

# Executive Summary

## Introduction

In 1976, Congress passed into law what is currently known as the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This law authorized the United States (U.S.) to manage its fishery resources from 3 to 200 nautical miles (nm) (4.8 to 320 kilometers [km]) off its coast (the U.S. Exclusive Economic Zone [EEZ]). The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in Regional Fishery Management Councils. In the Alaska region, the North Pacific Fishery Management Council (Council) has the responsibility to prepare Fishery Management Plans (FMP) for marine resources requiring conservation and management, as determined by the Council. The U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (hereinafter referred to as NOAA Fisheries) is charged with carrying out the federal mandates of the U.S. Department of Commerce with regard to commercial fisheries such as approving and implementing FMPs and FMP amendments recommended by the Council.

In January 2004, the U.S. Congress amended the Magnuson-Stevens Act through the Consolidated Appropriations Act of 2004 (Pub. L. No. 108-199, section 801(j)), by adding subparagraph (j) in section 313. This subparagraph requires the Secretary to approve, by January 1, 2005, the Voluntary Three-pie Cooperative Program<sup>1</sup> (Program) as it was approved by the Council between June 2002, and April 2003, including all trailing amendments reported to Congress on May 6, 2003. Additionally, the statute gives the Council the ability to recommend to the Secretary subsequent program amendments. In June 2004, the Council adopted the Program, with minor adjustments, as Amendments 18 and 19 to the FMP. The legislated Program, as modified by the Council, is represented by Alternative 2, the preferred alternative. Please see section 1.8 *Relationship of this action to federal law and action* and Appendix 2 for further information on this Magnuson-Stevens Act amendment.

Under the Magnuson-Stevens Act, the Council prepared and the Secretary approved the *Fishery Management Plan for the Commercial King and Tanner Crab Fisheries in the Bering Sea/Aleutian Islands* in 1989. A National Environmental Policy Act (NEPA) Environmental Assessment (EA) was prepared for the FMP with a finding of no significant impact (FONSI). Environmental analysis documents were prepared for each subsequent FMP amendment and regulatory action. In 1998, the Council updated this FMP and changed the name to the *FMP for Bering Sea/Aleutian Islands King and Tanner Crabs* (BSAI crab FMP). An EA was prepared for this revised FMP and a FONSI was determined.

The purpose of this Environmental Impact Statement (EIS) is to provide decision-makers and the public with an evaluation of the environmental, social, and economic effects of alternative management programs for the Bering Sea and Aleutian Islands (BSAI) crab fisheries. It is intended that this EIS serve as the central environmental document for management measures developed by NOAA Fisheries and the Council to implement the provisions of the proposed program. NOAA Fisheries determined that this proposed action

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<sup>1</sup> The title ‘Voluntary Three-pie Cooperative Program’ is used in the Statute and in the Council’s motion, however the title ‘Three-pie Voluntary Cooperative Program’ more accurately reflects the Program because the three-pie portion is mandatory and the cooperative portion is voluntary. Both titles are used interchangeably in this EIS.

was a major federal action with potentially significant impacts on the human environment, therefore, preparation of an EIS level analysis was considered appropriate.

The EIS contains three appendices: a regulatory impact review/initial regulatory flexibility analysis (RIR/IRFA), the Council's reports to Congress and the Congressional action, and a social impact assessment. The RIR/IRFA analyzes the economic impacts of the elements and options from which the EIS alternatives were developed. The RIR/IRFA includes a net benefit analysis of the preferred alternative. Although specific benefits cannot be quantified, net benefits should arise from implementation of the preferred alternative. These net benefits arise from gains in harvesting and processing efficiency, consumer benefits, and environmental benefits. The Council's reports to Congress, the Congressional action (including the statutory language that amends the Magnuson-Stevens Act), and related documents provide the history of Congressional consideration of a rationalization program for the BSAI crab fisheries. The social impact assessment provides detailed analyses of the impact of the alternatives on communities and regions.

The Council has identified that the BSAI crab fisheries require a concerted effort to manage capacity. In an effort to alleviate the problems caused by excess capacity and the race for fish, the Council has determined that the institution of some form of rationalization program is needed to improve crab fisheries management in accordance with the Magnuson-Stevens Act. The need for a rationalized crab management regime is explained in the Council's *BSAI Crab Rationalization Problem Statement*:

Vessel owners, processors, and coastal communities have all made investments in the crab fisheries, and capacity in these fisheries far exceeds available resources. The BSAI crab stocks have also been highly variable and have suffered significant declines. Although three of these stocks are presently under rebuilding plans, the continuing race for fish frustrates conservation efforts. Additionally, the ability of crab harvesters and processors to diversify into other fisheries is severely limited and the economic viability of the crab industry is in jeopardy. Harvesting and processing capacity has expanded to accommodate highly abbreviated seasons, and presently, significant portions of that capacity operate in an economically inefficient manner or are idle between seasons. Many of the concerns identified by the Council at the beginning of the comprehensive rationalization process in 1992 still exist for the BSAI crab fisheries. Problems facing the fishery include:

1. Resource conservation, utilization and management problems;
2. Bycatch and its associated mortalities, and potential landing deadloss;
3. Excess harvesting and processing capacity, as well as low economic returns;
4. Lack of economic stability for harvesters, processors and coastal communities; and
5. High levels of occupational loss of life and injury.

The problem facing the Council, in the continuing process of comprehensive rationalization, is to develop a management program which slows the race for fish, reduces bycatch and its associated mortalities, provides for conservation to increase the efficacy of crab rebuilding strategies, addresses the social and economic concerns of communities, maintains healthy harvesting and processing sectors and promotes efficiency and safety in the harvesting sector. Any such system should seek to achieve equity between the harvesting and processing sectors, including healthy, stable and competitive markets.

The Council has designed three alternative rationalization programs that address the issues as laid out in this problem statement.

## **Alternatives analyzed**

Four alternatives are evaluated in this EIS; status quo and three rationalization programs. The rationalization programs were designed to capture the range of management options developed and considered by the Council and NOAA Fisheries over the six years in which the rationalization programs have been under development. During the course of developing a preferred alternative for a crab rationalization program, the Council and NOAA Fisheries examined a myriad of suboptions under each management component. However, it is not practical to construct an EIS that considers the environmental and economic consequences of every permutation of suboptions considered by the Council and NOAA Fisheries during the entire public process of developing a preferred alternative. Instead, the alternatives presented in this EIS are designed to capture the range of key issues and decision points that the Council, affected industry, and public have identified during scoping as critical from an environmental, economic, and socio-economic perspective. The following is a brief synopsis of each alternative.

**Alternative 1 Status Quo (No action).** The alternative is the continuation of the current FMP for BSAI king and Tanner crab fisheries, and all activities authorized under the FMP, the current suite of FMP management measures, and the State of Alaska (State) and federal regulations developed to implement those measures. The analysis of Alternative 1 provides an understanding of the effects on the human environment of the existing crab fisheries management regime as well as the expected consequences to the affected environment should the agency undertake no action to modify the current FMP.

**Alternative 2 Three-pie Voluntary Cooperative (Preferred Alternative).** This alternative is the rationalization program required by section 313(j) of the Magnuson-Stevens Act and as modified by Council recommendation. The three-pie voluntary cooperative program is a complex program that includes elements to manage several identifiable groups that depend on these fisheries. Allocations of harvest shares would be made to harvesters, communities, and captains. Processors would be allocated processing shares. Designated regions would be allocated certain percentages of the crab landings and processing activities to preserve their historic interests in the fisheries. Harvesters would be permitted to form cooperatives to realize efficiencies through fleet consolidation. The novelty of the program has compelled the Council to include several safeguards into the program, including a binding arbitration program for the resolution of price disputes, extensive data collection, and a program review to assess the success of the program.

**Alternative 3 Individual Fishing Quota (IFQ).** This alternative is an IFQ program for the BSAI crab fisheries. The primary difference between the IFQ alternative and the preferred alternative is the absence of processor shares in the IFQ alternative. Allocations of harvest shares would be made to harvesters, communities, and captains. Designated regions would be allocated certain percentages of the crab landings to preserve their historic interests in the fisheries. The novelty of this program has compelled the Council to include, as a safeguard, extensive data collection and a program review to assess the success of the program.

**Alternative 4 Cooperative.** This alternative is a cooperative program for harvesters in the BSAI crab fisheries. The primary difference between the cooperative alternative and the preferred alternative is that processors would not receive processor shares but would instead be licensed and receive the benefit of harvest delivery requirements arising out of processor associations with cooperatives. These associations would be based on the pattern of landings in the year prior to implementation of the program. Harvesters would form cooperatives to realize efficiencies through fleet consolidation and coordination. The novelty of this program has compelled the Council to include, as a safeguard, extensive data collection and a program review to assess the success of the program.

## **The Preferred Alternative**

At its June 2002 meeting, the Council, by unanimous vote, selected the Three-pie Voluntary Cooperative Program as its preferred rationalization alternative from the several alternatives analyzed. Through June 2004, the Council further refined the Program through a series of subsequent amendments. The description of the preferred alternative in Chapter 2 of this EIS contains the complete program, including all amendments to the Program.

The preferred alternative is a carefully crafted program that strikes a balance of the interests of several identifiable groups that depend on these fisheries. The Council developed this program to fit the specific dynamics and needs of the BSAI crab fisheries. The program builds on the Council's experiences with the halibut and sablefish IFQ program and the American Fisheries Act cooperative program for Bering Sea pollock. The program is intended to address conservation and management issues associated with the current derby fishery and to reduce bycatch and associated mortalities. Share allocations to harvesters and processors, together with incentives for cooperation, are intended to increase efficiencies, provide economic stability, and facilitate compensated reduction of excess capacities in both harvesting and processing sectors. The binding arbitration program is intended to resolve price disputes between harvesters and processors, which in the past have delayed fishing. Community interests are protected by CDQ group allocations and regional landing and processing requirements, as well as several community protection measures. Captains are allocated a portion of the catch to protect their interests in the fisheries. These "owner on board" shares are intended to provide long term benefits to both captains and crew. The program includes a comprehensive economic data collection program that would aid the Council in assessing the success of the program and developing amendments necessary to mitigate any unintended consequences. Perhaps most importantly, the program would improve safety of participants in the fishery by ending the race for fish.

The Council and NOAA Fisheries believe that the crab fisheries in the BSAI require this innovative, comprehensive management approach to adequately recognize and protect the interests of all participants. It recognizes all components of the fishery as a balanced, inextricably linked system, rather than individual, competing components. It may not be the appropriate model for other fisheries in the Nation, or even for other fisheries in the North Pacific, and is not intended to be a template for other fisheries. The Council and NOAA Fisheries believe this program is the appropriate management approach for these fisheries.

## What is Rationalization?

Rationalization programs derive their name from their rationalizing effect on investment in the fishery. Technically speaking, a rationalization program is one that results in an allocation of labor and capital between fishing and other industries that maximizes the net value of production. In other words, the program removes individual incentives to overinvest in labor and capital to secure or maintain one's share of the catch. Typically, rationalization programs are management programs that create a market in the fishery through the allotment of shares to participants. Investment decisions of share holders in the fishery are then geared toward receiving maximum returns on their allotted shares. The end result of these incentives is economic investments in the fishery commensurate with the amount of fish that can be harvested and processed. The assignment of harvest shares may not only eliminate the race for fish, but may also create incentives to improve safety, resource conservation, and pursue marketing opportunities. Rationalization involves a total revamping of the way the fishery is run and takes into consideration numerous economic, social, and environmental consequences that flow from the details of the program design.

## Summary of the environmental effects of the alternatives

The environmental effects of the alternatives under consideration derive primarily from changes in crab fishing and processing patterns that are expected to result from the structural and organizational changes in the fishery caused by implementing a rationalization program. The most significant structural change resulting from a rationalization program is the allocation of the crab resource. This allocation would eliminate the race for fish and allow for more efficient, safer crab fisheries. These major structural and organizational changes are expected to affect the patterns of crab fishing and processing in the BSAI. Effects examined include:

- **Changes to crab fishing patterns.** How would each of the alternatives affect when and where crab fishermen chose to fish?
- **Changes to fleet composition.** How would each of the alternatives affect the composition of the various crab fishing fleets?
- **Changes to crab processing patterns.** How would each of the alternatives affect crab processing (i.e., processing locations, product forms, and recovery rates)?

The task of describing how a particular fishery is expected to conduct itself under a comprehensive new set of rules involves some degree of conjecture and speculation. This is because the circumstances that lead fishermen and industry to behave in a certain manner are dependent on such a wide variety of unpredictable factors including such things as weather patterns, sea ice conditions, the migratory patterns of the target species, worldwide market conditions, other regulatory changes, as well as a host of other factors that are difficult or impossible to predict. Nevertheless, the reorganization of the BSAI crab fisheries under the rationalization program alternatives would result in certain predictable changes to fishing and processing practices and these changes would have some predictable environmental and economic consequences.

**Changes to fleet composition.** The composition of fishing fleets evolves in response to many variables including management measures, changing costs, and availability of target species. Under each of the rationalization program alternatives, it is assumed the BSAI crab fleet would experience reductions in fleet

size. Allocation of harvest shares under the rationalization alternatives would allow for the use of allocations by the most efficient operators and would encourage the removal of marginal vessels from the fleet.

**Changes to fishing patterns: Temporal dispersion.** The emergence of harvest share allocations in the BSAI crab fisheries would eliminate the race for fish and result in slower paced fisheries. Under the system of harvest share allocations, each operator is issued a fixed quota which may be fished or leased to other operators. Fishermen are, therefore, assured the opportunity to harvest a fixed amount of crab and no longer need to race for fish in competition with the rest of the fleet to assure their harvest. Harvesting and processing activities may disperse temporally for logistic or market reasons. For example, participants may choose production times to avoid conflicts with the groundfish fisheries, so that the same crews and facilities may be more efficiently used in multiple fisheries. And finally, differences in markets may lead different participants to operate at different times of the year to take advantage of market opportunities. The rationalization program alternatives would provide flexibility to participants in the BSAI crab fisheries who previously had to compete for harvests in each crab opening. Removal of the time pressure associated with the race for fish would permit harvesters to reduce bycatch by fishing more selectively and allowing longer pot soaks, which allows gear to sort harvests. The removal of the time pressure should also allow participants to search longer for pots, thus, reducing lost pots and mortality.

**Changes to fishing patterns: Spatial dispersion.** Under the rationalization program alternatives, the BSAI crab fisheries may disperse more widely on a spatial basis than has been the case in previous years. The most significant reason for this increased spatial dispersion may be the slower pace of fishing under the each of the alternative rationalization programs. If harvesters share fishing information, however, this could lead to less dispersion in the fishery over time. Under a rationalization program, harvesters would have more time to find optimal fishing grounds containing congregations of legal male crabs, thus reducing bycatch and increasing fishing efficiency.

**Changes to processing patterns.** The rationalization alternatives would also change processing patterns as temporal pressures on processing are removed allowing more time for improved recovery, quality, and product development. The effects of the alternatives on processor participation could differ. The three-pie voluntary cooperative alternative's regional and community protections could result in the fisheries supporting processing activity in locations where facilities might otherwise be closed (particularly in years of low total harvests). In addition, the processor protections of the three-pie voluntary cooperative and the cooperative alternatives could limit processor consolidation.

**Effects of the alternatives on the environment.** This EIS examines how the alternatives and projected changes to crab fishing and processing patterns are expected to affect the physical and biological resources of the BSAI. Table ES-1 displays the major conclusions with respect to environmental impacts of the alternatives. In summary, for all of the components of the environment analyzed, the alternatives have been found to have similar effects and those effects are either insignificant or unknown.

**Table ES-1 Summary of the predicted environmental effects of the alternatives.**

<b>Biological Issues</b>	<b>Alternative 1 Status Quo</b>	<b>Alternative 2 Three-pie voluntary cooperative</b>	<b>Alternative 3 IFQ</b>	<b>Alternative 4 Cooperative</b>	<b>Comments and Summary</b>
<b><i>Effects on the physical environment</i></b>					
Benthic species and habitat					Pot gear is used exclusively in the BSAI crab fisheries. The use of pot gear in the BSAI crab fisheries is not expected to have significant impacts on benthic habitat and EFH.
Essential fish habitat					
<b><i>Effects on marine mammals</i></b>					
Steller sea lions					These species do not prey on crab and their primary range does not significantly overlap with primary crab fishing areas during fishing seasons.
ESA-listed cetaceans					
Bearded Seal					This species prey on snow crab however, their primary range does not significantly overlap with primary snow crab fishing areas due to ice cover.
<b><i>Effects on crab and other benthic species</i></b>					
Crab species					None of the alternatives would affect total removals of crab or the harvest level setting process.
Bycatch of Benthic species in crab fisheries					None of the alternatives would affect total removals of other species caught as bycatch and current levels are very low.
<b><i>Effects on seabirds</i></b>					
ESA-listed seabirds					These species do not prey primarily on crab and their primary range does not significantly overlap with primary crab fishing areas during fishing seasons.
<b><i>Ecosystem effects</i></b>					
Predator-prey relationships	U	U	U	U	Concentrated removals of crab has not been a concern in the status-quo regime. The effects of a more dispersed fishery under Alternatives 2 through 4 on predator-prey relationships are considered unknown.
Energy flow and balance					Combined evidence regarding the level of discards relative to natural sources of detritus and no evidence of changes in scavenger populations that are related to discard trends suggests that all of the alternatives would have insignificant ecosystem impacts through energy removal and redirection.

**Table ES-1 (Cont.) Summary of the predicted environmental effects of the alternatives.**

<b>Biological Issues</b>	<b>Alternative 1 Status Quo</b>	<b>Alternative 2 Three-pie voluntary cooperative</b>	<b>Alternative 3 IFQ</b>	<b>Alternative 4 Cooperative</b>	<b>Comments and Summary</b>
Biological diversity	I	I	I	I	No fishing-induced extinctions of crab or other marine species have been documented in the last 30 years or so. No fishing-induced changes in trophic diversity have been detected under the current management regime.

Notes:  
 BSAI - Bering Sea and Aleutian Islands I Insignificant  
 EFH - essential fish habitat S+ Significant positive  
 ESA - Endangered Species Act U Unknown  
 IFQ - individual fishing quota

**Summary of the economic and socio-economic effects of the alternatives**

The EIS examines the economic and socio-economic effects of the alternative rationalization programs. Impacts on safety, harvester efficiency, processing efficiency, the distribution of benefits between the harvesting and processing sectors, consumers, captains and crew, and affected coastal communities are examined and summarized below. Tables ES-2, ES-3, and ES-4 display major conclusions with respect to the economic and socio-economic effects of the alternatives.

**Safety.** Commercial fishing is a dangerous occupation. From 1990 to 2001, 61 total fatalities occurred and 25 vessels were lost in BSAI crab fisheries. This occupational fatality rate is about 28 times the national average. Under the current management regime, harvesters must compete to obtain a share of the harvest creating an incentive to take risks in the fishery. Moreover, this management may lead to lower profit margins and, indirectly, to less investment in, or attention to, safety. A rationalization program would allow fishermen more flexibility in the timing of their harvests, reducing the incentive to compromise safety. In addition, a rationalization program should increase the profitability of the fishery and may indirectly lead to increased investment in safety. These factors should reduce risks of death, injury, and property loss in BSAI crab fisheries. Processors in the current fisheries are subject to similar time pressures as harvesters. The slowing of the race for fish could also provide an opportunity for improved safety at processing facilities.

**Effects on harvester efficiency.** The allocation of harvest shares in the fisheries under all of the rationalization alternatives should result in improved harvest efficiencies (revenues less costs). Harvesters would be able to make production decisions based on cost and revenue impacts without the need to race to preserve market shares. Regional landing requirements (in the three-pie voluntary cooperative alternative and the IFQ alternative) and the community protections (in the three-pie voluntary cooperative alternative) could reduce efficiency gains. Industry coordination under the cooperative programs could facilitate intra-cooperative efficiencies.

**Table ES-2 Summary of predicted economic and socio-economic effects of the alternatives.**

	Alternative 1 Status quo	Alternative 2 (Preferred Alternative) Three-pie voluntary cooperative	Alternative 3 IFQ	Alternative 4 Cooperative
<b>Harvester efficiency - revenues less costs</b>	Harvester efficiency remains at current level - efficiency is sacrificed by the race for fish.	<ol style="list-style-type: none"> <li>1) Harvester efficiency improves with allocation of harvest shares and end of the race for fish.</li> <li>2) Efficiency may be reduced by regional and processor share landing requirements and community protections (industry cooperation, both in the harvest sector and between harvesters and processors, could mitigate any efficiency loss).</li> <li>3) Processor shares limit market for landings.</li> <li>4) Arbitration has ex vessel pricing effects.</li> </ol>	<ol style="list-style-type: none"> <li>1) Harvester efficiency improves with allocation of harvest shares and end of the race for fish.</li> <li>2) Efficiency may be reduced by regional landing requirements.</li> <li>3) Market for landings is unrestricted by processor landing requirements.</li> </ol>	<ol style="list-style-type: none"> <li>1) Harvester efficiency improves with allocation of harvest shares and end of the race for fish.</li> <li>2) Efficiency may be reduced by cooperative processor landing requirements (industry cooperation, both in the harvest sector and between harvesters and processors, could mitigate any efficiency loss).</li> <li>3) Cooperative landing requirements and structure limits market for landings.</li> </ol>
<b>Processor efficiency - revenues less costs</b>	Processor efficiency remains at current level - efficiency is sacrificed by time pressures on processing resulting from the race for fish.	<ol style="list-style-type: none"> <li>1) Processor efficiency improves with end of the race for fish.</li> <li>2) Efficiency at the processing entity level may be increased by ability of processors to coordinate deliveries using leverage of processor shares.</li> <li>3) Arbitration effects ex vessel prices.</li> <li>4) Landing requirements and community protections may reduce efficiency (industry cooperation, both in the harvest sector and between harvesters and processors, could mitigate any efficiency loss).</li> </ol>	<ol style="list-style-type: none"> <li>1) Processor efficiency improves with the end of the race for fish.</li> <li>2) Processors compete for landings with ex vessel price.</li> <li>3) Efficiency may be reduced by regional landing requirements.</li> </ol>	<ol style="list-style-type: none"> <li>1) Processor efficiency improves with end of the race for fish.</li> <li>2) Efficiency at the processing entity level will be increased by cooperative processor landing requirements.</li> <li>3) Efficiency across processors could be reduced by share forfeiture rule for changing cooperatives (industry cooperation, both in the harvest sector and between harvesters and processors, could mitigate any efficiency loss).</li> </ol>

**ES-2 (Cont.) Summary of predicted economic and socio-economic effects of the alternatives**

	Alternative 1 Status quo	Alternative 2 (Preferred Alternative) Three-pie voluntary cooperative	Alternative 3 IFQ	Alternative 4 Cooperative
<b>Production efficiency (sum of harvesting and processing efficiencies)</b>	Efficiency remains at current level - efficiency is sacrificed by time pressures resulting from the race for fish.	<ul style="list-style-type: none"> <li>1) Efficiency improves with end of the race for fish.</li> <li>2) Coordination may increase by voluntary cooperatives</li> <li>3) Processing shares allow processors to coordinate deliveries but limit harvesters' ability to respond to market</li> <li>3) Arbitration effects may mitigate some loss of efficiency from processor share market restriction</li> <li>4) Regional and community landing requirements and community protections may reduce efficiency</li> </ul>	<ul style="list-style-type: none"> <li>1) Efficiency improves with end of the race for fish.</li> <li>2) Regional landing requirements could limit ex vessel market decisions.</li> <li>3) Transaction costs in markets could reduce overall efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>1) Efficiency improves with end of the race for fish.</li> <li>2) Coordination may increase by cooperative structure.</li> <li>3) Cooperative landing requirements will limit efficiency gains.</li> </ul>
<b>Effects on captains and crew</b>	<ul style="list-style-type: none"> <li>1) Short seasons limit earning abilities of captains and crew.</li> <li>2) Crew shares provide participants with a portion of vessel revenues.</li> </ul>	<ul style="list-style-type: none"> <li>1) Extended seasons with fewer vessels provide steady employment to fewer crew.</li> <li>2) Competition for jobs could reduce compensation or result in change to wage system for some crew.</li> <li>3) C shares could have effect on negotiating leverage of holders, but this is severely diminished by processor share landing requirement after three years.</li> </ul>	<ul style="list-style-type: none"> <li>1) Extended seasons with fewer vessels provide steady employment to fewer crew.</li> <li>2) Competition for jobs could reduce compensation or result in change to wage system for some crew.</li> <li>3) C shares should provide some negotiating leverage to holders.</li> </ul>	<ul style="list-style-type: none"> <li>1) Extended seasons with fewer vessels provide steady employment to fewer crew.</li> <li>2) Competition for jobs could reduce compensation or result in change to wage system for some crew.</li> <li>3) C shares should provide some negotiating leverage to holders.</li> </ul>

**ES-2 (Cont.) Summary of predicted economic and socio-economic effects of the alternatives**

	Alternative 1 Status quo	Alternative 2 (Preferred Alternative) Three-pie voluntary cooperative	Alternative 3 IFQ	Alternative 4 Cooperative
<b>Effects on consumers</b>	1) Time constraints from short seasons limit ability of industry to improve quality and recovery, add value, and engage in product development.	1) Removal of time constraints allow industry to improve quality and recovery, add value, and engage in product development.	1) Removal of time constraints allow industry to improve quality and recovery, add value, and engage in product development.	1) Removal of time constraints allow industry to improve quality and recovery, add value, and engage in product development.
<b>Effects on environmental benefits</b>	1) Race for fish reduces soak times and limits ability to precisely manage total harvests reducing environmental benefits.	1) Reduced time constraint results in longer soak times, reduction in lost gear, and reduced bycatch increasing environmental benefits. 2) Allocation of harvest shares allows more precise stock management increasing environmental benefits.	1) Reduced time constraint results in longer soak times, reduction in lost gear, and reduced bycatch increasing environmental benefits. 2) Allocation of harvest shares allows more precise stock management increasing environmental benefits.	1) Reduced time constraint results in longer soak times, reduction in lost gear, and reduced bycatch increasing environmental benefits. 2) Allocation of harvest shares allows more precise stock management increasing environmental benefits.

**Effects on processing efficiency.** Under all of the rationalization alternatives, processing efficiency (revenues minus costs) should improve with the end of the race for fish, allowing processors to improve product recovery and quality as well as develop high-value products. In the three-pie voluntary cooperative alternative, efficiency gains would depend on the ability of processors to use processing shares to coordinate deliveries and the balancing of harvesting and processing efficiencies by the arbitration program. The regional landing requirements and community protections could reduce efficiencies. Under the IFQ alternative, harvesters would coordinate deliveries in a manner that facilitates processor efficiencies to obtain the highest ex-vessel price. Regional landing requirements could reduce efficiency under this alternative. Processors would use the cooperative landing requirements to coordinate deliveries and realize processing efficiencies. Efficiency across processors could be reduced by the rules related to cooperative transfers.

**Effects on production efficiency.** All of the rationalization alternatives should result in improved production efficiencies (the sum of harvest efficiency and processing efficiency). Efficiency gains are derived primarily from slowing the race for fish, allowing both sectors to reduce inputs costs. The restrictions that limit the ability of participants to respond to market conditions and the provisions that facilitate coordination both within and across the sectors will also affect efficiency gains in production.

**Effects on captains and crew.** Under current management, short harvest seasons limit the earning ability of captains and crew. The rationalization alternatives remove vessels from the fisheries, reducing the number of captains and crew employed. Competition for positions could affect compensation or result in a wage system for some captains and crew. All three rationalization program alternatives allocate 3 percent of the total allowable catch (TAC) to captains as C shares and establish a crew loan program. C shares, however, should provide some negotiating leverage to holders of those shares, but his will be severely limited by processor share landing requirements after 3 years.

**Effects on consumers.** The current management leads to a race for fish that limits the ability of the industry to devote efforts to improving recovery and quality, and limits the development of new products. Under the rationalization alternatives, the removal of the race for fish should lead to product developments and improved recovery and quality that would benefit consumers.

**Effects on environmental benefits.** All three rationalization alternatives are likely to contribute environmental benefits from both improved fishing practices and improved management of stocks. Changes in the fisheries under rationalization and their effects on stocks, however, cannot be fully predicted. Increased soak times are anticipated in a rationalized fishery. These increases could lead to improved sorting of harvests by gear reducing the amount and handling of discards in the fishery. A reduction of discards is likely to reduce mortality to the benefit of stocks.

**Impacts to communities.** A range of Alaska communities from the northern Bering Sea to the western Aleutians to the Southeast panhandle are engaged in the crab fisheries through different combinations of harvesting, processing, and/or fishery support activities. A number of these communities may be considered substantially dependent upon the BSAI crab fishery. Additionally, a number of communities in the Pacific Northwest are home ports to a significant portion of the crab fleet, and Seattle features the greatest concentration of sectors of any community. Under status quo, these communities experience the adverse impacts associated with overcapitalization and the race for fish. The rationalization program alternatives would alleviate these adverse impacts, however, the benefits would not be distributed evenly among the affected communities due to the specific components of each alternative. Impacts on these communities would be linked with beneficial effects that would result in the establishment of a stable long-term supply of

crab to local shore-based processing plants and adverse effects of processors and harvesters exiting a community. Under the three-pie voluntary cooperative program, generally, the communities with substantial recent history of participation in the crab fisheries would receive the majority of the benefits, whereas communities with less substantial recent history would receive less benefits and may even lose some of their harvesting and processing abilities as the industry consolidates. This is mainly due to the community protection measures developed for that alternative. Under the IFQ alternative, it is predicted that there would be considerable distributional shifts among communities as harvesters and processors consolidate and as the changes in the prosecution of the fisheries facilitate changes in landing and processing locations (Tables ES-3 and ES-4). The cooperative program, because it establishes a closed class of processors, provides some degree of protection for processors, however, consolidation would still occur similar to the IFQ program.

**Impacts to Community Development Quota groups.** The Western Alaska Community Development Quota (CDQ) program allocated 7.5 percent of the BSAI crab harvests to 65 western Alaska communities. The purpose of the program is to support fisheries-related economic development. Six managing organizations of CDQ groups represent the communities. No negative impacts would be realized by these groups as a result of any of the rationalization program alternatives. Under each alternative to status quo, the overall allocation to the CDQ program would increase from 7.5 percent to 10 percent of the BSAI crab harvest for each fishery, except Norton Sound red king crab. The change amounts to a 33 percent increase in the overall CDQ crab allocation. Also, the rationalization program alternatives would add a 10 percent allocation for Aleutian Islands golden king crab and western Aleutian Islands red king crab, fisheries that are not currently in the CDQ program. Increasing the allocation would increase the royalties earned by CDQ groups and enable them to invest more in projects intended to benefit the 65 communities that belong to CDQ groups.

**Table ES-3 Summary of community impacts - harvesters.**

	<b>Alternative 1 Status quo</b>	<b>Alternative 2 (Preferred Alternative) Three-pie voluntary cooperative</b>	<b>Alternative 3 IFQ</b>	<b>Alternative 4 Cooperative</b>
<b>Regionally based harvesters</b>	<ol style="list-style-type: none"> <li>1) Areas of residence suffer from continued inefficiencies and overcapitalization resulting from the race for fish.</li> <li>2) Support services are geared toward meeting more temporary peak demands.</li> </ol>	<ol style="list-style-type: none"> <li>1) Communities of harvesters receiving allocations benefit from stability in fisheries but total number of vessels and crew employment may decline.</li> <li>2) Transfers of shares will benefit communities of purchasers and will harm communities of sellers.</li> <li>3) Provision of support services stabilizes with longer season with possible reduction in number of providers and employment.</li> <li>4) Impacts vary across communities with importance of crab fleet to local economy.</li> <li>5) Cooperatives may facilitate consolidation.</li> <li>6) Regionalization and community protections may slow and limit extent of consolidation.</li> <li>7) CDQ communities and Adak benefit from share allocations.</li> </ol>	<ol style="list-style-type: none"> <li>1) Communities of harvesters receiving allocations benefit from stability in fisheries but total number of vessels and crew employment may decline.</li> <li>2) Transfers of shares will benefit communities of purchasers and will harm communities of sellers.</li> <li>3) Provision of support services stabilizes with longer season with possible reduction in number of providers and employment.</li> <li>4) Impacts vary across communities with importance of crab fleet to local economy.</li> <li>5) Consolidation of open market share trading may be slower but more permanent.</li> <li>6) Regionalization limits consolidation across regions.</li> <li>7) CDQ communities and Adak benefit from share allocations.</li> </ol>	<ol style="list-style-type: none"> <li>1) Communities of harvesters receiving allocations benefit from stability in fisheries but total number of vessels and crew employment may decline.</li> <li>2) Transfers of shares will benefit communities of purchasers and will harm communities of sellers.</li> <li>3) Provision of support services stabilizes with longer season with possible reduction in number of providers and employment.</li> <li>4) Impacts vary across communities with importance of crab fleet to local economy.</li> <li>5) Cooperatives may facilitate consolidation.</li> <li>6) CDQ communities and Adak benefit from share allocations.</li> </ol>

**Table ES-4 Summary of community impacts - processors.**

	<b>Alternative 1 Status quo</b>	<b>Alternative 2 (Preferred Alternative) Three-pie voluntary cooperative</b>	<b>Alternative 3 IFQ</b>	<b>Alternative 4 Cooperative</b>
<b>Regionally based processors</b>	<ol style="list-style-type: none"> <li>1) Communities with processors suffer from continued inefficiencies and overcapitalization resulting from the race for fish but distribution of landings may benefit some communities.</li> <li>2) Support services are geared toward meeting more temporary peak demands.</li> </ol>	<ol style="list-style-type: none"> <li>1) Communities of processors receiving allocations benefit from stability in fisheries.</li> <li>2) Transfers of shares will benefit communities of purchasers and will harm communities of sellers.</li> <li>3) Provision of support services stabilizes with longer season with possible reduction in number of providers and employment.</li> <li>4) Impacts vary across communities with importance of crab processing to local economy.</li> <li>5) Regionalization and community protections may slow and limit extent of consolidation.</li> <li>6) Specific areas (Pribilofs and Western Aleutians) benefit from regionalization.</li> </ol>	<ol style="list-style-type: none"> <li>1) Communities able to retain or attract processing benefit from stability in fisheries.</li> <li>2) Transitions (on implementation and stock declines) harm communities unable to retain historic processing.</li> <li>3) Provision of support services in communities able to retain or attract processing stabilizes with longer season with possible reduction in number of providers and employment.</li> <li>4) Impacts vary across communities with importance of crab processing to local economy.</li> <li>5) Regionalization may slow and limit extent of consolidation.</li> </ol>	<ol style="list-style-type: none"> <li>1) Communities of processors with cooperative associations benefit from stability in fisheries.</li> <li>2) Changes in cooperative associations benefit communities that attract associations and harm communities that lose associations.</li> <li>3) Provision of support services in communities able to retain or attract processing stabilizes with longer season with possible reduction in number of providers and employment.</li> <li>4) Impacts vary across communities with importance of crab processing to local economy.</li> <li>5) Cooperative associations may slow or reduce extent of consolidation.</li> </ol>

## **Areas of controversy and issues yet to be resolved**

Any rationalization program, including the alternatives considered in this EIS, are controversial. By its nature, a program that dramatically changes management and allocates interests in a fishery will be controversial. The preferred alternative is a novel and innovative management program that represents the Council's and NOAA Fisheries effort to balance the interests of all those that participate in the fisheries, including harvesters, processors, communities, and captains. The recognition of these varied and competing interests differs from past rationalization programs, mitigating objections from some groups, while increasing objections from others. Novel program components include processor quota shares, binding arbitration, regionalization and community protection measures, and economic data collection. Since these program components have never been implemented before, the perceived and potential effects of these components, and of the program as a whole, are controversial and raise issues yet to be resolved.