

ENVIRONMENTAL ASSESSMENT/  
REGULATORY IMPACT REVIEW/  
FINAL REGULATORY FLEXIBILITY ANALYSIS  
of

Amendments 1 and 2

to the  
FISHERY MANAGEMENT PLAN  
for the  
SCALLOP FISHERY  
off Alaska

Prepared by staffs of the  
National Marine Fisheries Service  
North Pacific Fishery Management Council  
Alaska Department of Fish & Game

February 10, 1997

**TABLE OF CONTENTS**

**EXECUTIVE SUMMARY** ..... iii

**1.0 INTRODUCTION** ..... 1

1.1 Scallop Management Background ..... 1

1.2 Purpose of and Need for the Action ..... 4

1.3 Alternatives Considered ..... 6

    1.3.1 Alternative 1, Status Quo ..... 6

    1.3.2 Alternative 2 (Preferred) ..... 6

1.4 Alternatives Not Considered ..... 7

1.5 Alaska State Management of the Scallop Fishery ..... 8

    1.5.1 Current State management regime ..... 8

    1.5.2 Impact of Federal regulations on State management activities ..... 10

1.6 Management Measures Considered for Alternative 2, Amendment 1 ..... 13

    1.6.1 Registration Areas and Districts ..... 13

    1.6.2 Gear Restrictions ..... 13

    1.6.3 Efficiency Limits ..... 14

    1.6.4 Scallop Harvest Limits ..... 14

    1.6.5 Crab Bycatch Limits (CBLs) ..... 18

    1.6.6 Closed Waters ..... 21

    1.6.7 Inseason Adjustments ..... 22

    1.6.8 Fishing Seasons ..... 24

    1.6.9 Observer Requirements ..... 25

1.7 Limited Access Management Measures Considered for Alternative 2, Amendment 2 ..... 26

1.8 Management Measures Not Considered Under Alternatives 1 and 2 ..... 30

    1.8.1 Reporting Requirements ..... 30

    1.8.2 Permit Requirements ..... 30

    1.8.3 Minimum Size Limits ..... 30

    1.8.4 Guideline Harvest Ranges and Levels ..... 31

**2.0 NEPA REQUIREMENTS: ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES** ..... 32

2.1 Potential Impacts on the Scallop Resource ..... 32

2.2 Potential Impacts on Benthic Communities and the Physical Environment ..... 34

2.3 Potential Impacts on Bycatch of Non-target Species ..... 37

2.4 Impacts on Endangered, Threatened or Candidate Species ..... 39

2.5 Potential Impacts on ESA-listed Pacific salmon ..... 40

2.6 Potential Impacts on Seabirds ..... 40

2.7 Potential Impacts on Marine Mammals ..... 41

2.8 Coastal Zone Management Act ..... 41

2.9 Finding of No Significant Impact ..... 42

**3.0 REGULATORY IMPACT REVIEW: ECONOMIC AND SOCIOECONOMIC IMPACTS OF THE ALTERNATIVES** ..... 43

3.1 Economic Status of the Fishery ..... 44

3.2	Potential Impacts of Continuing the Status Quo .....	46
3.3	Potential Impacts of the Preferred Alternative .....	46
3.3.1	Potential Impacts of a Moratorium .....	46
3.3.2	Potential Impacts of Other Management Measures .....	58
3.3.3	Administrative, Enforcement, and Information Costs and Benefits .....	60
3.3.4	Benefit-Cost Conclusion .....	61
3.4	Impact of the Proposed Action Relative to E.O. 12866 Requirements .....	61
<b>4.0</b>	<b>IMPACT OF THE PROPOSED ACTION RELATIVE TO THE RFA .....</b>	<b>63</b>
<b>5.0</b>	<b>REFERENCES .....</b>	<b>64</b>
<b>6.0</b>	<b>LIST OF PREPARERS .....</b>	<b>69</b>
<b>7.0</b>	<b>LIST OF TABLES .....</b>	<b>70</b>
<b>8.0</b>	<b>LIST OF FIGURES .....</b>	<b>83</b>
<b>APPENDIX A.</b>	<b>Definitions of Terms .....</b>	<b>99</b>
<b>APPENDIX B.</b>	<b>Vessels that Qualify under the Council's April 1994 Preferred Moratorium Criteria .</b>	<b>101</b>
<b>APPENDIX C.</b>	<b>Description of Regulatory Areas and Districts .....</b>	<b>102</b>
<b>APPENDIX D.</b>	<b>Description of Closed Area Options .....</b>	<b>106</b>
<b>APPENDIX E.</b>	<b>Scallop Fishing Regulations and Selected Statutes: Alaska Commercial Scallop Fishing Regulations (1994) .....</b>	<b>112</b>

## **EXECUTIVE SUMMARY**

Background. The scallop fishery in the Exclusive Economic Zone (EEZ) (3 to 200 nautical miles offshore) and in Alaskan state waters has been managed by the State of Alaska (State) since a fishery began in 1968. These regulations established guideline harvest levels (GHLs) for different scallop registration areas, fishing seasons, open and closed fishing areas, observer coverage requirements, gear restrictions, and measures to limit the processing efficiency of undersized scallops that include a ban on the use of mechanical shucking machines and a limitation on crew size. A Federal Fishery Management Plan (FMP) was adopted by the North Pacific Fishery Management Council (Council) in April 1995 and approved by NMFS on July 26, 1995.

In June 1995, the Council adopted Amendment 1 to the FMP which would establish a Federal management regime to replace the interim closure of Federal waters to fishing for scallops. The Council's preferred alternative for Amendment 1 was to federalize the State's management regime and implement a vessel moratorium, based on criteria adopted in April 1994, and reaffirmed in January 1995. Eighteen vessels would qualify under the moratorium. This Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis (EA/RIR/FRFA) examines both Amendments 1 and 2 to the FMP. In April 1996, the Council separated the scallop vessel moratorium from the other management measures contained in Amendment 1 and recommended instead that the moratorium proceed as Amendment 2 to the FMP. The Council took this action so that the development of a vessel moratorium would not delay the reopening of the fishery. Amendment 1 was subsequently approved by NMFS on July 8, 1996, and the final rule implementing Amendment 1 was published on July 23, 1996 (61 FR 38099).

This document is being made available to the public during consideration of Amendment 2 (see EA/RIR/FRFA for Amendment 1) to the FMP with minor revisions to reflect statutory changes made during reauthorization of the Magnuson Fishery Conservation and Management Act (Magnuson Act) (P.L. 104-297, Oct. 11, 1996) which has been renamed the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Note that this document was prepared prior to the reauthorization of the Magnuson-Stevens Act. Consequently, much of the analysis refers to the Magnuson Act. Changes to the Magnuson Act that are of relevance to the discussion in this document are identified in footnotes. It should be noted that the "Status Quo" option discussed throughout much of this document refers to the status quo at the time that Amendment 1 was under consideration: The closure of Federal waters to fishing for scallops until August 29, 1996. Because Amendments 1 and 2 were separated, and Amendment 1 has subsequently been approved and implemented, Amendment 1 is now the "Status Quo" option for the purpose of analyzing Amendment 2. However, none of the management measures implemented under Amendment 1 affect access to the scallop fishery off Alaska, or have changed the fishery in any manner that would change the analysis of Amendment 2 contained in this document. In sections of this document where the "Status Quo" option is discussed with respect to Amendment 1, footnotes have been added to remind the reader that Amendment 1 has been approved and implemented and represents the new status quo for the purposes of Amendment 2.

Purpose and Need for the Action. Management measures for the Alaskan scallop fishery need to be implemented to allow for a controlled fishery for scallops. The FMP adopted by the Council in April set optimum yield (OY) at zero, meaning that no fishery would occur in Federal waters for 1 year or until an amendment to the FMP is prepared that would allow the controlled harvest of scallops in Federal waters. This action was taken to prevent further over exploitation of the scallop resource. Under the FMP, Federal regulations will expire August 28, 1996, allowing for uncontrolled fishing for scallops and attendant overfishing concerns after that period of time. Although the State has managed the scallop fishery in the past, the State cannot limit effort of vessels fishing in the scallop fishery that are not registered with the State. The

longevity of the species, its low mortality rate, and the generally unknown status of these stocks indicate they are susceptible to local and general overfishing. Along with unregulated fishing, the overcapitalization of the fishery has highlighted the potential for quickly overfishing this resource and demonstrated the need for controlling the effort of all vessels fishing in the EEZ. It is incumbent on NMFS to provide a conservative, risk averse strategy to manage scallop stocks and the fishery.

Alternatives Considered. There were two basic alternatives considered. The preferred alternative would allow for a federally managed scallop fishery to occur in the EEZ off Alaska.

Alternative 1: Status Quo<sup>1</sup> -- Continue closure of the EEZ for up to a 1-year period to all scallop fishing. This alternative would continue the closure that prohibits fishing for Alaskan scallops in Federal waters. Under this alternative, scallops would not be harvested in the EEZ until August 29, 1996. Scallops would be considered a prohibited species and retention would not be allowed in the EEZ. Because there would be no fishing allowed for scallops, no in-season management and monitoring of the fishery would be necessary. After August 28, 1996, no Federal regulations would exist to control fishing by vessels not registered in the State and overfishing of the scallop resource could occur.

Alternative 2 (Preferred): Amend the FMP for Alaskan scallops to allow for a federally controlled fishery to occur in the EEZ. This alternative would require NMFS to implement a suite of Federal regulations to support a controlled fishery for scallops in Federal waters. To the extent possible, the Council has expressed its intent that these regulations should complement Alaska State management of the Alaska scallop resource. Alternative 2 would be implemented in two separate amendments:

Amendment 1 would implement: (1) Gear and efficiency restrictions, (2) scallop registration areas and districts, (3) procedures for specifying total allowable catch (TAC) and crab bycatch limits (CBLs), (4) time and area closures, (5) inseason management authority, (6) fishing seasons, and (7) observer coverage requirements. All of these measures are those previously adopted by the Council, or currently used by the State. Amendment 1 has been developed in cooperation with the Alaska State Department of Fish and Game (ADF&G) and is designed to be consistent with State management of the scallop fishery prior to 1995.

Amendment 2 would implement a vessel moratorium for the scallop fishery off Alaska based on criteria the Council adopted in April 1994, and reaffirmed in January 1995. Eighteen vessels would qualify under the moratorium.

---

<sup>1</sup>Note that Amendment 1 has been approved and implemented. Therefore, Amendment 1 is the new status quo for the purpose of analyzing Amendment 2.

## Management Regime Considered under Alternative 2

<b>Amendment 1</b>	
<i>Management Measure</i>	<i>Effect of Measure</i>
Registration areas	Would create registration areas that are the same as State scallop registration areas. Spreads out harvest geographically.
Districts	Would create districts that are the same as State areas for Prince William Sound, Cook Inlet, and Kodiak areas. Allows for fine scale management.
Scallop catch limits	Would establish a specification process to set annual TACs by registration area. <b>Option 1 (preferred):</b> set limits for EEZ and State together. <b>Option 2:</b> set limits for EEZ waters only.
Inseason adjustments	Would allow NMFS Regional Director to adjust TAC or CBLs or close areas to prevent scallop stocks from being overfished.
Observer requirement	Would require vessels to carry ADF&G or NMFS certified observers.
Fishing seasons	Would establish opening dates for each registration area. Fishing would close in area once the NMFS Regional Director has determined the a TAC or CBL has been reached. In certain areas, the fishing season would extend until February 15 of the following year to match established State fishing seasons.
Closed waters	Would close areas to protect crab populations and crab habitat. <b>Option 1:</b> close EEZ areas currently established under State regulations to scallop fishing. <b>Option 2 (preferred):</b> close EEZ areas permanently closed to groundfish trawling to reduce crab bycatch and protect crab habitat. <b>Option 3:</b> close all areas listed in options 1 and 2.
Gear restrictions	Would restrict gear same as State regulations. Dredges with 15 ft (4.57 m) maximum width, fished 2 at a time are allowed. In Kamishak District of Cook Inlet, only 1 dredge with a 6 ft (1.83 m) maximum would be allowed.
Efficiency limits	Would restrict efficiency same as State regulations. Limits include a 12 person crew limit on scallop vessels and mandatory manual scallop shucking for weathervane scallops.
Bycatch limits for crab	Would restrict the number of crab the scallop fishery takes as bycatch. <b>Option 1 (preferred):</b> set CBLs for EEZ and State together. <b>Option 2:</b> set CBLs for EEZ waters only.

<b>Amendment 2</b>	
<i>Management Measure</i>	<i>Effect of Measure</i>
Limited access	Would include vessel moratorium based on criteria Council adopted in April 1994, and reaffirmed in January 1995. Eighteen vessels would qualify.

Alternatives not Considered. An alternative not considered would be to wait and see if changes are made to the Magnuson Act. Changes recently approved by the U.S. House of Representatives include language to the effect that fisheries off Alaska not managed by NMFS could be managed by the State, and the State's jurisdiction could extend into the EEZ.<sup>2</sup> Thus, in the case of the scallop fishery, all vessels fishing for scallops in the EEZ could be required to comply with State scallop regulations regardless of whether they were registered under the laws of the State. This alternative was not considered at this time because Magnuson Act approval may not occur until July 1996 or later. Because of the 95-day Secretarial review schedule for FMP amendments, if the Magnuson Act fails to be amended, and Amendment 1 to the FMP has not been proposed prior to April 1996, there is the possibility that a regulatory hiatus would again occur after August 28, 1996. If the Magnuson Act is amended to allow State jurisdiction over all vessels fishing in the EEZ, then the suite of management measures implemented under Amendment 1 could be repealed leaving Amendment 2, the vessel moratorium, as the only Federal management measure for the scallop fishery.

Impacts on Scallops. The biological and environmental impacts of scallop fishing on the scallop resource will depend on the alternative chosen. Under Alternative 1, the status quo, there would be no regulation that prevents vessels and fishermen not licensed by the State, to fish for scallops in the EEZ after the August 28, 1996, closure expires. State authority and jurisdiction for fisheries in the EEZ depends on vessels being registered with the State. Since the State cannot extend its jurisdiction to non-State registered vessels in the EEZ, scallop stocks can be potentially over harvested by non-licensed crew and vessels, which could make landings in states other than Alaska. Under Alternative 2, a controlled fishery with sustained yields would occur in the EEZ.

Impacts on Benthic Communities, the Physical Environment, Bycatch of Non-target Species and Catch of Allocated Groundfish. Given the best available information, the alternatives to the status quo are not reasonably 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. Scallop dredges may have potential, in some situations, to affect other organisms comprising benthic communities; however, these effects are not likely to be substantial for the relatively small scale scallop fisheries in Alaska.

Impacts on Endangered Species and Marine Mammals. Species that are listed, or proposed to be listed, under the Endangered Species Act (ESA) that may occur in the Bering Sea and Aleutian Islands area (BSAI) or Gulf of Alaska (GOA) include the endangered fin whale (Balaenoptera physalus); sei whale (Balaenoptera

---

<sup>2</sup>Note: The Magnuson-Stevens Act now contains language allowing a Fishery Management Council to delegate management authority of a fishery under it's jurisdiction to a state through an FMP amendment. Any FMP amendment delegating management authority to a state must be approved by a three-quarters vote by the Council.

borealis); humpback whale (Megaptera noveangliae); sperm whale (Physeter catodon); Snake River sockeye salmon (Oncorhynchus nerka) and short-tailed albatross (Diomedea albatrus); the threatened Steller sea lion (Eumetopias jubatus); Snake River fall and spring-summer chinook salmon (O. tshawytscha); and spectacled eider (Somateria fischeri). ESA-listed species of salmon, seabirds, and whales will not be affected by the proposed alternative.

Fishery Status. Traditionally, the scallop fishery had been prosecuted by a small number of vessels, targeting exclusively on weathervane scallops. However, information indicated that stocks of weathervane scallops were fully exploited in 1992 and that an increase in effort was likely. Because scallops are highly susceptible to overfishing and boom/bust cycles world-wide, concern was raised over projected increases in effort. The Council established a control date of January 20, 1993, in the event of a moratorium. In March 1993, the State established quotas (GHLs) for the 1993 fishery and beyond. NMFS announced a control date of April 24, 1994, after which scallop harvests made in the EEZ may not apply as catch history for purposes of any future Individual Fishing Quotas (IFQs) or licenses in anticipation of a future limited access program for this fishery. In 1993, 15 vessels landed scallops in the State and in 1994, 16 vessels landed scallops. Catches were reduced under State management, and signs of overcapitalization were apparent.

In February 1995, a non-Alaska registered vessel was discovered fishing in the EEZ. Because the vessel was not registered under the laws of the State, it was not subject of State regulations and no Federal regulations existed to control fishing for scallops in Federal waters. The fishery was closed by emergency regulation February 23, 1995, but not before the vessel individually took the equivalent of the entire GHL for the registration area in which it was located. On April 19, 1995, the Council approved and submitted to NMFS an FMP, which continues the closure of the EEZ to scallop fishing for up to a 1-year period. The FMP was approved by NMFS on July 26, 1995.

Impacts of the Status Quo. Retaining the status quo in the scallop fishery would result in no Federal regulations to supersede the current closure of Federal waters that expires on August 28, 1996, allowing for uncontrolled fishing for scallops and attendant overfishing concerns after that time<sup>3</sup>.

Impacts of Federalizing State Management. The effects of Federal fishery management of Alaskan scallops on existing users depends upon the particular suite of management measures and regulations adopted. Because the suite of management measures proposed under Amendment 1 is designed to be consistent with State management of the scallop fishery prior to 1995, the impacts would not be expected to differ from those experienced under State management prior to 1995.

Impacts of a Moratorium. Data indicate that the scallop fishery is overcapitalized (too many vessels) given current scallop prices and quotas. A moratorium will reduce the potential for new vessels to enter the fishery, and may thus positively affect those participants that are qualified. Those vessels that entered or planned to enter after the cutoff date will be negatively impacted.

Costs and Benefits. Administrative, enforcement, and information costs for alternative 2 would depend on the suite of management measures adopted. In 1993 and 1994, the State incurred considerable expense to manage intensely the scallop fishery in the EEZ. An additional \$540,000 may be needed for an initial scientific survey of scallops. Recurring funding on the order of \$60,000 for data analysis has also been

---

<sup>3</sup>Note that Amendment 1 has been approved and implemented. Therefore, Amendment 1 is the new status quo for the purpose of analyzing Amendment 2.



estimated; this could be more depending on the level of monitoring adopted. Enforcement costs could be \$100,000/year or more for a federally managed fishery in the EEZ. There may be additional costs to the State associated with implementing Federal management measures for the scallop fishery. These may include preparation and presentation of reports at Council meetings, scallop plan team meetings, preparation of Stock Assessment and Fishery Evaluation (SAFE) documents, assessments of overfishing, and other management functions. Benefits of this action will be the preservation and maintenance of a viable scallop fishery under any of the alternatives.

## 1.0 INTRODUCTION

The scallop fishery in the EEZ and in Alaskan State waters has been managed by the State since a fishery began in 1968. Regulations are implemented by ADF&G at 5 ACC 38.076. These regulations establish GHs for different scallop registration areas, fishing seasons, open and closed fishing areas, observer coverage requirements, gear restrictions, and measures to limit the processing efficiency of undersized scallops that include a ban on the use of mechanical shucking machines and a limitation on crew size. A Federal FMP for the scallop fishery was recommended by the Council in April 1995 and approved by NMFS July 26, 1995. The only management measure implemented by the FMP was a total closure of the EEZ off Alaska to scallop fishing to prevent overfishing by unregulated harvesting.

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

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 which may address the problem. This information is included in Section 1 of this document. Section 2 contains information on 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. Section 3 contains a Regulatory Impact Review (RIR) which addresses the requirements of both E.O. 12866 and the RFA that economic impacts of the alternatives be considered. Section 4 contains the Final Regulatory Flexibility Analysis (FRFA) required by the RFA which specifically addresses the impacts of the proposed action on small businesses.

This EA/RIR/FRFA addresses concerns that current management of the scallop fisheries in Alaska fails to allow harvesting of scallop stocks for up to a 1-year period, after which no Federal regulations will exist to control fishing for scallops in Federal waters by vessels fishing outside the Alaska State regulatory authority. Specifically, this document provides background information and assessments necessary for NMFS to determine if Amendments 1 and 2 are consistent with the Magnuson Act and other applicable laws. It also provides the public with information to assess the alternatives that are being considered and to comment on the alternatives. These comments will enable the Council and NMFS to make more informed decisions concerning the resolution of the management problems being addressed.

### 1.1 Scallop Management Background

Management of scallops has been under the jurisdiction of the State since 1968, as no Federal FMP had been implemented for this fishery. Although a preliminary FMP for Alaska scallops was drafted by the Council in 1976, it was never adopted. In 1992, the ADF&G developed an Interim Fishery Management Plan (IFMP) for scallops (Kruse et al. 1992), as fishing effort was rapidly increasing and maximum sustainable yield may have been exceeded. The IFMP specified three major management measures: (1) Setting area specific guideline harvest levels and gear restrictions to prevent localized overharvesting, (2) creating an observer program to monitor the fishery and obtain biological information, and (3) limiting effort via gear restrictions, seasons, minimum size limits, and other measures. Consistent with scallop management actions taken on the East Coast, the State promulgated regulations that limit crew size to a total of 12, and mandated that weathervane scallops may only be shucked manually to control effort. State regulations do not provide for a vessel moratorium to be implemented even for rapidly expanding fisheries. In 1993, the Commissioner of ADF&G declared scallops a High Impact Emerging Fishery (5 AAC 39.210) because of mounting resource concerns.

At the January 1993 meeting, the Council determined that the scallop fishery may require Federal management to protect the fishery from overexploitation and further overcapitalization. The Council was presented with information indicating the stocks of weathervane scallops were fully exploited and any increase in effort would be detrimental to the stocks and the Nation. Information indicated that dramatic changes in age composition had occurred after the fishing up period, with commensurate declines in harvest. To maintain catches in recent years, vessels abandoned historical fishing areas, and searched for new areas. Increased numbers of small scallops were being reported (Kruse et al. 1992). Additionally, scallops are highly susceptible to overfishing and boom/bust cycles world-wide. The Council set a control date of January 20, 1993, to notice the industry that a moratorium for this fishery may be implemented. This control date, which was published in the Council's newsletter, meant that fishermen and/or vessels not participating in the fishery by that date may not be guaranteed future access to the fishery.

Also at the January 1993 meeting, the Council directed staff to proceed with an analysis to evaluate potential Federal management of Alaskan scallops. An EA/RIR/IRFA was drafted to analyze a proposed amendment that would incorporate Alaskan scallops into the GOA and BSAI groundfish FMPs, as well as a proposal to develop a separate FMP for the Alaskan scallop fishery. All fisheries for weathervane scallops (Patinopecten caurinus), and all other scallop species in the EEZ waters off Alaska would be federally managed under the proposed alternatives. A moratorium on entry into the scallop fishery was proposed as an essential element of each alternative to the status quo. The intent of the proposed vessel moratorium was to stabilize the size and capitalization of the scallop fleet during the time that the Council considers limited entry alternatives for this fishery.

Scallop management was discussed, and public testimony was received, during subsequent Council meetings. At the June 1993 meeting, the Council and its advisory bodies reviewed a draft EA/RIR/IRFA analysis of management alternatives for the scallop fishery. Also at that meeting, the Council reaffirmed the January 20, 1993, control date. The Council recommended several revisions to the draft analysis, which was subsequently sent out for public review on August 9, 1993. At the September 1993 meeting, public testimony was received on scallop management, particularly on the qualifying criteria for a moratorium. At that meeting, the Council tentatively identified its preferred alternative of a separate FMP for the scallop fishery, with shared management authority with the State. The preferred alternative also included a vessel moratorium option; however, the Council requested additional analysis to assist with determining appropriate qualifying criteria. Additional analysis was incorporated into a revised draft FMP, including a draft EA/RIR/IRFA, and was released for public review on November 30, 1993.

At the April 1994 meeting, the Council and its advisory bodies reviewed the draft FMP and took public testimony. At that meeting, the Council voted to adopt a separate FMP for the scallop fishery, and institute a moratorium on entry of new vessels into the fishery. The FMP was based on the premise that all vessels fishing for scallops in Federal waters would be registered under the laws of the State. Also at the April meeting, the Council and NMFS announced a control date of April 24, 1994, after which scallop harvests made in the EEZ may not apply as catch history for purposes of any future IFQs or licenses in anticipation of a future limited access program for this fishery.

In January 1995, NMFS requested the Council to provide clarification regarding several issues that came up during the preparation of the proposed rule to implement the scallop FMP. The Council concurred with several NMFS recommendations including setting prohibited species caps (PSC) for snow crab and Tanner crab as a rate (0.003176 percent and 0.13542 percent, respectively) based on biomass, closing areas to scallop fishing that were closed to groundfish fishing to protect crab and crab habitat, and setting up an appeals process like that used for the individual fishing quota (IFQ) program for halibut and sablefish. The

Council also reaffirmed its preferred moratorium criteria, and that moratorium permits would be issued to the persons who owned a vessel at the time the vessels qualified under the moratorium.

During the time when regulations were being drafted to implement the FMP, a vessel not registered with the State fished for scallops in the EEZ. The vessel was fishing in the Prince William Sound Registration Area that was closed to Alaska registered vessels after the GH (50,000 lb) was taken on January 26. The State did not have authority to stop the vessel from fishing because it was not registered with the State. On February 17, 1995, the Council met by emergency teleconference to address the situation. The Council concurred that NMFS implement an emergency rule to close the EEZ off Alaska to scallop fishing to prevent further uncontrolled harvests in Federal waters. The emergency rule went into effect on February 23, and was published on March 1, 1995, and expired May 30, 1995. The Council recommended that NMFS extend the closure for an additional 90 days, which expired August 28, 1995.

At its April 1995 meeting, the Council took additional steps to prevent unregulated and uncontrolled harvests after the emergency rule expired. On April 19, 1995, the Council adopted an FMP which continued the closure of the EEZ to fishing for scallops for a 1-year period. The FMP was approved by NMFS on July 26, 1995. The Council also directed staff to complete an analysis of an amendment which would allow for a controlled fishery to occur in the EEZ. The analysis was contained in an EA/RIR document released for public review on May 26, 1995.

In June 1995, the Council considered the testimony and recommendations of its Scientific and Statistical Committee, fishing industry representatives, and the general public on alternative management options for the scallop fishery. The Council reviewed the information on potential impacts of the alternatives and options contained in the May 26 draft analysis. Based on the above information, the Council voted to recommend that the management measures encompassed under Alternative 2 be adopted for implementation. The Council's recommendation also included several additional measures that are not included in Amendment 1. These include Federal permit, recordkeeping and reporting requirements which NMFS does not believe are immediately necessary for reopening the scallop fishery in 1996 given that most vessels would be required to take State or Federal observers 100 percent of the time. Should the Magnuson Act reauthorization fail to allow for State management of all scallop vessels in the EEZ off Alaska, then permit, recordkeeping and reporting requirements could be proposed as a future FMP amendment if necessary.

## 1.2 Purpose of and Need for the Action

Federal management measures for the Alaskan scallop fishery are necessary to provide for a controlled fishery and to prevent over exploitation of the stocks. Under State statutes, the State cannot limit effort of vessels fishing in the scallop fishery that are not registered with the State. At least one non-Alaska registered vessel has fished for scallops exclusively in the EEZ, with indications others may follow. The longevity of the species and its low mortality rate indicate they are susceptible to local and general overfishing. In addition, the lack of information about the status of these stocks indicate cause for conservative management. Along with unregulated fishing, the overcapitalization of the fishery has highlighted the potential for quickly overfishing this resource and demonstrated the need for controlling the effort of all vessels fishing in the EEZ. Consideration of alternatives to allow a federally regulated scallop fishery is consistent with National Standards and the Council's nine Comprehensive Fishery Management Goals.

### *Problems with Current Management under the Federal FMP<sup>4</sup>*

Until 1995, all vessels participating in the Alaska scallop fishery have been registered under the laws of the State and the fishery was monitored and controlled under State jurisdiction. On February 23, 1995, NMFS implemented the emergency rule to close Federal waters to fishing for scallops in response to conservation concerns that continued uncontrolled fishing for scallops in the Federal waters could result in localized overfishing of scallop stocks. To prevent a regulatory hiatus that would result when the emergency rule expires, the Council adopted an FMP that authorized an interim closure to scallop fishing in the EEZ for up to a 1-year period. The FMP was approved by NMFS on July 26, 1995. The only management measure authorized under the FMP is an interim closure of Federal waters off Alaska to fishing for scallops during the period of time that an amendment to the FMP is prepared that would allow the controlled harvest of scallops in Federal waters. The interim closure will expire on August 28, 1996.

The intent of the FMP is to prevent overfishing of scallop stocks during the period of time that an alternative FMP or amendment is being developed that would allow a controlled harvest of scallops. The FMP specifies a long-term OY for the scallop fishery in the EEZ as a numerical range of 0 - 1.1 million lb (0-499 mt) of shucked scallop meats. Under the interim FMP, OY is set at zero. This amendment package analyzes a suite of alternative management measures necessary to support a controlled fishery for scallops in Federal waters.

### *Susceptibility to Overfishing*

Although no comprehensive surveys or stock assessments for scallop stocks exist, recent large variations in harvest and shifts in effort to new fishing areas may indicate that the maximum sustainable yield of various beds were being exceeded prior to implementation of quotas in 1993. Additionally, some fishermen have testified that the average scallop "meat counts" have increased in recent years, meaning that the average size of scallops harvested were smaller than in previous years. A reduction in the average size (age) of animals harvested may indicate an increase in fishing mortality of larger individuals, or high recruitment (Ricker 1975). It has been well-established that scallop populations worldwide are vulnerable to overharvest, and stock recovery may be slow (Aschan 1991; Bannister 1986; Bourne 1986; McLoughlin et al. 1991; Orensanz 1986). For these reasons, significant increases in scallop harvests in Alaska beyond historic levels should be avoided, as they may jeopardize stock health and sustained yield.

---

<sup>4</sup>Note that the problems listed in this section relate to the status quo prior to approval of Amendment 1 to the FMP. These problems have been largely resolved as a result of the implementation of Amendment 1.

The longevity of weathervane scallops in Alaska implies that they experience low natural mortality rates (Hoenig 1983), and this requires that conservative commercial harvests of weathervane scallops may be necessary to maintain healthy stocks and sustainable fisheries. The rate of natural mortality is one of the biological reference points commonly used in management of other fisheries to establish appropriate exploitation rates (Clark 1991). Unfortunately, other benchmarks that would bear on the choice of appropriate exploitation rates for weathervane scallops are not presently available; there is inadequate information on other biological production parameters, and uncertainty in scallop population dynamics for Alaskan scallop fisheries.

An unrestricted harvest in the EEZ would allow recruitment overfishing. It is widely accepted that fishery harvest levels should be prescribed in ways to prevent "recruitment overfishing," which is the condition that occurs when stocks are reduced to levels too low to produce adequate numbers of young scallops -- the future recruits to the fishery (Gulland 1983). Recruitment is a prerequisite for maintenance of viable populations, and is needed for sustainable harvests that support long-term economic benefits from the fishery. A managed fishery in the EEZ will prevent recruitment overfishing of scallops better assuring that a viable scallop fishery will exist in the future.

#### *Overcapitalized Fleet*

The existence of an overcapitalized fleet increases the potential of overfishing the resource in an unrestricted fishery. At its January 1993 meeting, the Council determined that unrestricted access to this fishery may be harmful to the resource and result in a net loss to the Nation. A control date of January 20, 1993, was set to place the industry on notice that a moratorium for this fishery may be implemented. This control date was again reaffirmed at the Council's June 1993 and June 1995 meetings. As anticipated, effort in this fishery apparently increased in 1993; 32 permits, representing 21 vessels were issued to fish scallops in 1993. Eleven of these vessels had made landings as of July 31, 1993, and a total of 15 vessels had made landings by the end of the year.

Even without additional vessels entering the fishery, the 1993 fishery was overcapitalized. In 1992, seven vessels harvested 1.8 million lb (816 mt), for an average of 257,143 lb (116.6 mt) harvested per vessel. The 1993 quota was set at 890,000 lb (403.7 mt) for areas with specified GHGs, or about one-half of the 1992 landings. Efficient harvesting of this quota could be done by only three to four vessels. Preliminary estimates of 1993 landings from areas without GHGs total 524,000 lb (237.7 mt) that potentially could have been taken by an additional two vessels. Yet, 11 vessels participated in the 1993 fishery by July 31. Hence, the 1993 fishery was overcapitalized, meaning that too much capital was invested relative to the fleet size necessary to conduct efficiently the fishery. In 1994, the fishery continued the trend; 16 vessels harvested 1,235,269 lb (560.3 mt) of scallops.

Conservation impacts of the scallop fishery in Alaska depend upon the particular suite of management measures adopted. Where no management exists there is every indication that the fishery would be subject to local and eventual general overfishing were the condition to persist. One vessel fishing in the EEZ without the effort restrictions on gear, and crew required by State law was apparently able to take over 100 percent of the State's GHG (54,000 lb) (24.5 mt). When the overcapitalization of the fishery is considered, it is clear the current scallop fleet could take several years' worth of the State's GHG in many areas in several months.

Because of the serious effects unrestricted fishing in this overcapitalized fishery would have on this resource, this proposed action concentrates on strict conservation in the fishery. Ideally, management strives to achieve a balance of factors, such as cost-effectiveness, enforceability, resource conservation, and positive

economic benefits that accrue from commercial harvests. Further, a management plan would provide mechanisms to gain information that can be used to improve the management without being too costly, and would provide for resource conservation without being overly restrictive to the fishery.

Access to scallop fisheries within the management unit can be limited by the Council and NMFS if Amendment 2 is adopted and approved. The State can also limit access to a minimal extent by limiting the number of individual permits issued annually. A Federal moratorium on entry of new vessels and participant limitation with IFQ's are two other forms of limited access that may be considered for management of the scallop fishery. Consistent with National Standard 5, the alternative to the status quo would implement management measures that promote efficiency in the utilization of fishery resources.

### 1.3 Alternatives Considered

1.3.1 Alternative 1. Status Quo<sup>5</sup>: Continue closure of the EEZ for up to a 1-year period to all scallop fishing. This alternative would continue the closure that prohibits fishing for Alaskan scallops in Federal waters. Under this alternative, scallops would not be harvested in the EEZ until August 29, 1996. Scallops would be considered a prohibited species and retention would not be allowed in the EEZ. Because there would be no fishing allowed for scallops, no in-season management and monitoring of the fishery would be necessary. After that time, no regulations would exist to control fishing by vessels not registered in the State and overfishing of the scallop resource could occur.

1.3.2 Alternative 2 (Preferred): Amend the FMP for Alaskan scallops to allow for a federally controlled fishery to occur in the EEZ. This alternative would require NMFS to implement a suite of Federal regulations to support a controlled fishery for scallops in Federal waters. To the extent possible, the Council has expressed its intent that these regulations should complement Alaska State management of the Alaska scallop resource. Alternative 2 would be implemented in two separate amendments:

Amendment 1 would implement: (1) Gear and efficiency restrictions, (2) scallop registration areas and districts, (3) procedures for specifying TAC and CBLs, (4) time and area closures, (5) inseason management authority, (6) fishing seasons, and (7) observer coverage requirements. All of these measures are those previously adopted by the Council, or currently used by the State. Amendment 1 has been developed in cooperation with the Alaska State ADF&G and is designed to be consistent with State management of the scallop fishery prior to 1995.

Amendment 2 would implement a vessel moratorium for the scallop fishery off Alaska based on criteria the Council adopted in April 1994, and reaffirmed in January 1995. Eighteen vessels would qualify under the moratorium.

Policy Issues regarding Alternative 2: It should be noted that NMFS budget is constrained, such that duties of existing personnel would need to be re-prioritized to allow for management of a scallop fishery. Management of the scallop fishery has proven to be quite costly, and the ADF&G has indicated that most current State management measures should be adopted to avoid contradictory State and Federal management regimes. Given that the State has previously managed the fishery, perhaps a cooperative arrangement could be pursued. However, a cooperative agreement with the State may also require Federal funds to support. In the event that NMFS-Alaska Region does not provide the support necessary for Federal management of

---

<sup>5</sup>Note that Amendment 1 has been approved and implemented. Therefore, Amendment 1 is the new status quo for the purpose of analyzing Amendment 2.

the scallop fishery off Alaska, continued closure of the EEZ is another alternative that may need to be explored in the near future.

Another policy issue exists regarding potential dual management of the scallop fishery by the State and NMFS. Alternative 2 is structured similar to the Council's old Tanner crab FMP, which was repealed in 1986. The Tanner crab FMP essentially federalized Alaska State regulations, and was amended each year to keep up with changes to the State's management regime. Practice showed that in spite of the Regional Director's inseason management authority, and daily contact with NMFS and ADF&G staff, Federal management could not keep up with State changes. Consequently, in January 1986, the National Oceanic and Atmospheric Administration (NOAA) General Counsel argued that the FMP did not comply with National Standards 5, 6, and 7, and should be suspended. Implementing regulations failed to promote efficiency in the utilization of fishery resources and failed to minimize costs and avoid unnecessary duplication. Amendment 1 to the scallop FMP would implement a framework process which would allow for rapid implementation of inseason changes. Nevertheless, dual management of the scallop fishery over an extended period of time could lead to a situation similar to that which occurred with Tanner crab.

NOAA General Counsel has advised that Federal scallop harvest limits could apply to Federal waters only, and not extend into State waters, as is the case with groundfish. However, if NMFS were to manage the EEZ, and the State to manage within 3 miles, numerous problems may be created similar to the repealed Tanner crab plan. A dual system would require two sets of harvest limits, two sets of crab bycatch caps, two observer programs, two registration procedures, and two sets of regulatory requirements. In some areas, scallop beds straddle both State and Federal waters (Yakutat, for example). Vessels move freely across the 3 mile line during the harvesting process. Two sets of regulations administered by two management agencies may create confusion among management agencies, fishermen, and observers. Such a dual regulatory management regime may run counter to National Standard 7, which states that conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication. For that reason, the scallop registration areas and harvest limits proposed by Alternative 2 would apply to both Federal and State waters.

#### 1.4 Alternatives Not Considered

One alternative not considered here is to eliminate the Federal FMP and defer all management of scallops to the State. Under this alternative, the State would resume management of the scallop fishery in State waters and the EEZ without Council oversight. This alternative would provide no specific Federal management measure to control fishing in the EEZ. Vessels not registered in the State could continue to enter the fishery and fish in the EEZ without observers or restriction as to amount or size of scallops taken. Yearly catches could exceed the recent record harvest of 1.8 million lb (816 mt) in 1992, potentially overfishing the resource.

Another alternative not considered would be to wait and see if changes are made to the Magnuson Act. Changes recently approved by the U.S. House of Representatives include language to the effect that fisheries off Alaska not managed by NMFS could be managed by the State, and the State's jurisdiction could extend into the EEZ. Thus, in the case of the scallop fishery, the State could require all vessels to register and follow all State laws, even when fishing in the EEZ. This alternative was not considered at this time because Magnuson Act approval may not occur until July 1996 or later. If the Magnuson Act is amended to allow State jurisdiction over all vessels fishing in the EEZ, then the suite of management measures implemented



under Amendment 1 could be repealed leaving Amendment 2, the vessel moratorium, as the only Federal management measure for the scallop fishery.<sup>6</sup>

The commercial scallop fishery in State waters is currently being managed by the State under miscellaneous shellfish regulations, contained in Chapter 38 of the Alaska Administrative Code; these regulations authorize management in Alaskan State waters and extends management authority beyond Alaska's territorial sea to include the adjoining waters of the EEZ (5 AAC 38.005 and 38.010). However, under the current closure of Federal waters, the State cannot manage a scallop fishery in the EEZ. Once the current closure expires or is repealed, the State has authority to regulate scallop vessels, registered with the State, that fish outside of State waters in the EEZ. However, these regulations do not apply to vessels not registered in the State and fishing outside of State waters.

## 1.5 Alaska State Management of the Scallop Fishery

### 1.5.1 Current State management regime

The primary pectinid harvested off Alaska is the weathervane scallop (*Patinopecten caurinus*). Since the early 1980's, between 4 and 20 vessels annually have participated in the Alaska scallop fishery. Gross earnings experienced by the fleet during this same period of time has ranged from almost \$.9 million in 1983 to about \$7 million in 1992. Between 1969 and 1991, about 40 percent of the annual landings of scallops from waters off Alaska were comprised of scallops harvested from State waters. Since 1991, however, scallop harvests have increasing occurred in Federal waters in some areas. In 1994, only 14 percent of the scallop landing came from State waters, with the remainder harvested in Federal waters off Alaska (Table 1.5.1). Some of this variability is due to more harvests in the Bering Sea, which have occurred exclusively in the EEZ (Table 1.5.2). Other areas may have an opposite trend. For example, catches from State waters in the Prince William Sound area increased from 2 percent in 1993 to 41 percent in 1995. The State had managed the scallop fishery in State and Federal waters, consistent with section 306(a)(3) of the Magnuson Act (16 U.S.C. 1801 et seq.), which allows a state to regulate directly any fishing vessel outside state waters if the vessel is registered under the law of that state.

ADF&G initiated development of a management plan for the scallop fishery in response to overfishing concerns resulting from recent changes in the weathervane scallop fishery off Alaska. Weathervane scallops possess biological traits (e.g., longevity, low natural mortality rate, and variable recruitment) that render them vulnerable to overfishing. Record landings occurred in the late 1960's (about 1.8 million lb (816 mt) shucked scallop meat), followed by a significant decline in catch through the 1970's and 1980's when landed catch ranged between 0.2 and 0.9 million pounds. ADF&G believes this decline is due, in part, to reduced abundance of scallop stocks (Kruse, 1994). Landings since 1989 have increased to near record levels. During this period, the number of vessels fishing for scallops has not increased (about 10 - 15 vessels annually), although an increase in fishing power is evidenced by a substantial increase in average vessel length (from 84 ft registered length in 1981 to 110 ft in 1991), a predominance of full-time scallop vessels, and an increased number of deliveries. From 1974 to 1993, the State did not have an observer program, although some indication exists that overfishing, or at least localized depletion may have occurred. Data voluntarily submitted by participants in the scallop fishery during the early 1990's showed that an increase

---

<sup>6</sup>Note: The Magnuson-Stevens Act now contains language allowing a Fishery Management Council to delegate management authority of a fishery under it's jurisdiction to a state through an FMP amendment. Any FMP amendment delegating management authority to a state must be approved by a three-quarters vote by the Council.

in meat counts per pound has occurred, indicating that smaller scallops now account for a greater proportion of the harvest. These data also suggest that catch-per-unit-of-effort (by weight) in traditional fishing grounds had decreased.

Limited age data suggest that the scallop stock historically exploited off west Kodiak Island experienced an age-structure shift from predominately age 7 and older scallops in the late 1960's to an age structure predominated by scallops less than age 6 during the early 1970's. This shift indicated that harvest amounts may have exceeded sustainable levels. Alternatively, strong year classes may have entered the fishery. Changes in fleet distribution from historical fishing grounds primarily in State waters to previously unfished grounds in the Bering Sea compounded management concerns.

In response to these concerns, ADF&G implemented a management plan for the scallop fishery in 1993-94 that established a total of nine fishery registration areas corresponding to the Southeastern, Yakutat, Prince William Sound, Cook Inlet, Kodiak, Alaska Peninsula, Dutch Harbor, Adak, and Bering Sea portions of the State. To prevent overfishing and maintain reproductive potential of scallop stocks, ADF&G established a guideline harvest range (GHR) for each of the traditional weathervane scallop fishing areas. In the absence of biomass estimates needed to implement an exploitation rate harvest strategy, the upper limit of the GHRs are specified as the long-term productivity (catch) from each of the traditional harvest areas. ADF&G may adjust GHRs based on changes in stock status, such as shifts in population size/age structure coupled to changes in area-specific catch-per-unit-effort (CPUE). If a GHR for a registration area is not specified, ADF&G may authorize fishing for weathervane or other scallop species under permits that generally include location and duration of harvests, gear limitations and other harvest procedures, periodic reporting or logbook requirements, requirements for on board observers, and scallop catch or CBLs.

ADF&G also has implemented king and Tanner CBLs to constrain the mortality of Tanner crab and king crab incidentally taken by scallop dredge gear. Generally, crab limits are set at 1 percent of total crab population for those management areas where crab stocks are healthy enough to support a commercial fishery. In areas closed to commercial fishing for crab, the CBLs for the scallop fishery are set at 0.5 percent of the total crab population. In the Bering Sea, a substantially different system was used, based on an acceptable bycatch rate, rather than a percentage of the crab population.

Specified waters are closed to fishing for scallops to prevent scallop dredging in biologically critical habitat areas, such as locations of high bycatch of crab or nursery areas for young fish and shellfish. State regulations also require each vessel to carry an observer at all times (except in the Kamishak District of Cook Inlet) to provide timely data for monitoring scallop catches relative to GHRs and for monitoring crab bycatch. Effort and catch data have been collected by the State on a day-to-day basis so that established guideline harvest amounts or CBLs are not exceeded. Observers also collect scientific data on scallop catch rates, size distribution and age composition. This information is required by ADF&G for potential adjustment of GHRs based on changes in stock status and productivity.

Last, ADF&G regulations establish gear specifications to minimize the catch of undersized scallops and efficiency controls to reduce the economic feasibility of harvesting scallops much smaller than sizes associated with OY. Current efficiency controls include a ban on automatic shucking machines and a crew limit of 12 persons.

The 1995 scallop GHLs and CBLs, as well as 1994-1995 scallop harvest and crab bycatch amounts in each State registration area opened for harvest in 1994-95 are listed in Table 1.5.3. In 1994, vessels fished for scallops in the Bering Sea and Alaska Peninsula registration areas under special-use permits. These areas

were closed in late summer due to crab bycatch. The 1994 scallop fisheries in other registration areas generally were closed based on the attainment of the GHL (Table 1.5.3).

#### 1.5.2 Impact of Federal regulations on State management activities

Under the FMP amendment, regulations to manage Federal waters for scallop fishing could impact the fishery in State waters, particularly if the management measures are different. Regulatory changes to the scallop fishery in Federal waters would be implemented in consultation with the Commissioner of ADF&G so that the State may implement any adjustments to its scallop management program that the State deems necessary to address management concerns in State waters.

There may be additional costs to the State associated with implementing Federal management measures for the scallop fishery. These may include preparation and presentation of reports at Council meetings, scallop plan team meetings, preparation of SAFE documents, assessments of overfishing, and other management functions.

Table 1.5.1 Percentage of Alaska scallop landings from State (within 3 miles) and Federal waters (3-200 miles), by year from 1990 through 1994.

<i>Year</i>	<i>State Waters</i>	<i>Federal Waters</i>
1990	46.9	53.1
1991	37.9	62.1
1992	73.6	26.4
1993	23.9	76.1
1994	13.7	86.3

Source: ADF&G.

Table 1.5.2 Proportion of historical landings from the EEZ within each regulatory area.

<i>Scallop Registration Area</i>	<i>Data Source</i> <sup>1</sup>	<i>Percent from EEZ</i>
Area A (Southeastern)	1	0
Area D (Yakutat)	2	highly variable
Area E (Prince William Sound)	2	80
Area H (Cook Inlet)	2	100
Area K (Kodiak)	1	95
Area M (Alaska Peninsula)	2	100
Area O (Dutch Harbor)	1	21
Area R (Adak)	1	43
Area Q (Bering Sea)	1	100

<sup>1</sup>Data Source: 1. Alaska CFEC scallop (fish ticket) harvest data 1990-1993.

2. ADF&G area biologist's assessment of scallops stock.

Table 1.5.3 Alaska State scallop registration areas from where scallops were harvested in 1994-95<sup>1</sup>, Guideline Harvest Range (GHR) (lb shucked meat), 1995 Tanner and king crab bycatch limits (number of crab), 1994 and 1995 scallop and crab catch amounts and season opening and closure dates.

<i>Registration Area</i>	<i>Guideline Harvest Range</i>	<i>Reported Harvest</i>	<i>Crab bycatch limits</i>		<i>Crab bycatch</i>		<i>1995 season open - closed dates</i>
			<i>King</i>	<i>Tanner</i>	<i>King</i>	<i>Tanner</i>	
<u>Yakutat</u>							1/10/95 - 2/14/95
1994	0 - 285,000	259,206	no crab limit				
1995	0 - 285,000	245,000 <sup>2</sup>	no crab limit				
<u>Prince William Sound</u>							
1994 (no fishery)	0 - 50,000	0		630			1/10/95 - 1/26/95
1995	0 - 50,000	48,000 <sup>2</sup>		630		69 <sup>2</sup>	
<u>Cook Inlet</u>							8/15/95 -
1994	0 - 20,000	20,431					
<u>Kodiak</u>							7/1/95 -
1994	0 - 400,000	381,850	283	199,500			
<u>Alaska Peninsula</u>							7/1/95 -
1994	permit	66,412	85	52,530	0	26,379	
<u>Dutch Harbor</u>							7/1/95 -
1994	0 - 170,000	1,931	45	50,500			
<u>Bering Sea</u>							7/1/95 -
1994	permit	505,439	17,000	260,000	55	262,500	

Source: ADF&G

<sup>1</sup>The Southeastern registration area is closed to fishing and no harvests were reported from the Adak registration area.

<sup>2</sup>Scallop catch and crab bycatch amounts do not include unreported amounts taken by the catcher/processor vessel fishing in the management area outside of State jurisdiction.

## 1.6 Management Measures Considered for Alternative 2, Amendment 1

### 1.6.1 Registration Areas and Districts

The State currently has registration areas to obtain more accurate data on origin of catch and to provide for orderly fisheries (Kruse and Shirley 1994). Registration requirements were designed to allow estimation of fishing effort and the rate at which the resource will be harvested. Vessels must register for one of nine management areas before fishing for scallops in that area. The areas are: Southeastern, Yakutat, Prince William Sound, Cook Inlet, Kodiak, Alaska Peninsula, Dutch Harbor, Aleutian Islands, and Bering Sea. By subdividing into registration or regulatory areas, management measures can be applied to more discrete areas, rather than the entire management unit. Regulatory areas are particularly important when setting stock specific quotas. Like the groundfish plans of the BSAI and GOA, regulatory areas are closed to fishing when the quota or bycatch limit is reached in that area. Regulatory areas are characterized by relatively homogeneous established fisheries on stocks of scallop that occupy distinct areas and may have similar life history patterns. These areas can also be used for observer reporting and monitoring. By keeping the boundaries of the areas the same as the State's registration areas, catch data will be comparable to historical information. Like ADF&G, NMFS may need to require pre-registration for these areas in order to monitor the fishery.

Districts may also be adopted for managing the scallop fishery. These subdivisions of registration areas allow for management measures to be applied in more discrete areas. For example, the State has closed portions of registration areas when inseason fisheries performance demonstrated declines in specific scallop beds, but these closures have been "hot spots", rather than defined districts. The State has used the following criteria to split registration areas: (1) The area contains a reasonably distinct stock of scallops that requires a separate GHR estimate to avoid possible overharvest, or (2) the stock requires a different size limit from other stocks in the registration area, (3) different timing of spawning requires a different fishing season, (4) estimates of fishing effort are needed pre-season so that overharvest can be prevented, or (5) if part of an area is relatively unutilized and unexplored and if creation of a new district will encourage exploration and utilization. Districts have been used primarily for granting exploratory permits and setting crab bycatch limits.

Amendment 1 would establish nine scallop registration areas composed of the Federal waters and adjacent State waters described in each area. These scallop registration areas would match the nine State scallop registration areas described in Alaska State regulations at 5 AAC 38.076(b). The Yakutat, Cook Inlet, and Kodiak scallop registration areas would be further subdivided into districts to allow for more concise management of scallop resources in these areas. A description of each registration area and district is contained in Appendix C.

### 1.6.2 Gear Restrictions

Amendment 1 may define legal gear types and gear specifications for scallop fishing based on existing state regulations. Specification of legal gear may be important to attainment of the biological conservation and economic and social objectives. Gear restrictions would match those currently used by the State. Under State regulations, the allowable commercial gear is limited to scallop dredges. Scallop dredges cannot exceed a maximum width of 15 ft (4.57 m); in the Cook Inlet Regulatory Area, dredge size is limited to a maximum of 6 ft (1.83 m) in width. Dredges are required to have rings with a minimum inside diameter of four inches. For vessels fishing west of Sanak Island (in the Aleutian Islands), three inch rings may be used only for species other than weathervanes. Chafing gear may not be used to decrease the legal inside ring diameter. Vessels are restricted to operating a maximum of two dredges at a time, except in Cook Inlet

where vessels are limited to a single dredge. As these gear limitations have been in place via State regulations, no additional impacts are expected. Additional research may show that other gear restrictions may be required to reduce the bycatch of fish, invertebrates, and juvenile scallops. Note that under the Council's preferred moratorium criteria, diving would be allowed as a legal gear for small, exempted vessels. However, because diving for scallops appears to occur exclusively within State waters, no provisions for diving have been included in Amendment 1.

### 1.6.3 Efficiency Limits

In an effort to maintain catch levels under increased competition, some individuals may elect to increase the catch capacity of their vessels, further contributing to overcapitalization. Management measures that limit the efficiency and catch capacity of vessels will tend to even out the distribution of catch among vessels. Amendment 1 would implement two types of efficiency limits currently used by the State; limits on crew size and a ban on automated shucking machines. As of July 1993, crew size has been limited to a maximum of 12 fishermen per vessel. Crew members are all persons involved with the operations of the vessel and include the captain, mate, engineer, cook, deck hand, and processing workers. Crew size limits have been implemented to reduce incentives to harvest small scallops (Kruse and Shirley 1994). Because larger scallops are worth more per meat and take the same amount of processing time as small scallops, a limited crew size provides an economic incentive for vessels to target the larger sized, higher yield, mature scallops. It has been documented that harvesting rate (CPUE) for most scallop vessels depends for the most part on crew size (Robert and Jamieson 1986), and thus this management measure also tends to even out the distribution of catch among vessels. The other proposed efficiency limit is a prohibition of mechanical shucking machines for weathervane scallops. These scallops may only be shucked by manual methods ("hand shucking"), and as with crew size limits, provide incentive for vessels to target larger scallops.

### 1.6.4 Scallop Harvest Limits

This amendment would establish a framework to specify preseason harvest limits. These would be in the form of TAC and acceptable biological catch (ABC). Seasons or areas would be closed when the harvest limits are reached or limited by bycatch constraints.

To achieve the biological conservation objective of preventing recruitment overfishing, the biological component, or ABC, may be defined as the upper limit of acceptable harvest for each area. The Magnuson Act guidelines (subpart D of 50 CFR part 600) state that "ABC is a preliminary description of the acceptable harvest (or range of harvests) for a given stock or stock complex. Its derivation focuses on the status and dynamics of the stock, environmental conditions, other ecological factors, and prevailing technological characteristics of the fishery." Because the maintenance of adequate reproductive potential takes precedence over economic and social considerations, the ABC serves as an upper bound constraint on harvest, and cannot exceed the overfishing definition contained in the FMP. A target harvest level is then chosen within ABC to maximize the anticipated discounted benefits to the fishery over the long term. These benefits include: Profits, personal income, employment, benefits to consumers and less tangible or less quantifiable social benefits such as the economic stability of coastal communities.

If the Council adopted a specification process similar to that used for the groundfish fisheries, then annual TACs would be set within the ABC limits established for the EEZ portion of the scallop stocks within regulatory areas. The sum of TACs for all regulatory areas must fall within the OY range (0-1.1 million lb (0-499 mt) of shucked scallop meat) for the EEZ. Under Option 1, the OY would need to be re-specified to include historical landings from State waters as well; this would increase OY to 1.8 million lb (816.5 mt) using the rationale detailed in the FMP. As new biological and fishery data are collected on scallops, ABCs would be reanalyzed for possible revision during the annual specification process. In the future, as more information becomes available, the OY, ABCs, and TACs may be set for individual scallop species.

The management measures proposed in Alternative 2 would allow NMFS to specify annual TAC limits. In areas of the EEZ where the scallop fishery has traditionally occurred, and where ADF&G has established GHs, NMFS would specify annual TACs based on the total weight of shucked scallop meat. These areas include all or parts of Scallop Registration Areas A (Southeastern), D (Yakutat), E (Prince William Sound), H (Cook Inlet), K (Kodiak) and O (Dutch Harbor). In areas where an adequate historic scallop catch record does not exist, or where bycatch of crab is of concern, NMFS would also specify annual CBLs for red king crab and tanner crab species. These areas include all or parts of Scallop Registration Areas K (Kodiak), M (Alaska Peninsula), O (Dutch Harbor), Q (Bering Sea) and R (Adak). If no numerical TAC is specified for a registration area, harvests would be limited to the total weight of scallops that can be harvested under the specified CBLs.

Amendment 1 proposes an annual process whereby the Council would announce the State's most recent recommendations for scallop TACs and CBLs, and their basis, to the public through its mailing list and provide copies of the information to the public upon request. Copies of the annual SAFE report would also be made available at this time. The Council would notify the public of its intent to develop final recommendations at a subsequent Council meeting (usually April) and solicit public comment both before and during its next meeting. After considering the SAFE report, public comments and other relevant information, the Council would submit its TAC and CBL recommendations along with the rationale and supporting information to NMFS for review and implementation. As soon as practicable, after receiving recommendations from the Council and ADF&G, NMFS would publish in the Federal Register annual specifications of TAC and CBLs for the following fishing year. To accommodate the annual specification process, the scallop fishing year would be a 12-month period starting July 1 and ending June 30 of the following year.

Regardless of the specific approach, the process of determining a catch limit which prevents recruitment overfishing and maximizes socioeconomic benefits includes the collection and analysis of biological, economic, social, and other data. Scallop populations vary in the level of scientific information available for management. Consequently, exact procedures for determining appropriate catch limits vary due to differences in the quality and quantity of resource data bases. Information used to evaluate the Federally-approved factors for establishing TACs include data from trawl surveys, dredge surveys, fishery performance statistics (CPUE), price, personal income, employment, and other market and economic data.

Ideally, bioeconomic analyses can provide advice to management about the benefits to be received from alternative harvest levels. Such analyses can be used to evaluate the benefits (e.g., personal income, employment, etc.) resulting from two alternative harvest strategies. For example, high exploitation rates can be applied to obtain higher harvest levels of scallops at the expense of



foregone future harvest. Alternatively, low exploitation rates can be applied to obtain higher future harvest of larger scallops at the expense of lower current harvest. Information on other socioeconomic factors, such as benefits to consumers and economic stability of coastal communities can also be used in the determination of harvest level.

For 1994, ADF&G managed the fishery at the upper end of the GHR in each traditional fishing area (Yakutat, Prince William Sound, Cook Inlet, Kodiak, and Dutch Harbor) within constraints of crab bycatch caps. Fishing for weathervane scallops in the remaining portions of the state (Southeastern, Alaska Peninsula, Bering Sea, Adak, and other non-traditional scallop fishing grounds) was allowed under the terms of a special exploratory harvest permit, similar to the permit needed to fish for scallop species other than weathervane scallops. In an amended proposal to the Board of Fisheries (Board), ADF&G has recommended a separate GHR of 0 - 35,000 lb (15.9 mt) for District 16 (originally in Statistical Area A) and that District 16 be included in Registration Area D.

Catch limits for each regulatory area may be derived on the basis of historic catches taken in the EEZ. In the absence of surveys, catch limits may be calculated based on the average total catch for each regulatory area. However, many of these areas have been fished sporadically since 1969. Some estimates of catch limits are provided in the following paragraphs. These catch limits are examples of what one may expect on the basis of historic catch data. Actual specification of all scallop catch limits would occur during an annual specification process that may include development and review by a scallop plan team, review by the Council's Advisory and Scientific and Statistical Committee, review and adoption by the Council, and review by the public and NMFS.

For traditional grounds (Kodiak, Yakutat, and Dutch Harbor), catch limits for the regulatory areas may be estimated from the average of the historic catch from 1969 to 1992 minus years when no fishery and "fishing-up-effect" occurs. The term "fishing-up-effect" is used to describe the initial exploitation phase of a new fishery or "removal of accumulated stock" (Gulland 1977). Catches much larger than equilibrium levels are taken for a few years immediately after substantial increases in fishing mortality rates on previously unfished stocks (Baranov 1918). Catches during this developmental period are greater than subsequent catches taken at the same rate of fishing (Ricker 1973). This cropping off of a population is evident in Kaiser's (1986) comparison of percentage age composition of the commercially caught weathervane scallops in Yakutat and the west side of Kodiak Island during fishery inception. The percentage of age 12 or older scallops declined from 35 percent to 3.6 percent in Yakutat between 1969 and 1971. In Kodiak, age 12<sup>+</sup> scallops declined from 27.3 percent to 2.6 percent between 1968 and 1971 and age 2-6 scallops increased from 13.3 percent to 53.8 percent. Dramatic declines in historic pounds landed in specific statistical areas during the first years a "fishing-up-effect" occurred in the Yakutat, Kodiak, and Dutch Harbor scallop fisheries. The first 2 years of catch data were excluded from calculation of the GHR for Kodiak. Years when zero catch occurred, 1977 and 1978, were also excluded from calculation of the GHR for Kodiak. The first year of catch data was excluded from the ABC calculation for Yakutat and Dutch Harbor to account for the "fishing-up-effect." The years 1978, 1979, and 1983 (0-30 lb catch) were excluded from calculation of GHR for Yakutat. Data from 1969 to 1981 and 1983 to 1984 were excluded from the estimation of the GHR for Dutch Harbor because no fishing occurred in those years.

For the Southeast Alaska and Alaska Peninsula areas, catch limits based on 1980-1994 data, (representing the second phase of the scallop fishery in Alaska) may be sufficient. These areas have been fished under an "exploratory permit" though ADF&G, and consequently, catches have been limited by effort, observed scallop catch rates, and crab bycatch caps. Average catch for the Southeast area, minus years when no fishing occurred, was 32,000 lb (14.5 mt). The average catch in the Alaska Peninsula area (not including the 7 years when no fishing occurred) was 67,643 lb (30.7 mt) of shucked scallop meats.

For the Bering Sea area, calculation of catch limits may be more difficult. Catches from this area have been very sporadic, and few vessels had made more than one trip into the area in the 1980s. The area had been fished under an "exploratory permit" though ADF&G, but a sizable effort did not occur until 1993. In 1993 and 1994, catches were limited by crab bycatch caps. Average catch for the Bering Sea area for these 2 years was 519,000 lb (235.4 mt).

In Cook Inlet, a constant harvest level of 20,000 lb (9.1 mt) per year has been attained; virtually all the catch has come from the Kamishak district in EEZ waters. Catch limit specification for the Aleutian Island area may require a modified approach, as the area was included in the Bering Sea for reporting purposes through 1994. Some pink scallops had previously been caught in this area.

Each year, TACs will be reviewed during the annual specification process. Generally, without an annual research survey, such year to year adjustments would be based on shifts in population size/age structure coupled to changes in area-specific CPUE. For example, declines in CPUE may indicate a decrease in stock abundance. A shift in age structure to younger, smaller scallops may indicate that rates of exploitation and scallop natural mortality exceed growth and recruitment of the stock. Taken together, these qualitative changes would indicate that the harvest should be lowered. Conversely, opposite trends in size/age structure and CPUE would suggest that the ABC could be raised. Conceivably, observer data on size/age structure of scallop stocks may be amenable to quantitative methods for estimation of stock abundance (Parrack 1992). If so, future TACs could be specified as catch quotas based on a fixed exploitation rate of scallop stock biomass estimates. An appropriate exploitation rate could be based on life history traits (Clark 1991) of weathervane scallops such as  $F=M=0.16$ .

For 1996, the Council may recommend that NMFS allow no scallop harvesting in Prince William Sound area. Information collected by the U.S. Coast Guard (USCG) suggested that a vessel not registered with the State caught approximately 54,000 lb (24.5 mt) of scallops in the Prince William Sound area in early 1995. This catch was taken in addition to the 48,000 lb (21.8 mt) reported caught by registered vessels. Thus, the total 1995 removals from the area exceeded the GHF of 50,000 lb (22.7 mt), and put the stock in an overfished condition based on best available information. The State has suggested that this area may not be opened in 1996 due to resource concerns.

There are two options to set catch limits for regulatory areas. The first option would be to set an overall TAC for each area, and landings would accrue towards the catch limit regardless of where they were taken (EEZ or State waters). The second option would be to set separate TACs for State and EEZ waters within each regulatory area.

**Option 1:** (Preferred) Set scallop catch limits for EEZ and State waters together. TACs would be set for each registration area (and district, if applicable), and would be managed and monitored as a whole regardless of where the catch is taken relative to the EEZ or within State waters. OY would need to be increased to 1.8 million lb (816.5 mt) to reflect landings from State waters.

**Option 2:** Set scallop catch limits for the EEZ portion only. Sum of TACs for the EEZ portion of all regulatory areas would fall within the specified OY range (0-1.1 million lb (0-499 mt)). Within each regulatory area, the proportion of TAC for EEZ waters would be set in proportion to best available information regarding proportion of the stock in the EEZ versus State waters. Management and monitoring would be separate for each. NOAA General Counsel has suggested that Federal scallop harvest limits apply to Federal waters only, and not extend into State waters, as is the case with groundfish.

### 1.6.5 Crab Bycatch Limits

Scallop dredges, like many other gear types, can be non-selective resulting in the catch of non-targeted species while fishing for scallops. A CBL program for Tanner crab (*Chionoecetes bairdi*), snow crab (*C. opilio*), and red king crab (*Paralithodes camtschatica*) taken by the scallop fishery may be adopted by this amendment. The PSC program would be based on bycatch limits (or caps) on the number of crabs of all sizes caught in the scallop fishery within registration areas. When a CBL is reached in a designated registration area, the affected area would be closed to fishing for scallop for the remainder of the fishing year.

#### *Bering Sea Area*

In January 1995, the Council recommended that bycatch limits be set for Tanner crab, snow crab, and red king crab in the Bering Sea area. These CBLs would be annually set based on a percentage of total survey crab abundance, which is estimated each year from the NMFS survey. The total survey estimate of abundance is simply the sum of indices for each size group and not the absolute total population. The Council approved the following percentages: *C. opilio*, 0.003176 percent; *C. bairdi*, 0.13542 percent, which equate to about 300,000 *opilio* and 260,000 *bairdi* crab based on the 1994 survey crab abundance. Fishing effort for scallops in the Adak, Bristol Bay, and Bering Sea registration areas is limited or undocumented. Therefore bycatch caps for these areas were set to allow the current fishing fleet adequate opportunity to explore and harvest these scallop stocks while protecting the crab resource. Tanner crab CBLs were calculated using a catch rate of 15 Tanner crab and 17 snow crab per tow, and 8 vessels fishing 24 tows per day, 30 days per month for 3 months.

Also in January, the Council notified the public that a percentage within the range 0.00176 percent to 0.0176 percent for red king crab was being considered for final approval in April 1995. These percentages equate to approximately 500 to 5,000 red king crab given 1994 population size (28.4 million crabs). These numbers were chosen as a tradeoff between controlling the level of crab bycatch and allowing some exploratory dredging to find new beds. Bycatch of red king crab in the Bering Sea totaled 1 crab (expanded to 6) in 1993, and 55 crab in 1994. Scallop industry representatives were concerned about the possibility that, with a very low CBL, one vessel could intentionally shut down the entire fleet before OY is attained. In April 1995, the Council notified the public that red king crab CBL would be set as a fixed or floating cap based on crab abundance, with options of 500 or 3,000 crab limits to be analyzed. These limits equate to percentages of 0.00176 percent (500 crabs) and 0.01056 percent (3,000 crabs) based on the 1994 survey. In June, the Council stated that it's preferred option would be to set the Bering Sea red king crab CBL within the 500 to 3,000 range as an annual specification.

#### *Gulf of Alaska and Aleutian Islands Areas*

Bycatch standards were approved by the Alaska Board and are determined yearly by ADF&G based on the most current information on the distribution of crab resources. Standards have been set for red king crab and Tanner crab in the GOA and Aleutian Islands areas, in addition to the Bering Sea. Bycatch standards for Alaskan scallop fisheries were first instituted by the State in July 1993. With the exception of Yakutat and Southeast areas, crab bycatch caps were specified for scallop fisheries in all registration areas. The following paragraphs describe the State's specification process used to establish bycatch caps in 1993. These caps were scheduled to change from year to year as new information about the scallop and crab populations and fisheries became available. The following paragraphs describe how the 1994 crab bycatch numbers were calculated by the State.

In Prince William Sound area, the State has set limits in both the Eastern and Western Districts. The Eastern District (waters east of 146 degrees W. longitude) crab bycatch was set at 1/2 percent of the last 3 years targeted crab catch (1980/81-1982/83) in the Eastern district. This equaled 500 Tanner crab for 1994. No estimate of Tanner crab abundance was made from survey data for the district in 1992 because of extreme low catches. In the Western District (waters west of 146 degrees W. longitude), the Tanner crab bycatch was set at 1/2 percent of the most recent years survey data, or 130 Tanner crab for 1994.

In the Kodiak, Alaska Peninsula, Dutch Harbor, and Cook Inlet regulatory areas, the crab bycatch cap for a scallop fishery is 1 percent of the total crab stock biomass estimate in areas with a commercial harvest of that crab species during the most recent season. In areas closed to directed fishing for a crab species during the past season, the crab bycatch cap for a scallop fisheries is 1/2 of 1 percent of the total most recent crab stock estimate. Bycatch caps are expressed in numbers of crabs and are for all sizes of crabs caught in a scallop fishery.

There are two options for setting PSC caps, similar to the options for harvest limits. The first option would be to set the caps for the entire registration area. The second option would be to set bycatch limits separately for the EEZ and State waters.

**Option 1:** (Preferred) Set crab bycatch caps for EEZ and State waters together. PSC caps would be set for each registration area (and district, if applicable), and would be managed and monitored as a whole regardless of where the PSC is taken relative to the EEZ or within State waters.

**Option 2:** Set CBLs for the EEZ portion only. Within each regulatory area, the proportion of allowable crab bycatch for EEZ waters would be set in proportion to best available information regarding historical catches from the EEZ versus State waters. Management and monitoring would be separate for each. NOAA General Counsel has suggested that Federal limits may apply to Federal waters only, and may not extend into State waters. This is also the case with groundfish catch and PSC limits.

Table 1.6.5 Crab bycatch limits set by ADF&G for the 1994 scallop fishery.

<i>Regulatory Area</i>	<i>Species</i>	<i>Bycatch Limit</i>
PWS (Eastern District)	Tanner crab	500
PWS (Western District)	Tanner crab	130
Kodiak (Shelikof)	King Crab	219
	Tanner crab	98,000
Kodiak (Northeast)	King Crab	123
	Tanner crab	143,000
Alaska Peninsula	King crab	119
	Tanner crab	44,000
Dutch Harbor	King crab	9
	Tanner crab	6,000
Cook Inlet (Kamishak District)	King crab	60
	Tanner crab	29,000
Cook Inlet (Outer/Eastern)	King crab	98
	Tanner crab	2,170
Bering Sea	King crab	17,000
	Tanner crab	260,000

Source: ADF&G

### 1.6.6 Closed Waters

Specific areas may be closed to scallop fishing under regulations implementing the amended FMP. Closure of these areas to scallop fishing may be necessary to protect crab resources by reducing the impact of dredging on crabs and their habitat. Many areas of the EEZ have been closed to scallop fishing by the State to protect crab resources. Other areas have been closed under Federal groundfish regulations for the same reasons. Two options for closed waters are highlighted in this document. Area descriptions for each of these options are found in Appendix D.

**Option 1:** Waters closed to scallop fishing by State regulations. *Adopt as closed waters to scallop fishing all waters previously closed to scallop fishing under State regulations.*

Prior to implementation of a Federal FMP, State regulations prohibited commercial fishing for scallops in certain waters. Although the majority of closed waters to scallop fishing under State regulations were within 3 miles, some waters in the EEZ have also been closed by the State. Many of these closures have been in the regulations for years. Waters off Yakutat were closed by the Board to protect subsistence users. Areas in Prince William Sound off the Copper River were closed to reduce bycatch on depressed stocks of Dungeness crabs. The rationale for the closed areas in the EEZ around the south end of Kodiak and Marmot Bay was based on red king crab bycatch concerns. In 1990, the Board closed other areas around Kodiak Island, including the west side bays, to protect depressed king and Tanner crab populations. The Unimak closure was adopted in the early 1970's to protect king crab habitat. The State closed EEZ waters off Mitrofanina Island in the mid-1980s to protect Tanner crab populations. More recently, the Petrel Banks area of the Aleutian Islands was closed to prevent interactions of scallop gear with crabs.

Although areas have been closed by State regulations for years, many of these areas are open to bottom trawling, and public testimony to the Council has indicated concern about an apparent inconsistency to the regulations. Public testimony has also indicated that experimental fishing in the Kodiak closed area in 1993 resulting in high scallop catch and little or no crab bycatch. Data from trawl surveys, and perhaps crab fishery data could be examined for abundance and distribution of crabs in these areas to determine if some areas should be reopened in the future.

**Option 2:** (Preferred) Waters closed to trawling by Federal regulations. *Adopt as closed waters to scallop fishing only those waters of the EEZ closed to groundfish trawling to protect crabs and their habitat as areas closed to scallop fishing.*

Option 2 would close to scallop fishing only those EEZ waters closed to groundfish trawling under Federal regulations. More specifically, the FMP would be amended to close all waters in the GOA and BSAI that have been closed to groundfish trawling to protect crab or their habitat; including the Kodiak king crab protection areas, the Bristol Bay crab protection zones, and the Pribilof Islands Habitat Conservation Area. The potential impacts for closing these areas have been fully analyzed, and because no scallop fishing takes place in these areas, no additional analysis is proposed. This option brings some consistency to the closed water regulations for the scallop and groundfish fisheries.

The areas described by this option are those areas (Kodiak king crab protection zones, Bristol Bay crab protection zones 512 and 516, Pribilof Islands Habitat Conservation Area) that have been closed to groundfish trawling to protect crabs. Analysis of the trawl closures were completed for the various groundfish plan amendments (NPFMC 1986, 1992b, 1994), and incorporated here by reference. Because scallop fishing has not occurred to any extent in these areas, no additional analysis is proposed.

**Option 3:** *Adopt as closed waters to scallop fishing both those waters of the EEZ closed to groundfish trawling to protect crabs and their habitat and all waters previously closed to scallop fishing under State regulations.*

#### 1.6.7 Inseason Adjustments

This management measure would allow NMFS to make inseason adjustments such as the closure, extension, or opening of a season in all or part of a scallop registration area; and the adjustment of TAC and PSC limits. Harvest ranges for scallops and crab bycatch limits have been set by ADF&G for a new fishing year based on the best biological, ecological, and socioeconomic information available. ADF&G has managed the fishery very intensely, which allows for inseason adjustments to the preseason levels. State regulations require each vessel to carry an observer at all times (except in the Kamishak District of Cook Inlet) to provide timely data for monitoring scallop catches relative to GHRs and for monitoring crab bycatch. This information is required by ADF&G for potential adjustment of GHRs based on changes in stock status and productivity.

New information and data relating to stock status may become available to the Regional Director and/or the Council during the course of a fishing year that warrants inseason adjustments in a fishery. Such changes in stock status might not have been anticipated or were not sufficiently understood at the time harvest levels were being set. Such changes may become known from events within the fishery as it proceeds, or they may become known from new scientific survey data. For example, NMFS may make inseason adjustments to specified crab bycatch limits to incorporate the results of summer crab abundance surveys. Certain changes warrant swift action by the Regional Director to protect the resource from biological harm by instituting gear modifications or adjustments through closures or restrictions. Other changes warrant action by the Regional Director to provide greater fishing opportunities for the industry by instituting time/area adjustments through openings or extension of a season beyond a scheduled closure.

The need for adjustment may be related to several circumstances. For instance, certain target or bycatch species may have decreased in abundance. When current information indicates that a stock has decreased in abundance, allowing a fishery to continue to a harvest level now known to be too high could increase the risk of overfishing that stock. Likewise, current information relating to prohibited species (i.e., those species that must be returned to the sea) might become available that indicates their abundance has decreased. Conservation measures limited to establishing PSC limits for such prohibited species may be necessary during the course of the fishery to prevent jeopardizing the well-being of prohibited species stocks.

New information may indicate that a prohibited species was more abundant than was anticipated when PSC limits were set. Closing a fishery on the basis of the preseason PSC limit that is proven to be too low would impose unnecessary costs on the fishery. Increasing the PSC limits may be appropriate if such additional mortality inflicted on the prohibited species of concern would not impose detrimental effects on the stock or unreasonable costs on a fishery that utilize the prohibited species. However, adjustments to target quotas or PSC limits which are not initially specified on the basis of biological stock status is not appropriate.

The Council has found that inseason adjustments are accomplished most effectively by management personnel who are monitoring the fishery and communicating with those in the fishing industry who would be directly affected by such adjustments. Therefore, the Council has recommended that the NMFS Regional Director make inseason adjustments to conserve fishery resources on the basis of all relevant information. Using all available information, the Regional Director may extend, open close or reopen fisheries in any or part of a regulatory area, or restrict the use of any type of fishing gear as a means of conserving the resource. The Regional Director may also change any previously specified TAC or CBL if such are proven to be

incorrectly specified on the basis of the best available scientific information or biological stock status. Such inseason adjustments must be necessary to prevent one of the following occurrences:

1. The overfishing of any scallop stock or other resource, including those for which bycatch limits have been set.
2. The harvest of a TAC for any scallop stock, the taking of a CBL, or the closure of any fishery based on a TAC or CBL which, on the basis of currently available information, is found by the Regional Director to be incorrectly specified.

The types of information which the Regional Director must consider in determining whether stock conditions exist that require an inseason management response are described, as follows, although he is not precluded from using information not described but determined to be relevant to the issue.

1. The effect of overall fishing effort within a regulatory area.
2. CPUE and rate of harvest.
3. Relative abundance of stocks within the area.
4. The condition of the stock within all or part of a regulatory area.
5. Any other factors relevant to the conservation and management of scallops or any incidentally caught species which are designated as a prohibited species or for which a CBL has been specified.

However, the Regional Director is constrained in his choice of management responses to prevent potential overfishing by having to first consider the least restrictive adjustments to conserve the resource. The order in which the Regional Director must consider inseason adjustments to prevent overfishing are specified as: (1) Any gear modification that would protect the species in need of conservation protection, but which would still allow fisheries to continue for other species; (2) a time/area closure which would allow fisheries for other species to continue in non-critical areas and time periods; and (3) total closure of the management area and season.

The procedure which the Regional Director must follow requires that NMFS publish proposed adjustments in the Federal Register before they are made final, unless NMFS finds for good cause that such notification is impracticable or contrary to the public interest. If NMFS determines that the prior comment period should be waived, he is still required to request comments for 15 days after the notice is made effective, and respond to any comments by publishing in the Federal Register either notification of continued effectiveness or notification modifying or rescinding the adjustment.

To manage effectively the scallop resource throughout its range, the Regional Director must coordinate inseason adjustments, when appropriate, with the State to assure uniformity of management in both State and Federal waters. Any inseason time/area adjustments made by the Regional Director would be carried out within the authority of the FMP. Such action is not considered to constitute an emergency that would warrant a plan amendment within the scope of the Magnuson Act. Any adjustments will be made by the Regional Director by such procedures provided under existing law. Any inseason adjustments that are beyond the scope of the above authority will be accomplished by emergency regulations as provided for under section 305(e) of the Magnuson Act.



### 1.6.8 Fishing Seasons

This amendment allows NMFS, after consulting with the Council, to set fishing seasons for scallops. Fishing seasons may be used to protect scallops during the spawning and settlement portions of their life cycle, or to distribute temporally the harvest. Normally the fisheries have been open during these periods as the spawning may extend over several months. Weathervane scallops are dioecious and spawn once annually in May to July depending on location (Hennick 1970). Fisheries conducted during sensitive biological periods should be designed to prevent any irreparable damage to the stocks. For example, fishing could be prohibited during spawning, settlement, or other critical period in scallop life cycles. As such, providing for a closure of fishing season could increase economic returns from the resource and reduce fishing variable costs, such as fuel and observer costs. Fishing seasons are generally regulated primarily to spread out harvest among time periods, allowing for better monitoring and data collection.

Establishment of fishing season shall take into account safety considerations. Fishing seasons could potentially affect the operation of fishing vessels and safety risks taken by vessel operators under adverse weather or ocean considerations. Fishing seasons shall be established to minimize potential weather related safety issues. Seasons shall also be flexible to allow for the safe conduct of the fishery. NMFS shall consider and provide for temporary adjustments, after consultation with the USCG and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions that affect the safe conduct of the fishery. Any such adjustments shall not adversely affect conservation efforts in other fisheries or discriminate among participants in the affected fishery.

Alternative 2 would establish season start dates identical to those previously set by the State, such that openings in the EEZ will coincide with openings in State waters. Within each regulatory area, the season would close when the TACs or CBLs were reached, or on June 30 in Registration Areas A, D, E, and portions of H; February 15 of the following year in Registration Areas K, M, O, R, and Q; and October 31 in the Kamishak District of Registration Area H.

Only two out of the five Westward Region regulatory areas were closed prior to the February 15 date. Recent fishery experience also indicates that the Kamishak District of Registration Area H (Cook Inlet) fishery will harvest the TAC prior to the end of the season on October 31.

Specification of fishing seasons may be important to attainment of the biological conservation, economic and social, vessel safety, and gear conflict objectives of the FMP. Fishing seasons have generally regulated to spread out harvest among time periods (allowing for better monitoring and data collection), and to reduce crab bycatch and interactions with crabs. January 10 is the State's opening date for the eastern areas (A, D, E), where bycatch is not of primary concern. July 1 is the State's opening date for the western areas (K, M, R, O, Q) to avoid interactions of the scallop fishery with molting king crabs. The State's season opening date for Cook Inlet (Area H) is August 15 due to bycatch concerns. After molting, Cook Inlet red king crab move south of the scallop grounds such that they are generally gone from the area by August. The late summer opening also allows Tanner crabs in Cook Inlet to develop firm shells that are more resistant to damage if taken as bycatch.

Table 1.6.8 Alternative 2 Season Opening and Closure Dates.

<i>Scallop Registration Area</i>	<i>Opening Date</i>	<i>Closure Date</i>
Area A (Southeastern)	January 10	June 30
Area D (Yakutat)	January 10	June 30
Area E (Prince William Sound)	January 10	June 30
Area H (Cook Inlet)	July 1	June 30
Area H (Kamishak District)	August 15	October 31
Area K (Kodiak)	July 1	February 15
Area M (Alaska Peninsula)	July 1	February 15
Area O (Dutch Harbor)	July 1	February 15
Area R (Adak)	July 1	February 15
Area Q (Bering Sea)	July 1	February 15

#### 1.6.9 Observer Requirements

As in the need for reporting requirements, the Council and NMFS must have the best available biological and socioeconomic information with which to carry out their responsibilities for conserving and managing scallop resources. To augment this information, NMFS, in consultation with the Council, will require each U.S. fishing vessel that catches scallop from, or receives scallops from the EEZ, to accommodate a observer certified by ADF&G or NMFS. Such accommodation may be exempt from this requirement under an Observer Plan prepared by the Council according to regulations implementing the FMP. The purpose of the at-sea observer requirement is to verify catches, including those discarded at sea, and collect biological information of types required in the Observer Plan, which will include information on marine mammals and birds. Observers associated with the Marine Mammal Protection Act Observer Program will be considered to be observers for purposes of the Observer Plan if they meet requirements of observers for this Program.

Observers are necessary aboard scallop fishing vessels to obtain needed information such as CPUE, size composition of the catch, and other information required to manage the scallops stocks in the management area. Any vessel fishing for scallops within the management area may be required to take aboard an observer, when so requested by the Director, Alaska Region, NMFS. Such an observer requirement may be imposed, notwithstanding the existence of a State mandated observer program for State registered vessels. To the maximum extent practicable, the Regional Director will coordinate any Federal observer program with that required by the State.

In June 1995, the Council voted to urge NMFS to require 100 percent observer coverage on all vessels fishing for scallops under this plan. In 1993 and 1994, the State mandated all vessels fishing for scallops carry an observer (100 percent coverage), primarily due to bycatch concerns but exempted vessels fishing in Registration Area H (Cook Inlet). ADF&G has indicated that it would oppose anything less than 100 percent coverage for all areas (except the Kamishak District of Cook Inlet), even under a federally managed

scallop fishery. Alternative 2 would require 100 percent observer coverage except for vessels less than 80 ft (24.4 m) length overall fishing in Registration Area H (Cook Inlet).

#### 1.7 Limited Access Management Measures Considered for Alternative 2, Amendment 2

A system for limiting access, which is an optional measure under section 303(b) of the Magnuson-Stevens Act, is a type of allocation of fishing privileges that may be used to promote economic efficiency or conservation. For example, "*limited access may be used to combat overfishing, overcrowding, or overcapitalization in a fishery to achieve OY*" (50 CFR 600.330(c)). The Magnuson-Stevens Act (Section 3(28)) further defines "...The 'optimum' with respect to the yield from a fishery, means the amount of fish -- (A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; (B) is prescribed on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant social, economic, or ecological factor; and (C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery."

A moratorium is proposed as an essential element to keep the fishery from being further overcapitalized. The intent of the proposed vessel moratorium is to stabilize the size and capitalization of the scallop fleet during the time that the Council is considering limited entry alternatives for this fishery. As such the vessel moratorium does not resolve the underlying problems of existing overcapitalization and excess effort in the fishery, but may prevent these problems from worsening while comprehensive solutions are being developed. The qualifying criteria and other elements previously adopted by the Council, and the analysis of these options are detailed in Chapter 3.

Permit limitation or participant limitation with individual fishing quotas (IFQ's) are two other forms of limited access that may be considered for management of the scallop fishery.<sup>7</sup> Although not fully analyzed here, the Council has expressed interest in using IFQ's as a management measure for the scallop fishery. A study of the Atlantic sea scallop fishery found that significant benefits would accrue to the industry and the Nation if an IFQ program were implemented for the sea scallop fishery (Sutinen et al. 1992). However, given the extended time frame necessary to develop and analyze IFQ's for the Alaska scallop fishery, a moratorium would serve to stabilize capitalization of the fleet while limited entry alternatives for the fleet are being considered. Under an IFQ system, the TAC is divided into units (shares) that are then allocated to individuals. Individual shares allow fishermen to adjust their strategies to harvest efficiently the resource. IFQs were recently implemented for the halibut and sablefish fixed gear fisheries in the North Pacific. As such, monitoring systems and other infrastructure will be already instituted should an IFQ system for scallops be proposed. An IFQ program for scallops would require additional analysis for plan amendment.

One potential drawback to all limited access measures is that they would apply only to Federal waters. Hence, under an IFQ system, quotas would not apply to state waters where 40 percent of the historic harvest has occurred. Similarly, under a moratorium or license limitation system, state waters would still be under open access, potentially creating problems with monitoring and enforcement.

At its September 1993 meeting, the Council tentatively identified its preferred moratorium options, but requested that additional analysis be done to assist with determining appropriate qualifying criteria. The options that the Council identified were: (1) Vessels must have participated in either 1991 or 1992, or

---

<sup>7</sup>Note: The Magnuson-Stevens Act now contains a 3-year moratorium on implementation of new IFQ programs. As a consequence, no IFQ program is under consideration for the scallop fishery off Alaska.

participated for a minimum of 4 years within the qualifying period (January 1, 1980 to January 20, 1993), or (2) Vessels must have participated in either 1990, 1991, 1992 or 1993 through July 30, or participated for a minimum of 4 years within the qualifying period (January 1, 1980 to January 20, 1993). Additional information was provided in the draft FMP dated November 30, 1993.

In April 1994, the Council recommended the following qualifying criteria as its preferred option. To qualify under the moratorium, a vessel must have participated (made at least one landing) in 1991 or 1992 or 1993, or must have participated for at least 4 years between January 1, 1980 and January 20, 1993. The 1980 date was adopted because data prior to 1980 were not available, and more importantly, 1980 marked the first year of the second phase of the scallop fishery, and was thus considered to be a reasonable base year for historical participation. Note that less than 3 vessels participated in 1974, 1976, 1977, and 1979, and no vessels participated in 1978. The

January 20, 1993, date was adopted as a cutoff date for historic participation, because vessels making landings in 1993 would be included as recent participants; participation after January 20, 1993, would not accrue towards historic participation. The Council did not include those vessels that participated in 1990, but did not have historic participation or more recent participation in the fishery, as moratorium qualified. It was determined that these vessels had neither recent nor historic dependence on the fishery. Vessels that were in the "pipeline" to fish for Alaskan scallops (i.e., under construction, being refitted, relocated, etc.) but had not made a required landing, would not qualify under the moratorium. The Council had been discussing a scallop moratorium throughout 1993, and by including the 1993 participants as moratorium qualified would address the problem of those vessels in the "pipeline."

Permits would be issued to the owner of each vessel at the time of qualifying. If two owners qualify for a single vessel, the most recent owner qualifies, such that each vessel generates only one permit. Vessels that made landings from Cook Inlet only would receive permits for that area only, and no crossovers between Cook Inlet and other areas will be allowed unless a vessel qualifies for both areas.

In addition to qualifying criteria, the other moratorium elements are: Duration, crossovers, reconstruction, replacement, exemptions for small vessels, and appeals. The Council's preferred options for these moratorium elements are listed Table 1.6. A 3-year limitation on the duration of the moratorium should provide sufficient time to develop, approve, and implement a permanent limited access program for the affected fisheries, or to decide to abandon limited access in favor of open access management measures. Crossovers of vessels between fisheries (scallop to or from groundfish, crab, salmon, or halibut) would not be allowed, except for those vessels qualified under both the scallop and groundfish moratoria. Additional crossovers would amplify any economic and biological impacts associated with the increased capacity of the fleet. Reconstruction and replacement of vessels was limited to prevent further increase in the capacity of the fleet. Regarding exemptions, the preferred option was to allow exemptions for small vessels, but to limit the gear used by these vessels to gear other than dredges or trawls. Such an exemption would allow small vessels to develop alternative methods of harvesting weathervanes and other scallop species, such as by diving or longlining.

Table 1.7 Scallop fishery moratorium elements adopted by the Council in April 1994, and reaffirmed in June 1995.

---

<u>Qualifying Criteria:</u>	Vessels must have participated (made at least one landing) in 1991 or 1992 or 1993, <u>or</u> must have participated for at least 4 years between January 1, 1980 and January 1, 1993. Vessels that were in the “pipeline” to fish for Alaskan scallops (i.e., under construction, being refitted, relocated, etc.) but had not made a required landing, would not qualify under the moratorium. Permits will be issued to the most recent owner of the vessel at the time of qualifying. Vessels that made landings from Cook Inlet only would receive permits for that area only, and no crossovers between Cook Inlet and other areas will be allowed unless a vessel qualifies for both areas.
<u>Length of Moratorium:</u>	The moratorium will remain in effect until the Council repeals or replaces; not to exceed 3 years from date of implementation, but Council may extend for 2 years if a permanent limited access program is imminent.
<u>Crossovers:</u>	Crossovers to other fisheries (groundfish, crab, or halibut) during the moratorium will not be allowed, except for vessels that were qualified under both the scallop and groundfish moratoria.
<u>Reconstruction:</u>	Vessels may be reconstructed during the moratorium. If physical reconstruction started on or after January 20, 1993, the new size is restricted to a 20 percent increase in vessel length (specified as length overall, LOA). Only one upgrade is allowed.
<u>Replacement:</u>	Qualifying vessels can be replaced with non-qualifying vessels as often as desired so long as the replaced vessel leaves the fishery or bumps another qualifying vessel out in the case of multiple transactions. Vessel size can be increased as many times as desired, but is restricted to a 20 percent maximum increase in original qualifying vessel length (LOA). For vessels lost or destroyed before or during the moratorium, qualifying vessels can be replaced with non-qualifying vessels subject to a 20 percent maximum increase in vessel length (LOA). Replaced vessels cannot be salvaged and come back into the fishery.
<u>Exemptions:</u>	Vessels 26 ft or less in the GOA and vessels 32 ft or less in LOA in the BSAI are exempted from the moratorium only if they use gear other than dredges or trawls (hence, diving would be allowed from these vessels).
<u>Appeals:</u>	The appeals procedures will be similar to those for the sablefish and halibut IFQ program.

---

## 1.8 Management Measures Not Considered Under Alternatives 1 and 2

### 1.8.1 Reporting Requirements

The State has required reporting of scallop catches by individual vessel operators since 1968. Current State requirements (5 AAC 39.130) include: Reporting the company or individual that purchased the catch; the full name and signature of the permit holder; the vessel that landed it with its license plate number; the type of gear used; the amount of gear; the weight of scallop meats landed; the dates of landing and capture; and the location of capture. Processing companies are required to report this information for each landing purchased, and vessel operators are required to provide information to the processor at the time of sale.

The Council and NMFS must have the best available biological and socioeconomic information with which to carry out their responsibilities for conserving and managing scallop resources, as well as other resources, such as crab that are incidentally caught in the scallop fishery. This information is used for making inseason and inter-season management decisions that affect these resources as well as the fishing industry that utilize them. This information is also used to judge the effectiveness of regulations guiding these decisions. The Council will recommend changes to regulations when necessary on the basis of such information.

NMFS does not propose any additional Federal requirements as part of Amendment 1 to the FMP. Because 100 percent observer coverage would be mandatory under Amendment 1 (except for small vessels in Cook Inlet) sufficient data to manage the fishery will be available from observer reports and State reporting requirements. Should the Council find it necessary to adopt Federal reporting requirements for the scallop fishery, such requirements could be implemented through future amendments to the FMP.

### 1.8.2 Permit Requirements

In order to facilitate rapid reopening of the scallop fishery under Amendment 1, no Federal permit requirement is proposed at this time. Alaska may continue to require vessels registered under the laws of the State to obtain and carry ADF&G scallop permits. Amendment 2 would require the issuance of moratorium permits; however, no additional fishing permits would be required under Amendment 2.

### 1.8.3 Minimum Size Limits

Minimum size limits are a standard tool used by fishery managers to meet biological conservation and economic and social objectives. Often minimum size limits are based on the average size of maturity is intended to allow scallops to spawn at least once before being subjected to harvest. Evidence available for weathervane scallops suggests that most are sexually mature at age 3, and all are sexually mature by age 4. Because of different growth rates, age 3 scallops average 3.3 inches (85 mm) in the Yakutat area and 4.1 inches in the Kodiak area (Hennick 1970). Thus, minimum size limits would need to be set depending on an area specific life history pattern.

Based on experience with Atlantic sea scallops, establishment of minimum size limits require enforcement considerations (Kruse et al. 1993). The effectiveness of minimum meat count regulations for sea scallops has been somewhat negated by mixing, soaking, and transfer of small meats prior to vessel unloading. An alternative to meat counts is minimum shell height regulations, although weathervane scallops are primarily shucked at sea.

Minimum size limits for scallops may not be needed at this time because (1) scallop catch specifications limit the amount of scallops taken, (2) larger scallops are targeted due to higher price and fewer scallops to shuck per pound, (3) the 4 inch minimum dredge ring size already selects for the larger sized scallops, and (4) enforcement considerations described above.

#### 1.8.4 Guideline Harvest Ranges and Levels

Preseason "guideline harvest levels (GHL)," and "guideline harvest range (GHR)," is the terminology used by ADF&G as catch quotas. The term GHL corresponds closely to the term "total allowable catch (TAC)" used by this amendment for scallops and used in the GOA and BSAI groundfish FMPs. This amendment proposes the alternative terminology of TAC and ABC for EEZ quota setting; this will assist the public and managers with understanding the different Federal and state quotas for each regulatory area. The ABC and TAC terminology also conforms to previously approved Federal regulatory language.

## 2.0 NEPA REQUIREMENTS: ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

An environmental assessment (EA) is required by the NEPA to determine whether the action considered will result in a significant impact on the human environment. The environmental analysis in the EA provides the basis for this determination and must analyze the intensity or severity of the impact of an action and the significance of an action with respect to society as a whole, the affected region and interests, and the locality. If the action is determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact (FONSI) would be the final environmental documents required by NEPA. An environmental impact study (EIS) must be prepared if the proposed action may cause a significant impact on the quality of the human environment.

An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose and alternatives were discussed in previous Sections, and the list of preparers is in Section 9. This section contains the discussion of the environmental impacts of the alternatives including impacts on species listed as threatened and endangered under the ESA.

The environmental impacts generally associated with fishery management actions are effects resulting from (1) overharvest of fish stocks which might involve changes in predator-prey relationships among invertebrates and vertebrates, including marine mammals and birds, (2) physical changes as a direct result of fishing practices affecting the sea bed, and (3) nutrient changes due to fish processing and discarding fish wastes into the sea. The proposed regulatory amendment is intended to result in improved conservation and management of scallop stocks in the EEZ off Alaska.

### 2.1 Potential Impacts on the Scallop Resource

The biological and environmental impacts on the scallop resource will depend on the alternative chosen. Under Alternative 1, the fishery will be closed in the EEZ, effectively eliminating any impact of the fishery on the environment in the EEZ until the closure expires; after that time, overexploitation could occur by unregulated vessels. Alternative 2 would incorporate all or most of the State's management measures, including establishment of annual catch quotas. With catch quotas, or TACs, a more orderly fishery would be conducted. Because harvest would be limited by TACs, there is a potential for a derby-style fishery, in which each vessel harvests as quickly as possible. Nevertheless, overall harvest levels would be maintained and the potential for overfishing would be reduced.

Under Alternative 1, the status quo, no scallop fishing would be allowed in the EEZ until August 29, 1996<sup>8</sup>. However, there would be no regulation that prevents vessels and fishermen not licensed by the State, to fish for scallops in the EEZ after the August 28, 1996, FMP closure expires. State authority and jurisdiction for fisheries in the EEZ depends on vessels being registered with the State. Since the State cannot extend its jurisdiction to non-State registered vessels in the EEZ, scallop stocks can be potentially overharvested by non-licensed crew and vessels, which could make landings in states other than Alaska. The environmental impacts of an unregulated scallop fishery in the EEZ are extensively analyzed in the EA/RIR prepared for the Scallop FMP (NPFMC 1995).

---

<sup>8</sup>Note that Amendment 1 has been approved and implemented. Therefore, Amendment 1 is the new status quo for the purpose of analyzing Amendment 2.



Because there is no regulation of non-State registered vessels, there could be overfishing under Alternative 1 (Status Quo) after August 28, 1996. The weathervane scallop stocks were apparently overfished in the early 1970's to the point that no landings were made in 1978. If effort and landings were allowed to increase, stocks could be subject to overfishing, with a resulting boom and bust fishing cycle. Other scallop populations around the world are vulnerable to overharvest, with slow stock recovery (Aschan 1991; Bannister 1986; Bourne 1986; McLoughlin et al. 1991; Orensanz 1986). Significant increases in Alaskan scallop harvests may jeopardize stock health and sustained fishery yield. The GHLS recently adopted by the State will restrict landings in the areas where GHLS are specified only for State registered vessels. For those areas without GHLS, landings may be restricted by State CBLs, and by the amount of effort in those areas only for State registered vessels.

Alternative 2 (preferred) would address the problem of State management not being able to control non-State registered vessels, and thus prevent overharvesting. State regulations would be reviewed for determination that they meet the criteria for inclusion in Federal management and a suite of Federal regulations would be issued under Amendment 1 that would complement existing State regulations.

Both direct and indirect sources of mortality should be considered in fishery management plans to ensure long-term maintenance of healthy scallop stocks and productive fisheries. Incidental mortality may occur by two mechanisms. Mortality can occur to scallops not captured by dredges. By limiting the number and size of dredges, Alternative 2 would also limit mortality associated with the potential "inefficiency" of scallop dredges. Another source of mortality is associated with the capture of small scallops that are handled and discarded at sea due to size regulations or economic considerations. These sources of mortality, and their relationship to management measures, are discussed below.

Measures to reduce the harvest of immature scallops may increase the long term yield per recruit in the future as more young scallops survive, reproduce, and grow legal size. To the extent that a minimum size measures act to prevent recruitment overfishing, long-term fishery productivity may be higher than levels that would occur without these requirements. Although many undamaged sea scallops that are quickly returned to the sea may experience no side effects (Naidu 1988), mortality may be significant when scallop catches containing rocks are dumped on a vessel's deck (Naidu 1988) or when scallops experience prolonged exposure to unfavorable on board conditions (Medcof and Bourne 1964), such as extreme air temperatures or prolonged desiccation. A submersible study of sea scallops from the Mid-Atlantic indicated low mortality (less than 10 percent) for scallops that were captured in dredges and discarded (NEFMC 1988). Mortality of undersized Atlantic sea scallops culled overboard was evaluated by Murawski and Serchuk (1989). In several controlled experiments, it was found that culling mortality for undersized scallops was probably no higher than 10 percent, at least over the short term (1-3 days) of the experiment. Gruffydd (1972) suggested that sand packing in scallop shells may injure the mantle tissues and perhaps cause significant delayed mortality. Shepard and Auster (1991) also discussed survivorship and pointed out that there may be substantial differences between mortality rates for very young scallops and older, legal sized, scallops. On the one hand, smaller scallops are more active and can potentially swim out of the way of an oncoming dredge (see Caddy 1968), but the youngest animals (spat) are attached to the substrate by byssal threads and would be extremely susceptible to dredging activity. A minimum ring size regulation greatly reduces the catch of small scallops, hence reducing discards and discard mortality (Kruse et al. 1993).

Efficiency limits can also be used to reduce the harvest of small scallops. Crew size limits have been implemented to reduce incentives to harvest juvenile scallops (Kruse and Shirley 1994). It has been documented that harvesting rate (really processing rate) for most scallop vessels depends for the most part on crew size (Robert and Jamieson 1986). Because larger scallops are worth more per meat and take the

same amount of processing time as small scallops, a limited crew size provides an economic incentive for vessels to target the larger sized, higher yield, mature scallops.

Several studies have addressed mortality of scallops not captured by dredges. In Australia, this type of fishing gear typically harvests only 5-35 percent 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 percent, 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 which 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 percent) 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 percent versus 7.7 percent. For weathervane scallops, mortality is likely to be lower, as this species prefers smoother bottom substrates consisting of mud, clay, sand, or gravel (Hennick 1970a, 1973).

Atlantic sea scallop beds and the benthic community associated with scallop fishing grounds in the Bay of Fundy was 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 GRT were 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 impact the recruitment of scallops to a productive ground.

## 2.2 Potential Impacts on Benthic Communities and the Physical Environment

Determination of significance requires evaluation whether any fishery management plan or amendment may reasonably be expected to allow substantial damage to the ocean and coastal habitats (NOAA Administrative Order 216-6). Like the gear used to harvest aquatic resources, scallop dredges may have some potential to affect adversely other organisms comprising benthic communities. Potential effects of groundfish gear have been described in prior groundfish plan amendments (e.g., Amendment 18/23 NPFMC 1992, NPFMC 1993). Studies on the potential effects of trawling and dredging are summarized below.

An article from the January 1992 New Zealand Journal of Marine and Freshwater Research, titled "Environmental Impact of Trawling on the Seabed: A Review" (Jones 1992) attempts to review available knowledge on the subject of trawl impacts on the benthic environment. Evidence of trawling, such as furrows from the trawl doors, varies in its depth into the sea-floor and its duration depending upon the "softness" of the bottom being trawled. Potential effects of this bottom alteration are not directly addressed in this report. In terms of sediment re-suspension, the report notes that there are two facets to this issue: (1) Increased, and usually temporary turbidity and (2) vertical redistribution of sediment layers. Both of these

results of bottom disturbance by trawl gear were noted to vary in their duration, primarily dependent upon the depths at which they occurred. The report also concludes that "From the work performed under the aegis of ICES, it would appear that beam trawls, otter trawls, and dredges are all basically similar in their effects. Generally, the heavier the gear in contact with the seabed, the greater the damage. The effects vary greatly, depending on the amount of gear contact with the bottom, together with the depth, nature of the seabed, and the strengths of the currents or tides....The removal of the macrobenthos has variable effects. In shallow water areas where the damage is intermittent, recolonization soon occurs. However, where the macrobenthos is substantially removed and recovery is not permitted, the change is permanent....The evidence is that bottom trawling has an impact on the environment, but that the extent and duration of that impact varies depending on local conditions."

Other sources of information on the effects of trawling or dredging are limited. The GOA Groundfish FMP contains a section titled "Benthic habitat damage by fishing gear." The section concludes that "Any effect of gear dragged along the bottom depends on the type of gear, its rigging, and the type of bottom and its biota. In addition to the target species, the movement of a bottom trawl through an area primarily affects the slow-moving macrobenthic fauna such as seastars and sea urchins. Some bivalves can also be damaged. Although little is known of the effects of these disturbances and damages have on the affected species or their local communities, only minor impacts are suspected."

A report prepared by the Washington Department of Fisheries (1985), titled "Final EIS for the Continued Harvest of Bottomfish in Puget Sound by Commercial Otter Trawl Gears", evaluates the potential adverse effects of otter trawl gear on the marine species, associated biota, marine substrate, water quality, and human activities. The EIS notes negative impacts of trawling including: disturbance of substrate such as otter board tracks, silt suspension, shearing of eel grass and other large algae, some wastage of bottomfish and crab, and net negative impact on recreational bottomfish fisheries. In the conclusions section of the EIS, which addresses effects on long-term productivity, the document state that "Trawling does not cause permanent habitat damage. Biota potentially impacted by trawling show the capability to naturally repopulate a harvested area."

Based on the above trawl studies, any adverse effects of scallop dredges on benthic communities in Alaska are likely lower in intensity than trawl gear. Scallop dredges generally weigh less than most trawl doors, and the relative width they occupy is significantly smaller. A 15 ft (4.57 m) wide New Bedford style scallop dredge weighs about 1,900 lb (0.86 mt) (Kodiak Fish Co. data). Because scallop vessels generally fish two dredges, the total weight of the gear is 3,800 lb (1.72 mt). Trawl gear can be significantly heavier. An 850 HP vessel pulling a trawl with a 150 ft (45.7 m) sweep may require a pair of doors weigh that about 4,500 lb (2.04 mt) each. Total weight of all trawl gear, including net, footrope, and mud gear would weigh about 16,400 lb (45.7 m) (T. Kandianis, personal communication 5/26/95). ICES research has indicated that the heavier the gear in contact with the seabed, the greater the damage, suggesting that scallop fishing may have less impact than bottom trawling.

Although small amounts of coral are caught or damaged by groundfish trawls (NPFMC 1992a), distribution data and limited observer information suggest that little or none is taken by scallop dredges in Alaska. Generally, corals do not have the same habitat requirements as weathervane scallops. Most corals, such as fan corals, bamboo corals, cup corals, soft corals, and hydrocorals occur at greater depths than scallops. The two more abundant species of coral that live at similar depths as scallops occur in habitat consisting of boulders and bedrock, habitats that are not inhabited by most scallop species.

Similar to trawling, dredging may place fine sediments into suspension, bury gravel below the surface and overturn 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 re-suspended sand, and overturning of larger rocks with an appreciable roughening of the sediment surface (Caddy 1968). A study of scallop dredging in Scotland showed that dredging caused significant physical disturbance to the sediments, as indicated by furrows and dislodgement of shell fragments and small stones (Eleftheriou and Robertson 1992). However, the authors note that these changes in bottom topography did not change sediment disposition, sediment size, organic carbon content, or chlorophyll content. Observations of the Icelandic scallop fishery off Norway indicated that dredging changed the bottom substrate from shell-sand to clay with large stones within a 3-year period (Aschan 1991). 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 ploughing 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 (Mayer et al. 1991). 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).

Two studies have indicated that intensive scallop dredging may have some direct impacts on the benthic community. Eleftheriou and Robertson (1992), conducted an experimental scallop dredging in a small sandy bay in Scotland to assess the effects of scallop dredging on the benthic fauna. They concluded that while dredging on sandy bottom has a limited effect on the physical environment and the smaller infauna, large numbers of the larger infauna (mollusks) and some epifaunal organisms (echinoderms and crustaceans) were killed or damaged after only a few hauls of the dredge. However, long term and cumulative effects were not examined. Achan (1991) examined the effects of dredging for islandic scallops on macrobenthos off Norway. Achan found that the faunal biomass declined over a 4-year period of heavy dredging. Several species, including *Stromylocentrotus droebachiensis*, *Pagurus pubescens*, *Ophiura robusta*, and polychaetes showed an increase in abundance over the time period. In summary, scallop gear, like other gear used to harvest living aquatic resources, may impact the benthic community and physical environment relative to the intensity of the fishery.

Regulation of the scallop fishery would reduce potential impacts. Regulation of fishing season could be used to protect scallop during the spawning portions of their life cycle, and protect young during critical periods. Additionally, areas could be closed to dredging as necessary to protect important benthic communities. Weathervane scallops occur at depths ranging from intertidal waters to 300 m, with highest abundance at depths between 45 and 130 m on substrates consisting of mud, clay, sand, or gravel (Hennick 1970a, 1973). In addition to weathervane scallops, such substrates are likely to support populations of starfish, skates, crabs, snails, flatfish, and other groundfish species. Other scallop species are found in different habitats.

Alternative 2 will reduce potential impacts of scallop dredging on benthic communities by limiting scallop dredges used in Alaska. A moratorium will limit the number of vessels and dredges that can be used in the EEZ. Limitations on dredge size will reduce the impact on benthic communities, as larger dredges weigh significantly more. Additionally, seasons could be set, and areas could be closed to dredging, if information indicated that such changes could be beneficial.

Based on the available information detailed above, the alternatives to the status quo are not reasonably expected to allow substantial damage to the ocean and coastal habitats (NOAA Administrative Order 216-6). Scallop dredges may have some potential, in some situations, to affect other organisms comprising benthic communities; however, these effects are not likely to be substantial for the relatively small scale scallop fisheries in Alaska, which would be regulated and restricted under alternative 2.

### 2.3 Potential Impacts on Bycatch of Non-target Species

As with trawl and other gear, scallop dredges have some potential to catch non-target species, particularly those that are slow moving or stationary. Limited data have been collected in past years on incidental catches of crab by dredges targeting weathervane and other scallop species, but the information remains confidential. In some areas, the catches of king and Tanner crabs may be high, and many captured crabs may be lethally damaged (Haynes and Powell 1968; Hennick 1973; Kaiser 1986). Some catches from scallop dredges contain small amounts of other species of crabs, shrimps, octopi, and fishes such as flatfishes, cod, and others (Hennick 1973, Kruse et al. 1993). Starfish, a scallop predator (Bourne 1991), was found to be the primary bycatch in weathervane scallop fisheries off Yakutat (Kruse et al. 1993). Seasonal and area-specific differences in bycatch rates exist. For example, in some areas incidental catches of king crabs may increase in spring as adult crabs migrate inshore for molting and mating, whereas other areas of dense scallop concentrations may possess few king crabs (Hennick 1973) and bycatch may be of little concern in these locations.

More recent bycatch data were collected during the 1993 ADF&G observer program (Urban et al. 1994). Nearly 900 days of scallop dredging were observed, comprising 12,881 hauls. By weight, the catch consisted of weathervane scallops (72.2 percent), starfish (11.4 percent), shells (4.9 percent), skates (1.9 percent), C. bairdi Tanner crab (1.5 percent), and arrowtooth flounder (1.1 percent). Flatfish and other invertebrate species comprised the remaining bycatch. No salmon bycatch was reported. Total bycatch of halibut ranged from less than 30 in Prince William Sound (Area E) to 1,750 in Kodiak (Area K). Total bycatch of Tanner crab in the 1993 scallop fishery was estimated to exceed 580,000 animals. Another 15,000 C. opilio snow crabs were captured. Estimated bycatch of red king crab was 200 or less in all registration areas.

Bycatch of Tanner crabs during the 1993 scallop fishery was analyzed in detail (Urban et al. 1994). Total Tanner crab bycatch varied widely between areas, ranging from 200 in Prince William Sound to 227,000 in the Bering Sea (Area Q). Crab bycatch consists primarily of small (<40 mm cw) immature Tanner crabs. Bycatch rates varied among vessels and areas fished, and ranged from zero to 2,600 crabs per tow-hour. Highest bycatch rates were associated with high scallop catch rates. New injuries were observed in 28 percent of the crabs sampled during the Shelikof scallop fishery. Approximately 13 percent of the Tanner crabs were recorded as dead or moribund before being discarded, with the highest mortality rates occurring on small (<40 mm cw) and large (>120 mm cw) crabs.

Other studies have also enumerated mortality and injury of crab taken as bycatch in the Alaska scallop fisheries. During a scallop survey of Cook Inlet in August 1984, a total of 5 red king crabs and more than 399 Tanner crabs were taken as bycatch in 47 tows (Hammarstrom and Merritt 1985). Of the crab taken as bycatch, 19 percent of the Tanner crabs were injured and mortality was estimated at 8 percent, with most injuries and mortality occurring when the catch was dumped on deck (Hammarstrom and Merritt 1985). Another scallop survey conducted around Kodiak Island in January 1968 had an unspecified bycatch (up to 33 per tow) of red king crabs, with an estimated mortality rate of 79 percent (Haynes and Powell 1968). Observations of the 1968-1972 scallop fishery around Kodiak Island indicated an average bycatch of 4.1

red king crab and 42.5 Tanner crab per tow (Kaiser 1986), with mortality estimated at 19 percent for Tanner crab and 48 percent for red king crab. An average of 0.6 Dungeness crabs per tow were also captured with mortality estimated to be 8 percent.

Bycatch of crab may vary by area, season, and depth. Off Yakutat, Hennick (1973) noted no king crab bycatch. Around Kodiak, king crab catches tended to increase in spring as adults migrated inshore for molting and mating (Hennick 1973). Consistent with other handling studies, newly molted crabs experience higher rates of injury and mortality than hard shelled crab, as a result of scallop dredges (Starr and McCrae 1983). Bycatch rates, injury rates, and mortality estimates do not take into account that scallop vessels dredge over the same bottom, tow after tow. Therefore, impacts of scallop fishing on crab bycatch may be overestimated in some situations.

Current regulations limit bycatch and interaction of crabs and the scallop fishery. King and Tanner crab bycatch limits for Alaskan scallop fisheries were instituted by the State in July 1993. With the exception of Yakutat and Southeast areas, crab bycatch limits were specified for scallop fisheries in all registration areas. In addition, large areas in state and EEZ waters have been closed to scallop fishing, as these areas have showed high concentrations of crabs. However, unrestricted fishing by vessels not registered by the State could increase this bycatch under the status quo after August 28, 1996.

Federal regulation of bycatch in the scallop fishery is considered under Alternative 2. Current regulations for the BSAI and GOA groundfish fisheries provide a number of regimes to manage the incidental take of PSC or bycatch of Pacific halibut, Pacific herring, Pacific salmon, steelhead trout, and king and Tanner crab. One example of bycatch management is time and area closures triggered by attainment of an established PSC limit. PSC limits can be in the form of a percentage of biomass, such as herring in the BSAI, an established number, as with king and Tanner crab in the BSAI, or an estimated mortality rate, as with halibut in both the BSAI and GOA. Though salmon is classified as a PSC, and cannot be retained, it differs from other PSCs in that there is no limit on the number of salmon that can be incidentally taken in the groundfish fisheries. Another program established to address bycatch is the vessel incentive program for the BSAI and GOA trawl fisheries. The Council also as recommended seasonal starting dates for some groundfish fisheries in order that the fisheries are conducted during a time of relatively lower bycatch rates.

Bycatch data collected by State observers in the 1993 scallop fishery (Urban et al. 1994) can be used to analyze bycatch rates of crabs and other species. During the 1993 BSAI scallop fishery (occurring over a 4 month period), a total of 10 vessels made 7,208 tows, to harvest 598,093 lb (271.3 mt) of scallop meat, with a bycatch of 276,500 Tanner crab and 212 king crab (Morrison 1994). On a rate basis, this equates to 83 lb (0.038 mt) of scallops and 38 Tanner crab per tow, or put another way, about 0.46 Tanner crabs per pound (1 Tanner crab per kilogram) of scallop meat harvested. At an average exvessel price of \$6.02 per pound for scallops, gross exvessel value was \$500 per tow. Bycatch rates varied greatly among vessels fishing in the 1993 Bering Sea scallop fishery (Urban et al. 1994). Catch of Tanner crabs per tow-hour ranged from 17 crabs to 203 crabs per tow-hour (median=53, mean=90). Length frequency of Tanner crabs taken as bycatch was not reported, but likely consisted primarily of small juvenile crab.

Fisheries for groundfish species are not expected to be adversely affected under any alternative. Under Alternative 2 (*preferred*) observer data would provide information on bycatch rates of crabs, halibut, and other groundfish.

Given the best available information, as summarized above, implementation of the amendment to the scallop fishery management plan is not reasonably expected to jeopardize the long-term productive capability of crab, herring or groundfish stocks.

#### 2.4 Impacts on Endangered, Threatened or Candidate Species

Species listed as endangered or threatened under the ESA that may be present in the GOA and BSAI include:

##### ENDANGERED

Northern right whale	<u>Balaena glacialis</u>
Sei whale	<u>Balaenoptera borealis</u>
Blue whale	<u>Balaenoptera musculus</u>
Fin whale	<u>Balaenoptera physalus</u>
Humpback whale	<u>Megaptera novaeangliae</u>
Sperm whale	<u>Physeter macrocephalus</u>
Snake River sockeye salmon	<u>Oncorhynchus nerka</u>
Short-tailed albatross	<u>Diomedea albatrus</u>

##### THREATENED

Steller sea lion	<u>Eumetopias jubatus</u>
Snake R. spring and summer chinook salmon	<u>Oncorhynchus tshawytscha</u>
Snake R. fall chinook salmon	<u>Oncorhynchus tshawytscha</u>
Spectacled eider	<u>Somateria fischeri</u>

##### CANDIDATE

Steller's eider	<u>Polysticta stelleri</u>
-----------------	----------------------------

The impact of the groundfish fisheries off Alaska on endangered and threatened species has been addressed extensively in a series of formal and informal consultations. The scallop fishery off Alaska (which consists of a much smaller fleet of vessels, and uses gear less likely to generate bycatch of finfish, seabirds or marine mammals) is not expected to affect ESA-listed species, seabirds or marine mammals in any manner or extent not already addressed under these previous consultations. In a formal consultation pursuant to section 7 of the ESA that culminated in a biological opinion dated April 19, 1991, NMFS concluded that the GOA and BSAI groundfish fisheries were not likely to adversely affect listed cetaceans or to jeopardize the continued existence or recovery of Steller sea lions. NMFS determined that section 7 consultation should be reinitiated for Steller sea lions if any proposed change in the GOA or BSAI groundfish fisheries was likely to adversely affect them, if new information regarding the effects of the fishery on Steller sea lions was obtained, or if there was a change in the status of sea lions. Since April 1991, NMFS has reinitiated section 7 consultation for several GOA and BSAI regulatory amendments (e.g., inshore/offshore) and for the annual TAC specifications.

Endangered, threatened, and candidate species of seabirds that may be found within the regions of the GOA and BSAI where the groundfish fisheries operate, and potential impacts of the groundfish fisheries on these species are discussed in the EA prepared for the 1997 TAC specifications. The U.S. Fish and Wildlife Service (USFWS), in consultation on the 1997 specifications, concluded that groundfish operations using gear other than hook-and-line gear are not likely to adversely affect short-tailed albatrosses (letter, Rappoport to Pennoyer, February 10, 1997).

## 2.5 Potential Impacts on ESA-listed Pacific salmon

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). No salmon bycatch was reported during the 1993 ADF&G observer program, with nearly 900 days fishing observed (Urban et al. 1994), and there have been no other reports of salmon bycatch in the scallop fishery off Alaska. Therefore, none of the alternatives will affect the continued existence of listed species of Pacific salmon, or result in disturbance or adverse modification of critical salmon habitat.

## 2.6 Potential Impacts on Seabirds

Many seabirds occur in Alaskan waters and have the potential for interaction with scallop fisheries. The most numerous seabirds in Alaska are northern fulmars, storm petrels, kittiwakes, murrelets, 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 an EA prepared for the 1997 Groundfish Total Allowable Catch Specifications (NMFS 1997).

Fishing interactions occur directly through entanglements or collisions with fishing gear, or indirectly through competition for fish prey; and indirect mortality from encounters with marine debris or pollution, and disruption of the ecosystem from habitat degradation. An assessment of impacts of groundfish fisheries on colonial and pelagic seabirds and migratory birds was prepared as part of the Final Environmental Assessment for 1997 Groundfish TAC Specifications for the Bering Sea/Aleutian Islands and the Gulf of Alaska. The EA is incorporated by reference, as is the informal consultation with the USFWS on the 1997 TAC specifications, and a 1997 biological opinion prepared by the USFWS on the effects of the 1997 GOA/BSAI groundfish TAC specifications and all subsequent actions and amendments consistent with the terms and conditions of the consultation. These documents list the endangered, threatened, proposed and candidate species that may be found within the regions of the GOA where the groundfish fisheries operate the potential impacts of the groundfish fisheries on these species. The 1997 informal consultation with the USFWS determined that trawl and pot fishing activities in the GOA/BSAI areas are not likely to adversely affect short-tailed albatross and limited the scope of the consultation to hook-and-line fisheries. Because 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, none of the alternatives will affect endangered or threatened seabirds or their critical habitat.



## 2.7 Potential Impacts on Marine Mammals

Cetacean and pinniped species are unlikely to have potential for interaction with scallop fisheries in the GOA and BSAI. Marine mammals not listed under ESA that may be present in the GOA and BSAI include cetaceans, (minke whale (Balaenoptera acutorostrata), killer whale (Orcinus orca), Dall's porpoise (Phocoenoides dalli), harbor porpoise (Phocoena phocoena), Pacific white-sided dolphin (Lagenorhynchus obliquidens), and the beaked whales (e.g., Berardius bairdii and Mesoplodon spp.)) as well as pinnipeds (northern fur seals (Callorhinus ursinus), and Pacific harbor seals (Phoca vitulina)) and the sea otter (Enhydra lutris).

A list of marine mammal species and detailed discussion regarding life history and potential impacts of the 1997 groundfish fisheries of the BSAI and GOA on these species can be found in the EA prepared for the 1997 Total Allowable Catch Specifications for Groundfish (NMFS 1997). Interactions of the scallop fishery with Steller sea lions and other pinnipeds, and sea otters are thought to be rare and less common than in the groundfish fisheries. In addition, there are no reported takes of marine mammals by the scallop fishery off Alaska. Therefore, none of the alternatives will have an adverse effect on marine mammals.

## 2.8 Coastal Zone Management Act

Each of the alternatives would be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Zone Management Program within the meaning of Section 307(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

2.9 Finding of No Significant Impact

For the reasons discussed above, implementation of any one of the alternatives to the status quo would not significantly affect the quality of the human environment, and the preparation of an environmental impact statement on the final action is not required under Section 102(2)(c) of the National Environmental Policy Act or its implementing regulations.

---

Date

### **3.0 REGULATORY IMPACT REVIEW: ECONOMIC AND SOCIOECONOMIC IMPACTS OF THE ALTERNATIVES**

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

This section also addresses the requirements of both E.O. 12866 and the RFA to provide adequate information to determine whether an action is "significant" under E.O. 12866 or will result in "significant" impacts on small entities under the RFA. Requirements of the RFA are addressed in Section 4.

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

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

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

1. Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
2. create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
3. materially alter the budgetary impacts of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
4. raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

A regulatory program is "economically significant" if it is likely to result in effects described in item (1) above. The RIR is designed to provide information to determine whether the proposed regulation is likely to be "economically significant."

### 3.1 Economic Status of the Fishery

Interest in an Alaskan scallop fishery has existed since the early 1950's when the Bureau of Commercial Fisheries began systematic surveys to determine if commercial quantities were available. The first commercial deliveries of weathervane scallops were made in 1967. Since then, the numbers of vessels, numbers of landings and harvest (weight of shucked meats) have varied annually. Total commercial harvest of scallops has fluctuated from a high of 157 landings totaling 1,850,187 lb (839.2 mt) of shucked meats by 19 vessels in 1969 to no landings in 1978. Prices and demand for scallop have remained high since fishery inception. Harvests in 1990 and 1991 were the highest on record since the early 1970's. The 1992 harvest was even higher at 1,810,788 lb (821.4 mt). On average, about two-thirds of the scallop harvest has been taken off Kodiak Island and about one-third has come from the Yakutat area; other areas have made minor contributions to overall landings. Harvest peaks have occurred as new beds were discovered or old beds recovered and then became depleted. Landings from State waters have historically comprised about 39 percent of the total, but more recent landings have been taken almost exclusively from EEZ waters. Only 14 percent of 1994 landings were from State waters (Ken Griffin, ADF&G, personal communication). Changes in CPUE could not be monitored, as the unit measure of effort (number of days as measured by trips) has not been consistent through the time series. Many vessels switched from landing fresh to frozen product during the late 1980's, extending the average trip from about 10 days to perhaps 20 or more.

The size of the scallop fishing fleet off Alaska has fluctuated since the fishery began in 1967. Since then, up to 19 vessels per year have participated in the fishery. In 1992, only seven vessels were actively fishing for scallops. Annual variability in the number of participants is due to both scallop abundance and the potential revenues generated by other fisheries (Kaiser 1986; Bourne 1991). Historically, many of the vessels participating in the fishery have dropped out after only 1 year. By 1992, only one vessel had participated for more than 4 consecutive years. Examination of the number of landings made by vessels indicates that the 1992 participants were "full time" scallopers, whereas vessels may have fished part time for scallops in previous years. Examination of the number of months in which scallop landings were made also indicates that the vessels fishing in 1992 were full time participants. Since the beginning of the fishery, scallops have been harvested by vessels and companies from the East Coast (Browning 1980). The same situation occurred through 1993 and 1994; of the 26 individuals permitted to fish for scallops in 1993, 16 were issued to addresses in Alaska, and 10 outside the State, primarily from the mid-Atlantic area. Of 16 vessels fishing in 1994, seven were home ported in Alaska, three in Seattle, and six on the East Coast. Eleven of these vessels landed only scallops (Ken Griffin, ADF&G, personal communication). No foreign vessels have ever participated in the scallop fishery in Alaska, and no Indian treaty fishing rights exist for this fishery.

Throughout the history of the Alaska scallop fishery, vessels fished nearly exclusively for weathervane scallops. Although scallop fisheries could potentially target species other than weathervanes, they have not done so. Landings of other scallop species were made by one vessel in 1991 and 1992, but due to confidentiality of the data, total landings of other species cannot be reported. Landings of other scallops may have been made in earlier years, but scallop species were not differentiated on fish tickets prior to 1991. Apparently, some amount of pink scallops were landed in 1979 (Kaiser 1986). Little information on the abundance and distribution of these other species is available. It is not known to what extent the scallop species are harvested by recreational or subsistence fisheries, however based on anecdotal information, some recreational diving for pink scallops occurs in Southeast Alaska.

Currently, the "average" scallop vessel is about 90-110 ft (27.4-33.5 m) long and carries a crew of 12. In the 1980's, several small (< 50 ft (15.2 m)) vessels participated in the fishery. The gear used to catch

scallops commercially is the dredge of a standard design, with a regulated minimum ring size. This type of fishing gear typically harvests only 5-35 percent of the scallops in their path, depending on dredge design, target species, bottom type, and other factors (McLoughlin et al. 1991). Although dredge width has varied in size through the history of the fishery, recent State regulations have limited dredges to a maximum width of 15 ft (4.6 m)(6 ft (1.8 m) in Cook Inlet). Traditionally, scallops have been processed at sea by manual shucking, with only the meats (adductor muscles) landed. The technology for automated mechanical shucking exists, and apparently can process Alaskan scallops. However, this type of shucking was recently prohibited by the State for weathervane scallops and in the East Coast sea scallop fishery to control effort.

Fishing operations at sea generally involve the following steps: (1) Dredge setting, (2) towing for about one hour, (3) dredge retrieval, (4) dumping of the catch on deck, (5) sorting out scallops to be retained, and (6) discarding of debris, small scallops, and bycatch of other species. Retained scallops are shucked the crew, and usually washed, sorted, and frozen (or iced) at sea. DuPaul and Carnegie (1994) reported on scallop fishing procedures during the weathervane scallop fishery off Yakutat in July 1993. They reported that fishermen generally retained most large scallops (> 85 mm SH). Small scallops (< 85 mm SH) comprised a very small percentage (< 5 percent) of the catch, and were not retained. Scallops in the 100-130 mm SH range comprised the vast majority of the catch, corresponding to meat counts of 28 to 48 meats per pound of shucked adductor muscles. In the 1993 scallop fisheries statewide, the largest scallops were taken in the Kodiak Island and Bering Sea.

Economic trends of the fishery depend upon the performance measures considered. For example, vessels averaged 212,000 lb (96.2 mt) each during the early "fishing-up period" (1970-1973) of the fishery. During 1974-1986, landings per vessel averaged only about one-third (66,000 lb (29.9 mt)) of the 1970-1973 average as stocks recovered from high harvest levels, but increased to about one-half (114,000 lb (51.7 mt)) of the original level during the 1987-1991 period. Note that the average landings per vessel in 1992 (258,684 lb (117.3 mt)) was the highest in the history of the fishery. On the other hand, average gross receipts (exvessel value) per vessel reveal a different trend due to price effects during these same three time periods: \$234,000, \$178,000, and \$453,000, respectively.

Average annual exvessel price has increased through the time series, with a distinct break occurring between 1975 and 1980. In the early years of the fishery, 1968-1975, exvessel price per pound ranged from \$0.85 to \$1.40. Prices in the early 1980's were much higher, with exvessel prices ranging from \$3.77 to \$4.88. Prices have decreased somewhat since then, with a range of \$3.12 to \$3.88 observed from 1985 to 1991. Exvessel prices received in 1993 ranged from \$4.76 to \$6.65 per pound of shucked meat. The 1993 and 1994 averages are \$5.00 and \$6.00 per lb respectively. These prices were higher than those historically paid for Alaskan scallops. If future exvessel prices were in the order of \$7.00 per pound, the value of 1.8 million lb (816.5 mt) of scallop meats would be \$12.6 million.

### 3.2 Potential Impacts of Continuing the Status Quo<sup>9</sup>

Continuation of the EEZ closure to scallop fishing would cause substantial impact to participants in the Alaskan scallop fisheries. Of the 16 vessels making landings of scallops in 1994, 11 vessels landed no other catch (Ken Griffin, ADF&G, personal communication). These vessels accounted for 88 percent of scallops landed. Based on their reported landings in 1994 and considering a closure in State waters as well, this would equate to a catch of approximately 1.1 million lb (490 mt) of shucked scallop meats. Using the 1994 average exvessel price of \$6.00/lb and assuming that 14 percent of the total annual scallop landings would continue from State waters, this would equate to an annual forgone revenue of \$5.7 million. An additional five vessels landed 0.1 million lb (45 mt) of shucked scallop meats equating to \$0.52 million in 1992. This catch was from less than 1 percent to 46 percent of these vessels' landed catch of all species, including groundfish and crab. Taken together, closure of the EEZ, along with a concurrent closure of Alaskan State waters would result in those vessels forgoing revenue on the order of \$6.2 million annually for the duration of the EEZ closure.

There continues to be the possibility of a fishery for scallops in State waters. However, only about 14 percent of the resource was taken in State waters in 1994. Any State fishery would likely have to be of very short duration to prevent that portion of the State GHF from being exceeded.

Because of the longevity and low natural mortality associated with weathervane scallops, the yield from this fishery would essentially be recouped when the fishery is reopened, either one year after the FMP goes into effect, or whenever the FMP is superseded by another FMP or amendment instituting a comprehensive management plan for scallops.

### 3.3 Potential Impacts of the Preferred Alternative

#### 3.3.1 Potential Impacts of a Moratorium

A moratorium is proposed as Amendment 2 under Alternative 2 to keep the fishery from being further overcapitalized. The intent of the proposed vessel moratorium is to stabilize the size and capitalization of the scallop fleet during the time that the Council is considering limited entry alternatives for this fishery. As such the vessel moratorium does not resolve the underlying problems of existing overcapitalization and excess effort in the fishery, but may prevent these problems from worsening while comprehensive solutions are being developed.

The proposed moratorium applies to vessels, rather than owners or operators. Procedures for granting access to the fishery would require that the vessel designated on the relevant fishing permit qualify under the moratorium criteria. Permits would not be issued to applicants who designate a non-qualifying vessel. Newcomers would be able to enter the fishery, but only by acquiring an existing, qualifying moratorium vessel.

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:

---

<sup>9</sup>Note that Amendment 1 has been approved and implemented. Therefore, Amendment 1 is the new status quo for the purpose of analyzing Amendment 2.

- 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."

### *Moratorium Elements and Options*

The proposed scallop vessel moratorium consists of several elements and options. Similar to the moratorium for groundfish (Amendment 23/28 to the BSAI and GOA plans), the key elements are summarized as follows: (1) The qualifying criteria; (2) the duration of the moratorium; (3) fishery crossovers during the moratorium; (4) reconstruction of vessels during the moratorium; (5) replacement of vessels during the moratorium; (6) exemptions for lost or destroyed vessels; (7) exemptions for small vessels; and (8) an appeals procedure. Unlike the groundfish moratorium, special exemptions for disadvantaged communities were not considered, as the commercial fishery is relatively small in size and area. For each element, two or more options exist that were analyzed for consideration.

#### 1. Qualifying Criteria

Determination of vessels qualified to participate in the scallop fishery may be based on a vessel making landings in certain years (qualifying participation), and may also include a time frame (qualifying period) on which to base historical participation. Incorporation of minimum participation would allow vessels that were historically dependent on the fishery, as well as the vessels that were more recently in the fishery, to participate in future scallop fisheries. Little information is available to determine how many vessels would qualify under any set of qualifying criteria; however, it is likely that most of the vessels that were under construction, being refitted, or being relocated to fish for Alaskan scallops prior to the Control Date would have participated by the end of 1993. The options for qualifying criteria are listed below.

##### A. Qualifying Participation

- a. Vessels must have participated in either 1991 or 1992, or participated for a minimum of 4 years within the qualifying period.
- b. (*Preferred*) Vessels must have participated in either 1991, 1992 or 1993, or participated for a minimum of 4 years within the historic qualifying period (1980 to 1990).
- c. Vessels must have participated in either 1990, 1991, 1992 or 1993 through July 30, or participated for a minimum of 4 years within the historic qualifying period (1980 to 1990).
- d. No minimum number of participating years within the qualifying period required; all vessels that made at least one landing during the qualifying period would be qualified.

## Qualifying Period Options:

### Beginning Dates

- a. January 1, 1967 (first year of commercial scallop deliveries)
- b. January 1, 1980 (*Preferred*; coincides with start of buildup of scallop fishery)
- c. January 1, 1992 (restricts fishery to more recent participants)
- d. some other date

### Ending Dates

- a. February 9, 1992 (coincides with groundfish moratorium)
- b. December 31, 1990 (*Preferred*; for historic participation)
- c. December 31, 1993 (*Preferred*; for current participation)
- c. some other date

## B. Qualifying Criteria

- a. Vessels that were in the "pipeline" to fish for Alaskan scallops (i.e., under construction, being refitted, relocated, etc.), but had not made landings during the qualifying period, would qualify under the moratorium.
- b. (*Preferred*) Vessels that were in the "pipeline" to fish for Alaskan scallops (i.e., under construction, being refitted, relocated, etc.), but had not made landings during the qualifying period, would not qualify under the moratorium.

## 2. Length of Moratorium

Potential limitations on the duration of the moratorium should provide sufficient time to develop, approve, and implement a permanent limited access program for the scallop fishery, or to decide to abandon limited access in favor of open access management measures. The options considered are:

- a. (*Preferred*) Until the Council repeals or replaces; not to exceed 3 years from date of implementation, but Council may extend for 2 years if a permanent limited access program is imminent.
- b. Until the Council repeals or replaces; not to exceed 4 years from date of implementation, but Council may extend for 2 years if a permanent limited access program is imminent.
- c. Until the Council repeals or replaces; not to exceed 4 years from date of implementation.
- d. Some other duration period.

## 3. Crossovers During Moratorium

The Council may consider to restrict vessels from crossing over among fisheries, regardless of their prior participation in these fisheries.



- a. No restrictions on crossovers to other fisheries (groundfish, crab, or halibut) during the moratorium.
- b. (*Preferred*) Crossovers to other fisheries (groundfish, crab, or halibut) during the moratorium will not be allowed, except for vessels that were qualified under both the scallop and groundfish moratoria.

#### 4. Reconstruction of Vessels During the Moratorium

Reconstruction and replacement restrictions will help stabilize the capacity of the fleet. However, some provision for owners to replace or rebuild existing vessels would allow owners to improve safety and efficiency, without unduly contributing to capitalization of effort.

- a. (*Preferred*) Vessels may be reconstructed during the moratorium subject to limitations and conditions listed below.
  - 1. If physical reconstruction was completed before January 20, 1993, new size unrestricted; one more upgrade allowed, limited to a 20 percent increase in vessel length overall (LOA).
  - 2. If physical reconstruction was started before January 20, 1993, new size unrestricted; no more upgrades allowed.
  - 3. (*Preferred*) If physical reconstruction started on or after January 20, 1993, new size restricted to a 20 percent increase in LOA; no more upgrades allowed.
- b. Vessels may not be reconstructed during the moratorium.

#### 5. Replacement of Vessels During the Moratorium

- a. Qualifying vessels can be replaced with non-qualifying vessels as often as desired so long as the replaced vessel leaves the fishery or bumps another qualifying vessel out in the case of multiple transactions. No increases in vessel length allowed.
- b. (*Preferred*) Qualifying vessels can be replaced with non-qualifying vessels as often as desired so long as the replaced vessel leaves the fishery or bumps another qualifying vessel out in the case of multiple transactions. Vessel size can be increased as many times as desired, but restricted to a 20 percent maximum increase in original qualifying LOA.
- c. Qualifying vessels cannot be replaced.

#### 6. A. Replacement of Vessels Lost or Destroyed During the Moratorium

- a. Qualifying vessels can be replaced with non-qualifying vessels of similar length. Replaced vessels cannot be salvaged and come back into the fishery. No increases in vessel length allowed.
- b. (*Preferred*) Qualifying vessels can be replaced with non-qualifying vessels subject to a 20 percent maximum increase in LOA. Replaced vessels cannot be salvaged and come back into the fishery.
- c. Qualifying vessels cannot be replaced.

## 6. B. Replacement of Vessels Lost or Destroyed Before the Moratorium

- a. Qualifying vessels can be replaced with non-qualifying vessels of similar length. Replaced vessels cannot be salvaged and come back into the fishery. No increases in vessel length allowed.
- b. (*Preferred*) Qualifying vessels can be replaced with non-qualifying vessels subject to a 20 percent maximum increase in LOA. Replaced vessels cannot be salvaged and come back into the fishery.
- c. Qualifying vessels cannot be replaced.

## 7. Small Vessel Exemption

Allowing additional vessels into the scallop fishery would add more effort and capital into the scallop fisheries. However, an exemption would allow new, small vessels to pioneer fisheries for Chlamys species, which occur primarily in the inshore, more protected areas.

- a. (*Preferred*) Exempt small vessels from the moratorium only if they use gear other than dredges or trawls. This exemption applies only to vessels 26 ft (7.9 m) LOA or less in the GOA, and vessels 32 ft (9.8 m) LOA or less in the BSAI. Exempted vessels cannot be replaced or rebuilt such that the maximum size exceeds 26 ft (7.9 m) LOA in the GOA or 32 ft (9.8 m) LOA for vessels fishing for scallops in the BSAI.
- b. Exempt small vessels from the moratorium, regardless of gear type used. In the GOA, vessels 26 ft (7.9 m) or less are exempted from the moratorium. In the BSAI, vessels 32 ft (9.8 m) or less are exempted from the moratorium.
- c. No exemptions allowed for small vessels.

## 8. Appeals Process

The initial determination of whether a particular vessel is allowed to fish for scallops under the moratorium could be appealed.

- a. (*Preferred*) The appeals procedures will be similar to those for the sablefish and halibut IFQ program. It would be a one-tier process.
- b. The appeals procedure will consist of an adjudication board of government persons and non-voting industry representatives.
- c. Some other appeal process.

## *Analysis of Moratorium Options*

The options chosen for moratorium will have economic impacts for both qualifying and non-qualifying vessels. In particular, the qualifying time chosen will determine how many vessels will be allowed access to the fishery. In addition to the qualifying criteria, the other elements are: duration, crossovers, reconstruction, replacement, exemptions for small vessels, and appeals. Limitations on the duration of the moratorium should provide sufficient time to develop, approve, and implement a permanent limited access program for the affected fisheries, or to decide to abandon limited access in favor of open access management measures. Any crossovers of vessels between fisheries, if allowed, will amplify any economic and biological impacts associated with the increased capacity of the fleet. Reconstruction, replacement, and exemptions for small vessels, if allowed, will also increase the capacity of the fleet. Additionally, any

allowances ("qualifying criteria") made for vessels that were under construction during the qualifying period, but had not yet made landings, would also increase the capacity of the fleet. The same holds true for vessels that were refitted or relocated to fish for Alaskan scallops. Such an increase in capacity will directly depend on the extent of these options and allowances.

Moratorium options that allow for an increase in vessels, vessel size, and effort over the 1992 level may reduce the long term viability of the scallop fishery. A historical perspective implies that there would be significant economic benefits to not allowing increased fishing effort and/or fishing mortality on scallops. The weathervane scallop stocks were apparently overfished in the early 1970's to the point that no landings were made in 1978. If effort and landings were allowed to increase, stocks could be subject to recruitment overfishing, with a resulting stock collapse. Scallop populations are vulnerable to variable recruitment, overharvest, and slow stock recovery (Aschan 1991; Bannister 1986; Bourne 1986; McLoughlin et al. 1991; Orensanz 1986). A stock collapse of scallops would result in loss to the Nation, as product would not be harvested and sold during a rebuilding period.

The qualifying criteria will determine how many vessels will be allowed access to the fishery. Data on the number of persons licensed and vessels registered to fish for scallops, obtained from ADF&G Commercial Fisheries Entry Commission, provide information as to how many persons and vessels would be affected by qualifying time options. The following table shows the cumulative number of unique persons licensed and unique vessels registered to fish for scallops through 1992. The distribution of the number of years individual vessels participated in the fishery from 1980-1992 was listed in Section 1.3. Historical data on the fishery prior to 1980 were not available.

<u>Years</u>	<u>Individuals</u>	<u>Vessels</u>
only 1992	8	7
1991-1992	9	8
1990-1992	19	12
1989-1992	20	13
1988-1992	22	14
1987-1992	23	15
1986-1992	30	21
1985-1992	34	25
1984-1992	37	30
1983-1992	41	33
1982-1992	53	43
1981-1992	64	50
1980-1992	71	53

A total of 15 vessels made scallop landings in 1993, including six of the seven that made landings in 1992. Of the 1993 participants, three made landings only from the Cook Inlet registration area. The other 12 participants did not participate in the Cook Inlet fishery, and made landings only from other areas. As the numbers show, the potential number of vessels decreases as the qualifying period is shortened. From the above table, and the 1993 participants, the potential number of vessels can be determined for any number of qualifying periods.

Although an infinite number of qualifying periods for a moratorium exist, reasonable options were chosen for analysis based on certain dates. These dates analyzed for appropriate qualifying period are listed below:

### Beginning Dates

- a. January 1, 1967 (first year of commercial scallop deliveries)
- b. January 1, 1980 (coincides with start of buildup of scallop fishery)
- c. January 1, 1992 (restricts fishery to more recent participants)
- d. some other date

### Ending Dates

- a. February 9, 1992 (coincides with groundfish moratorium)
- b. January 20, 1993 (Council's Control Date for scallop fishery)
- c. December 31, 1993 (would allow 1993 participants to qualify)
- d. some other date

The January 1, 1992 to February 9, 1992, qualifying period was considered unseasonably short and not analyzed further. Therefore, all of the qualifying periods examined, with two exceptions, will allow at least 53 vessels the potential to participate in the fishery. The exceptions to this are the options to allow only those vessels that landed scallops from January 1, 1992 through January 20, 1993, which would limit the fishery to about seven qualifying vessels. Longer qualifying periods, such as including the 1993 participants, would allow more vessels the potential to participate. As of December 31 1993, a total of 15 vessels made scallop landings, including six of the seven that made landings in 1992.

A qualifying period that excludes 1993 would adversely affect permit holders from outside the State of Alaska. Of the 26 individuals permitted to fish for scallops in 1993 through August, 16 were issued to addresses in Alaska, and 10 outside the State. Twelve of the 26 permits were "new issue" permits; of these, seven were issued to addresses outside the State, primarily from the mid-Atlantic area. Each of these new issue permits represents a vessel that may have been under construction, or were relocated to fish for Alaskan scallops prior to the issuance of the Control Date. Investments may have been substantial.

In addition to analysis of qualifying period, and analysis of qualifying participation was also done to take into account those vessels with either recent or historic participation in the fishery. Options analyzed for qualifying participation were the following.

- a. Vessels must have participated in either 1991 or 1992, or participated for a minimum of 4 years within the qualifying period.
- b. Vessels must have participated in either 1991, 1992 or 1993, or participated for a minimum of 4 years within the qualifying period.
- c. Vessels must have participated in either 1990, 1991, 1992 or 1993 through July 30, or participated for a minimum of 4 years within the qualifying period.
- d. No minimum number of participating years within the qualifying period required; all vessels that made at least one landing during the qualifying period would be qualified.

Options (a), (b), and (c) are similar in that they include either a landing in a recent year, or had historic dependence on the fishery. Incorporation of minimum participation would allow vessels that were historically dependent on the fishery ("historic participants"), as well as the vessels that were more recently in the fishery ("recent participants"), to participate in future scallop fisheries. Historic dependence was

defined as 4 years of landings within the qualifying period. Of the vessels participating since 1980, seven vessels had participated for 4 or more years, as compared to 12 vessels with 3 or more years of participation. CFEC data indicate that of the seven vessels with 4 or more years of participation: (1) Only one vessel did not participate in the more recent fishery ( $\geq$  1991); (2) four participated in all years since 1990; (3) one participated through the 1991 fishery, then dropped out; and (4) one participated for 6 years prior to 1986, but then participated again in 1993.

Options for qualifying participation also account for recent participants by including those vessels that made landings in recent years. Options analyzed for recent qualifying participation include vessels making landings in 1990, 1991, 1992, and 1993. Option (a) includes only those vessels that made landings in 1991 or 1992, which would qualify eight vessels under this criteria. Option (b) adds vessels that made landings in 1993 (through December 31), which would qualify 18 vessels, including the Cook Inlet participants. Option (c) includes all vessels qualified under option (b) plus those vessels that made landings in 1990. A total of 20 vessels would qualify under the option (c) recent participant criteria.

#### *Preferred Moratorium Qualifying Criteria*

At its September 1993 meeting, the Council tentatively identified its preferred moratorium options, but requested that additional analysis be done to assist with determining appropriate qualifying criteria. The options that the Council identified were: (1) Vessels must have participated in either 1991 or 1992, or participated for a minimum of 4 years within the qualifying period (January 1, 1980 to January 20, 1993), or (2) Vessels must have participated in either 1990, 1991, 1992 or 1993 through July 30, or participated for a minimum of 4 years within the qualifying period (January 1, 1980 to January 20, 1993). Additional information was provided in the draft FMP dated November 30, 1993.

In April 1994, the Council recommended the following qualifying criteria as its preferred option. To qualify under the moratorium, vessels must have participated (made at least one landing) in 1991 or 1992 or 1993, or must have participated for at least 4 years between January 1, 1980 and December 31, 1990. The 1980 date was adopted because data prior to 1980 were not available, and more importantly, 1980 marked the first year of the second phase of the scallop fishery, and was thus considered to be a reasonable base year for historical participation. Note that less than 3 vessels participated in 1974, 1976, 1977, and 1979, and no vessels participated in 1978. The December 31, 1990, date was adopted as a cutoff date for historic participation, because vessels making landings after that date would be included as recent participants. The Council did not include those vessels that participated in 1990, but did not have historic participation or more recent participation in the fishery, as moratorium qualified. It was determined that these vessels had neither recent nor historic dependence on the fishery. Vessels that were in the "pipeline" to fish for Alaskan scallops (i.e., under construction, being refitted, relocated, etc.), but had not made a required landing, would not qualify under the moratorium. The Council had been discussing a scallop moratorium throughout 1993, and by including the 1993 participants as moratorium qualified would address the problem of those vessels in the "pipeline."

Permits would be issued to the owner of each vessel at the time of qualifying. If two owners qualify for a single vessel, the most recent owner qualifies, such that each vessel generates only one permit. Vessels that made landings from Cook Inlet only would receive permits for that area only, and no crossovers between Cook Inlet and other areas will be allowed unless a vessel qualifies for both areas.

In addition to qualifying criteria, the other moratorium elements are: Duration, crossovers, reconstruction, replacement, exemptions for small vessels, and appeals. The Council's preferred options for these

moratorium elements are listed Table 7. A 3-year limitation on the duration of the moratorium should provide sufficient time to develop, approve, and implement a permanent limited access program for the affected fisheries, or to decide to abandon limited access in favor of open access management measures. Crossovers of vessels between fisheries (scallop to or from groundfish, crab, salmon, or halibut) would not be allowed, except for those vessels qualified under both the scallop and groundfish moratoria. Additional crossovers would amplify any economic and biological impacts associated with the increased capacity of the fleet. Reconstruction and replacement of vessels was limit to prevent further increase the capacity of the fleet. Regarding exemptions, the preferred option was to allow exemptions for small vessels, but to limit the gear used by these vessels to gear other than dredges or trawls. Such an exemption would allow small vessels to develop alternative methods of harvesting weathervanes and other scallop species, such as by diving or longlining.

#### *Projected Effort*

Under the Council's preferred qualifying criteria, a total of 18 vessels would qualify. Of these, 14 would qualify only for areas outside Cook Inlet, 3 would qualify only for the Cook Inlet area, and 1 vessel would qualify for both areas.

#### *Projected Landings*

The number of vessels which can participate and still produce profits depend on expected landings in future years. Based on landings of weathervane and other scallop species, up to 1.3 million lb (589.7 mt) in landings statewide (EEZ plus State waters) are expected during the duration of the proposed moratorium. These landings were estimated by assuming that catch limits and landings in the near term will be at the upper end of the OY range for the EEZ (0 - 1.1 million lb (0 - 499 mt)). Some catches will also come from State waters. Hence, using the best available information, near term landings for Alaskan scallops are likely to be on the order of 1.0 to 1.3 million lb (453.6 to 589.7 mt) of shucked meats.

#### *Breakeven Analysis*

A breakeven analysis for an individual fishing vessel provides an estimate of the scallop harvest necessary to cover annual operating (variable) and fixed costs. Information about the operating and fixed costs for vessels in the scallop fleet has not been readily available, but owners of seven vessels volunteered cost data for their operations as part of their public testimony. These vessels represent the approximate average size of all vessels participating in the 1993 fishery. With the exception of the smallest vessel in the fleet, all vessels generally carry a 12 person crew, which includes the captain, cook, and engineer. This information represents the best available for the scallop fishery, and therefore, is used to develop a breakeven analysis for the fleet.

Annual operating costs all vessels were estimated to be about 59 percent of the gross revenues and fish taxes about 3 to 4 percent of gross revenues. However, fixed costs are likely to vary considerably from one vessel to the next, depending primarily on the amount of repair and supplies required, insurance costs, and debt repayment costs. The number of vessels that will break even in the fishery greatly depends on exvessel price paid for scallops. Industry sources have indicated that price may vary from vessel to vessel. Exvessel prices received in 1993 ranged from \$4.76 to \$6.65 per pound of shucked meat. These prices were higher than the historically paid for Alaskan scallops. Exvessel price ranged from \$3.12 to \$4.88 per pound from 1980-1991.

Based on the information provided through public testimony, about nine vessels would be able to operate at the breakeven level, assuming total landings of 1.3 million lb (589.7 mt) and the reported 1993 exvessel price per pound. Fewer vessels would break even if quotas (landings) or price was reduced. Alternatively, more vessels would break even if quotas or price increased. For example, if future exvessel prices were in the order of \$7.00 per pound or more, several more vessels could operate at a breakeven level.

This analysis assumed that the fishery will occur year-round. Both fixed and operating costs are reduced when the fishery is limited by short seasons, as vessels can tie up to the dock. In fact, some vessels were not able to operate in all months during the 1993 fishery. The same situation could occur in future years. Under this amendment to the scallop FMP, fishing seasons could be set to restrict harvest during scallop spawning or to address safety concerns, or for other reasons.

Although the information used in this analysis was available for some vessels in the fleet, other analyses suggest that assuming operating costs of about 59 percent of gross revenues is not unreasonable. Operating (variable) costs for various types of groundfish trawl and longline catcher/processor vessels were estimated for analysis of cod allocation in the BSAI (Amendment 24 to the BSAI Groundfish FMP, NPFMC 1993). Appendix D of that analysis provided the following estimates of operating costs as a percent of gross revenues: (1) 41 percent for trawl vessels heading and gutting product, (2) 46 percent for trawl vessels filleting product, (3) 51 percent for a large longline catcher/processor, and (4) 66 percent for a small longline catcher processor. Note that the size distribution of small longline vessels are similar to the sizes of scallop vessels, hence supporting operating costs used in this analysis for the scallop fishery.

#### *Overcapitalization*

From the perspective of the individual fisherman, net returns decline as the vessel's share of the quota decreases due to increased fishing pressure and shorter seasons. Capitalization of the fishery continues beyond an efficient level because fishermen do not bear the entire social cost of the fishery resource. The resource is owned by the public, and although it has some value, fishermen are allowed to take the fish for free. This encourages capitalization beyond the level of operation that would exist if fishermen had to incur the cost or value society places on the fish. Effort continues to increase in the fishery beyond an efficient or profitable fleet size until average net returns reach or fall below zero. The cumulative effect is a fleet that dissipates net economic value and perpetuates low incomes in the fishery. The overcapitalized fleet also represents an unnecessarily large and unproductive share of the economy's capital investment base. This condition of overcapitalization prevents achievement of optimum yield from the fishery to the extent that economic rents are lower than those achievable, and overall capital costs in the fishery are higher than required. The status quo will perpetuate these inefficiencies.

Options available to vessels that do not qualify under the moratorium are limited. Some of the vessels previously harvested scallops in the Atlantic Ocean, and may still qualify to scallop on the east coast. Although many scallop vessels could be rigged to fish for groundfish, the opportunities for new vessels to participate in North Pacific fisheries are limited. The Council recently adopted a moratorium on new vessels entering the groundfish and crab fisheries in the North Pacific, and the analysis for that moratorium (NPFMC 1992c) details many of the same overcapitalization problems addressed in this analysis for a moratorium for the scallop fishery. Beyond existing fisheries under Council management, the opportunities and capabilities of this fleet to engage in other fisheries imply a shift to one of several alternatives: (1) State-managed fisheries within Alaska; (2) state or federally managed fisheries in the U.S. outside Alaska; or (3) high-seas or foreign fisheries elsewhere in the world.

Opportunities for new entrants in Alaska state-managed fisheries are restricted by the state's limited entry program that covers most of the important commercial fisheries, including salmon, sablefish, herring, and crab. In order to access most of these fisheries, new entrants from EEZ fisheries would have to purchase a permit, as well as adopt necessary vessel and gear modifications. In the case of salmon, asking prices for permits vary from around \$50,000 up to over \$250,000 for the most desirable areas. Salmon vessels in some areas have been developed to operate in specific regulatory and oceanographic conditions, such that halibut or groundfish boats may prove inadequate without modifications. The Alaska state fisheries are managed under a limited entry permit system because of existing concerns over excess capacity, such that the entry of vessels from Council-managed fisheries would require the exit of an existing vessel. In general, there appear to be few, if any, unexploited opportunities in existing state-managed fisheries that are capable of absorbing an influx of new entrants from the EEZ fisheries.

Overcapitalization is common in many EEZ fisheries of the United States, and many of these fisheries have been subject to limited entry systems. A moratorium and effort reduction package has recently been adopted for the East Coast scallop fishery under Amendment #4 of the Atlantic Sea Scallop FMP (NEFMC 1993). That moratorium will affect the North Pacific scallop fisheries in two ways. First, vessels that would not participate under the proposed moratorium for Alaska scallop fishery would not be able to participate in the Atlantic sea scallop fishery unless they had previously fished for sea scallops and met the moratorium qualifying criteria outlined in Amendment 4. Second, vessels that do not qualify to continue scalloping in the Atlantic may look to enter the scallop fishery in Alaska, if access remained unrestricted. Under Amendment 4, 34 vessels that derived at least 85 percent of their income from sea scallops in 1991, will not qualify under that moratorium (Lou Goodreau, NEFMC staff, personal communication). It is likely that some of these vessels would participate in the Alaska scallop fishery if access were unrestricted.

Many fisheries in the Pacific Council waters off Washington, Oregon, and California are already governed by trip limits, and fishery managers have recommended that NMFS approve their adoption of a license limitation scheme to restrict further unneeded fishing effort (Pacific Fishery Management Council, 1992). In the Western Pacific waters off Hawaii, a moratorium on entry into certain longline fisheries has already been adopted. Although the fleet operating in the Alaska EEZ may have the technical capability to operate in these and other domestic fisheries, the real constraint is obtaining access to these already overcapitalized fisheries.

Outside domestic waters, fishing opportunities are less certain, although it is recognized that excess harvesting capacity exists for many of the world's developed fisheries. Following the extension of fisheries jurisdiction in the mid-1970s, most coastal nations--led by the United States--endeavored to claim the economic benefits associated with the marine resources in their exclusive economic zones, greatly reducing the opportunities for distant water fleets of some countries. As a result, access to the coastal waters of foreign nations must be arranged through joint venture arrangements, in competition with the distant water fleets of many other nations, such as Japan and Korea. However, the shift to foreign fisheries requires both logistical and diplomatic arrangements that may be beyond the scope of many small boat operators. Also, opportunities for the Alaska fleet in foreign fisheries likely favor technologically advanced, higher valued vessels not readily available in the host country.

In summary, the problems associated with excess capacity and overcapitalization cannot be easily overcome by shifting unneeded vessels to other fisheries. This is not so much because of an incompatibility of technology, as the dilemma of widespread overcapitalization. Efficient, adaptable vessels are capable of shifting to other fisheries, and may well enter different fisheries in response to economic efficiency criteria. Entrepreneurs may also be capable of finding and competing in a variety of world-wide fisheries. However,



overall there is no simple means of shifting excess Alaska EEZ vessels into other fisheries in the current environment, primarily because already there appears to be more than adequate capacity throughout the Alaskan, United States, and world fishing industry.

### *Implementation of a Moratorium*

Implementation of a moratorium is essentially a matter of issuing licenses for qualified vessels and tracking the vessel configuration to verify adherence to capacity restrictions. There are several levels of possible enforcement and vessel qualification checks that could occur. The most basic level of qualification checking would occur when a vessel owner applies for a permit to harvest scallops. The vessel identification would be checked against landings data going back through the applicable qualification dates. If the vessel was found to have made a landing in a moratorium fishery, then the owner would be issued a license. A second level of qualification checking would require the maintenance of a vessel database containing all vessels which qualify to participate in the moratorium regardless of whether licensing applications had been submitted. This would be a "master" database which would be the baseline for determining all vessel qualifications.

Implementation and enforcement would also involve a system of verification or inspections of relevant capacity measures, such as vessel length. In this case, enforcement of the moratorium may have to include inspection of vessels to verify changes in length. Special implementation and enforcement considerations will have to be made for vessels being replaced with new vessels. This would occur in four steps: (1) Verification that the owner of the replacing vessel has the authority to replace the exiting vessel; (2) verification that the capacity of replacing vessel does not exceed that of the replaced vessel; (3) removal of the replaced vessel from the qualified list of vessels and revoke any existing moratorium scallop harvesting rights; and (4) issuance of a moratorium permit to the replacing vessel.

### 3.3.2 Potential Impacts of Other Management Measures

Establishment of ABC and TAC levels may have differential effects on existing users, depending on the level of yield specified, productivity of scallop stocks, and future changes in numbers of participants. If the number of participants exhibits historic patterns in the future, then total harvest per vessel may reflect historical values, as well. In such case, higher exvessel value would be realized only through increases in exvessel price. On the other hand, if more vessels participate in the fishery in the future, then existing users will capture smaller harvest shares. Establishment of ABC and TAC may increase long-term future harvest above those levels that would occur in the absence of these management measures, if ABCs and TACs help prevent overharvest and promote sustainable fisheries, as planned.

Potential closures during the scallop spawning season may impose costs to those vessels that would have otherwise fished during closed periods. Marginal costs will be nil for vessels fishing in those areas (e.g., Kamishak district of lower Cook Inlet) where fishing is not permitted currently during the spawning season, whereas costs may be greater for areas (e.g., Southeastern, Yakutat, etc.) where there are no closed seasons (although in all likelihood, the TAC would be taken by then). However, given available fishing effort during the balance of the year, it is unlikely that total harvest will be significantly affected by seasonal closures alone.

Regulations that prohibit commercial fishing for scallops in certain waters ("closed waters") reduce the potential yield of the scallop fishery if there are substantial quantities of scallops inhabiting these areas. Some of the current closed areas previously produced harvestable quantities of weathervane scallops. Some

areas were originally closed by the State of Alaska to prevent possible impact of scallop dredging on adjacent crab fisheries. Future surveys, or fishing by exploratory permit in these areas will provide data to re-assess these area closures. One fisherman that did some exploratory fishing in these areas in 1993 testified that these areas may contain quantities of weathervanes that could be harvested with minimal crab bycatch. Any new areas designated as closed waters would further impact the fishery.

Specification of CBLs reduces the amount of scallops that could potentially be taken. Scallop dredging can result in the catch of non-targeted species while fishing for scallops. CBLs for Alaskan scallop fisheries were first instituted by the State in July 1993. With the exception of the Yakutat and Southeast areas, CBLs were specified for scallop fisheries in all registration areas. Establishment of bycatch limits has limited the scallop fishery in many of those areas, especially the Bering Sea registration area.

Establishment of a minimum size limit will reduce catch rates, but only if vessels stay out of areas with small scallops. Increased costs will occur due to avoidance of high density areas of undersized scallops or due to additional on board sorting of sublegal scallops. On the other hand, catch rates of larger scallops may increase in the future as more young scallops survive, reproduce, and grow legal size. To the extent that a minimum size limit acts to prevent recruitment overfishing, long-term fishery productivity may be higher than levels that would occur without this regulation. Additionally, the exvessel price for larger scallops is generally higher than for smaller ones.

Efficiency limits have both biological and economic impacts. The biological impact has to do with the size of scallops that are retained based on crew size and other efficiency limits as discussed in Section 2. The economic impact is primarily due to resource allocation among vessels. Efficiency limits negatively impact those operations that have the capability to harvest and process scallops at a faster rate than other vessels. For a system where total catch is capped by a quota, efficiency limits benefit smaller vessels, allowing them to compete with larger vessels. The amount of scallops that can be harvested by individual vessels depend on several factors including fishing experience and gear efficiency. The amount of scallops that can be processed on board vessels depends on how fast the scallops can be sorted and shucked.

Management measures currently in use include limits on crew size and a ban on automatic shucking machines. As of July 1993, crew size has been limited to a maximum of 12 fishermen per vessel. Crew members are all persons involved with the operations of the vessel and include the captain, mate, engineer, cook, deck hand, and processing workers. Crew size limits have been implemented to reduce incentives to harvest small scallops (Kruse and Shirley 1994). Because larger scallops are worth more per meat and take the same amount of processing time as small scallops, a limited crew size provides an economic incentive for vessels to target the larger sized, higher yield, mature scallops. It has been documented that harvesting rate for most scallop vessels depends for the most part on crew size (Robert and Jamieson 1986), and thus this management measure also tends to even out the distribution of catch among vessels. The other efficiency limit that may be proposed at this time is a prohibition of mechanical shucking machines for weathervane scallops. These scallops may only be shucked by manual methods ("hand shucking"), and as with crew size, provide incentive for vessels to target larger scallops. Larger vessels that have space on board for larger crew sizes and/or mechanical shucking devices are negatively impacted. Efficiency limits allocate the resource evenly among vessels, regardless of an individual vessel's potential harvesting capability. Other types of efficiency limits include restrictions on trip length and shell stocking. A shell stocking restriction would mandate that all scallops must be shucked at sea.

In an effort to maintain catch levels under increased competition, some individuals may elect to increase the catch capacity of their vessels, further contributing to overcapitalization. Management measures that limit the efficiency and catch capacity of vessels will tend to even out the distribution of catch among vessels.

Requirements for observers aboard vessels impose a cost to existing users. As a benchmark, it was recently estimated that observers in the ADF&G shellfish observer program cost an average of about \$7,400 per month. This estimate includes salary, benefits, insurance, travel, and other taxes and fees. In the crab and groundfish fisheries in the EEZ off Alaska, such costs have been widely accepted as necessary to enumerate harvests, discards, and bycatches and for enforcement considerations. However, with full observer coverage, and an average fishing season lasting 4 months, annual gross earnings would be reduced by \$29,600 to pay for observers. Smaller vessels that may not have the harvesting or processing capacity of the larger vessels (and hence lower gross income), may not be able to afford this level of coverage.

Scallops do not comprise a major component of subsistence harvest, and of what there is occurs in State waters. Under the current management system, commercial fishing permits for weathervane scallops have not been issued for inside waters of Southeast Alaska (Statistical Area A), because these stocks are considered too limited to sustain a commercial fishery in addition to existing harvests by subsistence, personal use, and sport fishermen.

### 3.3.3 Administrative, Enforcement, and Information Costs and Benefits

Costs and benefits will depend on which alternative and option is being considered. Alternative 1, or the status quo, would not incur any Federal cost because the State would continue to manage scallops in Federal waters. Alternative 2 and its options would result in varying amounts of cost to the Federal government. The significant cost categories for each alternative and option are discussed below.

#### *Costs*

Moratorium. Alternative 2 and its options would require Federal administration of a scallop vessel moratorium. A scallop moratorium would not be a significant cost because NMFS has already implemented a vessel moratorium in the groundfish and crab fisheries. The existing infrastructure developed for the groundfish and crab moratoriums can be used to implement the scallop moratorium. The annual recurring costs for a scallop moratorium would be the salary for a moratorium coordinator plus office space - \$12,000/yr. The moratorium coordinator would perform the administrative tasks of monitoring transfers of moratorium rights and vessel replacements, reconstruction of vessels, updating the moratorium database, and organizing the appeals process.

Fisheries Management. Under alternative 2, an amendment to the Scallop FMP and its implementing regulations would be required to be developed and submitted to NMFS for approval. The cost would be at least \$14,000. The annual costs for in-season management of the scallop fishery requires real-time monitoring of catches, resulting in added management costs. For Alternative 1, this cost is essentially zero. For alternative 2, in-season management costs would result from monitoring the scallop harvest, and computer programming for developing scallop reports and changing summary report forms. Administrative, enforcement, and information costs for alternative 2 would depend on the suite of management measures adopted and the extent to which the State and NMFS cooperate in management of the scallop fishery. In 1993 and 1994, the State incurred considerable expense to manage intensely the scallop fishery in the EEZ.

Research. All of the alternatives, including the status quo, have information costs and benefits. State and Federal observers may be placed aboard scallop fishing and/or processing vessels to obtain, for example, catch and effort data; species, and size composition data. Observers may provide the benefits of better scientific and enforcement information than is otherwise available. The State developed an industry funded observer program for scallop vessels, beginning in 1993.

The biomass, population dynamics parameters and the biological potential of the sea scallop resource are not yet well known. As such, it is important to conduct scientific research on the resource. Such research can be approached two ways: (1) Conduct periodic surveys to estimate resource distribution and biomass; and (2) develop a biological sampling program to collect data from the commercial fishery to assess the abundance and status of the resource. A comprehensive survey of the sea scallop grounds in the GOA and the Bering Sea will require a 90-day cruise. Such a cruise cannot be part of ongoing groundfish research cruises because the type of sampling gear to be used will be different. A specialized scallop dredge will have to be used. The estimated cost of such a survey would be about \$540,000 (assume a vessel charter with scientific personnel cost at \$6,000 per day for a 90-day cruise).

A necessary part of the research program involves collection of fisheries statistics and biological specimens from the fisheries for status of stocks analyses. Assuming that a scientific observer program will already be in place and be paid for by the industry, the data collected will have to be analyzed by additional scientific personnel to determine the status of stocks. Scallop specimens will have to be aged at the laboratory and all sources of data need to be analyzed annually. The additional annual labor cost will be about \$60,000 for 1.5 person-years of time. It should be noted that this labor cost will be an on-going expense, which may have to be adjusted for cost-of labor each year.

NMFS Enforcement. Alternative would require an estimated .25 agent/year to address assistance to State of Alaska's Fish & Wildlife Protection division. Enforcement costs for the moratorium are estimated at .25 to .5 agent/yr to address assistance to the State and enforce illegal vessel entry into the scallop fishery. Under full Federal management of a scallop fishery (Alternative 2), enforcement costs are estimated at .75 to 1.0 agent/yr to address all violations. The estimated agent cost is \$100,000/yr or more, and includes salary, equipment, travel, office space and support staff.

These enforcement costs assume that there will be few problems managing the scallop fishery. If the same types of problems that occur in the east coast scallop fishery develop in the Alaska scallop fishery, enforcement costs would increase.

NOAA General Counsel. Costs for General Counsel to review a proposed scallop FMP amendment for submission to NMFS would incur some cost. An appeals process for the scallop moratorium and enforcement of the scallop regulations may also require additional costs.

### *Benefits*

Under all alternatives, information collected by reporting requirements and an observer program will be useful to attain fishery management objectives and to ensure a viable scallop fishery. Maintenance of a viable scallop fishery under any of the alternatives will provide some benefit both the State and Federal governments through long-term employment.

### 3.3.4 Benefit-Cost Conclusion

There will be costs to fishermen who cannot gain access to the scallop fishery, unless they purchase or lease a qualifying vessel during the duration of the moratorium proposed under Alternative 2. Participating vessels may incur costs associated with observer coverage, but will benefit due to reduced competition. The Federal Government will incur cost associated with research and management of this fishery, and the magnitude of this cost depends on the alternative chosen. The benefits associated with Federal management result from the fishery not being further overcapitalized. Benefits also depend on the ability of the scallops stocks to maintain recruitment given the protection afforded by Federal management.

### 3.4 Impact of the Proposed Action Relative to E.O. 12866 Requirements

None of the proposed alternatives is expected to result in a "significant" regulatory action as defined in E.O. 12866.

The proposed amendment would not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency.

The proposed amendment would not materially alter the budgetary impacts of entitlements, grants, user fees, or loan programs or the rights and obligations of the recipients thereof.

The proposed amendment would not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

The proposed amendment would not have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, productivity, competition, jobs, the environment, the public health or safety, or governments.

## **4.0 IMPACT OF THE PROPOSED ACTION RELATIVE TO THE RFA**

The objective of the RFA is to require consideration of the capacity of those affected by regulations to bear the direct and indirect costs of regulation. If an action will have a significant impact on a substantial number of small entities, an Initial Regulatory Flexibility Analysis (IRFA) must be prepared to identify the need for the action, alternatives, potential costs and benefits of the action, the distribution of these impacts, and a determination of net benefits.

NMFS has defined all fish-harvesting or hatchery businesses that are independently owned and operated, not dominant in their field of operation, with annual receipts not in excess of \$2,000,000 as small businesses. In addition, seafood processors with 500 employees or fewer, wholesale industry members with 100 employees or fewer, not-for-profit enterprises, and government jurisdictions with a population of 50,000 or less are considered small entities. A "substantial number" of small entities would generally be 20 percent of the total universe of small entities affected by the regulation. A regulation would have a "significant impact" on these small entities if it resulted in a reduction in annual gross revenues by more than 5 percent, annual compliance costs that increased total costs of production by more than 5 percent, or compliance costs for small entities that are at least 10 percent higher than compliance costs as a percent of sales for large entities.

If an action is determined to affect a substantial number of small entities, the analysis must include:

1. a description and estimate of the number of small entities and total number of entities in a particular affected sector, and total number of small entities affected; and
2. analysis of economic impact on small entities, including direct and indirect compliance costs, burden of completing paperwork or recordkeeping requirements, effect on the competitive position of small entities, effect on the small entity's cashflow and liquidity, and ability of small entities to remain in the market.

The objective of the RFA is to require consideration of the capacity of those affected by regulations to bear the direct and indirect costs of regulation. If an action will have a significant impact on a substantial number of small entities an IRFA must be prepared to identify the need for the action, alternatives, potential costs and benefits of the action, the distribution of these impacts, and a determination of net benefits.

#### 4.1 Amendment 1

Most commercial fishing vessels harvesting scallops off Alaska meet the definition of a small entity under the RFA. The potential short-term foregone revenue that would occur under Alternative 1 (the status quo) would result in a significant economic impact on a substantial number of small entities. In 1994, 86 percent of the scallops harvested off Alaska were taken from Federal waters and 11 of the 16 vessels harvesting scallops participated in no other fishery. The economic effects of Alternative 2 to the regulated community would be positive and significant in that it would repeal the closure of all Federal waters to scallop fishing.

In the final rule implementing Amendment 1, NMFS has taken various steps to minimize economic impacts on small entities consistent with the objectives of the Magnuson Act. These steps include: (1) Avoiding duplicate State and Federal recordkeeping and reporting requirements, (2) avoiding duplicate State and Federal fishing permits, and (3) exempting small vessels fishing inside the Cook Inlet Registration Area from observer coverage requirements. Alternative 2--Amending the FMP for Alaskan scallops to allow for a federally controlled fishery to occur in the EEZ was determined to be the least burdensome alternative on small entities. Alternative 1-- Status Quo was rejected as more burdensome on small entities because alternative 1 would continue the closure of the EEZ to all scallop fishing for 1 year after which time unregulated fishing could occur. The likely effect of alternative 1 would be overfishing and depletion of the scallop resource which would result in a significant loss of fishing opportunity for all small entities involved in the scallop fishery.

#### 4.2 Amendment 2

The economic effects of Alternative 2, if promulgated, could have a significant and positive impact on a substantial number of small entities as compared to the status quo. A moratorium on the entry of new vessels into the scallop fishery will help prevent further overcapitalization of the fishery and the loss of income to current participants that would result from further overcapitalization. However, it is impossible to determine how many new vessels would enter the fishery in the absence of a vessel moratorium. As a consequence, the benefits of a moratorium are impossible to quantify.

Section 3.0 of this document describes the affected scallop fleet in detail. Eighteen vessels would qualify for the moratorium under the qualification criteria adopted by the Council. Some or all of these operations may be considered small entities under the RFA. According to ADF&G landing records, at least three vessels have entered the scallop fishery since the moratorium cut-off date and would not qualify for moratorium permits. However, participation in the scallop fishery by these three vessels has been sporadic. None of these vessels made a single landing during the entire moratorium qualification period of 1980-93,

nor have they participated on a consistent basis since the moratorium cut-off date of December 31, 1993, and none of these three vessels has re-entered the fishery since the re-opening of Federal waters to fishing for scallops on August 1, 1996, under Amendment 1 to the FMP. The Council chose not to extend the moratorium qualifying period past 1993 in order to discourage speculative entry while the moratorium was developed and submitted for review. Additional entry into the fishery during the development and implementation phase would only exacerbate the very problems that the moratorium is intended to solve. Fishermen received extensive notice through the Council process described above that the fishery was being limited in a way that jeopardized any investments they made in the fishery after 1993.

Amendment 2 would impose a minor collection-of-information requirement on affected vessels. This collection of information is necessary to provide information to NMFS for the implementation and management of the moratorium. NMFS would develop a database derived from State of Alaska scallop fish ticket data that would tentatively identify all vessels meeting the moratorium qualifying criteria. Scallop vessel owners wishing to participate in the scallop fishery during the moratorium period would submit to NMFS a completed application for a moratorium permit. NMFS would verify the information included on each application and issue moratorium permits to each qualifying vessel owner. To properly issue moratorium permits, NMFS must collect information such as: The name and address of the vessel owner to whom the permit will be issued; the name, registration number and length of the qualifying vessel; proof of ownership of the qualifying vessel; and the vessel's basis for qualifying for a moratorium permit.

During the moratorium, a moratorium permit could be transferred from a person to another person. This provision for transferability of moratorium permits is necessary to allow fishermen flexibility for their business operations. All persons taking part in the transfer of a moratorium permit would be required to submit an application for transfer of the moratorium permit to NMFS. NMFS would verify the information contained in the transfer application and issue a new moratorium permit in the name of the new permit holder.

NMFS and Alaska State files contain much of the information requested in the moratorium permit application, however, this information must be verified or corrected by the person applying for the moratorium permit. NMFS intends to reduce the burden on applicants by mailing pre-filled applications to each person the agency believes would qualify for a moratorium permit. Applicants would simply be requested to verify and/or correct the information shown on the permit application and return the signed and completed application to NMFS. Only potential applicants of whom NMFS is currently unaware would be required to fill out a blank permit application. NMFS has consulted with the Alaska State Department of Fish and Game (ADF&G) to determine what types of information on scallop vessels, vessel owners and scallop landings are available in ADF&G fishticket databases. The scallop fishing industry has been heavily involved in the design and development of the moratorium program through the Council process, and has indicated its support for the program.

The proposed rule to implement Amendment 2 was published in the Federal Register on December 26, 1996 (61 FR 67990) and comments were invited on the IRFA. No comments were received on the IRFA.

## 5.0 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, Unpublished Manuscript.
- Bannister, R.C.A. 1986. Assessment and population dynamics of commercially exploited shellfish in England and Wales. Pages 182-194 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.
- Baranov, F.I. 1918. On the question of the biological basis of fisheries. Nauch. Issled. Ikhtiol. Inst., Izv. 1(1):81-128.
- Bourne, N. 1986. Bivalve fisheries: their exploitation and management with particular reference to the Northeast Pacific region. Pages 2-13 in G.S. Jamieson and N. Bourne, (eds.) North Pacific workshop on stock assessment and management of invertebrates. Canadian Special Publication of Fisheries and Aquatic Sciences 92.
- Bourne, N. 1991. Fisheries and Aquaculture: West Coast of North America. In: S.E. Shumway, (ed.), Scallops: biology, ecology, and aquaculture. Elsevier, N.Y. 1991.
- 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. 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.
- Clark, W.G. 1991. Groundfish exploitation rates based on life history parameters. Canadian Journal of Fisheries and Aquatic Sciences 48: 734-750.
- DuPaul, W.D. and R.B. Carnegie. 1994. Observations of the Alaskan sea scallop (Patinopecten caurinus) fishery Yakutat, Alaska 1993. Virginia Institute of Marine Science Report No. 94-3.
- 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.
- Elnor, 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.



- Gruffydd L.D. 1972. Mortality of scallops on a Manx scallop bed due to fishing. *J. Mar. Bio. Ass. U.K.* 52:449-455.
- Gulland, J.A. 1983. *Fish stock assessment: a manual of basic methods.* John Wiley and Sons, New York.
- Hammarstrom, L.F., and M.F. Merritt. 1985. A survey of Pacific weathervane scallops (Pecten caurinus) in Kamishak Bay, Alaska. Alaska Department of Fish and Game, Division of Commercial Fisheries, Informational Leaflet 252, Juneau.
- Haynes, E.B., and G.C. Powell. 1968. A preliminary report on the Alaska sea scallop - fishery exploration, biology, and commercial processing. Alaska Department of Fish and Game, Division of Commercial Fisheries, Informational Leaflet 125, Juneau.
- Hennick, D.P. 1970a. The weathervane scallop fishery of Alaska with notes on occurrence in Washington and Oregon. Pacific Marine Fisheries Commission, Annual Report for the Year 1969: 33-34.
- Hennick, D.P. 1970b. 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.
- Hoening, J.M. 1983. Empirical use of longevity data to estimate mortality rates. *Fishery Bulletin* 82(1): 898-902.
- 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. 1994. Fishery Management Plan for Commercial Scallop Fisheries in Alaska. ADF&G Draft Special Publication No. 5.
- Kruse, G.H., P.R. Larson, and M.C. Murphy. 1992. Proposed interim management measures for commercial scallop fisheries in Alaska. ADF&G Regional Information Report No. 5J92-08.
- 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.
- 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.
- Mearns, A.J. and Young, D.R. 1977. Chromium in the marine environment. In: C.S. Giam (Ed), *Pollutant effects on marine organisms*. Lexington Books: Lexington, MA pp.43-44.
- Medcof, J., and N. Bourne. 1964. Causes of mortality of the sea scallop Placopecten magellanicus. *Proceedings of the National Shellfish Association* 53: 33-50.
- Morrison, R. 1994. Bering Sea Aleutian Islands Scallops. In: *Westward Region Reports to the Board of Fisheries*. March 1994.
- 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. Müller). *Journal of Shellfish Research* 7: 61-71.
- 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.
- NEFMC (New England Fishery Management Council). 1993. Final Amendment #4 and Supplemental Environmental Impact Statement to the Atlantic Sea Scallop Fishery Management Plan. New England Fishery Management Council, Saugus, Massachusetts. July 1993.
- National Marine Fisheries Service (NMFS). 1995. Biological Opinion on Groundfish Fisheries Conducted Under the BSAI and GOA FMPs of the NPFMC. December 7.
- National Marine Fisheries Service (NMFS). 1997. Final Environmental Assessment for the 1997 Groundfish Total Allowable Catch Specifications. NMFS-Alaska Region, PO Box 21668, Juneau, AK 99802-1668.
- NPFMC (North Pacific Fishery Management Council). 1989. Fishery Management Plan for the Commercial King and Tanner Crab Fisheries in the Bering Sea/Aleutian Islands. January 24, 1989.
- NPFMC (North Pacific Fishery Management Council). 1986. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for Amendment 10 to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea/Aleutian Islands Area.
- NPFMC (North Pacific Fishery Management Council). 1992. Final Supplemental Environmental Impact Statement and Regulatory Impact Review/Initial Regulatory Flexibility Analysis of Proposed Inshore/Offshore Allocation Alternatives (Amendment 18/23) to the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands and the Gulf of Alaska. March 5, 1992.

- NPFMC (North Pacific Fishery Management Council). 1992b. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for Amendment 26 to the Fishery Management Plan for the Groundfish Fishery of the Gulf of Alaska. Draft for Public Review. May 7, 1992.
- NPFMC (North Pacific Fishery Management Council). 1993. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis of Alternatives to Allocate the Pacific Cod Total Allowable Catch by Gear and/or Directly Change the Seasonality of the Cod Fisheries. Amendment 24 to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area. May 14, 1993.
- NPFMC (North Pacific Fishery Management Council). 1994. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for Amendment 21a to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea/Aleutian Islands. Draft for Secretarial Review. September 12, 1994.
- NPFMC (North Pacific Fishery Management Council). 1995. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis of the Fishery Management Plan for the Scallop Fishery off Alaska. Draft for Secretarial Review. July, 1995.
- 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.
- Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Bulletin of the Fisheries Research Board of Canada, No. 191. 382 p.
- Robert, G., and G.S. Jamieson. 1986. Commercial fishery data isopleths and their use in offshore sea scallop (Placopecten magellanicus) stock evaluations. Pages 76-82 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.
- Sharma, D. 1979. The Alaskan shelf. Springer-Verlag, New York. 498 p.
- Shepard, A.N. and P.J. Auster. 1991. Incidental (non-capture) damage to scallops caused by dragging on rock and sand substrates. In: Shumway, S.E. and Sandifer (eds.) An International Compendium of Scallop Biology and Culture. World Aquaculture Workshops, #1, The World Aquaculture Society, Louisiana State University, Baton Rouge. pp. 219-230.
- Shumway, S.E. 1990. A review of the effects of algal blooms on shellfish and aquaculture. Journal World Aquaculture Society.
- Starr, R.M., and J.E. McCrae. 1983. Weathervane scallop (Patinopecten caurinus) investigations in Oregon, 1981-1983. Oregon Department of Fish and Wildlife, Information Reports 83-10, Newport.

- Sutinen, J.G., P. Mace, J. Kirkley, W. DuPaul, and S. Edwards. 1992. Consideration of the Potential Use of Individual Transferable Quotas in the Atlantic Sea Scallop Fishery. National ITQ Study Report, Volume 5. March 13, 1992. 134 p.
- Urban, D., D. Pengilly, and I. Vining, 1994. The scallop observer program and statewide data analysis summary to the Board of Fisheries. Alaska Department of Fish and Game, Kodiak, Alaska. 54p.
- United States Fish and Wildlife Service (USFWS). 1989. Formal consultation with the U.S. Fish and Wildlife Service Pursuant to Section 7 of the Endangered Species Act. Biological Opinion. July 3, 1989. National Marine Fisheries Service, Juneau, Alaska.
- United States Fish and Wildlife Service (USFWS). 1994. Informal consultation with the U.S. Fish and Wildlife Service Pursuant to Section 7 of the Endangered Species Act. February 14, 1989. National Marine Fisheries Service, Juneau, Alaska.
- United States Fish and Wildlife Service (USFWS). 1995. Formal consultation with the U.S. Fish and Wildlife Service Pursuant to Section 7 of the Endangered Species Act. Amendment to Biological Opinion. February 7, 1995. National Marine Fisheries Service, Juneau, Alaska.

## **6.0 LIST OF PREPARERS**

David Witherell  
North Pacific Fishery Management Council  
P.O. Box 103136  
Anchorage, AK 99510

Dr. Gordon Kruse  
Alaska Department of Fish and Game  
Division of Commercial Fisheries  
P.O. Box 3-2000  
Juneau, AK 99802-2000

Kent Lind  
Alaska Regional Office  
National Marine Fisheries Service  
P.O. Box 21668  
Juneau, AK 99802

Sue Salveson  
Alaska Regional Office  
National Marine Fisheries Service  
P.O. Box 21668  
Juneau, AK 99802

## 7.0 LIST OF TABLES

- Table 1. Historic number of vessels, number of landings, landed weight of shucked meats, price per pound, exvessel value, landings per vessel, and exvessel value per vessel for the weathervane scallop fishery in Alaska during 1967-1994. In years when only one or two vessels participated in a fishery, the harvest statistics are confidential.
- Table 2. Landings of scallops by year, registration area, and species, 1980-1994.
- Table 3. Number of vessels participating in the scallop fishery 1980-1992, by the number of years participating.
- Table 4. Number of vessels participating in the scallop fishery 1980-1992, by landings category.
- Table 5. Number of vessels participating in the scallop fishery 1980-1992, by the number of months with scallop landings.
- Table 6. Number of vessels participating in the scallop fishery 1980-1992, by vessel length category.
- Table 7. Scallop fishery moratorium elements adopted by the Council, April 1994.
- Table 8. Available cost data for the scallop fleet participating in the 1993 fishery.

Table 1. Historic number of vessels, number of landings, landed weight of shucked meats, price per pound, exvessel value, landings per vessel, and exvessel value per vessel for the weathervane scallop fishery in Alaska during 1967-1994. All data for 1967-1968, and prices and exvessel values for 1967-1975 and 1979 were taken from Kaiser (1986); all other data were summarized from fish tickets (Kruse 1994). The 1994 data are preliminary. In years when only one or two vessels participated in a fishery, the harvest statistics are confidential.

<i>Year</i>	<i>No. of Vessels</i>	<i>No. of Landings</i>	<i>Landings Wt. (lb)</i>	<i>Price (\$/lb)</i>	<i>Exvessel Value (\$)</i>	<i>(lb) per Vessel</i>	<i>Value (\$) per Vessel</i>
1967	<-----Confidential----->						
1968	19	125	1,677,268	0.85	1,425,678	88,277	75,036
1969	19	157	1,850,187	0.85	1,572,659	97,378	82,772
1970	7	137	1,440,338	1.00	1,440,338	205,763	205,763
1971	5	60	931,151	1.05	977,709	186,230	195,542
1972	5	65	1,167,034	1.15	1,342,089	233,407	268,418
1973	5	45	1,109,495	1.20	1,331,394	221,881	266,279
1974	<-----Confidential----->						
1975	4	56	435,672	1.40	609,941	108,918	152,485
1976	<-----Confidential----->						
1977	<-----Confidential----->						
1978	0	0	0	-	0	0	0
1979	<-----Confidential----->						
1980	8	56	632,535	4.32	2,732,551	79,067	341,569
1981	18	101	924,441	4.05	3,743,986	51,358	207,999
1982	13	120	913,996	3.77	3,445,765	70,307	265,059
1983	6	31	194,116	4.88	947,286	32,353	157,881
1984	10	61	389,817	4.47	1,742,482	38,982	174,248
1985	8	53	647,679	3.12	2,020,758	80,599	252,595
1986	9	86	682,622	3.66	2,498,397	75,847	277,600
1987	4	55	583,043	3.38	1,970,685	145,761	492,671
1988	4	47	341,070	3.49	1,190,334	85,268	297,584
1989	7	54	525,598	3.68	1,934,201	75,085	276,314
1990	9	144	1,488,64	3.37	5,016,724	165,405	557,414
1991	7	144	1,191,014	3.76	4,478,213	170,145	639,745
1992	7	137	1,810,788	3.88	7,028,702	258,684	1,004,100
1993	15	155	1,428,976	5.00	7,144,880	95,265	476,325
1994	16	118	1,235,267	6.00	7,411,614	77,204	463,226

Table 2. Landings of scallops by year, registration area, and species, 1980-1994. Only landings from areas that contributed substantially to the total annual catch are listed separately. The "All Areas" catch listed for each year includes catch from all registration areas.

		<i>Weathervane scallops</i>		<i>Pink scallops</i>		<i>Annual Totals</i>	
		<i>Pounds</i>	<i>Vessels</i>	<i>Pounds</i>	<i>Vessels</i>	<i>Pounds</i>	<i>Vessels</i>
1980	(A) Southeastern Alaska	*	2	0	0	*	2
	(D) Yakutat	**	6	0	0	**	6
	(K) Kodiak	371,018	7	0	0	371,018	7
	All Areas	632,535	8	0	0	632,535	8
1981	(A) Southeastern Alaska	*	1	0	0	*	1
	(D) Yakutat	**	10	0	0	**	10
	(K) Kodiak	460,890	15	0	0	460,890	15
	All Areas	924,441	18	0	0	924,441	18
1982	(A) Southeastern Alaska	*	3	0	0	*	3
	(D) Yakutat	168,353	6	0	0	168,353	6
	(K) Kodiak	435,802	8	0	0	435,802	8
	(M) Alaska Peninsula	205,534	6	0	0	205,534	6
	(O) Dutch Harbor	**	5	0	0	**	5
	All Areas	913,996	13	0	0	913,996	13
1983	(A) Southeastern Alaska	*	1	0	0	*	1
	(K) Kodiak	**	4	0	0	**	4
	(M) Alaska Peninsula	*	1	0	0	*	1
	(H) Cook Inlet	*	1	0	0	*	1
	All Areas	194,116	6	0	0	194,116	6
1984	(D) Yakutat	*	2	0	0	*	2
	(K) Kodiak	309,502	6	0	0	309,502	6
	(H) Cook Inlet	*	3	0	0	*	3
	All Areas	389,817	9	0	0	389,817	9
1985	(D) Yakutat	14,221	4	0	0	14,221	4
	(K) Kodiak	*	3	0	0	*	3
	(M) Alaska Peninsula	*	1	0	0	*	1
	(O) Dutch Harbor	*	3	0	0	*	3
	(H) Cook Inlet	*	1	0	0	*	1
	All Areas	647,679	8	0	0	647,679	8



		<i>Weathervane scallops</i>		<i>Pink scallops</i>		<i>Annual Totals</i>	
		<i>Pounds</i>	<i>Vessels</i>	<i>Pounds</i>	<i>Vessels</i>	<i>Pounds</i>	<i>Vessels</i>
1986	(D) Yakutat	*	2	0	0	*	2
	(K) Kodiak	180,600	5	0	0	180,600	5
	(O) Dutch Harbor	387,209	5	0	0	387,209	5
	(H) Cook Inlet	*	3	0	0	*	3
	(Q) Adak/Bristol Bay/Bering Sea	*	1	0	0	*	1
	All Areas	682,622	9	0	0	682,622	9
1987	(D) Yakutat	*	1	0	0	*	1
	(K) Kodiak	*	3	0	0	*	3
	(O) Dutch Harbor	*	2	0	0	*	2
	(H) Cook Inlet	*	1	0	0	*	1
	(Q) Adak/Bristol Bay/Bering Sea	*	2	0	0	*	2
	All Areas	583,043	4	0	0	583,043	4
1988	(D) Yakutat	*	1	0	0	*	1
	(K) Kodiak	*	3	0	0	*	3
	(M) Alaska Peninsula	*	1	0	0	*	1
	(O) Dutch Harbor	*	1	0	0	*	1
	All Areas	341,070	4	0	0	341,070	4
1989	(D) Yakutat	*	1	0	0	*	1
	(K) Kodiak	**	5	0	0	**	5
	(O) Dutch Harbor	*	1	0	0	*	1
	All Areas	534,763	7	0	0	534,763	7
1990	(A) Southeastern Alaska	**	4	0	0	**	4
	(D) Yakutat	442,310	8	0	0	442,310	8
	(K) Kodiak	697,003	7	0	0	697,003	7
	(M) Alaska Peninsula	*	2	0	0	*	2
	(O) Dutch Harbor	*	1	0	0	*	1
	(Q) Adak/Bristol Bay/Bering Sea	*	1	0	0	*	1
	All Areas	1,488,642	9	0	0	1,488,642	9

		<i>Weathervane scallops</i>		<i>Pink scallops</i>		<i>Annual Totals</i>	
		<i>Pounds</i>	<i>Vessels</i>	<i>Pounds</i>	<i>Vessels</i>	<i>Pounds</i>	<i>Vessels</i>
1991	(A) Southeastern Alaska	*	3	0	0	*	3
	(D) Yakutat	402,571	5	0	0	402,571	5
	(K) Kodiak	514,348	4	0	0	514,348	4
	(M) Alaska Peninsula	*	1	0	0	*	1
	(O) Dutch Harbor	*	1	*	1	*	2
	(Q) Adak/Bristol Bay/Bering Sea	*	3	*	1	125,523	4
	All Areas	1,136,713	7	*	1	1,191,014	8
1992	(A) Southeastern Alaska	*	1	0	0	*	1
	(D) Yakutat	1,020,968	7	0	0	1,020,968	7
	(K) Kodiak	*	3	0	0	*	3
	(O) Dutch Harbor	*	1	*	1	*	1
	(E) Prince William Sound	208,836	4	0	0	208,836	4
	All Areas	1,741,578	7	*	1	1,810,788	7
1993	(Q) Bering Sea	531,668	9	0	0	531,668	9
	(D) Yakutat	256,493	10	0	0	256,493	10
	(K) Kodiak	374,908	10	0	0	374,908	10
	All Areas	1,428,976	15	0	0	1,428,976	15
1994	(Q) Bering Sea	505,439	9	0	0	505,439	9
	(D) Yakutat	259,206	12	0	0	259,206	12
	(K) Kodiak	381,850	10	0	0	381,850	10
	All Areas	1,235,269	17	0	0	1,235,269	17

\* Confidential data

\*\* Data masked to prevent extraction of confidential data

Table 3. Number of vessels participating in the scallop fishery 1980-1992, by the number of years participating.

<i>Year</i>	<i>Number of Years Participating</i>												
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>
<b>1980</b>	8	0	0	0	0	0	0	0	0	0	0	0	0
<b>1981</b>	13	5	0	0	0	0	0	0	0	0	0	0	0
<b>1982</b>	4	6	3	0	0	0	0	0	0	0	0	0	0
<b>1983</b>	4	0	1	1	0	0	0	0		0	0	0	0
<b>1984</b>	4		1	1	1	0	0	0	0	0	0	0	0
<b>1985</b>	6	0	1	0	1	1	0	0	0	0	0	0	0
<b>1986</b>	5	2	0	0	0	1	1	0	0	0	0	0	0
<b>1987</b>	0	2	0	1	0	0	0	1	0	0	0	0	0
<b>1988</b>	1	0	2	0	0	0	0	0	1	0	0	0	0
<b>1989</b>	3	2	0	1	0	0	0	0	0	1	0	0	0
<b>1990</b>	2	3	2	0	1	0	0	0	0	0	1	0	0
<b>1991</b>	3	0	2	1	0	1	0	0	0	0	0	1	0
<b>1992</b>	1	2	0	2	1	0	0	0	0	0	0	0	1

Note: No vessels fished in 1978, and only two fished in 1979; of these, one fished for only 1 year, and one fished through 1982.

Table 4. Number of vessels participating in the scallop fishery 1980-1992, by landings category.

	<i>Number of Landings Per Vessel</i>					
<i>Year</i>	<i>1-5</i>	<i>6-10</i>	<i>11-15</i>	<i>16-20</i>	<i>21-25</i>	<i>26-30</i>
<b>1980</b>	4	2	1	0	1	0
<b>1981</b>	12	3	2	1	0	0
<b>1982</b>	5	2	5	0	1	0
<b>1983</b>	5	0	0	0	1	0
<b>1984</b>	6	1	0	0	2	0
<b>1985</b>	7	0	0	2	0	0
<b>1986</b>	3	3	1	2	0	0
<b>1987</b>	1	2	0	0	0	1
<b>1988</b>	2	0	1	0	1	0
<b>1989</b>	3	3	0	1	0	0
<b>1990</b>	1	3	2	1	1	1
<b>1991</b>	1	1	3	1	2	0
<b>1992</b>		1	2	3	1	0

Table 5. Number of vessels participating in the scallop fishery 1980-1992, by the number of months with scallop landings.

<i>Months With</i>	<i>Year</i>											
	<i>1980</i>		<i>1981</i>		<i>1982</i>		<i>1983</i>		<i>1984</i>		<i>1985</i>	
	<i>Vessels</i>	<i>Percent</i>	<i>Vessels</i>	<i>Percent</i>	<i>Vessels</i>	<i>Percent</i>	<i>Vessels</i>	<i>Percent</i>	<i>Vessels</i>	<i>Percent</i>	<i>Vessels</i>	<i>Percent</i>
1	2	25.0	2	11.1	1	7.7	5	83.3	4	44.4	4	44.4
2	1	12.5	8	44.4	2	15.4	0	0	3	33.3	1	11.1
3	2	25.0	1	5.6	0	0	0	0	0	0	2	22.2
4	1	12.5	3	16.7	3	23.1	0	0	0	0	0	0
5	0	0	0	0	1	7.7	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	1	12.5	2	11.1	3	23.1	0	0	0	0	0	0
8	0	0	1	5.6	1	7.7	0	0	0	0	0	0
9	0	0	0	0	1	7.7	0	0	0	0	1	11.1
10	0	0	0	0	1	7.7	0	0	0	0	1	11.1
11	0	0	0	0	0	0	0	0	1	11.1	0	0
12	1	12.5	1	5.6	0	0	1	16.7	1	11.1	0	0
Year Totals	8	100.0	18	100.0	13	100.0	6	100.0	9	100.0	9	100.0

<i>Months With Landings</i>	<i>Year</i>													
	<i>1986</i>		<i>1987</i>		<i>1988</i>		<i>1989</i>		<i>1990</i>		<i>1991</i>		<i>1992</i>	
	<i>Vessels</i>	<i>Percent</i>	<i>Vessels</i>	<i>Percent</i>	<i>Vessels</i>	<i>Percent</i>	<i>Vessels</i>	<i>Percent</i>	<i>Vessels</i>	<i>Percent</i>	<i>Vessel</i>	<i>Percent</i>	<i>Vessel</i>	<i>Percent</i>
1	0	0	0	0	2	50.0	0	0	0	0	1	12.5	0	0
2	2	22.2	1	25.0	0	01.1	2	28.6	1	11.1	0	0	0	0
3	1	11.1	0	0	0	0	1	14.3	0	0	0	0	0	0
4	2	22.2	0	0	0	0	2	28.6	0	0	1	12.5	0	0
5	1	11.1	1	25.0	1	25.0	0	0	0	0	0	0	1	14.3
6	0	0	0	0	0	0	1	14.3	1	11.1	1	12.5	0	0
7	1	11.1	0	0	0	0	0	0	1	11.1	0	0	2	28.6
8	0	0	0	0	0	0	0	0	4	44.4	0	0	0	0
9	2	22.2	1	25.0	0	0	0	0	0	0	2	25.0	0	0
10	0	0	0	0	0	0	0	0	1	11.1	1	12.5	2	28.6
11	0	0	0	0	0	0	0	0	1	11.1	1	12.5	2	28.6
12	0	0	1	25.0	1	25.0	1	14.3	0	0	1	12.5	0	0
Year Totals	9	100.0	4	100.0	4	100.0	7	100.0	9	100.0	8	100.0	7	100.0

Table 6. Number of vessels participating in the scallop fishery 1980-1992, by vessel length category.

<i>Year</i>	<i>Length Category (ft)</i>						
	<i>&lt;50</i>	<i>50-70</i>	<i>71-90</i>	<i>91-110</i>	<i>111-130</i>	<i>131-150</i>	<i>&gt;150</i>
<b>1980</b>	0	1	5	2	0	0	0
<b>1981</b>	0	2	11	4	0	1	0
<b>1982</b>	2	0	8	3	0	0	0
<b>1983</b>	4	0	1	1	0	0	0
<b>1984</b>	4	2	1	2	0	0	0
<b>1985</b>	3	1	1	3	0	0	0
<b>1986</b>	3	0	1	3	1	1	0
<b>1987</b>	1	0	0	2	0	1	0
<b>1988</b>	0	0	1	2	0	1	0
<b>1989</b>	0	1	2	3	1	0	0
<b>1990</b>	0	1	2	5	1	0	0
<b>1991</b>	0	1	1	1	2	1	1
<b>1992</b>	0	1	2	1	1	1	1
<b>1993</b>	0	3	8	2	1	1	0
<b>1994</b>	0	4	8	2	1	1	

Note: Prior to 1980, nearly all vessels were 70-90 ft. One missing vessel in 1987.

Table 7. Scallop fishery moratorium elements adopted by the Council, April 1994.

---

<u>Qualifying Criteria:</u>	Vessels must have participated (made at least one landing) in 1991 or 1992 or 1993, <u>or</u> must have participated for at least four years between January 1, 1980 and January 1, 1993. Vessels that were in the “pipeline” to fish for Alaskan scallops (i.e., under construction, being refitted, relocated, etc.) but had not made a required landing, would not qualify under the moratorium. Permits will be issued to the most recent owner of the vessel at the time of qualifying. Vessels that made landings from Cook Inlet only would receive permits for that area only, and no crossovers between Cook Inlet and other areas will be allowed unless a vessel qualifies for both areas.
<u>Length of Moratorium:</u>	The moratorium will remain in effect until the Council repeals or replaces; not to exceed 3 years from date of implementation, but Council may extend for 2 years if a permanent limited access program is imminent.
<u>Crossovers:</u>	Crossovers to other fisheries (groundfish, crab, or halibut) during the moratorium will not be allowed, except for vessels that were qualified under both the scallop and groundfish moratoria.
<u>Reconstruction:</u>	Vessels may be reconstructed during the moratorium. If physical reconstruction started on or after January 20, 1993, the new size is restricted to a 20 percent increase in vessel length (specified as length overall, LOA). Only one upgrade is allowed.
<u>Replacement:</u>	Qualifying vessels can be replaced with non-qualifying vessels as often as desired so long as the replaced vessel leaves the fishery or bumps another qualifying vessel out in the case of multiple transactions. Vessel size can be increased as many times as desired, but is restricted to a 20 percent maximum increase in original qualifying vessel length (LOA). For vessels lost or destroyed before or during the moratorium, qualifying vessels can be replaced with non-qualifying vessels subject to a 20 percent maximum increase in vessel length (LOA). Replaced vessels cannot be salvaged and come back into the fishery.
<u>Exemptions:</u>	Vessels 26 ft or less in the GOA and vessels 32 ft or less in LOA in the BSAI are exempted from the moratorium only if they use gear other than dredges or trawls (hence, diving would be allowed from these vessels).
<u>Appeals:</u>	The appeals procedures will be similar to those for the sablefish and halibut IFQ program.

---



Table 8. Available cost data for the scallop fleet participating in the 1993 fishery.

<i>Vessel ID #</i>	<i>Length (ft.)</i>	<i>Operating Costs</i>	<i>Fish Taxes</i>	<i>Total Fixed Costs</i>	<i>1993 Exvessel price/lb</i>	<i>Break even income</i>	<i>Break even poundage</i>
1	114'	61%	3.85%	\$507,310	\$4.76	\$1,443,272	303,208
2	97'	56%	3.85%	\$276,191	\$4.76	\$ 696,573	146,339
3	88'	57%	3.30%	\$285,300	\$6.60	\$ 718,640	108,885
4	88'	57%	3.30%	\$285,300	\$6.60	\$ 718,640	108,885
5	98'	60%	1.25%	\$278,424	\$6.14	\$ 704,761	114,782
6	96'	60%	N/A	\$214,850	\$6.65	\$ 742,125	111,597
7	96'	60%	N/A	\$207,250	\$6.65	\$ 745,625	112,124
Average	97'	59%	-	\$293,518	\$6.02	\$ 824,234	143,689

## 8.0 LIST OF FIGURES

- Figure 1. Scallop landings in Alaska, 1969-1995.
- Figure 2. Scallop landings inside and outside Alaskan State waters by management area, 1969-1991.
- Figure 3. Scallop dredge design used in the U.S. east coast and Alaska sea scallop fisheries.
- Figure 4. Areas fished during the 1993 scallop fishery. Areas fished in Cook Inlet, Alaska Peninsula, and Dutch Harbor remain confidential.
- Figure 5. Size frequency of scallops caught in the Yakutat, Prince William Sound, and Kodiak Management Areas during the 1993 scallop fishery. From Urban et al. (1994).
- Figure 6. Size frequency of scallops caught in the Alaska Peninsula, Dutch Harbor, and Bering Sea Management Areas during the 1993 scallop fishery. From Urban et al. (1994).
- Figure 7. Registration (regulatory) areas for the scallop fishery.
- Figure 8. Scallop fishing districts in the Cook Inlet Area.
- Figure 9. Abundance of king crab, Tanner crab, and snow crab populations in the Bering Sea based on NMFS trawl survey data 1976-1994. All size categories are included.
- Figure 10. King crab protection areas around Kodiak Island.
- Figure 11. King crab protection zones in Bristol Bay. Zone 1 would be closed year-round; Zone 2 closed to scallop fishing March 15 - June 15.
- Figure 12. Pribilof Islands habitat protection area. This area would be closed to scallop fishing year-round.
- Figure 13. Closed waters to scallop fishing under State regulations in the Prince William Sound area.
- Figure 14. Closed waters to scallop fishing under State regulations in the Kodiak area.
- Figure 15. Closed waters to scallop fishing under State regulations in the Alaska Peninsula, and Dutch Harbor areas.

Figure 1. Scallop landings in Alaska, 1969-1995.

Figure 2. Scallop landings inside and outside Alaskan State waters by management area, 1969-1991.

Figure 3. Scallop dredge design used in the U.S. east coast and Alaska sea scallop fisheries.

Figure 4. Areas fished during the 1993 scallop fishery. Areas fished in Cook Inlet, Alaska Peninsula, and Dutch Harbor remain confidential.

Figure 5. Size frequency of scallops caught in the Yakutat, Prince William Sound, and Kodiak Management Areas during the 1993 scallop fishery. From Urban et al. (1994).

Figure 6. Size frequency of scallops caught in the Alaska Peninsula, Dutch Harbor, and Bering Sea Management Areas during the 1993 scallop fishery. From Urban et al. (1994).



Figure 7. Registration (regulatory) areas for the scallop fishery.

Figure 8. Scallop fishing districts in the Cook Inlet Area.

Figure 9. Abundance of king crab, Tanner crab, and snow crab populations in the Bering Sea based on NMFS trawl survey data 1976-1994. All size categories are included.

Figure 10. King crab protection areas around Kodiak Island.

Figure 11. King crab protection zones in Bristol Bay. Zone 1 would be closed year-round; Zone 2 closed to scallop fishing March 15 - June 15.

Figure 12. Pribilof Islands habitat protection area. This area would be closed to scallop fishing year-round.

Figure 13. Closed waters to scallop fishing under State regulations in the Prince William Sound area.

Figure 14. Closed waters to scallop fishing under State regulations in the Kodiak area.



Figure 15. Closed waters to scallop fishing under State regulations in the Alaska Peninsula, and Dutch Harbor areas.

## **APPENDIX A. Definitions of Terms**

The following terms are used extensively throughout this document:

Acceptable biological catch (ABC) is a preliminary description of the acceptable harvest (or range of harvests) for a given stock or stock complex. Its derivation focuses on the status and dynamics of the stock, environmental conditions, other ecological factors, and prevailing technological characteristics of the fishery. Given suitable biological justification, the ABC may be set anywhere between zero and the current harvestable biomass. The ABC is defined as zero when the stock is at or below threshold. The ABC may be modified to incorporate safety factors and risk assessment due to uncertainty.

Commercial fishing means fishing, the resulting catch of which is intended to be sold or bartered.

Federal is defined as the United States Federal Government. Federal fisheries management falls within the Department of Commerce, with the primary regulatory agency for fishing as the National Marine Fisheries Service within the National Oceanic and Atmospheric Administration. The North Pacific Fishery Management Council provide local and regional input on fishery management to the Secretary of Commerce on

Fishing year for purposes of the federally managed scallop fishery is defined as a 12-month period starting July 1 and ending June 30 of the following year.

Guideline harvest level (GHL) is the level of harvest that the State establishes preseason, and usually expressed as a range of allowable harvest for a species or species group of scallops for each registration area, district, subdistrict or section.

Guideline Harvest Range (GHR) is the range for the annual GHL of each registration area, district, subdistrict or section. The GHRs are established by the State on the basis of pounds of shucked meats, and are estimated using the best available scientific information. GHRs may be revised as new biological and fishery data become available.

Maximum sustainable yield (MSY) is an average over a reasonable length of time of the largest catch which can be taken continuously from a stock under current environmental conditions. MSY should normally be presented with a range of values around its point estimate. Where sufficient scientific data as to the biological characteristics of the stock do not exist, or the period of exploitation or investigation has not been long enough for adequate understanding of stock dynamics, the MSY will be estimated from the best information available. This definition adopted by the Council's Scientific and Statistical Committee (SSC) is similar to a definition presented in Ricker (1975).

Optimum Yield (OY) is that which provides the greatest overall benefit to the nation with particular reference to food production and recreational fisheries. OY is based upon the maximum sustainable yield for a given fishery, modified by relevant economic, social or biological factors. It may be obtained by a plus or minus deviation from ABC for purposes of promoting economic, social or ecological objectives as established by law and the public participation process.

The definition of OY prescribes that the benefits of the fishery resources be allocated among all of the people affected by the fishery. These include commercial fishermen, processors, foreign fishermen, sport fishermen, distributors, consumers, governments, and a host of manufacturing and service

industries. These groups usually have different and often conflicting ideas about the best use of the resources. Optimum yield then involves judgmental decisions that must be made by Councils based upon the best obtainable information.

Overfishing is the condition that occurs when the spawning stock is reduced by fishing to too low a level to ensure adequate production of young scallops -- the recruits to the future fishery. This definition is modified from Gulland (1983).

Registration (statistical) area. According to the State regulations, a statistical area consists of a registration area comprising all the waters within the statistical area which are territorial waters of Alaska; and an adjacent seaward biological influence zone, comprised of all the waters within the statistical area which are not part of the registration area. For this FMP, the term registration area shall encompass the statistical area.

State is defined as the State of Alaska. There are several agencies within the State (in addition to the State legislature) that regulate fisheries, fish processing, and habitat protection, including the Alaska Board of Fisheries (Board), the Alaska Department of Fish and Game (ADF&G), the Commercial Fisheries Entry Commission (CFEC), and the Alaska Department of Environmental Conservation (ADEC).

Subsistence fishing means the taking of scallops for customary and traditional uses by Alaska residents for direct personal or family consumption and not for sale in accordance with applicable law.

Threshold is the minimum size of a stock that allows sufficient recruitment so that the stock can eventually reach a level that produces MSY. Implicit in this definition are rebuilding schedules. They have not been explicitly specified since the selection of a schedule is a part of the OY determination process. Interest instead is on the identification of a stock level below which the ability to rebuild is uncertain. When a stock is at or below threshold, the fishery will be closed entirely, because further removals from the spawning stock will further jeopardize the already uncertain ability of the stock to recover. The estimate given should reflect use of the best scientific information available. This threshold definition differs only slightly from those used in other FMPs. The primary distinction is the specification that the fishery will be closed when the stock is at or below threshold. However, this addition is made only for clarity, and is consistent with the range of harvests specified in the definition of ABC below.

**APPENDIX B. Vessels that Qualify under the Council's April 1994 Preferred Moratorium Criteria**

## APPENDIX C. Description of Regulatory Areas and Districts

**Regulatory Areas:** The boundaries for each regulatory area are detailed below.

Southeastern Alaska (Area A) has at its southern boundary the International Boundary at Dixon entrance, and as its northern boundary Loran-C line 7960-Y-29590, which intersects the western tip of Cape Fairweather at 58° 47'58" N. Lat, 137° 56'30" W. long.

Yakatat (Area D) has at its western boundary the longitude of Cape Suckling (143° 53' W. long.) and at its southern boundary Loran-C line 7960-Y-29590, which intersects the western tip of Cape Fairweather at 58° 47'58" N. Lat, 137° 56'30" W. long.

Prince William Sound (Area E) has as its western boundary the longitude of Cape Fairfield (148° 53' W. long.), and its eastern boundary the longitude of Cape Suckling (143° 53' W. long.).

Cook Inlet (Area H) has as its eastern boundary the longitude of Cape Fairfield (148° 53' W. long.), and its southern boundary the latitude of Cape Douglas (58° 52' N. lat.).

Kodiak (Area K) has as its northern boundary the latitude of Cape Douglas (58° 52' N. lat.), and its western boundary the longitude of Cape Kumlik (157° 27' W. long.).

Alaska Peninsula (Area M) has as its eastern boundary the longitude of Cape Kumlik (157° 27' W. long.), and its western boundary the longitude of Scotch Cap Light. The area also includes all waters of Bechevin Bay and Isanotski Strait south of a line from the easternmost tip of Chunak Point to the westernmost tip of Cape Krenitzen.

Dutch Harbor (Area O) has as its northern boundary the latitude of Cape Sarichef (54° 36' N. lat.), and its eastern boundary the longitude of Scotch Cap Light, and as its western boundary 171° W. longitude, excluding the waters of Statistical areas R and Q.

Aleutian Islands (Area R) has as its eastern boundary 171° W. longitude, as its western boundary the U.S.-Russian Convention line of 1867 as depicted in NOAA Chart #513, and as its northern boundary 55° 30' N. latitude.

Bering Sea (Area Q) has its southern boundary a line from 54° 36' N. lat., 168° W. long., to 54° 36' N. lat., 171° W. long., to 55° 30' N. lat., 171° W. long., to 55° 30' N. lat., 173°30' W. long., as its northern boundary the latitude of Point Hope (68°21' N. lat.), as its eastern boundary a line from 54° 36' N. lat., 168° W. long., to 58° 39' N. lat., 168° W. long, to Cape Newenham (58° 39' N. lat.), and its western boundary the U.S.-Russian Convention line of 1867 as depicted in NOAA Charts #513 and #514.

**Districts:** The boundaries of each district are described below.

### Area D (Yakatat)

- (a) Yakataga District: all waters of Alaska between the longitude of Cape Suckling (143°53' W. long.) and the longitude of Icy Cape (141°42' W. long.).

- (b) Yakutat District: all waters of Alaska between the longitude of Icy Cape (141°42' W. long.) and a line projected southwest from the westernmost tip of Cape Fairweather.

Area E (Prince William Sound)

- (a) Orca District: all waters of Statistical Area E west of a line from a point on Hawkins Island (60° 30' 40" N. lat., 145° 59' W. long.) to a point at 60° 18' 45" N. lat., 145° 59' W. long., north of a line from a point at 60° 18' 45" N. lat., 145° 59' W. long., to Seal Rocks (60° 10' N. lat., 146° 50' W. long.), east of a line from Seal Rocks (60° 10' N. lat., 146° 50' W. long.) to a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., east of a line from a point at 60° 34' 50" N. lat., 146° 58' 30" W. long. to Knowles Head (60° 41' 05" N. lat., 146° 39' 15" W. long.) and west of a line from Salmo Point to a point on the mainland at 60° 37' 54" N. lat., 145° 45' 33" W. long.
- (b) Valdez Arm District: all waters of Statistical Area E west of a line from a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., to Knowles Head (60° 41' 05" N. lat., 146° 39' 15" W. long.), and north and east of a line from a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., to Granite Point (60° 52' 20" N. lat., 147° 22' 50" W. long.).
- (c) Port Wells District: all waters of Statistical Area E west of a line from a point at 60° 38' N. lat., 147° 40' W. long., to Granite Point (60° 52' 20" N. lat., 147° 22' 50" W. long.), and north of a line from a point at 60° 38' N. lat., 147° 40' W. long., to the southern entrance of Port Nellie Juan at 60° 36' N. lat.
- (d) Knight Island District: all waters of Statistical Area E south of a line from the southern entrance of Port Nellie Juan (60° 36' N. lat.), to a point at 60° 38' N. lat., 147° 40' W. long., east of a line from a point at 60° 38' N. lat., 147° 40' W. long., to Granite Point (60° 52' 20" N. lat., 147° 22' 50" W. long.), west of a line from Granite Point (60° 52' 20" N. lat., 147° 22' 50" W. long.), to a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., west of a line from a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., to a point at 60° 15' 40" N. lat., 147° 32' 30" W. long., to a point at 59° 40' N. lat., 148° 10' 25" W. long., and north of 59° 40' N. lat.
- (e) Montague District: all waters of Statistical Area E west of a line from Seal Rocks (60° 10' N. lat., 146° 50' W. long.) to a point at 59° 40' N. lat., 147° 40' W. long., north of a line from a point at 59° 40' N. lat., 147° 40' W. long. to a point at 59° 40' N. lat., 148° 10' 25" W. long., east of a line from a point at 59° 40' N. lat., 148° 10' 25" W. long., to a point at 60° 15' 40" N. lat., 147° 32' 30" W. long., east of a line from a point at 60° 15' 40" N. lat., 147° 32' 30" W. long., to a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., and west of a line from a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., to Seal Rocks (60° 10' N. lat., 146° 50' W. long.).

Area H (Cook Inlet)

- (a) Northern District; north of a line extending from Boulder Point at 60°46'23" N. lat., to Shell Platform C, then to a point on the west shore at 60°46'23" N. lat.;
- (b) Central District: all waters between a line extending from Boulder Point at 60°46'23" N. lat., to Shell Platform C, then to a point on the west shore at 60°46'23" N. lat., and the latitude of Anchor Point light (59°46'12" N. lat.)

- (d) Southern District: all waters enclosed by a line from Anchor Point Light west to 59°46'12" N. lat., 152°20' W. long., then south to 59°03'25" N. lat., 152°20" W. long., then in a northeasterly direction to the tip of Cape Elizabeth at 59°09'30" N. lat., 151°53' W. long., then from the tip of Cape Elizabeth to the tip of Point Adam at 59°15'20" N. lat., 151°58'30" W. long.;
- (e) Kamishak Bay District: all waters enclosed by a line from 59°46'12" N. lat., 153°00'30" W. long., then east to 59°46'12" N. lat., 152°20' W. long., then south to 59°03'25" N. lat., 152°20' W. long., then southwesterly to Cape Douglas (58°52' N. lat.);
- (f) Barren Island District: all waters enclosed by a line from Cape Douglas (58°52' N. lat.) to the tip of Cape Elizabeth at 59°09'30" N. lat., 151°53' W. long., then south to 58°52' N. lat., 151°53' W. long., then west to Cape Douglas.
- (g) Outer District: all waters enclosed by a line from the tip of Point Adam to the tip of Cape Elizabeth, then south to 58°52' N. lat., 151°53' W. long., then east to the longitude of Aligo Point (149°44'33" W. long.), then north to the tip of Aligo Point.

Area K (Kodiak)

- (a) Afognak District: all waters of Afognak and Shuyak Islands bounded by a line from Occident Point (57°57'25" N. lat., 152°51'30" W. long.), to Last Timber Point (57°58'50" N. lat., 152°58'55" W. long.), by the latitude of Dolphin Point on Whale Island (57°59'10" N. lat.), by the latitude of Raspberry Cape (58°03'35" N. lat.), by mid-stream Shelikof Straits, and by the latitude of Cape Douglas (58°52' N. lat.);
- (b) Northwest Kodiak district: all waters of north and west Kodiak Island bounded by the latitude of Termination Point (57°51'15" N. lat.), by the latitude of Dolphin Point on Whale Island (57°59'10" N. lat.) by a line from Occident Point (57°57'25" N. lat., 152°51'30" W. long.) to Last Timber Point (57°58'50" N. lat., 152°58'55" W. long.), by the latitude of Raspberry Cape (58°03'35" N. lat.), by the latitude of Rocky Point (57°39'45" N. lat.), and by mid-stream Shelikof Strait;
- (c) Southwest Kodiak District: all waters southwest of Kodiak Island bounded by the latitudes of Rocky Point (57°39'45" N. lat.) and Low Cape (56°59'35" N. lat.), and by mid-stream Shelikof Strait;
- (d) Alitak Bay District: all waters south of Kodiak Island bounded by the latitude of Low Cape, the latitude of Cape Trinity (56°44'50" N. lat.), and by mid-stream Shelikof Strait;
- (e) Eastside Kodiak District: all waters south and east of Kodiak Island bounded by the latitude of Cape Trinity (56°44'50" N. lat.), by the latitude of Cape Chiniak (57°37' N. lat.), and by mid-stream Shelikof Strait;
- (g) Mainland District: all waters along the south side of the Alaska Peninsula bounded by the latitude of Cape Douglas (58°52' N. lat.), mid-stream Shelikof Strait, and west of the longitude of the southern entrance of Imuya Bay near Kilokak Rocks (57°11'22" N. lat., 156°20'13" W. long.);

## **APPENDIX D. Description of Closed Area Options**

### **Option 1: Close waters to scallop fishing designated under State regulations:**

#### Area D (Yakutat)

The waters of Yakutat Bay east of a line from the easternmost tip of Ocean Cape to the southernmost tip of Point Manby are closed to the taking of scallops.

#### Area E (Prince William Sound)

The following waters are closed by State regulations to the taking of scallops:

(1) in the waters enclosed by a line drawn along the longitude of Cape Suckling (143° 53' W. long.), to a point at 60° 00' N. lat., then west along 60° 00' N. lat. to a point at 146° 00' W. long., then north along 146° 00' W. long. until it intersects a line drawn between Pt. Bentinck and Pt. Whitshed;

(2) in the waters enclosed by lines from Pt. Whitshed to Pt. Bentinck, from Cape Hinchinbrook (60° 14' N. lat., 146° 39' W. long.) to Seal Rocks (60° 10' N. lat., 146° 50' W. long.) to Zaikof Point (60° 19' N. lat., 146° 55' W. long.), and from a point at 60° 11' N. lat., 147° 20' W. long. on the northwest side of Montague Island, north to a point at 60° 30' N. lat., 147° 20' W. long., then east to a point at 60° 30' N. lat., 147° 00' W. long. then northeast to Knowles Head (60° 41' N. lat., 146° 37' 30" W. long.).

#### Area H (Cook Inlet)

Scallops may not be taken in the following waters:

- (1) Cook Inlet north of a line from Cape Douglas to Point Adam, except for the Kamishak District;
- (2) inshore from a line from Point Adam to Cape Elizabeth then to the southwestern point of Perl Island then to the southern point of East Chugach Island then to Gore Point;
- (3) Nuka Bay inside a line from Yalik Point to 59° 27' 30" N. lat., 150° 22' 50" W. long.

#### Areas K,M,O,R, and Q (Westward areas)

Scallops may not be taken:

(1) in the Pacific Ocean waters of the Alaska Peninsula Area between the longitude of Scotch Cap and the longitude of Cape Pankof, and waters of king crab registration area M extending shoreward and three miles seaward of a line (the base line) beginning at the southernmost tip of Cape Kumlik to the easternmost tip of Unavikshak Island to the southernmost tip of Atkulik Island to the easternmost tip of Kak Island to the easternmost tip of Castle Cap (Tuliumnit Point) to the easternmost tip of Chankliut Island and from there along the seaward coast to the southernmost tip of Chankliut Island to the southernmost tip of Seal Cape to the easternmost tip of Mitrofanina Island to the southernmost tip of Spitz Island to the southernmost tip of Chiachi Island, and all waters west of the southernmost tip of Kupreanof Point which are depicted as Territorial Sea on NOAA Chart #16540, (10th Ed., Oct. 10/81) titled, "Shumagin Island to Sanak Island", and all waters east of the longitude of Scotch Cap Light and



south of Unimak Island and the Alaska Peninsula which are depicted as Territorial Sea on NOAA Chart #16520, (20th Ed. July 10/82) titled, "Unimak and Akutan Passes and Approaches";

(2) in waters south of the latitude of Cape Ikolik (57° 17' 20" N. lat.), west of the longitude of Cape Barnabas (152° 52' W. long.), east of the longitude of Kilokak Rocks (156° 19' W. long.) and in Old Harbor Narrows west of 153° 16' W. long.;

(3) all waters of Sitkalidak Strait, Kiliuda Bay, and Ugak Bay east of 153° 16' W. long. in Sitkalidak Passage and enclosed by a line from Black Point (56° 59' 30" N. lat., 153° 18' W. long.) to 56° 57' 30" N. lat., 153° 13' W. long., then a line along the three mile contour to 57° 20' N. lat., 152° 23' W. long., then a straight line to the southernmost tip of Ugak Island (57° 22' N. lat., 152° 18' 30" W. long.) and west of a line from the northernmost tip of Ugak Island (57° 23' 30" N. lat., 152° 17' W. long.) to Narrow Cape (57° 26' N. lat., 152° 19' W. long.);

(4) all waters enclosed by a line from Cape Chiniak (57° 38' N. lat., 152° 09' W. long.) to 57° 38' N. lat., 151° 47' W. long., then to Cape St. Hermogenes (58° 15' N. lat., 151° 47' W. long.) and from Marmot Cape (58° 10' N. lat., 151° 52' W. long.) on Marmot Island to Pillar Cape on Afognak Island (58° 09' N. lat., 152° 07' W. long.);

(5) in waters of the Alaska Peninsula east of the longitude of Three Star Point (159° 10' W. long.), west of the longitude of Seal Cape (158° 25' W. long.), and north of the latitude of Kupreanof Point (55° 34' N. lat.);

(6) in waters of Inanudak Bay enclosed by a line from Cape Kigunak to Cape Imlalianuk on Umnak Island;

(7) all waters of Akutan Bay south of a line from Akun Head (54° 18' N. lat., 165° 38' W. long.) to North Head (54° 14' N. lat., 165° 56' W. long.);

(8) in waters of Kalekta Bay enclosed by a line from the tip of Erskine Point to the tip of Cape Kaletka on Unalaska Island;

(9) all waters of Akun Bay enclosed by a line from Billings Head (54° 17' 30" N. lat., 165° 28' 30" W. long.) to 54° 13' N. lat., 165° 24' 30" W. long. on the opposite shore;

(10) all waters of Unalaska Bay enclosed by a line from Cape Cheerful (54° 01' N. lat., 166° 09' 30" W. long.) to Cape Kalekta (54° 00' 30" N. lat.);

(11) all waters of Makushin Bay enclosed by a line from Cape Kovrizhka (53° 51' N. lat., 167° 09' 30" W. long.) to Cape Idak (53° 31' 20" N. lat., 167° 47' W. long.) to Konets Head (53° 19' 30" N. lat., 167° 50' 45" W. long.);

(12) all waters of Beaver Inlet south of a line from Brundage Head (53° 56' N. lat., 166° 12' 30" W. long.) to Cape Sedanka (53° 50' 30" N. lat., 166° 05' 20" W. long.) and north of 53° 42' N. lat.;

(13) all waters of Uyak Bay, Uganik Bay, Viekoda Bay, Kupreanof Strait, Raspberry Strait, Malina Bay, Paramanof Bay, Foul Bay, and Shuyak Strait east of a line from Cape Uyak (57° 38' 20" N. lat., 154° 20' 50" W. long.) to Cape Ugat (57° 52' 20" N. lat., 153° 50' 40" W. long.) to Raspberry Cape (58° 03' 35" N. lat., 153° 25' W. long.) to Black Cape (58° 24' 30" N. lat., 152° 53' W. long.) to Party Cape on Shuyak Island (58° 31' N. lat., 152° 34" W. long.) west of 152° 30' W. long. in Shuyak Strait and west of 152° 50' W. long. in Whale Pass and Afognak Strait.

(14) in all waters of the Petrel Bank Area north of 51° 30' N. lat., south of 54° 30' N. lat., west of 179° W. long., and east of 179° E. long.

**Option 2: Close to scallop fishing only those waters closed to trawling to protect crabs under Federal regulations:**

**Kodiak King Crab Protection Area**

A time/area closure scheme for the trawl fishery was developed for waters around Kodiak Island to protect red king crabs. These closures have been in place for the groundfish trawl fisheries since 1987 to help protect and rebuild the Kodiak king crab resource. The number of red king crab in the waters around Kodiak Island remain at historically low levels. Most of these crab are old and sexually mature. There has been no sign of significant recruitment in seven years. As a result, the Kodiak commercial king crab fishery has been closed since 1983 in an attempt to rebuild the stocks. While the cause for the decline of king crab is not known, most researchers believe that the decline can be attributed to a variety of environmental factors which independently or in combination led to the depressed condition of the resource. The extent to which the king crab decline is due to commercial fishing, either directed or incidental, is unknown.

King crab are known to concentrate in certain areas around Kodiak Island during the year. In the spring they migrate inshore to molt and mate. Approximately 70 percent of the female red king crab stocks are estimated to congregate in two areas, known as the Alitak/Towers and Marmot Flats. The Chirikof Island and Barnabas areas also possess concentrations of king crab but in lesser amounts. Past studies have shown that most king crab around Kodiak molt and mate in the March-May period, although some molting crab can be found during late-January through mid-June. Adult female king crabs must molt to mate and extrude eggs. After molting, their exoskeleton (shell) is soft, and crabs in this stage are known as soft-shell crabs. The new exoskeletons take two to three months to harden fully. During the soft-shell period, the crabs are particularly susceptible to injury and mortality from handling and from encounters with fishing gear. Because many of the present and potential groundfish trawling grounds overlap with the mating grounds of king crab, the potential exists for substantial king crab mortality. The same is true for the scallop fishery, although the proposed closure areas have been closed for many years by the State of Alaska.

Three area designations have been established for purposes of protecting king crab stocks and are described below.

Definitions of king crab protection areas in the Kodiak Island area.

**Area Type Name and Definition**

- I Type I areas are those king crab stock rebuilding areas where a high level of protection will be provided to the king crab by closing the area year-round to bottom trawling. Fishing with other gear would be allowed.
  
- II Type II areas are those areas sensitive for king crab populations and in which bottom trawling will be prohibited during the soft-shell season (February 15 - June 15). Fishing with other gear would be allowed and fishing with bottom trawl gear would be allowed from January 1 - February 14 and June 16 - December 31.
  
- III Type III areas are those geographic areas adjacent to a Type I or Type II area that have been identified as important juvenile king crab rearing or migratory areas. These areas

only become operational following a determination that the "recruitment event criteria" has occurred. The NMFS Regional Director will classify the expanded area as either Type I or II depending on the information available.

Areas designated as Type I, II, or III are detailed below.

For purposes of implementing a Type III area, a "recruitment event" is defined as the appearance of female king crab in substantially increased numbers. A substantially increased number is defined as occurring when the total number of females estimated for a given district equals the number of females established as a threshold criteria for opening that district to commercial crab fishing. In any given year a recruitment event may occur in one or more of the Kodiak management districts as indicated by the standardized Kodiak crab survey conducted by ADF&G. A recruitment event closure will continue until either (1) a commercial crab fishery opens for that district, (2) the number of crab drops below the threshold level established for that district, or (3) the end of 1992 when the closures established by this measure would expire. Implementation of the Type III area closures would be accomplished by regulatory amendment.

**TYPE I AREAS**

(i) Alitak Flats and Towers Areas: All water of Alitak Flats and the Towers Areas enclosed by a line connecting the following seven points in the order listed:

<u>Reference point</u>	<u>N Lat.</u>	<u>W Long.</u>	<u>Land descriptions</u>
a	56 59 4	154 31 1	Low Cape.  Cape Sitkinak East Point of Twoheaded Island Kodiak Island, thence, along the coastline of Kodiak Island until intersection of Low Cape.
b	57 00 0	155 00 0	
c	56 17 0	155 00 0	
d	56 17 0	153 52 0	
e	56 33 5	153 52 0	
f	56 54 5	153 32 5	
g	56 56 0	153 35 5	
a	56 59 4	154 31 1	

(ii) Marmot Flats Area: All water enclosed by a line connecting the following five points in the clockwise order listed:

<u>Reference point</u>	<u>N Lat.</u>	<u>W Long.</u>	<u>Land description</u>
a	58 00 0	152 30 0	Cape Chiniak, thence, along the coastline of Kodiak Island to North Cape.
b	58 00 0	151 47 0	
c	57 37 0	151 47 0	
d	57 37 0	152 10 1	
e	57 54 5	152 30 0	
a	58 00 0	152 30 0	

**TYPE II AREAS**

(i) Cherikof Island Area: All waters surrounding Chirikof Island enclosed by a line connecting the following four points in the counter clockwise order listed:

<u>Reference point</u>	<u>N Lat.</u>	<u>W Long.</u>
a	56 07 0	155 13 0
b	56 07 0	156 00 0
c	56 41 0	156 00 0
d	55 41 0	155 13 0
a	56 07 0	155 13 0

(ii) Barnabas Area: All water enclosed by a line connecting the following five points in the counter clockwise order listed:

<u>Reference point</u>	<u>N Lat.</u>	<u>W Long.</u>	<u>Land description</u>
a	57 00 0	153 18 0	Black Point
b	56 56 0	153 09 0	
c	57 22 0	152 18 5	South Tip of Ugak Island.
d	57 23 5	152 17 5	North Tip of Ugak Island
e	57 25 3	152 20 0	Narrow Cape, thence, along the
f	57 04 2	153 30 0	coastline of Kodiak Island to Cape Kasick to
a	57 00 0	153 18 0	Black Point, including inshore waters.

**TYPE III AREAS**

Outer Marmot Bay: All waters bounded by lines connecting the following coordinates in the order listed: (1) 58 00 00 N Lat., 151 55 40 W Long. (2) 58 02 30 N Lat., 151 55 40 W Long. (3) 58 02 30 N Lat., 151 47 00 W Long. (4) 58 04 53 N Lat., 151 47 00 W Long. (5) 58 04 53 N Lat., 151 35 25 W Long. (6) 57 57 40 N Lat., 151 35 25 W Long. (7) 57 57 40 N Lat., 151 47 00 W Long. (8) 58 00 00 N Lat., (9) 58 00 00 N Lat., 151 55 40 Long.

Barnabas: All waters bounded by lines connecting the following coordinates in the order listed: (1) 57 14 30 N Lat., 152 37 50 W Long. (2) 57 10 00 N Lat., 152 25 30 W Long. (3) 57 02 32 N Lat., 152 35 02 W Long. (4) 57 04 25 N Lat., 152 54 15 W Long. (5) Then following the three mile limit to 57 13 00 N Lat., 152 49 25 W Long. (6) Then following the three mile limit lint to: 57 14 30 N Lat., 152 37 50 W Long.

Horse's Head: All waters bounded by lines connecting the following coordinates in the order listed: (1) 56 49 55 N Lat., 153 36 30 W Long. (2) 56 34 35 N Lat., 153 05 37 W Long. (3) 56 28 35 N Lat., 153 05 37 W Long. (4) 56 28 35 N Lat., 153 52 05 W Long. (5) Then following the three mile limit line to: 56 49 55 N Lat., 153 36 30 W Long.

Chirikof: All waters bounded by lines connecting the following coordinates in the order listed: (1) 56 16 45 N Lat., 155 39 00 W Long. (2) 56 16 45 N Lat., 155 11 45 W Long. (3) 55 41 00 N Lat., 155 13 00 W Long. (4) 56 07 10 N Lat., 155 13 00 W Long. (5) 56 07 10 N Lat., 155 39 00 W Long. (6) 56 16 45 N Lat., 155 39 00 W Long.

### Bristol Bay Crab Protection Zones

A time/area closure scheme for the groundfish trawl fishery was developed for waters in Bristol Bay to protect red king crabs. These closures have been in place for the groundfish trawl fisheries since 1987 to help prevent incidental catch of red king crab, which are known to concentrate in these areas. The number of Bristol Bay red king crab is at historically low levels, with female biomass falling below threshold in 1994. Analysis of these closure areas for the groundfish fishery were made under BSAI amendment 10 (NPFMC 1986). Because this area has never been fished by the scallop fishery, no additional analysis is proposed.

The closed waters encompass the two Protection Zones implemented for the groundfish fishery. Protection Zone 1 would be closed to scallop fishing year-round, and is the area south of 58° 00' N. latitude and between 160° 00' W. longitude and 162° 00' W. longitude. Protection Zone 2 would be closed to scallop fishing March 15 through June 15, and is the area south of 58° 00' N. latitude and between 162° 00' W. longitude and 163° W. longitude. Under the State's season opening dates, the Bering Sea would not be opened to scallop fishing when Zone 2 closed.

### Pribilof Islands Habitat Protection Area

A time/area closure scheme for the groundfish trawl fishery was developed for waters around the Pribilof Islands to protect blue king crabs and their habitat, hair crabs, marine mammals, seabirds, and their prey species to allow rebuilding of these depressed stocks. This closure was implemented as Amendment 21a of the BSAI groundfish plan in 1995. Analysis of the closure (NPFMC 1994) is incorporated by reference. Under this option, all scallop fishing would be prohibited at all times in the EEZ within the area bounded by a straight line connecting the following pairs of coordinates in the following order:

(57° 57.0', 168° 30.0');  
(56° 55.2', 168° 30.0');  
(56° 48.0', 169° 2.4');  
(56° 34.2', 169° 2.4');  
(56° 30.0', 169° 25.2');  
(56° 30.0', 169° 44.1');  
(56° 55.8', 170° 21.6');  
(57° 13.8', 171° 0.0');  
(57° 57.0', 171° 0.0');  
(57° 57.0', 168° 30.0')

## **APPENDIX E. Scallop Fishing Regulations and Selected Statutes: Alaska Commercial Scallop Fishing Regulations (1994)**

### **SELECTED ALASKA STATUTES**

SEC. 16.05.050. POWERS AND DUTIES OF THE COMMISSIONER. The commissioner has, but not by way of limitation, the following powers and duties:

(20) to petition the Alaska Commercial Fisheries Entry Commission, unless the Board of Fisheries disapproves the petition under AS 16.05.251(g), to establish a moratorium on new entrants into commercial fisheries

(A) that have experienced recent increases in fishing effort that are beyond a low, sporadic level of effort;

(B) that have achieved a level of harvest that may be approaching or exceeding the maximum sustainable level for the fishery; and

(C) for which there is insufficient biological and resource management information necessary to promote the conservation and sustained yield management of the fishery.

SEC. 16.05.251. REGULATIONS OF THE BOARD OF FISHERIES.

(g) The Board of Fisheries shall consider a request of the commissioner for approval of a petition to the Alaska Commercial Fisheries Entry Commission to establish a moratorium on new entrants into a commercial fishery under AS 16.43.225 at the board's next regular or special meeting that follows the receipt by the board of the request for approval of the petition and that allows time for the notice required under this subsection. The board may consider the request of the commissioner for approval of the petition only after 15 days' public notice of the board's intention to consider whether the commissioner, in support of the request for approval of the petition, has adequately shown that the fishery meets requirements for a moratorium on new entrants under AS 16.05.050. The board by a majority vote of its members at the meeting when the petition must be considered shall approve or disapprove the petition.

SEC. 16.43.225. MORATORIUM ON NEW ENTRANTS INTO CERTAIN FISHERIES.

(a) Subject to (b) of this section, the commission may establish a moratorium on new entrants into a fishery (1) that has experienced recent increases in fishing effort that are beyond a low, sporadic level of effort; (2) that has achieved a level of harvest that may be approaching or exceeding the maximum sustainable level for the fishery; and (3) for which there is insufficient biological and resource management information necessary to promote the conservation and sustained yield management of the fishery.

(b) The commission may establish a moratorium on new entrants into a fishery described in (a) of this section if (1) the commissioner of fish and game, subject to AS 16.05.251(g), petitions the commission under AS 44.62.220 to establish a moratorium on new entrants into the fishery; and (2) the commission finds that

(A) the fishery has reached a level of participation that may threaten the conservation and sustained yield management of the fishery resource and the economic health and stability of commercial fishing; and

(B) the commission has insufficient information to conclude that the establishment of a maximum number of entry permits under AS 16.43.240 would further the purposes of this chapter.

(c) The commission may establish a moratorium under this section for a continuous period of up to four years. A fishery that has been subject to a moratorium under this section may not be subjected to subsequent moratorium under this section unless five years have elapsed since the previous moratorium expired.

(d) While a moratorium is in effect, the commission shall conduct investigations to determine whether a maximum number of entry permits should be established under AS 16.43.240 by (1) conducting research into conditions in the fishery; (2) consulting with the Department of Fish and Game and the Board of Fisheries, and (3) consulting with participants in the fishery.

(e) The commission shall establish by regulation the qualifications for applicants for an interim-use permit for a fishery subject to a moratorium under this section. The qualifications must include the minimum requirements for past or present participation and harvest in the fishery. The commission may not issue an interim-use permit of a fishery subject to a moratorium under this section unless the applicant can satisfy the qualifications established under this subsection and establish the present ability and intent to participate actively in the fishery.

#### **CHAPTER 38. MISCELLANEOUS SHELLFISH FISHERY 1994**

**5 AAC 38.035. AREA CLOSURES.** (a) The commissioner shall monitor the condition of miscellaneous shellfish stocks in all statistical areas through the use of such data and information as are practically available.

(b) When the commissioner finds that continued fishing effort would jeopardize the viability of miscellaneous shellfish resources in territorial waters of Alaska within any statistical area, he shall close such waters by emergency order.

(c) In determining whether to close territorial waters of Alaska, the commissioner shall consider all appropriate factors to the extent there is information available on such factors. Factors which may be considered include

- (1) the effect of overall fishing effort within the statistical area encompassing the territorial waters of Alaska;
- (2) catch per unit of effort and rate of harvest;
- (3) relative abundance of miscellaneous shellfish resources in the area in comparison with preseason expectations of the department;
- (4) such guideline harvest levels as may be promulgated by regulation;
- (5) the proportion of immature shellfish being handled;
- (6) general information on the condition of miscellaneous shellfish within the area;
- (7) information pertaining to the maximum sustainable yield level of miscellaneous shellfish within the area;
- (8) timeliness and accuracy of catch reporting by buyers, fishermen or vessel operators within the registration area to the extent that such timeliness or accuracy may reasonably be expected to affect proper management; and
- (9) adequacy of subsistence harvest within the areas.

(d) Within five days after the closure of any territorial waters of Alaska, the owner of any vessel registered for miscellaneous shellfish may formally request the commissioner to reopen such waters. The commissioner shall personally review pertinent information on the condition of that species within the area, and shall formally announce his decision within 14 days of the receipt of the request.

#### **ARTICLE 2. GENERAL SPECIFICATIONS AND RESTRICTIONS**

##### **5 AAC 38.076. ALASKA SCALLOP FISHERY MANAGEMENT PLAN.**

(a) The requirements of the management plan contained in this section apply to vessels commercially fishing for scallops.

(b) The following scallop registration areas are established:

- (1) Scallop Registration Area A (Southeastern Alaska) is Statistical Area A, described in 5 AAC 38.100, except for all waters of District 16 as described in 5 AAC 33.200(p);
- (2) Scallop Registration Area D (Yakutat) is Statistical Area D, described in 5 AAC 38.160 and all waters of District 16 as described in 5 AAC 33.200(p);
- (3) Scallop Registration Area E (Prince William Sound) is Statistical Area E, described in 5 AAC 38.200;
- (4) Scallop Registration Area H (Cook Inlet) is Statistical Area H, described in 5 AAC 38.300;
- (5) Scallop Registration Area K (Kodiak) is Statistical Area K, described in 5 AAC 34.400;
- (6) Scallop Registration Area M (Alaska Peninsula) is Statistical Area M, described in 5 AAC 34.500;
- (7) Scallop Registration Area O (Dutch Harbor) is Statistical Area O, described in 5 AAC 34.600;

(8) Scallop Registration Area Q (Bristol Bay-Bering Sea) is the combination of the Bristol Bay and Bering Sea Statistical Areas, described in 5 AAC 34.800 and 5 AAC 34.900;

(9) Scallop Registration Area R (Adak) is Statistical Area R, described in 5 AAC 34.700.

(c) A person may use a vessel to take scallops only in a scallop registration area and its adjacent seaward biological influence zone and only if the owner or the owner's authorized agent has registered the vessel with the department for that scallop registration area. In this subsection, "adjacent seaward biological influence zone" means all of the waters adjacent to a scallop registration area and seaward to a boundary that is a line drawn in such a manner that each point on it is 200 nautical miles from the baseline from which the territorial sea is measured.

(d) A vessel may be registered to take scallops in only one scallop registration area at a time.

(e) In addition to the other requirements of this section, a person who takes scallops other than weathervane scallops, and a person who takes weathervane scallops when a permit is required under this chapter, must obtain a permit issued by the department which might include:

- (1) location and duration of harvests;
- (2) gear limitations and other harvest procedures;
- (3) periodic reporting, including logbook requirements;
- (4) requirements for onboard observers; and
- (5) catch or bycatch limits.

(f) Unless otherwise provided by permit issued under (e) of this section, scallops may be taken only as follows:

- (1) a vessel fishing for weathervane scallops may use and carry only scallop dredges with rings having an inside diameter of four inches or larger;
- (2) a vessel fishing for scallops other than weathervane scallops may use or carry only scallop dredges with rings having an inside diameter of three inches or larger;
- (3) a person may not use chafing gear or other devices that decrease the legal inside ring diameter of a scallop dredge;
- (4) no more than two scallop dredges may be operated at one time from a vessel, and the opening of a scallop dredge may not be more than 15 ft wide.

(g) When taking scallops in a fishery with a guideline harvest range established by regulation, a vessel must carry an onboard observer as specified in 5 AAC 39.141, 5 AAC 39.142, 5 AAC 39.143, and 5 AAC 39.645 unless the department, in its discretion, determines that carrying an onboard observer will not serve the purposes of the onboard observer program. When taking scallops in a fishery without a guideline harvest range established by regulation, a vessel must carry an onboard observer as specified in 5 AAC 39.141, 5 AAC 39.142, 5 AAC 39.143, and 5 AAC 39.645.

(h) Fishing seasons, open and closed areas, and guideline harvest ranges for taking weathervane scallops are set out 5 AAC 38.120, 5 AAC 38.167, 5 AAC 38.168, 5 AAC 38.180, 5 AAC 38.220, 5 AAC 38.221, 5 AAC 38.224, 5 AAC 38.320, 5 AAC 38.324, 5 AAC 38.420, 5 AAC 38.425, and 5 AAC 38.430.

(i) Weathervane scallops may be shucked by hand only. A mechanical shucking machine may not be on board a vessel that is fishing for weathervane scallops.

(j) A vessel that is fishing for weathervane scallops may have on board no more than 12 persons who are crew members of the vessel. For the purpose of this subsection, **crew member** means a person who is involved with the operations of the vessel, and includes a captain, mate, engineer, cook, deckhand and processing worker, but does not include an onboard observer.

### ARTICLE 3. CONDITIONS FOR LICENSE

AAC 38.085. AGREEMENTS FOR USE PRIVILEGE. (a) Any person who has applied for and been issued a valid interim-use permit card for any gear used in the taking of miscellaneous shellfish, or a commercial fishing vessel license, or who has registered to fish for miscellaneous shellfish, or who has been issued a permit to fish for miscellaneous shellfish by the commissioner, has agreed

- (1) to engage in fishing for a species of miscellaneous shellfish within a statistical area only if the season for that species in the waters subject to the jurisdiction of the state within that statistical area is open;
- (2) to refrain from fishing for miscellaneous shellfish in any closed waters within any statistical area;



(3) to engage in fishing for miscellaneous shellfish only in districts permitted and in compliance with regulations governing such districts where statistical areas are subdivided into districts;

(4) to engage in fishing for miscellaneous shellfish in statistical areas in compliance with all regulations (including gear limitations or prohibitions and permit requirements) governing miscellaneous shellfish fishing in waters subject to the jurisdiction of the state encompassed by the statistical area; and

(5) to comply with the requirements and provisions of 5 AAC 39.130.

(b) A permit holder or registrant further agrees that the agreement contained in subsection (a) of this section shall have the force of regulation.

(c) The permit holder or registrant has entered into the above described agreement in return for receiving from the state a use privilege to fish for miscellaneous shellfish inhabiting waters subject to the jurisdiction of the state, and is entitled to engage in such fishing for miscellaneous shellfish consistent with applicable laws and regulations.

#### **ARTICLE 5. STATISTICAL AREA A (SOUTHEASTERN ALASKA)**

5 AAC 38.100. DESCRIPTION OF STATISTICAL AREA A. Statistical Area A (Southeastern Alaska) has as its southern boundary the International Boundary at Dixon Entrance, and as its northern boundary Loran-C line 7960-Y-29590, which intersects the western tip of Cape Fairweather at 58° 47' 58" N. lat., 137° 56' 30" W. long.

5 AAC 38.105. DESCRIPTION OF DISTRICTS. Districts are as described in 5 AAC 30.200 and 5 AAC 33.200.

#### **ARTICLE 6. STATISTICAL AREA D (YAKUTAT)**

5 AAC 38.160. DESCRIPTION OF STATISTICAL AREA D. Statistical Area D (Yakutat) has as its western boundary the longitude of Cape Suckling (143° 53' W. long.), and as its southern boundary Loran-C line 7960-Y-29590, which intersects the western tip of Cape Fairweather at 58° 47' 58" N. lat, 137° 56' 30" W. long.

5 AAC 38.161. DESCRIPTION OF DISTRICTS. Districts for Statistical Area D are those described at 5 AAC 30.200.

5 AAC 38.167. FISHING SEASONS FOR SCALLOPS. In Scallop Registration Area D, described in 5 AAC 38.076(b)(2), weathervane scallops may be taken from January 10 until the season is closed by the department by emergency order. When the season is closed under 5 AAC 38.168, a person may take weathervane scallops only if the department issues the person a permit under 5 AAC 38.076(e) for exploratory fishing for new scallop beds.

5 AAC 38.168. GUIDELINE HARVEST RANGE FOR THE TAKING OF SCALLOPS. In Scallop Registration Area D, described in 5 AAC 38.076(b)(2), the guideline harvest range for the taking of weathervane scallops is as follows:

- (1) in District 16 as described in 5 AAC 33.200(p): zero to 35,000 pounds of shucked meat;
- (2) in the remainder of Scallop Registration Area D: zero to 250,000 pounds shucked meat.

5 AAC 38.180. CLOSED WATERS. The waters of Yakutat Bay east of a line from the easternmost tip of Ocean Cape to the southernmost tip of Point Manby are closed to the taking of scallops.

#### **ARTICLE 7. STATISTICAL AREA E (PRINCE WILLIAM SOUND)**

5 AAC 38.200. DESCRIPTION OF STATISTICAL AREA. Statistical Area E has as its western boundary the longitude of Cape Fairfield (148° 53' W. long.), and its eastern boundary the longitude of Cape Suckling (143° 53' W. long.).

5 AAC 38.205. DESCRIPTION OF DISTRICTS. (a) Orca District: all waters of Statistical Area E west of a line from a point on Hawkins Island (60° 30' 40" N. lat., 145° 59' W. long.) to a point at 60° 18' 45" N. lat., 145° 59' W. long., north of a line

from a point at 60° 18' 45" N. lat., 145° 59' W. long., to Seal Rocks (60° 10' N. lat., 146° 50' W. long.), east of a line from Seal Rocks (60° 10' N. lat., 146° 50' W. long.) to a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., east of a line from a point at 60° 34' 50" N. lat., 146° 58' 30" W. long. to Knowles Head (60° 41' 05" N. lat., 146° 39' 15" W. long.) and west of a line from Salmo Point to a point on the mainland at 60° 37' 54" N. lat., 145° 45' 33" W. long.

(b) Valdez Arm District: all waters of Statistical Area E west of a line from a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., to Knowles Head (60° 41' 05" N. lat., 146° 39' 15" W. long.), and north and east of a line from a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., to Granite Point (60° 52' 20" N. lat., 147° 22' 50" W. long.).

(c) Port Wells District: all waters of Statistical Area E west of a line from a point at 60° 38' N. lat., 147° 40' W. long., to Granite Point (60° 52' 20" N. lat., 147° 22' 50" W. long.), and north of a line from a point at 60° 38' N. lat., 147° 40' W. long., to the southern entrance of Port Nellie Juan at 60° 36' N. lat.

(d) Knight Island District: all waters of Statistical Area E south of a line from the southern entrance of Port Nellie Juan (60° 36' N. lat.), to a point at 60° 38' N. lat., 147° 40' W. long., east of a line from a point at 60° 38' N. lat., 147° 40' W. long., to Granite Point (60° 52' 20" N. lat., 147° 22' 50" W. long.), west of a line from Granite Point (60° 52' 20" N. lat., 147° 22' 50" W. long.), to a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., west of a line from a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., to a point at 60° 15' 40" N. lat., 147° 32' 30" W. long., to a point at 59° 40' N. lat., 148° 10' 25" W. long., and north of 59° 40' N. lat.

(e) Montague District: all waters of Statistical Area E west of a line from Seal Rocks (60° 10' N. lat., 146° 50' W. long.) to a point at 59° 40' N. lat., 147° 40' W. long., north of a line from a point at 59° 40' N. lat., 147° 40' W. long. to a point at 59° 40' N. lat., 148° 10' 25" W. long., east of a line from a point at 59° 40' N. lat., 148° 10' 25" W. long., to a point at 60° 15' 40" N. lat., 147° 32' 30" W. long., east of a line from a point at 60° 15' 40" N. lat., 147° 32' 30" W. long., to a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., and west of a line from a point at 60° 34' 50" N. lat., 146° 58' 30" W. long., to Seal Rocks (60° 10' N. lat., 146° 50' W. long.).

5 AAC 38.220. FISHING SEASONS FOR SCALLOPS. In Scallop Registration Area E, weathervane scallops may be taken only from January 10 until the season is closed by emergency order. When the season is closed under 5 AAC 38.221, a person may take weathervane scallops only if the department issues the person a permit under 5 AAC 38.076(e) for exploratory fishing for new scallops beds.

5 AAC 38.221. GUIDELINE HARVEST RANGE FOR THE TAKING OF SCALLOPS. In Scallop Registration Area E, the guideline harvest range for weathervane scallops is zero to 50,000 pounds of shucked scallop meat.

5 AAC 38.224. CLOSED WATERS. (a) Scallops may not be taken in the following waters:

(1) in the waters enclosed by a line drawn along the longitude of Cape Suckling (143° 53' W. long.), to a point at 60° 00' N. lat., then west along 60° 00' N. lat. to a point at 146° 00' W. long., then north along 146° 00' W. long. until it intersects a line drawn between Pt. Bentinck and Pt. Whitshed;

(2) in the waters enclosed by lines from Pt. Whitshed to Pt. Bentinck, from Cape Hinchinbrook (60° 14' N. lat., 146° 39' W. long.) to Seal Rocks (60° 10' N. lat., 146° 50' W. long.) to Zaikof Point (60° 19' N. lat., 146° 55' W. long.), and from a point at 60° 11' N. lat., 147° 20' W. long. on the northwest side of Montague Island, north to a point at 60° 30' N. lat., 147° 20' W. long., then east to a point at 60° 30' N. lat., 147° 00' W. long, then northeast to Knowles Head (60° 41' N. lat., 146° 37' 30" W. long.).

## **ARTICLE 8. STATISTICAL AREA H (COOK INLET)**

5 AAC 38.300. DESCRIPTION OF STATISTICAL AREA. Statistical Area H has as its eastern boundary the longitude of Cape Fairfield (148° 50' W. long.) and its southern boundary the latitude of Cape Douglas (58° 52' N. lat.).

5 AAC 38.305. DESCRIPTION OF DISTRICTS. (a) Except as provided in (b) of this section, districts are as described in 5 AAC 21.200.

(b) For clams and mussels, the subdistricts in the Southern District (Kachemak Bay) are described as follows:

(1) Subdistrict 1: All waters of Kachemak Bay east of a line from the mouth of Fritz Creek at 59° 40' 45" N. lat., 151° 22' 18" W. long. to the west end of Glacier Spit at 59° 38' 30" N. lat., 151° 12' 18" W. long., including Chugachik Island;

(2) Subdistrict 2: All waters of Kachemak Bay enclosed by a line from the west end of Glacier Spit at 59° 38' 30" N. lat., 151° 12' 18" W. long. to 60 Foot Rock to Anisom Point, including China Poot Bay and Halibut Cove;

(3) Subdistrict 3-A: All waters of Kachemak Bay enclosed by a line from Anisom Point to 60 Foot Rock and west to 59° 33' N. lat., 151° 32' W. long. and south to the west end of Hesketh Island at 59° 30' 18" N. lat., 151° 32' W. long. and from the east end of Hesketh Island east along 59° 30' 30" N. lat. to 151° 23' W. long. and south to the head of Sadie Cove at 59° 27' 42" N. lat., 151° 20' 36" W. long., including Yukon Island and the northern and eastern beaches of Sadie Cove;

(4) Subdistrict 3-B: All waters of Kachemak Bay enclosed by a line from the head of Sadie Cove at 59° 27' 42" N. lat., 151° 20' 36" W. long. north to 59° 30' 30" N. lat., 151° 23' W. long. and west along 59° 30' 30" N. lat. to the east end of Hesketh Island and south to 59° 27' 12" N. lat., 151° 24' 45" W. long. and south to the head of Tutka Bay at 59° 24' 48" N. lat., 151° 17' 12" W. long., including the southern and western beaches of Sadie Cove and the eastern and southern beaches of Tutka Bay;

(5) Subdistrict 4: All waters of Kachemak Bay enclosed by a line from the head of Tutka Bay at 59° 24' 48" N. lat., 151° 17' 12" W. long. north to 59° 27' 12" N. lat., 151° 24' 45" W. long. and north to the east end of Hesketh Island at 59° 30' 30" N. lat., 151° 30' W. long. and from the west end of Hesketh Island at 59° 30' 18" N. lat., 151° 32' W. long. to Barabara Point, including the Herring Islands, Jakolof, and Kasitsna Bays, and the northern and western beaches of Tutka Bay.

5 AAC 38.320. FISHING SEASONS FOR SCALLOPS. In Scallop Registration Area H, weathervane scallops may be taken or possessed in the Kamishak District from August 15 through October 31. In all other districts, from January 1 through December 31, a person may harvest weathervane scallops if the department issues the person a permit under 5 AAC 38.076(e) for exploratory fishing for new scallop beds.

5 AAC 38.322. GEAR FOR SCALLOPS. In the Kamishak, Southern, and Central Districts, scallops may be taken only with a single dredge. The opening of a dredge may not be more than six feet in width.

5 AAC 38.324. CLOSED WATERS FOR SCALLOPS. Scallops may not be taken in the following waters:

(1) Cook Inlet north of a line from Cape Douglas to Point Adam, except for the Kamishak District;

(2) inshore from a line from Point Adam to Cape Elizabeth then to the southwestern point of Perl Island then to the southern point of East Chugach Island then to Gore Point;

(3) Nuka Bay inside a line from Yalik Point to 59° 27' 30" N. lat., 150° 22' 50" W. long.

5 AAC 38.330. GUIDELINE HARVEST RANGE. The guideline harvest range for the taking of scallops from the Kamishak District is 10,000 to 20,000 pounds of shucked meat.

#### **ARTICLE 9. STATISTICAL AREA J (WESTWARD)**

5 AAC 38.400. DESCRIPTION OF STATISTICAL AREA. Statistical Area J includes all Pacific Ocean waters south of the latitude of Cape Douglas (58° 52' N. lat.), and west of the longitude of Cape Fairfield (148° 50' W. long.), and all Bering Sea and Pacific Ocean waters east of the U.S.-Russian Convention line of 1867 as depicted on NOAA Chart #513, (5th Ed., November 6, 1982) and NOAA Chart #514, (5th Ed., December 28, 1985).

5 AAC 38.420. FISHING SEASONS FOR SCALLOPS. In Scallop Registration Areas K, M, O, Q, and R, weathervane scallops may be taken from July 1 through February 15.

5 AAC 38.425. CLOSED WATERS FOR SCALLOPS. Scallops may not be taken

(1) in the Pacific Ocean waters of the Alaska Peninsula Area between the longitude of Scotch Cap and the longitude of Cape Pankof, and waters of king crab registration area M extending shoreward and three miles seaward of a line (the base line) beginning at the southernmost tip of Cape Kumlik to the easternmost tip of Unavikshak Island to the southernmost tip of Atkulik Island to the easternmost tip of Kak Island to the easternmost tip of Castle Cap (Tuliumnit Point) to the easternmost tip of Chankliut Island and from there along the seaward coast to the southernmost tip of Chankliut Island to the southernmost tip of Seal Cape to the easternmost tip of Mitrofanina Island to the southernmost tip of Spitz Island to the southernmost tip of Chiachi Island, and all waters west of the southernmost tip of Kupreanof Point which are depicted as Territorial Sea on NOAA Chart #16540, (10th Ed., Oct. 10/81) titled, "Shumagin Island to Sanak Island", and all waters east of the longitude of Scotch Cap Light and south of Unimak Island and the Alaska Peninsula which are depicted as Territorial Sea on NOAA Chart #16520, (20th Ed. July 10/82) titled, "Unimak and Akutan Passes and Approaches";

(2) in waters south of the latitude of Cape Ikolik (57° 17' 20" N. lat.), west of the longitude of Cape Barnabas (152° 52' W. long.), east of the longitude of Kilokak Rocks (156° 19' W. long.) and in Old Harbor Narrows west of 153° 16' W. long.;

(3) all waters of Sitkalidak Strait, Kiliuda Bay, and Ugak Bay east of 153° 16' W. long. in Sitkalidak Passage and enclosed by a line from Black Point (56° 59' 30" N. lat., 153° 18' W. long.) to 56° 57' 30" N. lat., 153° 13' W. long., then a line along the three mile contour to 57° 20' N. lat., 152° 23' W. long., then a straight line to the southernmost tip of Ugak Island (57° 22' N. lat., 152° 18' 30" W. long.) and west of a line from the northernmost tip of Ugak Island (57° 23' 30" N. lat., 152° 17' W. long.) to Narrow Cape (57° 26' N. lat., 152° 19' W. long.);

(4) all waters enclosed by a line from Cape Chiniak (57° 38' N. lat., 152° 09' W. long.) to 57° 38' N. lat., 151° 47' W. long., then to Cape St. Hermogenes (58° 15' N. lat., 151° 47' W. long.) and from Marmot Cape (58° 10' N. lat., 151° 52' W. long.) on Marmot Island to Pillar Cape on Afognak Island (58° 09' N. lat., 152° 07' W. long.);

(5) in waters of the Alaska Peninsula east of the longitude of Three Star Point (159° 10' W. long.), west of the longitude of Seal Cape (158° 25' W. long.), and north of the latitude of Kupreanof Point (55° 34' N. lat.);

(6) in waters of Inanudak Bay enclosed by a line from Cape Kigunak to Cape Ilmalianuk on Umnak Island;

(7) all waters of Akutan Bay south of a line from Akun Head (54° 18' N. lat., 165° 38' W. long.) to North Head (54° 14' N. lat., 165° 56' W. long.);

(8) in waters of Kalekta Bay enclosed by a line from the tip of Erskine Point to the tip of Cape Kaletka on Unalaska Island;

(9) all waters of Akun Bay enclosed by a line from Billings Head (54° 17' 30" N. lat., 165° 28' 30" W. long.) to 54° 13' N. lat., 165° 24' 30" W. long. on the opposite shore;

(10) all waters of Unalaska Bay enclosed by a line from Cape Cheerful (54° 01' N. lat., 166° 09' 30" W. long.) to Cape Kalekta (54° 00' 30" N. lat.);

(11) all waters of Makushin Bay enclosed by a line from Cape Kovrizhka (53° 51' N. lat., 167° 09' 30" W. long.) to Cape Idak (53° 31' 20" N. lat., 167° 47' W. long.) to Konets Head (53° 19' 30" N. lat., 167° 50' 45" W. long.);

(12) all waters of Beaver Inlet south of a line from Brundage Head (53° 56' N. lat., 166° 12' 30" W. long.) to Cape Sedanka (53° 50' 30" N. lat., 166° 05' 20" W. long.) and north of 53° 42' N. lat.;

(13) all waters of Uyak Bay, Uganik Bay, Viekoda Bay, Kupreanof Strait, Raspberry Strait, Malina Bay, Paramanof Bay, Foul Bay, and Shuyak Strait east of a line from Cape Uyak (57° 38' 20" N. lat., 154° 20' 50" W. long.) to Cape Ugat (57° 52' 20" N. lat., 153° 50' 40" W. long.) to Raspberry Cape (58° 03' 35" N. lat., 153° 25' W. long.) to Black Cape (58° 24' 30" N. lat., 152° 53' W. long.) to Party Cape on Shuyak Island (58° 31' N. lat., 152° 34' W. long.) west of 152° 30' W. long. in Shuyak Strait and west of 152° 50' W. long. in Whale Pass and Afognak Strait.

(14) in all waters of the Petrel Bank Area north of 51° 30' N. lat., south of 54° 30' N. lat., west of 179° W. long., and east of 179° E. long.,

5 AAC 38.430. GUIDELINE HARVEST RANGE FOR THE TAKING OF SCALLOPS. In Scallop Registration Areas K and O, the guideline harvest ranges for weathervane scallops are as follows:

(1) in waters of Scallop Registration Area K, the guideline harvest range is zero to 400,000 pounds of shucked meat;

(2) in waters of Scallop Registration Area O, the guideline harvest range is zero to 170,000 pounds of shucked meat.

## CHAPTER 39. GENERAL PROVISIONS

**5 AAC 39.120. REGISTRATION OF COMMERCIAL FISHING VESSELS.** (a) A person who owns a commercial fishing vessel or his authorized agent shall register that vessel by completing a vessel license application or renewal form and submitting it to the Commercial Fisheries Entry Commission, unless the vessel is not required to be licensed under AS 16.05.495. Vessel registration is required before fishing or transporting fish in any waters of Alaska. A vessel, if it is in compliance with all regulations governing registration and if it displays a license issued under AS 16.05.530, unless the vessel is not required to be licensed under AS 16.05.495, is considered to be registered under the laws of the state and may take or transport fish. It is unlawful to take, attempt to take or possess unprocessed fish aboard a vessel in the waters of Alaska unless the vessel is registered under the laws of the state. In this subsection

(1) **employ** or **employed** means taking or attempting to take fish, or transporting fish which have been taken or any operation of a vessel aiding or assisting in the taking or transporting of fish;

(2) **in compliance with all regulations governing registration** includes vessel registration required by 5 AAC 31.020, 5 AAC 31.070, 5 AAC 32.020, 5 AAC 32.070, 5 AAC 34.020, 5 AAC 34.070, 5 AAC 35.020, 5 AAC 35.070, 5 AAC 38.020 and 5 AAC 38.070, and includes district or subdistrict registration requirements of 5 AAC 03 - 5 AAC 38, and includes the provisions of this section;

(3) **registered under the laws of the state** means that a vessel displays a license described in 20 AAC 05.958 and issued under AS 16.05.530, unless the vessel is not required to be licensed under AS 16.05.495, and that the registration provisions of 5 AAC 03 - 5 AAC 39 have been complied with and evidence of compliance is immediately available at all times during fishing or transporting operations, and can be shown upon request to an authorized representative of the department;

(b) Area registration requirements for shellfish vessels are as specified in the registration regulations in 5 AAC 31 - 5 AAC 38.

(c) Area registration requirements for salmon net fishing vessels are as follows:

(1) a person who owns a fishing vessel to be used to take salmon with net gear, or his authorized agent, shall register for an area by designating on the vessel license application or renewal form the vessel's one area of intended salmon net gear operation for the year; it is unlawful for a vessel to engage in salmon net fishing in an area other than the single area selected;

(2) in this section the term **area** means any registration area listed in (d) of this section, except that

(A) in salmon net Registration Area T, a vessel must also be registered by the department for a fishing district as required by 5 AAC 06.370;

(B) in salmon net Registration Area Y, a vessel must also be registered by the department for a fishing district as required by 5 AAC 03.370;

(C) A purse seine vessel registered for salmon net Registration Area M is also registered to operate purse seine gear in Registration Area F during the same registration year;

(3) a vessel registered for an area of salmon net fishing in compliance with (c)(1) of this section will be issued, by the Commercial Fisheries Entry Commission, a vessel license area tab for that year; it is unlawful for a vessel to fish in the area of registration unless the vessel displays the area tab on the vessel license number plate; no vessel owner or operator may possess for each vessel, or no vessel may display, more than one vessel license area tab;

(4) a person who owns a fishing vessel registered for an area of intended operation in compliance with (c)(1) of this section or his authorized agent may register it for a different salmon net registration area under the following conditions:

(A) the reregistration of a salmon net fishing vessel shall be authorized

(i) by the commissioner upon receipt of proof in writing that the vessel has been lost through sinking, destruction, or extensive mechanical breakdown, or that the vessel operator has suffered serious injury, sickness or death during the open season; or

(ii) by the Commercial Fisheries Entry Commission upon receipt of a written certification or personal affidavit stating that the vessel has not been used for salmon net fishing in the original area of registration;

(B) a person authorized to reregister a vessel must complete a reregistration form issued by the Commercial Fisheries Entry Commission and submit it to the commissioner together with any previously issued vessel license area tab;

(C) it is unlawful for a vessel to fish in the area of reregistration unless the vessel displays the appropriate area tab on the vessel license number plate;

(D) area reregistration under this section shall supersede the original area registration as if the original area registration had never been made;

(E) once a vessel has reregistered for another net registration area to replace a lost vessel, that vessel can not transfer back to its original net registration area during that season;

(d) Salmon net gear registration areas are as follows:

**5 AAC 39.130. REPORTS REQUIRED OF PROCESSORS, BUYERS, AND FISHERMEN; TRANSPORTING REQUIREMENTS.**

(a) Each person, company, firm or other organization who is the first purchaser of raw fish, or who catches and processes, or has processed his own fish or byproducts of fish shall

(1) furnish to the department each calendar year before operating a written statement of intent to operate with a description of the nature, extent and location of the operation on forms available from the department; forms will not be processed and fish tickets will not be issued without certification that surety bonds as required by AS 16.10.290 - AS 16.10.296 have been posted with the Commissioner of Labor and that a valid Alaska Business License or Fisheries Business License has been issued by the Department of Revenue;

(2) submit, no later than April 1, an operator's accurate and complete summary of activity for each Intent to Operate form filed for the previous year or a signed statement of nonactivity on forms available from the department;

(3) furnish, verbally or in writing, purchasing or production records as requested by the department or its representative.

(b) Each buyer of raw fish, each fisherman selling to a buyer not licensed to process fish (a catcher/seller), and each person or company who catches and processes his or her own catch or has that catch processed by another person or company, shall record each landing on an ADF&G fish ticket. A catcher/seller must complete an ADF&G form in order to obtain fish tickets. Fish tickets must be submitted to a local representative of the department within seven days after landing, or as otherwise specified by the department for each particular area and fishery. The operator of a fishing vessel whose port of landing is outside Alaska, or who sells, transfers, or delivers fish in a Seaward Biological Influence Zone, shall submit a completed ADF&G fish ticket, or an equivalent document containing all of the information required on an ADF&G fish ticket, to the department before the fish are transported out of the jurisdiction of the state. The record must include the following:

(1) the name of the individual or company buying the fish, the processor code assigned to each buyer by the department, and the signature of the buyer or his representative;

(2) the full name and signature of the permit holder;

(3) the name or the Coast Guard number of the vessel employed in taking the fish;

(4) the date of the landing of the fish;

(5) the permanent vessel license plate number or, for set gillnets and fish wheels, the fisherman's five-digit CFEC permit serial number;

(6) the type of gear by which the fish were taken;

(7) the nearest headland or bay or statistical catch area in which the fish were taken;

(8) information applicable to the following species:

(A) the number and pounds of salmon by species;

(B) the number and pounds of king, Dungeness and Tanner crab;

(C) the pounds of other fish or shellfish by species;

(9) the CFEC permit number of the operator of the unit of gear with which the fish were taken, imprinted on the fish ticket from the valid permit card at the time of delivery only; the imprinting requirement of this paragraph may be suspended by a local representative of the department after presentation by the fisherman of documentation from the department or CFEC that the permit card has been lost, transferred or destroyed; if the above suspension is granted, then the buyer or fisherman shall write the permit number on the fish ticket at the time of delivery only;

(10) other information the department may require.

(c) Each fisherman shall furnish to the buyer factual catch data necessary for completion of reports required by the department.

(d) Each shellfish fisherman shall furnish in writing to the department, directly or through the buyer, data necessary for reports required by the department.

(e) The following information regarding the transporting of unprocessed fish shall be transmitted to an authorized representative of the department either verbally, in writing, or by telephone:

(1) the number and species of salmon taken in any regulatory area shall be reported before being transported to any other area or out of the state;

(2) the numbers or pounds by species of all other fish shall be reported before being transported out of the state.

(f) Operators of floating fish processing vessels shall report in person, or by radio or telephone, to the local representative of the department located within the management area of intended operation before the start of processing operations. The report must include the initial processing location by district or subdistrict, the exact latitude and longitude of the location, and the date of intended operation. Before moving the operation and upon arriving at a new location, the operator shall notify the local department representative in person, or by radio or telephone, of the new location of operation by district or subdistrict and exact latitude and longitude of the location. The local representative of the department may waive all or part of the above requirements if he determines they are not necessary for the conservation or management of the fishery in that area.

(g) No person may possess a fish ticket that has been imprinted with a CFEC permit number until the time of delivery to the purchaser of the fish listed on the fish ticket.

(h) In the Arctic - Yukon - Kuskokwim area, a buyer or processor transporting salmon or salmon roe to the point of initial processing shall have in his or her possession, and display, upon request, to a peace officer of the state, a completed fish ticket, or a copy of it, for all salmon or salmon roe in the buyer's or processor's possession at the time. Such a buyer or processor, while transporting commercially caught salmon or salmon roe, may not possess or transport subsistence caught salmon or salmon roe.

(i) The owner and operator of each fishing vessel registered under the laws of the state and regulated under federal groundfish fishery regulations at Title 50, Code of Federal Regulations, Parts 672 and 675, and each person (as defined in AS 01.10.060) who is the first purchaser of raw groundfish shall comply with the recordkeeping and reporting requirements regulations codified at Title 50, Code of Federal Regulation, Parts 672 and 675, Sections 672.5 and 675.5,(1988), as amended 54 Fed. Reg. 18519 (May 1, 1989); 54 Fed. Reg. 50386 (December 6, 1989); 55 Fed. Reg. 1036 (January 11, 1990).

**5 AAC 39.141. ONBOARD OBSERVER PROGRAM.** (a) The Board of Fisheries finds that, in particular fisheries, observers on board fishing vessels would greatly enhance management, primarily by facilitating information gathering, and by improving regulatory compliance. Onboard observers may be the only practical fishery monitoring, data-gathering, or enforcement mechanism in some Alaska fisheries where a large component of vessels, such as catcher/processors and floating processors, rarely or never enter Alaskan ports. The Board of Fisheries, therefore, finds it necessary to authorize the Alaska Department of Fish and Game to implement onboard observer programs in particular fisheries when the board determines that it

(1) is the only practical data-gathering or enforcement mechanism;

(2) will not unduly disrupt the fishery; and

(3) can be conducted at a reasonable cost.

(b) Every onboard observer of the Departments of Public Safety and Fish and Game shall have free and unobstructed access to inspect the catch, equipment, gear or operations of the fishing vessel or the tender to which the observer is assigned, and to inspect the catches of vessels delivering to the vessel to which assigned while the vessel to which assigned is

(1) within waters under the jurisdiction of the state;

(2) taking or intending to take any species of fish; or

(3) transporting or processing any species of fish.

(c) Onboard observers must be as unintrusive to vessel operations as practicable and must make the scheduling and scope of their activities predictable and practicable.

(d) Onboard observers are not required to obtain criminal or administrative search warrants to conduct their duties.

(e) Onboard observers shall carry out such scientific and other duties as deemed necessary or appropriate to manage, protect, maintain, improve, and extend the fish and aquatic plant resources of the state.

(f) Onboard observers shall have free and unobstructed access to loran coordinates, at random, at least twice in each 24-hour period. However, an observer shall have access to loran coordinates at any time if the observer suspects illegal activities. These loran observations are not to interfere with normal operations of the vessel.

(g) Every independent contracting agent, and their office personnel and business agents while employed by the independent contracting agent and for six months after terminating that employment, may not work as an onboard observer.

## **ARTICLE 6. SHELLFISH FISHERY**

**5 AAC 39.645. SHELLFISH ONBOARD OBSERVER PROGRAM.** (a) The Board of Fisheries finds that onboard observers provide the only effective means of collecting essential biological and management data from catcher/processor and floating processor vessels that process shellfish. These data are necessary to achieve the sustained yield of the shellfish resource without overfishing. The department has traditionally collected essential biological and management data at the point of shoreside landing immediately before processing. The rapid evolution to processing by catcher/processor and floating processor vessels in particular shellfish fisheries has seriously eroded the department's ability to adequately monitor harvests. Onboard observers are the only practical data-gathering mechanism for these fisheries without unduly disrupting the operation of these processors.

(b) Further, the board finds that, in particular shellfish fisheries, onboard observers provide the only effective means to enforce regulations that protect the shellfish resource. The board finds that catcher/processor catch statistics have clearly demonstrated that some operators of these vessels have routinely failed to comply with king and Tanner crab size limit regulations. Without onboard observer coverage, sublegal and female crab might be taken and processed immediately, making enforcement of size and sex regulations impossible.

(c) The cost of providing these onboard observers is a reasonable expense to be borne by the processors themselves. No acceptable management alternatives exist other than disallowing operation of a vessel that is required, but refuses, to cooperate with an onboard observer program. The onboard observer program set out in this section is compatible with and complementary to the existing observer programs of other agencies.

(d) Based on the findings in (a) - (c) of this section, the department shall institute a mandatory onboard observer program, following the requirements and guidelines set out in this section, for all vessels that process Tanner crab, red king crab, blue king crab, or brown king crab. The department may waive the onboard observer requirement for a vessel that processes those species of crab at a place where a department sampler is located, if the sampler has reasonable access to the vessel and if the vessel is tied to a dock or is at anchor; all other vessel inspection requirements remain in effect. The department may waive the onboard observer requirement when an observer is taken ill or is injured while onboard and is unable to function, or when in the judgment of the department the observer is unavailable despite the good faith effort of the vessel operator and for a reason which is totally beyond the control of the vessel operator. A request for a waiver and all supporting documentation must be submitted in writing. The department may place its own representatives on board a processing vessel to perform tank inspections, or to verify the performance of an observer, without waiving the observer requirement.

(e) In addition to the permit requirements in 5 AAC 34.055 and 5 AAC 35.055, the permit for a vessel that processes Tanner crab, red king crab, blue king crab, or brown king crab must require that an observer, approved by the department and provided by the permittee, be briefed by the department for the fishery in which the vessel participates and that the observer be on board the vessel before the vessel obtains a tank inspection, before the vessel takes crab, and before the start of and during all processing operations. For the purposes of 5 AAC 34.055, 5 AAC 35.055, and 5 AAC 39.140, the observer is a representative of the department. All information collected by the observer is confidential property of the department. The department shall develop guidelines for approval of observers, including training requirements, conflict-of-interests standards, data collection schedules and standards, record keeping and reporting requirements, and other criteria needed to ensure accurate and objective reporting.



(f) Based on the findings in this section, it is the board's intent that a credible, fair, and enforceable observer program be implemented before the September 25, 1988 opening of the Bristol Bay red king crab fishery. Information gathered in this observer program is intended to promote both conservation and enforcement.

(g) Requirements for observers, contractors, and vessel operators are detailed in

(1) Parts I and II of the ADF&G Observer Manual for Alaska Crab Processors, dated April 27, 1990, and revised as of February 9, 1993 and adopted by reference; and

(2) Parts I and II of the ADF&G Scallop Observer Manual dated June 1994 and adopted by reference.

(h) An employee or crew member of a commercial crab catcher/processor, crab floating processor, or crab catcher vessel may not be employed as a shellfish onboard observer for 12 consecutive months after the person's last day of employment on the crab catcher/processor, crab floating processor or crab catcher vessel.