mobilization issues have arisen such that preparation work is still planned for 2008, but the project as currently (2008) scheduled will extend into the 2009 construction season. This $6-million-plus project is being undertaken as a combined effort of the City of King Cove and the Agdaagux Tribe. The city has a history of working with the tribe on similar projects, such as the roadway improvements from the city to the airport, which represented a unique combination of federal, state, and municipal programs and entities. Originally the state funded a replacement of the downtown area bridge spanning the channel between King Cove Lagoon and King Cove itself, and a related subsequent project upgraded the road from the city to the airport, with the latter representing the first time the Statewide Transportation Improvement Program (STIP) process was opened to a combination of BIA, tribal, and municipal entities, with additional funding coming from other sources, such as the Denali Commission. Dredge materials from the harbor were brought onshore to be used in this project, which saved considerable resources, and by having the tribe take the lead (and the city play a supporting role), access to a range of federal funds, such as those from the BIA and the Administration for Native Americans (established in 1974 under the Native American Programs Act and now a part of the U.S. Department of Health and Human Services that

provides community project-based funding), was facilitated. The currently planned downtown roadway paving project will not only improve the community's infrastructure but will also provide local employment and economic activity. Other planned city and tribal ventures in the more distant future include a waste oil recycling center, landfill improvements, and future phases of work on the road to Cold Bay.

The second project is a harbor upgrade that is planned for 2009. In the older, small boat portion of the harbor, this project will replace floats, revamp the water and electrical system, upgrade the approach dock (but not the T dock), and replace pilings as needed. It is expected that the state's share of the cost will be approximately $3 million, with an additional $3 million in matching funds required, which the city is in the process of pursuing. As part of the funding for this project, the city also needs to demonstrate to the state that the King Cove harbor is being run in a financially solvent manner, which the previously discussed fee increase will facilitate (although the use of some fish tax revenues to supplement harbor use fees on an ongoing basis is also reportedly acceptable).

The third project is a hydroelectric system upgrade that the city would like to start in the Waterfall Creek area in 2009. The city (and its local partners, including the Agdaagux Tribe) is in the process of locating and securing funding for this project.

Other projects are also on the horizon. The city recently obtained the old school building in the downtown area from the AEB and is exploring options for consolidating offices and services into this building and options for taking on other tenants, potentially including PPSF, to help utilize the space and offset some of the operating costs. The city is also interested in a small-scale public transit system, especially as the spatial distribution of key services has changed over time with, for example, the move of the school and the clinic from the downtown to the Rams Creek subdivision area. This potential project, however, is still in the conceptual rather than the planning stage.

2.3.4.5 Aleutians East Borough Projects

The AEB has its financial department offices in King Cove and is otherwise involved in a number of projects that have a direct impact on the local economy of the community. The largest of these projects, the Cold Bay to King Cove surface transportation link, has improved access to the community, provided a significant number of jobs during its construction phase, and continues to provide operational phase jobs to King Cove residents.

At present (2008), the Cold Bay to King Cove surface transportation link incorporates approximately 5.7 miles of roadway from a junction near the King Cove airport to a hovercraft landing ramp and temporary support facility on Cold Bay itself (including a large sprung structure for hovercraft support and a trailer used as support office/passenger waiting area) and a hovercraft that makes the run across Cold Bay from the King Cove linked ramp to another ramp connected to road system that serves the community of Cold Bay itself. This "Cold Bay side" ramp is near the Cold Bay airport, and passengers and freight on this end move between the airport and the hovercraft on an AEB-provided shuttle van.

Photo by Della Trumble

Hovercraft support facility near King Cove

According to a senior borough official, the hovercraft entered service in July 2007 and provided regularly scheduled service until March 2008. It was the AEB's intention to provide service 7 days per week. At the time of fieldwork for this project (May 2008), the hovercraft was not offering scheduled service, but was available for emergencies, such as medivacs, and chartering for school functions and special events. The six-person, normally full-time, crew operating and maintaining the hovercraft, including the captain, is composed of long-time King Cove residents with the exception of the mechanic who came to the community with the project and helped to train the rest of the crew. During the time of fieldwork, however, during which scheduled service was not available, crew positions were part-time, and operations were being only maintained at a minimal level sufficient to keep licenses and certifications valid. Regularly scheduled service is planned to be resumed as of June 1, 2008, but only on a 3-day per week basis, plus charters, primarily due to higher-than-anticipated operating costs.

Hovercraft *Suna-x̂* (Aleut for "large boat"), at 90 tons and 2,400 horsepower, is reportedly the largest civilian hovercraft operating in the United States. It has a total of 40 passenger seats in an enclosed cabin and is able to transport at least one vehicle and cargo on its open foredeck.

There is interest on the part of the AEB and King Cove residents in completing an all-road link between King Cove and Cold Bay. The primary impediment to this link-up is the fact that the land in between the existing road termini (including a section of the road that extends approximately 5 miles past the current [2008] hovercraft ramp on the King Cove side of the road) is a part of the Izembek National Wildlife Refuge and includes a designated wilderness area. For this link to come to fruition, land transfers would have to take place, Congressional approval would be required, and environmental studies-associated mitigation, if applicable, would be needed.

As of May 2008, land swap agreements have reportedly been agreed to in principal by the KCC, the State of Alaska, and the U.S. Fish and Wildlife Service, but approval of the project awaits Congressional action, where debate over the project has proven to be contentious. Even if the project, which is being contested due to environmental concerns, is swiftly approved, environmental studies requirements will push the actual construction of the project well into the future.[35]

In either its current configuration, or as an all-road system, such a link theoretically eliminates the transportation bottleneck caused by the not-infrequent closure of King Cove's airport due to adverse flying conditions, a circumstance that can last for several days at a time, several times per year, but in practice the hovercraft is now (2008) only used on an emergency or special occasion basis. A surface transportation link to the Cold Bay airport, one of the state's major airport facilities and far less subject to closure due to adverse weather conditions, would provide a much more reliable means of getting vessel crews in and out of the community (maximizing the utility of the newly constructed harbor) as well as processing crews, and it could also

[35] While enjoying widespread support in Cold Bay and at the AEB level, the road link project was publicly opposed by the current [2008] municipal administration in Cold Bay on reports televised statewide in May 2008. Local [King Cove] speculation regarding the reason for the opposition from Cold Bay was rooted more in potential competition for hunting grounds currently being exclusively used by Cold Bay residents for both personal use and outfitted for guided sport hunting, as opposed to, or in addition to, the publicly stated concerns over social impacts to Cold Bay and environmental impacts of a roadway running through what is currently designated wilderness within the Izembek National Wildlife Refuge.

potentially provide a viable avenue for the transportation of fresh product from the community (but this may be limited in actuality by project impact mitigation measures that could restrict such commerce). Further, local sources report that public safety would be improved through a greater ability to access timely medical evacuation flights.

The AEB is also currently (2008) in discussions with Alaska Airlines regarding potential restoration of jet service to Cold Bay, which would, in turn, substantially improve service to King Cove. According to senior AEB staff, the Alaska Airlines jet that provides service on a regular basis between Anchorage and Adak overflies Cold Bay 3 days per week. According to AEB staff, the carrier is permitted an interim stop under the terms of their contract for the Adak run, which could take place in Cold Bay, facilitating the flow of passengers and freight to local communities, including King Cove.

2.4 KODIAK

The community of Kodiak, located near the northeastern end of Kodiak Island in the Gulf of Alaska, is the largest island in Alaska and second in size within the United States only to the island of Hawaii. It is 252 air miles southwest of Anchorage, a 45-minute flight. The city of Kodiak, incorporated as a Home Rule City in 1940 and encompassing 3.5 square miles of land and 1.4 square miles of water, is part of the Kodiak Island Borough (KIB). Kodiak National Wildlife Refuge encompasses nearly 1.9 million acres on Kodiak and Afognak islands, and the Alaska Maritime National Wildlife Refuge, which includes the Barren Islands in the northernmost portion of the KIB as well as some tidelands and submerged lands in and around the city of Kodiak itself,[36] also has a significant presence in the Kodiak region.

The climate of Kodiak Island has a strong marine influence with moderate precipitation, occasional high winds, and frequent cloud cover and fog. Severe storms may occur year-round and are most common from December through February. Annual rainfall is 67 inches, and snowfall averages 78 inches. January temperatures range from 14 to 46° F, with July temperatures varying from 39 to 76° F.

2.4.1 Overview

Kodiak's identity is that of a fishing community. Through time, both its fishermen and processors have developed an engagement in and dependency upon many different fisheries. That is, while some fishermen and plants do specialize, many participants display a wide diversification in their fishery operations.

Commercial fish processing in the Kodiak region began on the Karluk spit in 1882. Not long after that, canneries[37] were established in the community of Kodiak. While the quantity and form of shore processing plants in Kodiak have changed, this sector remains an influential component of the fishing industry that is, in turn, fundamental to the community and its economy.

Shore processing facilities or canneries in the Kodiak region concentrated primarily on salmon and herring prior to 1950, although there was also a cold storage facility at Port Williams where halibut was frequently landed. As their common name suggests, the product produced was most often canned fish. Cannery operations expanded in the 1950s to accommodate king crab processing. Thirty-two canneries processed 90 million pounds of crab in 1966. In the following years, there was some growth within the sector; for example, one new shoreplant was built in Kodiak in 1968.

Declining harvest levels, however, prompted several shoreplants to move their operations during the late 1960s and early 1970s to Unalaska/Dutch Harbor in the Aleutian Islands, closer to the larger supply of Bering Sea/Aleutian Islands (BSAI) king crab. This move also diverted

[36] Precise federal ownership/management of tidelands in and around Kodiak is matter of contention. This includes lands currently utilized for seafood processing.

[37] The term "cannery" is still commonly used in Kodiak to refer to shore-based seafood processors, regardless of product form actually produced. This term appears to be more commonly used in Kodiak than in some of the other communities profiled.

some of the crab that had previously been taken to Kodiak for processing, and the number of shoreplants in Kodiak declined by more than half. When king crab stocks started to crash in the late 1960s, some of the Kodiak plants sought to diversify. At least one plant added facilities to separate the previously dominant crab line and the main plant was then converted into a shrimp plant. Other plants report they "evolved into shrimp" to augment their crab production. Kodiak shrimp landings peaked in 1971, and stocks crashed in the late 1970s. The reason, while not definitive, may have been related to predation by large stocks of cod and pollock. Between 1978 and 1981, several Kodiak processing plants stopped shrimp production.

A temporary resurgence in the Kodiak red king crab stocks in the mid- to late-1970s instigated expansion of existing plants once again and fostered the building of two new plants in Kodiak. Larger freezing capacity was a notable addition to most of the shoreplants. This allowed flexibility in storing larger volumes and processing more species into more diversified products. Larger docks also became important to the processors so that they could unload more boats in a given amount of time. With a larger overall capacity to process fish, competition by the plants for fishery landings increased, and the rate of return for individual shoreplants declined. Diminishing crab stocks as the fishery entered the 1980s compounded this problem. After a record catch in 1980, the Kodiak king crab stocks crashed. Several factors, including overharvesting and natural conditions, have been cited by fishermen and scientific sources as contributors to this collapse. There has not been a red king crab opening in the Gulf of Alaska since the early 1980s. Waters around Kodiak still produce Tanner and Dungeness crab fisheries, and Kodiak shoreplants process these species in addition to deliveries of crab they receive from boats returning from the Bering Sea fishery.

Efforts to fish Dungeness crab along the Kodiak coastline were slower to intensify, and landings peaked in 1981. At about the time when the Kodiak shoreplants started processing shrimp, the bairdi Tanner crab fishery "started to become a reality," but the Tanner crab seasons, like the seasons of other crab species, soon became shorter and less productive. Many of the plants maintained halibut production lines while they were processing crab, shrimp, and salmon. At that time, halibut processing was not the intense activity it was to become under the derby-type open access system. The season was open most of the year and there were relatively few boats fishing it. As the crab and shrimp faded as viable resources to maintain shoreplant production, salmon became much more important to the processing companies in Kodiak, as they continued looking for products to fill the gaps in their production.

The provisions of the Magnuson Act of 1976 gradually expelled the foreign fleets capitalizing on the groundfish fishery within the Gulf of Alaska Exclusive Economic Zone, while American boats and processors entered the fishery. By the late 1970s a few Kodiak shoreplants, according to one plant manager, started experimenting with groundfish resources "because there wasn't much crab to do." However, the majority of the groundfish caught prior to 1988 was processed aboard foreign vessels, first by wholly foreign operations, and then by joint ventures where American boats delivered to floating foreign processors. One interviewee described the late 1970s and 1980s as years of "forced" diversification:

> In that same time period [late 70s-early 80s] we started playing around with halibut and black cod, and very early playing around with other groundfish, and then in the mid-80s we got a lot more serious, and then in 1988 we built the new

> factory for surimi. It's pretty easy to see that we were kind of just forced into it. I mean, if you wanted to stay in the fish business you got into groundfish because that is all there was. And of course during that whole period, we continued to process salmon and herring and other products that were available to us.

Plant and dock expansions fostered their ability to further utilize groundfish resources. The first surimi production in Alaska took place in Kodiak in 1985 with the aid of an Alaska Fisheries Development Foundation Saltonstall-Kennedy grant. Also in the mid-1980s, "the State of Alaska came out with their tax credit program for getting into the groundfish, and so we fully utilized that," according to one plant operator, and his was not the only plant to do so. In 1987, a single plant processed about one-third of all the pollock that was taken out of the Gulf, but tax credits and other incentives contributed to additional effort and capitalization in the processing sector. This had limiting effects on large volumes being received by any one plant. The growth of the shore-based groundfish fishery in the Gulf of Alaska provided most Kodiak processors with products needed to keep their plants running nearly year-round. Large capital investments made the capacity to process groundfish resources greater than the total amount delivered, but a number of factors have converged to change operations significantly. Changing seasons have forestalled the opportunity to run plant operations year-round or at maximum capacity for extended periods of time, and competition for the "race for fish" stimulated overcapitalization in both the harvesting and processing sectors. Inshore/Offshore-1 management measures provided protection to Gulf of Alaska onshore processors and the harvesters who deliver to them from preemption by the offshore sector. However, even with license limitation, the Gulf of Alaska fishery is still characterized by overcapitalization. The derby-style fishing tactics and, in particular, the large volumes of pollock that can be caught in a short amount of time with contemporary equipment and technology can effectively "plug" the shoreplants relative to their normal operating capacity. If plants increase their capacity to handle these peak demands, they are essentially "capitalizing for inefficiency" as much of this capacity will be idle for most of the year. After the implementation of the American Fisheries Act of 1998 (AFA) in the Bering Sea, some Kodiak processors also cite the "race for history" in Gulf of Alaska fisheries (and especially pollock) as an additional pressure toward inefficiency in local groundfish fisheries, in anticipation of eventual groundfish rationalization in some form in the Gulf of Alaska.

According to the City of Kodiak, Kodiak is home port to 770 commercial fishing vessels, making it the state's "largest fishing port" (NMFS 2002) as measured by local fleet size. The development or evolution of the Kodiak harvesting fleet has essentially paralleled that of the processors to which they deliver (along with the development of a fleet component that in part or in whole participates in BSAI fisheries). The details and dynamics are somewhat complex but have resulted in a fleet of multispecies, multigear boats (although trawlers may be somewhat more specialized, they can also switch gear or work as tenders). This versatility is especially important to harvesters as seasons have become more compressed and competition to harvest the resources has increased, although management restrictions such as license limitations or Individual Fishing Quotas (IFQs) have increased the cost and perhaps reduced the possibility for such versatility. Kodiak fishermen greatly value having options and making their own decisions regarding a diversified fishing strategy. Thus, both the potential benefits (generally increased stability of access and amount harvested for those who can fish) and the potential costs (increased cost for entry into fisheries and reduced flexibility) of any or the recent proposed management alternatives directed toward rationalizing various fisheries are generally quite clear to them.

Though commercial fishing remains a central element in the underpinning of the local economy, Kodiak's economy has become increasingly diversified. The local United States Coast Guard (USCG) installation is the largest in the United States, and although relatively self-sufficient in some respects, it also contributes a great deal to the local economy in many ways, with approximately 1,300 uniformed and civilian employees, along with 1,700 dependents. Housing has been relatively scarce since the 1980s and new house construction has been constant since that time, both to meet this demand as well as in response to increased population and more USCG personnel living off-base. The housing market, however, is currently softer than it has been in the collective memory of most Kodiak residents, due at least in part to a general downturn in the fishing industry. In the decade from 1987 through 1996, wholesale value of seafood processed in Kodiak ranged from roughly $200 million and up on an annual basis; from 1997 to 2006 this value only reached $100 million in 2 years (1999 and 2006). The service sector, and especially the retail sector, has continued to grow and has become increasingly important. Fishing support services have been affected by the long-term downturn in the fishing industry. The local timber industry is at a relative low point currently but has been significant in the past. Education is an important economic and social component of the community, represented by the facilities of Kodiak College and the Fishery Industrial Technology Center. The aerospace industry has the potential, through a local rocket launch facility and associated activities, to contribute to the economy both directly as well as more indirectly through support services and facilities provided to outside specialists who work at the launches.

2.4.2 Community Demographics

Kodiak is a large community by Alaska standards and is the seventh largest community in the state in terms of population.[38] Accompanying this size is a relatively diversified economy compared to other fishing communities in the southwestern part of the state. In terms of direct employment in the fishery being the overriding factor in residency decisions, the population of Kodiak could be viewed as less directly tied to the fishing economy than, for example, is the case for Unalaska, Akutan, or King Cove. Much of the economic diversity seen in Kodiak, however, links back to commercial fisheries in one way or another, with commercial fishing underpinning much of the apparent diversity, generating secondary and indirect employment, and otherwise driving a wide range of related activities. For example, there is a considerable U.S. Coast Guard presence in the community. While not a direct fisheries activity, the base would not exist in Kodiak if it were not driven by commercial fishing-related demands.

2.4.2.1 Total Population

Table 2.4-1 provides information on Kodiak's total population by decade since 1880. The city of Kodiak did not attain the status of the largest community on the island until about 1920 or so and has grown steadily since then. The KIB was formed much later, and numbers for the borough are not available until 1960 when 7,174 people were enumerated. Named places within the KIB only totaled 3,320 people at that time, however, and most were in Kodiak. Based on present conditions, it can be assumed that most of the difference (whatever its "true" value) represented

[38] The six largest communities in Alaska, in order, are Anchorage, Juneau, Fairbanks, Sitka, Ketchikan, and Kenai. There are two different basic types of local governance in these communities: Anchorage, Juneau, and Sitka are unified Home Rule Municipalities (i.e., unified city/boroughs), while Fairbanks, Ketchikan, and Kenai, like Kodiak, are Home Rule Cities (Kodiak Chamber of Commerce 2004).

people living in the area of, but outside of the city limits of, Kodiak (Linda Freed, personal communication 2001[39]). This would account for a good deal of the sharp increase between 1950 and 1960 of the population of the "greater city of Kodiak" (Table 2.4-1).

Table 2.4-1. Kodiak City and Area Population 1880–2000

Year	City of Kodiak	Greater City of Kodiak[1]	Total Hinterland[2]	Kodiak Island Borough
1880	0	0	694	NA
1890	495	495	1,334	NA
1900	341	341	623	NA
1910	438	438	655	NA
1920	374	374	343	NA
1930	442	442	444	NA
1940	864	864	589	NA
1950	1,710	1,710	567	NA
1960	2,628	6,482	692	7,174
1970	3,798	8,410	999	9,409
1980	4,756	8,842	1,097	9,939
1990	6,365	11,610	1,699	13,309
2000	6,334	12,211	1,702	13,913

[1] "Greater city of Kodiak" encompasses the city of Kodiak, Kodiak Station, and the derived unincorporated population—see text.

[2] "Total Hinterland" is the total population of all named places on Kodiak Island, other than the city of Kodiak and Kodiak Station.

Source: DCED for named places; "greater city of Kodiak" and "Total Hinterland" are derived values—see text.

The 2000 "unincorporated population" is 4,037 and is generally believed to approximate the population that could be considered part of the greater city of Kodiak area but not within its incorporated city limits. This "unincorporated" population is thus equal to about 64 percent of the city's 2000 incorporated population of 6,334. A reported trend in recent years is an increase in the "unincorporated" population and a simultaneous, if slight, decrease in population for the city of Kodiak proper, as the city is considered essentially built out. An additional 1,840 people live on the USCG base, which most people also consider as part of the greater city of Kodiak area. Together these three populations include 12,211 individuals, or about 86 percent of the KIB's total 2000 population of 13,913. This three-population greater city of Kodiak figure does not include the residents of Chiniak or Womens Bay (which together comprise about 5 percent of the KIB's population), although from a number of perspectives it would be logically consistent to include them as well, based on the closeness of social, employment, and economic ties. The calculated greater city of Kodiak percentage of the total borough population has varied from 84 to 90 percent since the formation of the KIB. Table 2.4-2 provides 2005 population estimates for communities and named places within the KIB. While specific relationships vary by community, in general, Kodiak acts as a transportation, administrative, and economic hub for the borough.

[39] Freed, Linda, Director of Community Development, Kodiak Island Borough, June 2001.

Table 2.4-2. Kodiak Island Borough Population Estimates, 2005

Community or Area	Estimated Population
City of Kodiak	6,088
Akhiok	41
Chiniak	52
Larsen Bay	97
Old Harbor	200
Ouzinkie	191
Port Lions	220
Karluk	27
Womens Bay	703
USCG Base	1,975
Other Areas	4,044
Total Borough	13,638

Source: Kodiak Chamber of Commerce Kodiak Community Profile and Economic Indicators, 2007 (based on Alaska Department of Labor data).

Kodiak, like other fishing communities, experiences seasonal population fluctuations that correspond to peak harvest and processing periods. In Kodiak, this has historically been most evident in summer (primarily July and August). With the development and growing importance of groundfish processing, however, Kodiak processors have increasingly tried to operate year-round (or nearly year-round) and have done so in recent years with a predominantly local labor force, for a number of reasons, including increased costs of transporting, housing, feeding, and training temporary employees. These trends have had the effect of minimizing seasonal population fluctuations tied to fishing *per se*, and the growth of the nonfishing portion of the economy has also tended to smooth out overall population peaks and valleys. These dynamics are discussed below in terms of the processing and harvesting labor force.

2.4.2.2 Ethnicity

Kodiak is a complex community in terms of the ethnic composition of its population. Sugpiaqs (Koniags) were the original inhabitants of the area, but in the late 1700s contact with Russians, their diseases, and their sea otter hunting and trading operations had devastating effects on the Native population and culture. (Alutiiq has survived as the present-day Native language, however, and a number of developments in the late twentieth century, such as the Alaska Native Claims Settlement Act of 1971 and the Alaska National Interest Lands Conservation Act of 1980, among others, have fostered more economic and political autonomy for Alaska Natives in the region and elsewhere in the state.) Alaska, including Kodiak, became a U.S. Territory in 1867, and a cannery opened on Karluk spit 15 years later. This marked the start of the development of commercial fishing on Kodiak Island, and Karluk remained the largest community on the island until about 1920. Commercial fishing and the military buildup associated with World War II brought many non-Natives to Kodiak, primarily Caucasians, but the population influx also included a substantial number of persons of other minorities, most of whom were at least initially associated with fish processing employment.

Table 2.4-3 presents time series information on ethnicity for the city of Kodiak and Table 2.4-4 presents comparative information for the KIB. While the information is not all directly comparable due to changing definitions and different sources, certain conclusions are fairly clear. The population of the greater city of Kodiak area is quite different from that of the borough as a whole, and a good portion of this difference is related to the economic development in the city in general and fisheries development in particular. For example, most residents of Filipino or Asian and Pacific Islander descent live in or near the city of Kodiak. With initial in-migration of these groups associated with fish processing employment, they are the segment of the KIB population that is most rapidly increasing, from an unknown population in 1970 (but no more than 3 percent) to 6 percent in 1980 to 11 percent in 1990 to 17 percent in 2000. This is consistent with the common community perception, and plant manager reports, that fish processing workers are more of a resident workforce with intact family units than in the past and, further, that fish processing jobs are being used as an entry-level means of moving to Kodiak before individuals then take employment in other sectors of the local economy. The Alaska Native population has stayed at approximately the same percentage through time but is clearly a smaller percentage of the city of Kodiak population than it is of the KIB as a whole. The white or Euroamerican population has declined in terms of percentage over time. Overall, there has thus been a gradual, long-term shift in ethnic composition, with Asian and Pacific Islanders increasing in percentage and Euroamericans declining in percentage. Native Americans and African Americans have shown relatively little change. Census data also show that the "Hispanic Origin" portion of the population has also grown over time, and this is consistent with plant managers' observations about the changing composition of processing workforces, along with anecdotal information that the Hispanic population is increasing and located primarily in the city of Kodiak (KIB website).

Table 2.4-3. Ethnic Composition of Population Kodiak City: 1970, 1980, 1990, and 2000

Race/Ethnicity	1970		1980		1990		2000	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
White	3,094	81.7%	3,337	71.2%	4,028	63.3%	2,939	46.4%
Black or African American	44	1.2%	26	0.5%	47	0.7%	44	0.7%
Native American/Alaskan	479	12.6%	573	12.2%	629	9.9%	663	10.5%
Asian/Pacific Islands*	NA	-	554	11.8%	1,282	20.1%	2,069	32.6%
Other**	116	3.1%	-	-	379	5.9%	619	9.8%
Total	3,733	100%	4,490	100%	6,365	100%	6,334	100%
Hispanic***	NA	-	196	4.2%	403	6.3%	541	8.5%

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 59) and Asian (pop 2,010)

** In the 2000 census, this category was Some Other Race (pop 276) and Two or More Races (pop 343).

*** "Hispanic" is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

Source: U.S. Census Bureau 1990, 2000.

Table 2.4-4. Ethnic Composition of Population Kodiak Island Borough: 1980, 1990, and 2000

Race/Ethnicity	1980		1990		2000	
	Number	Percent	Number	Percent	Number	Percent
White	7,046	70.9%	9,289	69.8%	8,304	59.7%
Black or African American	72	0.7%	135	1.0%	134	1%
Native American/Alaskan	1,710	17.2%	1,723	12.9%	2,028	14.6%
Asian/Pacific Islands*	624	6.3%	1,492	11.2%	2,342	16.8%
Other**	283	2.8%	670	5.0%	1,105	8%
Total	9,735	100%	13,309	100%	13,913	100%
Hispanic***	204	2.0%	669	5.0%	848	6.1%

* In the 2000 census, this was split into Native Hawaii and Other Pacific Islander (pop 110) and Asian (pop 2,232).
** In the 2000 census, this category was Some Other Race (pop 387) and Two or More Races (pop 718).
*** "Hispanic" is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).
Source: U.S. Census Bureau 1990, 2000.

As noted earlier, the greater city of Kodiak area acts in many ways as a hub community for other communities within the borough. Most of the outlying communities within the borough have predominately Alaska Native populations, as shown in Table 2.4-5. As may be seen in the table, in 2000 the city of Kodiak and Womens Bay (about 8 miles from the city of Kodiak, and close to the Kodiak Station USCG base) had populations around 12 to 13 percent Alaska Native. Chiniak (road connected to the city of Kodiak, and arguably closely linked to that community in a number of ways) and the Kodiak Station USCG base (again, closely associated with the greater city of Kodiak itself) were around 3 to 4 percent Alaska Native. All other communities in the borough are outlying villages without road connections and, with one exception, were predominantly (between 64 and 96 percent) Alaska Native (and five of these six communities were about 80 percent or greater Alaska Native).

Table 2.4-5. Kodiak Island Borough Population and Alaska Native Percentage of Population by Place, 2000

Community or Area	Population	Percent Alaska Native
City of Kodiak	6,334	13%
Womens Bay	690	12%
Chiniak	50	4%
Kodiak Station (USCG)	1,840	3%
Aleneva	68	2%
Akhiok	80	94%
Karluk	27	96%
Larsen Bay	115	79%
Old Harbor	237	86%
Ouzinkie	225	88%
Port Lions	256	64%
Other Areas	3,991	16%
Total Borough	13,913	17%

Source: Alaska Dept of Commerce, Community and Economic Development, 2004.

The single exception to this pattern (predominantly non-Native population named places being confined to the road connected to the greater city of Kodiak area and predominantly Alaska Native communities being the non-road-connected outlying communities) is the unincorporated community of Aleneva. This is one of Alaska's "Russian Old Believer" (*Starovery*) communities, whose population traces their ancestry through descendants of Orthodox Russians who refused to accept church reforms of the mid-seventeenth century and who first came to the New World seeking religious freedom following the Bolshevik Revolution of 1917. Aleneva is located on the coast of Afognak Island in the Raspberry Strait, north of Kodiak. The oldest (dating from the late 1960s) and best known of Alaska's Russian Old Believer communities are on the Kenai Peninsula, but Aleneva has also proven to be a favored location for the degree of voluntary social isolation often sought by this group. (This group is relevant for characterization of commercial fishing in Kodiak as Old Believers in Alaska in general are often commercial fishermen and builders of commercial fishing boats. Aleneva fishermen primarily longline for cod and halibut with 50-foot [and under] vessels and sell their catch to processors in Kodiak.)

2.4.2.3 Age and Sex

The city of Kodiak shows a greater proportion of males than females in its population and has been relatively stable in this regard for the period 1970–2000 (Table 2.4-6). The KIB as a whole shows an analogous imbalance over the 1990 through 2000 period (Table 2.4-7). This is a common characteristic of communities where at least one major economic sector disproportionately employs single members of one sex. In Kodiak, the fishing industry has historically employed many single males, both as harvesters and processors, and this has involved a substantial amount of labor migration to the community. Although this population has apparently become more resident and less transient than in the past, evidently this has not greatly affected the overall population's male-to-female ratio. Population data suggest that single males still disproportionately migrate to Kodiak for at least some period of time, and/or perhaps that females may tend to migrate out more than do males. The North Pacific Fishery Management Council (NPFMC) community profile developed in the early 1990s (IAI 1991) indicates that the male/female ratio for the Native population was approximately equal, as would be expected from a resident population. The male-to-female ratio for Euroamericans was somewhat skewed (54 percent male, 46 percent female), and for Filipinos was even more skewed. This was interpreted as evidence for a relatively resident Native population, with a predominately resident Euroamerican population somewhat more prone to movement in and out, and a much more mobile "other minority" population disproportionately composed of single male workers and a smaller percentage of family units with children. More recent data suggest that this pattern has been changing over the intervening years, however, as the processing workforce has become more residential and less transient through time, and as individuals who initially came to Kodiak for processing work are moving into employment in other economic sectors and raising families in the community.

Table 2.4-6. Population by Age and Sex, Kodiak City: 1970, 1980, 1990, and 2000

	1970		1980		1990		2000	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Male	2,055	54%	2,498	53%	3,496	55%	3379	53%
Female	1,743	46%	2,188	47%	2,869	45%	2955	47%
Total	3,798	100%	4,686	100%	6,365	100%	6334	100%
Median Age	NA		NA		NA		33.5 years	

Source: U.S. Census Bureau 1990, 2000.

Table 2.4-7. Population by Age and Sex, Kodiak Island Borough: 1990 and 2000

	1990		2000	
	Number	Percent	Number	Percent
Male	7,395	56%	7,362	53%
Female	5,914	44%	6,551	47%
Total	13,309	100%	13,913	100%
Median Age	NA		31.6 years	

Source: U.S. Census Bureau 1990, 2000.

One way of looking at changes in population dynamics by age is through school enrollment figures. Table 2.4-8 provides information on enrollments in schools in the greater city of Kodiak area from 1997 through 2003. Other borough schools are found in six operational rural areas (Akhiok, Larson Bay, Port Lions, Ouzinkie, Old Harbor, and Karluk[40]) and two logging camps (Danger Bay and Big Sandy Lake, although the latter was not open during the 2007–2008 school year). As shown, total enrollments have fluctuated on a year-to-year basis but have remained relatively stable over this period of time. In contrast to the town schools, overall KIB School District enrollments are down in recent years, which district personnel attribute to a combination of smaller families and the growth in the number of religious-affiliated private schools on the island.

Tables 2.4-9a and 2.4-9b provide information on school enrollments by student ethnicity for the 2002–2003 and 2007–2008 school years. Some changes are evident between these years, with the proportion of Caucasian students decreasing, and the proportions of Asian and Hawaiian/Pacific Islander and Hispanic students increasing. Alaska Native, American Indian, Black/African American, and multi-ethnic students remained proportionally about the same. As the local Asian/Pacific Islander population in general was originally associated with commercial fishing/processing opportunities in the community, the school enrollment data reinforce the noted trend of movement out of processing and settling in to become more fully engaged in the community, raise families, and participate in various other sectors of the community economy. This is one area where large-scale population change may be traced directly back to commercial fishing activities. The same may be said for Kodiak's Caucasian population, but with a longer time line and many more intervening variables, this is not as directly apparent as is the case with the Asian/Pacific Islander population. Localized and age demographic variation is also evident

[40] There have been recent changes in school locations based on shifting demographic patterns: the school in Karluk opened for the 2005-2006 school year ; the school at Chiniak closed in the 2007-2008 school year.

Table 2.4-8. Kodiak Town School Student Enrollments, by School Year, 1997–1998 through 2007–2008

School	1997–1998	1998–1999	1999–2000	2000–2001	2001–2002	2002–2003	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008
East Elementary	429	432	467	467	451	463	449	341	332	320	340
Main Elementary	267	258	253	257	262	264	277	291	264	269	261
North Star Elementary	266	272	313	325	327	297	262	298	328	308	327
Peterson Elementary	358	328	381	334	299	273	252	301	317	323	306
Kodiak Middle School	435	408	357	369	425	413	416	377	369	348	363
Kodiak High School	672	703	689	736	766	785	785	830	839	819	785
Total	2,427	2,401	2,460	2,488	2,530	2,495	2,441	2,438	2,449	2,387	2,382

Note: "Town" schools include those in and around the city of Kodiak, but not the outlying villages within the Kodiak Island Borough School District. Peterson Elementary School is located on the U.S. Coast Guard base.
Source: Derived from Kodiak Island Borough School District annual "Ethnicity by School and Gender" spreadsheets.

Table 2.4-9a. Ethnic Enrollment by School, Kodiak Town Schools, 2002–2003 School Year

School	Alaska Native	American Indian	Asian/ Pacific Islander	Black/ African American	Caucasian	Hispanic	Mixed	Total
East Elementary	112	4	98	0	210	31	8	463
Main Elementary	15	3	159	0	28	53	6	264
North Star Elementary	61	9	44	3	163	13	4	297
Peterson Elementary	14	3	14	7	220	11	4	273
Kodiak Middle School	63	8	112	4	198	23	5	413
Kodiak High School	116	17	186	12	423	28	3	785
Total Enrollment	381	44	613	26	1,242	159	30	2,495
Percent of Total Enrollment	15.27%	1.76%	24.57%	1.04%	49.78%	6.37%	1.20%	100.00%

Note: "Town" schools include those in and around the city of Kodiak, but not the outlying villages within the Kodiak Island Borough School District. Peterson Elementary School is located on the U.S. Coast Guard base.
Source: Derived from Kodiak Island Borough School District annual "Ethnic Enrollment by School" spreadsheets.

Table 2.4-9b. Ethnic Enrollment by School, Kodiak Town Schools, 2007–2008 School Year

School	Alaska Native	American Indian	Asian & Hawaiian/ Pacific Islander	Black/ African American	Caucasian	Hispanic	Multi-Ethnic	Total
East Elementary	94	8	70	1	140	25	2	340
Main Elementary	14	3	180	1	30	29	4	261
North Star Elementary	78	4	62	2	157	20	4	327
Peterson Elementary	14	2	36	13	200	29	12	306
Kodiak Middle School	61	6	96	3	161	36	0	363
Kodiak High School	106	12	194	4	393	69	7	785
Total Enrollment	367	35	638	24	1,081	208	29	2,382
Percent of Total Enrollment	15.41%	1.47%	26.78%	1.01%	45.38%	8.73%	1.22%	100.00%

Note: "Town" schools include those in and around the city of Kodiak, but not the outlying villages within the Kodiak Island Borough School District. Peterson Elementary School is located on the U.S. Coast Guard base. "Asian" and "Hawaiian/Pacific Islander," separate in the October 2007 count, are combined in this table to provide comparability to earlier years.
Source: Derived from Kodiak Island Borough School District "Ethnicity by School and Gender" spreadsheet 2007.

in these data. For example Asian and Hawaiian/Pacific Islander children make up almost 70 percent of the student population of Main Elementary, but only about 20 percent of either East or North Star Elementary, and roughly 25 percent of the student populations of both Kodiak Middle School and Kodiak High School. Peterson Elementary, on the USCG installation, has over half of the Black/African American students of any age in all of the Kodiak city area schools.

Beyond the numbers seen in the previous tables, the specific ethnic make-up of the school district has reportedly changed over the years even within specific census categories. In the late 1970s, according to district personnel, there were numerous Korean and Japanese students, but their numbers declined in subsequent years as the Filipino student population grew. The school provides bilingual education and carries out the federal Migrant Education Title I-C Program, a program that supports educational instruction for families who must move to follow short-term or temporary employment opportunities. Under the Migrant Education Program, the district

receives federal funds to provide instruction to children of families that fish for long periods of time off-site, to children living with parents in logging camps, and to subsistence hunters. This program has little impact in the city of Kodiak itself, however, as processing plant employees are not included in this program and, as most fishermen do not travel with their children, rarely are fishing families the beneficiaries of this program.

The schools in Kodiak have, however, felt the impact of processing worker-related family migration in other ways. One way includes processing workers being sent to plants outside Kodiak during peak seasons. Another is when workers leave for a month (typically December) when the plants slow down or close, often taking advantage of the chance to visit family in their home countries. According to district personnel, it is not unusual for 2 or 3 students in a classroom of 22 to 25 total students to be gone for extended periods of time, disrupting their education. More recently, the district has taken a more strict interpretation of enforcing state requirements that mandate dropping from enrollment those students who are gone for more than 10 days. As a result, according to district personnel, at present if the primary bread-winner in the family must leave the community for a long period of time, it is now more typical for children not to accompany the parent and remain in school in Kodiak.

2.4.2.4 Housing Types and Population Segments

Historically, group housing in Kodiak was largely associated with the processing workforce, but this is no longer common, and certainly not to the nearly exclusive degree seen in major Southwest Alaska processing communities. This is due both to changes in labor migration patterns as well as to the greater complexity of the institutional base and range of housing types in Kodiak. As shown in Table 2.4-10, only 6 percent of the population lived in group housing in 1990, and this figure dropped to 2 percent in 2000. This is a much lower percentage of population residing in group quarters than in Unalaska, Akutan, and King Cove (as well as Sand Point) and is consistent with a processing workforce more heavily drawn from the local labor pool than is the case in these other communities.

Table 2.4-10. Group Quarters Housing Information, Kodiak, 1990 and 2000

Year	Total Population	Group Quarters Population		Non-Group Quarters Population	
		Number	Percent of Total Population	Number	Percent of Total Population
1990	6,365	356	5.59%	6,009	94.41%
2000	6,334	146	2.30%	6,188	97.97%

Source: U.S. Census Bureau 1990, 2000.

Table 2.4-11 provides information on group housing and ethnicity for Kodiak for 1990, and similar information for 2000 is presented in Table 2.4-12. In 1990, while there was a significant difference between the group quarters and non-group quarters demographics (with the group quarters population being a higher minority group than the community population as a whole), the differences are not as sharp in general or for particular groups as seen in the Aleutian region communities. A similar pattern is seen in the 2000 data; however, the small numbers of persons involved make any conclusions about the proportionality or trends of change between groups tenuous.

Table 2.4-11. Ethnicity and Group Quarters Housing Information, Kodiak, 1990

Race/Ethnicity	Total Population		Group Quarters Population		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	4,028	63.28%	192	53.93%	3,836	63.84%
Black or African American	29	0.46%	3	0.84%	26	0.43%
American Indian, Eskimo, Aleut	811	12.74%	21	5.90%	790	13.15%
Asian or Pacific Islander	1,282	20.14%	118	33.15%	1,164	19.37%
Other race	197	3.10%	22	6.18%	175	2.91%
Total Population	6,365	100.00%	356	100.00%	6,009	100.00%
Hispanic origin, any race	407	6.39%	42	11.80%	365	6.07%
Total Minority Population	2,429	38.16%	181	50.84%	2,248	37.41%
Total Non-Minority Population (White Non-Hispanic)	3,936	61.84%	175	49.16%	3,761	62.59%

Source: U.S. Census Bureau 1990.

Table 2.4-12. Ethnicity and Group Quarters Housing Information, Kodiak, 2000

Race/Ethnicity	Total Population		Group Quarters Population**		Non-Group Quarters Population	
	Number	Percent	Number	Percent	Number	Percent
White	2,939	46.40%	78	53.42%	2,861	46.23%
Black or African American	44	0.69%	4	2.74%	40	0.65%
Alaska Native/Native American	663	10.47%	19	13.01%	644	10.41%
Native Hawaiian/Other Pacific Islander	59	0.93%	4	2.74%	55	0.89%
Asian	2,010	31.73%	28	19.18%	1,982	32.03%
Some Other Race	276	4.36%	8	5.48%	268	4.33%
Two or More Races	343	5.42%	5	3.42%	338	5.46%
Unknown	0	0%	0	0%	0	0%
Total	6,334	100.00%	146	100.00%	6,188	100.00%
Hispanic*	541	8.54%	17	11.64%	526	8.50%
Total Minority Population	3,565	56.28%	76	52.05%	3,489	56.38%
Total Non-Minority Population (White Alone, Not Hispanic or Latino)	2,769	43.72%	70	47.95%	2,699	43.62%

* "Hispanic" is an ethnic category and may include individuals of any race (and therefore is not included in the total as this would result in double counting).

** Unlike the other fishing community profiles in this document, not all persons in group quarters in Kodiak fall into the "noninstitutionalized population/other noninstitutionalized group quarters" census category. A total of 19 persons in group quarters in Kodiak are considered to be part of an "institutionalized population." In this case all are listed as residents of nursing homes.

Source: U.S. Census Bureau 2000.

Apart from group and non-group housing distinctions, household type in Kodiak varies by population segment, although systematic information of these patterns is not available. In general, however, in the 1980s housing was in very short supply, and it was not unusual for complete strangers to be more than willing to share space in a marginal housing unit to take advantage of very strong employment opportunities. Sales of houses and the rental of apartments were almost totally through word of mouth and almost instantaneous. This has changed to the point where houses are now on the market for a period of time more typical of

other larger Alaskan communities before selling, although apartment vacancy rates are still lower than are private housing vacancies. Average rent for apartments is higher or equal to rent in typical Alaskan urban communities, although the vacancy rate for units is higher than in places such as Anchorage, Juneau, and the Matanuska-Susitna Borough (AHFC 2001). Construction of new housing to meet the local demand has continued through the present, although it may have slowed somewhat in the recent past, and contractors are reportedly building few or no new houses on speculation. There are incentives that have encouraged the building of new housing outside of Kodiak city limits, however, such as the state subsidizing the mortgage rate one full percentage point for housing outside of the city of Kodiak.[41] Further, undeveloped land within the current city limits is somewhat scarce as the city builds out.

Information from interviews for previous projects would suggest that fish processors tend to live in smaller structures and/or with more household members, than do people with other employment. There are sections of town or developments where particular ethnic groups or persons with overall income levels associated with the seafood processing employment are concentrated, but there are also members of these same groups scattered throughout Kodiak.

One housing dynamic that had been operating until the recent past, noted earlier, has been that of the development of a more resident processing force. Kodiak processors have largely been able to close down bunkhouses as those attracted to Kodiak by fairly steady processing work preferred private housing in the community to company-owned group housing. Much of the processing labor force is on-call, working long shifts during the busy periods and slowing down to a smaller "core" group of employees during the slower seasons. While some plants still maintain bunkhouses for a seasonal influx of transient workers, this is less common than in the past. While one processor's workforce is unionized, the workforce at the other plants run the gamut from those that are steady, receive benefit packages, and are maintained throughout the year, to those that are much less predictably provided on-call hourly wages. There are numerous local people who work in the processing plants on a part-time basis, but the pay scale associated with most processing work requires a relatively large number of hours to support a local resident compared to other types of employment.

Other than for peak processing periods (with one exception), virtually all Kodiak processing labor is local in the sense of having local housing arrangements, if not a long-term commitment to the community. Systematic information is lacking, but anecdotally the same mechanism by which people are recruited to Kodiak to work in fish processing also allows them to find a place to live. Many such workers come because they have a relative or friend who is already working in Kodiak. This person then becomes a resource to locate housing. This is also one reason that household size and household structure tend to be different for different ethnic groups in Kodiak and are especially fluid for fish processor workers.

The USCG base also affects the local housing supply in that it is "home" to close to 2,000 people. The base is reported to have been built in the 1930s as a temporary facility and so had a large supply of substandard housing. Much of this has since been dismantled, with a substantial

[41] According to KIB staff, the incentive to build outside of the city itself is because the State of Alaska's home loan program tends to favor areas that are defined as rural. Unincorporated borough lands meet this definition; therefore, residents can obtain longer-term, low-interest loans than if they live inside Kodiak city boundaries. According to City staff, the state will further subsidize the mortgage rate another full percentage point for newly constructed energy-efficient homes.

but not equivalent amount of new and better housing being erected on-base. Most USCG personnel have the option of living off-base if they prefer, so this has increased the local demand for housing.

Table 2.4-13 displays basic information on community housing, households, families, and median household and family income in 2000. As shown, the city of Kodiak is above the borough income averages. For example, median family income in Kodiak itself is about 3 percent higher than the borough as a whole. Compared to all communities in the region, the city of Kodiak places at the upper end of the range. In 2000, the highest median family income in the region was in the community of Chiniak, with a figure of $75,067, while the lowest figure was $19,167 for Karluk.

Table 2.4-13. Selected Household Information, Selected Kodiak Region Communities, 2000

Community	Total Housing Units	Vacant Housing Units	Total House-holds	Average Persons per House-hold	Median House-hold Income	Family House-holds	Average Family Size	Median Family Income
Kodiak	2,255	259	1,996	3.1	$55,142	1,362	3.64	$60,484
Kodiak Island Borough	5,159	735	4,424	3.07	$54,636	3,257	3.52	$58,834

Source: U.S. Census Bureau 2000.

2.4.3 Local Economy and Links to Commercial Fisheries

Despite the relative diversification of Kodiak's economy, direct fishery-related employment is still a very large component of total local employment. Excluding the USCG, 4 of the top 10 employers in Kodiak in 2003 were seafood processors, and 3 more were listed in the top 20 employers (Table 2.4-14a). As of 2006, again excluding the USCG, 5 of the top 10 local employers were seafood processors and another local seafood processor was in the top 20 (Table 2.4-14b). Additionally, a catcher/processor listed as homeported in Kodiak (Seafreeze Alaska) and a processor operating out of Larsen Bay (Icicle Seafoods) were in the top 20 local employers. The list does not include Western Alaska Fisheries, reportedly because its Kodiak employment numbers are grouped with employment in other communities and reported elsewhere due to company structure. Otherwise, according the local chamber of commerce, Western Alaska Fisheries would likely also appear in the list of top 10 local employers.

It should be further noted that while Kodiak's economy is apparently far more diversified than those of the other fishing communities profiled in this document (Unalaska, Akutan, and King Cove), much of the nondirect economic activity in Kodiak relies to a greater or lesser degree on fishing activity as a base. The education, service and retail, and government sectors, including the USCG, are all very important for Kodiak. In this regard, interviews with some support providers who in the past have been primarily direct fisheries-oriented indicate that more recently customers from other sectors, including USCG, tourism, government, and education, have become significant in terms of the sale of outboard motors, boats, and similar marine-oriented items than in the past. As one such provider remarked, one-third of the USCG base

Table 2.4-14a. Top 20 Kodiak Employers, 2003

Rank	Employer*	Employment
1	Kodiak Island Borough School District	435
2	North Pacific Processors (APS)	264
3	Trident Seafood Group	200
4	Providence Kodiak Island Medical Center	190
5	City of Kodiak	159**
6	Wal-Mart Associates	147
7	Kodiak Area Native Association	132
7	Ocean Beauty Seafoods	132
9	Western Alaska Fisheries	125
10	Homeland Security	123
11	Safeway Inc.	119
12	University of Alaska Anchorage	84
13	Kodiak Inn	82
14	Alaska Department of Fish & Game	77
15	Brechan Enterprises	74
15	Global Seafoods	74
15	International Seafoods	74
18	Ki Enterprises (McDonald's)	72
19	Kodiak Electric Association	47
19	Alaska Fresh Seafood Inc.	47
19	Ben A. Thomas Inc. Alaska Division	47
20	Kodiak Island Housing Authority	43

* USCG and commercial fishermen are not included in this table.

** The City of Kodiak figure provided is apparently no longer accurate. According to the City Manager (personal communication 3/2/05), the city has "approximately 115 (non-seasonal) FTE's."

Source: Kodiak Chamber of Commerce, "Kodiak Community Profile and Economic Indicators," 1st Quarter 2005 revision.

Table 2.4-14b. Top 20 Kodiak Employers, 2006

Rank	Employer*	Employment
1	Kodiak Island Borough School District	450
2	Trident Seafoods Corporation	314
3	North Pacific Seafoods, Inc. [Alaska Pacific Seafoods]	234
4	Providence Hospital	210
5	Ocean Beauty Seafoods	201
6	International Seafoods	199
7	City of Kodiak	162
8	Safeway, Inc.	129
9	Global Seafoods	120
10	Department of Transportation	118
10	Wal-Mart Associates	118
12	Kodiak Area Natives Association	89
13	University of Alaska Anchorage	80
14	Alaska Department of Fish & Game	73
14	Ki Enterprises (McDonald's)	73
16	Seafreeze Alaska LP	66
17	Icicle Seafoods, Inc.	54
18	Kodiak Inn, Inc.	50
19	Alaska Fresh Seafood Inc.	45
19	Brechan Enterprises	45
19	Kodiak Island Housing Authority	45

* USCG and commercial fishermen are not included in this table.

Source: Kodiak Chamber of Commerce, "Kodiak Community Profile and Economic Indicators," 4th Quarter 2007 revision.

turns over every year, which equates to a constant stream of new customers for him. Realtors have also noted that large homes are less likely to be purchased by fishermen and more likely to be purchased by "Coasties" (USCG personnel) or other Kodiak residents than in the past. Again, however, with the exception of the tourism industry, a large reason the other sectors are as well developed as they are is related back to servicing, supplying, or otherwise directly or indirectly supporting the fishing industry. As previously noted, this includes the local USCG presence, with their primary local focus on fisheries activities.

Kodiak's economy does follow annual cycles, which is attributable, in part, to the continuing importance of the commercial fishing industry. The fishing industry, in turn, responds to openings and closings of commercial seasons (and, of course, harvest levels and price). The locally important fishing seasons for Kodiak are well summarized on an annual "Kodiak Fisherman's Calendar" poster that is published by the Kodiak Daily Mirror newspaper and is commonly found in the community. Information from this poster has been adapted for use in Table 2.4-15.

Table 2.4-15. Kodiak Fisherman's Calendar, 2008

January 1	Cod "A" season in GOA and BSAI for fixed gear opens
January 1	Black rockfish — jig in Kodiak and South Peninsula
January 15	Kodiak Tanner crab season opens
January 15	Bering Sea Snow crab (opilio) opens
January 20	Pollock "A" season opens
January 20	Cod "A" season for trawl gear opens
March 1	Chignik state-waters Pacific cod opens
March 10	Pollock "B" season opens
TBA	South Peninsula state-waters Pacific cod fishery opens seven days after the Western GOA federal fishery closes
TBA	Kodiak state-waters Pacific cod fishery opens seven days after the Central GOA federal fishery closes
TBA	Halibut and sablefish IFQ fisheries opens (closes mid-November)
March 20–22	ComFish Alaska
April 15	Kodiak sac roe herring fishery opens (closes June 30)
May 1	Rockfish pilot program begins for trawl gear (closes November 15)
May 1	Dungeness crab Westward region, except south end of Kodiak, opens
Mid-May	Copper River sockeye opens (exact date TBA)
Emergency order	Chignik district shrimp opens
June 1	Tentative date Kodiak salmon season opening (closes October 31)
June 15	Dungeness crab for Kodiak south end opens
June 15	Kodiak district shrimp opens
Mid-June	Kodiak early run traditionally peaks
June 24	Gillnet Aleutian Islands bait herring opens
July 1	Kodiak, Yakutat, PWS and Bering Sea scallop season opens
July 4	Bristol Bay sockeye season traditionally peaks
July 6	Kodiak pink salmon fishery opens
July 15	Seine Aleutian Islands bait herring opens
August 15	Aleutian Islands brown king crab opens

Table 2.4-15. (continued)

August 15	Scallop fishing in Kamishak District opens (closes October 31)
August 25	Pollock "C" season opens
Late August	Kodiak late run traditionally peaks
September 1	Cod "B" season for fixed gear and trawl gear opens
October 1	Kodiak and Peninsula sea urchin, sea cucumber dive fisheries open
October 1	Kodiak food and bait herring season opens
October 1	Pollock "D" season opens
October 15	Bristol Bay red king crab, snow crab, and Bering Sea Tanner crab opens
November 15	Halibut and sablefish IFQ fisheries close
November	FishExpo in Seattle opens TBA
December 31	State pot and jig cod fishery officially closes
December 31	Lingcod officially closes

Note: All dates are subject to change pending fisheries management regulations.
Source: Adapted from Kodiak Daily Mirror flyer.

Table 2.4-16 displays the total volume of fish landed at Kodiak for 1984 through 2006. Kodiak has consistently ranked in the top four U.S. ports in terms of value of fish landings and in the top seven in terms of volume of landings over this period. As shown, there is considerable variability in absolute figures from year to year as, for example, the value of landings in Kodiak declined by over one-third between 1999 and 2002, but have since rebounded, reaching levels in 2006 similar to those seen in 1999 (in terms of absolute dollars, not inflation adjusted dollars). Among U.S. ports over the most recent 3 years shown (2004–2006) Kodiak has ranked behind Unalaska/Dutch Harbor, Alaska, Reedville, Virginia, and either Intracoastal City or Empire-Venice, Louisiana, in terms of volume of catch landed, and New Bedford, Massachusetts, Unalaska/Dutch Harbor, and, in the case of 2004 only, Hampton Roads Area, Virginia, in terms of value of catch landed.

Table 2.4-16. Volume and Value of Fish Landed at Kodiak, 1984–2006

Year	Volume		Value		Average Value ($/lb)*
	Millions of Pounds	U.S. Ranking	Millions of Dollars	U.S. Ranking	
1984	69.9	7	113.6	2	1.63
1985	65.8	6	96.1	3	1.46
1986	141.2	7	89.8	3	0.64
1987	204.1	3	132.1	2	0.65
1988	304.6	3	166.3	1	0.55
1989	213.2	6	100.2	3	0.47
1990	272.5	3	101.7	3	0.37
1991	287.3	4	96.9	3	0.34
1992	274.0	3	90.0	3	0.33
1993	374.2	2	81.5	3	0.22
1994	307.7	2	107.6	2	0.35
1995	362.4	2	105.4	2	0.29
1996	202.7	5	82.3	3	0.41
1997	267.5	6	88.6	3	0.33
1998	357.6	5	78.7	3	0.22

Table 2.4-16. (continued)

Year	Volume		Value		Average Value ($/lb)*
	Millions of Pounds	U.S. Ranking	Millions of Dollars	U.S. Ranking	
1999	331.6	6	100.8	3	0.30
2000	289.6	6	94.7	3	0.33
2001	285.5	6	74.4	3	0.26
2002	250.4	4	63.3	4	0.25
2003	262.9	5	81.5	3	0.31
2004	317.4	4	94.0	4	0.30
2005	337.2	4	95.8	3	0.28
2006	332.8	4	101.4	3	0.30

*Average value derived from volume and value data.
Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division, Silver Spring, MD (accessed through NMFS Website http://www.st.nmfs.noaa.gov/st1/commercial/landings/lport_hist.html), 2004 and 5/27/08.

Table 2.4-17a lists detailed information on total volume and value of fish landings for Kodiak for 2003 by species or species group. It is important to note that individual fisheries fluctuate from year to year, and no single year should be taken as representative of other years. Nevertheless, the 2003 data represented information from the most recent full year for which data are available at the time of the pre-BSAI implementation study (2004). Clearly, the value of landings in Kodiak are dominated by halibut, salmon, and Pacific cod, which together accounted for 68 percent of the total value of all species landed. These three species (or species groups) accounted for between 20 and 27 percent of total value each, while no other species accounted for more than about 10 percent of the total. Sablefish, pollock, and Bristol Bay red king crab, the next three most important species after halibut, salmon, and Pacific cod, accounted for 10 percent, 8 percent, and 6 percent of the overall total, respectively. No other species accounts for more than about 2 percent of the total. Salmon, pollock, and Pacific cod accounted for greatest volume of fish landed, with these three high volume species (or species complex) comprising over three-quarters of all landings by weight. As shown, several other groundfish species are relatively high-volume species locally, but account for a relatively small proportion of the total value landed, due to relatively low values per pound.

Table 2.4-17a. Volume and Value of Fish Landed at the Port of Kodiak, by Species, 2003

Species	Volume Landed (Pounds) [1]	% of Total Volume	Ex-vessel Value (dollars)	% of Total Value
Halibut [2]	7,891,904	2.88%	$22,407,370	27.03%
Salmon	83,646,938	30.49%	$17,890,468	21.58%
Pacific Cod	52,935,977	19.29%	$16,410,153	19.79%
Sablefish	2,405,403	0.88%	$8,034,046	9.69%
Pollock	73,136,066	26.66%	$6,582,246	7.94%
Bristol Bay Red King Crab	879,269	0.32%	$4,712,882	5.68%
Other Crab	540,173	0.20%	$1,299,915	1.57%
Rock Sole	8,123,946	2.96%	$1,137,352	1.37%
Herring	4,361,882	1.59%	$1,086,270	1.31%

Table 2.4-17a. (continued)

Species	Volume Landed (Pounds) [1]	% of Total Volume	Ex-vessel Value (dollars)	% of Total Value
Flatfish [3]	14,264,333	5.20%	$747,899	0.90%
Dungeness Crab	472,573	0.17%	$704,134	0.85%
Rockfish [4]	10,982,826	4.00%	$700,627	0.85%
Pacific Ocean Perch	11,507,301	4.19%	$575,365	0.69%
Flathead Sole	2,798,544	1.02%	$251,869	0.30%
Sea Cucumbers	153,903	0.06%	$210,847	0.25%
Black Rockfish	83,854	0.03%	$31,865	0.04%
Octopus	64,875	0.02%	$27,896	0.03%
Weathervane Scallops	NA	--	NA	--
Bering Sea Snow Crab	NA	--	NA	--
Miscellaneous/other/unspecified (inc. shrimp and sea urchins) [5]	118,493	0.04%	$99,747	0.12%
Total	274,368,260	100.00%	$82,910,951	100.00%

[1] Represents pounds of product landed at the Port of Kodiak, including harvests from outside of the Kodiak management area (from Fish Ticket data).
[2] Halibut volume from NMFS Website and includes all landings in Kodiak regardless of where fish were harvested.
[3] Includes butter sole, yellowfin sole, starry flounder, Alaska plaice, and Greenland turbot.
[4] Includes northern, thornyhead, yelloweye, rougheye, shortraker, and dusky rockfish.
[5] Figures in this row provided to make totals for known and unspecified species sum to reported port totals and are adjusted to account for rounding errors and species that are not reported individually due to confidentiality restrictions. Values should be taken as approximations and should not be used for comparative purposes.
Source: Adapted from Kodiak Chamber of Commerce, 2004 (from Alaska Department of Fish and Game).

Table 2.4-17b lists detailed information on total volume and value of fish landings for Kodiak for 2006 by species or species group. These data represent the most recent full-year data available. Clearly, the value of landings in Kodiak are dominated by salmon (30 percent), and Pacific cod (19 percent), pollock (13 percent) halibut (12 percent), which together accounted for 75 percent of the total value of all species landed. Sablefish accounted for about 8 percent of the total, while all species of crab combined accounted for a little over 6 percent of the total, and flatfish accounted for about 4 percent of the total. No other species or species complex accounted for more than 2 percent of the total but, as shown, several other groundfish species were relatively high-volume species locally, but accounted for a relatively small proportion of the total value landed, due to relatively low values per pound.

Table 2.4-17b. Volume and Value of Fish Landed at Port of Kodiak, by Species, 2006

Species	Volume Landed (pounds) [1]	% of Total Volume	Ex-vessel Value (dollars)	% of Total Value
salmon, Chinook	210,592	0.06%	$197,956	0.19%
salmon, sockeye	8,146,700	2.14%	$6,843,228	6.44%
salmon, coho	4,338,634	1.14%	$2,863,498	2.70%
salmon, pink	117,392,708	30.82%	$18,782,833	17.69%
salmon, chum	9,102,850	2.39%	$3,003,941	2.83%
halibut, Pacific[2]	3,454,834	0.91%	$13,085,725	12.32%

Table 2.4-17b. (continued)

Species	Volume Landed (pounds) [1]	% of Total Volume	Ex-vessel Value (dollars)	% of Total Value
herring, Pacific	5,624,729	1.48%	$618,720	0.58%
cod, Pacific (gray)	50,039,197	13.14%	$20,516,071	19.32%
pollock, walleye	101,523,425	26.65%	$14,213,280	13.39%
arrowtooth flounder	30,710,932	8.06%	$2,149,765	2.02%
black rockfish	214,151	0.06%	$85,660	0.08%
octopus	209,709	0.06%	$132,117	0.12%
perch, Pacific ocean	10,496,787	2.76%	$1,679,486	1.58%
squid	3,375,890	0.89%	$236,312	0.22%
sablefish (black cod)	2,467,618	0.65%	$8,834,073	8.32%
skates	3,099,190	0.81%	$688,156	0.65%
Rockfish[3]	6,878,056	1.81%	$1,124,548	1.06%
flatfish[4]	20,421,644	5.36%	$4,281,385	4.03%
crab[5]	3,215,170	0.84%	$6,851,290	6.45%
Total	380,922,816	100.00%	$106,188,044	100.00%

[1] Represents pounds of product landed at the Port of Kodiak, including harvests from outside of the Kodiak management area (from Fish Ticket data).

[2] Halibut pounds from NMFS website: http//www.fakr.noaa.gov/ram/ifqreports.htm and includes all landings in Kodiak regardless of where fish were harvested.

[3] Includes greenstripe, northern, thorneyhead, yelloweye, quillback, tiger, rosethorn, rougheye, shortraker, redbanded, dusky, yellowtail, sharpchin, harlequin, and blackgill rockfish.

[4] Includes dover sole, rex sole, butter sole, English sole, starry flounder, petrale sole, sand sole, Alaska plaice, and Greenland turbot.

[5] Includes Dungeness, red king, bairdi, and opilio crab.

Source: Adapted from Kodiak Chamber of Commerce, 2004 (from Alaska Department of Fish and Game).

The portion of Kodiak's economy tied to the fisheries shows distinct variation by season. The more-or-less regular or cyclical annual variation endemic to Kodiak's fishing economy also spills over into other local economic sectors; other sectors, such as tourism-related businesses, have their own seasonal fluctuations. An estimated 76 percent of all visitors arrive during the summer months and visitor spending in fiscal year (FY) 2006 was estimated at $22.6 million (Kodiak Island Convention and Visitors Bureau 2007). In FY 2006, the combined City of Kodiak's and the KIB's room taxes equaled $180,542. Kodiak Chamber of Commerce data as compiled by the City of Kodiak Finance Department for total sale receipts, cannery receipts, boat harbor revenues, charter boat revenues, and retail sales all show pronounced seasonal fluctuations over time. The local timber industry is still a part of the overall regional economy, but it has declined substantially in recent years. Timber severance taxes were $347,424 in 1995, but only $17,013 in 2005, although they rebounded to $62,740 in 2006. There are a number of different niche sectors on the island, with one of the more unusual being the commercial space port/rocket launch facility run by the Alaska Aerospace Development Corporation, which has been operational since 1998.

According to the Kodiak Chamber of Commerce, in 2007 the state estimated the KIB's average monthly employment to be 5,745, excluding fish harvesting and the USCG. Other Chamber of Commerce figures put the USCG and other government entities as providing 35 percent of local employment, the seafood industry (including harvesting and processing) at about 27 percent, and retail trade/transportation/utilities at around 11 percent. No other sector accounted for more than

7 percent of local employment. Monthly unemployment ranged from 4.7 percent to 9.3 percent, due primarily to seasonal fishing employment fluctuations, with an average annual unemployment rate of 6.2 percent for the KIB as a whole in 2007 (Kodiak Chamber of Commerce 2007).

Table 2.4-18 displays data on employment and poverty for the city of Kodiak and the KIB from census data for 2000. As shown, there was very little unemployment in these jurisdictions, presumably due in part to the presence of fishery-related employment opportunities, and also the fact that the Kodiak economy is relatively diversified by rural Alaska standards (and particularly in comparison to the Aleutian region fishing communities, such as Unalaska, Akutan, and King Cove). The city of Kodiak has the second-lowest unemployment of any civilian community in the KIB region (3.6 percent compared to 2.1 percent in Port Lions), whereas the village of Old Harbor has the highest unemployment in the region at 12.5 percent. Proportions of the population considered to be below the poverty threshold vary between the communities, but taken in isolation this is somewhat misleading. For example, Ouzinkie had the lowest poverty rate of any community in the region in 2000 at 6.0 percent, but at the same time 48 percent of the adults in the community are not working. Old Harbor has the highest poverty rate in the region at 29.5 percent.

Table 2.4-18. Employment and Poverty Information, City of Kodiak and Kodiak Island Borough, 2000

Community	Total Persons Employed	Unemployed	Percent Unemployment	Percent Adults not Working	Not Seeking Employment	Percent Poverty
Kodiak	3,053	160	3.6	29.62	1,170	7.4
Kodiak Island Borough	6,131	335	3.4	29.27	2,532	6.6

Source: U.S. Census Bureau 2000.

The following discussion of the fishing industry is divided into a section on fishery-related organizations, followed by separate sections on the harvesting and processing sectors, as each is extremely important for the Kodiak economy and community. A fourth section provides some general contextual information on fishery industry support services.

2.4.3.1 Fishery-Related Organizations

An indicator of the central social, economic, and political importance of commercial fishing and fishing-related activities in the community of Kodiak is the number of local and locally based statewide organizations that represent a range of fishery industry interests including the harvesting, processing, and marketing sectors within the industry. Kodiak is also the base for various special interest community and environmental groups attentive to fishing issues. Some of these are long-standing, well-organized groups; others come together on an ad-hoc basis to address particular legislative or operational issues; while still others are loose-knit, grassroots affiliations organized to respond to particular issues facing a sector within the industry. These groups may be seen as falling into three basic categories: (1) organizations that promote marketing of a fishery product; (2) organizations focused on particular target fisheries (salmon, halibut, groundfish), gear types (longline, trawler, etc.), or industry sectors (processing); and (3)

grassroots organizations formed to respond to a specific issue(s) facing a sector or sectors in the industry. While there are a number of emergent organizations, the degree of organizational complexity is not seen in any of the other major fishing communities in the southwest portion of the state (such as Unalaska, Akutan, or King Cove) and is indicative of Kodiak's large fleet, processing capacity, and diversity of interests. The following is a general list of organizations, by type, within the Kodiak region.

Kodiak-based organizations that promote marketing include the United Salmon Association (USA), representing salmon fishermen, and the United Fishermen's Marketing Association (UFMA), which represents the nontrawl fleet. Both are multiple-layered organizations that are involved with marketing efforts, research, and providing formal representation on legislative affairs on behalf of their respective industries. USA is an organization of salmon fishermen concerned with issues of pricing, product quality, and long-term economic viability of the fishery. It is a fishermen's marketing association and consults with Alaska state legislators to draft legislation to maintain and compete in the salmon market. The association, as a whole, has worked toward creating organic labeling standards for wild salmon, obtained funding to provide the labeling to American seafood producers, and tracks resources available to fishermen under a variety of legislative programs. USA, in partnership with the "Kodiak Branding and Marketing Committee," a subcommittee of the Kodiak Chamber of Commerce, has established an extensive marketing campaign to promote wild Alaska salmon in response to the growth of farmed salmon and its impact on the Alaska salmon market. While its headquarters are based in Kodiak, USA's membership includes salmon fishermen in Kodiak, Prince William Sound, Southeast, and Western Alaska. UFMA has existed since the 1930s as a cooperative, negotiating salmon prices and, later, Tanner crab prices. UFMA represents nontrawl commercial seafood producers to government agencies on legislative and regulatory matters. They are also involved with advanced and applied fisheries research on a variety of levels. UFMA's core members are salmon fishermen but include Bering Sea and Gulf of Alaska crab vessels, as well as halibut, sablefish, and cod pot fishermen. While it does not represent processors, UFMA does work closely with both shoreplant and at-sea processors on issues of mutual interest.

Kodiak-based organizations representing particular fishery sectors include the Kodiak Long Line Vessel Owners Association (LLVOA) and the Alaska Whitefish Trawlers Association (AWTA), and the Alaska Groundfish Databank (AGDB) among others. LLVOA is a relatively small organization with few members, but those members reportedly include the top 10 percent of the producers in the fleet, with five member vessels alone, according to 2004 interviews with LLVOA staff, accounting for over 50 percent of all longline harvest in Kodiak. AWTA was formed in 1972 and represents trawl fishermen and vessel owners. It was originally known as the Kodiak Shrimp Trawlers Association; the organization subsequently became the Alaska Shrimp Trawlers, later changing its name to the Alaska Draggers Association, before announcing its current name in June 2008. AWTA provides formal representation on behalf of the trawl fishermen to government agencies, including national and international commissions on issues that affect the trawl fleet. The organization has a membership of about 45 trawlers, though some of these have other gear types, including longline and pot gear, on their vessels as well. Of the 45 AWTA members, 65 percent are Alaska vessel owners, while 30 percent are Washington or Oregon based. According to AWTA leadership, at least 75 percent of the member vessels have crew members that are Alaska based. AWTA staff have been active on the Council's Advisory Panel for over 20 years, and lobbies the Council on regulatory policy issues. Most of the members live and work in Kodiak and all fish in the Gulf of Alaska, while some also fish in the

Bering Sea. AGDB is a consulting, lobbying, and public relations firm representing trawl fishermen and groundfish processors at the state and federal levels on issues concerning fisheries, policy, and related issues. It is a private for-profit firm with two branches that include an "information services" and a "membership" branch. Any individual or entity can join as an informational client; full membership is determined on a client-by-client basis and includes most Kodiak-based processors. AGDB works with the fishing industry and National Marine Fisheries Service (NMFS) to facilitate the management of federal fishery openings and closures through provision of catch and processing information. AGDB provides weekly updates for BSAI and Gulf of Alaska fisheries and assists clients in developing fishing and processing business plans. Two other Kodiak-based organizations that may be seen as part of this category are the Kodiak Seiners Association and the Kodiak Set Net Association. These were both organizations formed in response to the Exxon Valdez oil spill, and both continue to be involved with legislative issues on an ad-hoc basis.

There are also a number of small, loose-knit organizations representing specific harvesting sectors within commercial fisheries in Kodiak. These are typically grassroots groups that do not maintain a professional staff but are active on what are perceived as key issues as they arise. A number of these organizations have been established to represent vessel skippers and crew in regulatory change, IFQ, and rationalization processes because, in the words of one representative, "the guys on deck are the last to know" about the impacts of potential management changes. Issues of recent concern to these groups have included absentee vessel ownership, share distribution, formation of co-ops with processor linkages, and state and federal fishery harmonization. Though available time did not permit follow-up and interviews with each group, the following are a few that represent the variety of organizations active in Kodiak: the Alaska Jiggers Association, representing small jig boats; the Fish Heads, representing skippers and crew; the Old Harbor Fishermen's Association, representing small communities and their interest in obtaining quota shares for communities outside the city of Kodiak; and the Kodiak Fishermen's Wives Association, a group supporting local fishermen.

2.4.3.2 Harvesting

Community Harvester Quantitative Description

An earlier North Pacific Research Board (NPRB)/NPFMC funded community profile effort, *Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak, Alaska* (EDAW 2005), included a quantitative characterization of the Kodiak local commercial fishing harvest sector, including detailed information on an annual basis, from 1995 through 2002, of local vessel characteristics, distribution of permit holders, catch and earnings estimates, and landings inside and outside of the community, along with an analysis of the spatial distribution of fishing effort of the local fleet. As updating this information is effort intensive and not central to the current BSAI crab rationalization 3-year review-oriented community analysis, it has not been updated for this community profile. Rather, the more qualitatively oriented and BSAI crab rationalization focused discussion in the next section has been updated.

Communities also directly benefit from the harvest sector through participation of residents as crew members as well as through the engagement of vessel owners and permit holders. Beginning in 2000, CFEC has produced estimates of crew members by community, based on the

number of permit holders in the community, plus the community residents who have applied for a Crew Member License with ADFG. Table 2.4-19 provides estimates of crew members for Kodiak for the years 2000 through 2006.

Table 2.4-19. Estimated Number of Permit Holders and Crew Members from Kodiak 2000–2006

Year	Permit Holders	Crew Members	Total
2000	656	1031	1,687
2001	CFEC did not develop this report for 2001		
2002	617	772	1,389
2003	600	752	1,352
2004	586	730	1,316
2005	598	702	1,300
2006	575	715	1,290

Note: Includes Chiniak.
Source: CFEC permit holder and crew member counts by census area and city of residence report, accessed via www.cfec.state.ak.us/Mnu_Summary_Info.htm.

Community Harvester Characterization

The Kodiak fleet is primarily composed of multigear and multispecies boats. Vessels in this fleet usually have a handshake agreement with a shore processor for the delivery of fish. The vessel is said to "work for" the shoreplant and sometimes the plant operators refer to "their boats" meaning those with which working relationships exist. These vessels deliver to that plant on a regular basis. The size and composition of processor fleets vary, depending on the plant's capacity and product mix, as noted in the processor discussion below. Most of the boats that deliver to Kodiak processors are multipurpose vessels that can change fisheries to meet the current market and fishing circumstances. For example, some vessels will switch between crab, halibut, and cod or crab, halibut, and pollock. One vessel owner interviewed reported that he fished for more than 20 species with three different types of gear. The size of a processor's fleet depends on what season it is and what they are targeting at the time. It is not uncommon, however, for a plant to have a fleet of 8 to 16 boats fishing groundfish and crab. Among plants that run pollock, there is a bimodal distribution of trawl fishing power. The larger plants typically have 8 to 10 trawlers working with them, whereas the smaller plants typically have 4 or fewer trawlers in their pollock fleet. Most plants also have 6 to 10 fixed gear vessels in their fleet. Most of the fixed gear boats are pot boats fishing for Pacific cod and/or Tanner crab (when openings occur). There is a small fleet that fishes for Dungeness crab as well.

Fleet sizes are smaller now than they were when local shellfish was a larger part of production. Interview data suggest that prior to the implementation of the AFA in the Bering Sea, the Gulf of Alaska pollock (and flatfish) fleet tended to cooperate in an effort to balance deliveries to maintain high levels of production. This was a somewhat unique relationship to develop in an open access fishery, but it was a form of industry-developed "rationalization" to counter some of the inherent inefficiencies of a high volume/low value fishery with excess capacity. Ideally, the plants want just the right number of boats to keep production lines busy all of the time, but with a trawl fleet's capacity to catch groundfish, harvest can easily exceed a processor's capacity.

Since implementation of the AFA in the Bering Sea, Kodiak processors have reported that this arrangement is, in essence, no longer in effect. With the anticipation of eventual pollock (and other groundfish) rationalization in the Gulf of Alaska, a "race for history" in the Gulf has resulted, with at least one new processing entrant and inefficient practices that tend to accompany such "race" conditions (see processing discussion below).

A strategy of flexibility and adaptability in the fishing industry has caused boats to become very good at converting from one gear type to another, if they have the gear available. In the mid-1980s this did not happen frequently, but it is easier and more common now (subject to license limitation and other management measures). While boats may switch from one gear type to another, operators usually deliver to the same processor. If a new operator comes aboard, the vessel may or may not change delivery sites, depending on the established relationships of the vessel owner/operator to processor.

Conversions also take place within the trawl fleet. For example, there is a switch in nets for midwater or pelagic trawling to bottom trawling when going from pollock to cod, and according to field interviews, almost all local trawlers have both types of nets. Medium-sized and small trawlers (usually those less than 70 feet in length) will make a conversion as soon as Tanner season is closed, but the bigger Kodiak trawlers, those in the 80- to 120-foot range, will usually leave their trawl gear on and not make any conversions, unless they are going tendering for salmon or herring. There have been a number of recent changes in conversion patterns, however, and this has resulted in changes in flexibility as the nature of some of the fisheries has changed. For example, in the not-too-distant past, vessels could trawl the better part of the year, so a number of them sold their pots and abandoned the fixed gear fishery. Also, according to local sources, the Kodiak area Tanner quota has been so small in recent years that the bigger boats "can't justify going out," effectively limiting their flexibility.

2.4.3.3 Processing

Community Processor Quantitative Description

An earlier NPRB/NPFMC funded community profile effort, *Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak, Alaska* (EDAW 2005), included a quantitative characterization of the Kodiak local commercial processing sector, including detailed information on an annual basis, from 1995 through 2002, of the number of active processors, species processed, pounds purchased, ex-vessel values, and wholesale values by species, processing value added, and relative dependency by species. As updating this information is effort intensive and not central to the current BSAI crab rationalization 3-year review-oriented community analysis, it has not been updated for this community profile. Rather, the more qualitatively oriented and BSAI crab rationalization focused discussion in the next section has been updated.

Community Processor Characterization

Kodiak's shoreplants have played a significant role in the history of community, influencing its economic and demographic patterns over the years. Even among the eight major contemporary processing plants there is a considerable amount of diversity in the size, volume, and species processed. It is this diversification that best characterizes Kodiak's ability to weather the ebbs

and flows of an industry dependent upon changes in the viability of the resource being harvested, the market itself, and past/future regulatory shifts. Locally based processors vary in product output and specialization, ranging from large quantity canning of salmon, processed at several different locations within Kodiak, to fresh and fresh-frozen products, as well as niche markets servicing the sports-fishing industry.

Table 2.4-20 provides summary average annual employment figures for Kodiak plants for the period 1999 through 2002. As noted in the subsequent individual operation discussions, current employment varies considerably during any given year as plants will add a shift, hire additional employees, and maximize processing and freezing capabilities during various seasons and season overlaps. These adaptations are required since various species need separate processing lines, machinery, and crews. At other times, especially at year's end, the plants have little, if anything, to process and will reduce employment to a level sufficient to cover maintenance and off-season project needs while minimizing overhead costs. All of these factors should lead to caution when looking at "annual average" employment figures. Further, it should be understood that the available data only cover a few years and do not portray important longer-term trends that would require data from the years before 1999 and after 2002 to illustrate. For example, as detailed in subsequent discussions, a number of the plants included in this table were no longer in business at the time of fieldwork in late 2004; others have changed hands in the interim. In general, declines in a number of fisheries have taken their toll on Kodiak over the years. Despite these limitations, the data do allow a look at the relative scale of different processing entities in the community during this window. Current (2008) employment estimates for each processor are provided in the individual discussions below.

Table 2.4-20. Annual Average Employment by Kodiak Shore-based Processors, 1999–2002

Processor	1999	2000	2001	2002
Ocean Beauty Seafoods	337	338	342	206
Trident Seafoods Corporation	100	184	184	188
Cook Inlet Processing (Polar Equipment)	206	228	191	1
North Pacific Processors	218	198	222	182
True World Foods (formerly International Seafoods)	208	147	126	157
Global Seafoods Kodiak LLC	7	137	74	1
Western Alaska Fisheries	137	110	126	133
Alaska Fresh Seafood	36	41	38	40
Kodiak Salmon Packers	21	29	28	1
Kodiak Fishmeal Company	17	16	17	17
Wards Cove Packing Company	3	14	20	9
Island Seafoods	6	9	13	44
Kodiak Seafood Processing	15	4	3	1
Kodiak Smoking & Processing	3	3	6	6
Total	**1,314**	**1,458**	**1,390**	**986**

Source: McDowell Group 2002; Department of Labor and McDowell Group Estimates.

While the presence of local processing has been a constant in the community, individual operations have substantially different histories and have undergone a variety of changes in recent years. For example, among the large plants processing groundfish and salmon in the community, the facility now operated by Trident Seafoods centers around a converted World

War II "Liberty Ship" that was reportedly brought to the community by previous owners (Alaska Packers) in the wake of the devastating 1964 earthquake to become the first plant up and running after that disaster. (This facility apparently later operated under the names All Alaskan and Tyson Seafoods before being acquired by its present owner.) Ocean Beauty, on the other hand, operates in a facility originally built in 1911, which was the oldest and largest seafood production facility in Kodiak when it was purchased in the 1960s. In 1967, B&B Fisheries opened its doors, which became Western Alaska Fisheries in the early 1970s, and is still in existence today. Ownership type also varies widely. For example, International Seafoods of Alaska (ISA) is a wholly owned subsidiary of True World Group, Inc., which is in turn owned by the Unification Church. In contrast, Alaska Fresh Seafoods (AFS), a smaller plant, has been in operation since 1978 and is owned, in part, by Kodiak and other Alaska fishermen.

All plants feature busy and slow periods during the year, but these peaks and valleys differ at least slightly for each processor, based upon the dependence of processor to fishery or the relationship between fleet and processor. This seasonal pattern has also changed with changes in the fisheries. For example, earlier (2004) interviews with processing plant personnel pointed out how the role of halibut has changed in terms of local processing since the implementation of the halibut IFQ management program, with three-quarters or more of all halibut going to market as a fresh product, as opposed to perhaps one-quarter before IFQs. This has not only changed the role of halibut in individual operations, it has also resulted in a different pattern of landings, with the economics of the fresh market favoring road-connected ports over Kodiak for at least some harvest areas. More recently, BSAI crab rationalization has shifted the periods when BSAI crab is run at the local processors.

With regard to the workforce among Kodiak processors, the large majority of plant workers in Kodiak are drawn from the local labor pool. While some workers still come to the community specifically for processing work opportunities, in the past 20 years, the importation of short-term workers by the processing companies themselves has become less and less common. As of 2008, among all major Kodiak plants, only Trident reports bringing workers into the community on a 6-month contract basis and providing them bunkhouse quarters, similar to the pattern seen in the years before the development of a large local workforce. In the not-too-distant past, Ocean Beauty and Western Alaska Fisheries both utilized bunkhouse facilities during peak seasons, but neither continues to do so. (Alaska Pacific Seafoods [APS] has retained a small bunkhouse, but this is used only as transitional housing for workers new to the community; ISA has a bunkhouse but rents out spaces to workers as a more-or-less traditional landlord rather than providing living quarters as part of a room-and-board living arrangement; Western Alaska Fisheries will rent housing on a temporary basis for transient student workers during peak seasons but otherwise does not provide housing for its workers.) This high reliance on the processing workers from a local labor pool differentiates Kodiak from other major processing communities in the southwestern part of the state, such as Unalaska, Akutan, King Cove, and Sand Point. Major processors in each of these communities still retain a relatively transient labor force approach to staffing processing plants. In January 2005, however, in a departure from the local pattern, Western did hire seasonal workers from outside the community for the early peak cod season but did not offer housing as part of the employment agreement. This ended up causing considerable concern in the community as, according to local newspaper accounts, about 80 people hired through Alaska Job Service in Anchorage arrived in the community prior to the start of the season without having made housing arrangements (despite knowing that they needed to do so) and without sufficient resources to care for themselves prior to earning their first processing

paycheck. This, in turn, proved to be a challenge for local service providers, as the unprepared workers utilized local shelters for immediate food and housing needs. While this may have been an isolated incident, it illustrates the continually changing nature of attempting to meet peak processing demands over time. The following sections provide a description of each processing plant, its products, annual round, fleet, peak seasons, and workforce. The discussion is further divided into plants that currently process rationalized BSAI crab and those that do not.

Seafood Plants Currently Processing Rationalized BSAI Crab

A total of three major Kodiak seafood processing plants are currently (2008) processing rationalized BSAI crab: Ocean Beauty Seafoods, APS, and Alaska Fresh Seafoods. These plants, and the impacts to the plants of BSAI crab rationalization, are characterized in this section.

Ocean Beauty Seafoods is a major producer of fresh, frozen, and canned salmon but participates in a range of other fisheries as well, including cod, pollock, rockfish, flatfish, perch, and herring, along with local Tanner (when open) and Dungeness crab and halibut. Ocean Beauty management reports that the plant essentially runs all available commercial species. Production is year-round, with the exception of a dead period from mid-November through the end of the year. While in years past, plant management characterized that about 50 percent of their business related to salmon processing while groundfish made up almost all of the remaining half, groundfish has been relatively more important in recent years, but annual fluctuations occur. With regard to groundfish, cod is the most economically important to the plant, with pollock, rockfish, and flatfish following. Dungeness and halibut were once more important but now are considered "filler" runs.

Ocean Beauty is one of the few shoreplants that still engages in canning operations. It cans pink salmon, while all other species are sold frozen or fresh. Its busy seasons are January through March, when pollock and cod are processed; June through August during the salmon runs; and then again during the fall pollock and cod seasons during September and October. On-site employment peaks at around 225 during the January-March and June-August busy seasons, when employees can average 60- to 70-hour workweeks. Ocean Beauty's workers are drawn from the local residential workforce, with the exception of a few machinists who are brought in for the summer busy season, but who are otherwise employed in the company's Pacific Northwest operations, and temporary processing hires that augment the regular workforce during the highest peaks. The plant maintains about 20 to 25 people working 40-hour workweeks when processing is not occurring.

Ocean Beauty maintains an ongoing and relatively steady relationship with the same fleet every year, with the current (2008) fleet reported to be very similar to the one characterized in 2004, although Ocean Beauty neither owns any vessels nor has formal contracts with delivering vessels. For groundfish, the fleet includes 4 draggers, 25 fixed gear vessels, a small number of pot gear vessels, and occasional deliveries from transient vessels. For salmon, approximately 55 seine vessels and 30 set gillnet site fishermen deliver to the plant. Ocean Beauty also operates a seasonal plant at Alitak, near the village of Akhiok at the southern end of Kodiak Island. Open from April 15 though October 1, this plant processes salmon delivered from 25 seiners and 30 set gillnet sites, along with halibut, black cod, and herring. Because Ocean Beauty's Kodiak shoreplant is geared for canning and freezing salmon, as well as processing groundfish and other

niche species, it allows plant management the flexibility to "try and buy as much as we can, of anything we can, as long as it makes economic sense" in order to keep the facility running efficiently. This variability and diversity are typical of the mid-size plants, and some larger plants, on Kodiak. Whereas, in the late 1970s, each plant seemed to have a special níche, because the profit margin is smaller now than in the past, there is a greater need to run a variety of fish to cover overhead. Plant personnel reported that two changes have occurred in the recent past: through diversification, running both salmon and groundfish, Ocean Beauty is better able to spread the risk and lessen the potential of losing a particular market, and the demand for value-added processing, including fillet and portioning as well as relatively new products such as freezer pouches and pop-tops, has grown exponentially. With regard to domestic versus overseas shipping of product, the balance between the two fluctuates in response to market conditions, but almost all salmon product continues to ship to domestic destinations.

In terms of BSAI crab rationalization impacts, local Ocean Beauty plant management reports that they were initially issued the majority of Processor Quota (PQ) in Kodiak, but that as of 2008 were not running any of their A share Individual Processor Quota (IPQ) (and were barred from doing so) due to becoming designated as a vessel affiliated entity between the time of initial PQ issue and the present time. This occurred as a result of investment in the firm (and therefore acquisition of ownership interest in the company) by an Alaska Native entity that also holds vessel ownership interests. Ocean Beauty still holds PQ ownership of A shares of rationalized opilio, king, and bairdi crab (although the latter is characterized as particularly small), but these shares are now operationally controlled by the City of Kodiak, which currently (2008) leases the IPQ to two other local processors. Prior to the effective release of A shares, Ocean Beauty did purchase more B share opilio than it held in A share PQ, and it never bought its own bairdi A share because of the logistics of delivery of such a small amount of crab. Ocean Beauty does purchase B share crab, with 2007 being the first year that their local processing was composed exclusively of B share deliveries. In 2007–2008, Ocean Beauty bought B share king crab and opilio, which reportedly was the very last crab delivered to the community those seasons, setting back the normal processing schedule compared to previous years. According to plant management, BSAI crab boats will not come to Kodiak to deliver B shares early, but rather will do so on a season-ending trip when they are done fishing that species. Local Ocean Beauty management reports that there have been times in the past when they have been offered B share crab and did not take it because of other processing that was occurring at the plant, and times when they have wanted additional B share crab and could not obtain it. Overall, the largest impacts of the rationalization program on the processor have resulted from the unintended consequences of the unique circumstances of changing investments in the firm, not the overall level of crab deliveries to the community of Kodiak. While Ocean Beauty did receive more PQ of king crab than any other Kodiak processor, local management has described the amount as not all that large in absolute terms (approximately 470,000 lbs of IPQ in 2006), and the effective loss of A share access has not resulted in changing employment patterns at the plant. Management does report, however, given that some king crab was run every year (with Ocean Beauty pioneering the small packs that have now become common), it is "hard to watch other plants divvy up our crab," just as it is hard for Ocean Beauty processing workers who would typically get a king crab-related bump in earnings before the year-end holidays to see that bump go to workers at other plants. Further, management reports that BSAI crab vessels that had built a relationship with Ocean Beauty over the years were now obligated to go to other plants, which could be problematic, particularly if those plants are not set up to run crab at the rate that Ocean Beauty could process (and presumably crab did not fit into ongoing business operations of those

plants in the same manner as it did at Ocean Beauty as evidenced by processing patterns during the BSAI rationalization qualifying period).

APS, a division of North Pacific Seafoods, was the first American plant to produce surimi. The surimi operation was started through a National Oceanic and Atmospheric Administration (NOAA) grant in 1985 and made surimi every year until 2003, before discontinuing surimi production due to market forces. Processing has become diversified over the years, and now includes salmon, sole, groundfish, pollock, flatfish, herring, and local Tanner crab (when open), along with some BSAI crab. While APS used to have a nonstop workflow with very few peaks and valleys, maintaining this pattern has become more difficult since the late 1990s. APS used to bring in employees from outside the community in the 1980s and early 1990s, when they were operating four cannery lines. They have since moved from canning to frozen products and have not used the bunkhouses since the late 1990s, employing long-time Kodiak residents instead. Use of local residents also has brought with it flexibility and, as a result, APS processes more niche species, such as sea cucumbers, which enables the plant to maintain a constant crew, sustain the fleet that brings them higher-value products, and better control overhead.

In terms of an annual round, at present (2008) January through March is characterized as a busy period as cod, pollock, sole, and some crab are processed. April sees sole and herring processing but is somewhat less busy, and May is a slow month. June picks up with rockfish, but the pattern has changed in the past few years with the rockfish rationalization pilot program (implemented in May 2007), and July through August are peak activity months, due primarily to salmon being run in combination with rockfish and pollock. September and October feature mostly cod and pollock processing, and some crab processing has occurred toward the end of the year. APS maintains a core labor force of approximately 110 people who are long-time Kodiak residents. This stability reportedly benefits the employees as well as the plant, as with steady employment comes increased benefits, such as insurance. During the busy seasons, the crew increases to between 190 and 200 people, and the plant runs in two shifts per day during the peak times. During slow periods, the number of crew on-site varies, depending on availability and volume of niche species, such as sole and herring. The trough of plant employment has typically occurred in November and December when the plant maintained a small crew of 6 to 8 people at 40 hours a week, as well as others to perform maintenance and cleanup for a few days per week, but this is somewhat variable with recent changes from BSAI crab rationalization. APS does not typically supply processing employee housing, but it does have a small bunkhouse that is often used as a transitional housing source for those new to the community or for peak housing demand, such as immediately after the completion of the Bristol Bay salmon season when 20 or 25 workers transitioned to Kodiak.

The plant takes deliveries from approximately 160 vessels during a year, but there are about 20 "core" versatile vessels that deliver salmon and participate in a range of other fisheries. According to plant management, there are another 20 or so multispecies vessels that are mid-range and relatively steady in their delivery volumes, with the balance of the delivering vessels supplying landings to the plant in "dribbles." With regard to groundfish, APS maintains steady delivery relationships with six trawl vessels and eight fixed gear pot and longline vessels. All but two of these have IFQ for halibut and black cod. With regard to halibut, the market has become more competitive; APS's approach is to maintain a good relationship with the vessels bringing in halibut because those same vessels are also bringing cod, crab, and pollock. Although the market has shifted to Homer and is not as much of a "money maker" as it used to

be, APS reports it still benefits by maintaining ongoing relationships with vessels and key customers alike. For example, in recent years shipping halibut via the airlines was reported to help maintain steady air cargo freight prices for the company throughout the year. Similarly, as halibut is purchased, it keeps a steady relationship with the vessels when APS needs cod or pollock.

In terms of impacts to local Kodiak operations resulting from BSAI crab rationalization, according to APS plant management, in 2007–2008, the Kodiak APS plant ran both Bering Sea opilio and king crab. The plant did qualify for what local management characterizes as "a sliver" of A shares—no Bering Sea red king crab, some Pribilof king crab (although those fisheries are currently closed) and "a dab" of opilio. However, during 2007–2008, the plant did lease Kodiak Community Fisheries Development Association opilio and king crab quota in addition to its own A shares and some B and C share crab it also purchased from the individual harvest quota holders. According to local plant management, there have been some challenges in competing with Bering Sea-based processors for B shares, particularly those larger plants with large PQs, as those plants have had the largest benefits of increased operational efficiencies under the rationalization program (ability to schedule deliveries and crew, optimize processing line use, and the like). According to local APS management, at the Kodiak plant it really is not possible to schedule BSAI crab deliveries, particularly for B shares, as those come at the end of the season as different vessels and co-ops close out their quota. With unscheduled and staggered deliveries, there are line start-up and shut-down inefficiencies that tie into the ability to compete on price. Other factors in play are whether or not vessels are storing their gear out west, along with rising fuel prices. Some secondary impacts have been felt with the fleet consolidation that resulted both from the crab vessel buy-back program as well as BSAI crab rationalization itself, where it has reportedly been more difficult to find adequate tenders for Bristol Bay salmon operations, but at present (2008) it is thought that that situation will have worked its way out by this summer's season.

AFS is a small plant that has been in operation since 1978. AFS was originally half-owned by fishermen, and two private owners, a broker in Seattle and a Kodiak resident. While the AFS corporate office is in Seattle, it is still managed out of Kodiak. According to AFS management, it originally was a crab-only plant (running king, Tanner, and Dungeness), owned in part by Bering Sea crabbers, and was reportedly the first plant in Kodiak to run opilio crab. According to AFS ownership, the plant was fully dependent on crab from 1978 until the crab crash of 1982. In the mid-1980s, the plant diversified into cod and halibut, among other endeavors. Over the years processing focus has continue to evolve and at present (2008) AFS typically processes cod, halibut and halibut by-catch species (skate and black cod), some red salmon, and king crab. Additionally, AFS "started in earnest" on Dungeness crab in 2007 (with deliveries being made by a single vessel). Overall, AFS management reports receiving fish from an average of 158 vessels annually, consistent with what was reported in earlier years. Of these, 95 have halibut IFQs and vary from 80-foot vessels to small skiffs. Local management estimates that in 2007–2008, deliveries were taken from about a half-dozen Bering Sea crab boats.

While there is some flow of processing year-round, processing focus changes throughout the year as AFS processes cod in January; halibut and skate, a by-catch of halibut, beginning in March; black cod May through August; and king crab in November, with the timing of the latter influenced by the shift to BSAI crab rationalization as local deliveries reportedly now only occur at the very end of the lengthened season. Slow periods do occur during the summer and late in

the year. July and August are typically slow when the salmon fleet is out. November is also typically slow except for king crab processing, and the plant shuts down altogether around December 15 and remains closed through the holidays. Otherwise the plant is characterized as relatively busy year-round.

A core crew of about 12 people work 40-hour weeks at AFS throughout the year. This number easily doubles during the busy seasons and can reach a maximum of 40 to 45 people during peak periods. At present (2008) approximately 18 people work in the January through March period when processing is dominated by cod. Within this period there is an opilio "bump" of about 2 weeks in late February/early March when there are around 40 workers on-site. With increased halibut processing from April to June, the workforce includes approximately 30 people. There is another labor peak in October primarily related to halibut and black cod that lasts until mid-November. With BSAI crab rationalization, crab processing now occurs in late November and can last into the first week of December. According to plant management, the peak workforce has changed from domestic college students who years ago came to Kodiak to work during peak periods, to a primarily local workforce today. AFS does not have bunkhouse facilities, nor does it otherwise provide room and board for its workers. While some college students are still seen during peak summer periods, reportedly these are all individuals from overseas rather than from U.S. colleges. Similarly, AFS reported that it was common, not so long ago, for USCG spouses to work prior to the holiday season in the fall, but this apparently no longer occurs either. In addition to adding workers during peak periods, shifts also lengthen, ranging 10 to 16 hours during the busy seasons.

With respect to BSAI crab rationalization impacts, AFS management reported in 2008 that if it were not for the leasing of processing quota (A shares) from Ocean Beauty (via the Kodiak community fisheries development association), AFS would essentially be out of the BSAI crab business because of such a small initial PQ allocation of its own (approximately 30,000 pounds in the first year, or less than one van's worth, according to one of the owners). According to plant management, however, there were a number of trends that served to diminish BSAI crab processing at the plant prior to the implementation of crab rationalization itself, including changes in pot limits that effectively facilitated deliveries to more western communities and made deliveries to Kodiak logistically more difficult, particularly given the pattern of Kodiak primarily being the recipient of "last load" deliveries. AFS management also reports that under rationalization "last load" BSAI crab does not come into Kodiak in the same way it used to as with the formation of co-ops under rationalization, all B share quota tends to go onto one boat per co-op. BSAI crab rationalization has also introduced a degree of uncertainty to crab processing at AFS, according to plant management, as it is currently dependent upon the community association A share lease arrangement, which is based on a yearly agreement, such that future processing is dependent on continuing successfully reach annual agreements. AFS has successfully obtained crab delivered under B and C share quota allocations based, according to AFS management, on 20+ years of good relationships with Bering Sea fishermen.

One of the major owners of AFS also has ownership interest in a company (Woodruff & Associates) that has provided pot storage services to the crab fleet over the years. According to the owner, 100 percent of the customers of this business used to be fishermen, but with decline in pot storage demand, the business has diversified into moving and storage, including camper storage. Part of the drop in demand in business was reportedly related to pre-crab rationalization changes in pot limits, which apparently caused vessels to store more gear out west rather than in

Kodiak, although the business owner has stated that BSAI rationalization itself has caused an approximately 30 percent drop in revenue for the business.

Seafood Plants Not Currently Processing Rationalized BSAI Crab

A total of five major Kodiak seafood processing plants are not currently (2008) processing rationalized BSAI crab: Trident Seafoods, Western Alaska Fisheries, Island Seafoods, ISA, and Global Seafoods. These plants, and the impacts to the plants of BSAI crab rationalization, are characterized in this section.

Trident Seafoods currently (2008) processes pollock, rockfish, flatfish, halibut, and Pacific cod at its Kodiak facility. Unlike a number of other Kodiak plants, Trident does not process salmon. Trident seeks to differentiate itself through the production of top grade surimi and value-added products through their own packaging. The majority of their products are frozen, such as H&G, fillets (frozen, shatter pack, block), and surimi, although fresh fillets are also produced. Trident's peak periods have changed in recent years, and overall processing is steadier throughout the year now than was the case even a few years ago. This leveling of processing effort was reportedly facilitated to a substantial degree by the rockfish pilot rationalization program that began in May 2007 and shifted rockfish from a summer peak fishery to primarily a May to June fishery. The reduced halibut bycatch in rockfish fishery, which was rolled over into the flatfish fishery, allowed the flatfish processing to continue at the plant until the first week of December 2007. Busier periods, if not as dramatic as in the past, are still seen around pollock and Pacific cod openings. The plant also processes halibut and black cod "as it comes in," but these do not represent peak fisheries.

Local Trident management staff reports a relatively stable workforce throughout the year of about 250 individuals, of whom about 200 are Kodiak residents on-call and approximately 50 of whom are brought to the community on a 6-month contract basis. The latter group is recruited out of Trident offices in Seattle and lives in Trident bunkhouse facilities during their stay in Kodiak (while the Kodiak resident processing workers do not stay in company housing). The specific number of workers on-site on any given day is a function of how fish deliveries come into the plant. This is quite a different pattern than was described by plant management in 2004, when workers were shifted between Trident plants in Kodiak and elsewhere to balance workforce requirements across plants in different communities that had different peak demand cycles. At present, an additional 20 to 30 workers may be brought in on a temporary basis during particularly busy times, but this is not a regular occurrence. During the peak periods, there are typically two 12-hour shifts run, although shifts can last up to 16 hours. The Trident Kodiak plant has for quite a few years maintained a steady relationship with the same dozen pollock, cod, and rockfish vessels, some of which also participate in hake fishery in the Pacific Northwest.

In terms of BSAI crab rationalization impacts, local management at Trident Seafoods reports that there have been no known impacts to their Kodiak operations resulting from crab rationalization, due to a lack of historic or current participation in BSAI crab processing.

Western Alaska Fisheries processes cod, pollock, local Tanner crab (when open), flatfish, salmon, and rockfish, with a heavy emphasis on groundfish. According to plant management, groundfish provides over 90 percent of its product sales; about 8 percent is salmon; and the

remaining 2 percent is a combination of crab, herring and halibut. Western does no canning, focusing on a variety of frozen and fresh products. Frozen groundfish products include fillet, surimi, pollock roe, cod roe milt, stomachs (pollock, cod), heads, and milt (primarily for the Japanese and Korean markets). Fresh groundfish products include head and gut and in the round products from cod and pollock, along with milt. Salmon head and gut and fillet products are processed and sold fresh and frozen. According to plant staff, over 60 percent of Western's business is exported, with 40 percent sold domestically, though changes in both markets are occurring, with Asian markets in a growth cycle. Western reported that while halibut used to be important locally, Kodiak is no longer in a position to compete on prices with communities on the road system, such as Homer.

Western is the only union plant in Kodiak. It employs a core workforce of about 120 people, but total employment fluctuates with the season. January through March marks the first busy season for Western, with cod, pollock, and Tanner crab being important species. According to plant management, during this time, the numbers of employees increase to around 180 to 200 full-time equivalent staff, covering 10- to 12-hour shifts per day. During May and June, activity at the plant has reportedly been helped by the rockfish rationalization pilot project that is now (2008) about 2 years old. (The program has allowed the plant to move rockfish into what was a slow time, improving processing flow at that time of year, as well as moving it away from overlapping with peak salmon time, when it was problematic to handle.) Processing speeds up again from June to August when salmon seasons open and continue into the fall. At this time, around 180 to 200 people are working full-time processing salmon, rockfish, cod, and pollock, the latter of which reopens on August 25. Employment is pared back to the core crew of approximately 120 for the November to early December period when flatfish are being run at the plant. At the end of December the plant is basically down except for maintenance. Workers at the plant are typically local residents, although the plant does supplement its local labor force with about 40 to 50 students from Turkey (arranged through a third-party service) during the summer salmon season. Reportedly this arrangement has been in place for several years and has worked out well for the plant, which rents housing for these temporary workers. During winter peak times another 40 to 50 workers are required to supplement locally available labor, and these individuals are recruited from a variety of places, including elsewhere in Alaska as well as outside the state.

Western's fleet includes 10 trawlers, 6 longliners, 3 to 4 pot cod, and 8 salmon seiners that also harvest herring and local Tanner crab. While the plant used to take salmon from a substantial number of set-net sites (reportedly 40 in 2004), they no longer do so. As a result of Western's ongoing relationships with the same fleet, year in and year out, it processes fish year-round, turning out products in off-seasons, with rockfish a case in point. According to plant staff, "We do things here just to keep our boats happy. We can make surimi fast, to get the guys offloading, back out there, to keep our own people busy." With regard to shipping of products, less than 10 percent of its products is flown out fresh, with the balance surface shipped as frozen products.

In terms of BSAI crab rationalization impacts, local management at Western Alaska Fisheries reports that there have been no known impacts to their Kodiak operations resulting from crab rationalization, due to a lack of historic or current participation in BSAI crab processing.

The plant operating as Island Seafoods has been in Kodiak since 1995. It did not, however, operate in 1998, changed ownership in 1999, and was acquired by its current owner, Pacific

Seafood Group, in 2003. While Island Seafoods is the smallest commercial fisheries processor in Kodiak, according to plant management, Pacific Seafood Group is a vertically integrated firm that owns processing and distribution facilities, is one of North America's largest seafood companies, and continues to grow locally as well. Island Seafoods processes commercial cod, halibut, rockfish, and salmon, and in recent years has also added flatfish, Pacific Ocean perch, and pollock to its range of species. The delivery fleet has also changed within the last few years. An overall strategy, particularly in the first few years post-ownership change, was to work primarily with vessels that are not serviced by the larger processors, including a relatively large number of small-volume entry-level jig vessels. The number of these small vessels delivering to the plant has declined sharply more recently, to perhaps a quarter in 2008 of what was seen in 2004. The plant also takes deliveries from longliners and pot boats, and there has been an increase in the deliveries from larger vessels at the plant in recent years. Plant management reports that overall tonnage through the plant has increased by perhaps 40 percent in the last 4 years (2004–2008). Part of the strategy in this fleet mix is to be well positioned as a sustainable fishery participant in the face of potential future fishery management changes. Island Seafoods obtains its salmon from multiple set-net site owners, which have increased in number substantially in recent years, and from a single salmon vessel.

In addition to being of a smaller scale, Island Seafoods differentiates itself from other local processing businesses by being diversified into other business activities, including selling retail and catering to the sport charter fishing industry, processing and shipping sport fish for the visitor trade. Island Seafoods also prepares corporate gift packs and sells its products off a website. Related ventures include operating as a Federal Express facility, and future plans to increase sales to the visitor/tourism market include opening a restaurant. These various ventures are characterized by plant management primarily as "add-on sales," as Island Seafoods sees itself primarily as gaining efficiencies by "eliminating the middle-man" and delivering commercial seafood directly to Pacific Seafood's distribution markets, with its strength being found in its focus on fresh products and its ability to adapt quickly to American markets. In terms of the relative dependency on different business avenues, Island Seafoods management estimates that less than 10 percent of its total gross sales comes from sportfishing and its retail business, while over 90 percent remains in commercial seafood production. Currently it is estimated that about half of the commercial product stays in the United States while around half is exported.

Like other processors, Island Seafoods has a distinct annual cycle, but with different historical roots. The company began processing sportsfishing products only, and, as time went on, it filled in the remaining years with commercial production, until that became the dominant aspect of the plant production. The plant currently (2008) maintains a core workforce of 45 full-time employees (over twice the number reported in 2004) from January through November, with the workforce increasing to about 60 employees during peak salmon season from July through mid-September (about a one-third increase over the peak number reported in 2004). As is the case with other plants, December is a dead period with only a skeleton crew performing maintenance and cleanup tasks. Island Seafoods segregates its sportsfish processing operation from its commercial operation not only in terms of physical processing but also in terms of its workforce; 8 or 9 of the summer peak season employees work solely with sportfish processing.

In terms of BSAI crab rationalization impacts, management at Island Seafoods reports that there have been no direct impacts to their Kodiak operations resulting from crab rationalization, due to a lack of historic or current participation in BSAI crab processing. Plant management does

report that pre-rationalization, occasionally they would take spill-over deliveries from trawl or longline groundfish vessels that were unable to deliver to their originally intended Kodiak processing plant if that plant was backed up with peak crab deliveries, but that was an infrequent occurrence.

ISA (formerly known as True World – International Seafoods) local plant management reports that although there have been a number of fluctuations in the meantime, their mix of processing species and products and levels of employment are currently (2008) quite similar to what was reported in 2004. ISA processes pollock, cod, salmon, and flatfish at its Kodiak plant. During its busy periods of January through March and June through July, the local ISA workforce is composed of approximately 150 people. In the interim slow seasons, around 40 to 50 employees work at the plant, but labor demand can be difficult to predict on a day-to-day basis as sometimes 16-hour days are followed by several days off between deliveries. In general, ISA now has a smaller workforce than was utilized before the plant was shut down for about 6 months in 2002, during which time it changed hands and operations were reorganized. ISA utilizes a local workforce, although they do maintain group quarters in the form a single bunkhouse, left over from a number of years ago when peak employment demands at the plant were higher, which they rent to workers.

ISA produces a variety of products. From pollock, the plant produces fillet, head and gut, and fish in the round. With regard to salmon, ISA produces head and gut, fillets, and salmon rolls; for cod, products include fillet, head and gut, and round. They do not can any products. Plant management reports that the product mix has changed in recent years, including a greater demand for head and gut going mostly to China, while the overall demand for surimi has diminished. Fresh halibut has been produced in a number of recent years but is not a steady product for the plant. The fleet associated with the plant consists of 30 to 40 vessels, including a number of smaller jig and pot boats, 4 or 5 draggers, and 15 to 20 longliners. Typically, around 15 salmon boats deliver to the plant. Approximately 60 percent of the products originated at the plant are reported to be exported to Japan, Korea, and China, with a small percentage going to European markets, while fresh cod is sent to domestic markets.

In terms of BSAI crab rationalization impacts, local management at ISA reports that there have been no known impacts to their Kodiak operations resulting from crab rationalization, due to a lack of historic or current participation in BSAI crab processing.

Global Seafoods opened its doors in 1999 and operated for 2 years as a groundfish processing plant. Not financially solvent, Global was then shut down for 2 years and reopened in January 2003. Upon reopening, the plant diversified into other fisheries beyond groundfish, with plant management reporting a tripling of production between 2003 and 2004 through a combination of salmon and groundfish processing and marketing relatively underdeveloped species such as skate and arrowtooth flounder. Currently (2008), the Global management characterizes the Kodiak facility as primarily a groundfish plant, but with an additional strong emphasis on salmon. There is a continuing marketing effort for different groundfish products, such as livers, stomachs, and codheads, as well as a number of species that come into the plant as bycatch, such as grenadiers.

The fleet delivering to Global Seafoods is reportedly currently (2008) similar to the fleet as described in 2004, which included 3 trawlers, 25 to 40 longline vessels, 10 to 15 jiggers/salmon seiners, and 2 pot boats. (A particular niche of the delivering fleet that Global has developed is

among Russian-speaking longline captains and owners, as the owner of Global is also fluent in Russian.) In terms of an annual cycle, January to April is a peak period for groundfish (about a month longer than reported in 2004), while the plant is typically closed to deliveries for most of May. Around June 10, cod deliveries will resume, starting a busy period that reaches a peak during July and August when salmon fisheries are in full swing. September and October are again busy months for groundfish, with things slowing down again during November and December. A relatively recent change that has occurred in the annual cycle was brought about by the Gulf of Alaska rockfish rationalization pilot program. Global did not qualify for participation in this program, although reportedly rockfish and particularly a couple of rockfish fishery bycatch species, Pacific Ocean perch and black cod, were considered relatively important to the plant.

Global Seafoods employs about 150 people during peak seasons (down from the approximately 200 reported for peaks in 2004), working two 12-hour shifts. Hires are typically drawn from the local labor pool, with individuals in the core crew reportedly either working at Global or, when seasonal layoffs occur, drawing unemployment benefits but remaining in the community. Approximately 20 to 40 extra workers from outside the community are typically added during the summer salmon seasons, with these jobs being filled in recent years by foreign students (primarily from Turkey). Global had a formal agreement with an agency to facilitate these hires for a few years, but did not enter into such an agreement in 2007. A number of former student workers returned on their own, however, so this particular overseas labor pool continues to be a source of seasonal help. Local management reports that if salmon gets "particularly crazy" they will place job service postings, but typically do not need to do so, as individuals leaving other processors are sometimes available (and prefer not to do so if recruiting proves necessary, as the overseas student hires have reportedly proven to work out better than job service referrals). Global does not provide worker housing but will help outside hires find local housing. During off-seasons, employment at the plant will drop to 12 to 15 individuals.

In terms of BSAI crab rationalization impacts, local management at Global Seafoods reports that there have been no known impacts to their Kodiak operations resulting from crab rationalization, due to a lack of historic or current participation in BSAI crab processing.

2.4.3.4 Support Services

The community of Kodiak is distinguished from most other Alaskan fishing ports by the number and range of support service businesses that cater in whole or in part to the commercial fishing industry. Support services include a wide range of companies, including companies that provide direct services to processing plants and harvesting vessels, such as hydraulic and welding firms, as well as indirect service providers that still depend to a degree on fisheries-related activities, such accounting and bookkeeping services and vehicle rental enterprises. In addition, there are also several educational and governmental entities that operate fisheries-related research facilities in Kodiak. The locally based Fishery Industrial Technology Center, part of the University of Alaska Fairbanks, has two main academic programs, sustainable harvesting and seafood processing, with programmatic efforts focused on harvest technology, processing technology, seafood quality and safety, contaminants, and collaborative ecological research. The Kodiak Fisheries Research Center, owned by the KIB, leases space to various public entities, such as NOAA Fisheries, which with its Alaska Fisheries Science Center staff operate the Kodiak Laboratory on the premises, the Alaska Department of Fish and Game, and the

University of Alaska Fairbanks School of Fisheries and Ocean Sciences. Further, NOAA Fisheries research vessel *Oscar Dyson* is home ported in Kodiak. Kodiak College, a 2-year campus of the University of Alaska Anchorage, also offers programs that support the fishing industry and allows residents the opportunity to pursue higher education goals without having to leave the community. Among the communities in the region, Kodiak has the greatest diversity and capacity to support Gulf of Alaska fisheries. The community also serves as an in-state support hub for some of the BSAI fisheries, although Unalaska/Dutch Harbor is far and away the primary support base for that region.

While Kodiak has consistently been a center for support service provision for the commercial fishing industry, the level and nature of service provision have not been consistent, with changes in the fishery driving changes in the support sector. While systematic data on how individual support services have been affected by changes in the local fishing economy are not available, there are a number of qualitative indicators of these impacts, as detailed in the discussions below.

Support services may be characterized in a number of different ways, and not all categories of support businesses are mutually exclusive, as a single enterprise may supply a range of services. Further, there are a number of providers of goods and services in the community whose businesses may feel the impact of fishery-related activity, but they are not directly connected to the fishery. For the sake of simplicity, however, the following discussion of Kodiak support businesses is organized by general category (shoreplant support, vessel support, and shipping) and limited to direct service providers.

The following business characterizations were derived from limited field interviews conducted over a brief period of time. It was not possible to contact all support service businesses in the community, and these sketches are intended to convey the types and nature of these businesses in the community, and their links to the fisheries, not provide an exhaustive inventory of Kodiak support service businesses. For the purposes of this report, a premium was placed on re-contacting businesses that were included in interviews in 2004 in a pre-BSAI crab rationalization social impact assessment effort.

Shoreplant Support

One specialized support niche in Kodiak is fish waste processing, which may be considered either a form of processing or of fishery support. According to earlier (2004) interviews, Kodiak Fishmeal Company is dependent upon the biowaste from the processing plants to produce a high protein product known as fishmeal, along with fish bone and fish oil. Fish waste is ground into a consistent size, and the moisture is extracted. Fishmeal is reportedly the largest and most valuable end product and is primarily sold to the aquaculture industry in Asia as a feed component. The market for fishmeal continues to grow, and two forms are produced in Kodiak: white fishmeal and dark fishmeal. Fish bone is used primarily as fertilizer, and fish oil is either used to run the fishmeal plant boilers or is sold to the aquaculture industry. While a fishmeal plant was operating in the community in the early 1990s, it had a limited capacity such that processors still disposed the remaining majority of the waste by loading it onto barges and discharging it into the ocean. According to those earlier (2004) interview data, the impetus for the current larger-scale operation began in the mid-1990s when the U.S. Environmental Protection Agency demanded that Kodiak processors more closely adhere to federal environmental regulations, risk significant fines, or face a shut-down. At that time, again

according to interview data, seven processors formed the Kodiak Fishmeal General Partnership and built a new biodrying plant to handle large amounts of waste per day.

Processing plants in Kodiak, like processing plants elsewhere in Alaska, are to a significant degree self-supplied from outside of the community, given relative ease of shipping and existing business relationships outside of Kodiak. Nonetheless, processing plants do economically interact with various support sector businesses on Kodiak to a degree not seen in more isolated communities such as Unalaska, Akutan, or King Cove, through purchasing groceries for their galleys, fuel purchases, local maintenance contracts, and purchases of various parts and supplies in the community. These include electronics, metal fabrication, hydraulic maintenance, and hardware purchases, among others. These businesses are typically primarily oriented toward vessel support and are described in the next section.

Vessel Support

Kodiak has a well-developed range of support service businesses that are primarily oriented toward commercial fishing vessel support. It is important to keep in mind, however, that many of these same businesses also support processing operations, if to a lesser degree. As noted above, there are quite a few such businesses in Kodiak; the businesses described here—marine hardware/gear supply, hydraulics, welding, marine electronics, marine mechanical, marine fuel sales, general stores, and boatyard services—are only a subset of some of the different types of support businesses present in the community and the individual firms mentioned are usually only a subset of the particular subsector noted.

Marine Hardware/Gear Supply

One type of direct fishing vessel support service is marine hardware supply, and there are at least three businesses in the community that fall in this category. These are Net Systems Inc., Kodiak Marine Supply, and Sutliff True Value Hardware. While Net Systems Inc. and Kodiak Marine Supply focus on marine equipment, Sutliff supplies a local residential market as well as the commercial fishing industry.

Net Systems produces trawl and seine web and cable, provides custom rigging and splicing services, and has a specialty in selling large-scale hardware such as load-bearing swivel as well as pumps and motors for pumps. The degree of dependency on the fishing business may be gauged by management reporting that the trawl business accounts for about 70 percent of revenues, while commercial fishing as a whole accounts for around 85 to 90 percent of Net Systems' overall business. Over the years, however, the business has seen a great deal of change related to transitions in the local fishing industry, especially the salmon industry. From the late 1980s through the mid-1990s, Net Systems reportedly employed 12 staff, but currently (2008) has 2 regular employees, a level of staffing consistent with what was reported in 2004. There has, however, been an improvement of business conditions in the last several years with a rebound of the salmon fishery, which has reportedly easily doubled seine-related business in the last few years. There is a pronounced cycle to the business with about a 10- to 20-day rushed period in January building up to the pot, jig, and longline cod fisheries and the A season pollock fishery all opening within a few days of each other. Business is relatively slow following the winter fisheries, ramping up again in early June when fishermen are gearing up for salmon openers. The largest pulse of business occurs during July and August salmon fisheries, although

rockfish effort, which used to overlap with the peak salmon season, has shifted forward in the year as a result of the implementation of the rockfish pilot rationalization program. Another peak occurs in early October for pollock reopening, but this is variable in intensity from year to year depending on how much pollock is left over from earlier seasons and the relative success of the concurrent flatfish fishery. When local Tanner seasons are open there is also some activity related to the local crab fleet gearing up in the fall.

According to a senior employee, the BSAI crab fleet never generated a lot of business for Net Systems in Kodiak as crabbers typically supplied directly out of Seattle. In the past, some last-minute items would be sold, along with some crab webbing, but as an indication of how slow these items have moved, reportedly Net Systems bought their last bale of crab web 6 or 8 years ago (long before rationalization) and still has some left. According to senior staff, the fleet consolidation that accompanied BSAI crab rationalization has not affected Net Systems direct sales, because Bering Sea crab-related business was minimal to nonexistent in the years leading up to rationalization. The business has, however, reportedly seen some indirect impacts from BSAI crab rationalization as a result of job losses among former BSAI crab boat crew members who would formerly utilize BSAI crab income to purchase gear at Net Systems for their own local multispecies vessels participating in other fisheries.

Kodiak Marine Supply carries a variety of fishing supplies and gear, commercial fishing-oriented clothing and personal items, hardware, lines, maintenance supplies, and paint, among other items. Kodiak Marine Supply averages approximately 10 employees throughout the year. There are busier and slower times of the year, with January being a busy period along with May through early June.

In terms of BSAI crab rationalization impacts, the manager of Kodiak Marine Supply related (2008) that vessel sales were lost with fleet consolidation, as were sales of personal items to crew members; however, there are no readily available data to quantify this change in sales. Some of the vessels no longer participating in the rationalized BSAI fisheries are still in the community, and some are participating in different fisheries, either directly or through tendering, so they are likely generating some business. Again, data are not available to quantify this. In general, prior to rationalization BSAI crab fisheries provided a "good blast" of business in September and were worth more in sales than was the local trawl sector. While there have been negative impacts with the loss of business, Kodiak Marine Supply is characterized by local management as "rolling, adapting" to the changes brought about by rationalization.

Sutliff True Value Hardware reports that about half its business is fishing related, while the other half of its sales include housewares, paint, clothing, building supplies, lawn and garden, and nonmarine hardware supplies. Sutliff used to carry marine supplies such as longlines, hooks, and snaps, but, as a result of rationalization of the halibut fishery, they reported that the effective removal of openings and closings has resulted in increased lead time for purchases, removing the "urgency-to-buy" prior to season openings and resulting in a shifting of purchases off-island. At the same time, internet commerce became popular, providing price-competitive alternatives and greater access to hardware and materials outside of Kodiak. Inventory now includes such things as rain gear, clothing, pumps, survival suits, boat repair tools, anchors, emergency locator beacons, and shackles rather than fishing gear *per se*. Store staff have characterized two primary busy seasons related to fishing: salmon season preparation in the early summer (when purchases are made for the immediately upcoming seasons) and salmon season cleanup in the late summer

(when purchases are made for vessel and gear repair tasks during the off-season). Summertime (June through September) is characterized as the busiest time for nonfishery sales.

In terms of impacts of BSAI crab rationalization, managers at Sutliff characterized the business as being hard-hit on two levels: one was decreased spending by local resident crab crew members who lost jobs as a result of fleet consolidation (that is spending on the entire range of inventory carried by the store) and the other was direct sales related to crabbing itself (e.g., sales of sweats, raingear, boots, and the like to crew members for use during crab fishing and crab vessel/engineer support sales such as engine maintenance-related tools, water system parts, galley supplies, and the like). While this has not resulted in a change in employment levels at the store, it has reportedly had a significant impact on the revenues generated by the store.

One common thread in previous (2004) interviews with the marine supply business sector was the observation of the changes brought about by a transition to IFQs in the halibut fishery. Before halibut IFQs were in place, personnel from each store described a rush of sales immediately before each opening during the year. After the IFQ system was in place, the rush was significantly reduced because fishermen, no longer in a race for fish, were no longer driven by the necessity of making immediate purchases. This changed the balance of the "time versus money" equation, giving fishermen the option of "waiting it out," performing price comparisons, or purchasing items off-island. It would appear that BSAI crab rationalization has extended this trend, at least to a degree. At the same time, a number of other changes were occurring that may have served to soften the traditional marine hardware market locally, including the growth of the internet, which created a new array of direct-purchase options for customers, and new entrants into related markets, such as the opening of a Wal-Mart store in the community, which occurred prior to (but relatively close to) the implementation of BSAI crab rationalization. While Wal-Mart is reportedly not a direct competitor when it comes to providing specialized marine hardware, other commercial fishing-related purchases, such as clothing, personal items, paper goods, and miscellaneous spot purchases, may be affected.

Hydraulics

There are two hydraulic shops in Kodiak that are primary providers to the local commercial fishing sector, Alaska Hydraulics and Island Hydraulics. As with the other support service businesses, these companies report that as a result of the change in "derby" style fishing seasons in some fisheries, vessel owners have more time to shop around or they may choose to make repairs themselves, leading to less work for the hydraulics businesses, less impulse types of purchases, and a more predictable flow of business, but at the expense of reducing if not eliminating some of the profitable peak demand periods. At the same time, other trends are reported that have offset these decreases.

Alaska Hydraulics, which has a full machine shop, manufactures hoses, and performs a variety of other manufacturing and repair services, has been in Kodiak since the 1970s, with a second shop in Anchorage. Alaska Hydraulics estimates that currently (2008), about 90 percent of their current business in Kodiak is fishing related, which is consistent with the figure reported in 2004. Most of the vessel support work takes place on board vessels themselves as opposed to in the shop. Most of the work is associated with trawl vessels and salmon seiners, although historically there had been a spike in activity just before local Tanner crab season (when open) and Bering Sea crab fisheries as well. Salmon-related activity results in a busy period in the early summer,

but trawl vessel work is more evenly spread throughout the year. Alaska Hydraulic also provides technical support to remote salmon sites and troubleshooting problems via phone and e-mail. Processors remain important customers for Alaska Hydraulics, with about 70 percent of the processing-related work being in the form of supplying parts, and the remaining 30 percent being field service-related tasks. Alaska Hydraulics currently (2008) employs nine persons, up from six reported in 2004, all of whom are local residents.

According to company management, Alaska Hydraulics business has grown in recent years and has not felt significant impacts from BSAI crab rationalization, due to a number of factors not directly related to crab rationalization itself. First, because of high fuel prices, more boats are staying in Kodiak rather than returning to Seattle and are getting boat work done in the community that would have otherwise taken place in Seattle. Second, the local salmon fishery has rebounded in recent years, improving that segment of the business. Third, Alaska Hydraulics gained market shares when a competitor, AIM, went out of business and the work load effectively was redistributed among remaining local firms. Fourth, a number of local vessels that did crab in the BSAI but no longer do so have remained customers as they have subsequently tendered salmon or otherwise participated in other fisheries. In other words, while direct crab business may have diminished due to BSAI crab rationalization, other variables in play occurring during the same time period have served to offset any negative impact to the facility's local bottom line.

Island Hydraulics has been in business since 1987 and includes a full machine shop, manufacturing hydraulic hoses for boats and providing repairs. Island staff report that approximately 85 percent of its business is generated through fishing/marine services, with the remaining 15 percent attributable to servicing the trucking industry. Island Hydraulics currently (2008) has three steady employees, all of whom are local residents, up from two employees reported in 2004. Consistent with a pattern reported in 2004, interview data suggest that while there is relatively steady work throughout the year, there are marked increases seen 2 weeks before each major fishing season opens as preparations for openers are made. The last half of December and early January are the busiest seasons. Within the overall commercial fleet, most work currently derives from trawl vessels, as the hydraulic equipment is larger, more complex, and more difficult for nonspecialists to repair. While this has been true for quite a number of years now, in the more distant past a higher relative volume of repair work was associated with crab and salmon seasons, although with improvements in local salmon fisheries this work has begun to increase again in recent years. Island Hydraulics also remanufactures cranes at the processing plants, though this is characterized as "a tiny portion" of their overall work. Recently the company also added a crane truck to its operation that is more than twice as large as the largest boom truck utilized by another local business. This has had the effect of diversifying Island Hydraulics' business without directly competing for the same market niche pursued by the other established business. Island Hydraulics uses their truck, for example, to pull large trawl winch motors, which require lifting capabilities beyond that of other operators. This crane truck is also too large to efficiently do pot lifting for a hauling/storage operation, which is performed by other firms in the community with smaller boom trucks.

As a result of BSAI crab rationalization and accompanying fleet consolidation, Island Hydraulics did see some impacts as "crab was a piece of the pie" for the business, but according to local management, this did not end up having an impact on the bottom line of local operations, due to the same factors listed for Alaska Hydraulics. According to Island Hydraulics management,

primary among these is the trend of more vessels staying in the community rather than running to Seattle due to high fuel prices, creating more work for the business as more major repairs are being undertaken in Kodiak than would have been the case in earlier years.

Welding

The community of Kodiak is also home to a number (at least seven, as of 2004) of different welding operations of various scales, including several independent, one-man shops. Two of the local welding shops have a specialty of servicing the fishing industry, with the larger of the two being Arc N' Spark Welding. Arc N' Spark, which began in the mid-1970s, had 9 employees as of 2008 (reportedly employing the largest number of welders in Kodiak), which is the same number as reported in 2004, down from 14 welders in the late 1980s. (Reportedly, a number of the independent welders in Kodiak gained training and experience through Arc N' Spark.) The owner of Arc N' Spark estimates that around 95 percent of their business is commercial fishing related, which is an increase in fishery dependence over what was estimated in 2004 (80 percent). Arc N' Spark has customers among vessels of all of the different commercial fleets that operate out of Kodiak, although some generate more business than others. Reportedly, king crab was an important part of the business in its early years, when Arc N' Spark built crab pots before shifting toward fabrication and repair (with no pot building occurring in almost 20 years). In addition to welding *per se*, Arc N' Spark offers tooling services, welding supply sales, boat fabrication and repair services, and services related to the use of its heavy-duty metal rolling and bending machine.

For Arc N' Spark in particular there are a number of busy and slow seasons tied to different fisheries, with busy seasons typically occurring in the month prior to openings rather than during the seasons themselves. December, a slow month for fishermen and especially processors, is a busy month for Arc N' Spark due to the multiple fishery openings in January. March and April see business ramping up again, with May being a particularly intense month due to the impending salmon seasons. June marks the end of "frantic salmon preparation." The summer and fall are less busy, with intensity picking back up again in November. During good fishing seasons there will be more in-season work than normal as heavy fishing puts more stress and strain on the gear, leading to break-downs and repairs, but generally off-season business is of greater volume than in-season business.

Arc N' Spark also operates two boom trucks used for a number of purposes, such as pulling small boats out of the water and moving fishing gear, including crab pots and salmon seines. Reportedly, this component of the business has changed in recent years, with very little crab pot movement now taking place. With a capacity to haul 17 to 20 pots per trip, Arc N' Spark reportedly sees only three to four pot hauling jobs per year at present (2008). The owner of Arc N' Spark reports that pot hauling in general is a business in decline in Kodiak, and not just for his particular business. Kodiak boats apparently tend to store more gear out west than in years past. The lower volume of Kodiak stored gear is now often handled either by local processors, using company equipment rather than a third-party hauler, or by the vessel owners themselves, many of whom have a truck and a trailer to handle their own gear.

In terms of the overall impact of BSAI crab rationalization for Arc N' Spark, with the consolidation of the crab fleet there are not only fewer vessels to work on, but there is also reportedly a good deal of surplus vessel equipment on the market now, including launchers,

lights, davits, and the like, such that that remaining vessels may not need as many services as would have otherwise been the case. Rationalization has also had an impact on inventory, as reportedly Arc N' Spark no longer stocks a number of items, such as pot hooks, throwing hooks, and bait choppers. In general, the owner of Arc N' Spark characterizes it as being difficult to turn a profit under present conditions, with BSAI crab rationalization contributing to those conditions.

The results from past projects would suggest that different welding firms may have been affected to different degrees by changes in the fishing industry over time. One welder interviewed in 2004, for example, noted that when halibut moved to an IFQ system, his company was not adversely affected even though fleet consolidation occurred. He reported that although there are fewer boats to work on, those he did still work on were larger and more complex than the average vessel before IFQs and the end result was about the same in terms of dollar value of welding work for his firm. In this case, it may be that it was inherently easier a smaller operation to adapt to changing circumstances involving a drop in volume in a particular fishery sector. Also, previous interviews (2004) would suggest that the volume of welding work was sensitive to marine fuel prices, as one interviewee noted that as fuel prices increased, the number of boats seeking welding services decreased in association with a decrease in disposable income (that is, vessel owners had a greater tendency to defer maintenance or perform do-it-yourself work). As fuel prices have recently escalated again, this may also be a factor in the overall vitality of this sector.

Marine Electronics

Support services for marine electronics on Kodiak are provided mainly by Radar Alaska, the only local shop that specializes in selling and servicing marine electronic equipment. Radar provides equipment for boats such as VHF radios, satellite phones, radars, orator boxes (for clarifying sound and blocking background noise), and the electronics for net systems. Radar management estimates that about 90 percent of its business comes from commercial fishing vessels with the remaining 10 percent deriving from sport charter vessels, which represents a shift more toward sport vessels in recent years. In terms of an annual cycle, the pattern reported in 2008 was consistent with the one reported in 2004: the shop has marked busy periods in January during the 2 weeks before the multiple season openings, for March through June when work on smaller boats increases, and December when Radar technicians make repairs and work on boats that are inactive until the seasons begin again in January. Like a number of other Kodiak support businesses, Radar's levels, particularly as measured by employment, decreased dramatically between the mid-1990s and the mid-2000s. In 1995, Radar employed seven technicians, while as of 2004 there was only one technician employed in Kodiak. In 2008, additional technician capacity included an individual who was splitting time worked between sales (two-thirds time) and technical work (one-third time). Overall, in the mid-1990s Radar had a total of 13 employees in Kodiak, whereas in 2004 there were 3 employees on-site. At present (2008), Radar has three full-time employees and one-part time employee, the latter being a high school student who works after-school hours.

In general, the overall decline in activity and employment seen since the mid-1990s has been attributed in part to changing fisheries economics (driven in part by changes in regulations, fewer people fishing, greater efficiencies, and an increase in competition from farmed fish), but also in large part to changes in electronics technology. These latter changes include improvements in

the longevity of the equipment, and the fact that the cost of electronic gear has declined to the point where replacement, rather than repair, has in many cases become more economically viable than repairing existing equipment. There has also reportedly been increased competition from catalog and internet sales. The dip in overall sales began around 1997, when computers, which used to be an anomaly on vessels, became increasingly inexpensive, common, and user friendly/plug-and-play capable. On the other hand, one fishing regulatory shift that changed the business was the move to halibut IFQs, which, according to Radar's staff, leveled out the peaks prior to each season. There is now less of a rush, and more time to set up communication systems on the boats, resulting in increased safety because the removal of derby fishing eliminates pressure to go out in times when the communications system on the boat is not working properly. On the other hand, Radar is experiencing reduced sales because consumers have more time to shop around to get the best price, which might include ordering online and having a product shipped, a luxury pre-IFQ scenarios did not always provide for, given the previous urgency of repairs and service needs.

There is some differentiation in the fleet from an electronics perspective, as groundfish trawlers tend to have more electronics on their boats compared to salmon fishermen. Radar Alaska management reported that it used to do work for the processors on side-band communication gear, but in recent years they have switched to satellite phones, which do not require the same degree of technical expertise for installation and maintenance. Additionally, plants do continue to buy equipment on behalf of the boats via purchase orders, with the boats settling with the processors at a later time. These types of sales are estimated to comprise about 10 to 15 percent of total sales. Another market for communications gear comprises set-net site owners who are also required to have a radio. Overall, approximately two-thirds of Radar's business is sales, with the remaining one-third composed of technical service and repair.

In terms of the impact of BSAI crab rationalization specifically, Radar Alaska reports that the business took a "big hit" the first year of rationalization, but more or less "acclimated" after that. With crab quota leasing and fleet consolidation, the level of business that Radar typically saw in the late summer and fall has declined, and it has not picked up since. Some vessels that previously were customers are no longer active, and this cut into business revenues, if not levels of employment. During this same span of years, however, the trawl sector has picked up at least some of the slack, with trawling activity occurring during more of the year than was previously the case. While some other businesses have reported incremental increases in sales related to vessels staying in the community more as a result of reducing or eliminating runs to Seattle for services due to high fuel costs, Radar has not seen this directly, although there have been some uptick of sales related to vessels attempting to increase fuel efficiency. For example, newer autopilots reportedly steer a better line than previous generations, factoring in to owner's decisions to upgrade their technology. According to senior Radar staff, acclimating to post-BSAI crab rationalization conditions has included watching expenses more closely to be able to reduce costs where possible, as well as seeking different fleet niches.

Marine Mechanical

Mechanical services represent yet another fishery support service sector on Kodiak. There are a few independent mechanics in Kodiak that focus on marine work, with E. Norton Inc., being one of the better known shops. In operation since 1988, with substantial investment in the enterprise in 1989 during the *Exxon Valdez* oil spill event, it specializes in propulsion, design, and

engineering of exhaust components and systems, repair of auto-baiter equipment, and repowering of jig and pot cod boats, although some business derives from the USCG as well as aircraft-related work. According to information from an interview with the shop's founder in 2004, 90 percent of the company's work was attributable to the fishing industry and, of that figure, approximately 15 percent came from charter boats; 20 percent from commercial trawlers; 10 percent from commercial longline vessels; and the remaining proportion from a combination of salmon, halibut, and miscellaneous small vessels. At present (2008), approximately 60 percent of business revenues derive from sales (and sales with services) and approximately 40 percent from straight service. The business is unique in Kodiak due to its focus on exhaust systems and cooling issues for jet units. The busy season runs from November through May, particularly during breaks between fishing seasons during these months. Earlier interviews (2004) noted that there tended to be a surge of business at year's end driven in part by tax incentives, and while this is apparently less of a specific consideration for customers at present (2008) than in the past, the 6 weeks or so between the end of IFQ halibut fishing in November and the start of cod and Tanner seasons in January is still a particularly busy window. Recent changes in business demand have included an increase in vessels repowering to improve fuel efficiency in response to rise in fuel prices.

In terms of impacts specifically attributable to BSAI crab rationalization, the owner of Norton's reported that prior to crab rationalization, approximately seven crab vessels were consistent customers whereas now (2008) none are. Prior to rationalization, approximately 25 crab vessels were reported to be at least occasional customers, while during the post-rationalization period, only 4 or 5 have been. Further, with crab there is been no more capital investments in vessel systems, with a surplus of systems available from inactive vessels. According to the owner of the business, however, crab was "never a huge part" of the business. While there have been declines in crab-related revenue, there has been an increase in specific pot cod sector-related work as well as vessel repowering jobs, including crab vessels, to meet changes in emissions requirements and to improve fuel efficiency. Also helping to diversify the business is a customer base spread over a wide geography, with sales ranging from Southeast Alaska to Sand Point and into Bristol Bay. The winter of 2007–2008 was characterized as particularly slow, although this was reportedly attributable to weather conditions, not factors specific to any particular fisheries.

Marine Fuel Sales

Marine fuel sales are also an important support business in Kodiak. There are two primary marine fueling facilities in the community, North Pacific Fuel and Petro Marine Services. Due to increased security measures following the September 11, 2001, terrorist attacks, it is no longer possible to obtain detailed information on fueling facilities, though some general information is available. Petro Marine uses a city dock to unload the fuel, which is moved by barge to the marine facility. North Pacific Fuel utilizes a terminal that reportedly began operations under Union Oil of California ownership approximately 60 years ago. Both companies deliver refined diesel products for commercial fishing-related services. In previous interviews (2004), North Pacific Fuel management estimated that about 65 percent of their annual business derives from servicing fishing vessels (with less than 5 percent linked with catcher processor vessels), while the remaining 35 percent of their sales associated with the residential market and processing plants. At present (2008), however, local management reports that it is not possible to characterize such a marine/land split with readily available data. Further, as there is not a fixed land business base, due to contracts varying annually, each year is different. In general,

however, the amount of business associated with vessels has reportedly decreased as part of a long-term trend, but the reasons behind the trend are not clear. Specifically, according to local management, it is likely that there may have been some impacts related to BSAI crab rationalization and fleet consolidation, but these, if any, have not been quantified, nor is it apparent whether crab rationalization has played a part in the longer-term trend of declining fishing fleet sales. In terms of local employment, there are 15 people employed at the local terminal and another 2 at the local gas station, with this level of employment remaining steady for the past several years. In previous interviews (2004), then-recent increases in fuel prices were reported to have affected the level of participation among local fleets. An example of this was given of one year when there was leftover pollock quota, where the price of pollock, compared to the rising cost of fuel, confined fishermen to half the catch as approximately 40 percent of the gross income was paid for fuel costs (based upon a maximum load). Similarly, according to interviews in past years, a large part of the North Pacific Fuels local marine business derived from the trawl fleet, as trawlers tend to burn more fuel than other vessels. Summer was characterized as the busiest season for vessel fuel sales, due to the salmon and pollock season activities, although there has been a substantial decline in the number of local salmon vessels fishing in the 2000s compared to the number of vessels fishing locally in the late 1990s.

General Stores

Some Kodiak businesses also support the commercial fishing sector through sales of groceries and general store supplies to the fleet. Larger grocery outlets in Kodiak include Safeway, Food-For-Less, and Wal-Mart.

The Kodiak Safeway store was specifically designed handle the logistics of being a service hub to other Kodiak region communities and as such is equally capable of handling large fleet-related orders. The store has a large storage capacity (20,000 square feet out of a total store area of 70,000 square feet), enabling the store to hold large orders of food destined for communities such as Akhiok, Old Harbor, and Ouzinkie, plus vessels and remote set-net operations. According to store management, "if vessels are homeported here, they shop here" and a number of out-of-town vessels will also shop at the store. For vessel orders, typically crew will come into the store, although sometimes a crew member will call ahead with an order (or a processing plant will send a purchase order on behalf of a vessel). For call-in orders, the store prepares and boxes grocery supplies (via an investment in cardboard boxes) and delivers the boxes to the docks at no additional cost to the customer. They can also store and refrigerate the groceries until pick-up or delivery. This flexibility and efficiency reduces downtime in between fishing trips, generating customer loyalty, but ofttimes crew prefer to come in to the store due to the ability to take the groceries with them at the time rather than waiting on a delivery schedule that may be variable if time in port is short. According to store management, grocery purchases can easily range from $200 to $8,000 per trip, per vessel.

Safeway management reports that the core of its business is the community of Kodiak, but a significant amount of the business is related to commercial fishing in some manner, and some management effort is necessary to ensure efficiency for both fishing-related and typical residential customers. For example, in-store commercial grocery purchases are conducted using a special checkout station, designed to accommodate large box orders, thereby mitigating the impact large orders could otherwise have on everyday costumers. With regard to seasonal

fluctuations, Safeway management reported that January and the May through September season are the busiest periods of the year for fisheries-related business. In general, from May through September "the whole island bubbles up" with increased business generated from tourism, lodging, and logging increases, not just fishing increases. The Tanner crab opening in January would typically generate a high level of activity, but in recent years this has not been as substantial as in previous times. Safeway management reports that the local store employs 140+ persons at present (2008), up from the 110 to 135 persons indicated in earlier (2004) interviews. Earlier (2004) interviews also indicated that the transition of halibut to an IFQ system affected the store's ability to track and predict an ebb and flow to the direct fisheries-related component of their business. Overall, as of 2004, there are noticeably fewer spikes occurring before and during the various fishery openings, with the exception of the Tanner crab season, which continued to be significant. As of 2008, Safeway management reported that while they do not have fishing-specific data, "virtually every fishery is not what it used to be" in terms of direct store sales.

In the mid-1990s, according to local management, the Kodiak store was 1 of the top 10 Safeway stores in the United States in terms of sales volume. Since that time, fishery-related demands have decreased, the residential population has remained relatively flat, and more competition has come into the market. Despite these challenges, however, local Safeway management reports that for at least the last 11 years (the tenure of the current management) sales have been up year over year on an annualized basis each year, with the exception of the year that Wal-Mart opened nearby (with sales being virtually flat that year compared to the previous year). While no longer in the U.S. top 10 for Safeway stores, local management reports that has as much to do with unrelated dynamics of change (e.g., Safeway obtaining a number of larger stores through acquisitions and increased fuel sales at other stores [the Kodiak Safeway does not sell fuel]) as anything else.

In terms of BSAI crab rationalization impacts specifically, Safeway management reports that they cannot quantify the change in terms of business dollar volume, but they do report that the customer vessel count for crab vessels is about one-quarter of what it used to be prior to rationalization and while the dollars per transaction is generally growing in the store, the dollars per transaction for crab vessels would appear to be declining (as crews appear to be more cost conscious than in the past). While average daily sales may have risen 20 percent or so during crab peaks, store management noted that these peaks were of short duration. During crab seasons prior to rationalization, Safeway staff would obtain Alaska Department of Fish and Game vessel lists and identify the vessels that Safeway could expect to see, which would typically be somewhere around 25 to 30 vessels. The store would then plan to back into a window that would last approximately 9 days before the major seasons, from the time of the first boat supplying to the last boat departing. For staffing purposes, it was assumed that around four vessels per day would shop in the store, and in general within this window the store would need to oversupply to ensure adequate service for regular local customers (and not run short on milk, eggs, bread, and other common grocery items). During this time the store could be a "sea of carts." This planning would take place 2 to 3 weeks ahead of time, and involved a substantial number of people. Now (2008) only five to six large crab vessels are anticipated to shop at the store per season, and management no longer bothers to meet to strategize, identify vessels, schedule extra staff, or order extra inventory related to crab vessel openings. While this is a marked change, Safeway management reports that crab even at its peak was a small proportion of annualized sales. In general, senior staff characterizes BSAI crab rationalization as not

hurting the grocery industry in Kodiak as people "still need to eat" and so will spend on groceries even if they need to cut back elsewhere.

Food-For-Less, an Alaska Commercial Company-owned store, is a general store located near the harbor, but according to its manager it currently (2008), unlike Safeway, does not provide a substantial amount of groceries to vessels. The store does provide duty free tobacco sales to vessels, but apparently this has been little changed. Rather, whatever impacts of BSAI crab rationalization may have been felt by Food-For-Less were more in the form of loss of income to crab crew members and their families, and the associated subsequent local household spending, rather than vessel sales *per se*. According to local management, however, any impacts to Food-For-Less have been "miniscule" relative to the overall bottom line of the store, especially as people displaced from the crab fishery were largely able to find alternative employment or sources of income such that changes in spending at the store were not apparent.

Boatyard Services

Kodiak also has a boatyard for vessel support. Fuller Boatyard is a privately owned incorporated business, which has been in operation since 1964. In 1987, the current owners purchased the business from Ted and Fern Fuller, the original owners. Currently (2008), Fuller's has one employee in addition to its owner (who fishes salmon in addition to owning the yard). Fuller's operates primarily as an open air repair facility on 4.4 acres of tidelands on the Near Island channel[42] with an inside, heated net loft on-site along with some additional warehouse space.

Fuller's services 18-foot to 96-foot-long vessels under 150 tons. They lift, launch, and store commercial fishing vessels, as well as some recreational power and sail boats. The boatyard operates three lifts and a hoist (one 25-ton Marine Travelift, one 100-ton Travelift, one 150-ton Travelift, and a 50-ton Acme Hoist) and also provides blocking. Fuller's also rents out pressure washers and welding equipment and provides 110-volt electricity for the tradesmen and vessels. Fuller's is reportedly the only boatyard in Alaska that is an "open yard" that allows vessel owners to bring in their own tradesmen to do fabrication and repairs. This yard thus serves as a facility to outside tradesmen, some of whom rent approximately half of the warehouse space in the yard, to provide welding, fiberglass work, boat repair, woodwork, interior finish work, electrical services, and other services on-site.

The capacity of the largest lift at Fuller Boatyard is well below the size of the larger vessels in the resident commercial fishing fleet, so these vessels at present must seek dry dock facilities outside the community. As discussed in a later section, the City of Kodiak is in the process of obtaining a larger lift that, according to plan, would be operated by a private entity to be determined.[43] At present (2008), Fuller's primarily services the salmon seine fleet, crab vessels, tenders, and some pot cod boats, consistent with what was reported in 2004, but overall fleet numbers are down. According to the long-time employee of the yard, there are now roughly 100 seiners working the local area that form the potential business base for that fleet, down from roughly 300 at its peak, reportedly due to attrition of smaller vessels, which in turn is attributable to changes in refrigerated

[42] The City of Kodiak, in the 1970s, sold its tidelands along the urban waterfront to private enterprise. All tidelands along the urban waterfront, with the exception of the harbor, are now privately owned, including the parcels where the seafood processors are located.

[43] As of the time of fieldwork (June 2008) a contractor other than Fuller's had been selected to run the new lift, but a formal agreement between the City and the prospective operator had not yet been executed.

seawater requirements and the practical advantages of having larger holds, combined with increased operating costs, including elevated fuel costs. The owners estimate that 99 percent of the boatyard business is associated with the commercial fishing fleet. Despite a limited lift capacity, quite a few of the boats serviced at the yard are from Washington, Oregon, or California, although this segment of the business has reportedly declined in recent years relative to local fleet business. The boat yard storage volume has been relatively stable for the past few years, after seeing declines of 50 percent or so of demand related to the noted changes in the salmon fishery as well as the consolidation of the halibut fleet under IFQ conditions. For the last several years, including the years immediately preceding BSAI crab rationalization, business has been fairly steady with about 40 vessels are stored over the winter at the yard.

In terms of the impact of BSAI crab rationalization on Fuller's boat yard, a long-time employee of the yard reported that approximately 10 local crab vessels among its customers (typically vessels in the 86 foot length range, most of which participated in the red king crab fishery) no longer actively fish rationalized crab, although they have retained their quota. These vessels, however, have reportedly remained in the community and have remained customers of the boat yard while pursuing alternate fishing opportunities (e.g., tendering), such that the boat yard has not seen declines in business directly as a result of loss of vessels. This same employee, however, reported that with the loss of local crew positions on BSAI crab vessels, the individuals who typically held these positions are spending less on their own vessels, which does translate into a reduction in the amount of work that is done at the yard.

Shipping

There are several cargo carriers with a long-term local presence that are used to ship seafood products off Kodiak Island. Two are marine shipping carriers, and two are air cargo carriers. They include Horizon Lines, Samson Tug and Barge, Alaska Airlines/ERA, and Northern Air Cargo.

Horizon Lines is a domestic carrier that has gone through a number of ownership changes in recent years. Known as Sea-Land before becoming CSX Lines, in 2002 CSX Lines was sold to the Carlyle Group, which changed the name of its domestic shipping service to Horizon Lines. In the spring of 2004, the Carlyle Group sold Horizon Lines to Castle Harlan, but the Horizon name was retained. According to Horizon management in Kodiak, the vast majority of the containers they ship from Kodiak are seafood products, but the weight of full seafood containers is significantly more than the weight of other household goods, dunnage, and autos, such that approximately 90 percent of the wharfage collected by the City of Kodiak from Horizon Lines is seafood related. While Horizon does business with all the processing plants in Kodiak, it does not service catcher-processors. Horizon operates two routes that include Kodiak. Both start in Tacoma, stop in Anchorage, and continue on to Kodiak. One route returns to Tacoma and the second travels to Dutch Harbor, where it connects with international carriers, then turns around and travels south to Tacoma. Of its seafood-related business, approximately 60 percent of all products shipped by Horizon were destined for domestic markets. Some fluctuations in shipping mode for commercial fisheries related cargo do occur during different seasons, even within individual fisheries based on market demands for different product forms, including fresh forms.

Horizon is an agent for MAERSK shipping, which provides export shipping from Dutch Harbor. Horizon also moves cargo destined for overseas shipment on American President Lines (APL) vessels.

Samson Tug and Barge operates a container hauling and break-bulk service in Kodiak. Because ships with deeper hulls cannot get into the outlying communities in the Kodiak Archipelago, Samson brings salmon and other products from remote canneries to a central location in the greater Kodiak area, and transfers the containers to larger vessels. Samson also hauls containers destined for shipment on APL out of Dutch Harbor. According to earlier (2004) interviews, Horizon contracts with Samson to haul empty containers to King Cove and Sand Point, as well as to bring cargo into and out of the small communities in the region. Processors typically use Horizon or Northern Air Cargo when shipping frozen or fresh products, while Samson is used to move cargo that does not require a 3-day turnaround. Samson does have refrigeration capacity to ship frozen products as well as dry cargo such as canned salmon. Kodiak was also served by Western Pioneer in the past, but more recently this firm sold its vessels and no longer operates a freight division.

The Port and Harbor Department of the City of Kodiak itself also acts as a support service provider for commercial fishing related activities. The department, which manages the port and its two harbors, is operated via an enterprise fund. Its purpose is to serve the commercial and recreational boat fleet by providing marine infrastructure and services. It provides customer service and billing for port and cargo operations; it coordinates scheduling and use of facilities; provides limited search and rescue within city limits; and in conjunction with other city departments provides emergency response for fire, crime, and accidents. Details of this department and the revenues port and harbor activities generate are provided in the local governance and revenues section, below.

In addition to the Port of Kodiak facilities, there is a privately operated terminal in the greater Kodiak area. Seaport Terminal Services Inc., a subsidiary of LASH[44] Corporation, operates the terminal and provides associated support services. According to 2004 interview information, the terminal presently has over 1,200 feet of dock space available. The terminal also has warehousing, yard storage, crane services with 40-ton to 150-ton cranes, 4-ton to 40-ton forklifts, trucking, waste disposal, and water. Fuel is also available through delivery from Kodiak's local distributors. Seaport maintains three mooring buoys within the "designated anchorage" in Womens Bay to provide moorage capabilities for large vessels and barges. Vessel haul-out and storage are available for most vessels up to 50 feet in length. LASH Corporation is presently developing an industrial park next to the terminal with property for sale or long-term lease.

Kodiak State Airport is located about 4 miles southwest of downtown Kodiak. The airport is owned by the USCG, is leased to the State of Alaska, and operated by the Alaska Department of Transportation and Public Facilities. In addition to linking Kodiak to Anchorage and other mainland destinations, the airport also serves as a regional hub for smaller outlying communities. With one of its runways being in excess of 7,500 feet, an instrument landing system/distance measuring equipment (ILS/DME) approach capability, and a control tower manned for 16 hours per day, Kodiak State Airport has functional passenger transportation and cargo shipping capacity far in excess of other fishing communities in the southwestern part of the state (including the other fishing communities profiled in this document [Unalaska/Dutch Harbor, Akutan, and King Cove]). While volume of product moving by air is small in proportion to the

[44] In most shipping contexts, LASH is an acronym for Lighter Aboard Ship vessels that carry multiple (approximately 90) standard size LASH barges that can be independently loaded/off-loaded and towed to and from the oceangoing ship to smaller ocean or inland waterways ports. In this case, LASH is simply an acronym for the founders of the company.

volume of product that moves by surface transport, air shipping of seafood is nonetheless an important part of the local transportation economy. For example, with the start of halibut season in 2005, one of the carriers was anticipating shipping 100,000 pounds of halibut in the first week alone. With relatively quick and reliable connections to the global air shipping capabilities found at Ted Stevens Anchorage International Airport, air shipment of fresh product from Kodiak is more economically feasible than is the case from many other rural Alaska seaports, but price/cost competition with fresh product landed at road system communities such as Homer (that can then be trucked to Anchorage and beyond) remains challenging.

Additional Characterization of Potential BSAI Crab Rationalization Impacts to Support Service Businesses

In an earlier study (Knapp 2006), quarterly sales tax data from a group of 12 Kodiak marine supply and service businesses (Alaska Hydraulics, Alaska Industrial and Marine Services, Arc N' Spark Welding, Island Hydraulics, Kodiak Marine Supply, Kodiak Metals and Supply, Kodiak Ocean Safety Services, Kodiak Service Company, Kodiak Welding and Supply, Nets Pacific, Radar Alaska, and Sutliff's Hardware) were tracked and compared to previous quarters. Table 2.4-21 updates that information through the first quarter of 2008. As shown, as a group, every quarter shows a percentage increase in sales taxes over the analogous quarter for the previous year for the range of years shown, encompassing pre- and post-BSAI crab rationalization periods, with one exception (the first quarter taxes for 2007 were lower than the first quarter taxes in 2006).

As noted in the earlier study (Knapp 2006), however, sales trends were not the same for all of these businesses. As shown in Table 2.4-22, while one of these businesses (Alaska Industrial and Marine Services) is no longer in business, of the remaining 11 firms, overall things are better in 2007/08 (the third year post rationalization) when compared to the last year pre-BSAI crab rationalization (2004/05) than they were in the first year post-rationalization (2005/06). In the fourth quarter of 2007, nine of the 11 remaining businesses showed an increase in sales (as measured by sales taxes) over the fourth quarter of 2004, and of these nine increases, eight were characterized as "big" by the City's Finance Department.[45] For the first quarter of 2008, 10 of the 11 remaining businesses showed at least some increase over the first quarter of 2005. As noted in the earlier study (Knapp 2006), "from this limited evidence [2005/06 sales compared to 2004/05 sales], it is difficult to find any clear evidence of any *major* [emphasis in original] effect of crab rationalization on Kodiak marine supply and service businesses in general." The incorporation of more recent data does not change this finding, and it is still true that although as a group there does not appear to be a dramatic or obvious decline in sales, there are likely a number of these firms are not doing the volume of sales that they otherwise might be doing in the absence of BSAI crab rationalization. Additional tables on quarterly sales for 27 "business types" since 2002 are presented in Attachment 2. These tables parallel those presented in the earlier study (Knapp 2006). As with the earlier study, these data do not show any clear impacts of BSAI crab rationalization on the different sectors illustrated.

[45] For the 2007/2008 characterization compared to the pre-rationalization baseline, "big" increases were considered to be increased sales over $100,000 because of an apparent natural break in the data at that point. For the smallest business, the $100,000 amount represented an increase of 65 percent.

Table 2.4-21. Total Sales of Twelve Kodiak Marine Supply and Services Businesses

	Year					% change from previous year			
Quarter	**2004**	**2005**	**2006**	**2007**	**2008**	**2005**	**2006**	**2007**	**2008**
1st Quarter	$2,367,140	$2,656,511	$2,925,099	$2,631,386	$3,350,469	12.2%	10.1%	-10.0%	27.3%
2nd Quarter	$3,003,710	$3,650,427	$4,207,919	$4,219,240	NA	21.5%	15.3%	0.3%	NA
3rd Quarter	$2,590,335	$3,085,760	$3,367,510	$3,804,994	NA	19.1%	9.1%	13.0%	NA
4th Quarter	$2,127,741	$2,479,691	$2,926,588	$3,308,160	NA	16.5%	18.0%	13.0%	NA
Total	$10,088,927	$11,872,389	$13,427,116	$13,963,779	NA	17.7%	13.1%	4.0%	NA

Source: Knapp 2006; City of Kodiak, Sales Tax Office 2008.

Table 2.4-22. Change in Sales Compared with the Previous Year for Twelve Kodiak Marine Supply and Service Companies

Change	Fourth Quarter 2005 compared to Fourth Quarter 2004	First Quarter 2006 compared to First Quarter 2005	Fourth Quarter 2007 compared to Fourth Quarter 2004	First Quarter 2008 compared to First Quarter 2005
Decrease of Any Size	3	4	2	1
Big Decrease	1	2	0	0
Increase of Any Size	9	7	9	10
Big Increase	"several"	6	8	1

Note: One business in the group, Alaska Industrial and Marine Services, closed in December 2006.
Source: Knapp 2006; City of Kodiak, L. Freed, personal communication 2008.

2.4.4 Local Governance and Revenues

As described above, Kodiak is home to a wide range of governmental institutions. Fishing-related revenues are an important component of overall revenues for both the city of Kodiak and the KIB. Municipal revenue information for the period 1999 through 2007 parallel to that presented for the other Alaska communities profiled is presented in Table 2.4-23. As shown, local operating revenues generated by taxes have increased each year in recent years. Shared fish taxes, a part of outside operating revenues, show a more complex pattern. Although all subsequent years are higher than the figure for 2003, the shared fish tax revenues for 2004 were higher than those for 2005 and 2006, but lower than those for 2007.

Beyond the revenue sources that accrue to the municipality directly, residents of Kodiak (like the residents of other communities on the island) derive benefits from services provided by the borough, which also funds its services in part through fishery derived revenues. The borough has a resource-based severance tax that applies to extraction of natural resources including rock, sand, and gravel as well as timber and fish. While in past years timber used to make up the majority of this revenue, borough management estimates that more recently severance tax is typically over 90 percent attributable to fish. In FY 2007, the severance tax total was $1.3 million (of which approximately 98 percent came from fish), up from $1.2 million the year before. This borough tax is designed to mirror that state raw fish tax with the taxes being applied to the transactional value at the point of extraction, based on the value paid to commercial fishermen (as part of the transaction with the processors upon landing).

In addition to the severance tax, commercial fishing related activity contributes to borough revenues in a variety of ways. For example, the borough levies both real and personal property taxes on processing plants both within and outside of incorporated municipalities. (Borough real property taxes are paid on lands and buildings, borough personal property taxes are paid on equipment within the plants, and both are assessed at 10.5 mills; the City of Kodiak does not levy personal property taxes, but levies real property taxes at a rate of 2 mills, so seafood processing plants within the city boundaries pay a combined total of 12.5 mills in real property taxes.) The borough also levies a flat tax on vessels over 5 tons, which is equivalent to a personal property tax. This tax was set at $15 per vessel per year until FY 2006 (when it generated $7,547). In 2007, the tax changed to $1 per foot on vessels over 5 tons, with a minimum tax of $30 per vessel, which generated $26,217 in revenue that year. (The intent of not taxing vessels more aggressively is to support the commercial fishing industry; the recent tax

Table 2.4-23. Kodiak Municipal Revenues 1999–2007

Revenue Source	1999	2000	2001	2002	2003	2004	2005	2006	2007
Local Operating Revenue									
Taxes	$7,377,771	$7,998,729	$7,736,345	$7,740,939	$7,879,249	$8,056,275	$8,551,379	$8,929,890	$9,223,190
License/Permits	$65,969	$44,028	$39,355	$44,628	$38,063	$54,758	$58,319	$43,064	$51,535
Service Charges	$2,522,717	$1,400,947	$1,275,700	$1,427,824	$2,050,628	$1,431,142	$1,648,405	$1,392,238	$1,472,985
Enterprise	$5,559,886	$6,315,214	$7,005,648	$6,808,064	$5,972,076	$6,644,239	$7,079,057	$7,821,403	$8,952,296
Other Local Revenue	$1,941,751	$2,105,864	$1,509,686	$1,115,994	$742,066	$241,751	$568,236	$823,852	$1,214,681
Total Local Operating Revenues	$17,508,094	$17,864,782	$17,566,734	$17,137,449	$16,682,082	$16,428,165	$17,905,396	$19,010,447	$20,914,687
Outside Operating Revenues									
Federal Operating	$0	$0	$0	$0	$0	$0	$0	$0	$0
State Revenue Sharing	$118,049	$82,265	$73,635	$68,511	$63,501	$0	$0	$0	$0
State Municipal Assistance	$332,799	$222,926	$199,391	$211,503	$203,517	$0	$0	$0	$0
State Fish Tax Sharing	$615,603	$618,504	$667,927	$889,316	$627,719	$825,995	$643,560	$712,424	$828,773
Other State Revenue	$105,844	$92,950	$100,141	$82,655	$51,667	$218,497	$80,972	$361,453	$571,393
Other Intergovernmental	$0	$0	$20,000	$0	$3,650	$0	$0	$0	$0
State/Federal Education Funds	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Outside Revenues	$1,172,295	$1,016,645	$1,061,094	$1,251,985	$950,054	$1,044,492	$724,532	$1,073,877	$1,400,166
Total Operating Revenues	$18,680,389	$18,881,427	$18,627,828	$18,389,434	$17,632,136	$17,472,657	$18,629,928	$20,084,324	$22,314,853
Operating Revenue per Capita	$2,710	$2,762	$2,941	$2,810	$2,873	$2,818	$3,060	$3,382	$3,922
State/Federal Capital Project Revenues	$7,500	$491,851	$26,683	$175,821	$1,310,547	$628,403	$1,091,153	$1,175,962	$496,946
Total All Revenues	$18,687,889	$19,373,278	$18,654,511	$18,565,255	$18,942,683	$18,101,060	$19,721,081	$21,260,286	$22,811,799
Total All Revenues (2006 Constant Dollars)	$22,613,916	$22,680,911	$21,247,172	$20,804,644	$20,754,592	$19,318,019	$20,357,245	$21,260,286	$22,184,557

Source: Personal comment, DCED, spreadsheets provided July 2008.

increase was intended to at least cover the cost of collections.) These fishery-related tax revenues, in turn, provide a range of benefits to Kodiak and the borough as a whole. The borough also exempts any and all commercial fishing gear (exclusive of vessels) from personal property tax.

The state fisheries business tax benefits both the borough and the city directly through revenue sharing, with this revenue being shared evenly between the borough and the state where the activity takes place within the borough but outside of an incorporated municipality, and split 50 percent to the state, 25 percent to the borough, and 25 percent to the city where the activity takes place within an incorporated municipality. The borough also derives revenue from the state fishery resource landing tax, which is levied on processed fishery resources first landed in Alaska, based on the unprocessed value of the resource. (This tax is primarily collected from at-sea and floating processors that process resources outside of the 3-mile limit but bring their products to Alaska for transshipment.) In the case of Kodiak, the revenues generated by this tax are modest compared to those generated by the fisheries business tax. (For example, between 1999 and 2003, the resource landing tax ranged between less than one-half of one percent to a little less than five percent of the annual fisheries business tax.)

Table 2.4-24 provides information on state fish tax revenue sharing over the FY 1976 through FY 2007 period. As shown, there were several peaks and valleys over this span of years. After a sharp decline from 2002 to 2003 and another decline from 2003 to 2004, this revenue source has seen annual increases from 2005 through 2007.

Port and Harbor Department

The Port of Kodiak has more than 650 boat slips and 3 commercial piers that can handle vessels up to 850 feet long. In addition to the freight carriers already mentioned, it also supports several freight forwarders and consolidators. The three piers include the general use/ferry pier, the city dock, and the cargo terminal pier that together support the ferries, facilities for D7 class container ships, cruise ships, commercial fishing vessel loading and off-loading, and other cargo vessels. The city operates two marinas. Saint Paul Harbor, located downtown, has 250 slips for vessels up of 24 to 60 feet in length. Saint Herman Harbor, in Dog Bay on Near Island, has 325 slips for vessels 17 feet to 150 feet in length. Overall, Kodiak has the largest mooring capacity for large fishing vessels of any port in Alaska, with over 80 slips for vessels 90 feet to 150 feet in length. Both harbors are full most of the time, with 95 percent of the occupancy coming from commercial fishing vessels, with some commercial vessels originating from Washington and Oregon. Vessels with exclusive slips pay an annual fee for moorage; all other vessels pay a daily rate. The department provides security and services 24 hours a day, 7 days a week, with 13 staff members including 8 full-time patrol officers.

The City of Kodiak is planning to upgrade their vessel support facilities in the form of a travel lift to be located on city lands adjacent to St. Herman Harbor. The city obtained a grant from the federal Economic Development Administration for this project, which is being developed with public funds rather than as a private enterprise due to the city owning the tidelands upon which it will be located (necessitating a public partnership in any event) and the capital-intensive nature of the project. The city is planning to partner with a private entity that would operate the lift and, as of June 2008, had selected an operator but had not yet formalized an agreement with that entity. At present, larger Kodiak vessels must travel outside of the community (typically to

Table 2.4-24. Kodiak Island Borough Fish Tax Revenue Sharing, 1976–2007

Fiscal Year	Raw Fish Tax
1976	$54,039
1977	$66,709
1978	$79,834
1979	$251,716
1980	$182,348
1981	$452,802
1982	$428,924
1983	$828,783
1984	$884,740
1985	$709,477
1986	$651,383
1987	$647,057
1988	$871,703
1989	$875,085
1990	$2,044,881
1991	$1,082,779
1992	$1,295,921
1993	$1,005,664
1994	$1,244,127
1995	$997,032
1996	$1,077,121
1997	$1,349,834
1998	$994,768
1999	$918,010
2000	$833,980
2001	$1,006,947
2002	$1,364,248
2003	$840,768
2004	$649,928
2005	$773,290
2006	$802,313
2007	$958,965

Source: Kodiak Island Borough spreadsheet.

Seattle) for dry dock repairs. The only local lift, at the privately owned and operated Fuller Boatyard, has a 150-ton capacity, while the new lift would have a 600-ton/38-foot-beam capacity, meaning it could service the largest of the locally owned vessels. Having a local facility would save each vessel fuel and incidental costs (such as crew expenses) involved in taking their vessels to Seward (220 miles away) or Seattle (1,000 miles away). This would save tens of thousands of dollars in round-trip fuel costs alone associated with hauling out in Seattle, and it would keep vessel service dollars circulating in the community.

With fleet consolidation that has accompanied fishery rationalization (most recently with BSAI crab rationalization) there is concern that support service demand in Kodiak will decline. It is hoped that the planned travel lift would attract business from larger Bering Sea crab boats, whether home ported in Kodiak or not, expanding the city's fishing-related economic base. Successful implementation of this project would, it is hoped, generate additional business opportunities for other Kodiak marine support service providers, such as welding, hydraulics, mechanical, and electronics service entities. According to city officials, travel lift fees would be structured in such a way as to discourage smaller vessels that now use Fuller Boatyard from using the new lift (to avoid direct competition), while at the same time offering services to larger vessels in a manner that allows a competitive advantage relative to costs for similar services in Seward. One approach the city is taking to encourage additional support service growth is planning the facility as an "open yard," allowing vessel owners to bring in mechanics and tradesmen of their choice. Further, although there is no private sector commercial activity on Near Island at present, the city is also anticipating selling or leasing land for support service business development near the planned travel lift boatyard site.

In terms of impacts of BSAI crab rationalization on harbor revenues, moorage apparently has not been adversely affected. While there are fewer large crab vessels in the community, those that are remaining are viable operations and, according to the harbormaster, able to pay their moorage fees. With the decrease in number of larger vessels, there is no longer a waiting list for the larger boats, such that, according to the harbormaster, the situation is at equilibrium now (2008). The situation is made more complex by the fact that the structure of fees has changed to increase the costs per linear foot for larger vessels and the harbor is in the process of replacing a part of their facilities such that a number of vessels are in "hot bunk" status awaiting assignment of permanent (yearly) moorage slips upon completion of new facilities as opposed to term (nonexclusive use) moorage.

Senior harbor staff did note that approximately five vessels from Kodiak were part of the crab vessel buy-back that occurred prior to rationalization and, with the consolidation that occurred post-implementation of BSAI crab rationalization, there are a number of other vessels still in the harbor that are no longer active or as active in fishing as they were prior to rationalization. While vessels in the latter category may still generate moorage fees for the harbor, they are not generating the local fuel, grocery, supply, and maintenance sales that they did when they were active in the BSAI crab fisheries. Unrelated to BSAI crab rationalization, but occurring at the same time, there have been significant impacts to the Kodiak fleet as a result of escalating fuel prices. According to the harbormaster, there are boats now seeking moorage in Kodiak that were not doing so previously due to the desire to cut unnecessary running costs. Table 2.4-25 displays Kodiak harbor revenues for 2004–2007. As shown, moorage fees have increased every year during this period as have total harbor operating revenues.

Table 2.4-25. City of Kodiak Boat Harbor Enterprise Fund Revenues, 2004–2007

Operating Revenues	2004	2005	2006	2007
Moorage	$752,550	$1,040,705	$1,183,387	$1,366,121
Pier and dock fees	$122,223	$145,923	$161,147	$205,299
Administrative fees to other funds	$70,000	$70,000	$70,000	$70,000
Other fees and charges	$149,585	$155,934	$173,896	$213,162
Rentals	$13,882	$14,021	$14,161	$14,302
Penalties and interest	$6,168	$10,798	$14,349	$10,971
Other	$0	$27,748	$0	$15,013
Total operating revenues	$1,114,408	$1,465,129	$1,616,940	$1,894,868

Source: City of Kodiak Comprehensive Annual Financial Report 2007.

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CHAPTER 3.0
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ATTACHMENT 1

ANNUAL QUANTITATIVE FISHERY DATA (1998–2007) AND QUOTA SHAREHOLDER STATISTICS

Table A1-1. Harvest Averages by BSAI Crab Fishery

Fishery	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
Pounds												
Bristol Bay Red	14,290,271	11,047,099	7,544,523	7,777,413	8,854,462	14,528,926	14,112,438	--	16,476,791	14,056,264	11,165,019	15,266,528
Bering Sea Snow	243,250,200	184,693,785	30,654,163	23,367,023	30,202,576	26,077,630	22,170,150	22,884,174	33,256,154	32,652,952	72,912,463	32,954,553
Eastern Aleutian Golden	3,247,863	3,069,886	3,134,079	3,178,653	2,821,851	2,977,055	2,886,817	--	2,567,798	2,690,665	3,045,172	2,629,232
Western Aleutian Golden	2,444,628	*	2,830,131	2,823,453	2,740,054	2,640,604	2,688,773	2,688,234	*	*	**	**
Bering Tanner East	--	--	--	--	--	--	--	--	39,500	1,399,331	--	719,416
Bering Tanner West	--	--	--	--	--	--	--	--	751,817	498,210	--	625,014
Value												
Bristol Bay Red	$37,313,764	$68,611,798	$35,483,182	$36,506,456	$54,352,063	$72,685,060	$65,600,781	--	$72,332,409	$50,918,141	$52,936,158	$61,625,275
Bering Sea Snow	$135,790,155	$179,729,517	$56,157,509	$35,516,841	$40,824,518	$46,653,533	$45,052,267	$41,021,285	$38,151,516	$47,260,007	$72,593,203	$42,705,762
Eastern Aleutian Golden	$6,013,306	$9,308,659	$10,722,820	$10,116,883	$9,611,628	$10,386,474	$9,066,683	--	$6,969,776	$5,089,923	$9,318,065	$6,029,850
Western Aleutian Golden	$4,671,104	*	$8,779,869	$8,987,395	$8,820,756	$9,005,396	$9,163,071	$8,351,033	*	*	**	**
Bering Tanner East	--	--	--	--	--	--	--	--	$59,214	$1,954,922	--	$1,007,068
Bering Tanner West	--	--	--	--	--	--	--	--	$1,090,352	$675,469	--	$882,910
Vessels												
Bristol Bay Red	274	256	244	230	241	250	251	--	89	81	249.4	85
Bering Sea Snow	229	241	231	207	190	190	189	167	78	69	205.5	73.5
Eastern Aleutian Golden	14	15	15	19	19	18	19	--	7	6	17	6.5
Western Aleutian Golden	9	3	15	12	9	6	6	6	3	3	8.3	3
Bering Tanner East	--	--	--	--	--	--	--	--	6	37	--	21.5
Bering Tanner West	--	--	--	--	--	--	--	--	43	37	--	40
Average Price per Pound												
Bristol Bay Red	$2.61	$6.21	$4.70	$4.69	$6.14	$5.00	$4.65	--	$4.39	$3.62	$4.74	$4.04
Bering Sea Snow	$0.56	$0.97	$1.83	$1.52	$1.35	$1.79	$2.03	$1.79	$1.15	$1.45	$1.00	$1.30
Eastern Aleutian Golden	$1.85	$3.03	$3.42	$3.18	$3.41	$3.49	$3.14	--	$2.71	$1.89	$3.06	$2.29
Western Aleutian Golden	$1.91	**	$3.10	$3.18	$3.22	$3.41	$3.41	$3.11	**	**	**	**
Bering Tanner East	--	--	--	--	--	--	--	--	$1.50	$1.40	--	$1.40
Bering Tanner West	--	--	--	--	--	--	--	--	$1.45	$1.36	--	$1.41
Average Value per Vessel												
Bristol Bay Red	$136,182	$268,015	$145,423	$158,724	$225,527	$290,740	$261,358	--	$812,724	$628,619	$212,230	$725,003
Bering Sea Snow	$592,970	$745,766	$243,106	$171,579	$214,866	$245,545	$238,372	$245,636	$489,122	$684,928	$353,252	$581,031
Eastern Aleutian Golden	$429,522	$620,577	$714,855	$532,468	$505,875	$577,026	$477,194	--	$995,682	$848,321	$548,121	$927,669
Western Aleutian Golden	$519,012	**	$585,325	$748,950	$980,084	$1,500,899	$1,527,178	$1,391,839	**	**	**	**
Bering Tanner East	--	--	--	--	--	--	--	--	$9,869	$52,836	--	$46,840
Bering Tanner West	--	--	--	--	--	--	--	--	$25,357	$18,256	--	$22,073

*Data suppressed due to confidentiality.
**Computation suppressed due to confidentiality of primary data.
Source: Alaska Department of Fish and Game 2008; Alaska Commercial Fisheries Entry Commission 2008.

Table A1-2a. BSAI Crab Vessel Count by Community

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
Alaska	South-Central	Anchorage												
		Bristol Bay Red	5	5	4	4	4	6	6	--	3	4	4.9	3.5
		Bering Sea Snow	4	5	5	4	3	5	5	7	2	4	4.8	3.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	1	3	--	2.0
		Big Lake												
		Bristol Bay Red	0	0	1	0	0	0	0	--	0	0	0.1	0.0
		Bering Sea Snow	0	1	0	0	0	0	0	0	0	0	0.1	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Cordova												
		Bristol Bay Red	3	2	2	2	2	2	2	--	0	0	2.1	0.0
		Bering Sea Snow	2	3	2	2	1	1	2	1	0	0	1.8	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Kenai												
		Bristol Bay Red	1	1	1	1	0	0	0	--	0	0	0.6	0.0
		Bering Sea Snow	1	1	1	1	1	0	0	0	0	0	0.6	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Homer												
		Bristol Bay Red	8	7	7	7	7	6	6	--	3	3	6.9	3.0
		Bering Sea Snow	8	7	7	7	7	6	6	3	3	2	6.4	2.5
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	1	1	--	1.0
		Bering Tanner West	--	--	--	--	--	--	--	--	1	1	--	1.0
		Seldovia												
		Bristol Bay Red	1	1	1	1	1	1	1	--	0	1	1.0	0.5
		Bering Sea Snow	1	1	1	1	1	1	1	1	1	1	1.0	1.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	1	--	0.5
		South-Central Total												
		Bristol Bay Red	*18*	*16*	*16*	*15*	*14*	*15*	*15*	--	*6*	*8*	*15.6*	*7.0*

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
		Bering Sea Snow	*16*	*18*	*16*	*15*	*13*	*13*	*14*	*12*	*6*	*7*	*14.6*	*6.5*
		Eastern Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	--	*0*	*0*	*0.0*	*0.0*
		Western Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*	*0.0*
		Bering Tanner East	--	--	--	--	--	--	--	--	*1*	*1*	--	*1.0*
		Bering Tanner West	--	--	--	--	--	--	--	--	*2*	*5*	--	*3.5*
	Southeast	Ketchikan												
		Bristol Bay Red	1	1	1	1	1	1	1	--	0	1	1.0	0.5
		Bering Sea Snow	2	1	1	1	1	1	1	1	0	1	1.1	0.5
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	1	--	0.5
		Bering Tanner West	--	--	--	--	--	--	--	--	0	1	--	0.5
		Petersburg												
		Bristol Bay Red	2	2	2	2	2	2	2	--	0	0	2.0	0.0
		Bering Sea Snow	2	2	2	2	2	2	2	2	0	0	2.0	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Sitka												
		Bristol Bay Red	2	1	2	2	2	2	1	--	0	0	1.7	0.0
		Bering Sea Snow	2	2	2	2	2	2	1	0	0	0	1.6	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Yakutat												
		Bristol Bay Red	1	0	1	1	1	1	1	--	0	0	0.9	0.0
		Bering Sea Snow	1	1	1	0	0	1	1	1	0	0	0.8	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Southeast Total												
		Bristol Bay Red	*6*	*4*	*6*	*6*	*6*	*6*	*5*	--	*0*	*1*	*5.6*	*0.5*
		Bering Sea Snow	*7*	*6*	*6*	*5*	*5*	*6*	*5*	*4*	*0*	*1*	*5.5*	*0.5*
		Eastern Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	--	*0*	*0*	*0.0*	*0.0*
		Western Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*	*0.0*
		Bering Tanner East	--	--	--	--	--	--	--	--	*0*	*1*	--	*0.5*
		Bering Tanner West	--	--	--	--	--	--	--	--	*0*	*1*	--	*0.5*
	Aleutians	Dutch Harbor / Unalaska												
		Bristol Bay Red	4	4	2	2	2	2	1	--	0	0	2.4	0.0
		Bering Sea Snow	3	3	2	2	1	2	2	1	1	0	2.0	0.5
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
		King Cove												
		Bristol Bay Red	3	3	4	2	2	2	1	--	1	1	2.4	1.0
		Bering Sea Snow	2	2	3	2	1	1	0	0	0	0	1.4	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Sand Point												
		Bristol Bay Red	1	0	1	1	0	1	1	--	0	0	0.7	0.0
		Bering Sea Snow	1	0	1	0	0	0	0	0	0	0	0.3	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Aleutians Total												
		Bristol Bay Red	*8*	*7*	*7*	*5*	*4*	*5*	*3*	--	*1*	*1*	*5.6*	*1.0*
		Bering Sea Snow	*6*	*5*	*6*	*4*	*2*	*3*	*2*	*1*	*1*	*0*	*3.6*	*0.5*
		Eastern Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	--	*0*	*0*	*0.0*	*0.0*
		Western Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*	*0.0*
		Bering Tanner East	--	--	--	--	--	--	--	--	*0*	*0*	--	*0.0*
		Bering Tanner West	--	--	--	--	--	--	--	--	*0*	*0*	--	*0.0*
	All Subregions (non-Kodiak)	*All Subregions (non-Kodiak)*												
		Bristol Bay Red	*32*	*27*	*29*	*26*	*24*	*26*	*23*	--	*7*	*10*	*26.7*	*8.5*
		Bering Sea Snow	*29*	*29*	*28*	*24*	*20*	*22*	*21*	*17*	*7*	*8*	*23.8*	*7.5*
		Eastern Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	--	*0*	*0*	*0.0*	*0.0*
		Western Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*	*0.0*
		Bering Tanner East	--	--	--	--	--	--	--	--	*1*	*2*	--	*1.5*
		Bering Tanner West	--	--	--	--	--	--	--	--	*2*	*6*	--	*4.0*
	Kodiak	Kodiak												
		Bristol Bay Red	34	30	33	32	35	34	37	--	14	11	33.6	12.5
		Bering Sea Snow	26	29	32	26	27	25	22	22	11	9	26.1	10.0
		Eastern Aleutian Golden	1	2	2	2	3	3	3	--	0	0	2.3	0.0
		Western Aleutian Golden	2	1	1	2	1	0	0	0	0	0	0.9	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	5	--	2.5
		Bering Tanner West	--	--	--	--	--	--	--	--	6	2	--	4.0
	Alaska Total	**Alaska Total**												
		Bristol Bay Red	**66**	**57**	**62**	**58**	**59**	**60**	**60**	**--**	**21**	**21**	**60.3**	**21.0**
		Bering Sea Snow	**55**	**58**	**60**	**50**	**47**	**47**	**43**	**39**	**18**	**17**	**49.9**	**17.5**
		Eastern Aleutian Golden	**1**	**2**	**2**	**2**	**3**	**3**	**3**	**--**	**0**	**0**	**2.3**	**0.0**
		Western Aleutian Golden	**2**	**1**	**1**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0.9**	**0.0**
		Bering Tanner East	--	--	--	--	--	--	--	--	**1**	**7**	--	**4.0**
		Bering Tanner West	--	--	--	--	--	--	--	--	**8**	**8**	--	**8.0**
Washington	Seattle CMSA	Seattle CMSA												
		Bristol Bay Red	159	150	133	128	131	136	138	--	46	44	139.3	45.0
		Bering Sea Snow	130	137	117	113	99	98	102	91	44	38	110.9	41.0
		Eastern Aleutian Golden	11	11	11	15	15	14	15	--	5	4	13.1	4.5

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
		Western Aleutian Golden	5	1	11	6	5	3	3	3	2	1	4.6	1.5
		Bering Tanner East	--	--	--	--	--	--	--	--	4	22	--	13.0
		Bering Tanner West	--	--	--	--	--	--	--	--	26	20	--	23.0
	Other Washington	Other Washington												
		Bristol Bay Red	20	20	19	14	18	19	20	--	7	5	18.6	6.0
		Bering Sea Snow	18	19	17	16	15	18	18	12	3	2	16.6	2.5
		Eastern Aleutian Golden	1	1	1	1	1	1	1	--	1	1	1.0	1.0
		Western Aleutian Golden	1	0	1	1	0	0	0	0	0	0	0.4	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	1	--	0.5
		Bering Tanner West	--	--	--	--	--	--	--	--	1	1	--	1.0
	Washington Total	**Washington Total**												
		Bristol Bay Red	**179**	**170**	**152**	**142**	**149**	**155**	**158**	**--**	**53**	**49**	**157.9**	**51.0**
		Bering Sea Snow	**148**	**156**	**134**	**129**	**114**	**116**	**120**	**103**	**47**	**40**	**127.5**	**43.5**
		Eastern Aleutian Golden	**12**	**12**	**12**	**16**	**16**	**15**	**16**	**--**	**6**	**5**	**14.1**	**5.5**
		Western Aleutian Golden	**6**	**1**	**12**	**7**	**5**	**3**	**3**	**3**	**2**	**1**	**5.0**	**1.5**
		Bering Tanner East	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**4**	**23**	**--**	**13.5**
		Bering Tanner West	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**27**	**21**	**--**	**24.0**
Oregon	**Oregon Total**	**Oregon Total**												
		Bristol Bay Red	**19**	**21**	**18**	**19**	**20**	**22**	**21**	**--**	**10**	**7**	**20.0**	**8.5**
		Bering Sea Snow	**17**	**18**	**21**	**17**	**16**	**18**	**16**	**17**	**8**	**7**	**17.5**	**7.5**
		Eastern Aleutian Golden	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**--**	**0**	**0**	**0.6**	**0.0**
		Western Aleutian Golden	**2**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1.9**	**1.0**
		Bering Tanner East	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**1**	**4**	**--**	**2.5**
		Bering Tanner West	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**7**	**5**	**--**	**6.0**
Other U.S.	**Other U.S. Total**	**Other U.S. Total**												
		Bristol Bay Red	**10**	**8**	**6**	**5**	**6**	**5**	**4**	**--**	**2**	**1**	**6.3**	**1.5**
		Bering Sea Snow	**9**	**9**	**7**	**5**	**5**	**4**	**4**	**2**	**2**	**1**	**5.6**	**1.5**
		Eastern Aleutian Golden	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**--**	**0**	**0**	**0.0**	**0**
		Western Aleutian Golden	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.0**	**0.0**
		Bering Tanner East	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**0**	**0**	**--**	**0.0**
		Bering Tanner West	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**0**	**1**	**--**	**0.5**
All States	**All States Total**	**All States Total**												
		Bristol Bay Red	**274**	**256**	**238**	**224**	**234**	**242**	**243**	**--**	**86**	**78**	**244.4**	**82.0**
		Bering Sea Snow	**229**	**241**	**222**	**201**	**182**	**185**	**183**	**161**	**75**	**65**	**200.5**	**70.0**
		Eastern Aleutian Golden	**14**	**15**	**15**	**19**	**19**	**18**	**19**	**--**	**6**	**5**	**17.0**	**5.5**
		Western Aleutian Golden	**10**	**3**	**15**	**11**	**8**	**5**	**5**	**5**	**3**	**2**	**7.8**	**2.5**
		Bering Tanner East	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**6**	**34**	**--**	**20.0**
		Bering Tanner West	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**42**	**35**	**--**	**38.5**

Source: Alaska Department of Fish and Game 2008.

Table A1-2b. BSAI Crab Vessel Count Averages by Community

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
Alaska	South-Central	Anchorage												
		Bristol Bay Red	1.8	2.0	1.7	1.8	1.7	2.5	2.5	--	3.5	5.1	2.0	4.3
		Bering Sea Snow	1.7	2.1	2.3	2.0	1.6	2.7	2.7	4.3	2.7	6.2	2.4	4.3
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	2.4	8.6	--	5.2
		Big Lake												
		Bristol Bay Red	0.0	0.0	0.4	0.0	0.0	0.0	0.0	--	0.0	0.0	0.1	0.0
		Bering Sea Snow	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Cordova												
		Bristol Bay Red	1.1	0.8	0.8	0.9	0.9	0.8	0.8	--	0.0	0.0	0.9	0.0
		Bering Sea Snow	0.9	1.2	0.9	1.0	0.5	0.5	1.1	0.6	0.0	0.0	0.9	0.0
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Kenai												
		Bristol Bay Red	0.4	0.4	0.4	0.4	0.0	0.0	0.0	--	0.0	0.0	0.2	0.0
		Bering Sea Snow	0.4	0.4	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.3	0.0
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Homer												
		Bristol Bay Red	2.9	2.7	2.9	3.1	3.0	2.5	2.5	--	3.5	3.8	2.8	3.7
		Bering Sea Snow	3.5	2.9	3.2	3.5	3.8	3.2	3.3	1.9	4.0	3.1	3.2	3.6
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	16.7	2.9	--	5.0
		Bering Tanner West	--	--	--	--	--	--	--	--	2.4	2.9	--	2.6
		Seldovia												
		Bristol Bay Red	0.4	0.4	0.4	0.4	0.4	0.4	0.4	--	0.0	1.3	0.4	0.6
		Bering Sea Snow	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	1.3	1.5	0.5	1.4
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	2.9	--	1.3
		South-Central Total												
		Bristol Bay Red	*6.6*	*6.3*	*6.7*	*6.7*	*6.0*	*6.2*	*6.2*	*--*	*7.0*	*10.3*	*6.4*	*8.5*

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
		Bering Sea Snow	*7.0*	*7.5*	*7.2*	*7.5*	*7.1*	*7.0*	*7.7*	*7.5*	*8.0*	*10.8*	*7.3*	*9.3*
		Eastern Aleutian Golden	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	--	*0.0*	*0.0*	*0.0*	*0.0*
		Western Aleutian Golden	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
		Bering Tanner East	--	--	--	--	--	--	--	--	*16.7*	*2.9*	--	*5.0*
		Bering Tanner West	--	--	--	--	--	--	--	--	*4.8*	*14.3*	--	*9.1*
	Southeast	Ketchikan												
		Bristol Bay Red	0.4	0.4	0.4	0.4	0.4	0.4	0.4	--	0.0	1.3	0.4	0.6
		Bering Sea Snow	0.9	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.0	1.5	0.6	0.7
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	2.9	--	2.5
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	2.9	--	1.3
		Petersburg												
		Bristol Bay Red	0.7	0.8	0.8	0.9	0.9	0.8	0.8	--	0.0	0.0	0.8	0.0
		Bering Sea Snow	0.9	0.8	0.9	1.0	1.1	1.1	1.1	1.2	0.0	0.0	1.0	0.0
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Sitka												
		Bristol Bay Red	0.7	0.4	0.8	0.9	0.9	0.8	0.4	--	0.0	0.0	0.7	0.0
		Bering Sea Snow	0.9	0.8	0.9	1.0	1.1	1.1	0.5	0.0	0.0	0.0	0.8	0.0
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Yakutat												
		Bristol Bay Red	0.4	0.0	0.4	0.4	0.4	0.4	0.4	--	0.0	0.0	0.4	0.0
		Bering Sea Snow	0.4	0.4	0.5	0.0	0.0	0.5	0.5	0.6	0.0	0.0	0.4	0.0
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Southeast Total												
		Bristol Bay Red	*2.2*	*1.6*	*2.5*	*2.7*	*2.6*	*2.5*	*2.1*	--	*0.0*	*1.3*	*2.3*	*0.6*
		Bering Sea Snow	*3.1*	*2.5*	*2.7*	*2.5*	*2.7*	*3.2*	*2.7*	*2.5*	*0.0*	*1.5*	*2.7*	*0.7*
		Eastern Aleutian Golden	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	--	*0.0*	*0.0*	*0.0*	*0.0*
		Western Aleutian Golden	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
		Bering Tanner East	--	--	--	--	--	--	--	--	*0.0*	*2.9*	--	*2.5*
		Bering Tanner West	--	--	--	--	--	--	--	--	*0.0*	*2.9*	--	*1.3*
	Aleutians	Dutch Harbor / Unalaska												
		Bristol Bay Red	1.5	1.6	0.8	0.9	0.9	0.8	0.4	--	0.0	0.0	1.0	0.0
		Bering Sea Snow	1.3	1.2	0.9	1.0	0.5	1.1	1.1	0.6	1.3	0.0	1.0	0.7
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
		King Cove												
		Bristol Bay Red	1.1	1.2	1.7	0.9	0.9	0.8	0.4	--	1.2	1.3	1.0	1.2
		Bering Sea Snow	0.9	0.8	1.4	1.0	0.5	0.5	0.0	0.0	0.0	0.0	0.7	0.0
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Sand Point												
		Bristol Bay Red	0.4	0.0	0.4	0.4	0.0	0.4	0.4	--	0.0	0.0	0.3	0.0
		Bering Sea Snow	0.4	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
		Eastern Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0
		Western Aleutian Golden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0.0	0.0	--	0.0
		Aleutians Total												
		Bristol Bay Red	*2.9*	*2.7*	*2.9*	*2.2*	*1.7*	*2.1*	*1.2*	--	*1.2*	*1.3*	2.3	1.2
		Bering Sea Snow	*2.6*	*2.1*	*2.7*	*2.0*	*1.1*	*1.6*	*1.1*	*0.6*	*1.3*	*0.0*	1.8	0.7
		Eastern Aleutian Golden	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	--	*0.0*	*0.0*	0.0	0.0
		Western Aleutian Golden	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	*0.0*	*0.0*	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	*0.0*	*0.0*	--	0.0
	All Subregions (non-Kodiak)	*All Subregions (non-Kodiak)*												
		Bristol Bay Red	*11.7*	*10.5*	*12.2*	*11.6*	*10.3*	*10.7*	*9.5*	--	*8.1*	*12.8*	10.9	10.4
		Bering Sea Snow	*12.7*	*12.0*	*12.6*	*11.9*	*11.0*	*11.9*	*11.5*	*10.6*	*9.3*	*12.3*	11.8	10.7
		Eastern Aleutian Golden	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	--	*0.0*	*0.0*	0.0	0.0
		Western Aleutian Golden	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	*16.7*	*5.9*	--	7.5
		Bering Tanner West	--	--	--	--	--	--	--	--	*4.8*	*17.1*	--	10.4
	Kodiak	Kodiak												
		Bristol Bay Red	12.4	11.7	13.9	14.3	15.0	14.0	15.2	--	16.3	14.1	13.7	15.2
		Bering Sea Snow	11.4	12.0	14.4	12.9	14.8	13.5	12.0	13.7	14.7	13.8	13.0	14.3
		Eastern Aleutian Golden	7.1	13.3	13.3	10.5	15.8	16.7	15.8	--	0.0	0.0	13.4	0.0
		Western Aleutian Golden	20.0	33.3	6.7	18.2	12.5	0.0	0.0	0.0	0.0	0.0	11.3	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	14.7	--	12.5
		Bering Tanner West	--	--	--	--	--	--	--	--	14.3	5.7	--	10.4
	Alaska Total	**Alaska Total**												
		Bristol Bay Red	**24.1**	**22.3**	**26.1**	**25.9**	**25.2**	**24.8**	**24.7**	**--**	**24.4**	**26.9**	**24.7**	**25.6**
		Bering Sea Snow	**24.0**	**24.1**	**27.0**	**24.9**	**25.8**	**25.4**	**23.5**	**24.2**	**24.0**	**26.2**	**24.9**	**25.0**
		Eastern Aleutian Golden	**7.1**	**13.3**	**13.3**	**10.5**	**15.8**	**16.7**	**15.8**	**--**	**0.0**	**0.0**	**13.4**	**0.0**
		Western Aleutian Golden	**20.0**	**33.3**	**6.7**	**18.2**	**12.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**11.3**	**0.0**
		Bering Tanner East	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**16.7**	**20.6**	**--**	**20.0**
		Bering Tanner West	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**19.0**	**22.9**	**--**	**20.8**
Washington	Seattle CMSA	Seattle CMSA												
		Bristol Bay Red	58.0	58.6	55.9	57.1	56.0	56.2	56.8	--	53.5	56.4	57.0	54.9
		Bering Sea Snow	56.8	56.8	52.7	56.2	54.4	53.0	55.7	56.5	58.7	58.5	55.3	58.6
		Eastern Aleutian Golden	78.6	73.3	73.3	78.9	78.9	77.8	78.9	--	83.3	80.0	77.3	81.8

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
		Western Aleutian Golden	50.0	33.3	73.3	54.5	62.5	60.0	60.0	60.0	66.7	50.0	59.7	60.0
		Bering Tanner East	--	--	--	--	--	--	--	--	66.7	64.7	--	65.0
		Bering Tanner West	--	--	--	--	--	--	--	--	61.9	57.1	--	59.7
	Other Washington	Other Washington												
		Bristol Bay Red	7.3	7.8	8.0	6.3	7.7	7.9	8.2	--	8.1	6.4	7.6	7.3
		Bering Sea Snow	7.9	7.9	7.7	8.0	8.2	9.7	9.8	7.5	4.0	3.1	8.3	3.6
		Eastern Aleutian Golden	7.1	6.7	6.7	5.3	5.3	5.6	5.3	--	16.7	20.0	5.9	18.2
		Western Aleutian Golden	10.0	0.0	6.7	9.1	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0.0	2.9	--	2.5
		Bering Tanner West	--	--	--	--	--	--	--	--	2.4	2.9	--	2.6
	Washington Total	**Washington Total**												
		Bristol Bay Red	**65.3**	**66.4**	**63.9**	**63.4**	**63.7**	**64.0**	**65.0**	**--**	**61.6**	**62.8**	**64.6**	**62.2**
		Bering Sea Snow	**64.6**	**64.7**	**60.4**	**64.2**	**62.6**	**62.7**	**65.6**	**64.0**	**62.7**	**61.5**	**63.6**	**62.1**
		Eastern Aleutian Golden	**85.7**	**80.0**	**80.0**	**84.2**	**84.2**	**83.3**	**84.2**	**--**	**100.0**	**100.0**	**83.2**	**100.0**
		Western Aleutian Golden	**60.0**	**33.3**	**80.0**	**63.6**	**62.5**	**60.0**	**60.0**	**60.0**	**66.7**	**50.0**	**64.5**	**60.0**
		Bering Tanner East	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**66.7**	**67.6**	**--**	**67.5**
		Bering Tanner West	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**64.3**	**60.0**	**--**	**62.3**
Oregon	**Oregon Total**	**Oregon Total**												
		Bristol Bay Red	**6.9**	**8.2**	**7.6**	**8.5**	**8.5**	**9.1**	**8.6**	**--**	**11.6**	**9.0**	**8.2**	**10.4**
		Bering Sea Snow	**7.4**	**7.5**	**9.5**	**8.5**	**8.8**	**9.7**	**8.7**	**10.6**	**10.7**	**10.8**	**8.7**	**10.7**
		Eastern Aleutian Golden	**7.1**	**6.7**	**6.7**	**5.3**	**0.0**	**0.0**	**0.0**	**--**	**0.0**	**0.0**	**3.4**	**0.0**
		Western Aleutian Golden	**20.0**	**33.3**	**13.3**	**18.2**	**25.0**	**40.0**	**40.0**	**40.0**	**33.3**	**50.0**	**24.2**	**40.0**
		Bering Tanner East	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**16.7**	**11.8**	**--**	**12.5**
		Bering Tanner West	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**16.7**	**14.3**	**--**	**15.6**
Other U.S.	**Other U.S. Total**	**Other U.S. Total**												
		Bristol Bay Red	**3.6**	**3.1**	**2.5**	**2.2**	**2.6**	**2.1**	**1.6**	**--**	**2.3**	**1.3**	**2.6**	**1.8**
		Bering Sea Snow	**3.9**	**3.7**	**3.2**	**2.5**	**2.7**	**2.2**	**2.2**	**1.2**	**2.7**	**1.5**	**2.8**	**2.1**
		Eastern Aleutian Golden	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**--**	**0.0**	**0.0**	**0.0**	**0.0**
		Western Aleutian Golden	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Bering Tanner East	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**0.0**	**0.0**	**--**	**0.0**
		Bering Tanner West	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**0.0**	**2.9**	**--**	**1.3**
All States	**All States Total**	**All States Total**												
		Bristol Bay Red	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**--**	**100.0**	**100.0**	**100.0**	**100.0**
		Bering Sea Snow	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
		Eastern Aleutian Golden	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**--**	**100.0**	**100.0**	**100.0**	**100.0**
		Western Aleutian Golden	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
		Bering Tanner East	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**100.0**	**100.0**	**--**	**100.0**
		Bering Tanner West	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**100.0**	**100.0**	**--**	**100.0**

Source: Alaska Department of Fish and Game 2008.

Table A1-3a. BSAI Crab Catcher Vessel Harvest Volume by Community

State	Subarea	Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
Alaska	All Subregions (non-Kodiak)	Bristol Bay Red	1,237,549	1,147,427	938,891	847,751	848,783	1,226,946	1,275,652	--	1,492,608	1,395,789	1,074,714	1,444,199
		Bering Sea Snow	23,250,949	17,999,883	3,119,774	1,904,655	2,465,715	2,302,826	2,202,644	1,961,267	2,937,072	6,275,436	6,900,964	4,606,254
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0	0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0	0
		Bering Tanner East	--	--	--	--	--	--	--	--	*	*	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	*	59,252	--	**
	Kodiak	Bristol Bay Red	1,297,230	1,189,968	853,143	902,199	1,263,540	1,736,672	1,611,396	--	1,807,021	1,715,877	1,264,878	1,761,449
		Bering Sea Snow	23,953,304	19,912,153	3,588,875	2,404,699	3,574,069	3,205,202	2,460,563	3,140,499	2,922,280	3,915,030	7,779,921	3,418,655
		Eastern Aleutian Golden	*	*	*	*	*	*	*	--	0	0	0	0
		Western Aleutian Golden	*	*	*	*	*	0	0	0	0	0	0	0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	113,243	--	56,622
		Bering Tanner West	--	--	--	--	--	--	--	--	102,002	*	--	**
	Alaska Total	**Bristol Bay Red**	**2,534,779**	**2,337,395**	**1,792,034**	**1,749,950**	**2,112,323**	**2,963,618**	**2,887,048**	**--**	**3,299,629**	**3,111,666**	**2,339,592**	**3,205,648**
		Bering Sea Snow	**47,204,253**	**37,912,036**	**6,708,649**	**4,309,354**	**6,039,784**	**5,508,028**	**4,663,207**	**5,101,766**	**5,859,352**	**10,190,466**	**14,680,885**	**8,024,909**
		Eastern Aleutian Golden	*	*	*	*	*	*	*	--	**0**	**0**	**	**0**
		Western Aleutian Golden	*	*	*	*	*	**0**	**0**	**0**	**0**	**0**	**	**0**
		Bering Tanner East	--	--	--	--	--	--	--	--	*	*	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	*	*	--	**
Washington Total		**Bristol Bay Red**	**9,964,718**	**7,459,739**	**4,867,175**	**4,920,492**	**5,524,579**	**9,284,493**	**9,252,916**	**--**	**10,602,563**	**8,618,371**	**7,324,873**	**9,610,467**
		Bering Sea Snow	**170,375,037**	**126,862,922**	**19,155,686**	**13,664,406**	**19,147,390**	**16,502,486**	**14,315,749**	**14,403,925**	**19,534,818**	**15,537,972**	**49,303,450**	**17,536,395**
		Eastern Aleutian Golden	**2,409,697**	**2,338,356**	**2,202,494**	**2,592,414**	**2,455,371**	**2,558,748**	**2,397,996**	**--**	**2,548,282**	**2,671,367**	**2,422,154**	**2,609,825**
		Western Aleutian Golden	**662,233**	*	**845,478**	**699,832**	**774,455**	*	*	*	*	*	**372,750**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**38,176**	**741,043**	--	**389,610**
		Bering Tanner West	--	--	--	--	--	--	--	--	**572,932**	**238,926**	--	**405,929**
Oregon and Other U.S.* Total**		**Bristol Bay Red**	**1,790,774**	**1,249,965**	**675,470**	**793,173**	**918,664**	**1,600,121**	**1,366,432**	**--**	**2,021,066**	**1,634,636**	**1,199,228**	**1,827,851**
		Bering Sea Snow	**25,670,910**	**19,918,827**	**3,433,275**	**2,257,537**	**3,325,160**	**3,260,644**	**2,525,167**	**2,727,355**	**5,486,810**	**4,170,983**	**7,889,859**	**4,828,897**
		Eastern Aleutian Golden	*	*	*	*	**0**	**0**	**0**	--	**0**	**0**	**0**	**0**
		Western Aleutian Golden	*	*	*	*	*	*	*	*	*	*	**0**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	*	**463,805**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**36,620**	**179,174**	--	**107,897**
All States Total		**Bristol Bay Red**	**14,290,271**	**11,047,099**	**7,334,679**	**7,463,615**	**8,555,566**	**13,848,232**	**13,506,396**	**--**	**15,923,258**	**13,364,673**	**10,863,694**	**14,643,966**
		Bering Sea Snow	**243,250,200**	**184,693,785**	**29,297,610**	**20,231,297**	**28,512,334**	**25,271,158**	**21,504,123**	**22,233,046**	**30,880,980**	**29,899,421**	**71,874,194**	**30,390,201**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**

*Data suppressed due to confidentiality.
**Computation suppressed due to confidentiality of primary data.
***Oregon and Other U.S. combined to allow for display of otherwise confidential data for Bristol Bay Red and Bering Sea Snow.
Source: Alaska Department of Fish and Game 2008.

Table A1-3b. BSAI Crab Catcher Vessel Harvest Volume Percentages by Community

State	Subarea	Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
Alaska	All Subregions (non-Kodiak)	Bristol Bay Red	8.7	10.4	12.8	11.4	9.9	8.9	9.4	--	9.4	10.4	9.9	9.9
		Bering Sea Snow	9.6	9.7	10.6	9.4	8.6	9.1	10.2	8.8	9.5	21.0	9.6	15.2
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
	Kodiak	Bristol Bay Red	9.1	10.8	11.6	12.1	14.8	12.5	11.9	--	11.3	12.8	11.6	12.0
		Bering Sea Snow	9.8	10.8	12.2	11.9	12.5	12.7	11.4	14.1	9.5	13.1	10.8	11.2
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
	Alaska Total	**Bristol Bay Red**	**17.7**	**21.2**	**24.4**	**23.4**	**24.7**	**21.4**	**21.4**	**--**	**20.7**	**23.3**	**21.5**	**21.9**
		Bering Sea Snow	**19.4**	**20.5**	**22.9**	**21.3**	**21.2**	**21.8**	**21.7**	**22.9**	**19.0**	**34.1**	**20.4**	**26.4**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
Washington Total		**Bristol Bay Red**	**69.7**	**67.5**	**66.4**	**65.9**	**64.6**	**67.0**	**68.5**	**--**	**66.6**	**64.5**	**67.4**	**65.6**
		Bering Sea Snow	**70.0**	**68.7**	**65.4**	**67.5**	**67.2**	**65.3**	**66.6**	**64.8**	**63.3**	**52.0**	**68.6**	**57.7**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
Oregon and Other U.S.* Total**		**Bristol Bay Red**	**12.5**	**11.3**	**9.2**	**10.6**	**10.7**	**11.6**	**10.1**	**--**	**12.7**	**12.2**	**11.0**	**12.5**
		Bering Sea Snow	**10.6**	**10.8**	**11.7**	**11.2**	**11.7**	**12.9**	**11.7**	**12.3**	**17.8**	**14.0**	**11.0**	**15.9**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
All States Total		**Bristol Bay Red**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**--**	**100.0**	**100.0**	**100.0**	**100.0**
		Bering Sea Snow	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**

**Computation suppressed due to confidentiality of primary data.
***Oregon and Other U.S. combined to allow for display of otherwise confidential data for Bristol Bay Red and Bering Sea Snow.
Source: Alaska Department of Fish and Game 2008.

Table A1-4a. BSAI Crab Catcher Vessel Harvest Value by Community

State	Subarea	Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
Alaska	All Subregions (non-Kodiak)	Bristol Bay Red	$3,236,518	$7,149,807	$4,372,490	$3,987,452	$5,196,545	$6,095,885	$5,879,221	--	$6,505,986	$5,005,543	$5,131,131	$5,755,764
		Bering Sea Snow	$12,989,533	$17,519,298	$5,677,963	$2,898,706	$3,331,094	$4,134,724	$4,466,214	$3,488,705	$3,346,691	$9,269,497	$6,813,280	$6,308,094
		Eastern Aleutian Golden	$0	$0	$0	$0	$0	$0	$0	--	$0	$0	$0	$0
		Western Aleutian Golden	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Bering Tanner East	--	--	--	--	--	--	--	--	*	*	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	*	$56,070	--	**
	Kodiak	Bristol Bay Red	$3,375,858	$7,391,323	$4,050,744	$4,203,139	$7,843,530	$8,708,171	$7,546,789	--	$8,083,690	$6,440,854	$6,159,936	$7,262,272
		Bering Sea Snow	$13,434,861	$19,403,680	$6,709,660	$3,684,297	$4,825,809	$5,470,035	$5,061,370	$5,635,204	$3,341,832	$5,785,428	$8,028,114	$4,563,630
		Eastern Aleutian Golden	*	*	*	*	*	*	*	--	$0	$0	**	$0
		Western Aleutian Golden	*	*	*	*	*	$0	$0	$0	$0	$0	**	$0
		Bering Tanner East	--	--	--	--	--	--	--	--	$0	$149,338	--	$74,669
		Bering Tanner West	--	--	--	--	--	--	--	--	$129,217	*	--	**
	Alaska Total	**Bristol Bay Red**	**$6,612,376**	**$14,541,130**	**$8,423,233**	**$8,190,591**	**$13,040,075**	**$14,804,056**	**$13,426,010**	**--**	**$14,589,676**	**$11,446,398**	**$11,291,068**	**$13,018,037**
		Bering Sea Snow	**$26,424,393**	**$36,922,978**	**$12,387,623**	**$6,583,003**	**$8,156,903**	**$9,604,759**	**$9,527,584**	**$9,123,909**	**$6,688,523**	**$15,054,925**	**$14,841,394**	**$10,871,724**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**$0**	**$0**	**	**$0**
		Western Aleutian Golden	**	**	**	**	**	**$0**	**$0**	**$0**	**$0**	**$0**	**	**$0**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
Washington Total		**Bristol Bay Red**	**$26,021,242**	**$46,303,917**	**$22,856,365**	**$23,091,670**	**$33,798,376**	**$46,450,769**	**$42,968,657**	**--**	**$46,317,875**	**$31,380,818**	**$34,498,714**	**$38,849,347**
		Bering Sea Snow	**$95,007,129**	**$123,359,977**	**$34,983,610**	**$20,687,055**	**$25,838,646**	**$29,684,599**	**$29,027,832**	**$25,845,408**	**$22,422,398**	**$22,745,856**	**$48,054,282**	**$22,584,127**
		Eastern Aleutian Golden	**$4,458,525**	**$7,072,891**	**$7,536,831**	**$8,256,486**	**$8,363,225**	**$8,934,928**	**$7,544,368**	**--**	**$6,939,800**	**$5,065,270**	**$7,452,465**	**$6,002,535**
		Western Aleutian Golden	**$1,192,775**	*	**$2,559,934**	**$2,225,305**	**$2,490,340**	*	*	*	*	*	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**$57,524**	**$1,070,053**	--	**$563,788**
		Bering Tanner West	--	--	--	--	--	--	--	--	**$863,117**	**$336,602**	--	**$599,859**
Oregon and Other U.S. * Total**		**Bristol Bay Red**	**$4,680,146**	**$7,766,751**	**$3,200,142**	**$3,755,885**	**$5,675,430**	**$7,978,148**	**$6,376,208**	**--**	**$8,933,281**	**$6,019,908**	**$5,633,244**	**$7,476,595**
		Bering Sea Snow	**$14,358,633**	**$19,446,562**	**$6,295,505**	**$3,442,454**	**$4,521,269**	**$5,898,678**	**$5,134,299**	**$4,883,827**	**$6,239,374**	**$6,145,364**	**$7,997,653**	**$6,192,369**
		Eastern Aleutian Golden	*	*	*	*	**$0**	**$0**	**$0**	--	**$0**	**$0**	**	**$0**
		Western Aleutian Golden	*	*	*	*	*	*	*	*	*	*	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	*	**$614,655**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**$45,994**	**$256,987**	--	**$151,490**
All States Total		**Bristol Bay Red**	**$37,313,764**	**$68,611,798**	**$34,479,741**	**$35,038,146**	**$52,513,881**	**$69,232,974**	**$62,770,874**	**--**	**$69,840,832**	**$48,847,124**	**$51,423,025**	**$59,343,978**
		Bering Sea Snow	**$135,790,155**	**$179,729,517**	**$53,666,737**	**$30,712,512**	**$38,516,817**	**$45,188,036**	**$43,689,714**	**$39,853,144**	**$35,350,295**	**$43,946,145**	**$70,893,329**	**$39,648,220**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**

*Data suppressed due to confidentiality.
**Computation suppressed due to confidentiality of primary data.
***Oregon and Other U.S. combined to allow for display of otherwise confidential data for Bristol Bay Red and Bering Sea Snow.
Source: Alaska Department of Fish and Game 2008; Alaska Commercial Fisheries Entry Commission 2008.

Table A1-4b. BSAI Crab Catcher Vessel Harvest Value Percentages by Community

State	Subarea	Species	1998	1999	2000	2001	2002	2003	2004	2005	2005-2006	2006-2007	Pre-Rationalization Average	Post-Rationalization Average
Alaska	All Subregions (non-Kodiak)	Bristol Bay Red	8.7	10.4	12.7	11.4	9.9	8.8	9.4	--	9.3	10.2	10.0	9.7
		Bering Sea Snow	9.6	9.7	10.6	9.4	8.6	9.2	10.2	8.8	9.5	21.1	9.6	15.9
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
	Kodiak	Bristol Bay Red	9.0	10.8	11.7	12.0	14.9	12.6	12.0	--	11.6	13.2	12.0	12.2
		Bering Sea Snow	9.9	10.8	12.5	12.0	12.5	12.1	11.6	14.1	9.5	13.2	11.3	11.5
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
	Alaska Total	**Bristol Bay Red**	**17.7**	**21.2**	**24.4**	**23.4**	**24.8**	**21.4**	**21.4**	**--**	**20.9**	**23.4**	**22.0**	**21.9**
		Bering Sea Snow	**19.5**	**20.5**	**23.1**	**21.4**	**21.2**	**21.3**	**21.8**	**22.9**	**18.9**	**34.3**	**20.9**	**27.4**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
Washington Total		**Bristol Bay Red**	**69.7**	**67.5**	**66.3**	**65.9**	**64.4**	**67.1**	**68.5**	**--**	**66.3**	**64.2**	**67.1**	**65.5**
		Bering Sea Snow	**70.0**	**68.6**	**65.2**	**67.4**	**67.1**	**65.7**	**66.4**	**64.9**	**63.4**	**51.8**	**67.8**	**57.0**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
Oregon and Other U.S.* Total**		**Bristol Bay Red**	**12.5**	**11.3**	**9.3**	**10.7**	**10.8**	**11.5**	**10.2**	**--**	**12.8**	**12.3**	**11.0**	**12.6**
		Bering Sea Snow	**10.6**	**10.8**	**11.7**	**11.2**	**11.7**	**13.1**	**11.8**	**12.3**	**17.7**	**14.0**	**11.3**	**15.6**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**
All States Total		**Bristol Bay Red**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**--**	**100.0**	**100.0**	**100.0**	**100.0**
		Bering Sea Snow	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
		Eastern Aleutian Golden	**	**	**	**	**	**	**	--	**	**	**	**
		Western Aleutian Golden	**	**	**	**	**	**	**	**	**	**	**	**
		Bering Tanner East	--	--	--	--	--	--	--	--	**	**	--	**
		Bering Tanner West	--	--	--	--	--	--	--	--	**	**	--	**

**Computation suppressed due to confidentiality of primary data.
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Source: Alaska Department of Fish and Game 2008; Alaska Commercial Fisheries Entry Commission 2008.

Table A1-5a. BSAI Crab Vessel Harvest Diversity by Volume

State	Subarea	Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Pre-Rationalization Average (1998-2004)	Post-Rationalization Average (2006-2007)
Alaska	All Subregions (non-Kodiak)	Rationalized Crab	24,488,498	19,147,310	4,058,665	2,752,406	3,314,498	3,529,772	3,478,296	3,453,875	4,348,040	9,743,099	8,681,349	7,045,570
		Non-Rationalized Crab	1,364,487	2,132,574	648,015	988,095	1,159,801	590,943	213,208	140,892	321,265	1,677,022	1,013,875	999,144
		Groundfish	9,620,657	9,505,826	11,268,832	10,831,472	10,199,220	8,782,269	7,092,181	10,401,336	11,030,491	10,042,500	9,614,351	10,536,496
		Salmon	740,979	877,015	300,766	651,506	326,111	2,057,631	4,619,647	3,792,999	2,389,695	4,182,065	1,367,665	3,285,880
		Herring	0	0	0	0	0	0	0	0	0	0	0	0
		Halibut	552,432	641,648	617,024	753,621	758,127	522,931	382,448	469,910	456,862	0	604,033	228,431
		Other Species	6,019	53,279	8,112	2,457	18,086	523	50,168	33,139	20,918	26,026	19,806	23,472
	Kodiak	Rationalized Crab	26,767,190	22,606,814	4,876,033	3,733,898	5,255,783	5,360,181	4,560,780	5,023,184	4,664,771	6,819,689	10,451,526	5,742,230
		Non-Rationalized Crab	646,151	771,620	382,322	546,075	503,386	157,620	128,355	173,454	262,068	206,204	447,933	234,136
		Groundfish	41,912,058	44,520,051	44,520,051	51,614,543	58,944,925	62,929,355	69,679,934	64,028,281	61,031,762	51,635,078	53,445,845	56,333,420
		Salmon	0	1,245	0	803	0	0	3,453,801	0	2,292,683	538,340	493,693	1,415,512
		Herring	54,429	0	0	0	0	0	0	0	0	0	7,776	0
		Halibut	2,432,201	2,284,203	2,320,849	2,634,201	2,905,366	2,659,774	2,704,280	2,275,924	1,918,763	1,918,763	2,562,982	1,918,763
		Other Species	53,180	50,359	37,793	63,833	127,736	141,828	403,880	222,271	419,091	419,091	125,516	419,091
	Alaska Total	**Rationalized Crab**	**51,255,688**	**41,754,124**	**8,934,698**	**6,486,304**	**8,570,281**	**8,889,953**	**8,039,076**	**8,477,059**	**9,012,811**	**16,562,788**	**19,132,875**	**12,787,800**
		Non-Rationalized Crab	**2,010,638**	**2,904,194**	**1,030,337**	**1,534,170**	**1,663,187**	**748,563**	**341,563**	**314,346**	**583,333**	**1,883,226**	**1,461,807**	**1,233,280**
		Groundfish	**51,532,715**	**54,025,877**	**55,788,883**	**62,446,015**	**69,144,145**	**71,711,624**	**76,772,115**	**74,429,617**	**72,062,253**	**61,677,578**	**63,060,196**	**66,869,916**
		Salmon	**740,979**	**878,260**	**300,766**	**652,309**	**326,111**	**2,057,631**	**8,073,448**	**3,792,999**	**4,682,378**	**4,720,405**	**1,861,358**	**4,701,392**
		Herring	**54,429**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7,776**	**0**
		Halibut	**2,984,633**	**2,925,851**	**2,937,873**	**3,387,822**	**3,663,493**	**3,182,705**	**3,086,728**	**2,745,834**	**2,375,625**	**1,918,763**	**3,167,015**	**2,147,194**
		Other Species	**59,199**	**103,638**	**45,905**	**66,290**	**145,822**	**142,351**	**454,048**	**255,410**	**440,009**	**445,117**	**145,322**	**442,563**
Washington Total		**Rationalized Crab**	**183,338,398**	**136,981,071**	**26,927,950**	**22,162,911**	**27,593,665**	**28,716,080**	**26,296,105**	**28,266,702**	**31,883,758**	**28,561,065**	**64,573,740**	**30,222,412**
		Non-Rationalized Crab	**5,064,603**	**6,778,217**	**2,420,790**	**1,503,261**	**2,168,817**	**2,875,626**	**2,952,537**	**3,783,263**	**4,783,517**	**3,882,827**	**3,394,836**	**4,333,172**
		Groundfish	**489,167,072**	**504,190,620**	**605,110,132**	**663,739,943**	**690,871,965**	**674,449,446**	**699,903,753**	**704,028,277**	**736,275,546**	**527,313,036**	**618,204,704**	**631,794,291**
		Salmon	**1,510,925**	**1,810,448**	**691,467**	**487,571**	**0**	**654**	**2,472,467**	**1,714,023**	**1,040,245**	**1,364,466**	**996,219**	**1,202,356**
		Herring	**0**	**0**	**0**	**0**	**0**	**2,496**	**0**	**0**	**0**	**0**	**357**	**0**
		Halibut	**312,078**	**359,140**	**598,033**	**60,896**	**139,511**	**292,356**	**297,667**	**272,551**	**434,539**	**0**	**294,240**	**217,270**
		Other Species	**591,746**	**84,007**	**107,966**	**545,887**	**497,751**	**513,074**	**576,035**	**1,151,710**	**626,456**	**317,053**	**416,638**	**471,755**
Oregon and Other U.S.* Total**		**Rationalized Crab**	**28,534,555**	**22,249,234**	**5,743,840**	**4,497,922**	**5,676,199**	**6,684,907**	**5,899,944**	**5,599,962**	**8,024,888**	**7,437,618**	**11,326,657**	**7,731,253**
		Non-Rationalized Crab	**467,160**	**1,220,351**	**203,674**	**211,808**	**304,019**	**172,841**	**204,220**	**127,010**	**428,581**	**141,786**	**397,725**	**285,184**
		Groundfish	**40,651,800**	**48,230,011**	**49,995,887**	**60,104,033**	**60,673,351**	**64,741,019**	**69,293,332**	**70,959,848**	**66,885,511**	**51,115,899**	**56,241,348**	**59,000,705**
		Salmon	**2,461**	**2,704**	**0**	**1,073**	**0**	**481**	**0**	**0**	**0**	**0**	**960**	**0**
		Herring	**0**	**0**	**0**	**0**	**0**	**100,260**	**0**	**0**	**0**	**0**	**14,323**	**0**
		Halibut	**1,292,644**	**1,658,471**	**1,770,207**	**1,935,966**	**1,942,153**	**1,968,489**	**1,720,167**	**1,500,461**	**1,158,798**	**0**	**1,755,442**	**579,399**
		Other Species	**42,784**	**35,486**	**20,520**	**209,009**	**43,830**	**97,156**	**176,347**	**323,970**	**179,399**	**69,586**	**89,305**	**124,493**
All States Total		**Rationalized Crab**	**263,128,641**	**200,984,429**	**41,606,488**	**33,147,137**	**41,840,145**	**44,290,940**	**40,235,125**	**42,343,723**	**48,921,457**	**52,561,471**	**95,033,272**	**50,741,464**
		Non-Rationalized Crab	**7,542,401**	**10,902,762**	**3,654,801**	**3,249,239**	**4,136,023**	**3,797,030**	**3,498,320**	**4,224,619**	**5,795,431**	**5,907,839**	**5,254,368**	**5,851,635**
		Groundfish	**581,351,587**	**606,446,508**	**710,894,902**	**786,289,991**	**820,689,461**	**810,902,089**	**845,969,200**	**849,417,742**	**875,223,310**	**640,106,513**	**737,506,248**	**757,664,912**
		Salmon	**2,254,365**	**2,691,412**	**992,233**	**1,140,953**	**326,111**	**2,058,766**	**10,545,915**	**5,507,022**	**5,722,623**	**6,084,871**	**2,858,536**	**5,903,747**
		Herring	**54,429**	**0**	**0**	**0**	**0**	**102,756**	**0**	**0**	**0**	**0**	**22,455**	**0**
		Halibut	**4,589,355**	**4,943,462**	**5,306,113**	**5,384,684**	**5,745,157**	**5,443,550**	**5,104,562**	**4,518,846**	**3,968,962**	**1,918,763**	**5,216,698**	**2,943,863**
		Other Species	**693,729**	**223,131**	**174,391**	**821,186**	**687,403**	**752,581**	**1,206,430**	**1,731,090**	**1,245,864**	**831,756**	**651,264**	**1,038,810**

***Oregon and Other U.S. combined to allow for display of otherwise confidential data for Bristol Bay Red and Bering Sea Snow.
Source: Alaska Department of Fish and Game 2008.

Table A1-5b. BSAI Crab Vessel Harvest Diversity by Volume (percentage)

State	Subarea	Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Pre-Rationalization Average (1998-2004)	Post-Rationalization Average (2006-2007)
Alaska	All Subregions (non-Kodiak)	Rationalized Crab	66.6	59.2	24.0	17.2	21.0	22.8	22.0	18.9	23.4	38.0	40.8	31.9
		Non-Rationalized Crab	3.7	6.6	3.8	6.2	7.4	3.8	1.3	0.8	1.7	6.5	4.8	4.5
		Groundfish	26.2	29.4	66.7	67.8	64.7	56.7	44.8	56.9	59.4	39.1	45.1	47.6
		Salmon	2.0	2.7	1.8	4.1	2.1	13.3	29.2	20.7	12.9	16.3	6.4	14.9
		Herring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Halibut	1.5	2.0	3.7	4.7	4.8	3.4	2.4	2.6	2.5	0.0	2.8	1.0
		Other Species	0.0	0.2	0.0	0.0	0.1	0.0	0.3	0.2	0.1	0.1	0.1	0.1
		TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Kodiak	Rationalized Crab	37.2	32.2	9.4	6.4	7.8	7.5	5.6	7.0	6.6	11.1	15.5	8.7
		Non-Rationalized Crab	0.9	1.1	0.7	0.9	0.7	0.2	0.2	0.2	0.4	0.3	0.7	0.4
		Groundfish	58.3	63.4	85.4	88.1	87.0	88.3	86.1	89.3	86.5	83.9	79.1	85.3
		Salmon	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	3.2	0.9	0.7	2.1
		Herring	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Halibut	3.4	3.3	4.5	4.5	4.3	3.7	3.3	3.2	2.7	3.1	3.8	2.9
		Other Species	0.1	0.1	0.1	0.1	0.2	0.2	0.5	0.3	0.6	0.7	0.2	0.6
		TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Alaska Total	**Rationalized Crab**	**47.2**	**40.7**	**12.9**	**8.7**	**10.3**	**10.2**	**8.3**	**9.4**	**10.1**	**19.0**	**21.5**	**14.5**
		Non-Rationalized Crab	**1.9**	**2.8**	**1.5**	**2.1**	**2.0**	**0.9**	**0.4**	**0.3**	**0.7**	**2.2**	**1.6**	**1.4**
		Groundfish	**47.4**	**52.7**	**80.8**	**83.7**	**82.8**	**82.7**	**79.3**	**82.7**	**80.8**	**70.7**	**71.0**	**75.8**
		Salmon	**0.7**	**0.9**	**0.4**	**0.9**	**0.4**	**2.4**	**8.3**	**4.2**	**5.3**	**5.4**	**2.1**	**5.3**
		Herring	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Halibut	**2.7**	**2.9**	**4.3**	**4.5**	**4.4**	**3.7**	**3.2**	**3.1**	**2.7**	**2.2**	**3.6**	**2.4**
		Other Species	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.5**	**0.3**	**0.5**	**0.5**	**0.2**	**0.5**
		TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Washington Total		**Rationalized Crab**	**27.0**	**21.1**	**12.9**	**3.2**	**3.8**	**4.1**	**3.6**	**3.8**	**4.1**	**5.1**	**9.4**	**4.5**
		Non-Rationalized Crab	**0.7**	**1.0**	**1.5**	**0.2**	**0.3**	**0.4**	**0.4**	**0.5**	**0.6**	**0.7**	**0.5**	**0.6**
		Groundfish	**71.9**	**77.5**	**80.8**	**96.4**	**95.8**	**95.4**	**95.6**	**95.2**	**95.0**	**93.9**	**89.9**	**94.5**
		Salmon	**0.2**	**0.3**	**0.4**	**0.1**	**0.0**	**0.0**	**0.3**	**0.2**	**0.1**	**0.2**	**0.1**	**0.2**
		Herring	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Halibut	**0.0**	**0.1**	**4.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**
		Other Species	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**
		TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Oregon and Other U.S.* Total**		**Rationalized Crab**	**40.2**	**30.3**	**9.9**	**6.7**	**8.3**	**9.1**	**7.6**	**7.1**	**10.5**	**12.7**	**16.2**	**11.4**
		Non-Rationalized Crab	**0.7**	**1.7**	**0.4**	**0.3**	**0.4**	**0.2**	**0.3**	**0.2**	**0.6**	**0.2**	**0.6**	**0.4**
		Groundfish	**57.3**	**65.7**	**86.6**	**89.8**	**88.4**	**87.8**	**89.6**	**90.4**	**87.2**	**87.0**	**80.5**	**87.1**
		Salmon	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Herring	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Halibut	**1.8**	**2.3**	**3.1**	**2.9**	**2.8**	**2.7**	**2.2**	**1.9**	**1.5**	**0.0**	**2.5**	**0.9**
		Other Species	**0.1**	**0.0**	**0.0**	**0.3**	**0.1**	**0.1**	**0.2**	**0.4**	**0.2**	**0.1**	**0.1**	**0.2**
		TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

State	Subarea	Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Pre-Rationalization Average (1998-2004)	Post-Rationalization Average (2006-2007)
All States Total		**Rationalized Crab**	**30.6**	**24.3**	**5.5**	**4.0**	**4.8**	**5.1**	**4.4**	**4.7**	**5.2**	**7.4**	**11.2**	**6.2**
		Non-Rationalized Crab	**0.9**	**1.3**	**0.5**	**0.4**	**0.5**	**0.4**	**0.4**	**0.5**	**0.6**	**0.8**	**0.6**	**0.7**
		Groundfish	**67.6**	**73.4**	**93.2**	**94.7**	**94.0**	**93.5**	**93.3**	**93.6**	**93.0**	**90.5**	**87.1**	**91.9**
		Salmon	**0.3**	**0.3**	**0.1**	**0.1**	**0.0**	**0.2**	**1.2**	**0.6**	**0.6**	**0.9**	**0.3**	**0.7**
		Herring	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Halibut	**0.5**	**0.6**	**0.7**	**0.6**	**0.7**	**0.6**	**0.6**	**0.5**	**0.4**	**0.3**	**0.6**	**0.4**
		Other Species	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**
		TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

***Oregon and Other U.S. combined to allow for display of otherwise confidential data for Bristol Bay Red and Bering Sea Snow.
Source: Alaska Department of Fish and Game 2008.

Table A1-6a. BSAI Crab Vessel Harvest Diversity by Value

State	Subarea	Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Pre-Rationalization Average (1998-2004)	Post-Rationalization Average (2006-2007)
Alaska	All Subregions (non-Kodiak)	Rationalized Crab	$16,226,050	$24,669,105	$10,050,453	$6,886,159	$8,527,639	$10,230,609	$10,345,435	$9,994,690	$8,372,934	$23,517,929	$12,419,350	$15,945,432
		Non-Rationalized Crab	$2,088,379	$2,413,788	$1,451,952	$2,258,975	$3,351,998	$1,457,081	$342,562	$182,426	$581,487	$4,437,640	$1,909,248	$2,509,563
		Groundfish	$1,292,896	$1,803,587	$2,963,575	$2,354,777	$2,623,142	$2,566,570	$1,799,881	$2,132,660	$3,274,050	$4,109,328	$2,200,633	$3,691,689
		Salmon	$148,952	$370,416	$66,089	$83,018	$83,602	$192,463	$434,390	$452,802	$439,258	$716,336	$196,990	$577,797
		Herring	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		Halibut	$640,762	$1,246,538	$1,537,996	$1,465,676	$1,720,525	$1,482,328	$1,135,784	$1,423,655	$1,684,776	$0	$1,318,515	$842,388
		Other Species	$295	$19,281	$2,781	$55	$1,654	$7	$27,394	$16,019	$6,352	$10,179	$7,353	$8,266
	Kodiak	Rationalized Crab	$19,641,327	$31,433,399	$12,194,084	$9,237,239	$14,090,361	$15,629,752	$14,130,475	$13,807,655	$9,823,435	$17,684,284	$16,622,377	$13,753,859
		Non-Rationalized Crab	$1,232,659	$1,513,900	$1,044,606	$1,831,060	$1,042,521	$521,638	$151,211	$334,795	$566,109	$543,572	$1,048,228	$554,840
		Groundfish	$5,736,445	$9,401,304	$9,258,675	$7,462,983	$8,915,867	$10,155,338	$11,226,394	$13,237,473	$14,383,352	$10,624,028	$8,879,572	$12,503,690
		Salmon	$0	$2,221	$0	$1,121	$0	$0	$262,544	$0	$514,077	$101,209	$37,984	$307,643
		Herring	$11,485	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,641	$0
		Halibut	$2,961,880	$4,714,143	$5,822,009	$5,205,775	$6,465,897	$7,646,291	$8,015,999	$6,801,583	$7,360,711	$0	$5,833,142	$3,680,356
		Other Species	$14,229	$7,210	$4,512	$56,143	$47,824	$61,644	$208,991	$77,252	$96,145	$32,803	$57,222	$64,474
	Alaska Total	**Rationalized Crab**	**$35,867,377**	**$56,102,504**	**$22,244,537**	**$16,123,397**	**$22,618,000**	**$25,860,361**	**$24,475,910**	**$23,802,345**	**$18,196,368**	**$41,202,214**	**$29,041,727**	**$29,699,291**
		Non-Rationalized Crab	**$3,321,038**	**$3,927,688**	**$2,496,558**	**$4,090,035**	**$4,394,519**	**$1,978,719**	**$493,774**	**$517,221**	**$1,147,595**	**$4,981,212**	**$2,957,476**	**$3,064,404**
		Groundfish	**$7,029,341**	**$11,204,891**	**$12,222,250**	**$9,817,760**	**$11,539,010**	**$12,721,908**	**$13,026,275**	**$15,370,133**	**$17,657,403**	**$14,733,356**	**$11,080,205**	**$16,195,379**
		Salmon	**$148,952**	**$372,637**	**$66,089**	**$84,139**	**$83,602**	**$192,463**	**$696,934**	**$452,802**	**$953,334**	**$817,545**	**$234,974**	**$885,440**
		Herring	**$11,485**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,641**	**$0**
		Halibut	**$3,602,642**	**$5,960,680**	**$7,360,005**	**$6,671,451**	**$8,186,422**	**$9,128,619**	**$9,151,783**	**$8,225,238**	**$9,045,488**	**$0**	**$7,151,657**	**$4,522,744**
		Other Species	**$14,525**	**$26,491**	**$7,294**	**$56,198**	**$49,478**	**$61,652**	**$236,386**	**$93,271**	**$102,497**	**$42,982**	**$64,575**	**$72,740**
Washington Total		**Rationalized Crab**	**$126,523,831**	**$177,564,094**	**$67,676,794**	**$55,138,880**	**$69,561,502**	**$86,342,620**	**$80,567,665**	**$80,565,167**	**$60,505,463**	**$70,171,288**	**$94,767,912**	**$65,338,375**
		Non-Rationalized Crab	**$7,125,140**	**$10,349,538**	**$6,290,180**	**$3,802,707**	**$7,041,543**	**$8,999,649**	**$8,812,938**	**$12,126,897**	**$9,713,326**	**$9,894,453**	**$7,488,813**	**$9,803,889**
		Groundfish	**$34,320,234**	**$55,100,310**	**$80,216,990**	**$67,723,774**	**$79,355,473**	**$80,537,989**	**$79,689,510**	**$92,784,851**	**$108,227,316**	**$72,168,713**	**$68,134,897**	**$90,198,015**
		Salmon	**$511,448**	**$747,533**	**$273,128**	**$66,508**	**$0**	**$1,469**	**$187,907**	**$413,042**	**$261,365**	**$291,066**	**$255,427**	**$276,216**
		Herring	**$0**	**$0**	**$0**	**$0**	**$0**	**$130**	**$0**	**$0**	**$0**	**$0**	**$19**	**$0**
		Halibut	**$322,613**	**$743,417**	**$1,474,390**	**$118,747**	**$306,717**	**$836,660**	**$851,799**	**$788,468**	**$1,635,387**	**$0**	**$664,906**	**$817,693**
		Other Species	**$28,678**	**$10,271**	**$4,022**	**$10,548**	**$6,671**	**$58,355**	**$86,041**	**$54,971**	**$36,402**	**$19,249**	**$29,227**	**$27,825**
Oregon and Other U.S.* Total**		**Rationalized Crab**	**$20,995,676**	**$30,500,926**	**$15,090,325**	**$11,803,255**	**$15,048,057**	**$20,155,254**	**$17,796,710**	**$15,998,648**	**$13,984,176**	**$16,608,507**	**$18,770,029**	**$15,296,342**
		Non-Rationalized Crab	**$918,473**	**$1,186,240**	**$411,971**	**$552,963**	**$1,548,913**	**$689,171**	**$385,116**	**$246,361**	**$835,564**	**$281,603**	**$813,264**	**$558,583**
		Groundfish	**$4,480,664**	**$6,561,923**	**$8,164,753**	**$7,982,326**	**$7,875,763**	**$9,604,971**	**$9,180,960**	**$11,287,516**	**$12,259,255**	**$8,852,320**	**$7,693,051**	**$10,555,787**
		Salmon	**$4,023**	**$2,524**	**$0**	**$385**	**$0**	**$560**	**$0**	**$0**	**$0**	**$0**	**$1,070**	**$0**
		Herring	**$0**	**$0**	**$0**	**$0**	**$0**	**$22,759**	**$0**	**$0**	**$0**	**$0**	**$3,251**	**$0**
		Halibut	**$1,505,812**	**$3,342,849**	**$4,429,154**	**$3,802,394**	**$4,263,981**	**$5,650,958**	**$5,026,471**	**$4,446,313**	**$4,382,213**	**$0**	**$4,003,088**	**$2,191,107**
		Other Species	**$4,008**	**$8,089**	**$1,227**	**$2,174**	**$209**	**$27,445**	**$88,996**	**$115,990**	**$60,799**	**$23,650**	**$18,878**	**$42,225**
All States Total		**Rationalized Crab**	**$183,386,885**	**$264,167,524**	**$105,011,656**	**$83,065,532**	**$107,227,558**	**$132,358,235**	**$122,840,285**	**$120,366,160**	**$92,686,007**	**$127,982,008**	**$142,579,668**	**$110,334,008**
		Non-Rationalized Crab	**$11,364,651**	**$15,463,466**	**$9,198,709**	**$8,445,704**	**$12,984,976**	**$11,667,539**	**$9,691,827**	**$12,890,479**	**$11,696,485**	**$15,157,268**	**$11,259,553**	**$13,426,876**
		Groundfish	**$45,830,240**	**$72,867,124**	**$100,603,993**	**$85,523,860**	**$98,770,246**	**$102,864,868**	**$101,896,745**	**$119,442,500**	**$138,143,973**	**$95,754,389**	**$86,908,154**	**$116,949,181**
		Salmon	**$664,423**	**$1,122,694**	**$339,217**	**$151,032**	**$83,602**	**$194,492**	**$884,841**	**$865,844**	**$1,214,700**	**$1,108,611**	**$491,472**	**$1,161,655**
		Herring	**$11,485**	**$0**	**$0**	**$0**	**$0**	**$22,889**	**$0**	**$0**	**$0**	**$0**	**$4,910**	**$0**
		Halibut	**$5,431,066**	**$10,046,946**	**$13,263,549**	**$10,592,592**	**$12,757,120**	**$15,616,237**	**$15,030,053**	**$13,460,020**	**$15,063,088**	**$0**	**$11,819,652**	**$7,531,544**
		Other Species	**$47,211**	**$44,852**	**$12,543**	**$68,920**	**$56,358**	**$147,452**	**$411,422**	**$264,232**	**$199,698**	**$85,881**	**$112,680**	**$142,790**

***Oregon and Other U.S. combined to allow for display of otherwise confidential data for Bristol Bay Red and Bering Sea Snow.
Source: Alaska Department of Fish and Game 2008; Alaska Commercial Fisheries Entry Commission 2008.

Table A1-6b. BSAI Crab Vessel Harvest Diversity by Value (percentage)

State	Subarea	Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Pre-Rationalization Average (1998-2004)	Post-Rationalization Average (2006-2007)
Alaska	All Subregions (non-Kodiak)	Rationalized Crab	79.5	80.8	62.5	52.8	52.3	64.2	73.4	70.4	58.3	71.7	68.8	67.6
		Non-Rationalized Crab	10.2	7.9	9.0	17.3	20.6	9.1	2.4	1.3	4.0	13.5	10.6	10.6
		Groundfish	6.3	5.9	18.4	18.0	16.1	16.1	12.8	15.0	22.8	12.5	12.2	15.7
		Salmon	0.7	1.2	0.4	0.6	0.5	1.2	3.1	3.2	3.1	2.2	1.1	2.5
		Herring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Halibut	3.1	4.1	9.6	11.2	10.5	9.3	8.1	10.0	11.7	0.0	7.3	3.6
		Other Species	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0
		TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Kodiak	Rationalized Crab	66.4	66.8	43.1	38.8	46.1	46.0	41.6	40.3	30.0	61.0	51.2	44.6
		Non-Rationalized Crab	4.2	3.2	3.7	7.7	3.4	1.5	0.4	1.0	1.7	1.9	3.2	1.8
		Groundfish	19.4	20.0	32.7	31.4	29.2	29.9	33.0	38.6	43.9	36.7	27.3	40.5
		Salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	1.6	0.3	0.1	1.0
		Herring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Halibut	10.0	10.0	20.6	21.9	21.2	22.5	23.6	19.9	22.5	0.0	18.0	11.9
		Other Species	0.0	0.0	0.0	0.2	0.2	0.2	0.6	0.2	0.3	0.1	0.2	0.2
		TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Alaska Total	**Rationalized Crab**	**71.7**	**72.3**	**50.1**	**43.8**	**48.3**	**51.8**	**50.9**	**49.1**	**38.6**	**66.7**	**57.5**	**54.6**
		Non-Rationalized Crab	**6.6**	**5.1**	**5.6**	**11.1**	**9.4**	**4.0**	**1.0**	**1.1**	**2.4**	**8.1**	**5.9**	**5.6**
		Groundfish	**14.1**	**14.4**	**27.5**	**26.6**	**24.6**	**25.5**	**27.1**	**31.7**	**37.5**	**23.8**	**21.9**	**29.7**
		Salmon	**0.3**	**0.5**	**0.1**	**0.2**	**0.2**	**0.4**	**1.4**	**0.9**	**2.0**	**1.3**	**0.5**	**1.6**
		Herring	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Halibut	**7.2**	**7.7**	**16.6**	**18.1**	**17.5**	**18.3**	**19.0**	**17.0**	**19.2**	**0.0**	**14.2**	**8.3**
		Other Species	**0.0**	**0.0**	**0.0**	**0.2**	**0.1**	**0.1**	**0.5**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**
		TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Washington Total		**Rationalized Crab**	**74.9**	**72.6**	**43.4**	**43.5**	**44.5**	**48.8**	**47.3**	**43.1**	**33.5**	**46.0**	**55.3**	**39.3**
		Non-Rationalized Crab	**4.2**	**4.2**	**4.0**	**3.0**	**4.5**	**5.1**	**5.2**	**6.5**	**5.4**	**6.5**	**4.4**	**5.9**
		Groundfish	**20.3**	**22.5**	**51.4**	**53.4**	**50.8**	**45.6**	**46.8**	**49.7**	**60.0**	**47.3**	**39.8**	**54.2**
		Salmon	**0.3**	**0.3**	**0.2**	**0.1**	**0.0**	**0.0**	**0.1**	**0.2**	**0.1**	**0.2**	**0.1**	**0.2**
		Herring	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Halibut	**0.2**	**0.3**	**0.9**	**0.1**	**0.2**	**0.5**	**0.5**	**0.4**	**0.9**	**0.0**	**0.4**	**0.5**
		Other Species	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Oregon and Other U.S.* Total**		**Rationalized Crab**	**75.2**	**73.3**	**53.7**	**48.9**	**52.4**	**55.8**	**54.8**	**49.8**	**44.4**	**64.5**	**60.0**	**53.4**
		Non-Rationalized Crab	**3.3**	**2.9**	**1.5**	**2.3**	**5.4**	**1.9**	**1.2**	**0.8**	**2.7**	**1.1**	**2.6**	**2.0**
		Groundfish	**16.1**	**15.8**	**29.1**	**33.1**	**27.4**	**26.6**	**28.3**	**35.2**	**38.9**	**34.4**	**24.6**	**36.9**
		Salmon	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Herring	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Halibut	**5.4**	**8.0**	**15.8**	**15.7**	**14.8**	**15.6**	**15.5**	**13.9**	**13.9**	**0.0**	**12.8**	**7.6**
		Other Species	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.3**	**0.4**	**0.2**	**0.1**	**0.1**	**0.1**
		TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

State	Subarea	Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Pre-Rationalization Average (1998-2004)	Post-Rationalization Average (2006-2007)
All States Total		**Rationalized Crab**	**74.3**	**72.6**	**46.0**	**44.2**	**46.2**	**50.4**	**49.0**	**45.0**	**35.8**	**53.3**	**56.3**	**44.2**
		Non-Rationalized Crab	**4.6**	**4.3**	**4.0**	**4.5**	**5.6**	**4.4**	**3.9**	**4.8**	**4.5**	**6.3**	**4.4**	**5.4**
		Groundfish	**18.6**	**20.0**	**44.0**	**45.5**	**42.6**	**39.1**	**40.6**	**44.7**	**53.3**	**39.9**	**34.3**	**46.9**
		Salmon	**0.3**	**0.3**	**0.1**	**0.1**	**0.0**	**0.1**	**0.4**	**0.3**	**0.5**	**0.5**	**0.2**	**0.5**
		Herring	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Halibut	**2.2**	**2.8**	**5.8**	**5.6**	**5.5**	**5.9**	**6.0**	**5.0**	**5.8**	**0.0**	**4.7**	**3.0**
		Other Species	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.2**	**0.1**	**0.1**	**0.0**	**0.0**	**0.1**
		TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

***Oregon and Other U.S. combined to allow for display of otherwise confidential data for Bristol Bay Red and Bering Sea Snow.
Source: Alaska Department of Fish and Game 2008; Alaska Commercial Fisheries Entry Commission 2008.

Table A1-7. BSAI Crab Processor Count by Community

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Pre-Rationalization Average	Post-Rationalization Average
Alaska	South-Central	Cordova												
		Bristol Bay Red	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Bering Sea Snow	0	0	0	1	0	0	0	0	0	0	0.1	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Ninilchik												
		Bristol Bay Red	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Bering Sea Snow	1	0	0	0	0	0	0	0	0	0	0.1	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Wasilla												
		Bristol Bay Red	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Bering Sea Snow	1	0	0	0	0	0	0	0	0	0	0.1	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		South-Central Total												
		Bristol Bay Red	*0*	*0*	*0*	*0*	*0*	*0*	*0*	--	*0*	*0*	*0.0*	*0.0*
		Bering Sea Snow	*2*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0.4*	*0.0*
		Eastern Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	--	*0*	*0*	*0.0*	*0.0*
		Western Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*	*0.0*
		Bering Tanner East	--	--	--	--	--	--	--	--	*0*	*0*	--	*0.0*
		Bering Tanner West	--	--	--	--	--	--	--	--	*0*	*0*	--	*0.0*
	Southeast	Sitka												
		Bristol Bay Red	0	0	0	0	0	0	0	--	1	0	0.0	0.5
		Bering Sea Snow	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Southeast Total												
		Bristol Bay Red	*0*	*0*	*0*	*0*	*0*	*0*	*0*	--	*1*	*0*	*0.0*	*0.5*
		Bering Sea Snow	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*	*0.0*
		Eastern Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	--	*0*	*0*	*0.0*	*0.0*
		Western Aleutian Golden	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*	*0.0*
		Bering Tanner East	--	--	--	--	--	--	--	--	*0*	*0*	--	*0.0*
		Bering Tanner West	--	--	--	--	--	--	--	--	*0*	*0*	--	*0.0*
	Aleutians	Adak												
		Bristol Bay Red	0	0	0	1	0	0	0	--	0	0	0.1	0.0

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Pre-Rationalization Average	Post-Rationalization Average
		Bering Sea Snow	0	0	1	0	0	0	0	0	0	0	0.1	0.0
		Eastern Aleutian Golden	0	0	1	1	1	2	1	--	0	0	0.9	0.0
		Western Aleutian Golden	0	0	2	4	3	1	3	2	2	1	1.9	1.5
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		Akutan												
		Bristol Bay Red	1	1	1	1	1	1	1	--	1	1	1.0	1.0
		Bering Sea Snow	1	1	1	1	0	1	1	1	1	1	0.9	1.0
		Eastern Aleutian Golden	0	1	0	0	0	0	0	--	0	1	0.1	0.5
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	1	--	0.5
		Bering Tanner West	--	--	--	--	--	--	--	--	1	1	--	1.0
		Dutch Harbor/Unalaska												
		Bristol Bay Red	7	6	5	6	6	7	6	--	4	5	6.1	4.5
		Bering Sea Snow	9	9	6	6	5	6	6	6	7	8	6.6	7.5
		Eastern Aleutian Golden	6	4	3	3	3	3	3	--	3	4	3.6	3.5
		Western Aleutian Golden	4	2	4	4	3	2	2	2	2	2	2.9	2.0
		Bering Tanner East	--	--	--	--	--	--	--	--	2	6	--	4.0
		Bering Tanner West	--	--	--	--	--	--	--	--	5	5	--	5.0
		King Cove												
		Bristol Bay Red	1	1	1	1	2	3	1	--	1	3	1.4	2.0
		Bering Sea Snow	1	1	2	1	1	1	1	1	1	1	1.1	1.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	1	--	0.5
		Bering Tanner West	--	--	--	--	--	--	--	--	1	1	--	1.0
		Sand Point												
		Bristol Bay Red	0	0	0	0	1	1	1	--	0	0	0.4	0.0
		Bering Sea Snow	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	0	0	--	0.0
		St. Paul												
		Bristol Bay Red	1	1	0	0	0	1	0	--	1	1	0.4	1.0
		Bering Sea Snow	2	2	2	2	2	2	2	2	2	1	2.0	1.5
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	1	0	--	0.5
		Bering Tanner West	--	--	--	--	--	--	--	--	2	0	--	1.0
		Aleutians Total												
		Bristol Bay Red	*10*	*9*	*7*	*9*	*10*	*13*	*9*	--	*7*	*10*	*9.6*	*8.5*
		Bering Sea Snow	*13*	*13*	*12*	*10*	*8*	*10*	*10*	*10*	*11*	*11*	*10.8*	*11.0*
		Eastern Aleutian Golden	*6*	*5*	*4*	*4*	*4*	*5*	*4*	--	*3*	*5*	*4.6*	*4.0*
		Western Aleutian Golden	*4*	*2*	*6*	*8*	*6*	*3*	*5*	*4*	*4*	*3*	*4.8*	*3.5*
		Bering Tanner East	--	--	--	--	--	--	--	--	*3*	*8*	--	*5.5*

State	Subarea	Community/Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Pre-Rationalization Average	Post-Rationalization Average
		Bering Tanner West	--	--	--	--	--	--	--	--	*9*	*7*	--	*8.0*
	Kodiak	Kodiak												
		Bristol Bay Red	1	3	8	8	3	4	4	--	3	3	4.4	3.0
		Bering Sea Snow	2	1	3	1	4	1	2	1	2	2	1.9	2.0
		Eastern Aleutian Golden	0	0	0	0	0	0	0	--	0	0	0.0	0.0
		Western Aleutian Golden	0	0	0	0	0	0	0	0	0	0	0.0	0.0
		Bering Tanner East	--	--	--	--	--	--	--	--	0	0	--	0.0
		Bering Tanner West	--	--	--	--	--	--	--	--	1	0	--	0.5
	Alaska Total	**Alaska Total**												
		Bristol Bay Red	**11**	**12**	**15**	**17**	**13**	**17**	**13**	--	**11**	**13**	**14.0**	**12.0**
		Bering Sea Snow	**17**	**14**	**15**	**12**	**12**	**11**	**12**	**11**	**13**	**13**	**13.0**	**13.0**
		Eastern Aleutian Golden	**6**	**5**	**4**	**4**	**4**	**5**	**4**	--	**3**	**5**	**4.6**	**4.0**
		Western Aleutian Golden	**4**	**2**	**6**	**8**	**6**	**3**	**5**	**4**	**4**	**3**	**4.8**	**3.5**
		Bering Tanner East	--	--	--	--	--	--	--	--	**3**	**8**	--	**5.5**
		Bering Tanner West	--	--	--	--	--	--	--	--	**10**	**7**	--	**8.5**
Floating Catcher Processors		**Floating Catcher Processors Total**												
		Bristol Bay Red	**0**	**0**	**6**	**6**	**10**	**8**	**8**	--	**4**	**3**	**5.4**	**3.5**
		Bering Sea Snow	**0**	**0**	**9**	**7**	**8**	**5**	**6**	**6**	**4**	**4**	**5.1**	**4.0**
		Eastern Aleutian Golden	**0**	**0**	**0**	**0**	**0**	**0**	**0**	--	**1**	**1**	**0.0**	**1.0**
		Western Aleutian Golden	**0**	**0**	**1**	**1**	**2**	**2**	**1**	**1**	**1**	**1**	**1.0**	**1.0**
		Bering Tanner East	--	--	--	--	--	--	--	--	**0**	**3**	--	**1.5**
		Bering Tanner West	--	--	--	--	--	--	--	--	**1**	**2**	--	**1.5**
Inshore Stationary Floating Processors		**Inshore Stationary Floating Processors Total**												
		Bristol Bay Red	**0**	**0**	**3**	**3**	**3**	**5**	**4**	--	**1**	**1**	**2.6**	**1.0**
		Bering Sea Snow	**0**	**0**	**8**	**6**	**6**	**6**	**6**	**3**	**4**	**9**	**4.4**	**6.5**
		Eastern Aleutian Golden	**0**	**0**	**0**	**0**	**0**	**0**	**0**	--	**1**	**0**	**0.0**	**0.5**
		Western Aleutian Golden	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0.0**	**1.5**
		Bering Tanner East	--	--	--	--	--	--	--	--	**1**	**0**	--	**0.5**
		Bering Tanner West	--	--	--	--	--	--	--	--	**3**	**1**	--	**2.0**
Unknown		**Unknown Total**												
		Bristol Bay Red	**18**	**11**	**0**	**0**	**0**	**0**	**0**	--	**0**	**0**	**4.1**	**0.0**
		Bering Sea Snow	**36**	**28**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8.0**	**0.0**
		Eastern Aleutian Golden	**1**	**2**	**0**	**0**	**0**	**0**	**0**	--	**0**	**0**	**0.4**	**0.0**
		Western Aleutian Golden	**4**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.9**	**0.0**
		Bering Tanner East	--	--	--	--	--	--	--	--	**0**	**0**	--	**0.0**
		Bering Tanner West	--	--	--	--	--	--	--	--	**0**	**0**	--	**0.0**
All Processors		**All Processors Total**												
		Bristol Bay Red	**29**	**23**	**24**	**26**	**26**	**30**	**25**	--	**16**	**17**	**26.1**	**16.5**
		Bering Sea Snow	**53**	**42**	**32**	**25**	**26**	**22**	**24**	**20**	**21**	**26**	**30.5**	**23.5**
		Eastern Aleutian Golden	**7**	**7**	**4**	**4**	**4**	**5**	**4**	--	**5**	**6**	**5.0**	**5.5**
		Western Aleutian Golden	**8**	**3**	**9**	**9**	**8**	**5**	**6**	**5**	**8**	**4**	**6.6**	**6.0**
		Bering Tanner East	--	--	--	--	--	--	--	--	**4**	**11**	--	**7.5**
		Bering Tanner West	--	--	--	--	--	--	--	--	**14**	**10**	--	**12.0**

Source: Alaska Department of Fish and Game 2008.

Table A1-8. CVO Shares – Initial Allocation and 2008-2009 Quota Shareholders

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
Alaska	Anchorage	Bristol Bay Red	N	0	0	0.0	2	338,410	3.6
			S	8	11,675,744	3.2	23	27,561,978	7.6
		Bering Sea Snow	N	8	11,479,448	2.8	16	21,497,595	5.2
			S	8	12,955,234	2.7	19	44,580,194	9.5
		Bering Sea Tanner	U	8	2,666,137	1.5	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	6	2,961,237	32.1
		Western Aleutian Golden	U	0	0	0.0	5	2,484,898	23.8
			W	0	0	0.0	4	2,179,568	20.9
		Bering Tanner East	U	6	2,374,161	1.3	20	11,949,367	6.6
		Bering Tanner West	U	6	2,374,161	1.3	20	11,981,658	6.6
		Pribilof Is. Blue/Red	N	5	1,864,355	9.2	7	1,322,894	6.8
			S	3	211,621	2.2	7	658,300	7.0
		St. Matthew Blue	N	2	514,558	2.3	13	1,126,634	5.0
			S	2	363,005	5.8	9	1,139,001	18.2
		Western Aleutian Red	S	2	848,618	2.4	7	1,866,202	5.3
	Dillingham	Bristol Bay Red	N	0	0	0.0	1	50,330	0.5
			S	1	3,307,771	0.9	2	4,770,587	1.3
		Bering Sea Snow	N	1	7,561,480	1.8	2	9,603,685	2.3
			S	1	700,244	0.1	2	2,767,085	0.6
		Bering Sea Tanner	U	1	1,551,453	0.9	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	2	1,832,451	1.0	2	1,832,451	1.0
		Bering Tanner West	U	1	1,832,451	1.0	1	1,832,451	1.0
		Pribilof Is. Blue/Red	N	1	701,376	3.5	1	701,376	3.6
			S	0	0	0.0	0	0	0.0
		St. Matthew Blue	N	1	189,939	0.8	1	189,939	0.8
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	1	57,776	0.2	1	57,776	0.2
	Homer	Bristol Bay Red	N	1	765,462	8.1	1	574,097	6.1
			S	3	4,904,358	1.4	3	5,421,320	1.5
		Bering Sea Snow	N	3	12,744,558	3.1	4	13,355,897	3.2
			S	3	2,590,592	0.5	4	3,673,724	0.8

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		Bering Sea Tanner	U	3	2,922,441	1.6	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	4	3,571,507	1.9	4	3,401,456	1.9
		Bering Tanner West	U	4	3,571,507	1.9	4	3,401,456	1.9
		Pribilof Is. Blue/Red	N	3	1,982,206	9.8	4	1,982,206	10.1
			S	3	129,696	1.4	5	482,697	5.1
		St. Matthew Blue	N	0	0	0.0	1	132,216	0.6
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	King Cove	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	1	927,155	0.3	2	1,138,963	0.3
		Bering Sea Snow	N	0	0	0.0	1	177,495	0.0
			S	1	614,388	0.1	1	289,396	0.1
		Bering Sea Tanner	U	1	494,659	0.3	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	494,659	0.3	1	135,228	0.1
		Bering Tanner West	U	1	494,659	0.3	1	135,228	0.1
		Pribilof Is. Blue/Red	N	0	0	0.0	0	0	0.0
			S	2	119,394	1.3	2	119,394	1.3
		St. Matthew Blue	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Kodiak	Bristol Bay Red	N	1	536,268	5.7	6	768,603	8.1
			S	20	30,912,004	8.5	26	36,537,664	10.1
		Bering Sea Snow	N	19	44,041,099	10.6	26	52,436,776	12.6
			S	14	33,748,914	7.1	20	37,179,597	7.9
		Bering Sea Tanner	U	20	18,771,645	10.3	0	0	--
		Eastern Aleutian Golden	S	1	200,725	2.2	1	200,725	2.2
		Western Aleutian Golden	U	1	212,781	2.0	1	212,781	2.0
			W	1	406,407	3.9	1	406,407	3.9
		Bering Tanner East	U	21	20,025,021	10.9	23	20,381,815	11.2
		Bering Tanner West	U	21	20,025,021	10.9	25	20,703,799	11.4

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		Pribilof Is. Blue/Red	N	7	1,216,535	6.0	9	1,284,808	6.6
			S	5	523,982	5.6	11	776,070	8.2
		St. Matthew Blue	N	12	3,252,826	14.4	16	3,609,719	15.9
			S	4	417,563	6.7	9	468,615	7.5
		Western Aleutian Red	S	3	1,077,201	3.0	3	1,077,201	3.0
	Petersburg	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	2	3,068,068	0.8	2	3,068,068	0.8
		Bering Sea Snow	N	3	4,505,115	1.1	3	4,505,115	1.1
			S	3	5,815,152	1.2	3	5,815,152	1.2
		Bering Sea Tanner	U	3	1,221,640	0.7	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	3	1,221,640	0.7	3	1,221,640	0.7
		Bering Tanner West	U	3	1,221,640	0.7	3	1,221,640	0.7
		Pribilof Is. Blue/Red	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		St. Matthew Blue	N	1	272,359	1.2	1	272,359	1.2
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Sand Point	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Bering Sea Snow	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Bering Sea Tanner	U	0	0	0.0	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	312,244	0.2	0	0	0.0
		Bering Tanner West	U	1	312,244	0.2	0	0	0.0
		Pribilof Is. Blue/Red	N	1	208,284	1.0	1	208,284	1.1
			S	0	0	0.0	0	0	0.0
		St. Matthew Blue	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
	Seldovia	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	1	1,138,742	0.3	1	1,138,742	0.3
		Bering Sea Snow	N	1	964,144	0.2	1	964,144	0.2
			S	1	3,139,028	0.7	1	3,139,028	0.7
		Bering Sea Tanner	U	1	894,475	0.5	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	894,475	0.5	1	894,475	0.5
		Bering Tanner West	U	1	894,475	0.5	1	894,475	0.5
		Pribilof Is. Blue/Red	N	1	518,547	2.6	1	518,547	2.7
			S	0	0	0.0	0	0	0.0
		St. Matthew Blue	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Dutch Harbor/Unalaska	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	2	1,904,867	0.5	2	1,904,867	0.5
		Bering Sea Snow	N	1	1,389,562	0.3	1	1,389,562	0.3
			S	1	914,644	0.2	1	914,644	0.2
		Bering Sea Tanner	U	2	308,106	0.2	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	2	308,106	0.2	2	308,106	0.2
		Bering Tanner West	U	2	308,106	0.2	2	308,106	0.2
		Pribilof Is. Blue/Red	N	0	0	0.0	0	0	0.0
			S	2	474,530	5.0	2	474,530	5.0
		St. Matthew Blue	N	1	21,065	0.1	1	21,065	0.1
			S	1	17,026	0.3	1	17,026	0.3
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Yakutat	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	1	921,242	0.3	1	921,242	0.3
		Bering Sea Snow	N	1	1,483,952	0.4	1	1,483,952	0.4
			S	1	1,061,753	0.2	1	1,061,753	0.2
		Bering Sea Tanner	U	1	377,241	0.2	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	377,241	0.2	1	377,241	0.2
		Bering Tanner West	U	1	377,241	0.2	1	377,241	0.2
		Pribilof Is. Blue/Red	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		St. Matthew Blue	N	1	244,120	1.1	1	244,120	1.1
			S	1	9,921	0.2	1	9,921	0.2
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Alaska Total	**Bristol Bay Red**	**N**	**2**	**1,301,730**	**13.8**	**10**	**1,731,440**	**18.3**
			S	**39**	**58,759,951**	**16.2**	**62**	**82,463,431**	**22.8**
		Bering Sea Snow	**N**	**37**	**84,169,358**	**20.2**	**55**	**105,414,221**	**25.4**
			S	**33**	**61,539,949**	**13.0**	**52**	**99,420,573**	**21.1**
		Bering Sea Tanner	**U**	**40**	**29,207,797**	**16.1**	**0**	**0**	**--**
		Eastern Aleutian Golden	**S**	**1**	**200,725**	**2.2**	**7**	**3,161,962**	**34.3**
		Western Aleutian Golden	**U**	**1**	**212,781**	**2.0**	**6**	**2,697,679**	**25.9**
			W	**1**	**406,407**	**3.9**	**5**	**2,585,975**	**24.8**
		Bering Tanner East	**U**	**42**	**31,411,505**	**17.1**	**57**	**40,501,779**	**22.3**
		Bering Tanner West	**U**	**41**	**31,411,505**	**17.1**	**58**	**40,856,054**	**22.5**
		Pribilof Is. Blue/Red	**N**	**18**	**6,491,303**	**32.0**	**23**	**6,018,115**	**30.8**
			S	**15**	**1,459,223**	**15.5**	**27**	**2,510,991**	**26.6**
		St. Matthew Blue	**N**	**18**	**4,494,867**	**19.9**	**34**	**5,596,052**	**24.7**
			S	**8**	**807,515**	**12.9**	**20**	**1,634,563**	**26.2**
		Western Aleutian Red	**S**	**6**	**1,983,595**	**5.6**	**11**	**3,001,179**	**8.5**
Washington	**Washington Total**	**Bristol Bay Red**	**N**	**19**	**6,683,270**	**70.8**	**29**	**6,537,267**	**69.2**
			S	**165**	**251,116,943**	**69.3**	**182**	**234,682,066**	**64.8**
		Bering Sea Snow	**N**	**130**	**259,891,511**	**62.5**	**158**	**255,837,186**	**61.6**
			S	**148**	**341,611,087**	**72.3**	**165**	**308,198,546**	**65.6**
		Bering Sea Tanner	**U**	**168**	**125,736,784**	**69.3**	**0**	**0**	**--**
		Eastern Aleutian Golden	**S**	**13**	**7,694,171**	**83.4**	**8**	**4,054,326**	**43.9**
		Western Aleutian Golden	**U**	**10**	**4,593,571**	**44.1**	**7**	**2,108,673**	**20.2**
			W	**6**	**3,491,863**	**33.4**	**4**	**1,312,295**	**12.6**
		Bering Tanner East	**U**	**176**	**128,522,282**	**70.0**	**188**	**117,643,047**	**64.8**
		Bering Tanner West	**U**	**163**	**128,522,282**	**70.0**	**174**	**117,321,063**	**64.6**
		Pribilof Is. Blue/Red	**N**	**50**	**9,843,073**	**48.6**	**52**	**9,416,581**	**48.1**
			S	**44**	**6,105,894**	**64.7**	**45**	**5,310,864**	**56.3**

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		St. Matthew Blue	**N**	**81**	**14,659,734**	**65.0**	**87**	**14,122,819**	**62.3**
			S	**56**	**5,271,980**	**84.1**	**65**	**4,488,414**	**71.8**
		Western Aleutian Red	**S**	**20**	**20,824,471**	**58.7**	**20**	**19,806,887**	**55.8**
Oregon	**Oregon Total**	**Bristol Bay Red**	**N**	**9**	**880,690**	**9.3**	**3**	**557,136**	**5.9**
			S	**38**	**43,214,469**	**11.9**	**33**	**32,631,053**	**9.0**
		Bering Sea Snow	**N**	**39**	**62,139,357**	**14.9**	**29**	**41,884,988**	**10.1**
			S	**33**	**55,072,368**	**11.7**	**27**	**41,669,870**	**8.9**
		Bering Sea Tanner	**U**	**38**	**23,142,651**	**12.7**	**0**	**0**	**--**
		Eastern Aleutian Golden	**S**	**2**	**1,336,124**	**14.5**	**5**	**2,014,732**	**21.8**
		Western Aleutian Golden	**U**	**2**	**5,616,213**	**53.9**	**2**	**5,616,213**	**53.9**
			W	**2**	**6,543,992**	**62.7**	**2**	**6,543,992**	**62.7**
		Bering Tanner East	**U**	**37**	**20,057,204**	**10.9**	**31**	**17,159,913**	**9.5**
		Bering Tanner West	**U**	**35**	**20,057,204**	**10.9**	**29**	**17,159,913**	**9.5**
		Pribilof Is. Blue/Red	**N**	**15**	**3,596,942**	**17.8**	**14**	**3,604,079**	**18.4**
			S	**13**	**1,337,579**	**14.2**	**10**	**1,031,724**	**10.9**
		St. Matthew Blue	**N**	**20**	**3,104,472**	**13.8**	**15**	**2,144,652**	**9.5**
			S	**16**	**158,674**	**2.5**	**10**	**83,343**	**1.3**
		Western Aleutian Red	**S**	**3**	**12,679,971**	**35.7**	**3**	**12,679,971**	**35.7**
Other U.S.	**Other U.S. Total**	**Bristol Bay Red**	**N**	**1**	**578,220**	**6.1**	**2**	**620,946**	**6.6**
			S	**9**	**9,519,762**	**2.6**	**14**	**12,630,516**	**3.5**
		Bering Sea Snow	**N**	**6**	**9,680,397**	**2.3**	**12**	**12,472,090**	**3.0**
			S	**7**	**14,381,997**	**3.0**	**12**	**20,789,217**	**4.4**
		Bering Sea Tanner	**U**	**9**	**3,467,227**	**1.9**	**0**	**0**	**--**
		Eastern Aleutian Golden	**S**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Western Aleutian Golden	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
			W	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Tanner East	**U**	**10**	**3,518,567**	**1.9**	**14**	**6,167,946**	**3.4**
		Bering Tanner West	**U**	**8**	**3,518,567**	**1.9**	**12**	**6,167,946**	**3.4**
		Pribilof Is. Blue/Red	**N**	**2**	**330,216**	**1.6**	**3**	**521,383**	**2.7**
			S	**4**	**534,595**	**5.7**	**5**	**583,712**	**6.2**
		St. Matthew Blue	**N**	**4**	**297,872**	**1.3**	**8**	**799,031**	**3.5**
			S	**3**	**28,245**	**0.5**	**6**	**42,577**	**0.7**
		Western Aleutian Red	**S**	**0**	**0**	**0.0**	**0**	**0**	**0.0**

Source: National Marine Fisheries Service Alaska Regional Office 2008.

Table A1-9. CVC Shares – Initial Allocation and 2008-2009 Quota Shareholders

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
Alaska	Anchorage	Bristol Bay Red	N	1	32,600	10.9	0	0	0.0
			S	9	495,239	4.4	8	400,515	3.6
		Bering Sea Snow	N	7	661,665	4.9	8	733,801	5.4
			S	6	354,039	2.4	6	219,391	1.5
		Bering Sea Tanner	U	7	156,589	2.8	0	0	--
		Eastern Aleutian Golden	S	1	6,962	2.3	1	6,962	2.3
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	6	99,903	1.8	4	48,380	0.9
		Bering Tanner West	U	6	99,903	1.8	4	48,380	0.9
		Pribilof Is. Blue/Red	N	2	50,841	8.0	1	23,725	3.8
			S	1	2,252	0.8	1	2,252	0.8
		St. Matthew Blue	N	5	51,850	7.1	3	29,011	4.0
			S	1	2,828	1.6	1	2,828	1.6
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Cordova	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	1	58,658	0.5
		Bering Sea Snow	N	0	0	0.0	1	134,373	1.0
			S	0	0	0.0	1	92,177	0.6
		Bering Sea Tanner	U	0	0	0.0	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	0	0	0.0	1	42,669	0.8
		Bering Tanner West	U	0	0	0.0	1	42,669	0.8
		Pribilof Is. Blue/Red	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		St. Matthew Blue	N	0	0	0.0	1	11,551	1.6
			S	0	0	0.0	1	325	0.2
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Homer	Bristol Bay Red	N	1	30,454	10.2	1	30,454	10.2
			S	5	338,183	3.0	10	564,556	5.0
		Bering Sea Snow	N	6	944,549	7.0	7	993,266	7.3
			S	5	210,493	1.4	7	341,016	2.3

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		Bering Sea Tanner	U	4	143,044	2.6	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	6	207,378	3.8	6	207,378	3.8
		Bering Tanner West	U	5	207,378	3.8	5	207,378	3.8
		Pribilof Is. Blue/Red	N	3	70,084	11.1	3	70,084	11.1
			S	3	5,332	2.0	3	5,332	2.0
		St. Matthew Blue	N	1	17,002	2.3	2	20,833	2.9
			S	0	0	0.0	1	3,867	2.2
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Kenai	Bristol Bay Red	N	1	18,809	6.3	1	18,809	6.3
			S	1	18,594	0.2	1	18,594	0.2
		Bering Sea Snow	N	1	136,608	1.0	1	136,608	1.0
			S	0	0	0.0	0	0	0.0
		Bering Sea Tanner	U	1	28,957	0.5	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	0	0	0.0	0	0	0.0
		Bering Tanner West	U	0	0	0.0	0	0	0.0
		Pribilof Is. Blue/Red	N	0	0	0.0	0	0	0.0
			S	1	18,207	6.8	1	18,207	6.8
		St. Matthew Blue	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	King Cove	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	4	182,340	1.6	3	123,682	1.1
		Bering Sea Snow	N	3	215,341	1.6	2	80,968	0.6
			S	3	230,772	1.5	2	138,595	0.9
		Bering Sea Tanner	U	4	142,853	2.6	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	3	100,184	1.8	3	100,184	1.8
		Bering Tanner West	U	3	100,184	1.8	3	100,184	1.8

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		Pribilof Is. Blue/Red	N	2	23,886	3.8	2	23,886	3.8
			S	2	4,618	1.7	2	4,618	1.7
		St. Matthew Blue	N	2	18,008	2.5	1	6,547	0.9
			S	1	325	0.2	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Kodiak	Bristol Bay Red	N	3	52,366	17.5	3	60,434	20.2
			S	20	970,798	8.6	23	1,188,242	10.5
		Bering Sea Snow	N	17	2,134,613	15.8	14	1,908,746	14.1
			S	11	836,236	5.6	11	656,377	4.4
		Bering Sea Tanner	U	20	663,021	12.0	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	20	640,663	11.6	21	741,754	13.5
		Bering Tanner West	U	20	640,663	11.6	20	741,754	13.5
		Pribilof Is. Blue/Red	N	4	52,796	8.3	4	52,796	8.3
			S	3	15,430	5.8	3	15,430	5.8
		St. Matthew Blue	N	9	111,995	15.4	11	123,323	16.9
			S	6	14,334	8.3	7	11,936	6.8
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Petersburg	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	1	51,340	0.5	1	51,340	0.5
		Bering Sea Snow	N	1	153,059	1.1	1	153,059	1.1
			S	1	96,183	0.6	1	96,183	0.6
		Bering Sea Tanner	U	1	18,973	0.3	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	18,973	0.3	1	18,973	0.3
		Bering Tanner West	U	1	18,973	0.3	1	18,973	0.3
		Pribilof Is. Blue/Red	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		St. Matthew Blue	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
	Sand Point	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	1	36,820	0.3	1	36,820	0.3
		Bering Sea Snow	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Bering Sea Tanner	U	0	0	0.0	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	0	0	0.0	0	0	0.0
		Bering Tanner West	U	0	0	0.0	0	0	0.0
		Pribilof Is. Blue/Red	N	1	8,465	1.3	1	8,465	1.3
			S	0	0	0.0	0	0	0.0
		St. Matthew Blue	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Sitka	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Bering Sea Snow	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Bering Sea Tanner	U	0	0	0.0	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	42,669	0.8	0	0	0.0
		Bering Tanner West	U	1	42,669	0.8	0	0	0.0
		Pribilof Is. Blue/Red	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		St. Matthew Blue	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Soldotna	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	1	45,874	0.4	1	45,874	0.4
		Bering Sea Snow	N	1	43,126	0.3	1	43,126	0.3
			S	1	140,410	0.9	1	140,410	0.9
		Bering Sea Tanner	U	1	33,887	0.6	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	33,887	0.6	1	33,887	0.6
		Bering Tanner West	U	1	33,887	0.6	1	33,887	0.6
		Pribilof Is. Blue/Red	N	1	23,500	3.7	1	23,500	3.7
			S	0	0	0.0	0	0	0.0
		St. Matthew Blue	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Dutch Harbor/Unalaska	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	1	57,493	0.5	2	119,890	1.1
		Bering Sea Snow	N	1	62,932	0.5	2	143,825	1.1
			S	1	41,423	0.3	2	65,187	0.4
		Bering Sea Tanner	U	1	11,572	0.2	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	2	27,644	0.5	2	27,644	0.5
		Bering Tanner West	U	2	27,644	0.5	2	27,644	0.5
		Pribilof Is. Blue/Red	N	0	0	0.0	0	0	0.0
			S	0	11,654	4.4	1	11,654	4.4
		St. Matthew Blue	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Valdez	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	1	27,581	0.2	0	0	0.0
		Bering Sea Snow	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Bering Sea Tanner	U	1	28,533	0.5	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	28,533	0.5	0	0	0.0
		Bering Tanner West	U	1	28,533	0.5	0	0	0.0
		Pribilof Is. Blue/Red	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		St. Matthew Blue	N	1	8,951	1.2	1	8,951	1.2
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Wasilla	Bristol Bay Red	N	0	0	0.0	0	0	0.0
			S	1	54,984	0.5	1	54,984	0.5
		Bering Sea Snow	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Bering Sea Tanner	U	1	33,978	0.6	0	0	--
		Eastern Aleutian Golden	S	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
			W	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	33,978	0.6	1	33,978	0.6
		Bering Tanner West	U	1	33,978	0.6	1	33,978	0.6
		Pribilof Is. Blue/Red	N	1	8,488	1.3	1	8,488	1.3
			S	1	7,772	2.9	1	7,772	2.9
		St. Matthew Blue	N	0	0	0.0	0	0	0.0
			S	0	0	0.0	0	0	0.0
		Western Aleutian Red	S	0	0	0.0	0	0	0.0
	Alaska Total	**Bristol Bay Red**	**N**	**6**	**134,229**	**45.0**	**5**	**109,697**	**36.8**
			S	**45**	**2,279,246**	**20.2**	**52**	**2,663,155**	**23.6**
		Bering Sea Snow	**N**	**37**	**4,351,893**	**32.1**	**37**	**4,327,772**	**32.0**
			S	**28**	**1,909,556**	**12.8**	**31**	**1,749,336**	**11.7**
		Bering Sea Tanner	**U**	**41**	**1,261,407**	**22.9**	**0**	**0**	**--**
		Eastern Aleutian Golden	**S**	**1**	**6,962**	**2.3**	**1**	**6,962**	**2.3**
		Western Aleutian Golden	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
			W	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Tanner East	**U**	**42**	**1,233,812**	**22.4**	**40**	**1,254,847**	**22.8**
		Bering Tanner West	**U**	**41**	**1,233,812**	**22.4**	**38**	**1,254,847**	**22.8**
		Pribilof Is. Blue/Red	**N**	**14**	**238,060**	**37.6**	**13**	**210,944**	**33.3**
			S	**11**	**65,265**	**24.4**	**12**	**65,265**	**24.4**
		St. Matthew Blue	**N**	**18**	**207,806**	**28.6**	**19**	**200,216**	**27.5**
			S	**8**	**17,487**	**10.2**	**10**	**18,956**	**10.8**
		Western Aleutian Red	**S**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
Washington	**Washington Total**	**Bristol Bay Red**	**N**	**5**	**130,750**	**43.8**	**6**	**155,282**	**52.0**
			S	**106**	**7,181,960**	**63.7**	**105**	**6,880,865**	**61.0**

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		Bering Sea Snow	**N**	**83**	**7,451,855**	**55.0**	**82**	**6,859,273**	**50.7**
			S	**89**	**10,496,574**	**70.5**	**89**	**10,490,398**	**70.4**
		Bering Sea Tanner	**U**	**98**	**3,284,299**	**59.6**	**0**	**0**	**--**
		Eastern Aleutian Golden	**S**	**9**	**204,859**	**68.3**	**8**	**176,443**	**58.8**
		Western Aleutian Golden	**U**	**3**	**84,585**	**23.8**	**3**	**84,585**	**23.8**
			W	**3**	**81,288**	**24.3**	**3**	**81,288**	**24.3**
		Bering Tanner East	**U**	**101**	**3,408,883**	**61.9**	**99**	**3,214,956**	**58.3**
		Bering Tanner West	**U**	**92**	**3,408,883**	**61.9**	**90**	**3,214,956**	**58.3**
		Pribilof Is. Blue/Red	**N**	**12**	**266,684**	**42.2**	**13**	**293,800**	**46.4**
			S	**12**	**150,361**	**56.2**	**12**	**150,361**	**56.2**
		St. Matthew Blue	**N**	**39**	**421,288**	**57.9**	**37**	**409,439**	**56.3**
			S	**30**	**145,692**	**84.6**	**27**	**144,925**	**82.3**
		Western Aleutian Red	**S**	**3**	**1,200,156**	**77.2**	**3**	**1,200,156**	**77.2**
Oregon	**Oregon Total**	**Bristol Bay Red**	**N**	**1**	**13,489**	**4.5**	**1**	**13,489**	**4.5**
			S	**14**	**893,729**	**7.9**	**19**	**1,034,957**	**9.2**
		Bering Sea Snow	**N**	**13**	**988,385**	**7.3**	**19**	**1,271,348**	**9.4**
			S	**12**	**1,097,316**	**7.4**	**17**	**1,694,991**	**11.4**
		Bering Sea Tanner	**U**	**17**	**506,887**	**9.2**	**0**	**0**	**--**
		Eastern Aleutian Golden	**S**	**2**	**76,104**	**25.4**	**3**	**97,745**	**32.6**
		Western Aleutian Golden	**U**	**3**	**185,562**	**52.3**	**4**	**210,794**	**59.4**
			W	**3**	**205,069**	**61.2**	**4**	**253,838**	**75.7**
		Bering Tanner East	**U**	**18**	**605,096**	**11.0**	**23**	**691,447**	**12.5**
		Bering Tanner West	**U**	**16**	**605,096**	**11.0**	**22**	**691,447**	**12.5**
		Pribilof Is. Blue/Red	**N**	**4**	**58,396**	**9.2**	**4**	**58,396**	**9.2**
			S	**4**	**20,345**	**7.6**	**4**	**20,345**	**7.6**
		St. Matthew Blue	**N**	**4**	**50,807**	**7.0**	**6**	**70,336**	**9.7**
			S	**3**	**2,370**	**1.4**	**5**	**5,535**	**3.1**
		Western Aleutian Red	**S**	**1**	**354,878**	**22.8**	**1**	**354,878**	**22.8**
Other U.S.	**Other U.S. Total**	**Bristol Bay Red**	**N**	**1**	**19,987**	**6.7**	**1**	**19,987**	**6.7**
			S	**14**	**925,214**	**8.2**	**12**	**701,172**	**6.2**
		Bering Sea Snow	**N**	**10**	**746,050**	**5.5**	**12**	**1,079,822**	**8.0**
			S	**13**	**1,391,964**	**9.3**	**12**	**960,721**	**6.4**
		Bering Sea Tanner	**U**	**15**	**458,432**	**8.3**	**0**	**0**	**--**
		Eastern Aleutian Golden	**S**	**1**	**12,064**	**4.0**	**2**	**18,839**	**6.3**
		Western Aleutian Golden	**U**	**2**	**84,678**	**23.9**	**1**	**59,446**	**16.8**
			W	**1**	**48,769**	**14.6**	**0**	**0**	**0.0**

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		Bering Tanner East	**U**	**11**	**263,234**	**4.8**	**14**	**349,775**	**6.3**
		Bering Tanner West	**U**	**10**	**263,234**	**4.8**	**13**	**349,775**	**6.3**
		Pribilof Is. Blue/Red	**N**	**4**	**69,435**	**11.0**	**4**	**69,435**	**11.0**
			S	**4**	**31,447**	**11.8**	**4**	**31,447**	**11.8**
		St. Matthew Blue	**N**	**4**	**47,853**	**6.6**	**4**	**47,853**	**6.6**
			S	**3**	**6,704**	**3.9**	**3**	**6,704**	**3.8**
		Western Aleutian Red	**S**	**0**	**0**	**0.0**	**0**	**0**	**0.0**

Source: National Marine Fisheries Service Alaska Regional Office 2008.

Table A1-10. CPO Shares – Initial Allocation and 2008-2009 Quota Shareholders

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
Alaska	Anchorage	Bristol Bay Red	U	1	777,429	4.4	2	1,250,587	7.1
		Bering Sea Snow	U	1	3,494,652	3.9	3	8,061,549	9.1
		Bering Sea Tanner	U	1	460,039	3.5	0	0	--
		Eastern Aleutian Golden	U	0	0	0.0	0	0	0.0
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	460,039	3.5	2	915,592	7.0
		Bering Tanner West	U	1	460,039	3.5	2	915,592	7.0
		Pribilof Is. Blue/Red	U	0	0	0.0	0	0	0.0
		St. Matthew Blue	U	0	0	0.0	0	0	0.0
		Western Aleutian Red	U	0	0	0.0	0	0	0.0
	Alaska Total	**Bristol Bay Red**	**U**	**1**	**777,429**	**4.4**	**2**	**1,250,587**	**7.1**
		Bering Sea Snow	**U**	**1**	**3,494,652**	**3.9**	**3**	**8,061,549**	**9.1**
		Bering Sea Tanner	**U**	**1**	**460,039**	**3.5**	**0**	**0**	**--**
		Eastern Aleutian Golden	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Western Aleutian Golden	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Tanner East	**U**	**1**	**460,039**	**3.5**	**2**	**915,592**	**7.0**
		Bering Tanner West	**U**	**1**	**460,039**	**3.5**	**2**	**915,592**	**7.0**
		Pribilof Is. Blue/Red	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		St. Matthew Blue	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Western Aleutian Red	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
Washington	**Washington Total**	**Bristol Bay Red**	**U**	**13**	**16,921,219**	**95.6**	**13**	**16,448,061**	**92.9**
		Bering Sea Snow	**U**	**17**	**85,185,819**	**96.1**	**17**	**80,618,922**	**90.9**
		Bering Sea Tanner	**U**	**14**	**12,617,209**	**96.5**	**0**	**0**	**--**
		Eastern Aleutian Golden	**U**	**2**	**469,136**	**100.0**	**2**	**469,136**	**100.0**
		Western Aleutian Golden	**U**	**2**	**17,935,173**	**100.0**	**3**	**17,935,173**	**100.0**
		Bering Tanner East	**U**	**14**	**12,617,209**	**96.5**	**14**	**12,161,656**	**93.0**
		Bering Tanner West	**U**	**12**	**12,617,209**	**96.5**	**12**	**12,161,656**	**93.0**
		Pribilof Is. Blue/Red	**U**	**1**	**151,568**	**100.0**	**1**	**151,568**	**100.0**
		St. Matthew Blue	**U**	**5**	**579,116**	**100.0**	**5**	**579,116**	**100.0**
		Western Aleutian Red	**U**	**2**	**22,713,377**	**100.0**	**2**	**22,713,377**	**100.0**
Oregon	**Oregon Total**	**Bristol Bay Red**	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Sea Snow	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Sea Tanner	**U**	**0**	**0**	**0.0**	**0**	**0**	**--**
		Eastern Aleutian Golden	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		Western Aleutian Golden	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Tanner East	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Tanner West	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Pribilof Is. Blue/Red	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		St. Matthew Blue	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Western Aleutian Red	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
Other U.S.	**Other U.S. Total**	**Bristol Bay Red**	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Sea Snow	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Sea Tanner	**U**	**0**	**0**	**0.0**	**0**	**0**	**--**
		Eastern Aleutian Golden	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Western Aleutian Golden	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Tanner East	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Tanner West	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Pribilof Is. Blue/Red	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		St. Matthew Blue	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Western Aleutian Red	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**

Source: National Marine Fisheries Service Alaska Regional Office 2008.

Table A1-11. CPC Shares – Initial Allocation and 2008-2009 Quota Shareholders

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
Alaska	Anchorage	Bristol Bay Red	U	0	0	0.0	0	0	0.0
		Bering Sea Snow	U	0	0	0.0	0	0	0.0
		Bering Sea Tanner	U	0	0	0.0	0	0	--
		Eastern Aleutian Golden	U	0	0	--	0	0	--
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
		Bering Tanner East	U	1	25,739	5.2	1	25,739	5.2
		Bering Tanner West	U	1	25,739	5.2	1	25,739	5.2
		Pribilof Is. Blue/Red	U	0	0	--	0	0	--
		St. Matthew Blue	U	0	0	--	0	0	--
		Western Aleutian Red	U	0	0	0.0	0	0	0.0
	Kodiak	Bristol Bay Red	U	2	51,478	10.9	2	1,184	0.3
		Bering Sea Snow	U	0	0	0.0	0	0	0.0
		Bering Sea Tanner	U	0	0	0.0	0	0	--
		Eastern Aleutian Golden	U	0	0	--	0	0	--
		Western Aleutian Golden	U	0	0	0.0	0	0	0.0
		Bering Tanner East	U	0	0	0.0	0	0	0.0
		Bering Tanner West	U	0	0	0.0	0	0	0.0
		Pribilof Is. Blue/Red	U	0	0	--	0	0	--
		St. Matthew Blue	U	0	0	--	0	0	--
		Western Aleutian Red	U	0	0	0.0	0	0	0.0
	Alaska Total	**Bristol Bay Red**	**U**	**2**	**51,478**	**10.9**	**2**	**1,184**	**0.3**
		Bering Sea Snow	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Sea Tanner	**U**	**0**	**0**	**0.0**	**0**	**0**	**--**
		Eastern Aleutian Golden	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		Western Aleutian Golden	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Tanner East	**U**	**1**	**25,739**	**5.2**	**1**	**25,739**	**5.2**
		Bering Tanner West	**U**	**1**	**25,739**	**5.2**	**1**	**25,739**	**5.2**
		Pribilof Is. Blue/Red	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		St. Matthew Blue	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		Western Aleutian Red	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
Washington	**Washington Total**	**Bristol Bay Red**	**U**	**4**	**210,926**	**44.7**	**3**	**194,785**	**46.2**
		Bering Sea Snow	**U**	**6**	**1,230,257**	**69.3**	**7**	**1,469,349**	**82.8**
		Bering Sea Tanner	**U**	**12**	**408,191**	**82.8**	**0**	**0**	**--**
		Eastern Aleutian Golden	**U**	**0**	**0**	**--**	**0**	**0**	**--**

State	Community	Species	Region	Initial Allocation			2008-2009 Quota Shareholders		
				Unique Holders	Quota Units	% of Total Quota Units For Species/Region	Unique Holders	Quota Units	% of Total Quota Units For Species/Region
		Western Aleutian Golden	**U**	**1**	**500,850**	**98.2**	**1**	**500,850**	**98.2**
		Bering Tanner East	**U**	**11**	**376,882**	**76.4**	**11**	**376,882**	**76.4**
		Bering Tanner West	**U**	**11**	**376,882**	**76.4**	**11**	**376,882**	**76.4**
		Pribilof Is. Blue/Red	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		St. Matthew Blue	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		Western Aleutian Red	**U**	**1**	**245,011**	**100.0**	**1**	**245,011**	**100.0**
Oregon	**Oregon Total**	**Bristol Bay Red**	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Sea Snow	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Sea Tanner	**U**	**0**	**0**	**0.0**	**0**	**0**	**--**
		Eastern Aleutian Golden	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		Western Aleutian Golden	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Tanner East	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Bering Tanner West	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
		Pribilof Is. Blue/Red	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		St. Matthew Blue	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		Western Aleutian Red	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**
Other U.S.	**Other U.S. Total**	**Bristol Bay Red**	**U**	**2**	**209,621**	**44.4**	**3**	**225,762**	**53.5**
		Bering Sea Snow	**U**	**2**	**543,814**	**30.7**	**2**	**304,722**	**17.2**
		Bering Sea Tanner	**U**	**3**	**84,982**	**17.2**	**0**	**0**	**--**
		Eastern Aleutian Golden	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		Western Aleutian Golden	**U**	**1**	**9,257**	**1.8**	**1**	**9,257**	**1.8**
		Bering Tanner East	**U**	**3**	**90,552**	**18.4**	**3**	**90,552**	**18.4**
		Bering Tanner West	**U**	**3**	**90,552**	**18.4**	**3**	**90,552**	**18.4**
		Pribilof Is. Blue/Red	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		St. Matthew Blue	**U**	**0**	**0**	**--**	**0**	**0**	**--**
		Western Aleutian Red	**U**	**0**	**0**	**0.0**	**0**	**0**	**0.0**

Source: National Marine Fisheries Service Alaska Regional Office 2008.

ATTACHMENT 2

TOTAL AND PERCENTAGE OF KODIAK QUARTERLY SALES BY BUSINESS TYPE, FIRST QUARTER 2002–FIRST QUARTER 2008

Table A2-1. Total Sales Reported by Kodiak Businesses, by Year and Quarter (thousands of dollars), 2002–2008

	2002				2003				2004				2005				2006				2007				2008
Business Type	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**
Contractors	2,792	5,597	13,302	7,209	5,700	13,546	16,255	9,976	4,775	8,866	13,521	12,581	7,349	9,879	13,132	9,077	6,233	10,195	5,414	6,246	5,171	10,635	25,761	14,971	4,408
Grocery Stores	7,227	8,062	8,177	7,220	7,756	8,044	8,335	7,933	7,483	8,109	8,466	7,342	7,770	8,656	8,844	7,793	7,903	8,752	9,068	8,144	8,101	9,355	9,612	8,553	8,533
Canneries	2,286	4,789	4,354	3,648	3,125	5,421	5,705	3,029	3,356	4,535	6,585	2,579	3,225	5,676	5,862	3,263	3,092	5,437	5,921	4,204	3,021	6,765	6,322	5,169	2,424
Taxi Cabs	176	189	200	184	155	158	201	161	182	196	200	183	175	164	191	161	150	162	181	159	132	168	189	186	163
City Boat Harbor	525	371	585	312	618	329	744	296	570	119	854	159	273	148	700	563	503	290	924	642	532	317	1,087	1,327	487
Boat Charters	60	101	429	170	49	66	643	82	88	268	869	238	37	260	904	318	111	147	882	164	17	181	788	233	67
Communications	1,025	1,236	1,131	1,168	1,037	1,129	1,060	1,158	1,121	1,330	1,435	1,466	1,294	1,230	1,193	1,312	1,578	1,643	1,578	1,714	1,523	1,939	1,974	2,085	1,947
City Utilities	1,250	1,172	1,131	1,121	1,218	1,161	1,302	1,176	1,234	1,091	1,228	1,041	1,210	1,110	1,281	1,083	NA	1,132	1,350	757	1,281	1,290	1,439	705	1,431
Utilities	5,361	4,983	5,381	5,284	5,697	4,993	5,380	5,001	5,724	5,112	5,843	5,012	5,975	5,206	5,922	5,507	6,402	6,068	7,564	6,394	6,811	6,882	6,794	7,246	7,190
Beverage Distributors	213	377	481	362	296	416	492	410	360	471	453	294	352	509	546	462	647	51	572	367	30	59	86	591	423
Retail Sales	22,491	32,664	28,223	25,717	23,751	35,135	28,864	26,620	25,243	32,475	35,311	32,343	32,122	33,281	45,885	31,584	29,464	38,241	46,470	28,009	30,763	39,269	45,924	36,483	39,846
Restaurants	1,482	1,851	1,930	1,753	1,584	1,864	2,094	1,864	1,715	1,985	2,134	1,890	1,675	1,955	2,276	1,749	1,635	2,041	2,310	1,874	1,791	2,101	2,353	1,937	1,838
Bars/Liquor Stores	1,824	2,209	2,475	2,313	1,411	2,499	2,717	2,386	2,126	2,465	2,767	2,385	2,181	2,465	2,864	2,352	2,183	2,673	2,838	2,298	2,215	2,704	3,206	2,421	2,191
Rental/Leases	2,321	2,346	2,390	2,428	2,312	2,360	2,549	2,350	2,416	2,489	2,546	2,431	2,488	2,421	2,370	2,239	2,488	2,629	2,669	2,302	2,612	2,339	2,623	2,772	2,745
Hotels/Motels/B&B	478	918	1,375	756	683	1,068	1,512	831	812	1,025	1,484	858	788	1,138	1,651	966	1,017	1,336	1,821	887	799	1,314	1,876	945	789
Beauticians	166	184	184	208	173	208	201	188	185	192	188	202	183	195	199	213	196	198	217	203	213	217	206	201	177
Personal Services	123	140	159	155	167	183	200	185	225	232	220	211	200	182	189	178	198	228	225	166	163	183	168	212	218
Advertising	0	0	0	0	0	0	0	0	0	0	0	11	3	0	0	32	0	2	30	4	4	21	4	21	4
Artists/Photographers	18	53	16	89	17	57	64	49	19	53	75	88	38	82	101	89	49	95	52	124	40	76	69	123	22
Business Services	962	979	1,031	1,037	928	1,022	1,109	1,057	1,053	1,213	1,323	1,210	1,148	981	991	1,071	1,242	1,466	1,372	1,291	1,140	1,370	1,353	1,078	1,202
Vehicle Repairs	917	1,365	1,252	1,109	851	1,152	1,292	1,153	1,299	1,244	1,389	1,166	819	1,229	1,059	1,073	843	1,326	1,209	1,285	1,157	1,221	1,498	1,538	1,274
Service Stations	706	828	773	712	736	841	840	822	796	913	976	891	832	1,014	1,067	990	1,547	1,833	2,049	5,202	1,586	1,867	1,959	1,714	1,705
General Repair Services	1,333	1,617	1,836	1,863	1,743	1,767	1,722	1,461	1,411	1,850	1,798	1,599	1,560	1,724	1,607	1,689	1,728	2,352	1,955	1,802	1,439	2,168	2,282	1,999	1,876
Amusements	150	144	172	121	125	132	158	88	278	277	295	272	271	274	259	261	243	275	277	282	260	276	289	254	264
Health Services	114	104	113	100	37	126	83	84	122	103	110	106	88	126	101	68	51	49	55	46	50	55	52	41	45
Legal Services	287	236	353	267	231	284	325	243	275	287	532	495	325	427	182	294	385	241	278	300	265	224	255	401	247
Miscellaneous Services	669	1,040	1,494	1,234	707	1,686	1,662	1,298	1,232	1,831	1,726	1,470	1,475	2,087	2,022	1,495	1,709	5,070	6,296	4,068	2,206	2,570	2,967	2,405	2,670
Total	54,956	73,556	78,947	66,541	61,107	85,646	85,510	69,902	64,098	78,729	92,328	78,523	73,857	82,418	101,398	75,882	NA	93,933	103,579	78,935	73,322	95,567	121,135	95,611	84,185
Total, excl. City Utilities	53,707	72,384	77,816	65,421	59,889	84,484	84,208	68,726	62,864	77,638	91,101	77,482	72,647	81,308	100,117	74,798	71,596	92,801	102,228	78,177	72,041	94,276	119,696	94,905	82,754

Table A2-2. Percentage Change in Total Sales Reported by Kodiak Businesses Compared to Previous Year Corresponding Quarter, 2002–2008

	2003				2004				2005				2006				2007				2008
Business Type	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**
Contractors	104%	142%	22%	38%	-16%	-35%	-17%	26%	54%	11%	-3%	-28%	-15%	3%	-59%	-31%	-17%	4%	376%	140%	-15%
Grocery Stores	7%	0%	2%	10%	-4%	1%	2%	-7%	4%	7%	4%	6%	2%	1%	3%	5%	3%	7%	6%	5%	5%
Canneries	37%	13%	31%	-17%	7%	-16%	15%	-15%	-4%	25%	-11%	27%	-4%	-4%	1%	29%	-2%	24%	7%	23%	-20%
Taxi Cabs	-12%	-16%	0%	-13%	17%	24%	0%	14%	-4%	-16%	-5%	-12%	-14%	-1%	-5%	-1%	-12%	4%	4%	17%	23%
City Boat Harbor	18%	-11%	27%	-5%	-8%	-64%	15%	-46%	-52%	24%	-18%	254%	84%	96%	32%	14%	6%	9%	18%	107%	-9%
Boat Charters	-18%	-35%	50%	-52%	80%	306%	35%	190%	-58%	-3%	4%	34%	200%	-44%	-2%	-48%	-85%	24%	-11%	42%	294%
Communications	1%	-9%	-6%	-1%	8%	18%	35%	27%	15%	-8%	-17%	-11%	22%	34%	32%	31%	-4%	18%	25%	22%	28%
City Utilities	-3%	-1%	15%	5%	1%	-6%	-6%	-11%	-2%	2%	4%	4%	NA	2%	5%	-30%	NA	14%	7%	-7%	12%
Utilities	6%	0%	0%	-5%	0%	2%	9%	0%	4%	2%	1%	10%	7%	17%	28%	16%	6%	13%	-10%	13%	6%
Beverage Distributors	39%	10%	2%	13%	22%	13%	-8%	-28%	-2%	8%	21%	57%	84%	-90%	5%	-20%	-95%	17%	-85%	61%	1331%
Retail Sales	6%	8%	2%	4%	6%	-8%	22%	21%	27%	2%	30%	-2%	-8%	15%	1%	-11%	4%	3%	-1%	30%	30%
Restaurants	7%	1%	8%	6%	8%	6%	2%	1%	-2%	-2%	7%	-7%	-2%	4%	2%	7%	10%	3%	2%	3%	3%
Bars/Liquor Stores	-23%	13%	10%	3%	51%	-1%	2%	0%	3%	0%	4%	-1%	0%	8%	-1%	-2%	1%	1%	13%	5%	-1%
Rental/Leases	0%	1%	7%	-3%	4%	5%	0%	3%	3%	-3%	-7%	-8%	0%	9%	13%	3%	5%	-11%	-2%	20%	5%
Hotels/Motels/B&B	43%	16%	10%	10%	19%	-4%	-2%	3%	-3%	11%	11%	13%	29%	17%	10%	-8%	-21%	-2%	3%	6%	-1%
Beauticians	4%	13%	9%	-10%	7%	-8%	-6%	7%	-1%	2%	6%	5%	7%	2%	9%	-5%	9%	9%	-5%	-1%	-17%
Personal Services	36%	31%	26%	19%	35%	27%	10%	14%	-11%	-22%	-14%	-16%	-1%	25%	19%	-7%	-18%	-20%	-25%	28%	34%
Advertising												191%	-100%			-89%		780%	-86%	479%	6%
Artists/Photographers	-6%	8%	300%	-45%	12%	-7%	17%	80%	100%	55%	35%	1%	29%	16%	-48%	39%	-17%	-20%	31%	-1%	-45%
Business Services	-4%	4%	8%	2%	13%	19%	19%	14%	9%	-19%	-25%	-11%	8%	49%	38%	21%	-8%	-7%	-1%	-17%	5%
Vehicle Repairs	-7%	-16%	3%	4%	53%	8%	8%	1%	-37%	-1%	-24%	-8%	3%	8%	14%	20%	37%	-8%	24%	20%	10%
Service Stations	4%	2%	9%	15%	8%	9%	16%	8%	5%	11%	9%	11%	86%	81%	92%	425%	3%	2%	-4%	-67%	7%
General Repair Services	31%	9%	-6%	-22%	-19%	5%	4%	9%	11%	-7%	-11%	6%	11%	36%	22%	7%	-17%	-8%	17%	11%	30%
Amusements	-17%	-8%	-8%	-27%	122%	110%	87%	209%	-3%	-1%	-12%	-4%	-10%	0%	7%	8%	7%	0%	4%	-10%	1%
Health Services	-68%	21%	-27%	-16%	230%	-18%	33%	26%	-28%	22%	-8%	-36%	-42%	-61%	-45%	-32%	-2%	11%	-6%	-12%	-10%
Legal Services	-20%	20%	-8%	-9%	19%	1%	64%	104%	18%	49%	-66%	-41%	18%	-43%	53%	2%	-31%	-7%	-9%	34%	-7%
Miscellaneous Services	6%	62%	11%	5%	74%	9%	4%	13%	20%	14%	17%	2%	16%	143%	211%	172%	29%	-49%	-53%	-41%	21%
Total	11%	16%	8%	5%	5%	-8%	8%	12%	15%	5%	10%	-3%	NA	14%	2%	4%	NA	2%	17%	21%	15%
Total, excl. City Utilities	12%	17%	8%	5%	5%	-8%	8%	13%	16%	5%	10%	-3%	-1%	14%	2%	5%	1%	2%	17%	21%	15%

Table A2-3. Change and Percentage Change in Kodiak Fourth and First Quarter Sales by Business Type, 2004/05–2007/08

	Combined Average Sales, 4th & 1st Quarters (thousands of dollars)				Change of Combined Average Sales, 4th & 1st Quarters to Previous Year, Plus Comparison of 2007/08 to 2004/05							
Business Type	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2005/06**		**2006/07**		**2007/08**		**2007/08 to 2004/05**	
Contractors	9,965	7,655	5,708	9,689	-2,310	-23%	-1,947	-25%	3,981	70%	-276	-3%
Grocery Stores	7,556	7,848	8,123	8,543	292	4%	275	3%	420	5%	987	13%
Canneries	2,902	3,178	3,612	3,797	276	9%	435	14%	184	5%	895	31%
Taxi Cabs	179	156	145	174	-24	-13%	-10	-7%	29	20%	-5	-3%
City Boat Harbor	216	533	587	907	317	147%	54	10%	320	54%	691	320%
Boat Charters	138	215	90	150	77	56%	-124	-58%	59	66%	12	9%
Communications	1,380	1,445	1,618	2,016	65	5%	173	12%	397	25%	636	46%
City Utilities	1,126	NA	1,019	1,068	NA	NA	NA	NA	49	5%	-57	-5%
Utilities	5,494	5,955	6,603	7,218	461	8%	648	11%	615	9%	1,724	31%
Beverage Distributors	323	555	199	507	232	72%	-356	-64%	309	155%	184	57%
Retail Sales	32,233	30,524	29,386	38,164	-1,709	-5%	-1,138	-4%	8,779	30%	5,932	18%
Restaurants	1,783	1,692	1,833	1,888	-91	-5%	141	8%	55	3%	105	6%
Bars/Liquor Stores	2,283	2,268	2,257	2,306	-16	-1%	-11	0%	49	2%	23	1%
Rental/Leases	2,460	2,364	2,457	2,759	-96	-4%	93	4%	302	12%	299	12%
Hotels/Motels/B&B	823	992	843	867	169	20%	-148	-15%	23	3%	44	5%
Beauticians	193	205	208	189	12	6%	4	2%	-19	-9%	-3	-2%
Personal Services	206	188	164	215	-18	-9%	-24	-13%	51	31%	10	5%
Advertising	7	16	4	13	9	129%	-12	-76%	9	229%	6	83%
Artists/Photographers	63	69	82	73	6	10%	13	19%	-10	-12%	10	15%
Business Services	1,179	1,157	1,216	1,140	-23	-2%	59	5%	-76	-6%	-39	-3%
Vehicle Repairs	993	958	1,221	1,406	-35	-3%	263	27%	185	15%	413	42%
Service Stations	862	1,269	3,394	1,709	407	47%	2,126	168%	-1,685	-50%	848	98%
General Repair Services	1,580	1,709	1,620	1,937	129	8%	-88	-5%	317	20%	358	23%
Amusements	272	252	271	259	-20	-7%	19	7%	-12	-4%	-12	-5%
Health Services	97	60	48	43	-38	-39%	-11	-19%	-5	-11%	-54	-56%
Legal Services	410	340	283	324	-71	-17%	-57	-17%	42	15%	-86	-21%
Miscellaneous Services	1,473	1,602	3,137	2,538	130	9%	1,535	96%	-599	-19%	1,065	72%
Total	76,190	NA	76,128	89,898	NA	NA	NA	NA	13,770	18%	13,708	18%
Total, excl. City Utilities	75,065	73,197	75,109	88,830	-1,868	-2%	1,912	3%	13,721	18%	13,765	18%

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