

# PUBLIC REVIEW DRAFT

## Fishery Management Plan for Fish Resources of the Arctic Management Area



North Pacific Fishery Management Council  
605 W. 4th Avenue, Suite 306  
Anchorage, Alaska 99501

PHONE: (907) 271-2809  
FAX: (907) 271-2817

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**NOTE:** This is a draft of the Arctic FMP that is intended to provide the Council and the public with a general idea of how the Arctic FMP will be structured and its substantive content. It is written assuming the Council chose Alternative 2 (closing the Arctic Management Area to commercial fishing), and option 3 (setting fishery conservation and management measures). The Council has NOT selected its preferred alternative or option, so this draft is an example of the FMP at this time. Please refer to the accompanying Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis document for detailed analyses of the alternatives and options and for additional background information. This draft FMP will be modified to reflect the preferred alternative and option ultimately selected by the Council and any other necessary changes.

## Executive Summary

This Fishery Management Plan (FMP) governs commercial fishing for most species of fish within the Arctic Management Area.<sup>1</sup> The FMP management area, the Arctic Management Area, is all marine waters in the U.S. Exclusive Economic Zone of the Chukchi and Beaufort Seas from 3 nautical miles offshore the coast of Alaska or its baseline to 200 nautical miles offshore, north of Bering Strait (from Cape Prince of Wales to Cape Dezhneva) and westward to the 1990 U.S./Russia maritime boundary line and eastward to the U.S./Canada maritime boundary. The FMP governs commercial fishing for all stocks of fish, including all finfish, shellfish, or other marine living resources, except commercial fishing for Pacific salmon and Pacific halibut, which is managed under other authorities.

The FMP was approved by the Secretary of Commerce on (\*\*DATE\*\*) and implemented on (\*\*DATE\*\*). It may be referred to as the Arctic Fishery Management Plan.

### E.S. 1.1 Management Policy

The Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. 1801 et seq. (Magnuson-Stevens Act), is the primary domestic legislation governing management of the nation's marine fisheries. The Magnuson-Stevens Act requires FMPs to be consistent with a number of provisions, including ten national standards, with which all FMPs must conform and which guide fishery management. Besides the Magnuson-Stevens Act, U.S. fisheries management must be consistent with the requirements of other laws including the Marine Mammal Protection Act, the Endangered Species Act, and several other Federal laws.

Under the Magnuson-Stevens Act, the North Pacific Fishery Management Council (Council) is authorized to prepare and submit to the Secretary of Commerce for approval, disapproval or partial approval, an FMP and any necessary amendments for each fishery under its authority that requires conservation and management. The Council conducts public hearings so as to allow all interested persons an opportunity to be heard in the development of FMPs and amendments, and reviews and revises, as appropriate, the assessments and specifications with respect to the optimum yield from each fishery (16 U.S.C. 1852(h)).

The Council has developed a management policy and objectives to guide its development of management recommendations to the Secretary of Commerce. This management approach is described in Table ES- 1. For Arctic fish resources, the policy is to prohibit all commercial harvests of fish until sufficient information is available to support the sustainable management of a commercial fishery. See Chapter 3 for a description of the specifications process the Council will use to implement this policy.

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<sup>1</sup> The Magnuson-Stevens Fishery Conservation and Management Act defines "fish" as finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds.

## **Table ES- 1 Arctic Fishery Management Policy**

The Council's policy is to proactively apply judicious and responsible fisheries management practices, based on sound scientific research and analysis, to ensure the sustainability of fishery resources, to prevent unregulated fishing, and to protect associated ecosystems for the benefit of current users and future generations. For the past 30 years, the Council's management policy for Alaska fisheries has incorporated forward-looking conservation measures that address differing levels of uncertainty. This management policy has in recent years been labeled the precautionary approach. Recognizing that potential changes in productivity may be caused by fluctuations in natural oceanographic conditions, fisheries, and other non-fishing activities, the Council intends to continue to take appropriate measures to insure the continued sustainability of the managed species. It will carry out this objective by considering reasonable, adaptive management measures, as described in the Magnuson-Stevens Act and in conformance with the National Standards, the Endangered Species Act, the National Environmental Policy Act, and other applicable law. This management policy takes into account the National Academy of Science's recommendations on Sustainable Fisheries Policy.

As part of its policy, the Council intends to consider and adopt, as appropriate, measures that prevent unregulated fishing, apply the Council's precautionary, adaptive management policy through community-based or rights-based management, apply ecosystem-based management principles that protect managed species from overfishing and protect the health of the entire marine ecosystem, and where appropriate and practicable include habitat protection and bycatch constraints. All management measures will be based on the best scientific information available. Given this intent, the fishery management goals are to provide sound conservation and sustainability of the fish resources, provide socially and economically viable fisheries for the well-being of fishing communities, minimize human-caused threats to protected species, maintain a healthy marine resource habitat, and incorporate ecosystem-based considerations into management decisions.

This management policy recognizes the need to balance competing uses of marine resources and different social and economic goals for sustainable fishery management, including protection of the long-term health of the ecosystem and the optimization of yield from its fish resources. This policy will use and improve upon the Council's existing open and transparent process of public involvement in decision-making.

### **E.S. 1.2 Summary of Management Measures**

The management measures that govern commercial fisheries in the Arctic Management Area are summarized in Table ES-2.

Pursuant to Title II of the Magnuson-Stevens Act, there is no allowable level of foreign fishing for the fisheries covered by this FMP. While fishing vessels and fish processors of the U.S. have the capacity to harvest and process up to the level of optimum yield of all species subject to other Council FMPs, Council policy as articulated in this Arctic FMP is to prohibit commercial harvests of all fish resources of the Arctic Management Area until sufficient information is available to support the sustainable management of a commercial fishery.

**Table ES-2 Summary of Management Measures for the Arctic**

<b>Management Area</b>	All marine waters in the U.S. Exclusive Economic Zone of the Chukchi and Beaufort Seas from 3 nautical miles offshore the coast of Alaska or its baseline to 200 nautical miles offshore, north of Bering Strait (from Cape Prince of Wales to Cape Dezhneva) and westward to the 1990 U.S./Russia maritime boundary line and eastward to the U.S./Canada maritime boundary.  <b>Subareas:</b> While two contiguous seas (Chukchi and Beaufort) of the Arctic Ocean are referenced, this FMP does not divide the Arctic into subareas.
<b>Stocks</b>	All stocks of finfish, marine invertebrates, and other fish resources in the Arctic Management Area except Pacific salmon and Pacific halibut. Stocks are in either the target species or ecosystem component species categories in <b>Error! Reference source not found.</b>
<b>Maximum Sustainable Yield (MSY)</b>	The process for specifying MSY in the Arctic Management Area is described in Section 3.5 of this FMP.
<b>Optimum Yield (OY)</b>	The process for specifying OY in the Arctic Management Area is described in Section 3.7 of this FMP.
<b>Procedure to set Total Allowable Catch (TAC)</b>	In the future, if fishing is authorized in the Arctic Management Area, measures that establish TAC will be specified following the procedures described in Section 3.9 of this FMP.
<b>Apportionment of TAC</b>	In the future, if fishing is authorized in the Arctic Management Area, TAC may be apportioned by the Council based on criteria specified by the Council at that time. Currently, no TAC is specified for any target stock of the Arctic Management Area.
<b>Attainment of TAC</b>	In the future, if fishing is authorized in the Arctic Management Area, measures that determine the attainment of TAC will be specified following the procedures described in Section 3.9 of this FMP.
<b>Permits</b>	Fishing permits may be authorized, for limited experimental purposes (exempted fishing permits), for the target or incidental harvest of fish resources that would otherwise be prohibited following the procedures described in Section 3.11.
<b>Authorized Gear</b>	Gear types authorized by this FMP will be determined in the future, if fisheries develop in the Arctic Management Area, and then defined in regulations.
<b>Time and Area Restrictions</b>	No time and area restriction measures are established in this FMP.
<b>Prohibited Species</b>	No prohibited species are currently identified in this FMP. In the future, if commercial fishing is authorized in the Arctic Management Area, prohibited species may include Pacific halibut, Pacific herring, Pacific salmon and steelhead, whitefish (Subfamily <i>Coregoninae</i> ), and Dolly Varden char. Prohibited species must be returned to the sea with a minimum of injury except when their retention is authorized by other applicable law.
<b>Prohibited Species Catch (PSC) Limits</b>	No PSC limits or other restrictions are established in this FMP. If fishing is authorized in the future in the Arctic Management Area, the FMP may be amended to include PSC limits.
<b>Retention and Utilization Requirements</b>	No retention or utilization requirements are established in this FMP.
<b>Community Development Quota (CDQ) Multispecies Fishery</b>	No CDQ program is established for the Arctic Management Area.
<b>Flexible Authority</b>	In the future, if fishing is authorized in the Arctic Management Area, the Regional Administrator of NMFS is authorized to make inseason adjustments through gear modifications, closures, or fishing area/quota restrictions, for conservation reasons, to prevent identified habitat problems, or to increase vessel safety.

**Table ES-2 Summary of Management Measures for the Arctic**

<b>Recordkeeping and Reporting</b>	In the future, if fishing is authorized in the Arctic Management Area, recordkeeping that is necessary and appropriate to determine catch, production, effort, price, and other information necessary for conservation and management may be required. This may include the use of catch and/or product logs, product transfer logs, effort logs, or other records as specified in regulations. Recordkeeping and reporting requirements will be specified as part of any exempted fishing permits issued for fishing activities in the Arctic Management Area.
<b>Observer Program</b>	In the future, if fishing is authorized in the Arctic Management Area, U.S. fishing vessels that catch groundfish or crab in the EEZ, or receive groundfish or crab caught in the EEZ, and shoreside processors that receive groundfish or crab caught in the EEZ, may be required to accommodate NMFS-certified observers as specified in regulations, in order to verify catch composition and quantity, including at-sea discards, and collect biological information on marine resources.
<b>Management Measures</b>	The FMP provides management measures to prohibit commercial fishing until information is available to support sustainable management of any future authorized fishery.
<b>Monitoring and Enforcement</b>	In the future, if fishing is authorized in the Arctic Management Area, monitoring and enforcement measures necessary and appropriate to ensure sustainable management and conservation of Arctic fish stocks may be required. This may include the use of observers, electronic logbooks, VMS, or other measures that will be specified in regulations. Currently, commercial fisheries are prohibited, and enforcement of the fishery closure of the Arctic Management Area will be by the U.S. Coast Guard and NOAA Office of Law Enforcement.
<b>Evaluation and Review of the FMP</b>	The Council will maintain a continuing review of the fish resources managed under this FMP, and all critical components of the FMP will be reviewed periodically as described in Section 3.20.  <b>Management Policy:</b> Objectives in the management policy statement will be reviewed as determined necessary by the Council.  <b>Essential Fish Habitat (EFH):</b> The Council will conduct a complete review of EFH once every 5 years or as appropriate as new scientific information on habitat is available, and in between these reviews the Council will solicit proposals on Habitat Areas of Particular Concern if fisheries develop, and/or conservation and enhancement measures to minimize potential adverse effects from fishing may be considered.

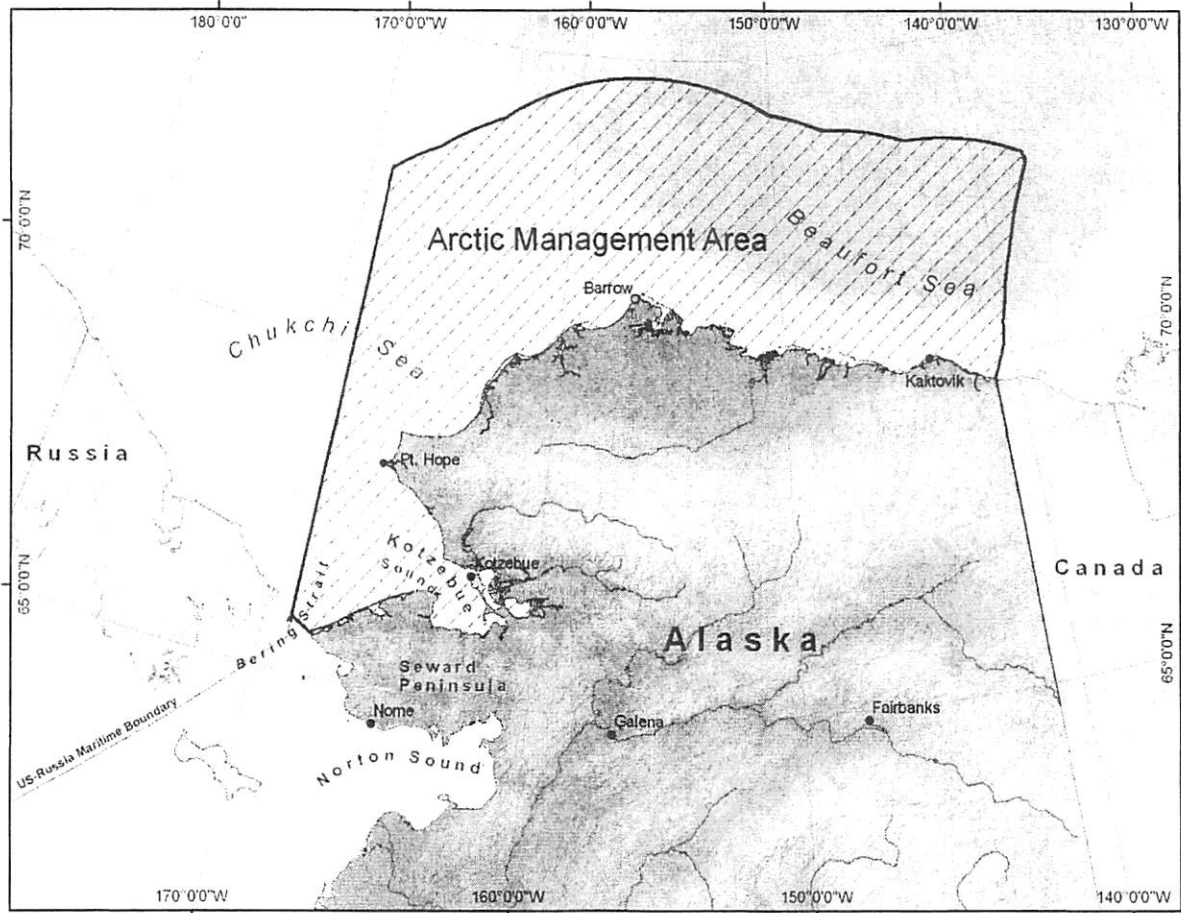
### **E.S. 1.3 Organization of the FMP**

This FMP is organized into six chapters. Chapter 1 contains an introduction to the FMP, and Chapter 2 describes the policy and management objectives of the FMP.

Chapter 3 contains the conservation and management measures for Arctic fishery management. Sections 3.1 through 3.7 outline the procedures for determining potential target species and maximum sustainable yield and optimum yield specifications. Sections 3.8 and 3.9 describe overfishing criteria and procedures for setting ABC and TAC, respectively. Sections 3.10 to 3.14 contain accountability measures, and permit and participation, gear, time and area, and catch restrictions information. A description of the bycatch reduction and incentive program is in Section 3.15. No share-based programs are established for the Arctic Management Area (Section 3.16). Measures that allow flexible management authority are addressed in Section 3.17, Section 3.18 designates monitoring and reporting requirements, and Section 3.19 describes management and enforcement considerations. Section 3.20 describes the schedule and procedures for review of the FMP or FMP components, and Section 3.21 describes the process for setting research priorities.

Chapter 4 contains a description of the Arctic's fish resources and their habitat (including essential fish habitat definitions), current fishing activities, the economic and socioeconomic characteristics of current fisheries and communities, and ecosystem characteristics. Additional descriptive information is also contained in the appendices. Section 4.3 provides a description of the Arctic ecosystem and interrelationships among the physical and biological components. It includes a discussion of potential climate change effects on the Arctic region. Chapter 5 specifies the relationship of the FMP with applicable law and other fisheries. Chapter 6 provides a fishery impact statement. Chapter 7 references additional sources of material about the Arctic, and includes the bibliography.

Appendices to the FMP include supplemental information. Appendix A contains descriptions of essential fish habitat and a discussion of adverse effects on essential fish habitat. Appendix B contains maps of EFH. Additional information about the Arctic Management Area, including its fish, bird, and marine mammal species, and an ecosystem description, are provided in the December 2008 Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) for this FMP. Appendix C provides a description of non-fishing Effects on EFH in the Arctic Region, Appendix D provides supplemental Arctic fish habitat descriptions, and Appendix E provides supplemental fish habitat maps.



**Public Review Draft  
Environmental Assessment/  
Regulatory Impact Review/Initial Regulatory Flexibility Analysis  
For the Arctic Fishery Management Plan  
And  
Amendment 29 to the Fishery Management Plan for Bering Sea/Aleutian Islands King  
and Tanner Crabs**

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**Responsible Official:** Robert D. Mecum, Acting Administrator  
National Marine Fisheries Service  
Alaska Region  
P.O. Box 21668  
Juneau, AK 99802

**Further Information Contact:** Bill Wilson  
North Pacific Fishery Management Council  
605 West 4<sup>th</sup> Avenue, #306  
Anchorage, Alaska 99501-2252  
(907) 271-2809

**Abstract:** The document provides decision-makers and the public with an evaluation of the environmental, social, and economic effects of alternatives and options to manage the fishery resources in the Arctic Management Area. No large fisheries exist in the Arctic Management Area. However, the warming of the Arctic and seasonal loss of sea ice may increase opportunities for fishing in this region. The Council proposes to develop an Arctic Fishery Management Plan that would (1) close the Arctic to commercial fishing so that unregulated fishing does not occur and until information improves so that fishing can be conducted sustainably and with due concern to other ecosystem components; (2) determine the fishery management authorities in the Arctic and provide the Council with a vehicle for addressing future management issues; and (3) implement an ecosystem-based management policy that recognizes the resources of the U.S. Arctic and the potential for fishery development that might affect those resources, particularly in the face of a changing climate. This document addresses the requirements of the National Environmental Policy Act, Presidential Executive Order 12866, and the Regulatory Flexibility Act.

This document has been approved by the Council for public review. Comments are requested prior to the Council's February 4-10, 2009 meeting in Seattle. At that meeting, the Council's Scientific and Statistical Committee, Advisory Panel, and Ecosystem Committee will review this document and provide comments to the Council, the Council will receive public comments, and then the Council is scheduled to choose its preferred alternative and take final action to adopt the Arctic FMP. The Council is interested in public comments on the alternatives and other elements of the proposed Arctic FMP.



## **Executive Summary**

The North Pacific Fishery Management Council (Council) recognizes emerging concerns over climate warming and receding seasonal ice cover in Alaska's Arctic region, and the potential long term effects from these changes on the Arctic marine ecosystem. Concerned over potential effects on fish populations in the Arctic region, the Council discussed a strategy to prepare for possible future change in the Arctic region, and determined that a fishery management regime for Alaska's Arctic marine waters is necessary.

This document is a public review draft Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) of the alternatives for a proposed Arctic Fishery Management Plan (FMP). The North Pacific Fishery Management Council intends to adopt an Arctic FMP, and is considering several alternatives to accomplish the Council's intent to prevent unregulated fishing in the Arctic Management Area. These alternatives are analyzed in this document.

The Council proposes to develop an Arctic FMP that will (1) close the Arctic to commercial fishing so that unregulated fishing does not occur and until information improves so that fishing can be conducted sustainably and with due concern to other ecosystem components; (2) determine the fishery management authorities in the Arctic and provide the Council with a vehicle for addressing future management issues; and (3) implement an ecosystem-based management policy that recognizes the resources of the U.S. Arctic and the potential for fishery development that might affect those resources, particularly in the face of a changing climate.

The Arctic Management Area is all marine waters in the exclusive economic zone (EEZ) of the Chukchi and Beaufort Seas from 3 nautical miles offshore the coast of Alaska or its baseline to 200 nautical miles offshore, north of Bering Strait (from Cape Prince of Wales to Cape Dezhneva) and westward to the 1990 U.S./Russia maritime boundary line and eastward to the U.S./Canada maritime boundary.

### **Purpose and Need**

Chapter 1 describes the proposed action and its purpose and need. The purpose of the proposed action is to establish federal fisheries management in the Arctic Management Area that complies with the Magnuson-Stevens Act before an unregulated commercial fishery emerges and causes adverse impacts to the marine resources and ecosystem of the Arctic EEZ off Alaska. A secondary purpose of the proposed action is to clarify fisheries management authorities in the U.S. Arctic EEZ. The need for the proposed action is to protect the sensitive ecosystem and marine resources of the Arctic EEZ off Alaska, which are already stressed due to climate change and may be further stressed from potentially unregulated, or inadequately regulated, commercial fishing. The action would prevent commercial fisheries from developing in the Arctic without the required management framework and scientific information on the fish stocks, their characteristics, and the implications of fishing for the stocks and related components of the ecosystem.

### **Alternatives**

Chapter 2 describes and compares four alternatives and three options, summarized as follows:

**Alternative 1:** No Action (Status quo). Maintain existing management authority.

**Alternative 2:** Adopt an Arctic FMP that closes the entire Arctic Management Area to commercial fishing. Amend the crab FMP to terminate its geographic coverage at Bering Strait.

**Alternative 3:** Adopt an Arctic FMP that closes the entire Arctic Management Area to commercial fishing. Amend the crab FMP to terminate its geographic coverage at Bering Strait. Alternative 3 would exempt from the Arctic FMP a red king crab fishery in the Chukchi

Sea of the size and scope of the historic fishery in the geographic area where the fishery has historically occurred.

**Alternative 4:** Adopt an Arctic FMP that closes the entire Arctic Management Area to commercial fishing. A red king crab fishery in the Chukchi Sea of the size and scope of the historic fishery in the geographic area where the fishery has historically occurred could be prosecuted under authority of the Crab FMP. The Arctic FMP would cover the area north of Pt. Hope for crab and north of Bering Strait for groundfish and scallops.

Either Option 1, 2, or 3 (Option 3 is a blend of elements from Options 1 and 2) must be chosen under Alternative 2, 3, or 4 to meet the MSA required provisions for an FMP to (1) assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, the fishery and (2) specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished or when overfishing is occurring. Alternative 2 or 3 would require amending the Council's king and Tanner crab FMP; the draft amendment text is provided in Appendix V.

**Option 1:** Specify maximum sustainable yield (MSY), status determination criteria (both maximum fishing mortality threshold (MFMT) and minimum stock size threshold (MSST)), optimum yield (OY), and annual catch limits (ACL) for the fisheries that the plan is intended to manage. Managed fisheries are those identified as having a non-negligible probability of developing within the foreseeable future.

**Option 2:** Create four categories of FMP species, identify species in each category, and create a process for moving species from the ecosystem component (EC) category to the Target Species category. Categorize all species of Arctic finfish and shellfish as EC species or prohibited species. EC and prohibited species are not considered managed fisheries under the FMP and do not require specification of reference points such as MSY, OY, and status determination criteria; therefore no reference points are required in this option. Reference points would be developed for a species to move it into the Target Species category.

**Option 3:** Create two categories of FMP species, identify species in either the EC or target species category, and create a process for moving species from the EC category to the Target Species category. Specify maximum sustainable yield (MSY), status determination criteria (both maximum fishing mortality threshold (MFMT) and minimum stock size threshold (MSST)), optimum yield (OY), and acceptable biological catch (ABC), overfishing limits (OFLs) and total allowable catch (TAC) for the Target Species. Overfishing levels for finfish or crab would be prescribed through a set of tiers in descending order of preference corresponding to descending order of information availability. Managed fisheries are those identified as having a non-negligible probability of developing within the foreseeable future.

### **Summary of the impacts of the alternatives**

The Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) evaluates the alternatives for their effects within the action area. Chapters 4 through 10 of this EA/RIR/IRFA assess the impacts of each alternative for finfish and shellfish, habitat, marine mammals, seabirds, ecosystem relationships, society, and the economy.

#### ***Finfish and shellfish in the Arctic Management Area***

Chapter 4 analyzes the impacts of the alternatives on finfish and shellfish. Many species of marine and anadromous (and amphidromous) fish and shellfish inhabit Arctic waters seasonally or year round.

However, no species of finfish or shellfish are known to occur in the Arctic Management Area in sufficient biomass to support commercial fishing, except for Arctic cod, saffron cod, and snow crab. The Council's objective for Alternatives 2, 3, and 4 is to create an FMP that closes the Arctic region to commercial harvest of all fish and shellfish species to prevent potential unregulated fishing. Under these alternatives, salmon and halibut commercial fisheries would remain closed under status quo management and under any of the other three alternatives. The Arctic FMP's Fishery Management Area under Alternatives 2 and 3 would include all federal Arctic waters north of Bering Strait. However, in contrast to Alternative 2, the Arctic FMP under Alternative 3 would exempt from federal management a red king crab fishery in the southeastern part of the Chukchi Sea, of the size and nature of the historic fishery, and which would be managed exclusively by the State of Alaska. Any other crab fishery, or an increase in magnitude of this historic crab fishery, would fall under the management of this Arctic FMP under Alternative 3. The Arctic FMP's Management Area under Alternative 4 would include all federal Arctic waters north of Bering Strait for all managed species, except for crab species. The crab FMP management boundary would remain at Pt. Hope, and the crab FMP would not be amended.

If no new fisheries are developed, then no impacts of selecting any of the alternatives are evident other than maintaining essentially the *status quo*. The primary difference in the alternatives is that under Alternative 1, the State of Alaska could open a new or developing fishery under its regulations. Also under *status quo*, neither the NMFS nor the State could prevent unregistered vessels from fishing in the Arctic, potentially allowing an unknown amount of unregulated fishing. Under Alternatives 2, 3, and 4 with any option, the Federal Arctic FMP would need to be amended to manage any new fishery in compliance with applicable Federal law. Differences between the alternatives in how each treats the Chukchi Sea red king crab fishery are described immediately above. Because Alternative 1 does not prevent unregulated fishing, there is potential for significant adverse effects on fish and shellfish resources under Alternative 1.

Options 1, 2, and 3 present administrative methods for achieving the same results as intended by Alternatives 2, 3, and 4, and that is prohibiting commercial fishing. Because these options describe an administrative process for scientific assessment that results in prohibiting commercial fishing in the Arctic, the effects of these options on fish and shellfish resources will be the same. Additionally, these options would require an FMP amendment to authorize a fishery under Alternatives 2, 3, or 4 and the FMP amendment would need to comply with the MSA and would require a NEPA analysis of the specific measures proposed and alternatives to those measures.

#### ***Habitat and Essential Fish Habitat***

Chapter 5 analyzes the impacts of the alternatives on habitat and essential fish habitat. Specific areas in the Arctic may be particularly susceptible to potential damage from bottom trawl fisheries. For these reasons, Alternative 1 has the potential to allow unregulated fishing that may result in significant negative impacts to habitat complexity, benthic biodiversity and habitat suitability; and therefore, may result in significantly negative impacts on habitat. Overall, Alternatives 2, 3, and 4 are more protective to habitat than Alternative 1 by preventing the occurrence of unregulated commercial fishing in the Arctic Management Area. Because Alternatives 2, 3, and 4 would not change the current conditions of habitat present in the Arctic Management Area, including no changes to habitat complexity, benthic diversity, and habitat suitability, the direct, indirect, and cumulative impacts of Alternatives 2, 3, and 4 on habitat are insignificant. Options 1 and 3 provide target species which require the identification and description of EFH for these species. Establishing EFH would require consultations for any federal action that may adversely affect EFH likely resulting in more consideration of protection for EFH for the target species than under Option 2, for which no EFH is identified.

#### ***Birds in the Arctic Management Area***

Chapter 6 analyzes the impacts of the alternatives on birds. Birds seasonally occur in substantial numbers

in the Arctic Management Area. Nearly all Arctic birds are migratory, and large numbers of many species are present between May and November; only a few species remain year round. Arctic bird species that may occur in marine waters include waterfowl, shorebirds, loons, seabirds, raptors, and other species. Bird species listed under the Endangered Species Act that inhabit the areas where commercial fishing could occur include spectacled eider and Steller's eider. Short-tailed albatross extremely rarely, if ever, inhabit this area. Two other candidate species for listing do inhabit and depend on breeding habitat in this area: Kittlitz's murrelet and the yellow-billed loon.

Potential effects on seabirds from commercial fisheries include incidental take, reduced prey availability, and habitat disturbance. Since all of the alternatives under consideration that may affect birds, other than status quo, would close commercial fisheries in the Arctic Management Area, none of the alternatives with the options would have significant impacts on seabirds. Compared to Option 2, Options 1 and 3 may provide some protection to habitat through the establishment of EFH and the requirement for consultation for federal actions that may adversely affect EFH. Two alternatives would allow a red king crab fishery to occur in the southeastern Chukchi Sea; birds do not consume crab and such a fishery would not adversely interact with birds, and thus there would be no significant direct, indirect or cumulative effects of these alternatives on birds. The development of unregulated fisheries under Alternative 1 has the potential to significantly adversely affect seabird species, dependent on the fishery and the seabird species that might interact with such a fishery.

#### *Marine Mammals in the Arctic Management Area*

Chapter 7 analyzes the impacts of the alternatives on marine mammals. The Arctic is known for its indigenous, and sometimes migratory, marine mammal populations. Fifteen marine mammal species are present in the Arctic Management Area: bowhead whales, gray whales, beluga whales, minke whales, killer whales, fin whales, humpback whales, narwhals, spotted seals, bearded seals, ribbon seals, ringed seals, Pacific walrus, polar bears, and harbor porpoise. Interactions between marine mammals and commercial fisheries may occur due to overlap in important marine mammal prey and the size and species of fish that are harvested in the fisheries, and due to temporal and spatial overlap in marine mammal occurrence and commercial fishing activities. Effects on marine mammals by the fisheries include incidental takes and entanglement, harvest of prey species, and disturbance. By prohibiting commercial fisheries, Alternatives 2, 3, and 4 with any of the options would be more protective for marine mammals in the Arctic Management Area compared to the *status quo*, which does not restrict commercial fishing by vessels not permitted by the State of Alaska. Alternative 2 is the most protective to marine mammals by prohibiting all commercial fishing in the Arctic Management Area. Alternatives 3 and 4 would allow a red king crab fishery to occur in the southeastern Chukchi Sea. Several marine mammals in this region, including beluga whales, spotted and bearded seals, and Pacific walrus eat crab. Gray, humpback, and bowhead whales have become entangled in pot fishing gear and may be impacted by a crab fishery if the whales encounter the crab gear. The scale of the crab fishery would remain very small, so that any potential for entanglement or competition for prey would also remain very small. The potential effects of this limited crab fishery on whales, walrus, and seals are therefore insignificant. Disturbances of marine mammals under Alternatives 2, 3, and 4 are not likely to occur because of the prohibition on fishing. The small red king crab fishery is likely small enough in scope that few marine mammals would be disturbed by the fishing activity under Alternatives 3 or 4.

Cumulative impacts on marine mammals in the Arctic Management Area are likely to occur from oil, gas, and mineral exploration and development and increased shipping activity, including increased potential for introducing invasive species. These activities have the potential to adversely impact marine mammals in the Arctic, but these impacts are likely to be localized and are not expected to result in stock level effects. Oil and gas production may result in cumulative significant adverse effects on marine mammals based on the potential effects of a large oil spill, especially under ice. The continuing fishing activity and continued subsistence harvest are potentially important sources of additional annual adverse impacts on marine mammals that range from the Bering Sea into the Arctic Management Area. Both of these activities are

monitored and are not expected to increase beyond the potential biological removals for most marine mammals or to greatly increase the total annual human-caused mortality. The extent of the fishery impacts would depend on the size of the fisheries, the protection measures in place, and the level of interactions between the fisheries and marine mammals. However, a number of factors will tend to reduce the impacts of managed fishing activity on marine mammals in the future, most importantly ecosystem management. Ecosystem-sensitive management and institutionalization of ecosystem considerations into fisheries governance are likely to increase our understanding of marine mammal populations and interactions with fisheries. The effects of actions of other federal, state, and international agencies are likely to be less important when compared to the direct interaction of the commercial fisheries, subsistence harvests, and marine mammals.

Under current conditions, the potential direct and indirect impacts from Alternatives 1, 3, and 4 are very limited (for incidental takes and harvest of prey resources) and nonexistent (for disturbance) under Alternative 2 because no fisheries are allowed at present or are likely to be allowed in the foreseeable future, with the possible exception of a very small historical king crab fishery. Compared to Option 2, Options 1 and 3 may provide some protection to habitat through the establishment of EFH and the requirement for consultation for federal actions that may adversely affect EFH. Therefore the past, present, and reasonably foreseeable future actions in combination with the direct and indirect impacts of Alternatives 1, 3, and 4 are not expected to result in significant impacts on Arctic marine mammals. Alternative 2 prevents any fishing in the Arctic Management Area and therefore has no effect on marine mammals. If unregulated fishing develops under Alternative 1, significant adverse effects are possible depending on the fishery and the marine mammal species that might interact with such a fishery.

#### *Ecosystem*

Chapter 8 analyzes the impacts of the alternatives on the ecosystem. Commercial fisheries can impact systemic relationships between components of the ecosystem by changing predator/prey relationships, energy flow and balance, and biological diversity. Since all of the alternatives under consideration, other than *status quo*, would close commercial fisheries in the Arctic Management Area, none of the alternatives with any option would appreciably impact the ecological relationships between components of the Arctic ecosystem. Alternatives 3 and 4 would allow a red king crab fishery to occur in the southeastern Chukchi Sea; the ecosystem effects of allowing this small localized fishery to continue are not considered to be large, and therefore no effects of these alternatives on the ecosystem are expected. If unregulated fishing were to develop under Alternative 1, there may be significant adverse effects on the ecosystem, especially if the target species is Arctic cod or saffron cod, important keystone species.

#### *Economic and Social Impacts*

The costs and benefits of this action are evaluated in Chapter 9, which provides a Regulatory Impact Review (RIR) of this action. All of the alternatives have the benefit of creating a framework within which future fisheries development may proceed in a sustainable manner. This should benefit a commercial fishery if one eventually evolves. It will also benefit other users of ecosystem services in the region that might be impacted by a commercial fishery, for example subsistence users of marine mammals. All of the alternatives impose a prohibition on fishing that will create an additional burden for the NOAA Office of Law Enforcement and the U.S. Coast Guard. It is not possible to evaluate the cost of these responsibilities with current information. The alternatives may create some ongoing management and specifications responsibilities for the Alaska Fisheries Science Center, the SSC, the AP, the Council, and the Sustainable Fisheries Division of NMFS. These are believed to be small. Alternative 2 prohibits what may be a small and poorly documented crab fishery in federal waters of Kotzebue Sound. Lost profits in this fishery may create a small cost but lack of information on the fishery makes it impossible to estimate this cost.

An Initial Regulatory Flexibility Analysis was conducted to examine adverse impacts of the alternatives

on directly regulated small entities. This analysis, in Chapter 10, was prepared to comply with the Regulatory Flexibility Act (RFA). Alternatives 1, 3, and 4 have no known impacts on directly regulated small entities. Alternative 2 would prohibit crab fishing that may be taking place in a small and poorly documented fishery in Kotzebue Sound. This may have an adverse impact on two to four small entities.

## **Revised Draft Management Policy, Goals, and Objectives for Arctic FMP**

### **Management Policy and Goals for Arctic Fisheries**

The Council recognizes the different and changing ecological conditions of the Arctic, including warming trends in ocean temperatures, the loss of seasonal ice cover, and the potential long term effects from these changes on the Arctic marine ecosystem. More prolonged ice-free seasons coupled with warming waters and changing ranges of fish species could together create conditions that could lead to commercial fishery development in the Alaskan Arctic EEZ. The emergence of unregulated, or inadequately regulated, commercial fisheries in the Arctic EEZ off Alaska could have adverse effects on the sensitive ecosystem and marine resources of this area, including fish, fish habitat, and non-fish species that inhabit or depend on marine resources of the Arctic EEZ, and the subsistence way of life of residents of Arctic villages. The Council views the development of an Arctic FMP as an opportunity for implementing an ecosystem-based management policy that recognizes these issues in the Alaskan Arctic EEZ.

The Council's management policy for the Arctic EEZ is an ecosystem-based management policy that proactively applies judicious and responsible fisheries management practices, based on sound scientific research and analysis, to ensure the sustainability of fishery resources, to prevent unregulated or poorly regulated commercial fishing, and to protect associated ecosystems for the benefit of current users and future generations. This management policy recognizes the need to balance competing uses of marine resources and different social and economic goals for sustainable fishery management, including protection of the long-term health of the ecosystem and the optimization of yield from its fish resources. Recognizing that potential changes in productivity may be caused by fluctuations in natural oceanographic conditions, fisheries, and other non-fishing activities, the Council intends to continue to take appropriate measures to insure the continued sustainability of the managed species and to prepare for possible fishery development in the Arctic (Lellis 2004). This policy will use and improve upon the Council's existing open and transparent process of public involvement in decision making.

Given this management policy, the Council's fishery management goals for the Arctic EEZ are to provide sound conservation and sustainability of fish resources, provide socially and economically viable commercial fisheries for the well-being of fishing communities, minimize human-caused threats to protected species, maintain healthy habitat for marine resources, and incorporate ecosystem-based considerations into management decisions. This policy recognizes the complex interactions among ecosystem components, and seeks to protect important species utilized by other ecosystem component species, potential target species, other organisms such as marine mammals and birds, and local residents and communities.

In implementing the management policy and goals, the Council will consider and adopt, as appropriate, measures that prevent unregulated or poorly regulated fishing; apply ecosystem-based management principles that protect managed species from overfishing and protect the health of the entire marine ecosystem; where appropriate and practicable, include habitat protection and bycatch constraints; authorize and regulate commercial fishing in the Arctic EEZ consistent with the goals and objectives of the management policy should commercial fishery development be proposed in the future; and apply the Council's precautionary, adaptive

management approach through community-based or rights-based management. All management measures will be based on the best scientific information available.

## **Management Objectives**

The Council has identified the following ten management objectives to carry out the management policy and goals for the Arctic FMP. The Council and NMFS will consider the following objectives in developing amendments to this FMP and associated management measures.

Because adaptive management requires regular and periodic review, the management objectives identified in this section will be reviewed periodically by the Council. The Council will also review, modify, eliminate, or consider new management measures, as appropriate, to best carry out the management objectives for the Arctic FMP.

1. Biological Conservation Objective. *Ensure the long-term reproductive viability of fish populations by: (a) preventing unregulated fishing and overfishing, and rebuilding depleted stocks by adopting conservative harvest levels using adaptive management to develop harvest limits; (b) adopting procedures to adjust acceptable biological catch levels as necessary to account for uncertainty and ecosystem factors; (c) protecting the integrity of the food web by accounting for, and controlling, bycatch mortality for target, prohibited species catch, ecosystem component species, and non-commercial species; (d) avoiding or minimizing impacts to seabirds and marine mammals; (e) incorporating ecosystem-based considerations into fishery management decisions, as appropriate; and (f) providing for an orderly process, based on best available science, for the sustainable management and authorization of any future commercial fishing in the Arctic Management Area.*

2. Economic and Social Objective. *Maximize economic and social benefits to the nation over time by: (a) promoting conservation while providing for optimum yield in terms of the greatest overall benefit to the nation with particular reference to food production, and sustainable opportunities for recreational, subsistence, and commercial fishing participants and fishing communities; (b) promoting management measures that, while meeting conservation objectives, are also designed to avoid significant disruption of existing social and economic structures; (c) promoting fair and equitable allocation of identified available resources in a manner such that no particular sector, group or entity acquires an excessive share of the privileges; and (d) promoting increased safety at sea.*

3. Gear Conflict Objective. *Minimize gear conflict among fisheries.*

4. Habitat Objective. *Preserve the quality and extent of suitable habitat by reducing or avoiding impacts to habitat where practicable.*

5. Vessel Safety Objective. *Include vessel safety considerations in the development of fisheries management measures, including temporary adjustments to the fishery to allow access, after consultation with the U. S. Coast Guard and fishery participants, for vessels that are otherwise excluded because of weather or ocean conditions causing safety concerns while ensuring no adverse effect on conservation in other fisheries or discrimination among fishery participants.*

6. Due Process Objective. *Ensure that interested parties have access to the regulatory process and are provided an opportunity for redress.*



7. Research and Management Objective. *Provide fisheries research, exempted fishing for information collection, other data collection, and analysis to ensure a sound information base for management decisions.*

8. Alaska Native Consultation Objective: *Incorporate local and traditional knowledge in fishery management and encourage Alaska Native participation and consultation in fishery management.*

9. Enforceability Objective: *Cooperate and coordinate management and enforcement programs with the Alaska Board of Fisheries, Alaska Department of Fish and Game, Division of Alaska Wildlife Troopers, the U.S. Coast Guard, NMFS Office for Law Enforcement, International Pacific Halibut Commission, Federal agencies, and other organizations to meet conservation requirements; promote economically healthy and sustainable fisheries and fishing communities; and maximize efficiencies in management and enforcement programs through continued consultation, coordination, and cooperation.*

10. Marine Mammal and Seabird Objective: *Cooperate and coordinate with the U. S. Fish and Wildlife Service and NMFS to protect Arctic marine mammal and seabird species by avoiding or minimizing where practicable impacts from fisheries management on these species in the Arctic Management Area.*

### Summary of Alternatives

Alternative	MSA Defined Fish Harvest Authorized in Arctic?	Authority	Scallop Harvest Authorized in Arctic?	Authority	Crab Harvest Authorized in Arctic?	Authority	Crab FMP northern boundary	Notes on Chukchi Sea red king crab fishery management
1	no	State regs*	no	State regs*	yes	Crab FMP and State regs**	Pt Hope	Crab FMP defers mgt authority to State
2	no	Arctic FMP	no	Arctic FMP	no	Arctic FMP	Bering Strait	Closed
3	no	Arctic FMP	no	Arctic FMP	yes – limited to historic RKC fishery in Chukchi Sea	Exempt from Arctic FMP/under State Authority	Bering Strait	Open by State – exempt from Federal management
4	no	Arctic FMP	no	Arctic FMP	yes – limited to historic RKC fishery in Chukchi Sea***	Crab FMP	Pt Hope	Crab FMP defers mgt authority to State

\* Authority limited to State registered vessels. The State Board of Fisheries has not authorized commercial fishing in adjacent Arctic Federal waters.

\*\* Authority limited to State registered vessels fishing in Registration Area Q (to Point Hope).

\*\*\* May require amendment to king and Tanner crab FMP to provide management for this stock.

**Alternative 1:** No Action (Status quo). Maintain existing management authority.

**Alternative 2:** Adopt an Arctic FMP that closes the entire Arctic Management Area to commercial fishing. Amend the crab FMP to terminate its geographic coverage at Bering Strait.

**Alternative 3:** Adopt an Arctic FMP that closes the entire Arctic Management Area to commercial fishing. Amend the crab FMP to terminate its geographic coverage at Bering Strait. Alternative 3 would exempt from the Arctic FMP a red king crab fishery in the Chukchi Sea of the size and scope of the historic fishery in the geographic area where the fishery has historically occurred.

**Alternative 4:** Adopt an Arctic FMP that closes the entire Arctic Management Area to commercial fishing. A red king crab fishery in the Chukchi Sea of the size and scope of the historic fishery in the geographic area where the fishery has historically occurred could be prosecuted under authority of the Crab FMP. The Arctic FMP would cover the area north of Pt. Hope for crab and north of Bering Strait for groundfish and scallops.

Either Option 1, 2, or 3 (Option 3 is a blend of elements from Options 1 and 2) must be chosen under Alternative 2, 3, or 4 to meet the MSA required provisions for an FMP to (1) assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, the fishery and (2) specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished or when overfishing is occurring. Alternative 2 or 3 would require amending the Council's king and Tanner crab FMP; the draft amendment text is provided in Appendix V of the EA/RIR/IRFA.

**Option 1:** Specify maximum sustainable yield (MSY), status determination criteria (both maximum fishing mortality threshold (MFMT) and minimum stock size threshold (MSST)), optimum yield (OY), and annual catch limits (ACL) for the fisheries that the plan is intended to manage. Managed fisheries are those identified as having a non-negligible probability of developing within the foreseeable future.

**Option 2:** Create four categories of FMP species, identify species in each category, and create a process for moving species from the ecosystem component (EC) category to the Target Species category. Categorize all species of Arctic finfish and shellfish as EC species or prohibited species. EC and prohibited species are not considered managed fisheries under the FMP and do not require specification of reference points such as MSY, OY, and status determination criteria; therefore no reference points are required in this option. Reference points would be developed for a species to move it into the Target Species category.

**Option 3:** Create two categories of FMP species, identify species in either the EC or target species category, and create a process for moving species from the EC category to the Target Species category. Specify maximum sustainable yield (MSY), status determination criteria (both maximum fishing mortality threshold (MFMT) and minimum stock size threshold (MSST)), optimum yield (OY), and acceptable biological catch (ABC), overfishing limits (OFLs) and total allowable catch (TAC) for the Target Species. Overfishing levels for finfish or crab would be prescribed through a set of tiers in descending order of preference corresponding to descending order of information availability. Managed fisheries are those identified as having a non-negligible probability of developing within the foreseeable future.