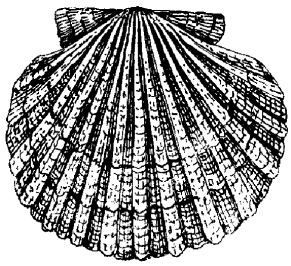
ENVIRONMENTAL ASSESSMENT/REGULATORY IMPACT REVIEW/
FINAL REGULATORY FLEXIBILITY ANALYSIS
for
Amendment 10
TO THE FISHERY MANAGEMENT PLAN FOR THE SCALLOP FISHERY OFF ALASKA

to modify the Licence Limitation Program



Abstract: Amendment 10 to the Scallop FMP proposes modifying the existing gear restriction endorsement on 2 of the 9 licenses under the Federal License Limitation Program (LLP). Four alternatives are examined: Alternative 1: Status Quo, maintain the current 6-foot dredge gear restriction endorsement; Alternative 2: modify the current 6-foot dredge restriction to allow vessels with the current endorsement to fish in Federal waters, outside of Cook Inlet, with a maximum of two 8-foot dredges (or two dredges with a combined width of no more than 16 feet); Alternative 3: modify the current 6-foot dredge restriction to allow vessels with the current endorsement to fish in Federal waters, outside of Cook Inlet, with a maximum of two 10-foot dredges (or two dredges with a combined width of no more than 20 feet); Alternative 4: eliminate the current 6-foot dredge restriction such that there are no gear restrictions on LLP licenses. The impacts of the alternatives upon habitat, marine mammals, seabirds, other fishery participants, and other potentially impacted entities are discussed in the analysis.

List of Responsible Agencies
North Pacific Fishery Management Council
Alaska Department of Fish and Game
National Marine Fisheries Service
For further information contact:

Gretchen Harrington
NMFS Alaska Region
PO BOX 21668
Juneau, Alaska 99802-1168
(907) 586-7228

Diana Stram
North Pacific Fishery Management Council
605 West 4th Ste 306
Anchorage, AK 99501
(907) 271-2809

June 2005

Table of Contents

Executive Summary

Beginning in 2001, a Federal Scallop License Limitation Program (LLP) license was required on board any vessel deployed in scallop fisheries in Federal waters off Alaska. Under the LLP, 7 vessel owners are licensed to fish in Federal waters, outside of Cook Inlet, without a gear restriction on the license. Two vessels owners are licensed to fish Federal waters, outside of Cook Inlet, with a single 6-foot dredge gear restriction endorsement. The State of Alaska (State) requires that all vessels that fish for scallops in statewide waters, which includes Federal waters, use no more that two 15- foot dredges and that all vessels have 100% observer coverage. All 9 licenses permit vessel owners to fish inside Cook Inlet with a single six-foot dredge.

Since the Federal LLP was implemented, it has come to the attention of the North Pacific Fishery Management Council (Council) that given observer requirements and their associated costs, the six foot dredge gear restriction may create a disproportionate economic hardship for the LLP license holders with the gear restriction when fishing outside of state waters. In February 2004, the Council developed a problem statement and alternatives for analysis of modifying or eliminating the gear restriction on two of the 9 LLP licenses. The purpose of the proposed action is to relieve a gear restriction adopted under the LLP that placed a disproportionately heavy burden of complying with fisheries conservation measures (such as observer coverage) on a few participants in the fishery, while maintaining the existing overall stability within the scallop fishery.

Four alternatives are considered in this analysis.

Alternative 1: Status Quo. Maintain the current 6-ft dredge restriction endorsement.

Alternative 1 represents the current LLP, as approved by NMFS. There are currently 9 LLP licenses, of which seven are restricted only by the State regulation of a maximum of two 15-ft dredges, while 2 licenses have a gear restriction endorsement that limits the holder to the use of a single 6-ft dredge.

Alternative 2: Modify the current 6-ft dredge restriction to allow vessels with the current endorsement to fish in Federal waters outside of Cook Inlet with a maximum of two eight-foot dredges (or two dredges with a combined width of no more than 16 feet).

This alternative would allow the two restricted LLP licenses to use wider dredges.

Alternative 3: **(preferred)** Modify the current 6-ft dredge restriction to allow vessels with the current endorsement to fish in Federal waters, outside of Cook Inlet, with a maximum of two ten-foot dredges (or two dredges with a combined width of no more than 20 feet).

This alternative would allow the two restricted LLP licenses to use wider dredges.

Alternative 4: Eliminate the current 6-ft dredge restriction on LLP licenses.

Alternative 4 would allow all 9 LLP license holders to utilize the full complement of State authorized gear, two 15-ft dredges, in Federal waters outside of Cook Inlet. This alternative is consistent with the State of Alaska regulations which limit scallop vessels to a maximum of two 15-ft dredges.

At its October 2004 meeting, the Council unanimously selected Alternative 3 as their preferred alternative. In discussing the difference between the alternatives, the Council noted that allowing two vessels the ability to use two 10-foot dredges would give them a much greater ability to cover the costs of carrying an observer in Federal waters, outside of Cook Inlet. Public testimony by a vessel owner with a restricted licence indicated that the use of larger dredges would allow the vessel to adequately cover their operational costs with the additional costs for an observer in statewide waters. The Council discussed the issue of increasing

capacity in the fishery by this action, but acknowledged that licences are already limited by vessel length and the two vessels associated with the licenses impacted by this action are among the smallest in the fishery. It was acknowledged that these vessels, by their size, are precluded from fishing in inclement weather and thus are already limited in their harvesting ability. The fishery is currently prosecuted in a slower manner than prior to 2000, due to the combination of limited licences, as well as the formation of a voluntary cooperative in the fishery. While the Council discussed the relative impacts of increasing harvesting ability on the two licences that are not part of this cooperative, due to their small size, they are not expected to impact the operation of the cooperative. Although the Council was initially considering updating the FMP at this time, to better reflect current management and biology, the Council decided to update the FMP via a separate plan amendment and thus removed the reference to updating the FMP from the approved problem statement for this analysis.

Analysis indicates that Alternative 3 increases the potential overall efficiency of the fishery marginally by allowing two LLP license holders to harvest scallops using larger, more efficient dredges without substantially decreasing the efficiency of all other LLP license holders. Alternatives to the status quo may impact other fishery participants and particularly the voluntary cooperative structure under which the fishery is currently prosecuted. The relative economic impacts on the other participants in the fishery would be two-fold; a decrease in relative harvest percentage, as well as a presumed decrease in the value of the LLP licenses currently held given their limited number. For alternatives 2, 3 and 4, the gear restrictions would be modified (alternative 2 and 3) or eliminated (alternative 4). Expansion of operations of the two license holders subject to a relaxation of the gear limitation in Federal waters outside of Cook Inlet is not known, but if expansion occurs, it is most likely to occur in Area E (Prince Williams Sound) and Area K (Kodiak) given the smaller size of these vessels. As these areas are currently fully utilized, any expansion of harvests by the two vessels would be at the expense of the other license holders in the fishery. All vessels in the fishery are limited to a maximum vessel length overall (MLOA) on their license, and the two license holders with the restricted gear limitation are also small vessels (<75' MLOA). Thus any expansion of operations by these vessels will be limited by the relative size and capacity of their vessels and the MLOA on their licenses.

Another factor under consideration is the relative value of the licenses. The value of the two licenses subject to less stringent gear restrictions would increase as those licenses could be usable for potentially larger operations. The relative value of the remaining 7 licenses under the Federal LLP are likely to decline with the increase in the number of non-gear restricted licenses. The impacts on the LLP license holders that are in the voluntary cooperative depend upon the operations and harvests of others in the fishery as the cooperative does not receive an exclusive allocation in the fishery. If the other participants increase harvests, the cooperative may need to respond by either reducing its own harvests or expanding the cooperative to include these other participants.

Several factors may ameliorate any decline of harvest or license value within the present context. First, the potential capacity of the two operations that would benefit from the proposed action is, by any measure, limited under terms of the LLP. Second, should the two LLP license holders join the cooperative, even greater economic and operational efficiencies may be realized, making the potential size of the revenue pool larger for all to share in. Through such efficiencies, the cooperative member licenses would be expected to increase in value, rather than suffer a decline, all else equal. If, as has been demonstrated elsewhere, cooperative fishing behavior "optimizes" the long term benefit stream deriving from the scallop resource, then the value of access to the resource (i.e., license value) will certainly rise over time. Additionally, increased participation in the cooperative would be expected to further maximize the conservation and economic benefits associated with cooperative based fisheries.

Analysis in the EA indicates that the proposed action to modify the gear restriction on two LLP licences will have no significant impact on the manner in which the fishery is conducted. Therefore, the proposed action will not alter the harvest of scallops or impact scallop stocks and habitat. The proposed action will provide for a more equitable sharing of the costs LLP license holders are required to incur in complying with existing

conservation measures. Additionally, and importantly, the proposed action also will provide the Council, NMFS, and the State with greater ability to consider and adopt further conservation measures that might otherwise have been economically unfeasible for the fishery as a whole. None of the alternatives are expected to have a significant impact on endangered or threatened species, or designated critical habitat.

1.0 Purpose and Need

1.1 Introduction

The scallop fishery in the Exclusive Economic Zone (EEZ) (3 to 200 miles offshore) off Alaska is jointly managed by NMFS and the Alaska Department of Fish and Game (ADF&G) under the Fishery Management Plan for the Scallop Fishery off Alaska (FMP). The FMP was developed by the Council under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and approved by NMFS on July 26, 1995.

Actions taken to amend FMPs or implement other regulations governing the scallop fisheries must meet the requirements of Federal laws and regulations. In addition to the Magnuson-Stevens Act, the most important of these are the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), Executive Order (E.O.) 12866, and the Regulatory Flexibility Act (RFA).

This Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis (EA/RIR/FRFA) addresses Amendment 10 to the FMP. NEPA, E.O. 12866 and the RFA require a description of the purpose and need for the proposed action, as well as a description of alternative actions that may address the problem. This information is included in Chapter 2 of this document. Chapter 3 contains information on the affected environment. Chapter 4 discusses the biological and environmental impacts of the alternatives as required by NEPA. Impacts on endangered species and marine mammals are also addressed in this section. Chapter 5 contains a Regulatory Impact Review (RIR), which addresses the economic impacts of the alternatives, and Chapter 6 contains the FRFA as required under the RFA. The proposed action would modify the existing LLP for the Alaska scallop fishery.

Beginning in 2001, a Federal Scallop LLP license is required on board any vessel deployed in scallop fisheries in Federal waters off Alaska. Under the LLP, NMFS issued 9 licenses that permit vessels to fish Federal waters. Two of these licenses have a gear restriction endorsement for a single 6-foot dredge. Seven of these licenses do not have a gear restriction endorsement, however, State of Alaska regulations limit scallop vessels to using 2 15-foot dredges in statewide waters.

1.2 Background on the Scallop LLP

The perceived need to limit access to the fishery was the primary motivation for the Council to begin its consideration of Federal management of the scallop fishery, in 1992. Following a specific incident of unregulated fishing activity in Prince William Sound, resulting in the State of Alaska's (State) guideline harvest ranges (GHR) being exceeded by more than 100 percent, the Council requested that NMFS implement an emergency rule to close Federal waters to fishing for scallops and prevent overfishing of the scallop stocks. NMFS approved the Council's request and closed Federal waters off Alaska to fishing for scallops, by emergency rule, on February 23, 1995 (60 FR 11054, March 1, 1995).

To respond to the need for Federal management of the scallop fishery once the emergency rule expired, the Council prepared and adopted an FMP, which was approved by NMFS on July 26, 1995. The only management measure authorized and implemented under the FMP was an interim 1-year closure of Federal waters off Alaska to fishing for scallops (60 FR 42070, August 15, 1995). The interim closure prevented fishing for scallops in Federal waters, while the Council developed a Federal scallop management program.

Summary of FMP amendments leading to the LLP (amendment 4)

Amendment 1: State-Federal Management Regime

Amendment 1 was approved by NMFS on July 10, 1996 (61 FR 38099). Amendment 1 established a joint State-Federal management regime under which NMFS implemented Federal scallop regulations that duplicated most State scallop regulations, including definitions of scallop registration areas and districts, scallop fishing seasons, closed waters, gear restrictions, efficiency limits, crab bycatch limits, scallop catch limits, in-season adjustments, and observer coverage requirements. This joint State-Federal management regime was designed as a temporary measure to prevent unregulated fishing in Federal waters until changes in the Magnuson-Stevens Act would enable the Council to delegate management of the fishery to the State. Federal and State waters were re-opened to fishing for scallops on August 1, 1996.

Amendment 2: Vessel Moratorium

Amendment 2 to the FMP, establishing a temporary moratorium on the entry of new vessels into the scallop fishery in Federal waters off Alaska was approved on April 11, 1997 (62 FR 17749). To qualify its owner for a moratorium permit, a vessel must have made a legal landing of scallops during 1991, 1992, or 1993, or during at least 4 separate years from 1980 through 1990. The moratorium was intended to remain in effect through June 30, 2000, or until replaced by a permanent limited access system. Eighteen vessel owners qualified for moratorium permits under the Federal vessel moratorium.

Amendment 3: Delegate Management Authority to the State

Amendment 3 delegated to the State the authority to manage all aspects of the scallop fishery in Federal waters, except limited access, including the authority to regulate vessels not registered under the laws of the State. The final rule implementing Amendment 3 was published on July 17, 1998 (63 FR 38501). Amendment 3 simplified scallop management in the Federal waters off Alaska, by eliminating the unnecessary duplication of regulations at the State and Federal levels.

Amendment 4: License Limitation Program

In December 1996, the Council initiated analysis of a license limitation program for the scallop fishery. Section 303(b)(6) of the Magnuson-Stevens Act provides authority to limit access to a fishery "to achieve optimum yield if, in developing such a system, the Council and Secretary take into account:

A. present participation in the fishery
B. historical fishing practices in, and dependence on, the fishery,
C. the economics of the fishery,
D. the capability of fishing vessels used in the fishery to engage in other fisheries,
E. the cultural and social framework relevant to the fishery, and,
F. any other relevant considerations."

An LLP was proposed to limit access to the fishery, because re-entry of latent capacity would, it was asserted, adversely affect the economic viability of the current participants in the fishery.

The EA for Amendment 4 to the Scallop LLP considered a range of 6 alternatives and two options for analysis. The preferred alternative was the following and included two additional options for area endorsements and vessel reconstruction and replacement:

> Holders of either Federal or State moratorium permits that used their moratorium permits to make legal landings of scallops in two of the three years (1996, 1997, and 1998, through November 9)

would receive a license. The Federal or State moratorium qualification period would serve as the historic qualifying period, and the years 1996, 1997 and 1998 would serve as the recent qualifying period. Under this alternative, a total of 9 licenses would be issued; one for each vessel.

Option 1: Area Endorsements
No area endorsements. All licenses are statewide, but Cook Inlet vessels would be restricted to a single 6 ft dredge in all areas, based on recent activity.

Option 2: Vessel Reconstruction and Replacement
No increases in vessel length allowed. Maximum vessel length will be restricted to 100% of the LOA of the qualifying vessel, on February 8 1999, unless the moratorium permit was used on a longer vessel in the recent qualifying period, in which case the license will be limited to 100% of the LOA of the longest vessel used in the recent qualifying period.

Area endorsements were initially considered to address concerns about having separate scallop fleets inside and outside of Cook Inlet. Originally, the designation of separate licenses was intended to protect the Homer, Alaska small boat fleet from competition by larger outside vessels. Three factors were cited in public testimony from February 1998, indicating that this protection was no longer necessary. First, the season opening dates for Yakutat and PWS had been changed from January to July 1, providing for additional fishing opportunities for larger vessels in the summer months. The second reason is that Cook Inlet requires the use of a single 6 foot dredge, which would not be economical to fish with a larger vessel and a 12 person crew. The third reason cited is that the Cook Inlet (Kamishak) quota had remained very small relative to outside areas, ranging from 20,000 to 28,000 pounds during that time period. Since 1997, the GHR ceiling for the Cook Inlet Registration area has been limited to 20,000 pounds.

The area endorsement that was originally analyzed allowed the Cook Inlet qualified vessels to fish in other areas, but limited these vessels to fishing only one 6-foot dredge. Testimony at the February 1998 meeting indicated that this could be a non- economically viable option, if the restricted vessels were required to carry an observer in the statewide areas. In the EA for Amendment 4, it was acknowledged that: "*Option 1C* (the option chosen) *would allow vessels to fish in the outside waters with a gear restriction, but the observer costs would be prohibitive, and none of the Cook Inlet vessels would be expected to participate in areas outside Cook Inlet. The difference between Option 1C(1) and Option 1C(2) is one vessel, the F/V Wayward Wind, that fished outside Cook Inlet during the historic qualifying period, but not in the recent qualifying period. Option 1C(1) would limit this vessel to fishing one 6-foot dredge outside of Cook Inlet."* (NPFMC, 1999).

The Council adopted an LLP, which limited the fishery to a total of 9 licenses. Only one license was issued for each qualifying vessel. Only those holders of moratorium permits who made legal landings of scallops from a vessel in two of the three years 1996, 1997, or 1998 received a license. The Council further adopted several options from the analysis, including no area endorsements and restrictions and limits on vessel replacement size.

In deciding upon the area endorsement, the Council debated the need to limit capacity in the fishery, based upon historical precedent and the vulnerability of the resource. The Council chose to adopt the more restrictive license limitation option available to them, given the concerns regarding the overcapacity of the fleet and the potential to overfish the scallop resource at that time.

The net result was that all licenses are applicable for all Federal waters, but license holders who never made a legal landing of scallops from outside Cook Inlet during the qualifying period, were restricted to a single 6 ft dredge in all areas. Federal regulations under 50 CFR 679.4(g)(3) state that "a scallop license authorizes the license holder to catch and retain scallops only if the vessel length and gear used do not exceed the vessel length and gear endorsements specified on the licence." This is the specific restriction that has been brought to the attention of the Council. Testimony received by Max and Scott Hulse indicates that they are

economically disadvantaged as the only scallop fishery participants in the Federal waters fishery outside of Cook Inlet, that are restricted to the use of a single 6 ft dredge. Apparently, the other 6 ft dredge endorsed licence, for Thomas Hogan, is only being used to fish within Cook Inlet. All of the other seven license holders are able to use the full complement of two 15 ft dredges, when fishing in Federal waters outside of Cook Inlet.

1.3 Problem statement adopted by the Council

The purpose of the proposed action is to relieve a gear restriction adopted under the LLP that placed a disproportionately heavy burden of complying with fisheries conservation measures (such as observer coverage) on a few participants in the fishery, while maintaining the existing overall stability within the scallop fishery. The Council adopted the following problem statement at its February 2004 meeting, in addressing the need for action on modifying the LLP license gear restriction:

> The current Federal LLP limits two license holders to fish with a single 6-ft dredge in Federal waters, while 7 license holders are allowed to use the full complement of gear (two 15-ft dredges). These 7 licenses have been further consolidated, as explained in section 3.3.2. The Council approved this LLP under Amendment 4 to the Federal Scallop FMP, as a means to address excess capacity in the scallop fishery. Since the Federal LLP was implemented, in 2001, it has come to the attention of the Council that, given observer requirements and their associated costs, this gear restriction may create a disproportionate economic hardship when fishing outside of State waters. The Council is considering modifying or eliminating this gear restriction on those Federal LLP licences.

2.0 Description of the Alternatives

Four alternatives are considered in this analysis.

2.1 Alternative 1: Status Quo. Maintain the current 6-ft dredge restriction endorsement.

Alternative 1, status quo, represents the current LLP, as approved by NMFS. There are currently 9 LLP licenses, of which seven have no gear restriction, while 2 have a gear restriction endorsement which limits them to the use of a single 6-ft dredge. These two vessels fished only in Cook Inlet during the qualifying period, as stated in the EA for Amendment 4 to the Scallop FMP.

2.2 Alternative 2: Modify the current 6-ft dredge restriction to allow vessels with the current endorsement to fish in Federal waters outside of Cook Inlet, with a maximum of two eight-foot dredges (or two dredges with a combined width of no more than 16 feet).

This alternative would allow the two restricted LLP licenses to use wider dredges.

2.3 Alternative 3: **(Preferred)** Modify the current 6-ft dredge restriction to allow vessels with the current endorsement to fish in Federal waters outside of Cook Inlet, with a maximum of two ten-foot dredges (or two dredges with a combined width of no more than 20 feet).

This alternative would allow the two restricted LLP licenses to use wider dredges.

2.4 Alternative 4: Eliminate the current 6-ft dredge restriction on LLP licenses.

Alternative 4 would allow all 9 license holders to utilize the full complement of State-authorized gear, two 15-ft dredges, in statewide waters outside of Cook Inlet. This alternative is consistent with the State of Alaska regulations, which limit scallop vessels to a maximum of two 15-ft dredges.

2.5 Alternatives considered but not carried forward for analysis

Since the request to change the existing LLP was brought forward in public testimony at the February 2004 Council meeting, consideration was given toward reexamining the alternatives from the previous analysis for Amendment 4. These alternatives, and specifically the gear size restriction, are described in Section 1.1 of this document. In 2000, when the Council was making its decision to limit the fishery according to its preferred alternative and options, the Council was responding to the perceived vulnerability of the scallop resource at that time, and the resulting imminent need to limit capacity in the fishery. Since that time, the capacity in the fishery has been reduced by the voluntary cooperative structure and the consolidation of LLP licenses. Given the changing nature the fishery, as well as the current status of the statewide scallop stocks, a reconsideration of previously examined qualifying criteria for the LLP did not seem to suitably address the current status of the fishery and fishery participants.

Testimony to the Council at the February 2004 meeting, suggested that the cost of carrying an observer in statewide waters is a limiting factor when fishing with only a 6-ft dredge. Consideration was given for an alternative under the LLP that allows for a waiver of statewide observer requirements for vessels utilizing a 6-ft dredge in statewide waters. However, observer coverage is a Category 1 measure under the FMP and delegated to the State of Alaska. Thus, any waiver of observer requirements would be evaluated by ADF&G and the Alaska Board of Fisheries (BOF). Waivers for observer coverage have been brought forward to the BOF in the past, but these waivers have not been approved by the BOF given concerns regarding the limited available information on the status of statewide scallop stocks and the emphasis placed upon the information provided by the Scallop Observer Program.

3.0 Affected Environment

3.1 Physical Environment

The management areas covered under the Scallop FMP includes all Federal waters of the Gulf of Alaska (GOA) and the Bering Sea/Aleutian Islands area (BSAI). The GOA is defined as the U.S. exclusive economic zone (EEZ) of the North Pacific Ocean, exclusive of the Bering Sea, between the eastern Aleutian Islands at 170°W longitude and Dixon Entrance at 132°40'W longitude. The BSAI is defined as the U.S. EEZ south of the Bering Strait to the Alaska Peninsula and Aleutian Islands and extending south of the Aleutian Islands west of 170° W longitude.

All commercial fisheries for Alaskan scallops take place in relatively shallow waters (< 200 m) of the continental shelf. Coastal waters overlying the continental shelf are subject to considerable seasonal influences. Winter cooling accompanied by turbulence and mixing due to major storms results in a uniform cold temperature in the upper 100 m. Seasonal changes in temperature and salinity diminish with increasing depth and distance from shore.

Along the outer shelf and upper slope, bottom water temperatures of 4 to 5° C persist year-round throughout the periphery of the GOA. With further increase in depth, water temperature shows no significant seasonal change but gradually decreases with depth, reaching 2° C or less at greater depths. The water circulation pattern in both the eastern Bering Sea and Gulf of Alaska is a counterclockwise gyre (Sharma 1979). Inshore current flow patterns are affected by weather, tides, and topography.

The continental shelf parallels the southeastern Alaska coast and extends around the GOA. Total area of continental shelf in the GOA is about 160,000 square km, which is less than 25 percent of the eastern Bering Sea Shelf. Although its width is less than 10 miles at some points, it is generally 30 to 60 miles wide. As it curves westerly from Cape Spencer towards Kodiak Island it extends some 50 miles seaward, making it the most extensive shelf area south of the Bering Sea. West of Kodiak Island and proceeding along the Alaska Peninsula toward the Aleutian Islands, the shelf gradually becomes narrow and rough again. The broadening and narrowing of the continental shelf from east to west plays an important role in the circulation of waters through the GOA, which is dominated by the Alaska Coastal Current (ACC).

The most prominent and unique feature of the Bering Sea is the extensive continental shelf in the eastern and northern portion of the sea. It constitutes approximately 80% of the total shelf area in the Bering Sea (Hood and Kelly 1974) and is one of the world's largest. For the Bering Sea as a whole, 44% of its 2.3 million km^2 area is continental shelf, 13% continental slope, and 43% deepwater basin.

The broad eastern Bering Sea shelf is extremely smooth and has a gentle uniform gradient resulting from sediment deposits (Sharma 1974). The sediments, originating along the coast and transported offshore in graded suspension by storm waves, are predominantly sands over the inner shelf and silt and clay sediments on the other shelf and slope.

Forming a partial barrier to the exchange of Bering Sea and Pacific Ocean water is the Aleutian-Commander Islands arc. This chain is made up of more than 150 islands and has a total length of approximately 2260 km (Gershanovich 1963). Shelf areas throughout most of the Aleutians portion of the chain are narrow (and frequently discontinuous between islands) ranging in width on the north and south sides of the island from about 4 km or less to 42-46 km. The shelf broadens in the eastern Aleutians.

Exchange of water between the Bering Sea and the Pacific Ocean occurs through the various Aleutian Island passes with an estimated 14% of the Pacific water remaining in the Bering Sea (Sharma 1974).

3.2 Biological Environment

3.2.1 Biology, Abundance, and Distribution of Weathervane scallops

Weathervane scallops (*Patinopectin caurinus*) are distributed from Point Reyes, California, to the Pribilof Islands, Alaska. The highest known densities in Alaska have been found to occur in the Bering Sea, off Kodiak Island, and along the eastern gulf coast from Cape Spencer to Cape St. Elias. Weathervane scallops are found from intertidal waters to depths of 300 m, but abundance tends to be greatest between depths of 40-130 m on beds of mud, clay, sand, and gravel.

Scallops are typically found in elongated beds oriented along the coast in the same direction as prevailing currents. A combination of large-scale (overall spawning population size and oceanographic conditions) and small-scale (site suitability for settlement) processes influence recruitment of scallops to these beds. Spawning occurs annually between May and early July. Spermatozoa and eggs are released directly into the water where fertilization occurs. Fertilized eggs settle to the bottom where they hatch into larvae within several days then rise in the water column. Larvae drift with prevailing currents in the upper water column for about a month while undergoing metamorphosis. They then settle to the bottom as juveniles and may attach to the substrate with byssal threads.

Weathervane scallops begin to mature by age 3 at about 7.6 cm (3 inches) in shell height, and virtually all scallops are mature by age 4. Growth, maximum size, and size at maturity vary significantly within and between beds and geographic areas. Weathervane scallops are long-lived; individuals may live 28 years old or more. Scallops are likely prey to various fish and invertebrates during the early part of their life cycle. Flounders are known to prey on juvenile weathervane scallops, and sea stars may also be important predators, both on juvenile scallops as well as adults.

The overall magnitude of the weathervane scallop resource off Alaska is thought to be very limited based on survey and fishery information. Weathervane scallops are found in patchy distributions along the continental shelf from Southeast Alaska to the Bering Sea and Aleutian Islands at depths of 40–250 m. Commercial fishing effort is concentrated in 75-120 m depths. Approximately 128 square nautical miles were dredged during the 2001/02 season (Barnhart and Rosenkranz 2003).

Fisheries occur in discrete areas of concentration (beds), as shown in Figure 1. These same beds have been exploited since the beginnings of the fishery over thirty years ago. Other known concentrations exist in areas currently closed to scallop fishing, including the south end of Kodiak Island, Unimak Bight, Davidson Bank, Inanudak Bay and other areas. In areas where scallop surveys have been conducted (Cook Inlet and Prince William Sound), scallops were very concentrated in these beds, and nearly absent in adjacent areas. Although the bed of scallops in the Bering Sea was known about many years ago, the fishery only began to target on this concentration in the 1990s. No other concentrations of weathervane scallops are known to exist off Alaska, in areas open to scallop fishing, despite many years of bottom trawl surveys and prospecting by scallop fishermen.

3.2.2 Habitat

Major scallop fishing locations in Alaska coastal waters are shown in Figure 1. Many areas of Alaska's coast are closed to scallop dredging to protect habitats important to other species. Bottom substrate types inhabited by weathervane scallops are variable throughout the state and include mud, clay, silt, sand, and pebble.

Amendment 5 to the Scallop FMP described Essential Fish Habitat (EFH) for all scallop stocks under the Fishery Management Unit (FMU) of the Scallop FMP. The following is the description of EFH for weathervane scallops.

EFH definition for Alaskan weathervane scallops

Eggs (several days) - Level 0_a
Demersal waters of the inner and middle continental shelf of the Gulf of Alaska and to a lesser extent in the Bering Sea and Aleutian Islands. Eggs are released in the late spring and early summer.

Larvae (2-3 weeks) - Level 0_a
Pelagic waters along the inner, middle, and outer continental shelf of the Gulf of Alaska west of Dixon entrance, extending into the Bering Sea and Aleutian Islands.

Juveniles (to 3 years of age) - Level 1
Areas of clay, mud, sand, and gravel along the mid-continental shelf of the BSAI and GOA.

Adults (3+ years of age) - Level 2
Areas of clay, mud, sand, and gravel along the mid continental shelf of the GOA and BSAI. Areas of concentration are those between the depths of 40-130 m. Scallop beds are generally elongated in the direction of current flow.

EFH descriptions and identification are currently under the process of revision by NMFS and the Council. A copy of the draft EFH EIS analysis is available on the NMFS Alaska Region website at http://www.fakr.noaa.gov/habitat/seis/efheis.htm .

3.2.3 Crab and groundfish stocks in region

In both the Bering Sea and Gulf of Alaska, scallops are only a part of a diverse benthic community. Weathervane scallops are associated with other benthic species such as king and Tanner crabs and flatfishes. Commercially important crab species include red king crab (*Paralithodes camtschatica*), blue king crab (*P. platypus*), dungeness crab (*Cancer magister*), and two species of Tanner crab (*Chionoectes bairdi*, and *C. opilio*). Red king crabs are distributed from Southeast Alaska to Kodiak Island and northward into Norton Sound, with highest densities at depths of 40-100 meters. Blue king crabs also occur at those depths, but are distributed primarily around the Pribilof, St. Matthew, and St. Lawrence Islands. Tanner crabs occur at those depths, and deeper to 700 meters. *C. opilio* are distributed throughout the Bering Sea. *C. bairdi*, on the other hand, are distributed through the Gulf of Alaska and Aleutian Islands to the Bering Sea, with highest concentrations in the Bering Sea from the Alaska Peninsula to the Pribilof Islands. More information on the distribution and harvest of crabs in the BSAI can be found in the annual Stock Assessment and Fishery Evaluation report (NPFMC 2003a) and the Environmental Impact Statement for the Bering Sea and Aleutian Island Crab Fisheries (NMFS 2004b). The SAFE report is available through the Council office while the Crab EIS is available on-line (http://www.fakr.noaa.gov/sustainablefisheries/crab/eis/index.htm).

Flatfish in the BSAI and GOA include yellowfin sole (*Limanda aspera*); Alaska Plaice (*Pleuronectes quadrituberculatus*) and rock sole (*Lepidopsetta* spp.), which dominate the flounder community in the BSAI, and arrowtooth flounder, (*Atheresthes stomias*), which comprises the largest part of the exploitable biomass of flounders in the Gulf of Alaska. Other abundant flounders in the Gulf include Pacific halibut (*Hippoglossus stenolepis*); rock sole (*Lepidopsetta bilineata*); starry flounder (*Platichthys stellatus*); flathead sole (*Hippoglossoides elassodon*); rex sole (*Glyptocephalus zachirus*); and, in deep water, Dover sole (*Microstomus pacificus*). A more complete description of commercial groundfish, other finfish, and shellfish stocks can be found in the Council's annual Stock Assessment and Fishery Evaluation report for the groundfish stocks (NPFMC 2003b) and in the Final Programmatic Supplemental Environmental Impact Statement for the Alaska Groundfish Fisheries (NMFS 2004).

Bycatch in the scallop fishery includes prohibited species, other commercially important species of fish and invertebrates, miscellaneous non-commercial species, and natural and man-made debris. Prohibited species

include king crab (*Paralithodes camtschaticus*), Tanner crab (*Chionoecetes bairdi*), snow crab (*C. opilio*), Dungeness crab (*Cancer magister*), and Pacific Halibut (*Hippoglossus stenolepis*). Although a variety of marine vertebrates, invertebrates, and debris are caught incidentally in the scallop dredges, weathervane scallops predominate catches. Since 1996, the five most frequently caught species or items, by percent weight, from haul composition sampling are weathervane scallops 77%, numerous species of starfish 5%, natural debris (kelp, wood, etc.) 5%, empty bivalve shells 4%, and several species of skates 2%. Gorgonian (hard) corals are infrequently encountered during observer sampling of scallop dredges. Since 1996, corals have been observed in only 11 of the 15,836 tows sampled for catch composition and bycatch. Each observation of coral in these sampled tows weighed less than 1 pound. Detailed catch composition data from observer sampling are available in annual reports produced by ADF&G (e.g., Barnhart and Rosenkranz 2003).

3.3 Human Environment

3.3.1 Management of the Fishery

Under the Federal FMP, initiated in 1995, all management measures, except limited access, are delegated to the State of Alaska. The FMP must also conform with all applicable Federal laws, including NEPA, the Magnuson-Stevens Act, E.O. 12866, and the RFA. ADF&G management of the weathervane scallop fishery covers both State and Federal waters off Alaska.

3.3.1.1 Fishing seasons and observer requirements

The regulatory fishing season for weathervane scallops in Alaska is July 1 through February 15, except in the Cook Inlet Registration Area. In the Kamishak District of the Cook Inlet Registration Area, the season is August 15 through October 31, and in all other districts of Cook Inlet, the season is from January 1 through December 31, under conditions of an exploratory permit. Scallop fishing in any registration area in the State may be closed by emergency order prior to the end of the regulatory season. Scallop guideline harvest ranges (GHRs) and crab bycatch limits (CBLs) are typically announced by ADF&G, approximately one month prior to the season opening date.

The State of Alaska requires 100% onboard observer coverage. The primary purposes of the onboard observer program are to collect biological and fishery-based data, monitor bycatch, and provide for regulatory enforcement. Data are collected on crab and halibut bycatch, discarded scallop catch, retained scallop catch, catch composition, scallop meat weight recovery, location, area, and depth fished, and catch per unit effort (CPUE). Observers report scallop harvest, number of tows, area fished, and crab bycatch to ADF&G, tri-weekly, during the season. Data are used to manage the fishery in season and to set GHRs for the following season.

The weathervane scallop fishery is prosecuted with standard New Bedford style scallop dredges. On average, fully-rigged[1] dredges weigh the following: a 6-ft dredge weighs between 900 and 1,200 pounds (J. Barnhart, ADF&G pers. comm.); an 8-ft dredge weighs between 1,500 and 1,600 pounds (J. Barnhart, ADF&G, pers. comm.); and a 15-ft dredge weighs between 3,300 and 3,500 pounds (Tom Minio, pers. comm.). The frame design provides a rigid, fixed dredge opening. Attached to and directly behind the frame is a steel ring bag consisting of 4-inch (inside diameter) rings connected with steel links. A sweep chain footrope is attached to the bottom of the mesh bag. The top of the bag consists of 6-inch stretched mesh polypropylene netting which helps hold the bag open while the dredge is towed along the ocean floor. A club stick attached to the end of the bag helps maintain the shape of the bag and provides for an attachment point to dump the dredge contents on deck. Steel dredge shoes that are welded onto the lower corners of the frame bear most of the dredge's weight and act as runners, permitting the dredge to move easily along the substrate. Each dredge is attached to the boat by a single steel wire cable operated from a deck winch.

All vessels fishing inside the Cook Inlet Registration Area are limited to a single dredge, not more than 6 feet in width. Unless otherwise restricted by the LLP license, vessels fishing in the remainder of the State may simultaneously operate a maximum of 2 dredges, each of which is 15 feet or less in width. Vessels used in the weathervane scallop fishery range in size from 58 feet to 124 feet length overall, with a maximum of 850 horsepower.

3.3.1.2 Summary of recent landings

There are 9 scallop registration areas managed by the State under the FMP for vessels commercially fishing for scallops. These include the Southeastern Alaska Registration Area (Area A);Yakutat Registration Area (Area D and District 16); Prince William Sound Registration Area (Area E); Cook Inlet Registration Area (Area H); Kodiak Registration Area (Area K), which is subdivided into the Northeast, Shelikof and Semidi Districts; Alaska Peninsula Registration Area (Area M); Dutch Harbor Registration Area (Area O); Bering Sea Registration Area (Area Q); and Adak Registration Area (Area R) (Figure 1). ADF&G establishes GHRs and manages the fishery by registration areas within regions.

Vessel participation and total catch by registration area and year are shown in Tables 1-10. With the exception of Kodiak, Prince William Sound, and Cook Inlet (except recent years), catches have been well below State GHRs for each area. Additional years and other information on harvest rates and recruitment are available in the annual SAFE reports. ADF&G has confidential release forms signed by vessel operators in order to display specific catch information. Whenever possible, unless otherwise indicated as "confidential", catch records have been made available for publication by the State.

[1]Fully-rigged dredge ready to fish includes ring bag, club stick and attachments.

Table 1. Yakutat Area D scallop fishery summary statistics. (Confidential catch information was made available voluntarily by the Scallop fleet unless otherwise noted)

Season	Number vessels	GHR ceiling (lbs meat)	Dredge hours	Catch (lbs meat)	CPUE (lbs meat per dredge hr)
1993	7[a]	250,000	1,999	139,057	70
1994	10[a]	250,000	4,130	246,862	60
1995	8[b]	250,000	4,730	237,417	50
1996	4	250,000	4,438	238,736	54
1997/98	4	250,000	3,956	243,810	62
1998/99	8	250,000	4,154	241,337	58
1999/00	3	250,000	3,840	249,681	65
2000/01	3	250,000	4,241	195,699	46
2001/02	2	200,000	2,406	103,800	43
2002/03	2	200,000	2,439	122,718	50
2003/04	2	200,000	3,360	160,918	48

[a] One additional vessel fished by waiver without an observer; data not included.
[b] Two additional vessels fished by waiver without observers; data not included.

Table 2. Yakutat District 16 scallop fishery summary statistics.

Season	Number vessels	GHR ceiling (lbs meat)	Dredge hours	Catch (lbs meat)	CPUE (lbs meat per dredge hr)
1993	1	35,000		confidential	
1994	7[a]	35,000	408	22,226	54
1995	6[a]	35,000	1,095	33,260	30
1996	2	35,000	917	34,060	37
1997/98	4	35,000	561	22,020	39
1998/99	2	35,000	702	34,090	49
1999/00	2	35,000	674	34,624	51
2000/01	3	35,000	476	30,904	65
2001/02	2	35,000	417	20,398	49
2002/03	2	35,000	100	3,685	37
2003/04	2	35,000	18	1,072	59

[a] One additional vessel fished by waiver without an observer; data not included.

Table 3. Prince William Sound Area E scallop fishery summary statistics**.** (Confidential catch information was made available voluntarily by the Scallop fleet unless otherwise noted)

Season	Number vessels	GHR ceiling (lbs meat)	Dredge hours	Catch (lbs meat)	CPUE (lbs meat per dredge hr)
1993	7	50,000	638	63,068	99
1994		Closed			
1995	3	50,000		108,000[a]	
1996		Closed			
1997	1	17,200	171	18,000	105
1998/99	2	20,000	179	19,650	110
1999/00	2	20,000	149	20,410	137
2000/01	3	30,000	221	30,266	137
2001/02	1	30,000	263	30,090	114
2002/03	2	20,000	122	15,641	121
2003/04	1	20,000	216	19,980	93

[a] Pounds include those taken by a single vessel outside the jurisdiction of the state of Alaska, in excess of the limit allowed for the area.

Table 4. Cook Inlet, Kamishak District scallop fishery summary statistics. (Confidential catch information was made available voluntarily by the Scallop fleet unless otherwise noted)

Season	Number vessels	GHR ceiling (lbs meat)	Dredge hours	Catch[a] (lbs meat)	CPUE (lbs meat per dredge hr)
1993	3		529	20,115	38
1994	4		454	20,431	45
1995		closed			
1996	5		534	28,228	53
1997	3	20,000	394	20,336	52
1998/99	1	20,000	390	conf	
1999/00	3	20,000	333	20,315	61
2000/01	3	20,000	276	20,516	74
2001/02	2	20,000	406	confidential	
2002/03	3	20,000	311	8,591	28
2003/04	2	20,000		confidential	

[a] Includes estimated dead loss.

Table 5. Kodiak Northeast District scallop fishery summary statistics. (Confidential catch information was made available voluntarily by the Scallop fleet unless otherwise noted)

Season	Number vessels	GHR ceiling (lbs meat)	Dredge hours	Catch (lbs meat)	CPUE (lbs meat per dredge hr)
1993/94	10	NA	6,940	155,187	22
1994/95	7	NA	1,773	35,207	20
1995/96		closed			
1996/97	3	NA	581	11,430	20
1997/98	3	NA	2,604	95,858	37
1998/99	4	NA	2,749	120,010	44
1999/00	3	75,000	1,384	77,119	56
2000/01	4	80,000	1,101	79,965	73
2001/02	3	80,000	1,142	80,470	70
2002/03	2	80,000	1,350	80,000	59
2003/04	2	80,000	1,248	79,965	64

Table 6. Kodiak Shelikof District scallop fishery summary statistics. (Confidential catch information was made available voluntarily by the Scallop fleet unless otherwise noted)

Season	Number vessels	GHR ceiling (lbs meat)	Dredge hours	Catch (lbs meat)	CPUE (lbs meat per dredge hr)
1993/94	5	NA	2,491	105,017	42
1994/95	11	NA	8,662	314,051	36
1995/96		closed			
1996/97	3[a]	NA	3,491	219,305	63
1997/98	4	NA	5,492	258,346	47
1998/99	8	NA	4,081	179,870	44
1999/00	6	180,000	4,304	187,963	44
2000/01	5	180,000	2,907	180,087	62
2001/02	4	180,000	3,398	177,112	52
2002/03	3	180,000	3,799	180,580	48
2003/04	2	180,000	3,258	180,011	55

[a] One additional vessel fished but data are not available.

Table 7. Kodiak Semidi District scallop fishery summary statistics.

Season	Number vessels	GHR ceiling (lbs meat)	Dredge hours	Catch (lbs meat)	CPUE (lbs meat per dredge hr)
1993/94	6[a]	NA	1,819	55,487	32
1994/95	2	NA	272	confidential	
1995/96		closed			
1996/97	3	NA	1,017	37,810	37
1997/98	1	NA	349	6,315	18
1998/99	2	NA	106	1,720	16
1999/00	1	NA	45	930	21
2000/01		NA	0		
2001/02		NA	0		
2002/03		NA	0		
2003/04		NA	0		

[a] Two additional vessels registered but did not fish

Table 8. Alaska Peninsula Area scallop fishery summary statistics. (Confidential catch information was made available voluntarily by the Scallop fleet unless otherwise noted)

Season	Number vessels	GHR ceiling (lbs meat)	Dredge hours	Catch (lbs meat)	CPUE (lbs meat per dredge hr)
1993/94	8	NA	1,847	112,152	61
1994/95	7	NA	1,664	65,282	39
1995/96		closed			
1996/97	2	200,000	327	12,560	38
1997/98	4	200,000	1,752	51,616	29
1998/99	4	200,000	1,612	63,290	39
1999/00	5	200,000	2,025	75,535	37
2000/01	3	33,000	320	7,660	24
2001/02		closed			
2002/03		closed			
2003/04		10,000			

Table 9. Bering Sea Area scallop fishery summary statistics.

Season	Number vessels	GHR ceiling (lbs meat)	Dredge hours	Catch (lbs meat)	CPUE (lbs meat per dredge hr)
1993/94	9	NA	5,764	284,414	49
1994/95	8	NA	11,113	505,439	45
1995/96		closed			
1996/97	1	600,000	2,313	150,295	65
1997/98	2	600,000	2,246	97,002	43
1998/99	4	400,000	2,319	96,795	42
1999/00	2	400,000	3,294	164,929	50
2000/01	3	200,000	3,355	205,520	61
2001/02	3	200,000	3,072	140,871	46
2002/03	2	105,000	2,038	92,240	45
2003/04	2	105,000	1,020	42,590	42

Table 10. Dutch Harbor Area scallop fishery summary statistics. (Confidential catch information was made available voluntarily by the Scallop fleet unless otherwise noted)

Season	Number vessels	GHR ceiling (lbs meat)	Dredge hours	Catch (lbs meat)	CPUE (lbs meat per dredge hr)
1993/94	2	170,000	838	confidential	46
1994/95	3	170,000	81	1,931	24
1995/96	1	170,000	1,047	26,950	26
1996/97		170,000	0		
1997/98	1	170,000	171	5,790	34
1998/99	4	110,000	1,025	46,432	45
1999/00	1	110,000	273	6,465	24
2000/01		closed			
2001/02		closed			
2002/03	1	10,000	184	6,000	33
2003/04		closed			

Table 11: Percent of Scallop Meats Caught in Federal and State Waters
1998/99 - 2003/04 Regulatory Seasons

Registration Area	District	Federal/State Waters	Percent of Harvest by State/Federal Water[a,b]					
			1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04
D	**D**	**FED**	**65%**	**70%**	**80%**	**64%**	**78%**	**56%**
		STATE	**35%**	**30%**	**20%**	**36%**	**22%**	**44%**
	D Total		100%	100%	100%	100%	100%	100%
	D16	**FED**	**28%**	**55%**	**13%**	**28%**	**100%**	**83%**
		STATE	**72%**	**45%**	**87%**	**72%**	**-**	**17%**
	D16 Total		100%	100%	100%	100%	100%	100%
E	**E**	**FED**	**68%**	**30%**	**100%**	**100%**	**100%**	**100%**
		STATE	**32%**	**70%**	**-**	**-**	**-**	**-**
	E Total		100%	100%	100%	100%	100%	100%
H	**H**	**FED**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
	H Total		100%	100%	100%	100%	100%	100%
K	**KNE**	**FED**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
	KNE Total		100%	100%	100%	100%	100%	100%
	KSH	**FED**	**69%**	**74%**	**70%**	**51%**	**61%**	**70%**
		STATE	**31%**	**26%**	**30%**	**49%**	**39%**	**30%**
	KSH Total		100%	100%	100%	100%	100%	100%
	Semidi	**FED**	**56%**	**-**	**-**	**-**	**-**	**-**
		STATE	**44%**	**100%**	**-**	**-**	**-**	**-**
	Semidi Total		100%	100%	-	-	-	-
M	**M**	**FED**	**100%**	**100%**	**100%**	**-**	**-**	**-**
		STATE	**0%**	**0%**	**-**	**-**	**-**	**-**
	M Total		100%	100%	100%	-	-	-
O	**O**	**FED**	**0%**	**4%**	**-**	**-**	**4%**	**-**
		STATE	**100%**	**96%**	**-**	**-**	**96%**	**-**
	O Total		100%	100%	-	-	100%	-
Q	**Q**	**FED**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
	Q Total		100%	100%	100%	100%	100%	100%

[a] 0% indicates some fishing occurred, an insignificant amount was caught
[b] - designation indicates no fishing occurred

Table 11 shows the percent of scallop harvest caught in Federal versus State waters from 1998/99 through the 2003/04 regulatory season. GHRs are set for a registration area, regardless of State and Federal jurisdiction within that area. Examining the percentage of harvest between State and Federal waters gives an indication of where this harvest is primarily being taken. Percentage of harvest in State and Federal waters is not necessarily an indication of the biological availability of the resource. The areas of interest for purposes of this analysis are Areas D (Yakutat), E (Prince William Sound), and K (Kodiak), which are the areas that either have had historical harvest by the smaller vessels, or for which testimony has indicated future fishing efforts would be concentrated. Area E GHR is currently fully harvested in the Federal fishery, although historically up to 70% of the harvest was taken from State waters. The harvest of Area D GHR was more evenly split between State and Federal waters in the 2003/04 season, though previous years have shown a much higher percentage of the harvest coming from Federal waters. Area K, specifically the Shelikof District (KSH), has a range of 51% to 74% of the harvest coming from Federal waters since 1998/99, while State water percentages have ranged from 26% to 49% over the same time period.

3.3.2 Description of Fishery participants

Commercial weathervane scallop fishing in Federal waters is limited by the LLP, while participation in State waters (0-3 nautical miles) is controlled by a limited entry vessel permit system. Nine licenses are issued to fish statewide under the LLP (Appendix A1). The State vessel-based limited entry system became effective in 2004. Prior to that, a State vessel-based moratorium limited participation in State waters to nine vessels. Three of the vessels qualifying for the LLP also qualified for the State moratorium (Appendix A2).

LLP licenses have been voluntarily consolidated by the fleet, through an industry cooperative (see section 3.3.2.1). Two licences have been consolidated of the 7 licenses that are authorized to fish in Federal waters outside of Cook Inlet with no gear restriction. Three larger vessels with LLP licenses, including one limited by American Fisheries Act (AFA) sideboards, participate in the Federal water portion of the fishery and harvest the majority of the scallop quota in the Federal (statewide) fishery, outside of Cook Inlet. Three smaller vessels with LLP licenses participate primarily in the Cook Inlet fishery. Occasionally, one of the smaller vessels participates in the scallop fishery outside of Cook Inlet. Of all scallop vessels currently active in Alaska, only two are permitted to fish in State waters, and one is a small vessel that typically fishes in Cook Inlet, however, as of July 1, 2004, one additional vessel is permitted to fish in State waters.

3.3.2.1 Description of the voluntary cooperative

In May 2000, six of the nine LLP owners formed the North Pacific Scallop Cooperative (cooperative), under authority of the Fishermen's Cooperative Marketing Act, 48 Stat. 1213 (1934), 15 U.S.C. § 521. No state or federal regulations establish cooperatives for the scallop fishery, and the following description provides information on how the cooperative manages itself. The purpose of the cooperative was to slow the race for fish among members, enabling participants to develop better techniques for bycatch avoidance, as well as to improve efficiency in targeting scallops. However, because the cooperative is a voluntary association of vessels with no legal harvest allocation, the cooperative still competes with non-members to harvest the GHR.

Cooperative operations are managed by the cooperative and transparent to the managers of the fishery. The cooperative manages harvests of its participants under the terms of their cooperative contract, but receives no direct allocation under state or federal regulation. Under the cooperative contract, the cooperative avoids preempting historic effort by non-member vessels by annually reserving the estimated historic maximum catch of the non-member vessels prior to planning the fishing of its members. The cooperative sets this reserve aside in the area most likely to be utilized by non-member vessels. The area can vary from year to year, depending upon the region where effort by non-member vessels is concentrated. If the reserve is not utilized, the cooperative redistributes that amount to cooperative members after non-members have finished fishing.[2] Since the cooperative allocations are contractual only, they could be preempted if non-members were to catch more than the reserve. So, the cooperative is able to function only because non-members have not increased their harvests over historic levels since the development of the cooperative.

Non-member vessels are not bound by any of the cooperative's contract provisions or limited in their harvests except by the GHR, so may fish in any area statewide authorized by regulation. According to cooperative members, non-members are welcome to join the cooperative at any time, under the same terms and conditions as the existing members.

According to members of the cooperative, the cooperative members negotiate allocations of scallops and crab bycatch among members annually, and enforce those allocations through provisions in the cooperative contract. Participants agree to stop fishing once they have reached either their scallop allowance or crab caps.

[2] Non-members have typically fished for a limited portion of the year. After that time, the cooperative members typically harvest any of the reserve remaining.

The cooperative contract gives cooperative members the authority to seek injunctive relief, if a member fails to cease fishing once their allocation is met. Additional provisions in the cooperative contract include: requirement to report data in season to a third party contractor; prohibition on fishing in the Cook Inlet Management Area; installation and use of vessel monitoring systems (VMS) to track fishing locations; reserve of scallop and crab allocations for possible use by non co-op members; severe financial penalties for overages of scallops or crabs; a rolling 5-year contract length; and others.

According to cooperative members, some owners opted to remove their boats from the scallop fishery to improve efficiency in recent years. The cooperative allocation to those permits has generally been leased to other vessels in the cooperative. Since formation of the cooperative, fewer vessels participate and fishing effort occurs over a longer time period each season.

3.3.3 Price Trends, Landings, and Vessel Participation

Of the 9 original licenses, several have been purchased and consolidated resulting in a lower number of boats fishing for the entire harvest. Table 12 shows the commercial catch, effort, and value in the scallop fishery from 1967 to 2003. Since the LLP and the formation of the cooperative, the number of vessels participating actively has declined from 8 in 2000, to only 4 in 2003.

Table 12: Historic commercial catch, effort, and value
weathervane scallops statewide including Cook Inlet 1967-2003

Year	Number of Vessels	Total (t)	Total (lbs)	Average Price/Lb.*	Total Value (USD)
1980	8	279.7	616,717	3.60	4,587,151
1981	18	409.8	903,355	4.00	6,830,662
1982	13	413.8	912,295	3.25	5,285,131
1983	5	88.3	194,656	5.00	1,666,575
1984	6	176.8	389,817	4.00	2,568,811
1985	7	287.9	634,681	4.00	4,049,002
1986	8	318.0	701,119	4.25	4,663,155
1987	4	298.8	658,756	3.45	3,438,288
1988	4	154.7	341,070	3.68	1,832,318
1989	7	242.6	534,763	3.87	2,898,505
1990	9	666.6	1,469,531	3.43	6,720,655
1991	6	515.6	1,136,649	3.82	5,588,159
1992	8	810.0	1,785,673	3.96	8,883,499
1993	15	691.9	1,525,373	5.15	9,627,048
1994	17	570.0	1,256,736	5.79	8,735,296
1995	10	186.3	410,743	6.05	2,910,834
1996	9	332.2	732,424	6.30	5,267,433
1997	9	364.7	804,043	6.50	5,839,418
1998	8	378.9	835,311	6.40	5,887,655
1999	10	380.1	837,971	6.25	5,649,751
2000	8	325.9	718,454	5.40	4,049,741
2001	6	252.5	556,641	5.25	2,969,881
2002	6	223.7	493,065	5.25	2,588,591
2003	4	239.7	528,523	5.25	2,712,361

*The estimated average scallop price is a compilation of a variety of sources including processor reports, personal communications with scallop vessel operators, etc.

During the 2000/01 fishery, 7 vessels participated outside of Cook Inlet. During the 2001/02 fishery, four vessels participated. During the 2002/03 fishery, four vessels participated outside of Cook Inlet. In 2003/04, only two vessels participated outside of Cook Inlet. A more detailed examination of the relative percentage of the catch by vessel is necessarily constrained by confidentiality in the fishery.

Average price per pound has been stable in the last three years, but has declined from a high of $6.50/lb in 1997 (Table 12). The total value of the fishery has also declined in the last ten years, from a high of approximately $9.6 million in 1993, to $2.7 million in 2003. Total landings in the fishery (Table 12) have declined from a high of 691.9 tons in 1993, to 239.7 tons in 2003. For comparison with worldwide landings, scallop landings worldwide (see below) have increased in the period from 1996-2002 (FAO 2004).

Year	1996	1997	1998	1999	2000	2001	2002
World Scallop landings (all species) (t)	535,166	532,891	554,767	612,702	660,700	702,737	741,516

Source: FAO 2004

3.3.4 Landings by Port

Statewide weathervane scallop landings by individual port, from 1990 to 2003, are shown in Table 13. Here landings represent a single offload of scallops at the port, and are not representative of the relative amount of scallop meats offloaded at any port. Individual landings by port and by year are confidential, due to the small number of landings.

An examination of the number of offloads gives some indication of which ports have continued, increased, or decreased in their relative importance for offloading of scallop deliveries over time. In general the trend has been fewer offloads to fewer ports. Dutch Harbor, Homer, and Kodiak have continued and/or increased in number of offloads, while Sitka and Seward have declined in the number of landings. There were no scallop landings in Seward in the last two years. No scallops were landed in Cordova since 2000. At-sea landings have occurred in the last 3 years, with one landing each in 2001, and 2002, and 4 landings in 2003. Yakutat continues to have scallop landings, though a reduced number in 2003, compared to more recent years.

Table 13: Statewide weathervane scallop landings by port, 1990 through 2003
Landings are indicated by the number of offloads at a specific port.

	Year														Total	
Port	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Landings	Landed Pounds
Bel/Sea, WA												1	3	1	5	123,632
Cordova	1		6	1		1		1	1	1	8				20	210,792
Dutch Harbor	12	13	8	32	27	1		14	4	3	2	4	4	3	127	2,013,740
Homer	2			15	12	2	11	7	12	4	8	6	7	13	99	242,568
Kodiak	70	48	49	64	44	6	15	14	15	12	6	8	9	10	370	5,808,856
Ketchikan	1														1	Confidential
Petersburg	2														2	Confidential
Pelican				3											3	Confidential
Seldovia														1	1	Confidential
Seward	5		1	3	4	2	7	5	20	21	10	3			81	2,086,133
Sitka	8	24	15	6	2	2								1	58	364,179
Sand Point										1					1	Confidential
Yakutat	22	16	34	3	5	3	4	6	10	3	3	12	7	2	130	2,000,195
At Sea												1	1	4	6	168,360
Total Landings	123	101	113	127	94	17	37	47	62	45	37	35	31	35	904	
Landed Pounds	1,488,737	1,136,649	1,785,673	1,525,308	1,256,736	351,023	732,424	804,043	835,311	837,971	718,454	556,641	493,065	528,523		13,050,558

4.0 Environmental Impacts

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

The effects of scallop fishing on the biological environment and associated impacts on marine mammals, seabirds, and other threatened or endangered species are analyzed in the final EA/RIR/FRFA for Amendments 1 and 2 to the FMP (NMFS 1997a). The alternatives to the status quo are not expected to allow substantial damage to the ocean and coastal habitats, or to jeopardize the long-term productive capability of crab, herring, or groundfish stocks in any manner not previously analyzed in the EA for Amendment 1. Scallop dredges may have potential, in some situations, to affect other organisms comprising benthic communities. These effects are not likely to be substantial, however, because the scallop fisheries in Alaska are small in area relative to the total benthic ecosystem, compressed in time, and contribute insignificantly to the total bycatch of crabs off Alaska.

In addition, the alternatives under consideration are not expected to change the manner in which the scallop fishery currently is conducted in the Federal waters off Alaska because the proposed LLP changes do not affect the amount of scallops harvested, which is controlled by an overall catch limit, or the timing of the harvest or location of the harvests. However, Alternatives 2, 3, and 4 provide for a more equitable sharing of the costs LLP license holders are required to incur in complying with existing conservation measures. Additionally, and importantly, Alternatives 2, 3, and 4 also will provide the Council, NMFS, and the State with greater ability to consider and adopt further conservation measures that might otherwise have been economically unfeasible for the fishery as a whole.

4.1 Potential impacts on Scallop Stocks

There are no expected impacts upon the statewide scallop stocks. Scallop stocks are conservatively managed by ADF&G using established GHRs by registration area. The only change anticipated by adoption of either alternatives 2, 3 or 4 would be an increase in the allowable dredge size by two vessels. The ring sizes on both 6-ft and 15-ft dredges remain the same, and there are no changes proposed to state GHRs. Analysis done for Sea Scallop regulation changes in New England indicated that if the total amount of area-swept by the dredges remains the same, then the impacts on scallop mortality and the environment would be equivalent regardless of a change in dredge width (NEFMC 2003). This assumes, of course, that the dredges are catching the same size selection of scallops. For the weathervane scallop fishery in Alaska the ring sizes are fixed at 4 inches regardless of dredge width.

4.2 Potential impacts on bycatch of non-target species

As detailed in section 3.2.3, the scallop fishery has 100% observer coverage, thus data on the bycatch of non-target species in the fishery is well known. This includes prohibited species (such as crab and halibut), other commercially important species of fish and invertebrates, miscellaneous non-commercial species, and natural and man-made debris. Annual reports produced by ADF&G give detailed catch composition data from observer sampling.

Bycatch of crabs in the scallop fishery is controlled through the use of Crab Bycatch Limits (CBLs) based on individual crab stock abundance. Annual CBLs are established by ADF&G prior to the scallop season, and bycatch is monitored during the season through tri-weekly observer reports delivered by radio or email. Bycatch caps are expressed in numbers of crabs and include all sizes of crabs caught in the scallop fishery

(Barnhart 2003). Additional information on individual CBLs by region and species can be found in the 2003 Scallop SAFE Report (NPFMC 2003c).

Closures based on the fleet reaching crab bycatch limits have decreased over the years since inception of CBLs in 1993 (Barnhart and Rosenkranz 2003). During the 1993/94 season, four areas were closed due to crab bycatch. Since the 2000/01 season no area has closed due to crab bycatch.

The voluntary cooperative includes 6 of the 9 LLP license holders and fishes exclusively in the state and Federal waters outside of Cook Inlet. Vessel operators provide confidential inseason fishing information to an independent consulting company contracted by the cooperative. This firm reviews crab bycatch data, fishing locations, and scallop harvest, which allows for real time identification of high crab bycatch areas. When these areas are identified, the fleet is provided with the information and directed to avoid the area.

Observations from scallop fisheries across the state suggest that mortality of crab bycatch may be lower on average than those taken in trawl fisheries, perhaps due to shorter tow times, shorter exposure times, and lower catch weight and volume. For crab taken as bycatch in the Gulf of Alaska weathervane scallop fishery, Hennick (1973) estimated that about 30% of Tanner crabs and 42% of the red king crabs bycaught in scallop dredges were killed or injured. Hammerstrom and Merrit (1985) estimated mortality of Tanner crab at 8% in Cook Inlet. Kaiser (1986) estimated mortality rates of 19% for Tanner crab and 48% for red king crab bycatch off Kodiak Island. Urban et al. (1994) recorded that in 1993, based on observer collected data, 13-35% of the Tanner crab bycatch were dead or moribund before being discarded with the highest mortality rate occurring on small (<40 mm carapace width, CW) and large (>120 mm CW) crabs. Delayed mortality of Tanner crab resulting from injury or stress has not estimated. Mortality in the Bering Sea appears to be lower than in the Gulf of Alaska, in part due to different sizes of crab taken. Observer collected data observations from the 1994 Bering Sea scallop fishery indicated lower bycatch mortality of red king crab (10%), Tanner crab (11%) and snow crab (19%) (Barnhart et al. 1996). As with observations from the Gulf of Alaska, mortality appeared to be related to size, with larger and smaller crabs having higher mortality rates on average than mid-sized crabs (Barnhart et al. 1996). Delayed mortality was not estimated. In one groundfish plan amendment analysis, all sources of crab mortality were examined; in this analysis a 40% discard mortality rate for all crab species was assumed for scallop fisheries (NPFMC 1993).

A study was conducted by Northern Economics (2003) to review the incidental catch rates within the scallop fishery during the time period before and after the formation of the cooperative. While it is difficult to ascertain specifically what is driving the changes in incidental catch rates, the study showed that since the formation of the cooperative, the incidental catch rate has dropped by 39%, or 126 MT of incidental catch per 1,000 tons of retained scallops. In a comparison of pre and post-coop incidental catch rates by species, Brittle Stars and Sea Baskets declined by 51%, prohibited species by 1%, other commercial species by 12%, kelps and rocks by 56% and miscellaneous starfish species declined by 52%. The decline in the bycatch of kelp and rocks is noteworthy in that these make up important habitat components of the ecosystem. Thus, this decline may indicate a lesser stress upon the habitat as a result of fishing practices following the formation of the cooperative.

None of the alternatives are expected to impact the long-term productive capability of crab or groundfish stocks. Modifications to the scallop LLP will not change the State's existing bycatch control measures that limit the amount of bycatch in the scallop fishery nor will the proposed changes to the LLP affect the existing scallop observer program, which monitors the amount of bycatch of non-target species in the scallop fishery. Therefore, the alternatives would have no effect on non-target species.

4.3 Potential impacts on Habitat

This section contains analyses of potential fishing gear impacts on benthic substrate attributable to the scallop fishery. The habitat impacts of the scallop fishery will not change due to this proposed action because the

proposed action does not increase the amount of scallops harvested or change the location or timing of the fishery.

Two broad categories may be defined in the consequences of dredging for scallop populations: habitat alteration and gear-induced damage and mortality (Grant 2000). Dredging for scallops may affect habitat by causing unobserved mortality to scallops and other marine life, mortality of discards, and modification of the benthic community and sediments. Similar to trawling, dredging places fine sediments into suspension, buries gravel below the surface and overturns large rocks that are embedded in the substrate (NEFMC 1982, Caddy 1973). Dredging can also result in dislodgement of buried shell material, burying of gravel under resuspended sand, and overturning of larger rocks with an appreciable roughening of the sediment surface (Caddy 1968). Two effects of habitat alteration that can be examined with regard to scallops are the disruption of substrate for juvenile scallops and the resuspension of sediments (Grant 2000).

For some scallop species, it has been demonstrated that dredges may adversely affect substrate required for settlement of young to the bottom (Fonseca et al. 1984; Orensanz 1986). Mayer et al. (1991), investigating the effects of a New Bedford scallop dredge on sedimentology at a site in coastal Maine, found that vertical redistribution of bottom sediments had greater implications than the horizontal translocation associated with scraping and plowing the bottom. The scallop dredge tended to bury surficial metabolizable organic matter below the surface, causing a shift in sediment metabolism away from aerobic respiration that occurred at the sediment-water interface and instead toward subsurface anaerobic respiration by bacteria. Dredge marks on the sea floor tend to be short-lived in areas of strong bottom currents, but may persist in low energy environments (Messieh et al. 1991).

Several studies have addressed mortality of scallops not captured by dredges. In Australia, this type of fishing gear typically harvests only 5-35% of the scallops in their path, depending on dredge design, target species, bottom type, and other factors (McLoughlin et al. 1991). Of those that come in contact with the dredge but are not captured, some elude the passing dredge and recover completely from the gear interaction. Some injuries may occur during on board handling of undersized scallops that are returned to the sea or during gear interactions on the sea floor (Caddy 1968; Naidu 1988; Caddy 1989), and delayed mortality can result from siltation of body cavities (Naidu 1988) or an increased vulnerability to disease (McLoughlin et al. 1991) and predation (Elner and Jamieson 1979). Caddy (1973) estimated incidental dredge mortality to be 13 to 17%, based on observations of broken and mutilated shells of Atlantic sea scallops. However, a submersible study of sea scallops from the mid-Atlantic indicated that scallop dredges capture with high efficiency those scallops that are within the path of the scallop dredge and cause very low mortality among those scallops that are not captured (NEFMC 1988). Murawski and Serchuk (1989) made submersible observations of dredge tracks and found a much lower mortality rate (<5%) for Atlantic sea scallops. The difference in mortality between these two studies can be attributed to the substrate on which the experiments were conducted. Caddy's work was done in a sandy/gravelly area and Murawski and Serchuk worked on a smooth sand bottom. Shepard and Auster (1991) investigated the effect of different substrate types on dredge induced damage to scallops and found a significantly higher incidental damage on rock than sand, 25.5% versus 7.7%. For weathervane scallops, mortality is likely to be lower as this species prefers smoother bottom substrates consisting of mud, clay, sand, or gravel (Hennick 1970, 1973).

Atlantic sea scallop beds and the benthic community associated with scallop fishing grounds in the Bay of Fundy were assessed in 1969 (Caddy 1976). During the intervening years, the area has seen great changes in fishing pressure with recent effort amounting to more than 90 vessels of over 25 gross registered tons continuously fishing the grounds with Digby drags for days at a time (Kenchington and Lundy 1991). Since 1969, there have also been dramatic fluctuations in scallop abundance, including both record highs and lows for this century. In particular, scallop abundance rose to over 1000 times “normal” levels with the recruitment of two strong year-classes in 1985 and 1986. This information indicates that extensive dredging does not affect the recruitment of scallops to a productive ground.

There are limited studies available on the specific impacts of trawl and dredge gear on scallops. Recently, some studies have focused on scallop beds in Alaska including Masuda and Stone (2003) and Rosenkranz and Byersdorfer (2004). However these studies were not designed to evaluate habitat impacts. Rosenkranz and Byersdorfer (2004) used utilized video equipment to do a stock assessment of scallop beds in the Eastern GOA, while Masuda and Stone (2003) utilized a manned submarine to evaluate scallop populations in Chiniak Gully in the Central Gulf of Alaska. This area is one of the more heavily trawled areas in the central GOA (Rose and Jorgensen 2004). While the study was not designed to evaluate the effects of dredging and trawling on scallop specifically, information was collected on the abundance and size distributions of populations between areas open and closed to bottom trawling and scallop dredging (Masuda and Stone 2003). Results indicated possible shifts in the size frequency distributions of scallops located within and outside of closed areas but no indication of a change in the density of spatial characteristics of the populations.

As indicated in section 4.2, bycatch data from the Scallop Observer Program has shown that habitat forming organisms (e.g. Gorgonian hard corals) are infrequently observed in sampling of scallop catch. Since 1996, trace amounts of corals have only been encountered in 11 of the 15,836 tows sampled for catch composition and bycatch (Barnhart and Rosenkranz 2003). Natural debris, kelp wood, etc. made up approximately 5% of the total percent weight sampled for the same time period. As previously expressed, a study by Northern Economics (2003) examining incidental catch rates before and after the formation of the cooperative in 2000 found that the bycatch of kelp and rocks has declined 56% since 2000. This could indicate a lesser stress upon the habitat due to the change in fishing practices following the formation of the cooperative; however, a specific study on changes to fishing practices since the formation of the cooperative has not be done in order to further elucidate this.

4.4 Potential impacts on EFH

Section 303(a)(7) of the Magnuson-Stevens Act requires all FMPs to describe and identify EFH, which it defines as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." In addition, FMPs must minimize effects on EFH caused by fishing and identify other actions to conserve and enhance EFH. These EFH requirements are detailed in Amendment 5 to the FMP for the Scallop Fishery off Alaska and the accompanying Environmental Assessment (available from NMFS).

The scallop fishery occurs from the Bering Sea to Yakutat in the Gulf of Alaska, concentrating in the regions around Kodiak and Yakutat. All managed species and their identified EFH under each of the Council's five FMPs are located within the area affected by this action. The scallop fishery does not occur on any areas designated as Habitat Areas of Particular Concern (HAPC). According to the EIS for EFH Identification and Conservation in Alaska, the potential impacts on EFH from the scallop fishery are "minimal and temporary" (NMFS 2005).

The proposed action will not change the location of the scallop fishery or increase the amount of scallops harvested. The location of the fishery is determined by the location of the scallop resource which is not randomly distributed. The ADF&G annually determines the scallop GHR by registration area based on scallop abundance estimates and observer-collected data. Modifying the gear restriction under the LLP will not change how the GHR is determined. Nor will modifying the LLP gear restriction change the existing scallop management areas or the location of the scallop beds. Increasing the allowable dredge size on two licences is not expected to increase the amount or location of harvest. The main anticipated change would be the relative amount of scallops harvested by each vessel.

The proposed amendment will not increase the amount of harvest, the intensity of harvest, or the location of harvest. Therefore, this action is presumed not to increase the impacts of the fishery to EFH. Based on the above, this action, in the context of the fishery as a whole, will not adversely affect EFH for species managed under the five North Pacific FMPs. As a result of this determination, an EFH consultation is not required.

4.5 Endangered Species Act

The Endangered Species Act of 1973 (ESA), as amended [16 U.S.C. § 1531 *et seq*; ESA], provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The program is administered jointly by the NMFS for most marine mammal species, marine and anadromous fish species, and marine plants species and by the USFWS for bird species, and terrestrial and freshwater wildlife and plant species.

The designation of an ESA-listed species is based on the biological health of that species. The status determination is either threatened or endangered. Threatened species are those likely to become endangered in the foreseeable future [16 U.S.C. § 1532(20)]. Endangered species are those in danger of becoming extinct throughout all or a significant portion of their range [16 U.S.C. § 1532(20)]. Species can be listed as endangered without first being listed as threatened. The Secretary of Commerce, acting through NMFS, is authorized to list marine fish, plants, and mammals (except for walrus and sea otter) and anadromous fish species. The Secretary of the Interior, acting through the USFWS, is authorized to list walrus and sea otter, seabirds, terrestrial plants and wildlife, and freshwater fish and plant species.

In addition to listing species under the ESA, the critical habitat of a newly listed species must be designated concurrent with its listing to the "maximum extent prudent and determinable" [16 U.S.C. § 1533(b)(1)(A)]. The ESA defines critical habitat as those specific areas that are essential to the conservation of a listed species and that may be in need of special consideration. Federal agencies are prohibited from undertaking actions that destroy or adversely modify designated critical habitat. Some species, primarily the cetaceans, which were listed in 1969 under the Endangered Species Conservation Act and carried forward as endangered under the ESA, have not received critical habitat designations.

4.6 Impacts on Endangered or Threatened Species

Species listed as endangered and threatened under the ESA that may be present in the Federal waters off Alaska include:

Common Name	Scientific Name	ESA Status
Northern Right Whale	*Balaena glacialis*	Endangered
Bowhead Whale [1]	*Balaena mysticetus*	Endangered
Sei Whale	*Balaenoptera borealis*	Endangered
Blue Whale	*Balaenoptera musculus*	Endangered
Fin Whale	*Balaenoptera physalus*	Endangered
Humpback Whale	*Megaptera novaeangliae*	Endangered
Sperm Whale	*Physeter macrocephalus*	Endangered
Snake River Sockeye Salmon	*Onchorynchus nerka*	Endangered
Short-tailed Albatross	*Phoebaotria albatrus*	Endangered
Steller Sea Lion	*Eumetopias jubatus*	Endangered and Threatened [2]
Snake River Fall Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Snake River Spring/Summer Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Puget Sound Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Lower Columbia River Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Upper Willamette River Chinook Salmon	*Onchorynchus tshawytscha*	Threatened
Upper Columbia River Spring Chinook Salmon	*Onchorynchus tshawytscha*	Endangered
Upper Columbia River Steelhead	*Onchorynchus mykiss*	Endangered
Snake River Basin Steelhead	*Onchorynchus mykiss*	Threatened
Lower Columbia River Steelhead	*Onchorynchus mykiss*	Threatened
Upper Willamette River Steelhead	*Onchorynchus mykiss*	Threatened
Middle Columbia River Steelhead	*Onchorynchus mykiss*	Threatened
Spectacled Eider	*Somateria fishcheri*	Threatened
Steller Eider	*Polysticta stelleri*	Threatened

[1] The bowhead whale is present in the Bering Sea area only.
[2] Steller sea lion are listed as endangered west of Cape Suckling and threatened east of Cape Suckling.

After reviewing the current status of the listed species, designated critical habitat, and the potential effects of the scallop fisheries prosecuted under the FMP, NMFS Sustainable Fisheries concludes that the scallop fishery off Alaska (which consists of a small fleet of vessels, and uses gear less likely to generate bycatch of finfish, seabirds or marine mammals) will have no affect on ESA-listed species or designated critical habitat, pursuant to Section 7 of the ESA. Therefore, the ESA does not require a consultation for the FMP for the Scallop Fishery off Alaska. This determination is based on the fact that scallops do not interact with any listed species and do not comprise a measurable portion of the diet of any listed species. No interactions between the scallop fisheries, which have 100 percent observer coverage, and any listed species have been reported. The proposed action does not change the scallop fishery to the extent that it would alter the impacts of the fishery on ESA-listed species or designated critical habitat. Therefore, the proposed action would have no effect on ESA-listed species or designated critical habitat, pursuant to Section 7 of the ESA

Capture of salmon by the scallop dredges is reported to be extremely rare (Hennick 1973), as scallop dredges are small in size, and remain within one meter of the ocean bottom. Bycatch of all fish species by scallop dredges is composed primarily of flounders and skates (Kruse et al. 1993; Urban et al. 1994). A total of 8 pounds of chum salmon (likely a single fish) was reported caught between 1996 - 1999 in the scallop fishery (J. Barnhart, pers. comm). No salmon bycatch was reported by ADF&G observers deployed on vessels during the 1999-2002 fishing seasons (Barnhart and Rosenkranz, 2003), and there have been no other reports of salmon bycatch in the scallop fishery off Alaska.

Since scallop dredges are small in size, unbaited, and remain within one meter of the ocean bottom, interactions with seabirds and marine mammals are much less likely in the scallop fishery than in the groundfish fishery, which consists of a much larger fleet of vessels using large nets or baited hooks or pots. In addition, there are no reported takes of seabirds or marine mammals by the scallop fishery off Alaska. The scallop fisheries do not occur in critical habitat established for Spectacled Eiders or Steller Eiders. According to observer data, occasional scallop fishing does occur in the 20 nm Aquatic Zone of Steller sea lion critical habitat in the Gulf of Alaska. Specifically, the Kodiak Shelikof bed is in Steller sea lion critical habitat, as is approximately half of Kodiak North East scallop fishing, and about 2/3rds of Kayak Island scallop fishing. The Bering Sea scallop fishing area is not in Steller sea lion critical habitat. See Figure 1 for a map of the general scallop fishing locations and Tables 1 though 10 for the level of fishing effort in each. However, NMFS Sustainable Fisheries has concluded that this low level of disturbance has no effect on Steller sea lions or their critical habitat.

4.7 Potential Impacts on Seabirds

Many seabirds occur in Alaskan waters indicating a potential for interaction with scallop fisheries. The most numerous seabirds in Alaska are northern fulmars, storm petrels, kittiwakes, murres, auklets, and puffins. These groups, and others, represent 38 species of seabirds that breed in Alaska. Eight species of Alaska seabirds breed only in Alaska and in Siberia. Populations of five other species are concentrated in Alaska but range throughout the North Pacific region. Marine waters off Alaska provide critical feeding grounds for these species as well as others that do not breed in Alaska but migrate to Alaska during summer, and for other species that breed in Canada or Eurasia and overwinter in Alaska. Additional discussion about seabird life history, predator-prey relationships, and interactions with commercial fisheries can be found in the Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement (NMFS 2004). Since scallop dredges are small in size, and remain within one meter of the ocean bottom, interactions with seabirds are much less likely in the scallop fishery than in the groundfish fishery, which consists of a much larger fleet of vessels using large nets or baited hooks or pots. In addition, there are no reported takes of seabirds by the scallop fishery off Alaska. Therefore, the proposed action will have no impact on seabirds.

4.8 Potential Impacts on Marine Mammals

The scallop fishery in the EEZ of Alaska is classified as Category III fishery under the Marine Mammal Protection Act. A fishery that interacts only with non-strategic stocks and whose level of take has insignificant impact on the stocks is placed in Category III. An observer program is in place for the scallop fisheries. No takes of marine mammals by the scallop fishery off Alaska have been reported. Therefore, the proposed action will have no impact on marine mammals.

4.9 Potential Impacts on Biodiversity and the Ecosystem

Removals of scallops by the commercial fishery removes predators, prey, or competitors and thus could conceivably alter predator-prey relationships relative to an unfished system. Studies from other ecosystems have been conducted to determine whether predators were controlling prey populations and whether fishing down predators produced a corresponding increase in prey. Similarly, the examination of fishing effects on prey populations has been conducted to evaluate impacts on predators. Finally, fishing down of competitors

has the potential to produce species replacements in trophic guilds. Evidence from other ecosystems presents mixed results about the possible importance of fishing in causing population changes of the fished species' prey, predators, or competitors. Some studies showed a relationship, while others showed that the changes were more likely due to direct environmental influences on the prey, predator, or competitor species rather than a food web effect. Fishing does have the potential to impact food webs but each ecosystem must be examined to determine how important it is for that ecosystem.

Little research has been conducted on the trophic interactions of scallops. Known predators of scallops are discussed in Section 3.2. With trophic interactions and interspecific competition so poorly understood, it is not possible to clearly specify the effects to the ecosystem of the scallop fishery. However, given the nature of the action, the presumed effects of the alternatives on the ecosystem are insignificant.

4.10 Socio-economic effects of the Alternatives

There are 9 Federal Scallop LLP licence holders. None of the alternatives will alter the number of licence holders; however, three of the alternatives will alter the gear restriction currently imposed on two of the 9 licences. Under Alternatives 2, 3, and 4, the current 6-ft dredge restriction imposed on the two licenses would be partially relieved to allow two 8-ft dredges, two 10-ft dredges, or no gear restrictions, respectively.

The FMP contains an Economic and Social Objective, which is to maximize economic and social benefits to the nation over time. The proposed action improves fleet efficiency by increasing the efficiency of the two LLP holders with the current dredge restriction. Additional efficiency gains would be realized by all members of the fleet if the two LLP license holders joined the voluntary cooperative. Improvements in efficiency increase the economic benefits to the nation over time.

Analysis indicates that alternatives to the status quo increase efficiency by increasing the efficiency of the two LLP holders with the gear restrictions. The relative adverse economic impacts on the other participants in the fishery could be two-fold. First, the action could result in the decrease in relative harvest percentage. Second, it could result in a presumed decrease in the value of the LLP licenses currently held, given their limited number. The likelihood of expansion of operations by the two license holders subject to a relaxation of the gear limitation in Federal waters outside of Cook Inlet is not known. But, if expansion occurs, it is most likely to occur in Area E and Area K, given the smaller size of these vessels. As these areas are currently fully utilized, any expansion of harvests by the two affected vessels would be at the expense of the other license holders traditionally fishing in those management areas. Additionally, the value of the two licenses that would become subject to less stringent gear restrictions, would be expected to increase, as those licenses could be used to expand fishing effort. However, it is important to note that all vessels are constrained by the vessel length on their LLP license, which would not be altered under any of the proposed alternatives. These two licenses are associated with among the smallest vessels under the LLP. The relative value of the remaining 7 licenses under the Federal LLP, may potentially decline with the increase in the number of non-gear restricted licenses. However, the capacity represented by the two subject vessels is sufficiently limited, that it likely does not represent a significant market force.

If the other participants increase effort, the cooperative may need to respond by reducing its own harvests, increasing its effort to maintain its level of harvests, or expanding the cooperative to include these other participants. The likely scenario, given the benefits of cooperative membership and that the cooperative structure is already developed in this fishery, would be to expand the cooperative to include these other two participants as members. If the two LLP license holders join the cooperative, the cooperative itself will be stronger, efficiency of the fleet overall will improve, and this fishery would experience the benefits of being fully rationalized. Even greater economic and operational efficiencies may be realized for the entire fleet, making the potential size of the revenue pool larger for all. As has been demonstrated elsewhere, cooperative fishing behavior optimizes the long-term benefit stream deriving from the scallop resource. Additionally, through improvements in efficiencies from a fleet-wide cooperative, the cooperative member licenses would

be expected to increase in value, rather than suffer a decline, as the value of access to the resource (i.e., license value) rises over time.

A more detailed discussion of the economic impacts of the alternatives can be found in section 5.4 of this document.

Impacts on Safety

No fatalities are known to have occurred in the scallop fishery. The alternatives considered would not impact the ability of vessel owners and captains to invest in safety, take weather conditions into consideration when making decisions, and hire professional crews. Therefore alternatives will have no effect on safety.

4.11 Cumulative Effects

Analysis of the potential cumulative effects of a proposed action and its alternatives is a requirement of NEPA. Cumulative effects are those combined effects on the quality of the human environment that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what Federal or non-Federal agency or person undertakes such other actions (40 CFR 1508.7, 1508.25(a), and 1508.25(c)). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The concept behind cumulative effects analysis is to capture the total effects of many actions over time that would be missed by evaluating each action individually. At the same time, the CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action on the universe but to focus on those effects that are truly meaningful. However, a cumulative effects analysis is not required when is action has no impact on a resource component. As previously discussed there is no expected impact of the alternatives on scallop stocks, EFH, bycatch of other species in the scallop fishery, prohibited or ESA-listed species, or marine mammals. Potential economic impacts are described in the Regulatory Impact Review (RIR), Section 5.0 of this document.

5.0 Regulatory Impact Review

5.1 Introduction

This RIR is required under Presidential Executive Order (E.O.) 12866 (58 *FR* 51735; October 4, 1993). The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

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

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

- Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

5.2 Purpose and Need

As explained in Section 2.2, the problem statement adopted by the Council is as follows:

> *The current Federal LLP limits two license holders to fish with a single 6 ft dredge in Federal waters while 7 license holders are allowed to use the full complement of authorized gear (two 15 ft dredges). The Council approved this LLP under Amendment 4 to the Federal Scallop FMP, as a means to address excess capacity in the scallop fishery. Since the Federal LLP was implemented in 2001, it has come to the attention of the Council that, given observer requirements and their associated costs, this gear restriction may create a disproportionate economic hardship to these two operations when fishing outside of State waters. The Council is considering modifying or eliminating this gear restriction on those Federal LLP licences.*

5.3 Alternatives considered

Four alternatives are considered in this analysis.

5.3.1 Alternative 1: Status Quo. Maintain the current 6-ft dredge restriction endorsement on LLP licenses.

Alternative 1, status quo, represents the current LLP as implemented by NMFS. There are currently 9 LLP licenses, of which seven licenses have no gear restriction (e.g., can utilize the maximum State authorized gear, two 15-ft dredges), while two licenses have a gear restriction endorsement which limits them to use a

single 6-ft dredge. These two LLP licenses were earned by vessels that fished only in Cook Inlet during the qualifying period, as stated in the EA for Amendment 4 to the Scallop FMP.

5.3.2 Alternative 2: Modify the current 6-ft dredge restriction to allow vessels with the current endorsement to fish in Federal waters outside of Cook Inlet, with a maximum of two eight-foot dredges (or two dredges with a combined width of no more than 16 feet).

This alternative would allow the two restricted licenses to use wider dredges.

5.3.3 Alternative 3: **(preferred)** Modify the current 6-ft dredge restriction to allow vessels with the current endorsement to fish in Federal waters outside of Cook Inlet, with a maximum of two 10-foot dredges (or two dredges with a combined width of no more than 20 feet).

This alternative would allow the two restricted licenses to use wider dredges.

5.3.4 Alternative 4: Eliminate the current 6-ft dredge restriction on LLP licenses.

Alternative 4 removes the gear restriction endorsement from the LLP licenses and would allow all 9 LLP license holders to utilize the full complement of State authorized gear (two 15-ft dredges), in Federal waters outside of Cook Inlet. This alternative is consistent with the State of Alaska regulations, which limit scallop vessels to a maximum of two 15-ft dredges.

5.4 Economic Impacts of the Alternatives

The economic analysis is constrained by confidentiality of data (which arises because of the few participants in the scallop fishery), the availability of reliable cost and operational data, and the lack of thoroughly tested quantitative models. As a result, the analysis of economic impacts of the alternatives is largely qualitative.

The analysis focuses on three groups of affected participants: the two LLP license holders currently limited to a single 6-foot dredge gear restriction (who would be directly affected by the proposed regulatory change), the six LLP license holders without a gear restriction and who participate in the cooperative, and the one LLP license holder without a gear restriction, but does not participate in the cooperative.

5.4.1 Potential impacts on fishery participants

Discussion of the relative impacts under any of the alternatives is necessarily hypothetical in nature. Data and confidentiality constraints combine to further limit this assessment to a largely qualitative treatment of potential impacts under each alternative scenario.

Adoption of **Alternative 1** would result in no change to the current LLP, as implemented in 2001. Under this alternative, the 6-ft dredge gear restriction would be retained for LLP licenses earned based on participation in Cook Inlet in the qualifying period, which includes just two of the nine licence holders, i.e., these two boats would only be able to fish in Federal waters, outside of Cook Inlet, using a single 6-ft dredge. Other license holders would continue to be permitted to use two dredges of up to 15 feet each. Maintaining the status quo management is likely to leave fishing practices and economic impacts unchanged from current conditions. In the current fishery, the holders of the two licenses that are subject to more restrictive gear limitations, limit their participation in Federal waters to inside Cook Inlet, although one vessel has attempted some limited harvest in Federal waters outside of Cook Inlet. Whether these two participants continue to limit their participation in Federal waters, under status quo management, cannot be determined with certainty. One of the license holders, however, asserts that he is economically unable to fish in the Federal waters outside of Cook Inlet, while subject to the 6-foot dredge limit, because he is unable to realize high enough exvessel

revenues to cover the costs of mandatory observers, associated with fishing in Federal waters.[3] In the event that either or both of the holders of the licenses subject to more restrictive gear limitations were to expand operations in Federal waters outside of Cook Inlet, the impact of that participation on other license holders would be limited by the ability of those holders to harvest scallops using only one 6-foot dredge. Although an expansion of operations in Federal waters outside of Cook Inlet waters is possible, the operations of the cooperative are unlikely to be disrupted substantially by expansion of operations by the two gear limited vessels.

Under this alternative, there would be no change to the LLP, or to any of the licenses. Therefore, there would be no change in the relative value of LLP licenses and no change in the economic impact on the other participants in the fishery. Current cost and breakeven analysis was submitted voluntarily by some members of the scallop fishery and is attached as Appendix B.

Under **Alternatives 2 and 3**, the 6-ft dredge gear restriction would be relaxed; however, the two LLP licenses would still have a gear restriction. **Alternative 4**, which eliminates the gear restriction endorsement, would allow the two currently disproportionately restricted license holders the ability to fish under the same rules as the rest of the fleet, if the license is fished. Each of these alternatives increases the ability of the two LLP license holders to increase their share of the total harvest and has some (albeit, variable) potential to increase the value of these two licenses, regardless if the license is fished.

The relative economic impacts on the other participants in the fishery would potentially be two-fold. First, other participants could potentially experience a decrease in relative harvest percentage as the two restricted LLP license holders increase their portion of the catch, should meaningful additional effort be deployed by the two previously limited operators. Second, other participants could potentially experience a decrease in the market value of the LLP licenses. An additional discussion of the potential impacts on the cooperative is provided further in this section.

Under **Alternative 2**, a maximum of two 8-ft dredges, or two dredges with a combined width of no more than 16 ft, and **Alterative 3 (preferred)**, a maximum of two 10-ft dredges, or two dredges with a combined width of no more than 20 ft, would be authorized for use by the two LLP license holders with the current gear restriction. The potential for expansion of operations of the two license holders subject to this action is not known. One of these two current license holders has stated that two 10-foot dredges is the maximum gear that could be used on the vessel currently using that license. The current holder of one license asserts that expansion of operations in Federal waters outside of Cook Inlet is likely to be limited.[4] Near term expansion of these operations is most likely to occur, if at all, in the areas nearest to Cook Inlet, where these two license holders currently fish (i.e., Prince William Sound Area E and Kodiak Area K, which includes the Shelikof district). Since 1999, harvests in the Shelikof district have reached or exceeded the established GHR ceiling of 180,000 lbs (Table 6). Vessel participation for this region, over the same time period, has ranged from 2 to 6 vessels. In Prince William Sound (Area E), harvests since 1999, have reached or exceeded the

[3] Estimated observer costs per day are $350 (Jeff Barnhart, ADF&G, pers. comm.). Ex-vessel price per pound in 2003 for most regions was approximately $5.50 (Jeff Barnhart, ADF&G, pers. comm).

[4] The owner of this vessel, Max Hulse, has stated that the traditional fishing grounds for this vessel have been recently restricted to Cook Inlet due to aforementioned concerns regarding observer costs in statewide waters. However, some additional landings were made in areas of Kodiak (Shelikof) and Prince William Sound (Kayak Island) where weather is generally better for smaller vessels and scallop size tends to be larger. If the vessel, as was indicated, fished in these traditional grounds, additional fishing opportunities would be provided by the use of the larger dredge in the month of July and early September in the area of Shelikof. The owner has suggested that the vessel would continue to fish Cook Inlet during the month of August. Smaller vessels have a more limited ability to fish in statewide waters due to their inability to withstand the inclement weather conditions. The owner estimated that the vessel would be weathered out of fishing for scallops in the statewide waters of Shelikof Straight approximately 50 percent of the time. However, the ability to move in and out of state waters utilizing the same dredge gear would allow for increased harvests in the time periods that the smaller boats were able to fish. Provisions for the state waters scallop fishery will allow all vessels to fish with two 15-foot dredges in all state waters outside of Cook Inlet.

established GHR of 20,000 to 30,000 lbs, with the exception of the 2002/2003 season (Table 3). Vessel participation in this region has ranged from 1 to 3 vessels. Since these areas are fully utilized, any expansion of harvests by the two vessels subject to the regulation change would be at the expense of the other license holders in the fishery (cooperative members and the non member). In the long term, at least in theory, expansion of harvest shares by these two licenses could increase, particularly if either of these current license holders transfer their licenses to more powerful vessels. However, this potential for increases in catch share would be significantly limited by the MLOA on these licenses that restricts the size of vessel upon which the license may be used. Additionally, shucking rate and crew size restrictions, imposed by State regulations, will also play a role in the ability for these smaller boats to fully utilize the increased harvest capacity afforded by the authorized increase in dredge size. Therefore, it does not appear that either operation has the potential to significantly impact the catch shares of the other operations in the fishery, so instability in the sector is not a serious concern associated with Alternatives 2, 3, and 4. Some relatively modest redistribution of earnings, and more likely redeployment of effort, seem the most probable outcome of implementing Alternative 2, 3, and 4.

The value of the two licenses that would benefit from the less stringent gear restrictions could increase as those licenses will be usable for potentially larger operations, up to the MLOA on the license. The relaxed gear limitations could make the licenses attractive to a new market of buyers that have more powerful vessels that are able to realize greater returns from the license than would have been possible under the single 6-foot dredge limitation. Both licenses in question are restricted to MLOA of less than 75 feet. Information from the New England Sea Scallop fishery on vessels utilizing New Bedford-style trawls suggests that vessels of at least 60 feet, with at least 500 BHP, and 50 gross registered tons are capable of pulling two 15-ft dredges. (A. Applegate, NEFMC, pers. comm.). So, although the vessels on which the licenses are currently used may not be able to fully use gear to the authorized limit, the license could be transferred to a different vessel better able to use the full complement of gear. Deck space, processing space, and living quarters on smaller vessels, however, may additionally limit the relative expansion of operations by these vessels (J. Barnhart, ADF&G, pers. comm). Furthermore, some of that limited deck and living space will be foregone to accommodate the mandatory observer that will accompany participation in these Federal waters' fisheries outside of Cook Inlet.

Under **Alternative 4**, the current gear restriction on two of the nine LLP licenses would be eliminated, thus both of these licenses would be allowed use of the full complement of State authorized gear, two 15-foot dredges. This would mean uniform gear limitations on all vessels participating in the fishery. As under Alternatives 2 and 3, whether the two licenses directly affected by the regulatory change would change operations cannot be predicted.[5] Similar impacts are expected for Alternatives 2, 3, and 4 as the ability of analysts to differentiate impacts are limited. The additional gear that would be permitted under Alternatives 2, 3, and 4 would create an opportunity for the two vessels, which are subject to the removal of the gear restrictions, to compete for a larger share of the scallop harvest outside of Cook Inlet. Whether and when the larger dredges would be used by these operations, and with what success, is not known.

The impacts of Alternatives 2, 3, and 4 on the LLP license holders that are in the voluntary cooperative depend largely on changes of the operations and harvests of others in the fishery because the cooperative does not receive an exclusive allocation in the fishery. So, if other participants increase harvests, the harvests of the cooperative will decline unless cooperative responds by increasing effort to maintain its catch share. Under a worse case scenario, an increase in harvests by the two LLP holders could result in disbanding of the cooperative, and a return to the race for fish. The implications of a return to a race for fish would be a loss of efficiency, as each LLP license holder that wished to realize any return from the fishery would be required to enter a vessel in the fishery. Currently, only two to three vessels harvest the cooperative's catch. Efficiency would also be lost as each vessel races to maximize its portion of the total catch, with greater attention to accelerating catch, and less attention to reducing harvest costs and enhancing product recovery and quality.

[5] The holder of one of the two affected LLP licenses asserts that his vessel could not operate with two 15 foot dredges.

The distribution of activity in the different areas, in a race for fish, cannot be fully predicted, but it could generally be expected that the areas with the highest CPUEs and GHRs would draw the most effort, early in the season. After the closure of these areas, vessels would move on to other areas that have lower CPUEs and GHRs. In areas receiving higher effort, grounds preemption could result, with redistribution of effort in response. If a race for fish does ensue, as a result of the change in management, the returns to former members of the (now defunct) cooperative could decline, perhaps substantially. In the long run, however, the race for fish is unlikely to persist with this full complement of nine LLP qualified vessels. Unless some additional management action were taken to alter the outcome, managed open access assures that the fastest, most technologically sophisticated operations will "out compete" the marginal operations and drive them out of the fishery. In the intermediate run, the race for fish will induce "capital stuffing" and even more inefficiency, and all resource rents will be dissipated. Those operations that are left in the scallop fishery will, themselves, not find a stable equilibrium, because the presence of any positive rents will induce new entry, which, even in an LLP controlled fishery, will be possible, owing to the presence of "latent" licenses, remaining from those operations forced out during the transitional race-for-fish. In this case, the net return to cooperative members, and the fleet as a whole, would decline through a decline in efficiency and a loss of a portion of the fishery currently harvested by the cooperative members that would be harvested by the two LLP holders.

A more likely scenario, given the benefits of cooperative membership and that the cooperative structure is already developed in this fishery, would be to expand the cooperative to include these other two participants as members, with some likely concession to these new members.[6][7] The addition of one or two new members could be achieved more easily and with less disruption than disbanding the cooperative. While a portion of the harvest currently allocated to existing cooperative members would be allocated to the two new members, this loss of harvest is off-set by the gains in efficiency from a fleet-wide cooperative. The benefits of fishing in a cooperative, over fishing in a competitive, regulated open access fishery, are likely to be substantial enough that participants will decide to fish in a larger cooperative, rather than race-for-fish, with all the well know, aforementioned, implications of that choice. If the two LLP license holders join the cooperative, the cooperative itself will be stronger, the efficiency of the fleet overall will improve, and this fishery would experience the benefits of being fully rationalized. Even greater economic and operational efficiencies may be realized for the entire fleet, making the potential size of the revenue pool larger for all. As has been demonstrated elsewhere, cooperative fishing behavior "optimizes" the long-term benefit stream deriving from the scallop resource.

The value of the present LLP license holder's licenses may potentially decline as compared to the status quo. This decline, to the extent that it emerges, would be assumed to be commensurate with the associated decline in the expected long-run return from the license. Several factors may ameliorate any such decline within the present context, however. First, the potential capacity of the two operations that would benefit from the proposed action is, by any measure, relatively limited under terms of the LLP and State scallop harvest rules. Second, through improvements in efficiencies from a fleet-wide cooperative, the member licenses would be expected to increase in value, rather than suffer a decline, as the value of access to the resource (i.e., license value) rises over time.

---

[6] The three license holders that are not cooperative members were offered membership at the outset, but chose not to join. Given that they were unwilling to join at the outset under the cooperative's current allocation rules, it is unlikely they would accept membership under less restrictive gear regulations subject to those same terms. So, if these license holders are to be drawn into the cooperative, the current members would likely need to make some concession to gain these new members.

[7] According to cooperative members, the cooperative currently sets aside the amount traditionally harvested by non-members and only harvests this amount after weather has precluded these other smaller vessels from participation. If non-members do not exceed the set aside, the presumed impact is negligible in theory. In practice, however, non-members have never taken the full set aside, instead leaving at least a portion of the set aside for cooperative harvest at the end of the season. So, cooperative harvests might be reduced, even if the non-members only harvest the set aside.

The returns to the LLP holder that is not a member of the cooperative and is not subject to the restrictive gear limits, is likely to remain unchanged. This LLP license holder currently harvests a portion of the GHR in a few areas and is likely to continue to operate in those areas, independent of the cooperative.

The Cook Inlet fleet, which is fleet of small, non-LLP qualified vessels (except for the two operations that are subjects of this action) that fish exclusively within the Inlet, could see an increase in harvest amounts if one or both of the LLP license holders decreases effort in Cook Inlet to participate in other areas outside of Cook Inlet.

5.4.2 Impact on the management of the fishery

Under Alternatives 2, 3, or 4, harvest by these two vessels would likely increase in the Federal waters outside of Cook Inlet, thus increasing the economic returns to these two LLP holders. Amendment 10 provides for a more equitable sharing of the costs LLP license holders are required to incur in complying with existing conservation measures. In addition, Amendment 10 will provide the Council, NMFS, and the State with greater ability to consider and adopt further conservation measures that might otherwise have been economically unfeasible for the fishery as a whole. The State requires vessels fishing outside of Cook Inlet to have 100% observer coverage, which is paid for by the vessels. Estimated observer costs per day, per vessel, are $350 (J. Barnhart, ADF&G, pers. comm.). Since these areas are already fished by other vessels, the only change would be in the number of boats on which observers are deployed. If the vessels joined the cooperative, then any increased management responsibility would be assumed within the cooperative management and not by the State.

Impacts of the alternatives on the other aspects of management of the fishery would likely be negligible. Total harvest by the fleet would stay the same because total harvest is determined by the GHR. The GHRs would not change and presumably harvest rates would be the same. As the State already manages conservatively for GHRs, inseason management would remain the same.

6.0 Final Regulatory Flexibility Analysis

The Regulatory Flexibility Act (RFA), first enacted in 1980, requires the government to review all regulations to ensure that, while accomplishing their intended purposes, the government does not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a Federal regulation. Major goals of the RFA are: (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action.

On March 29, 1996, President Clinton signed the Small Business Regulatory Enforcement Fairness Act. Among other things, the new law amended the RFA to allow judicial review of an agency's compliance with the RFA. The 1996 amendments also updated the requirements for a final regulatory flexibility analysis, including a description of the steps an agency must take to minimize the significant economic impact on small entities. Finally, the 1996 amendments expanded the authority of the Chief Counsel for Advocacy of the Small Business Administration (SBA) to file amicus briefs in court proceedings involving an agency's violation of the RFA.

In determining the scope, or 'universe', of the entities to be considered in a FRFA, NMFS generally includes only those entities that can reasonably be expected to be directly regulated by the final rule. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (e.g., user group, gear type, geographic area), that segment would be considered the universe for the purpose of this analysis. NMFS interprets the intent of the RFA to address negative economic impacts, not beneficial impacts, and thus such a focus exists in analyses that are designed to address RFA compliance.

An FRFA has been prepared and is included in this package for Secretarial review because, based on all available information, it is not possible to 'certify' under §605 of the RFA that the action will not have a significant economic impact on a substantial number of small entities.

Under 5 U.S.C., § 604(a) of the RFA, each FRFA is required to contain:

> (1) a succinct statement of the need for, and objectives of, the rule;
>
> (2) a summary of the significant issues raised by the public comments in response to the initial regulatory flexibility analysis, a summary of the assessment of the agency of such issues, and a statement of any changes made in the proposed rule as a result of such comments;
>
> (3) a description of and an estimate of the number of small entities to which the rule will apply or an explanation of why no such estimate is available;
>
> (4) a description of the projected reporting, recordkeeping and other compliance requirements of the rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record; and
>
> (5) a description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.

6.1 Definition of a small entity

The RFA recognizes and defines three kinds of small entities: (1) small businesses, (2) small non-profit organizations, and (3) small government jurisdictions.

Small businesses. Section 601(3) of the RFA defines a 'small business' as having the same meaning as 'small business concern' which is defined under Section 3 of the Small Business Act (SBA). 'Small business' or 'small business concern' includes any firm that is independently owned and operated and not dominant in its field of operation. The SBA has further defined a "small business concern" as one "organized for profit, with a place of business located in the U.S., and which operates primarily within the U.S. or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials, or labor... A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the form is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture."

The SBA has established size criteria for all major industry sectors in the U.S., including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of $3.5 million for all its affiliated operations worldwide. A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the $3.5 million criterion for fish harvesting operations. Finally, a wholesale business servicing the fishing industry is a small businesses if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide.

Small organizations. The RFA defines "small organizations" as any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.

Small governmental jurisdictions. The RFA defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with populations of fewer than 50,000.

6.2 A succinct statement of the need for, and objectives of, the rule

The need for this rule was brought to the Council in public testimony, at its February 2004 meeting, that indicated a participant in the scallop fishery was experiencing disproportionate adverse economic impacts as a result of the gear restriction endorsement on his LLP license. The objective of the rule is to modify the gear restriction endorsement on the LLP to alleviate the economic hardship to the LLP holders with this endorsement, without negatively impacting the remainder of the fleet, the sustainability of the fishery, or its ability to achieve optimum yield.

6.3 Public Comment

The proposed rule implementing Amendment 10 was published in the Federal Register on April 13, 2005 (70 FR 1909). An Initial Regulatory Flexibility Analysis (IRFA) was prepared for the proposed rule, and described in the classification section of the preamble to the rule. The public comment period ended on May 31, 2005. NMFS received 3 letters of public comment on the proposed rule, which are summarized and responded to in the preamble to the final rule. NMFS received no comments on the IRFA No changes were made to the final rule from the proposed rule in response to the comments.

6.4 A description of, and where feasible, an estimate of the number of small entities to which the final rule will apply

For purposes of the FRFA, the two LLP license holders, which currently are subject to the single 6-ft. dredge gear restriction, are the only small entities (i.e., each having annual gross receipts of less than $3.5 million) directly regulated by the regulations. These two small entities are described in detail in Section 3.3, above.

6.5 Recordkeeping and reporting requirements

This regulation does not impose new recordkeeping or reporting requirements on the regulated small entities.

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

This analysis did not uncover any existing Federal rules that duplicate, overlap, or conflict with any of the actions proposed in the Alternatives.

6.7 Description of significant alternatives and description of steps taken to minimize the significant economic impacts on small entities.

A FRFA should include "a description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected. "

The range of alternatives has been discussed in Sections 2.0 and 5.0 of this document. The alternatives analyzed in this document range from elimination of the disproportionate gear restriction, currently applied to both licenses (Alternative 4), to retaining the current gear restriction (Alternative 1, Status Quo). Alternative 3, the preferred alternative, would change the single 6-ft dredge restriction endorsement in the LLP to a restriction endorsement of two dredges with a combined width of no more that 20 feet (6.1 m). Alternative 3 appears, on the basis of the foregoing analysis, to most effectively achieve the objectives of the action, while minimizing the potential adverse effects on small entities. That is, none of the other available alternative place a smaller burden on directly regulated small entities, while fully achieving the Council's objectives for this action, as discussed below.

The LLP disproportionally impacted the two small entities, which fished exclusively inside of Cook Inlet during the qualifying period, by limiting the size of dredge either vessel could operate to a single 6-ft (1.8 m) dredge. The remaining LLP license holders may operate up to two 15-ft dredges. The Council recommended Amendment 10 because it found that it is not economically viable for vessels to operate outside Cook Inlet (as authorized by authority of the LLP license) with the existing 6-ft dredge gear restrictions. The Council determined that, given existing observer requirements, and their associated costs, the single 6-ft dredge restriction created a disproportionate economic hardship when fishing in Federal waters. Thus, Amendment 10 minimizes the negative economic impacts of the LLP on small entities and increases the economic efficiency of these two fishing operations, as demonstrated in Appendix B.

Alternative 3 would allow the two LLP license holders with the current gear restriction endorsement the opportunity to fish in Federal waters, outside Cook Inlet, with larger gear. The Council also concluded that, because of changes to the fleet after the LLP was implemented, that these two vessels could increase their capacity by using larger dredges without increasing fishing effort to the extent that it would interfere with the total fleet's ability to operate at a sustainable and economically viable level. Alterative 3 has the potential to provide these two vessels with an opportunity to capture a larger share of the total catch, thus allowing them to offset observer costs and, perhaps, enhance their economic viability. Because of the MLOA imposed

upon these vessels by the LLP license, it does not appear that either operation has the potential to significantly impact the catch shares of the other operations in the fishery, so instability in the sector is not a serious concern associated with the proposed action. Some relatively modest redistribution of earnings, and more likely redeployment of effort, is a probable outcome of implementing the preferred alternative.

Alternative 3 also increases the potential overall efficiency of the fishery marginally by allowing two LLP license holders to harvest scallops using larger, more efficient dredges without substantially decreasing the efficiency of all other LLP license holders. By providing for increased parity among the LLP license holders, Alternative 3 also may lead to greater participation in the voluntary cooperative of which 6 of the 9 LLP license holders are presently members. Participation in the cooperative could further increase the benefits of this action to the two small entities directly regulated by this action.

7.0 Summary and Conclusions

Beginning in 2001, a Federal LLP license is required on board any vessel deployed in scallop fisheries in Federal waters off Alaska. Under the LLP, 9 vessel owners are licensed to fish for scallops in Federal waters. Two of these LLP licenses have a gear restriction endorsement of a single 6-foot dredge, because each only fished in Cook Inlet during the qualifying period. Since the Federal LLP was implemented, it has come to the attention of the Council that, given observer requirements and their associated costs, this gear restriction may create a disproportionate economic hardship on the two LLP license holders. In February 2004, the Council developed a problem statement and alternatives for analysis of modifying or eliminating the disproportionate gear restriction. The alternatives analyzed in this document range from elimination of the disproportionate gear restriction on both licenses (Alternative 4), to retaining the gear restriction (Alternative 1, Status Quo). Alternative 3, the preferred alternative, would change the single 6-ft dredge restriction endorsement in the LLP to a restriction endorsement of two dredges with a combined width of no more that 20 feet (6.1 m). The potential for expansion of statewide operations by the two license holders subject to a relaxation of the gear limitation is not known, but if expansion occurs, it is most likely to occur in Area E and Area K, given the smaller size of these vessels.

Analysis in the EA indicates that the proposed action to modify the gear restriction on two LLP licences will have no significant impact on the manner in which the fishery is conducted. Therefore, the proposed action will not alter the harvest of scallops or impact scallop stocks and habitat. The proposed action will provide for a more equitable sharing of the costs and burdens LLP license holders are required to incur in complying with existing conservation measures. In addition, the proposed action will provide the Council, NMFS, and the State with greater ability to consider and adopt further conservation measures that might otherwise have been economically unfeasible for the fishery as a whole. None of the alternatives are expected to have a significant impact on endangered or threatened species, or designated critical habitat.

Analysis in the RIR indicates that Alternative 3 also increases the potential overall efficiency of the fishery marginally by allowing two LLP license holders to harvest scallops using larger, more efficient dredges without substantially decreasing the efficiency of all other LLP license holders. The alternatives to the status quo may impact other fishery participants, and particularly those who are members of the voluntary cooperative structure under which the fishery is currently prosecuted. The relative economic impacts on the other participants in the fishery could be two-fold: (1) a potential decrease in relative harvest percentage as the two LLP license holders increase their harvest percentage, and (2) a potential decrease in the value of the LLP licenses. If the two LLP holders increase harvests, the cooperative may need to respond by reducing its own harvests, increasing effort to maintain its catch share, or expanding the cooperative to include these other participants as members with some likely concession to these new members.

Several factors may ameliorate any decline of harvest or license value within the present context. First, the potential capacity of the two operations that would benefit from the proposed action is, by any measure, limited under terms of the LLP. Second, should new members join the cooperative, even greater economic

and operational efficiencies may be realized, making the potential size of the revenue pool larger for all to share in. Through such efficiencies, the member licenses would be expected to increase in value, rather than suffer a decline, all else equal. If, as has been demonstrated elsewhere, cooperative fishing behavior "optimizes" the long term benefit stream deriving from the scallop resource (i.e., if cooperative fishermen perceive a stewardship interest in sustaining and enhancing scallop productivity), then the value of access to the resource (i.e., license value) will certainly rise, over time. Additionally, any increased participation in the cooperative would be expected to further maximize the conservation and economic benefits associated with cooperative-based fisheries.

Analysis in the FRFA indicates the proposed action directly benefits 2 small entities by increasing the amount of scallops they will be able to harvest, increasing the value of their licenses, and potentially allowing these two small entities to join the cooperative and realize the increase efficiencies of cooperative participation.

8.0 References

Aschan, M.M. 1991. Effects of Iceland scallop dredging on benthic communities in the Northeast Atlantic. Special international workshop on the effects of physical disturbance on the sea floor on benthic and epibenthic ecosystems. Conseil International pour L'Exploration de la Mer, Benthos Working Group Manuscript.

Barnhart, J.P. 2003. Weathervane scallop fishery in Alaska with a focus on the Westward Region, 1967-2002. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K03-5, Kodiak

Barnhart, J. P., and G. Rosenkranz. 2003. Summary and analysis of onboard observer-collected data from the 1999/2000 through 2001/2002 statewide commercial weathervane scallop fishery. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K03-9, Kodiak.

Barnhart, J.P., I.W. Vining, and L.C. Byrne. 1996. A summary of data collected by scallop observers from the 1994/1995 commercial scallop fishery in Alaska's Westward Region. Alaska Department of Fish and Game Regional Information Report 4K96-33.

Caddy, J.F. 1968. Underwater observations on scallop (Placopecten magellanicus) behavior and drag efficiency. Journal of the Fisheries Research Board of Canada 25: 2123-2141.

Caddy, J.F. 1973. Underwater observations on tracks of dredges and trawls and some effects of dredging on a scallop ground. Journal of the Fisheries Research Board of Canada 30: 173-180.

Caddy, J.F. 1989. A perspective on the population dynamics and assessment of scallop fisheries, with special reference to the sea scallop, *Placopecten magellanicus* Gmelin. Pages 559-589 in J.F. Caddy, editor. Marine invertebrate fisheries: their assessment and management. John Wiley and Sons, New York.

Eleftheriou, A., and M.R. Robertson. 1992. The effects of experimental scallop dredging on the fauna and physical environment of a shallow sandy community. Netherlands Journal of Sea Research 30: 289-299.

Elner, R.W., and G.S. Jamieson. 1979. Predation on sea scallops, *Placopecten magellanicus*, by the rock crab, *Cancer irroratus*, and the American lobster, *Homarus americanus*. Journal of the Fisheries Research Board of Canada 36: 537-543.

Fonseca, M.S., G.W. Thayer, A.J. Chester, and C. Foltz. 1984. Impact of scallop harvesting on eelgrass *(Zostera marina)* meadows: implications for management. North American Journal of Fisheries Management 4: 286-293.

Gershanovich, D.E., 1963. Bottom relief of the main fishing grounds (shelf and continental slope) and some aspects of the geomorphology of the Bering Sea. Tr. Vses. Nauchno-issled. Inst. Morsk., Rybn. Khoz. Okeanogr. 48 (Izv. Tikhookean. Nauchno-issled. Inst. Morsk. Rybn. Khoz. Okeanogr. 50). (Transl. in Soviet Fisheries Investigations in the Northeast Pacific, Part I, p. 9-78 by Israel Program Sci. Transl., 1968. Avail. Natl. Tech. Inf. Serv., Springfield, VA as TT67-51203.)

Grant, J. 2000. Modelling Approaches to Dredging Impacts and Their Role in Scallop Population Dynamics. Pages 27-36 *in* Alaska Department of Fish and Game and University of Alaska Fairbanks. A workshop examining potential fishing effects on population dynamics and benthic community structure of scallops with emphasis on the weathervane scallop *Patinopecten caurinus* in Alaskan waters. Alaska Department of Fish and Game, Division of Commercial Fisheries, Special Publication 14, Juneau.

Hammerstrom, L.F., and M.F. Merrit. 1985. A survey of Pacific weathervane scallops in Kamishak Bay, Alaska. Alaska Department of Fish and Game, Division of Commercial Fisheries, Information Leaflet 252.

Hennick, D.P. 1970. Reproductive cycle, size at maturity, and sexual composition of commercially harvested weathervane scallops *(Patinopecten caurinus)* in Alaska. Journal of the Fisheries Research Board of Canada 27: 2112-2119.

Hennick, D.P. 1973. Sea scallop, *Patinopecten caurinus*, investigations in Alaska. Alaska Department of Fish and Game, Division of Commercial Fisheries, Completion Report 5-23-R, Juneau.

Hood, D.W. and E.J. Kelley, 1974. Introduction. In D. W. Hood and E. J. Kelley (eds.). Oceanography of the Bering Sea. Inst. Mar. Sci., Univ. Alaska, pp. XV-XXI.

Jones, J.B. 1992. Environmental impact of trawling on the seabed: a review. New Zealand Journal of Marine and Freshwater Research. 26: 59-67.

Kaiser, R.J. 1986. Characteristics of the Pacific weathervane scallop (Pecten [Patinopecten] caurinus, Gould 1850*)* fishery in Alaska, 1967-1981. Alaska Department of Fish and Game, Division of Commercial Fisheries (Unpublished Report, Catalog RUR-5J86-01), Juneau.

Kenchington, E.L. and M.J. Lundy. 1991. Bay of Fundy stock assessment. CAFSAC Research Document 91/26, 28 p.

Kruse, G.H., E. Krygier, R.D. Mecum, and M.C. Murphy. 1993. Synopsis of ADF&G scallop meeting, Anchorage, Alaska, July 15, 1993. ADF&G Regional Information Report No. 5J93-07.

Masuda, M. and R.P. Stone. 2003. Biological and Spatial Characteristics of the Weathervane Scallop *Patinopecten caurinus* at Chiniak Gully in the Central Gulf of Alaska. Alaska Fishery Research Bulletin. 10(2):104-118.

Mayer, L.M., D.F. Schick, R.H. Findlay, and D.L. Rice. 1991. Effects of commercial dragging on sedimentary organic matter. Marine Environmental Research 31:249-261.

McLoughlin, R.J., P.C. Young, R.B. Martin, and J. Parslow. 1991. The Australian scallop dredge: estimates of catching efficiency and associated indirect fishing mortality. Fisheries Research 11: 1-24.

Messieh, S.N., T.W. Rowell, D.L. Peer, and P.J. Cranford. 1991. The effects of trawling, dredging and ocean dumping on the eastern Canadian continental shelf seabed. Continental Shelf Research, 11:1237-1263.

Murawski, S.A. and F.M. Serchuk. 1989. Environmental effects of offshore dredge fisheries for bivalves. ICES, Shellfish committee, C.M. 1989/k:27.

Naidu, K.S. 1988. Estimating mortality rates in the Iceland scallop, *Chlamys islandica* (O.F. M_ller). Journal of Shellfish Research (7):61-71.

NEFMC (New England Fishery Management Council). 2003. Amendment #10 to the fishery management plan for Atlantic sea scallops. New England Fishery Management Council, Newburyport, Massachusetts.

NEFMC (New England Fishery Management Council). 1982. Fishery management plan, final environmental impact statement, regulatory impact review for Atlantic sea scallops *(Placopecten magellanicus)*. New England Fishery Management Council, Saugus, Massachusetts.

NEFMC (New England Fishery Management Council). 1988. Amendment #2 to the fishery management plan for Atlantic sea scallops. New England Fishery Management Council, Saugus, Massachusetts.

National Marine Fisheries Service (NMFS). 2004a. Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement. NMFS-Alaska Region, PO Box 21668, Juneau, AK 99802-1668.

National Marine Fisheries Service (NMFS). 2004b. Bering Sea and Aleutian Islands Crab Fisheries Final Environmental Impact Statement. NMFS-Alaska Region, PO Box 21668, Juneau, AK 99802-1668.

National Marine Fisheries Service (NMFS). 2005. Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska. NMFS-Alaska Region, PO Box 21668, Juneau, AK 99802-1668.

National Marine Fisheries Service (NMFS). 1998. Final Supplemental Environmental Impact Statement for Groundfish Total Allowable Catch Specifications and Prohibited Species Catch Limits Under the Authority of the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and Groundfish of the Gulf of Alaska. NMFS-Alaska Region, PO Box 21668, Juneau, AK 99802-1668.

National Marine Fisheries Service (NMFS). 1997a. Final Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for Amendments 1 and 2 to the Fishery Management Plan for the Scallop Fishery off Alaska. NMFS-Alaska Region, PO Box 21668, Juneau, AK 99802-1668.

National Marine Fisheries Service (NMFS). 1997b. Final Environmental Assessment for the 1997 Groundfish Total Allowable Catch Specifications. NMFS-Alaska Region, PO Box 21668, Juneau, AK 99802-1668.

Northern Economics. 2003. Effects of Rationalization. Poster presented at the Conference on Fisheries Management in the United States, Washington, D.C., November 13-15, 2003.

NPFMC (North Pacific Fishery Management Council). 2003a. Stock Assessment and Fishery Evaluation Report for the King and Tanner Crab Fisheries of the Bering Sea and Aleutian Islands Region. North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, Alaska.

NPFMC (North Pacific Fishery Management Council). 2003b. Groundfish Stock Assessment and Fishery Evaluation Reports for the BSAI and GOA . North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, Alaska.

NPFMC (North Pacific Fishery Management Council). 2003c. Stock Assessment and Fishery Evaluation Report for the Weathervane Scallop Fishery in Alaska. North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, Alaska. December 2003

NPFMC (North Pacific Fishery Management Council). 1999. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis of Amendment 4 to the Fishery Management Plan for the Scallop Fishery off Alaska. North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, Alaska.

NPFMC (North Pacific Fishery Management Council). 1993. Environmental Assessment and Regulatory Impact of Amendment 37 to the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands. North Pacific Fishery Management Council, 605 West 4th Avenue, Suite 306, Anchorage, Alaska.

Orensanz, J.M. 1986. Size, environment, and density: the regulation of a scallop stock and its management implications. Pages 195-227 *in* G.S. Jamieson and N. Bourne, editors. North Pacific workshop on stock assessment and management of invertebrates. Canadian Special Publication of Fisheries and Aquatic Sciences 92.

Rosenkrantz, G.E. and S.C. Byersdorfer. 2004. Video Scallop Survey in the eastern Gulf of Alaska, USA. Fisheries Research 69(2004) 131-140.

Sharma, D. 1979. The Alaskan shelf. Springer-Verlag, New York. 498 p.

Urban, D., D. Pengilly and I.W. Vining. 1994. The scallop observer program and statewide data analysis summary to the Board of Fisheries. Alaska Department of Fish and Game Regional Information Report 4K94-28.

9.0 List of Preparers and Agencies and individuals consulted

Diana Stram, NPFMC; Jeff Barnhart, ADF&G; Mark Fina, NPFMC; David Witherell, NPFMC; Gretchen Harrington, NMFS; Kurt Schelle, CFEC; Nancy Free-Sloan, CFEC; Heidi Morrison, ADF&G; Gregg Rosenkranz, ADF&G; Andrew Applegate, NEFMC; Lewis Queirolo, NMFS; Teressa Kandianis; Max Hulse

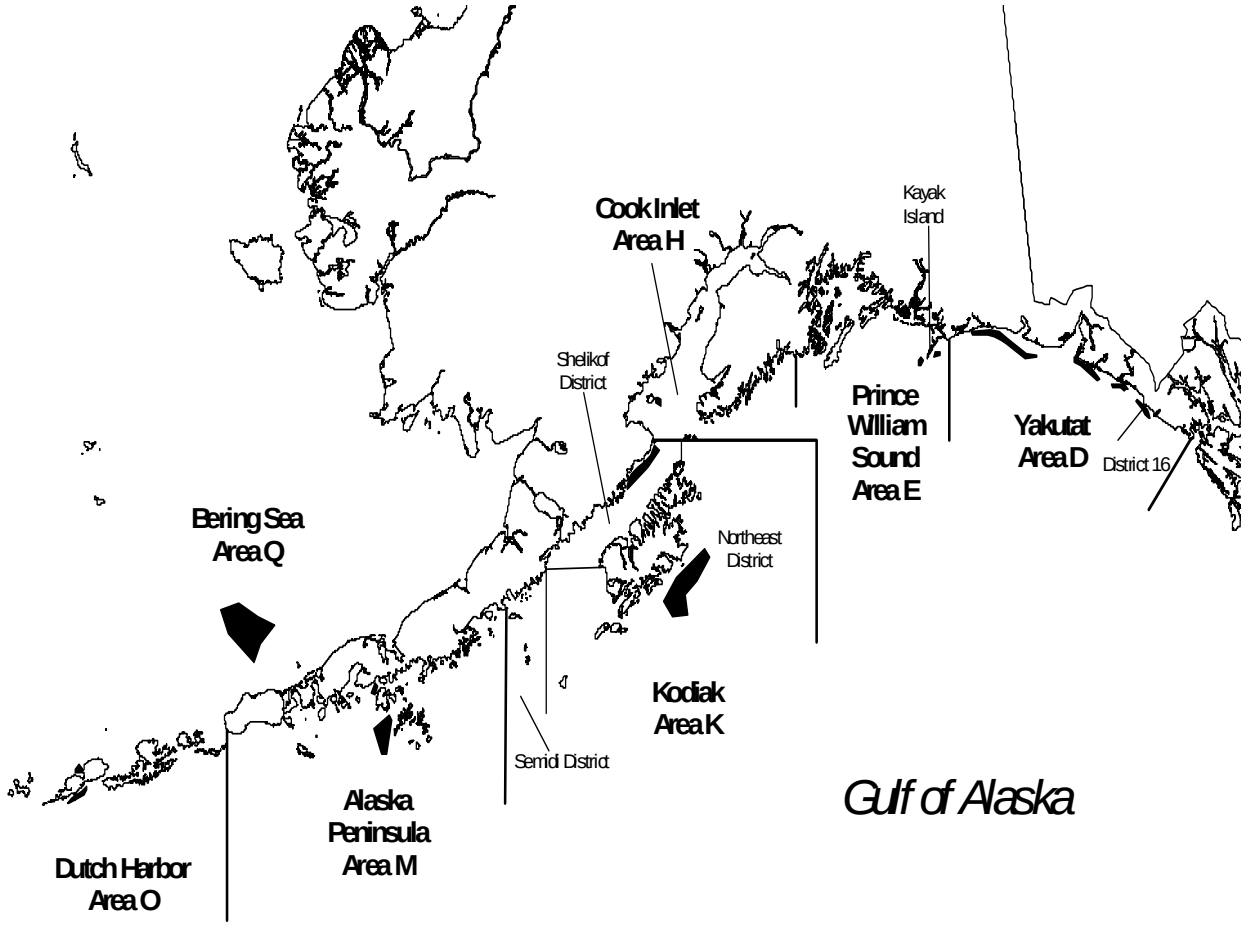


Figure 1: Map showing registration areas and general fishing locations (dark polygons) for weathervane scallops off Alaska.

Appendix A1: Scallop License Limitation Program Licenses
Issued by National Marine Fisheries Service - Restricted Access Management

National Marine Fisheries Service
PO Box 21668
Restricted Access Management
Juneau, Alaska 99802-1668
800-304-4846

Prepared: January 9, 2003

License	License Holder	MLOA	Transferable?	Gear Restrictions
009	Carolina Boy, Inc.	95'	Yes	None
010	Alaska Scallop, LLC	96'	Yes	None
002	Forum Star, Inc.	97'	Yes	None
003	Hogan, Thomas C.	75'	Yes	Single 6' (1.8m) scallop dredge
004	Hulse, Max et al.	79'	Yes	Single 6' (1.8m) scallop dredge
005	Ocean Fisheries LLC	100'	Yes	None
006	Thomas Gilmartin	70'	Yes	None
008	Provider, Inc.	124'	Yes	None
007	Pursuit, Inc.	101'	Yes	None

Note: these licenses do not have expiration dates. Interim licenses remain valid until Final Agency Action is taken on claims.

Appendix A2: Scallop Moratorium Permits
Issued by State of Alaska - Commercial Fisheries Entry Commission

State of Alaska
Commercial Fisheries Entry Commission
8800 Glacier Hwy, #109
Juneau, AK 99801
(907) 789-6150, Licensing

Vessel Name	Statewide Permit	Cook Inlet Permit
Alaska Beauty	Y	Y
Arctic Queen (formerly Jacqueline & Joseph)	Y	
Carolina Boy	Y	
La Brisa	Y	Y
Northern Explorer	Y	Y
Provider	Y	
Pursuit	Y	
Rush	Y	
Trade Wind	Y	

APPENDIX B: Breakeven cost estimates submitted by Scallop fishery participants

B-1 Provided by Teressa Kandianis

Provider, Inc.
114' Scalloper
Based upon 2003 costs
Average Value/Lb for 2003 $ 5.01

Crew Share 42%	
(Includes FICA, FUTA, SUTA)	
Available to cover other expenses	59%
Fuel	178,215
Mortgage Principal/Interest	46,367
Insurance	187,966
Crew Health Insurance	10,288
Scallop Lease	157,419
Moorage and Storage	18,621
Licenses, Permits, Dues	10,906
Business Administration	70,264
Communications	16,128
R&M/Cap. Improvements	165,011
Fishing Gear	21,135
Freight	2,256
Professional Fees	5,148
Fisheries Business Tax	23,800
Fisheries Resource Landing Tax	30,422
Observer	79,873
Total Expenses	**1,023,818**
Breakeven Point Calculation	Vessel Costs
Non Crew Expense	59%
Breakeven Income	1,750,117

Breakeven Catch

B/E pounds With Value @	harvested	
$	4.50	388,915
$	5.00	350,023
$	5.50	318,203
$	6.00	291,686
$	6.25	280,019
$	6.45	271,336
$	6.75	259,277
$	7.00	250,017

APPENDIX B: Breakeven cost estimates submitted by Scallop fishery participants

Ocean Hunter

Prorated for scallop fishery
100' Scallop CP (Also crabs)
Based upon 2003 pro rated expenses for the scallop fishery
Average Value/Lb for 2003 $ 4.94

Crew Share	43%
(Includes FICA, FUTA, SUTA)	
Available to cover other expenses	57%
Fuel	143,275
Principal and Interest	20,126
Insurance	95,273
Moorage and Storage	8,936
Dues	4,973
Business Administration	17,374
Communications	3,889
Repair and Maintenance	75,000
Materials and Supplies	35,000
Freight	3,035
Professional Fees	11,674
Licenses/FishResLdgTax*	82,832
Observer	51,119
Scallop Lease	87,097
Total Expenses	**639,603**

Breakeven Point Calculation	Vessel Costs
Non Crew Expense	0.57
Breakeven Income	1,122,111

Breakeven Catch with Various Price Levels

With Value @	B/E pounds harvested
$ 4.50	249,358
$ 5.00	224,422
$ 5.50	204,020
$ 6.00	187,018
$ 6.25	179,538
$ 6.45	173,971
$ 6.75	166,239
$ 7.00	160,302

*Above Tax expense was using Alaska Department of Revenues 2002 "statewide scallop average price" of $4.53. June 1st of this year they came out with a scallop average price of $15.00. This analysis assumes that number was an error and will be replaced with one closer to a realistic ex vessel raw fish value.

APPENDIX B: Breakeven cost estimates submitted by Scallop fishery participants

B2 - Provided by Max Hulse

Max & Scott Hulse
P O Box 770881
Eagle River, Alaska 99577
July 3, 2004

Mr. Kevin Duffy
Alaska Dept. of Fish & Game
Commissioner
P O Box 25526
Juneau, Alaska 99802

Dear Mr. Duffy,

Thanks for taking your time to consider the following.

You will remember our short visit at the Portland Council Meeting when I briefly expressed the importance for us to be able to use two 10' as opposed to two 8' scallop dredges on our fishing vessel La Brisa.. Even though we are permitted in State Waters to use up to two 15' dredges, *the Council's final action on dredge size allowed in Federal Waters will dictate the size dredges we will also use in State* waters, i.e., it wouldn't be feasible or really even possible for us to carry two different size dredge sets on board for use in Federal and State waters respectively.

The Council has been very open in considering our request for relief from the six foot dredge restriction and thus we are hopeful they will allow us the use of two 10 foot dredges.

I need to better explain my reasoning regarding the use of two 10s instead of two 8s. Due to our vessel's draft and size of 79', we are pretty much restricted by weather to fish in only two areas in statewide waters, not including Cook Inlet. Yakutat is too open to weather with no place to hide, as are the waters out west. *That leaves us only the Federal waters around Cordova-Kayak Island and Shelikof waters*, adjacent to State waters, where we can find some shelter and fish during poor weather.

To make at least a marginal profit, we need to fish a good portion of our time in the Shelikof area, as scallops harvested from there are larger, more marketable, and bring a much better price. But in this area, the scallops are far less dense than in the Kayak area and thus require larger dredge size for profitable harvest.

The following data and estimates are based on our fishing logbook and tax records. We used a base of forty fishing days per year (July 1 - August 9) in the two above areas, not including Cook Inlet (August 15-August 31).

The Cook Inlet area isn't always a sure thing as the quota some years, for various reasons, has been drastically reduced. However, in a good year, with 3 vessels fishing for the 20,000 lbs quota, with no observer costs, and $7.00/lb price, a fair year's net income for our vessel is $12,000.00.

At $5.50/lb our **break-even analysis** per day for Kayak area is $3600/day; $3800/day for Shelikof due to greater fuel costs. $14,000.00 for forty days is included for the observer. Net vessel income is after paying all fishing expenses and crew shares, not including the vessel maintenance.

Kayak Area - 2002 Log Book

1 - 6 ft dredge, 14 tows in a 24 hour period -
1 tow equal 50 lbs of shucked scallop meat

14 tows X 50 lbs = 700 lbs meat per day

700 lbs X $5.50 = $3850.00 per day
Less $3600.00 break-even amount
$ 250.00 net per day

$250.00 X 40 days = **$10,000.00 net vessel income**

Note:
Kayak Area - 2000 Log Book (we used one 6' and one 8' dredge)
The 8' dredge yielded slightly more than the six foot .

Estimate:
Two 8 foot dredges should yield 725 lbs. meat per day.

725 lbs X $5.50 = $3988.00 per day
Less $3600.00 break-even amount
$ 388.00 net per day

$388.00 X 40 days = **$15,520.00 net vessel income**

Estimate:
Two 10 foot dredges should yield 750 lbs meat per day

750 lb X $5.50 = $4125.00 per day
Less $3600.00 break-even amount
$ 525.00 net per day

$525.00 X 40 days = **$21,000.00 net vessel income**

Note:
Shelikof Waters – 1999 Log Book (we used one 6' and one 8' dredge just long enough to get some data). The 6' dredge yielded an average of two bushels per tow, the eight foot dredge three bushels per tow. We averaged 20 tows in 24 hours.

Two 8' dredges - 6 bushels per tow equal approximately 30 lbs shucked meat.

20 Tows X 30 lbs meat = 600 lbs meat per day

600 lbs X $7.00/lb = $4200.00 per day
Less $3800.00 break-even amount
$ 400.00 net per day

$400.00 X 40 days = **$16,000.00 net vessel income**

Two 10' dredges - 8 bushels per tow equal approximately 40 lbs shucked meat.

20 Tows X 40 lbs meat = 800 lbs meat per day

800 lbs X $7.00/lb = $5600.00 per day
Less $3800.00 break-even amount
$1800.00 net per day

$1800.00 X 40 days = **$72,000.00 net vessel income**

Please Note:
1. **Not much difference in Kayak area** using two 10s versus two 8s, which is due to the extreme density of the scallops -- you can't shuck fast enough to keep up with your dredges.

2. **Huge difference in Shelikof area** using two 10s versus two 8s, which is due to the extreme lack of scallop density, plus scallops are in scattered pockets requiring larger dredges which cover more area each tow.

3. $72,000.00 net vessel income per year is a minimal amount needed to make a fair profit. When Cook Inlet is good, the extra $12,000 would give us a buffer.

4. Jeff Barnhart, Statewide Scallop Biologist, would have our catch records for 1999, 2000, and 2002, and you have our permission to access any of our fish tickets.

Thanks so much for your time and consideration.

Sincerely,

Max G. Hulse

cc: Stephanie Madsen, Council Chair
Chris Oliver, Executive Director
Dr. Earl Krygier

Harrington

G:\FMGROUP\Amendment 10 Scallop LLP\FR\scallop 10 FR EA RIR FRFA.ea.wpd
r:\region\2005\sf\mar\scallop 10 FR EA RIR FRFA.ea.wpd

Rev. Ginter: 6-15-2005