

PRELIMINARY DRAFT

Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility
Analysis
for
A Regulatory Amendment to Revise Regulations for Seabird Avoidance Measures
in the Hook-and-line Fisheries off Alaska
To Reduce the Incidental Take of the Short-tailed Albatross
And Other Seabird Species

**This document is a preliminary draft.
Supplemental maps and figures will be provided at the NPFMC meeting in Seattle
February 2008.**

PRELIMINARY DRAFT

Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis
for
A Regulatory Amendment to Revise Regulations for Seabird Avoidance Measures
in the Hook-and-line Fisheries off Alaska
To Reduce the Incidental Take of the Short-tailed Albatross
And Other Seabird Species

Date: January 2008

Lead Agency: National Marine Fisheries Service
Alaska Regional Office
Juneau, Alaska

Responsible Official: Robert D. Mecum
Acting Administrator
Alaska Regional Office

For Further Information Kristin Mabry
Alaska Regional Office

Contact: P.O. Box 21668
Juneau, Alaska 99802-1668
kristin.mabry@noaa.gov

Abstract: This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis analyzes the impacts of revisions to current seabird avoidance measures in the hook-and-line fisheries off Alaska only in IPHC Area 4E in the Bering Sea. This proposed action is based on a review of seabird interaction data. This data included: 1) satellite tagging studies depicting the endangered short-tailed albatross usage of Bering Sea habitat, 2) opportunistic sightings of short-tailed albatross, 3) seabird observation data from IPHC halibut longline surveys in the Bering Sea, and 4) hook and line effort data. The analysis concludes that the requirement of using seabird avoidance measures in a portion of IPHC area 4E may be unnecessary due to very limited usage of this area by seabirds in general, and a low probability of encountering short-tailed albatross inside 4E. This analysis contains options for hook-and-line vessels by size class, that eliminate the required use of seabird avoidance measures in the portion of 4E where short-tailed albatross are rare. The objective of this proposed regulatory amendment is to improve the efficiency of current seabird avoidance requirements in areas where the incidental take of short-tailed albatrosses and other seabird species is extremely low, thereby relieving unnecessary regulatory burden and its associated costs.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
1.0 PURPOSE AND NEED FOR ACTION.....	7
2.0 ACTION AND ALTERNATIVES TO THE ACTION.....	19
3.0 AFFECTED ENVIRONMENT	23
4.0 ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES.....	39
5.0 CUMULATIVE IMPACTS OF THE ALTERNATIVES	57
6.0 REGULATORY IMPACT REVIEW: ECONOMIC AND SOCIO-ECONOMIC IMPACTS OF THE ALTERNATIVES	59
7.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS.....	73
8.0 CONCLUSIONS.....	81
9.0 REFERENCES	83
10.0 LIST OF PREPARERS.....	91
11.0 APPENDICES..... Letter from FWS to NPFMC dated January 27, 2007.	93

EXECUTIVE SUMMARY

This environmental assessment/regulatory impact review/initial regulatory flexibility analysis (EA/RIR/IRFA) assesses the potential environmental and socioeconomic impacts of a proposed federal action that would change seabird avoidance requirements for the hook-and-line groundfish fisheries in the Bering Sea/Aleutian Islands (BSAI) and the Pacific halibut fishery in U.S. Convention waters off Alaska.

The intent of these changes is to relieve an unnecessary regulatory burden on fisheries in areas where seabird avoidance measures are not needed and to maintain their use in areas where they are.

The Council plans to conduct an initial review of this proposed action in February 2007 based on analysis of the alternatives analyzed herein. The alternatives are as follows:

1. Status Quo for vessels greater than 26 ft LOA in Area 4E:

a. Vessels less than 55 ft LOA with masts, poles, or rigging using snap-on hook-and-line gear are required to deploy one streamer line while setting gear. Specifically, the streamer line must be at least 45 m long and must be maintained with a minimum aerial extent of 20 m.

b. Vessels less than 55 ft LOA with masts, poles, or rigging not using snap-on hook-and-line gear (conventional gear) are required to deploy one streamer line while setting gear. Specifically, the streamer line must be at minimum of 90 m long and must be maintained with a minimum aerial extent of 40 m.

c. Vessels less than 55 ft LOA without masts, poles, or rigging and not capable of adding poles or davits to accommodate a streamer line (including bowpickers) must tow a buoy in such a way to deter birds from the sinking groundline, without fouling on the gear, while setting hook-and-line gear.

d. Vessels less than or equal to 32 ft LOA in IPHC area 4E shoreward of EEZ (inside 3 nm) are currently not required to use seabird avoidance measures.

e. Vessels greater than 55 ft LOA with snap-on gear are required to use one streamer line that meets the standard. Vessels greater than 55 ft LOA with other than snap-on gear are required to use paired streamer lines with standard.

2. EXEMPTION FOR 26-32' VESSELS: Maintain status quo seabird protection measures except that vessels greater than 26 and less than or equal to 32 ft LOA are not required to use seabird avoidance measures in area 4E. NOTE: Vessels less than or equal to 32 ft LOA in IPHC area 4E shoreward of EEZ (inside 3 nm) are currently not required to use seabird avoidance measures. One of the following options would continue to require seabird avoidance measures in the STAL subarea of 4E outside of 3nm:

Option 1. Vessels fishing in the STAL subarea of 4E are required to use seabird avoidance regulations as detailed in alternative 1, above.

Option 2. EXCEPT: Vessels fishing in the STAL subarea of 4E are required to use only a buoy bag to deter seabirds.

3. EXEMPTION FOR 26-55' VESSELS: Maintain status quo seabird protection measures except that vessels greater than 26 and less than or equal to 55 ft LOA are not required to use seabird avoidance measures in area 4E. One of the following options would continue to require seabird avoidance measures in the STAL subarea of 4E:

Option 1. EXCEPT: Vessels fishing in the STAL subarea of 4E are required to use seabird avoidance regulations as detailed in alternative 1, above.

Option 2. EXCEPT: Vessels fishing in the STAL subarea of 4E are required to use a buoy bag to deter seabirds.

4. EXEMPTION FOR ALL VESSELS OVER 26': Seabird avoidance measures are not required in area 4E, except as required by one of the following options:

Option 1. Vessels fishing in the STAL subarea of 4E are required to use seabird avoidance regulations as detailed in alternative 1, above.

Option 2. Vessels fishing in the STAL subarea of 4E are required to use only a buoy bag to deter seabirds.

See Table 1-1 for a comparison of these four alternatives.

Table 1-1. Seabird Avoidance Measures Alternatives for Hook and Line Gear in IPHC Area 4E for vessels > 26' LOA

Location, Vessel Size & Config	26-55' in the EEZ >32' to ≤ 55' in 0-3 nm w/o masts, poles, or rigging	26- 55' in the EEZ >32' to ≤ 55' in 0-3 nm with masts, poles, or rigging	>55' in the EEZ >55' in 0-3 nm
Alt 1 (Status Quo)	1 buoy bag line	1 streamer line with standard (snap-on gear) ¹	1 streamer line with standard (snap-on gear) ¹
		1 streamer line with standard (other than snap-on gear) ²	Paired streamer lines with standard (other than snap-on gear) ²
Alt 2	26-32' - no seabird avoidance measures required in 4E, >32' - status quo		
option 1	Vessels 26-32' LOA fishing in the STAL subarea ³ of 4E are required to use seabird avoidance regulations as detailed in alternative 1, above.		
option 2	Vessels 26-32' LOA fishing in the STAL subarea ³ of 4E are required to use only a buoy bag to deter seabirds.		
Alt 3	26- 55' - no seabird avoidance measures required in 4E, > 55' - status quo		
option 1	Vessels 26-55' LOA fishing in the STAL subarea ³ of 4E are required to use seabird avoidance regulations as detailed in alternative 1, above.		
option 2	Vessels 26-55' LOA fishing in the STAL subarea ³ of 4E are required to use only a buoy bag to deter seabirds.		
Alt 4	all vessels - no seabird avoidance measures required in 4E		
option 1	All vessels fishing in the STAL subarea ³ of 4E are required to use seabird avoidance regulations as detailed in alternative 1, above.		
option 2	All vessels fishing in the STAL subarea ³ of 4E are required to use only a buoy bag to deter seabirds.		

1 Streamer line standard that is 45 m in length and in the air for 20 m aft of stern.

2 Streamer line standard that is 90 m in length and in the air for 40 m aft of stern.

3 STAL subarea - southern portion of 4E where albatross are more likely to occur. See Figure X

1.0 PURPOSE AND NEED FOR ACTION

In 1997, NMFS began requiring seabird avoidance measures to mitigate interactions between the federal hook-and-line fisheries and seabirds, one species of which—the short-tailed albatross—is listed as endangered under the Endangered Species Act (ESA). Because such measures directly affect fishing operations, the North Pacific Fishery Management Council (Council) and NMFS have promoted research to improve the efficiency and success of such measures and to ensure that they impose no unnecessary burden on fishermen.

This document constitutes the environmental assessment (EA) of alternatives to change the requirements in a portion of the Eastern Bering Sea to allow vessels to not use seabird avoidance gear where seabirds are less likely to occur. In addition, the environmental assessment portion of this document is followed by a regulatory impact review (RIR) and initial regulatory flexibility analysis (IRFA) for assessing the socioeconomic impacts of the alternatives.

In this chapter, we establish the purpose and need for federal action, describe the geographical scope of the action area, and discuss the specific statutory requirements for such action.

1.1 Purpose

The purpose of the proposed action is to revise the seabird avoidance measures so that, based on the best available information regarding seabird occurrence, these measures may be applied most efficiently, i.e., providing adequate protection to seabirds while imposing no unnecessary burden on fishermen. Seabird avoidance measures reduce the incidental mortality of seabirds in the hook-and-line fisheries off of Alaska. Recent analyses suggest that these measures can be focused on certain sectors of the hook-and-line vessel fleet and in specified geographic areas where interactions are more likely to occur between hook-and-line vessels and seabirds, particularly ESA-listed seabird species and species of concern. The proposed action thus has the dual purpose of continuing to protect seabirds while eliminating seabird avoidance gear requirements in waters where pelagic seabirds (particularly the endangered short-tailed albatross and other species of concern) are rarely observed. These revisions exemplify the principles of adaptive management, using the best available information to focus regulatory requirements where they are needed and to ensure that those requirements are effective and efficient.

This action furthers the goals and objectives of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Northern Pacific Halibut Act of 1982 (Halibut Act), the Migratory Bird Treaty Act (MBTA), and the ESA, while providing relief from unnecessary regulatory burdens on hook-and-line fishermen in IPHC Area 4E.

1.2 Background

NMFS issued final regulations for seabird avoidance measures in the GOA and BSAI groundfish hook-and-line fisheries on April 29, 1997 (62 FR 23176) and in the Pacific halibut fishery off Alaska on March 6, 1998 (63 FR 11161). Since that time, the NPFMC has continued to refine the regulations based on seabird interaction research. Final action taken in 2007 resulted in regulatory changes (implemented by final rule at 72 FR 71601 published December 18, 2007 effective January 17, 2008) that relieved the requirements in State of Alaska inside waters where seabird species of conservation concern are rare and added a standard to the usage of seabird avoidance gear in EEZ waters where birds are more common.

This environmental assessment draws heavily on the EA prepared in support of that earlier regulatory change (NMFS 2007) and hereby incorporates that document by reference. The analyses contained in that EA were based on results from research projects suggested by the North Pacific Fishery Management Council's (Council) Science and Statistical Committee, and conducted by Washington and Alaska Sea Grant Programs (SGP). The research included: 1) hook-and-line surveys in Alaskan waters which revealed a rarity of seabird presence in inside waters; and 2) experiments conducted to test efficacy of seabird avoidance gear use on vessels smaller than 55 feet. The research results suggest that seabird avoidance measures can be improved by strengthening the gear requirements through construction standards in waters where seabirds are more common and eliminating requirements in waters where seabirds are rarely observed. That EA also analyzed options that would eliminate both the Seabird Avoidance Plan and the use of a second "other device"—both of which were required by regulations at that time. The final research results of the Washington SG study were presented to the Council at its June 2006 meeting, the Council took initial action at its December 2006 meeting, and they took final action in February of 2007.

In the final recommended alternative for that previous seabird action, the NPFMC also requested analysis of the impacts of "*removal of seabird avoidance measures in IPHC Area 4E and potential subareas to identify whether similar actions might be taken in 4E to both protect endangered seabirds and reduce restrictions imposed on fishermen where they may not be applicable.*"

This environmental assessment constitutes that analysis. Because the previous action and analysis are similar to the present proposed action, we incorporate NMFS 2007 by reference into this document.

1.3 Goals and Objectives of this Action

This environmental assessment addresses the Council's motion from the February 2007 meeting. The proposed action is intended to improve the seabird avoidance measures requirements for the BSAI hook-and-line fisheries by continuing to mitigate interactions with the ESA-listed short-

tailed albatross (*Phoebastria albatrus*) and other seabird species, while alleviating an unnecessary regulatory burden on vessels fishing in waters where seabird interactions are less common.

1.4 Applicability of All Alternatives

Management of the Federal groundfish fishery located off Alaska in the 3-200 nm U.S. EEZ is conducted under the BSAI and GOA groundfish fishery management plans (FMPs) (NPFMC 2005a and 2005b). The State of Alaska manages groundfish fisheries off Alaska from 0 to 3 nm. Fisheries in state waters occur either as Alaska Department of Fish and Game state-managed fisheries, or as “parallel” fisheries. Parallel groundfish fisheries refer to groundfish harvests in state waters that the state manages concurrently with federal season openings and closures. Harvests from these parallel fisheries are accounted for under the federal TACs. See Woodby and Hulbert (2006) and Woody et al (2005) for additional detail about these fisheries. Regulation 5 AAC 28.055 adopts by reference federal regulations for all hook-and-line fisheries for groundfish in state waters (Appendix 1). Management of the Individual Fishing Quota (IFQ) and Community Development Quota (CDQ) halibut fisheries occur in U.S. Convention waters off Alaska, which is from 0-200 nm offshore.

As noted previously, the current seabird avoidance regulations apply to operators of federally permitted vessels fishing for groundfish with hook-and-line gear in the GOA and the BSAI; to federally permitted vessels fishing for groundfish with hook-and-line gear in waters of the State of Alaska (0-3 nm); and to operators of vessels fishing for Pacific halibut in U.S. Convention waters off Alaska. Since the inception of requirements for seabird avoidance measures off Alaska, NMFS has intended that these measures be used by all hook-and-line vessel operators at risk of incidentally taking short-tailed albatross and/or other seabird species, regardless of geographic area fished (i.e. EEZ or state waters) or target fishery (i.e. groundfish or halibut).

To more closely reflect the respective fishery management authorities and policies of federal and state governments, regulations implementing any of the alternatives would apply to operators of vessels fishing for the following:

1. Pacific halibut in the Individual Fishing Quota (IFQ) and Community Development Quota (CDQ) management programs in waters from 0 to 200 nm,
2. IFQ sablefish in EEZ waters (3 to 200 nm) and waters of the State of Alaska (0 to 3 nm), except waters of Prince William Sound and areas in which sablefish fishing is managed under a State of Alaska limited entry program (Clarence Strait, Chatham Strait), and
3. Groundfish (except IFQ sablefish) with hook-and-line gear in the U.S. EEZ waters off Alaska (3-200 nm).

As described later in the document, fishing effort inside IPHC area 4E is mainly comprised of CDQ halibut fishing and some Pacific cod in the southern portion.

1.5 Action Area

The groundfish fisheries occur in the North Pacific Ocean and Bering Sea in the EEZ from 50°N to 65°N (Figure 1). This action refers to fishing grounds in IPHC area 4E (depicted in Figure 1 with a cross-hatch) which encompasses a portion of the eastern Bering Sea shelf from Bristol Bay to Norton Sound. The area affected by the fisheries necessarily includes adjacent State of Alaska waters. Seabird avoidance measures affect groundfish fishing with hook-and-line gear throughout the Bering Sea.

The halibut fishery occurs in portions of Convention waters in and off Alaska. Convention waters, according to the Halibut Act, are "maritime areas off the west coast of the United States and Canada as described in Article I of the Convention."

1.6 Applicable Laws

The Federal groundfish fisheries off Alaska are managed under two FMPs, *The Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area* (BSAI) (NPFMC, 2005a) and *The Fishery Management Plan for Groundfish of the Gulf of Alaska* (NPFMC, 2005b). The Council developed (and the Secretary of Commerce approved) these FMPs and their amendments pursuant to the Magnuson-Stevens Act and other applicable Federal laws and executive orders (E.O.s). The FMPs manage the groundfish fisheries for optimum yield (OY) and allocate harvest among user groups while preventing overfishing and conserving marine resources. The FMPs, certain amendments, and additional actions necessary to conserve public trust resources are developed by the Council and NMFS. The Pacific halibut fishery in Alaska is managed by the IFQ Program under authority of the Halibut Act.

When managing the BSAI and GOA groundfish fisheries and the Pacific halibut fishery off Alaska, NMFS must comply with a number of statutes and executive orders: the Magnuson-Stevens Act, the American Fisheries Act (AFA), the Halibut Act, the ESA, the National Environmental Policy Act (NEPA), the Administrative Procedure Act (APA), the Regulatory Flexibility Act (RFA), Executive Order 12866, Executive Order 13186, and other applicable laws. These statutes and EO 12866 contain the requirements and the processes which must be applied to fisheries management actions and analyses. EO 13186 specifically addresses the responsibilities of federal agencies to protect migratory birds. Processes for developing management measures and analyzing the effects of the measures are detailed in the statutes summarized below.

Magnuson-Stevens Act

Under the Magnuson-Stevens Act, the United States has exclusive fishery management authority over all marine fishery resources found within the EEZ, which extends to between 3 and 200

nautical miles from the baseline used to measure the territorial sea. The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in regional fishery management councils. In the Alaska Region, the Council has the responsibility to prepare FMPs for the marine fisheries it finds that require conservation and management. NMFS is charged with carrying out the federal mandates of the Department of Commerce with regard to marine fish. The mission of NMFS is the stewardship of living marine resources for the benefit of the nation through their science-based conservation and management and promotion of the health of their environment. The goals for accomplishing this mission are sustainable fisheries, recovered protected species, and healthy living marine resource habitat. NMFS Alaska Regional Office and Alaska Fisheries Science Center provide research, analysis and technical support for management actions recommended by the Council. Conservation and management measures to reduce seabird-fishery interactions in groundfish fisheries may be implemented under authority of the Magnuson-Stevens Act.

Halibut Act

Management of the Pacific halibut (hereafter halibut) fishery in and off of Alaska is based on an international agreement between Canada and the United States—the “Convention between United States of America and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea,” signed at Ottawa, Canada on March 2, 1953, and amended by the “Protocol Amending the Convention,” signed at Washington, D.C., March 29, 1979. This Convention, administered by the International Pacific Halibut Commission (IPHC), is given effect in the United States by the Northern Pacific Halibut Act of 1982 (Halibut Act), P.L. 97-176, 16 U.S.C. 773c(c). Generally, fishery management regulations governing the halibut fisheries are developed by the IPHC and recommended to the U.S. Secretary of State. When approved, these regulations are published by NMFS in the Federal Register as annual management measures.

The Halibut Act authorizes the regional fishery management councils having authority for the geographic area concerned to develop regulations governing the halibut fishery in U.S. portions of Convention waters that would apply to nationals or vessels of the U.S. Such an action by the Council is limited only to those regulations that (a) are in addition to and not in conflict with IPHC regulations, (b) are approved and implemented by the Secretary, and (c) are fair and equitable and consistent with other applicable Federal law.

Endangered Species Act

The Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.; ESA), provides the primary legal framework for the conservation and recovery of species in danger of or threatened with extinction. The purposes of the ESA include “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to

provide a program for the conservation of such endangered species and threatened species ...” (16 U.S.C. § 1531(b)). Section 7(a)(2) of the ESA requires that each Federal agency ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat of such species. When the action of a Federal agency may affect a protected species or its critical habitat, that agency (i.e., the “action” agency) is required to consult with either the NMFS or the U.S. Fish and Wildlife Service (USFWS), depending upon the protected species or critical habitat that may be affected. Section 7(b) of the ESA requires the Services to summarize consultations in biological opinions that detail how actions may affect threatened or endangered species and designated critical habitat.

In 2003, the USFWS issued program and project level biological opinions on the groundfish fisheries as implemented under the FMPs and on the annual harvest specifications. (USFWS 2003a and 2003b). These biological opinions found that the groundfish fisheries and the harvest specifications were not likely to jeopardize the continued existence of ESA-listed seabirds, including the short tailed albatross. Reasonable and prudent measures (RPM) included the continuation of seabird avoidance measures and monitoring of incidental takes in the groundfish fisheries. This federal action includes the implementation of management measures consistent with the objectives of the RPM included in both 2003 biological opinions.

National Environmental Policy Act

NEPA (42 U.S.C. 4331, *et seq.*) establishes our national environmental policy, provides an interdisciplinary framework for environmental planning by Federal agencies, and contains action-forcing procedures to ensure that Federal decision-makers take environmental factors into account. NEPA does not require that the most environmentally desirable alternative be chosen, but does require that the environmental effects of all the alternatives be analyzed equally for the benefit of decision-makers and the public.

NEPA has two principal purposes:

1. To require Federal agencies to evaluate the potential environmental effects of any major planned Federal action to ensure that public officials make well-informed decisions about the potential impacts.
2. To promote public awareness of potential impacts at the earliest planning stages of major Federal actions by requiring Federal agencies to prepare a detailed environmental evaluation for any major Federal action significantly affecting the quality of the human environment.

NEPA requires an assessment of both the biological and the social and economic consequences of fisheries management alternatives and provides that members of the public have an opportunity to be involved in and to influence decision-making on Federal actions. In short,

NEPA ensures that environmental information is available to government officials and the public before decisions are made and actions taken. Title II, Section 202 of NEPA (42 U.S.C. 4332) created the Council of Environmental Quality (CEQ). The duties of the CEQ include, among other things, advising and assisting the President in preparing an annual environmental quality report, which is submitted to Congress. This report gathers information concerning trends in the quality of the environment, and developing policies to promote the goals of NEPA (42 U.S.C. 4344). The CEQ is also responsible for the development and oversight of regulations and procedures implementing NEPA. The CEQ regulations provide guidance for Federal agencies regarding NEPA's requirements (40 CFR Part 1500) and require agencies to identify processes for issue scoping, for the consideration of alternatives, for developing evaluation procedures, for involving the public and reviewing public input, and for coordinating with other agencies—all of which are applicable to the Council's development of FMPs. NOAA has also prepared environmental review procedures for implementing NEPA (NOAA Administrative Order 216-6). This Administrative Order describes NOAA's policies, requirements, and procedures for complying with NEPA and the implementing regulations issued by the CEQ. A 1999 revision and update to the Administrative Order includes specific guidance regarding categorical exclusions, especially as they relate to endangered species, marine mammals, fisheries, and habitat restoration. The Administrative Order also expands on guidance for consideration of cumulative impacts and "tiering" in the environmental review of NOAA actions. This Administrative Order provides comprehensive and specific procedural guidance to NMFS and the Council for preparing and adopting FMPs. Federal fishery management actions subject to NEPA requirements include the approval of FMPs, FMP amendments, and regulations implementing FMPs. Such approval requires preparation of the appropriate level of NEPA analysis (Categorical Exclusion, Environmental Assessment, or Environmental Impact Statement). NEPA and the Magnuson-Stevens Act requirements for schedule, format, and public participation are compatible and allow one process to fulfill both obligations.

An EA is prepared pursuant to NEPA to determine whether an action will result in significant effects on the human environment. If the environmental effects of the action are determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact are the final environmental documents required by NEPA. If an analysis concludes that the action is a major Federal action significantly affecting the human environment, an environmental impact statement must be prepared.

An EA must include a discussion of the purpose and need for the action, the environmental impacts of the proposed action, and a list of agencies and persons consulted. The purpose and need are discussed in section 1. The federal action and alternatives are in section 2. Section 3 contains a description of the status of the environment. Section 4 contains the discussion of the environmental impacts that will result from the federal action on the human environment. Section 5 reviews potential cumulative effects. Section 6 is the Regulatory Impact Review (RIR) and section 7 is the Initial Regulatory Flexibility Analysis (IRFA). Section 8 lists the document's conclusions, section 9 contains the references used in the document, and section 10 is a list of preparers and agencies consulted.

The purpose of this EA/RIR/IRFA is to analyze the impacts of revisions to the existing seabird avoidance measures. This document adopts by reference pertinent information from two other NEPA documents:

- The PSEIS (NMFS 2004a) contains analysis of a fisheries management policy framework that emphasizes increased protection of marine mammals and seabirds.
- The Alaska Groundfish Harvest Specifications draft EIS (NMFS 2006b) analyzes impacts to seabirds, and other ecosystem components, from a range of groundfish catch scenarios.

These documents both contain lengthy discussions of the affected environment, potential impacts to seabirds from groundfish fisheries, and cumulative effects. The analysis in this EA/RIR/IRFA does not repeat information contained in these documents, but summarizes pertinent information from them where appropriate, and incorporates newer information where available.

Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) requires federal agencies to assess the impacts of their proposed regulations on small entities and to seek ways to minimize economic effects on small entities that would be disproportionately or unnecessarily adverse. The most recent amendments to the RFA were enacted on March 29, 1996, with the Contract with America Advancement Act of 1996 (Public Law 104-121). Title II of that law, the Small Business Regulatory Enforcement Fairness Act (SBREFA), amended the RFA to require federal agencies to determine whether a proposed regulatory action would have a significant economic impact on a substantial number of small entities. For a federal agency, the most significant effect of SBREFA is that it made compliance with the RFA judicially reviewable.

The assessment requirement of the RFA is satisfied by a regulatory flexibility analysis, which applies only to regulatory actions for which prior notice and comment is required under the APA. Hence, emergency or interim rules that waive notice and comment are not required to have regulatory flexibility analyses. Further, regulatory flexibility analyses are required when an agency cannot certify that an action will not have a “significant economic impact” on a “substantial number of small entities.”

For purposes of these analyses, small entities include (1) small businesses which, for commercial fishing or fish processing, are firms with receipts of up to \$3.5 million annually or up to 500 employees, respectively, (2) small non-profit organizations, and (3) small governmental jurisdictions with a population of up to 50,000 persons. For Alaska fisheries, these criteria include most fishing firms except for the large catcher/process vessels and most coastal communities except for Anchorage. NMFS has published guidelines for RFA analysis; they include criteria for determining if the action would have a significant impact on a substantial number of small entities.

An initial regulatory flexibility analysis (IRFA) is prepared for any proposed regulatory action that meets the above criteria for having an anticipated “significant economic impact” on a “substantial number of small entities.” The IRFA usually is combined with the EA or

(supplemental) EIS document required by NEPA. However, if an action is determined to not have a “significant economic impact on a substantial number of small entities,” then a statement to this effect including a factual basis for the statement, must be published in the *Federal Register* and sent to the Small Business Administration. See section 7 of this EA/RIR/IRFA for the IRFA.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), 16 U.S. C. 703-712, was originally enacted in 1918. In its current form, it implements bilateral treaties to protect migratory birds between the United States and Great Britain, Mexico, Japan, and the former Union of Soviet Socialist Republics. Under the MBTA it is unlawful to pursue, hunt, take, capture, kill, possess, trade, or transport any migratory bird, or any part, nest, or egg of a migratory bird. Violations of the MBTA carry criminal penalties; any equipment and means of transportation used in activities in violation of the Act may be seized by the United States government and, upon conviction, must be forfeited to it. The MBTA is administered by the Department of the Interior, which is authorized to promulgate regulations allowing activities (such as hunting) which would otherwise violate the general prohibitions of the MBTA. To date, the MBTA has been applied to the territory of the United States and coastal waters extending 3 miles from shore.

Executive Order 13186

On January 11, 2001, President Clinton signed an Executive Order on responsibilities of federal agencies to protect migratory birds (66 FR 3853, January 17, 2001). The E.O. requires, among other things, that a memorandum of understanding (MOU) be developed and implemented within two years between the U.S. Fish and Wildlife Service (USFWS) and each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations. The purpose of the MOU is to promote the conservation of migratory bird populations through the integration of bird conservation principles, measures, and practices into federal actions and to avoid or minimize adverse impacts on migratory bird resources to the extent practicable.

For those federal actions that result in the unintentional take of migratory birds and that has, or is likely to have a measurable negative effect on those populations, pursuant to its MOU, the agency shall develop and use principles, standards, and practices that will lessen the amount of unintentional take. These principles, standards, and practices shall be regularly evaluated and revised to ensure that they are effective in lessening the detrimental effect of agency actions on migratory bird populations. These efforts shall focus first on species of concern, priority habitats, and key risk factors. As of this date, these elements have not yet been identified and no MOU exists between NMFS and the USFWS.

Paperwork Reduction Act

The Paperwork Reduction Act (PRA) of 1995 (44 USC 3501 et seq., and 5 CFR part 1320) is designed “to minimize the paperwork burden for individuals, small businesses, educational and nonprofit institutions, federal contractors, state, local and tribal governments, and other persons resulting from the collection of information by or for the Federal Government.” In brief, this law is intended to ensure that the government is not overly burdening the public with requests for information. Procedurally, the PRA requirements constrain what, how, and how frequently information will be collected from the public affected by a rule that requires reporting (e.g., the amount of fish caught during a fishing trip). The Office of Management and Budget (OMB) reviews and approves any collection of information requirements in fisheries regulations. This proposed action includes the option to remove the seabird avoidance plan which is a PRA requirement that was approved by OMB (OMB no. 0648-0474).

Information Quality Act

Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554) directed OMB to issue government-wide guidelines that provide policy and procedural guidance for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by federal agencies. This bill is known as the Information Quality Act (IQA). OMB’s guidelines require all federal agencies to develop their own guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by the agency. NMFS published its guidelines in February 2002 (available online at <http://www.commerce.gov>). Any rulemaking that may result from this action would have a predissemination review to ensure the requirements of the IQA are met for any information released to the public in support of the action.

Non-Statutory NMFS Policies

In addition to statutory non-discretionary requirements, NMFS also has policies in place which guide bycatch management efforts. Two in particular that relate to seabird incidental catch (or ‘bycatch’) are the US’s National Plan of Action for Reducing the Incidental Catch of Seabirds (NPOA-Seabirds) and the NMFS National Bycatch Strategy.

NPOA-Seabirds

The United States developed its National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries (NPOA-Seabirds) in 2001. Development of the NPOA-Seabirds was a collaborative effort between NMFS, the U.S. Fish and Wildlife Service (FWS) and the Department of State (DOS), carried out in large part by the Interagency Seabird Working Group (ISWG) consisting of representatives from those three agencies. This partnership approach recognizes the individual agency management authorities covering seabird interactions with hook-and-line fisheries.

Through the NPOA-Seabirds, NMFS encourages a variety of actions including prescription of mitigation measures to reduce seabird bycatch and working in partnership with the fishery management councils and hook-and-line fishermen to conduct research on seabird bycatch, develop the most practical and effective seabird deterrent measures, evaluate the effectiveness of those measures, and evaluate and improve other technologies and practices that reduce seabird bycatch.

This proposed action and the research that led to it are consistent with NMFS's implementation of the NPOA-Seabirds. The NPOA-Seabirds and associated information can be found at <http://www.fakr.noaa.gov/protectedresources/seabirds/national.htm>

NMFS National Bycatch Strategy

The bycatch of fishery resources, marine mammals, sea turtles, seabirds, and other living marine resources has become a central concern of the commercial and recreational fishing industries, resource managers, conservation organizations, scientists, and the public, both nationally and globally. During the past 26 years, the regional fishery management councils (the councils) and NMFS have responded to this concern by taking a variety of actions to address the issue of bycatch. The actions have included research to develop better methods for monitoring and reducing bycatch, outreach programs to explain the bycatch problem and search for solutions, and regulatory actions to monitor and decrease bycatch. In 2003, NMFS developed its National Bycatch Strategy. The strategy outlines how NMFS will improve upon and expand current bycatch reduction efforts and undertake new bycatch initiatives, such as: assessing regional progress toward meeting national bycatch objectives and strategies; developing a national approach that standardizes bycatch reporting; implementing the national bycatch goal through regional implementation plans; expanding international approaches to bycatch reduction; undertaking new education and outreach efforts; and identifying long-term funding requirements.

After careful review of the various definitions of bycatch and associated terms, NMFS considered the definitions contained in the Magnuson-Stevens Act as the basis for development of an inclusive definition of bycatch. The Magnuson-Stevens Act defines bycatch as “fish which are harvested in a fishery, but which are not sold or kept for personal use . . .” To fully meet the agency's responsibilities, as defined principally by the Magnuson-Stevens Act, the Marine Mammal Protection Act, and the ESA, NMFS expanded this definition. Specifically, living marine resources other than “fish” as defined in the Magnuson-Stevens Act (i.e., marine mammals and seabirds) were included to consider all species taken or encountered in marine fisheries and “retained catch of non-target species was included.” The National Bycatch Strategy uses this inclusive definition of bycatch.

The proposed action is consistent with actions implemented under NMFS's National Bycatch Strategy. For more information about NMFS's National Bycatch Strategy, see <http://www.nmfs.noaa.gov/bycatch.htm>

1.7 Public Participation

Public testimony on seabird/fisheries interactions was invited at the October 2007 NPFMC meeting in Anchorage. A preliminary presentation of this EA/RIR/IRFA package will be open to the public in February 2007 at the NPFMC Seattle meeting, and a revised draft at a following meeting, at which time the Council will take action and selected a preferred alternative.

1.8 Summary

In this chapter we have established the purpose and need for this federal action. This analysis is provided at the request of the Council to examine fisheries interactions with seabirds in IPHC Area 4E to determine if the requirement of seabird avoidance measures is necessary there. Also, this chapter has defined the geographical area pertinent to this action and described the statutory and other legal provisions under which NMFS and the Council manage and conserve seabirds and fisheries off Alaska.

2.0 ACTION ALTERNATIVES

This chapter presents the detailed alternatives for implementing federal action to revise seabird avoidance measures for groundfish and Pacific halibut fisheries off Alaska. This action has the following four alternatives. See Table 1-1.

2.1 Alternative 1: Status quo for vessels greater than 26 ft LOA in Area 4E

The current regulations regarding seabirds (50 CFR Part 679.24) comprise a complex suite of seabird avoidance measures according to vessel size and configuration, gear type, and operational area. Avoidance measures include streamer lines, either single or paired, and buoy bag lines.

1. Status Quo

- a. Vessels less than 55 ft LOA with masts, poles, or rigging using snap-on hook-and-line gear are required to deploy one streamer line while setting gear. Specifically, the streamer line must be at least 45 m long and must be maintained with a minimum aerial extent of 20 m.
- b. Vessels less than 55 ft LOA with masts, poles, or rigging not using snap-on hook-and-line gear (conventional gear) are required to deploy one streamer line while setting gear. Specifically, the streamer line must be at minimum of 90 m long and must be maintained with a minimum aerial extent of 40 m.
- c. Vessels less than 55 ft LOA without masts, poles, or rigging and not capable of adding poles or davits to accommodate a streamer line (including bowpickers) must tow a buoy in such a way to deter birds from the sinking groundline, without fouling on the gear, while setting hook-and-line gear.
- d. Vessels less than or equal to 32 ft LOA in IPHC area 4E shoreward of EEZ (inside 3 nm) are currently not required to use seabird avoidance measures.
- e. Vessels greater than 55 ft LOA with snap-on gear are required to use one streamer line that meets the standard. Vessels greater than 55 ft LOA with other than snap-on gear are required to use paired streamer lines with standard.

Additional Alternatives

Alternatives 2, 3, and 4 all eliminate the required use of seabird avoidance measures in at IPHC area 4E. They differ by which vessels would be no longer required to use seabird avoidance measures. Alternative 2 only exempts vessels less than or equal to 32 feet LOA, while Alternative 3 exempts vessels less than or equal to 55 feet LOA, and Alternative 4 exempts all

vessels.

Options refer to a sub-area of area 4E as the STAL area. The STAL was defined by performing spatial and statistical analyses on available datasets to determine what portion of 4E has greater potential to be utilized by short-tailed albatross, increasing the likelihood of an interaction with a HAL fishing vessel. The STAL area is presented in Chapter 4.

2.2. Alternative 2: EXEMPTION FOR 26-32' VESSELS: Maintain status quo seabird protection measures except that vessels greater than 26 and less than or equal to 32 ft LOA are not required to use seabird avoidance measures in area 4E. Vessels less than or equal to 32 ft LOA in IPHC area 4E shoreward of EEZ (inside 3 nm) are currently not required to use seabird avoidance measures. One of the following options would continue to require seabird avoidance measures in the STAL subarea of 4E outside of 3nm:

Option 1. Vessels fishing in the STAL subarea of 4E are required to use seabird avoidance regulations as detailed in alternative 1, above.

Option 2. EXCEPT: Vessels fishing in the STAL subarea of 4E are required to use only a buoy bag to deter seabirds.

2.3. Alternative 3: EXEMPTION FOR 26-55' VESSELS: Maintain status quo seabird protection measures except that vessels greater than 26 and less than or equal to 55 ft LOA are not required to use seabird avoidance measures in area 4E. One of the following options would continue to require seabird avoidance measures in the STAL subarea of 4E:

Option 1. EXCEPT: Vessels fishing in the STAL subarea of 4E are required to use seabird avoidance regulations as detailed in alternative 1, above.

Option 2. EXCEPT: Vessels fishing in the STAL subarea of 4E are required to use a buoy bag to deter seabirds.

2.4. Alternative 4: EXEMPTION FOR ALL VESSELS OVER 26': Seabird avoidance measures are not required in area 4E, except as required by one of the following options:

Option 1. Vessels fishing in the STAL subarea of 4E are required to use seabird avoidance regulations as detailed in alternative 1, above.

Option 2. Vessels fishing in the STAL subarea of 4E are required to use only a buoy bag to deter seabirds.

2.5 Other Alternatives Considered but not carried forward

Require that a buoy bag line be used on vessels 26-32 ft fishing in the EEZ waters of Area 4E. Sub-option: All vessels 26 to 32 ft LOA fishing with hook-and-line gear in the EEZ waters of IPHC Area 4E would be exempt from seabird avoidance regulations.

These options were considered as part of the 2006 NPFMC action. A consultation letter from FWS stated that selection of either of these options without additional analysis would trigger a formal consultation (FWS 2007). The letter is quoted below.

“The Service and its research partners have tagged between 1 and 2 percent of the total short-tailed albatross population with satellite transmitters. We have meaningful tracking information for less than 1 percent of the total population in Alaskan waters (greater than 2 weeks of transmissions within the Alaska Exclusive Economic Zone). At least two of our tagged birds spent time in the southwest portion of area 4E. Simple extrapolation of this sparse data suggest that perhaps hundreds of short-tailed albatrosses have used area 4E during the course of our study. Consequently, our data do not support modifying alternatives 2 and 3 of the EA to allow 26-32 foot vessels to set longline gear in 4E while towing only a buoy bag. Similarly, the data do not support the suboptions exempting vessels of this size class from using all seabird avoidance measures. We note that the short-tailed albatross adult caught on September 21, 1998, was caught by a vessel that was towing a buoy bag. The vessel that was towing this buoy bag was doing so in an ineffective, albeit legal manner. However, regulations still do not stipulate performance measures for buoy bag deployment. Adoption of alternative 2/option 3, or alternative 3/option 3 will trigger reinitiation of formal Section 7 consultation between the Service and NOAA Fisheries.

Consideration could be given to subdividing area 4E, allowing for sub-areas to be exempted from seabird regulations. However, we believe that subdivision of this area should be undertaken with caution and backed by scientific justification. Spatial analysis methods, such as kriging of short-tailed albatross satellite telemetry data, could provide the scientific basis to justify removal of seabird deterrent regulations in certain sub-areas. “

3.0 AFFECTED ENVIRONMENT

Detailed descriptions of the physical and marine habitat of the BSAI are presented in the Alaska Groundfish Harvest Specifications EIS (AGHSEIS) (NMFS 2007). The effects of fishing on the marine habitat and EFH are analyzed in section 4.9.6 of the AGHSEIS. The proposed alternatives in this analysis address revisions to seabird avoidance measures, all above-water modifications to hook-and-line fishing operations. Because these alternatives would not impact benthic marine habitat or EFH, no additional analysis on habitat or EFH has been conducted.

The alternatives are more likely to potentially affect the biological and human components of the marine environment because the alternatives would require the use of measures to reduce incidental take of seabirds and affect the socioeconomic condition of those participating in the fishery. Both endangered species (short-tailed albatross) and other non-target species (numerous seabird species) could potentially be affected by each alternative. Each of the alternatives has the potential to directly affect seabird species and the socioeconomic component of the environment.

This EA incorporates information presented in the PSEIS (NMFS 2004a). To reduce the length of descriptive information about the affected environment, readers are referred to the AGHSEIS for description of the environmental and economic background as follows: seabirds at 3.7, and the socioeconomic environment at 3.9.

3.1 Status of Seabird Species

Thirty-eight species of seabirds breed in Alaska. There are approximately 1,800 seabird colonies in Alaska, ranging in size from a few pairs to 3.5 million birds, (Figure 3). The U.S. Fish and Wildlife Service (USFWS) is the lead federal agency for managing and conserving seabirds and is responsible for monitoring the distribution and abundance of populations. Twelve sites along the coastline of Alaska are scheduled for annual monitoring, and additional sites are monitored every three years. Breeding populations are estimated to contain 36 million individual birds in the Bering Sea and 12 million in the GOA; total population size (including subadults and nonbreeders) is estimated to be approximately 30 percent higher. Five additional species that breed elsewhere but occur in Alaskan waters during the summer months contribute another 30 million birds. The USFWS Beringian Seabird Colony Catalog (2004) represents the location, population size, and species composition for each colony based on the most recent information available. These population estimates are based on opportunistic surveys of colonies, and may rely on historical information at some locations (Stephensen, pers. com.).

Table 3-1. Seabird species in the BSAI and GOA (NMFS 2004a).

Albatrosses <ul style="list-style-type: none"> • Black-footed • Short-tailed • Laysan 	Gulls <ul style="list-style-type: none"> • Glaucous-winged • Glaucous • Herring • Mew • Bonaparte's • Sabine 	Murres <ul style="list-style-type: none"> • Common • Thick-billed
Northern fulmar	Jaegers <ul style="list-style-type: none"> • Long-tailed • Parasitic • Pomarine 	Guillemots <ul style="list-style-type: none"> • Black • Pigeon
Shearwaters <ul style="list-style-type: none"> • Short-tailed • Sooty 	Eiders <ul style="list-style-type: none"> • Common • King • Spectacled • Steller's 	Murrelets <ul style="list-style-type: none"> • Marbled • Kittlitz's • Ancient
Storm petrels <ul style="list-style-type: none"> • Leach's • Fork-tailed 	Kittiwakes <ul style="list-style-type: none"> • Black-legged • Red-legged 	Auklets <ul style="list-style-type: none"> • Cassin's • Parakeet • Least • Whiskered • Crested
Cormorants <ul style="list-style-type: none"> • Pelagic • Red-faced • Double-crested 	Terns <ul style="list-style-type: none"> • Arctic • Aleutian 	Puffins <ul style="list-style-type: none"> • Rhinoceros • Horned • Tufted

As noted in the PSEIS, seabird life history includes low reproductive rates, low adult mortality rates, long life span, and delayed sexual maturity. These traits make seabird populations extremely sensitive to changes in adult survival and less sensitive to fluctuations in reproductive effort. The problem with attributing population changes to specific impacts is that, because seabirds are long-lived animals, it may take years or decades before relatively small changes in survival rates result in observable impacts on the breeding population. Moloney et al (1994) estimated a 5-10 year lag time in detecting a breeding population decline from modeled hook-and-line incidental take of juvenile wandering albatross, and a 30-50 year population stabilization period after conservation measures were put in place.

More information on seabirds in Alaska's EEZ may be found in several NMFS, Council, and USFWS documents (all links were tested on September 22, 2006):

- The USFWS has primary seabird management responsibilities in Alaska. The URL for the Migratory Bird Management program web page is at:
<http://alaska.fws.gov/mbsp/mbm/index.htm>
- Section 3.7 of the PSEIS (NMFS 2004a) provides background on seabirds and their interactions with the fisheries. This may be accessed at
http://www.fakr.noaa.gov/sustainablefisheries/seis/final062004/Chaps/chpt_3/chpt_3_7.pdf
- The annual Ecosystems Considerations chapter of the SAFE reports has a chapter on seabirds. Back issues of the Ecosystem SAFE reports may be accessed at
<http://www.afsc.noaa.gov/REFM/REEM/Assess/Default.htm> and the 2006 issue is available at <http://access.afsc.noaa.gov/reem/ecoweb/index.cfm>
- The Seabird Fishery Interaction Research webpage of the AFSC:
<http://www.afsc.noaa.gov/refm/reem/Seabirds/Default.htm>
- The NMFS Alaska Region's Seabird Incidental Take Reduction webpage:
<http://www.fakr.noaa.gov/protectedresources/seabirds.html>
- The BSAI and GOA Groundfish FMPs each contain an "Appendix I" dealing with marine mammal and seabird populations that interact with the fisheries. The FMPs may be accessed from the Council's home page at <http://www.fakr.noaa.gov/npfmc/default.htm>
- Washington Sea Grant has several publications on seabird takes, and technologies and practices for reducing them: <http://www.wsg.washington.edu/publications/online/index.html>

The seabird component of the environment affected by the groundfish FMPs is described in detail in section 3.7 of the PSEIS (NMFS, 2004a), in chapter 9 of the Alaska Groundfish Harvest Specifications EIS (NMFS 2007), and in the Ecosystems Considerations for 2007 chapter of the North Pacific Groundfish Stock Assessment and Fishery Evaluation Reports for 2006 (NMFS, 2005). The PSEIS describes the seabird species in the action area (NMFS 2004a, pp. 3.7-18 to 3.7-87).

3.1.1 ESA Listed Seabirds

Three species of seabirds that range into the BSAI and/or GOA are listed under the ESA: the endangered short-tailed albatross (*Phoebastria albatrus*), the threatened spectacled eider (*Somateria fischeri*) and the threatened Steller's eider (*Polysticta stelleri*). Please refer to section 3.4 of this document for a description of current ESA consultations.

The short-tailed albatross (STAL) populations were decimated by hunters and volcanic activity at nesting sites in the early 1900s, and the species was reported to be extinct in 1949. By 1954 there were 25 total birds seen on Torishima Island. Prohibition of hunting and habitat enhancement work has allowed the population to recover at a 7-8% rate based on egg counts from 1990-1998. The current world total population is estimated at around 2000 individuals

(USFWS 2006). 80-85% of nesting occurs at a colony subject to erosion and mudslides on Torishima Island, an active volcano in Japan, and smaller numbers nest in the Senkaku Islands where political uncertainty and the potential for oil development exist (USFWS 2005). No critical habitat has been designated for the short-tailed albatross in the US, since the population growth rate doesn't appear to be limited by marine habitat loss (NMFS 2004a). The USFWS and Oregon State University have placed 52 satellite tags on Laysan, black-footed, and short-tailed albatrosses in the central Aleutian Islands over the past 4 years (USFWS 2006) to study movement patterns of the birds in relation to commercial fishing activity and other variables (Figure 16). The STAL tagging has been a collaborative project between the US and Japan with birds tagged at the main breeding colony on Torishima Island, Japan, and at-sea near the Aleutian Islands, Alaska. From 2002 to 2006, 21 individual birds (representing about 1% of the entire population) were tagged, including adults, sub-adults, and hatching-year birds. Figure 6 shows STAL survey observations from 2002-2004 as presented by Melvin et al (2006). Short-tailed albatross feeding grounds are continental shelf breaks and areas of upwelling and high productivity. Although recent reliable diet information is not available, short-tailed albatross likely feed on squid and forage fish. Although surface foragers, their diet could include mid-water species that are positively buoyant after mortality (e.g. post-spawning for some squid species) or fragments of larger prey floating to the surface after being caught by subsurface predators (R. Suryan, pers.com.). The satellite data suggest that they move north after the breeding season to the southern tip of the Kamchatka Peninsula, and then east to the western Aleutian Islands. Additionally, the data indicate occurrences of STAL in a transitional area of Southeast Alaska (Cross Sound) and in the outer perimeter of IPHC Area 4E. Data from the North Pacific Pelagic Seabird Database (NPPSD) and IPHC surveys does not include reports of short-tailed albatross in inside waters. See section 3.5.5 for details of this STAL satellite tagging study.

Spectacled and Steller's eiders typically congregate well off-shore. While designated critical habitat does overlap with areas fished with hook-and-line gear, these species have never been documented to have been taken by the hook-and-line fisheries (USFWS 2003a and 2003b). Therefore, impacts to these species are not analyzed in this document.

Status of Endangered Species Act Consultations on Groundfish and Halibut Fisheries

The Endangered Species Act of 1973 as amended (16 U.S.C. 1531 *et seq*; ESA) provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The designation of an ESA-listed species is based on the biological health of that species. The status determination can be either threatened (species likely to become endangered in the foreseeable future [16 U.S.C. § 1532(20)]) or endangered (species in danger of becoming extinct throughout all or a significant portion of their range [16 U.S.C. § 1532(20)]). Species can be listed as endangered without first being listed as threatened. The Secretary of Commerce, acting through NMFS, is authorized to list marine fish, plants, and mammals (except for walrus and sea otter) and anadromous fish species. The Secretary of the Interior, acting through the USFWS, is

authorized to list walrus and sea otter, seabirds, terrestrial plants and wildlife, and freshwater fish and plant species.

In addition to listing species under the ESA, the critical habitat of a newly listed species is designated concurrent with its listing to the “maximum extent prudent and determinable” [16 U.S.C. § 1533(b)(1)(A)]. The ESA defines critical habitat as those specific areas in which are found physical or biological features that are essential to the conservation of a listed species and that may be in need of special consideration. Federal agencies are prohibited from authorizing or undertaking actions that jeopardize the continued existence of a listed species, or that destroy or adversely modify designated critical habitat.

The USFWS listed the short-tailed albatross as an endangered species under the ESA throughout its United States range (65 FR 46643, July 31, 2000). The current population status, life history, population biology, and foraging ecology of these species, as well as a history of ESA section 7 consultations and NMFS actions carried out as a result of those consultations are described in detail in section 3.7 of the PSEIS (NMFS, 2004a). Although critical habitat has not been established for the short-tailed albatross, the USFWS did designate critical habitat for the spectacled eider (66 FR 9146; February 6, 2001) and the Steller’s eider (66 FR 8850; February 2, 2001).

In 1997, NMFS initiated a section 7 consultation with USFWS on the effects of the Pacific halibut fishery off Alaska on the short-tailed albatross. USFWS issued a Biological Opinion in 1998 that concluded that the Pacific halibut fishery off Alaska was not likely to jeopardize the continued existence of the short-tailed albatross (USFWS 1998b). USFWS issued an Incidental Take Statement of two short-tailed albatross in a two year period (1998/1999, 2000/2001, 2002/2003, etc), reflecting what the agency anticipated the incidental take could be from the fishery action. Under the authority of ESA, USFWS identified non-discretionary reasonable and prudent measures that NMFS must implement to minimize the impacts of any incidental take.

Two updated USFWS Biological Opinions (BO) were recently published in 2003:

- Section 7 Consultation - Biological Opinion on the Effects of the Total Allowable Catch(TAC)-Setting Process for the Gulf of Alaska and Bering Sea/Aleutian Islands Groundfish Fisheries to the Endangered Short-tailed Albatross (*Phoebastria albatrus*) and Threatened Steller's Eider (*Polysticta stelleri*), September 2003 (USFWS 2003b).
- Section 7 Consultation - Programmatic Biological Opinion on the effects of the Fishery Management Plans for the Gulf of Alaska and Bering Sea/Aleutian Islands groundfish fisheries on the endangered short-tailed albatross (*Phoebastria albatrus*) and threatened Steller's eider (*Polysticta stelleri*), September 2003 (USFWS 2003a).

Although USFWS has determined that the short-tailed albatross is adversely affected by hook-and-line Pacific halibut and groundfish fisheries off Alaska, both USFWS opinions concurred with NOAA Fisheries and concluded that the GOA and BSAI fishery actions are not likely to jeopardize the continued existence of the short-tailed albatross or Steller’s eider or result in adverse modification of Steller’s eider critical habitat. The USFWS also concluded that these

fisheries are not likely to adversely affect the threatened spectacled eider. The Biological Opinion on the TAC-setting process updated incidental take limits of

- four short-tailed albatross taken every two years in the hook-and-line groundfish fishery off Alaska, and
- two short-tailed albatross taken in the groundfish trawl fishery off Alaska while the BO is in effect (approximately 5 years).

These incidental take limits are in addition to previous take limit set in 1998 for the Pacific halibut hook-and-line fishery off Alaska of two STAL in a two year period.

The 2003 Biological Opinion on the TAC-setting process also included mandatory terms and conditions that NOAA must follow in order to be in compliance with the ESA. One is the implementation of seabird deterrent measures that preceded this analysis (see NMFS 2002). Additionally, NOAA Fisheries must continue outreach and training of fishing crews as to proper deterrence techniques, continued training of observers in seabird identification, retention of all seabird carcasses until observers can identify and record takes, continued analysis and publication of estimated incidental take in the fisheries, collection of information regarding the efficacy of seabird protection measures, cooperation in reporting sightings of short-tailed albatross, and continued research and reporting on the incidental take of short-tailed albatross in trawl gear.

The ESA requires reinitiation of formal consultation when new information reveals effects of the NMFS action that may affect listed species or critical habitat in a matter or to an extent not considered in an existing biological opinion.

The USFWS also released a short-tailed albatross draft recovery plan for public review (70 FR 61988, October 27, 2005). This recovery plan meets the ESA requirements of describing site-specific actions necessary to achieve conservation and survival of the species, downlisting and delisting criteria, and estimates of time and cost required to implement the recovery plan. Because the primary threat to the species recovery is the possibility of an eruption of Torishima Island (see section 3.1.1), the most important recovery actions include monitoring the population and managing habitat on Torishima Island, establishing two or more breeding colonies on non-volcanic islands, monitoring the Senkaku population, and conducting telemetry and other research and outreach. Recovery criteria are currently under review. USFWS estimates that the STAL may be delisted in the year 2030, if new colony establishment is successful.

3.1.2 Other Species of Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS to “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973.” Birds of Conservation Concern (BCC) 2002 (USFWS 2002) identifies the migratory and non-migratory bird species (beyond those already designated as Federally

threatened or endangered) with their highest conservation priorities and draws attention to species in need of conservation action." NMFS Evaluating Bycatch report (NMFS 2004b) says the purpose of the BCC list is to highlight potential conservation issues and concerns before species get listed. The Birds of Conservation Concern report, USFWS (2002) lists 28 species of birds in Region 7 (Alaska Region). These are listed in Table 3-2. Many of these species do not interact with Alaska hook-and-line fisheries, and thus are not addressed in this analysis. Birds of conservation concern in the Alaska Region that may interact with hook-and-line fisheries are black-footed albatross and red-legged kittiwake.

Black-footed albatross

Although not an ESA-listed species, the black-footed albatross is of concern because some of the major colony population counts may be decreasing or of unknown status. World population estimates range from 275,000 to 327,753 individuals (Brooke 2004), with a total breeding population of 58,000 pairs (USFWS, 2006). Most of the population (95%) breeds in the Hawaiian Islands. Conservation concerns in the last century have included albatross mortalities by feather hunters, the introduction of nest predators (rabbits), and population reduction programs operated by the military. Tuna and swordfish pelagic longline fisheries in the North Pacific, including the Hawaiian longline fishery, and to a lesser extent the Alaska groundfish demersal longline fishery take black-footed albatross incidentally.

On October 1st, 2004, the U.S. Fish and Wildlife Service received a petition to list the black footed albatross (*Phoebastria nigripes*) as a threatened or endangered species, and that critical habitat be designated at the time of listing. The Service's response to the 90-day finding was deferred until October 9th, 2007, due to insufficient resources. At that time, the Service found that the petition warranted further review. Following the publication of the black-footed albatross population status review, the Service began developing it's 12-month finding indicating whether it believes a proposal to list this species as threatened or endangered is warranted. That 12-month finding is not yet available.

Melvin et al, (2006) and cites the fact that the World Conservation Union (IUCN) changed its conservation status of the species under the international classification criteria from vulnerable to endangered in 2003. Additionally, the USFWS has been working with Dr. Paul Sievert and Dr. Javier Arata of the U.S. Geological Survey (USGS) to develop a status assessment of Laysan and Black-footed Albatrosses. This assessment is in response to growing concerns regarding the current status and population trends of these two north Pacific albatrosses, particularly the black-footed.

Black-footed albatrosses occur in Alaska waters mainly in the northern Gulf of Alaska, but a few have been reported near Nunivak Island in the Bering Sea which is inside area 4E (USFWS, 2006).

Red-legged kittiwake

The red-legged kittiwake is a small gull that breeds at only a few locations in the world, all of which are in the Bering Sea, but outside of area 4E (USFWS, 2006). 80 percent of its worldwide population nests at St. George Island, with the remainder nesting at St. Paul, the Otter Islands, Bogoslof and Buldir Islands. The total population is estimated at around 209,000 birds (USFWS, 2006). They are listed as a USFWS bird of conservation concern because recent severe population declines remain unexplained (NMFS 2004b), but could be due to irregular food supplies in the Pribilof Islands.

Kittlitz's murrelet

Kittlitz's murrelet is a small diving seabird that forages in shallow waters within 5 km from shore for capelin, Pacific sandlance, zooplankton and other invertebrates. It feeds near glacier, icebergs, and outflows of glacial streams, sometimes nesting up to 45 miles inland on rugged mountains near glaciers. They nest on the ground, and not in colonies, thus less is known about their breeding behaviors. The entire North American population, and most of the world's population, inhabits Alaskan coastal waters discontinuously from Point Lay south to northern portions of Southeast Alaska. Kittlitz's murrelet is a relatively rare seabird. Most recent population estimates indicate that it has the smallest population of any seabird considered a regular breeder in Alaska (9,000 to 25,000 birds). This species appears to have undergone significant population declines in several of its core population centers--Prince William Sound (up to 84%), Malaspina Forelands (up to 75%), Kenai Fjords (up to 83%) and in Glacier Bay. Causes for the declines are not well known, but likely include: habitat loss or degradation, increased adult and juvenile mortality, and low recruitment. USFWS believes that glacial retreat and oceanic regime shifts are the factors that are most likely causing population-level declines in this species. On May 4, 2004, the USFWS (2004) gave the Kittlitz's murrelet (*Brachyramphus brevirostris*) a low ESA listing priority because it has no imminent, high magnitude threats (50 CFR Part 17 Volume 69, Number 86).

The USFWS has conducted surveys for Kittlitz's murrelet in the Alaska Maritime National Wildlife Refuge over the past few years (USFWS, 2006). These surveys have revealed substantial populations at Attu, Atka, Unalaska, and Adak. Intensive surveys in 2006 found an additional 10 nests in the mountains of Agattu. Bird biologists will now be able to study the species' breeding biology for the first time.

No Kittlitz's murrelets were specifically reported taken in the observed groundfish fisheries between 1993 and 2001 (PSEIS 2004). While their breeding distribution does extend into 4E (specifically Bristol Bay and western edge of the Seward Peninsula), their nearshore preferences, foraging techniques, diet composition, and the fact that they don't follow fishing vessels or congregate around them, reduce the likelihood of incidental take in groundfish fisheries (K. Rivera, NMFS, pers. comm.) (USFWS 2006).

3.1.3 Other Seabirds

Breeding and non-breeding seabird populations ranging into the BSAI and/or GOA include: the northern fulmar (*Fulmarus glacialis*), storm petrels, albatrosses and shearwaters (non-breeders in Alaska), cormorants, jaegers, gulls, kittiwakes, terns, murrelets, guillemots, auklets, murrelets, puffins, and eiders. Most of these species rely primarily on forage fish, although several auklets are more planktivorous and eiders take more crustacea. The life history, population biology, and foraging ecology of these species and species groups are described in detail in sections 3.7.5 – 3.7.19 of the PSEIS (NMFS 2004a).

3.2 Potential Fisheries/Seabirds Interactions

The PSEIS identifies how BSAI and GOA groundfish fisheries activities may affect, directly or indirectly, seabird populations. A direct effect on some seabird species may include incidental take (in fishing gear and vessel strikes) and is more fully described in section 3.7.1 of the PSEIS (NMFS 2004a). Indirect effects on some species may include: prey (forage fish) abundance and availability, benthic habitat, processing waste and offal, contamination by oil spills, nest predators in islands, and plastics ingestion. These indirect effects are more fully described on pages 3.7-12 through 3.7-17 of the PSEIS. Because this analysis focuses on the effects of changes to regulations in hook-and-line fisheries, this action is not expected to indirectly affect seabird populations in Alaska hook-and-line fisheries. Direct effects, including incidental take of seabirds, is discussed in more detail below.

3.2.1 Incidental Take of Seabirds in Hook-and-Line Fisheries

The presence of "free" food in the form of offal and bait attracts many birds to fishing operations. In the process of feeding, birds sometimes come into contact with fishing gear and are accidentally killed. The probability of a bird being caught is a function of many interrelated factors including: type of fishing operation and gear used; length of time fishing gear is at or near the surface of the water; behavior of the bird (feeding and foraging techniques); water and weather conditions (e.g., sea state); size of the bird; availability of food (including bait and offal); and physical condition of the bird (molt, migration, health).

Surface feeders, such as most *procelliforms* (albatross, fulmars, and shearwaters) and gulls, are most at risk of being taken in hook-and-line fisheries (Table 3-2). They are attracted to the vessels by the bait and the offal discharge. Nearshore foragers, such as cormorants, terns, guillemots, murrelets, Rhinoceros auklet, and puffins are less likely to interact with offshore groundfish fisheries (NMFS 2004b?). Other species such as eiders, do not spatially overlap with the BSAI hook-and-line fisheries. Additionally, their nearshore preferences, foraging techniques, diet composition, and the fact that they don't follow fishing vessels or congregate

around them, reduce the likelihood of incidental take in groundfish fisheries (K. Rivera, NMFS, pers. comm.).

In hook-and-line fisheries off Alaska, surface feeders are attracted to the baited hooks when the gear is being set, caught from the surface down to a depth of two meters (Melvin et al, 2001), and then dragged underwater where they drown. Figure 4 shows the 2 m access window behind the vessel where seabird interactions may occur.

Table 3-2. Seabirds species groups and risk of hook-and-line fishery interactions.

Species groups potentially at Risk	Species groups not likely to be at Risk
Albatross*	Cormorants
Fulmars	Terns*
Shearwaters	Guillemots
	Murrelets*
	Rhinoceros auklet
	Puffins
	Eiders*

**Starred species groups contain species that are listed birds of conservation concern with the USFWS, the IUCN, or listed as endangered or threatened under the ESA.*

3.2.2 Description of Hook-and-Line Fishing Gear

For a complete description of gear used in Alaska hook-and-line fisheries, please refer to NMFS 2002 and Melvin et al 2001. For a more thorough description of the fleet, please refer to the RIR in this package. In the BSAI Pacific cod fishery, most vessels are freezer-longliners, and 90% of them use auto-bait systems, setting up to 55,000 hooks per day (Melvin et al 2001). Many smaller vessels that participate in the BSAI Pacific halibut and Pacific cod fisheries discussed in this analysis bait hooks mostly by hand with snap gear. Snap gear is hook-and-line gear where the hook and gangion are attached to the groundline using a mechanical fastener or snap. This contrasts to hook-and-line conventional gear, sometimes called ‘stuck’ or fixed gear, and autoline gear. Snap gear is typically deployed from smaller sized vessels (less than 60 ft (18.3 m) LOA), with fewer crew, and setting at slower speeds than other types of hook-and-line gear.

3.2.3 Estimates of Incidental take of Seabirds in Hook-and-Line Fisheries off Alaska

The risk to seabirds of getting caught in fishing gear varies with bird species and gear type. Other factors that influence risk include season and location of fishing. Occurrence and density of seabird species at sea vary greatly at different places and times, according to habits of the birds, breeding activities, migration, and habitats, abundance, and movements of forage species. Based on the average annual estimates of seabirds observed taken in groundfish hook-and-line

fisheries from 2000 to 2004, hook-and-line seabird incidental take in the BSAI has ranged between 84 and 97 percent of the total hook-and-line bycatch, with GOA bycatch ranging between 3 and 16 percent. Also of note, the incidental take rates in the BSAI are approximately 3 times higher than in the GOA (AFSC 2006).

Estimates of the annual seabird incidental take for the Alaska groundfish hook-and-line fisheries, based on 2000 to 2004 data, indicate that approximately 8,869 seabirds are taken annually in the combined BSAI and GOA groundfish fisheries at the average annual rates of 0.036 (BS), 0.035 (AI) and 0.010 (GOA) birds per 1,000 hooks (AFSC 2006). Recently seabird bycatch and bycatch rate have trended downward (Figure 5A), with bycatch rates in all three regions decreasing since highs in the 1998-1999 period, although large inter-annual variation in seabird bycatch is common and effort (measured as number of hooks) has increased over the same period in the BS and GOA (Figure 5B). Table 3-3 shows annual estimated seabird mortality by region from 2000 to 2004.

In all three regions, the Northern fulmar is the predominant seabird taken in the hook-and-line fisheries (Figures 7A-7D). In the Aleutian Islands, Laysan albatross make up an additional 20% of the bycatch (Figure 7A). In the Gulf of Alaska, Laysan albatross are 12% and black-footed albatross are 20% of the bycatch (Figure 7B). In the Bering Sea, gulls are 22% of the bycatch, and albatross are much lower (Figure 7C).

Five endangered short-tailed albatrosses were reported caught in the hook-and-line fishery since reliable observer reports began in 1990: two in 1995, one in 1996, and two in 1998, and all in the BSAI. Both of the birds caught in 1995 were in the vicinity of Unimak Pass and were taken outside the observers' statistical samples; the bird caught in 1996 was near the Pribilof Islands in an observer's sample; the two short-tails taken in the Bering Sea in 1998 were in observers' samples.

Table 3-3. Estimated average annual seabird mortality by region from 2000-2004.

Annual estimate 2000-2004	Gulf of Alaska	Bering Sea	Aleutian Islands
Seabird takes	428	7,785	656
Effort (Number of 1000s of Hooks)	43,414.6	219,055.8	18,614.8
Bycatch Composition			
% Fulmar	39	51	71
% Gulls	23	31	5
% Albatross	31	2	17
% other	7	16	7

Note the low percentage of albatross in the Bering Sea (which includes 4E) seabird bycatch composition as compared to the Gulf of Alaska and Aleutian Islands.

3.2.4 Efforts to Address and Reduce Seabird Incidental Take in Alaska's Hook-and-line Fisheries

Several national and international initiatives highlight the need to address fisheries incidental take issues, including seabird incidental take, including

- the United Nation's Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fisheries
- NMFS' strategic document *Managing the Nation's Bycatch: Programs, Activities, and Recommendations for the National Marine Fisheries Service* (NMFS Bycatch Plan) (NMFS 1998b)
- Consistent with the Code of Conduct for Responsible Fisheries, the FAO recently adopted, an *International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA)* (FAO 1999)
- In February 2001, NMFS issued the United States' *National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (NPOA)*.
- Agreement on the Conservation of Albatrosses and Petrels (ACAP) is a multilateral agreement which seeks to conserve albatrosses and petrels by coordinating international activity to mitigate known threats to their populations. The Agreement provides a focus for international cooperation and exchange of information and expertise and aims to establish an enhanced understanding of the status of albatrosses and petrels, their susceptibility to a range of threats, and to identify effective means to mitigate these threats. (for more info see www.acap.aq)

Please refer to NMFS 2002 for a thorough discussion of these initiatives, as well as seabird incidental take monitoring and incidental take estimation procedures. NMFS 2002 also details the historical development of seabird avoidance measures in the Alaska hook-and-line fisheries.

3.3 Enforcement of Seabird Avoidance Regulations

The U.S. Coast Guard assumed an aggressive and proactive policy of educating commercial hook-and-line fishermen in the months prior to regulations being effective. At-sea enforcement has continued this policy in checking for compliance with regulations during at-sea boardings. Reports of these compliance checks are made in the Coast Guard's report to the Council at each meeting. From January 2002 to January 2006, NOAA Office of Law Enforcement investigated 182 cases involving alleged violations of seabird avoidance regulations and other seabird-related issues. These investigations resulted in: 18 paid penalties, 58 written warnings, 60 verbal warnings, 15 cases closed/declined for lack of resources or evidence, 1 case transferred to USFWS. The remaining cases are being adjudicated. (M. Gonzalez, pers. comm.) Over half of the violations issued during this time period pertained to the seabird avoidance plan. Vessels

either did not have a completed plan on board, or had no plan at all. Some of these same vessels were deploying seabird avoidance gear in accordance with the regulation but still received warnings and fines because their SAP was incomplete or missing.

North Pacific Groundfish Observers are trained on these regulatory requirements and directed to spot-check as many sets as possible while they are on board, as other priorities and required duties allow. Observers note whether paired, single, or no streamer lines were deployed and record that in their data. If they feel the vessel is not in compliance with regulations they note the circumstances and fill out an affidavit upon their return. Observers are directed to first work with the vessel captain to address apparent lapses in compliance whenever possible. All affidavits are forwarded to the NMFS Alaska Enforcement Division for processing. In 2004, 22 affidavits were filed for non-compliance with required seabird avoidance measures. In 2005, 9 affidavits were filed.

3.4 Recent Seabird Research

Information from several recent studies are pertinent to this analysis. They are summarized below and described in more detail in NMFS 2007.

The current seabird avoidance regulations differ according to vessel length and gear-type. Melvin et al 2006 reported that gear type and vessel setting speed were better predictors of seabird interaction risk than vessel length. They report that on typical halibut sets during their experiment, the mean distance astern at which snap-on gear sank to 2m was 38m, ranging from 28m to 46m. In contrast, when fixed gear was set at typical speeds, the 2m access window ranged from 50m to 133m, averaging 90m. This was due to the slower setting speeds of snap-on gear vessels compared with fixed gear vessels and a slightly higher mean sink rate of snap-on gear compared to fixed gear. Melvin et al also reported that vessel setting speed changes as little as 1 or 2 knots could double the 2m access window. Slower speeds and faster sink rates appear to create a shorter 2m access window, thereby reducing potential seabird interactions. Table 3-4 summarizes the speed, sink rate and 2 m access window for snap-on and fixed gear.

Table 3-4. Differences in average setting speeds and access windows between snap-on and fixed gear. Results from Melvin et al 2006.

Gear Type	Average Setting Speed in knots	2 m access window length Average (range) in meters
Trollers Snap-on	2.2 – 3.6	28 (21 – 54)
Bowpicker Snap-on	2.2 – 3.6	38 (28 – 46)
Combination Fixed	4.9 – 7.4	90 (50 – 133)

Satellite Tagging Study of Short-tailed Albatrosses (Suryan, 2006a and 2006b)

The USFWS and Oregon State University have placed 52 satellite tags on Laysan, black-footed, and short-tailed albatrosses in the central Aleutian Islands over the past 4 years (USFWS 2006) to study movement patterns of the birds in relation to commercial fishing activity and other variables (Figure 16). The tagging study has also been a collaborative project with Japan with birds tagged at the main breeding colony on Torishima Island. From 2002 to 2006, 21 individual short-tailed albatrosses (representing about 1% of the entire population) were tagged, including adults, sub-adults, and hatching-year birds. Short-tailed albatross feeding grounds are continental shelf breaks and areas of upwelling and high productivity. The satellite data suggest that they move north after the breeding season to the southern tip of the Kamchatka Peninsula, and then east to the western Aleutian Islands. During 2002 and 2003, satellite transmitters were deployed on birds immediately prior to their departure from a breeding colony at Torishima (n = 11), or at-sea in the Aleutian Islands (n = 3) (Suryan et al 2006b). Tracking durations ranged from 51 to 138 days for a total of 6709 locations. The ages of 11 of 14 albatrosses (three were unbanded) tracked during this study ranged from <1 to 18 years, with an unequal sex ratio of nine males to four females, and one individual of undetermined gender. Individuals were tracked from May to November and engaged in area-restricted search patterns along flight paths primarily over shelf break and slope regions. During the non-breeding season, short-tailed albatross ranged along the Pacific Rim from southern Japan through Alaska and Russia to northern California, primarily along continental shelf margins (Suryan et al 2006a). Movement patterns differed between gender and age classes. Upon leaving Torishima, females spent more time offshore of Japan and the Kurile Islands and Kamchatka Peninsula, Russia, compared to males which spent more time within the Aleutian Islands and Bering Sea. Age-specific differences in movement patterns were evident for < 1-yr-old birds. These two individuals traveled nearly twice the distance per day and total distance on average than all older albatrosses (Suryan et al 2006a). Birds spent little time in the western gyre (Kuroshio and Oyashio regions). Eleven of the 14 birds had sufficient data to analyze movements within Alaska. Within Alaska, albatrosses spent varying amounts of time amount NMFS reporting zones, with six of the zones (521, 524, 541, 542, 543, 610) being the most frequently used (Suryan et al 2006a). Albatrosses arriving from Japan spent the greatest amount of time in the western and central Aleutian Islands (541-543), whereas albatrosses tagged in Alaska were more widely distributed among fishing zones in the Aleutian Islands, Bering Sea, and the Alaska Peninsula. In the Aleutian Islands, area-restricted search patterns occurred within straits, particularly along the central and western part of the archipelago (Suryan et al 2006b). In the Bering Sea, area-restricted search patterns occurred along the northern continental shelf break, the Kamchatka Current region, and east of the Commander Islands. Non-breeding short-tailed albatross concentrate foraging in oceanic areas characterized by gradients in topography and water column productivity. Of the 14 short-tailed albatross tagged in 2002 and 2003, one ventured into the outer perimeter of IPHC Area 4E, none occurred in Southeast Inside District (NMFS Area 659).

Telemetry data demonstrate that short-tailed albatrosses did not disperse widely throughout the subarctic North Pacific (Suryan et al 2006b). The primary hot spots for short-tailed albatrosses in the Northwest Pacific Ocean and Bering Sea occur where a variety of underlying physical processes enhance biological productivity or prey aggregations. In this study, albatrosses made mainly transitory excursions along the northern boundary of the Kuroshio Extension and Oyashio Front while enroute to the Aleutian Islands and Bering Sea. The Aleutian Islands, in particular, were a primary foraging destination for short-tailed albatrosses. Passes within the Aleutian Islands with the greatest albatross area-restricted search pattern activity included Near, Buldir, Shumagin, and Seguam. Currents flowing through these relatively narrow and shallow passes cause localized upwelling, frontal zone formation, and eddies that enhance mixing, nutrient supply, and productivity. The significance of passes as feeding zones for breeding and migratory seabirds is well documented and their use by short-tailed albatrosses have been described from ship-based observations (Piatt et al, 2006). The few excursions of albatrosses onto the Bering Sea shelf occurred in the region south of St. Matthew Island and in the southeast, both areas where frontal zones commonly occur. The fact that short-tailed albatrosses spent little time in the central Bering Sea is consistent with ship-based observations indicating low seabird densities over deeper waters of the central Bering Sea (Suryan et al 2006b).

In late June and early July 2006, USFWS and Oregon State University continued the satellite tagging study with at-sea tagging of 6 individuals in the Aleutian Islands, south of Amlia Island and in Seguam Pass. Five of these hatching-year and subadult albatrosses were successfully tracked from June to September 2006. Two of these individuals were tracked within IPHC Area 4E, one in August 2003 and one in August 2006, and one other individual (six observation points) (Figure 17) was tracked in Cross Sound in September 2006. Both of these birds were hatch-year birds. The 2006 tagging used the same deployment procedures and methodologies as those birds tagged in 2002 and 2003 (Suryan et al 2006a and 2006b); these data are currently being analyzed.

3.5.5 At-Sea Seabird Surveys and the Identification of Short-tailed Albatross Hot-Spots

A recent analysis of short-tailed albatross sightings from a variety of ship-based platforms (Piatt et al 2006) corroborates findings of the satellite tagging study (Suryan et al 2006a,b). Sightings data were compiled from the following sources: from 1988-2004 records from seabird observers on the USFWS's research vessel M/V Tiglax; from incidental sightings by biologists, fishermen, seamen, fisheries observers and birdwatchers provided to the USFWS; from the IPHC; from the Alaska Natural Heritage Program; historical sightings documented in published literature; and from the North Pacific Pelagic Seabird Database. Researchers analyzed over 1400 sightings, the majority of which were located on the continental shelf edge of Alaska, abundance being greatly diminished along the east Gulf of Alaska coast and south to Southeast Alaska. Researchers concluded that the short-tailed albatross is not a "coastal" albatross, but rather is associated with upwelling in Aleutian passes and along continental shelf margins in Alaska. The sightings data suggest that the albatrosses appear persistently and predictably in some marine "hotspots." The

albatross were closely associated with shelf-edge habitats throughout the northern Gulf of Alaska and Bering Sea. In addition to Ingenstrem Rocks and Seguam Pass, important hotspots for short-tailed albatross in the Aleutians included Near Strait, Samalga Pass and the shelf-edge south of Umnak/Unalaska islands. In the Bering Sea, hotspots were located along margins of Zhemchug, St. Matthews and Pervenets Canyons (Piatt et al 2006). Researchers surmise that prior to decimation of the short-tailed albatross population by feather hunters around the turn of the century, the albatrosses may have been reasonably common nearshore (thus the term “coastal” albatross) but only where upwelling “hotspots” occurred near the coast. Although the sightings data were collected opportunistically and there was no quantitative measure of survey effort in coastal, shelf and oceanic waters, the researchers concluded that if short-tailed albatross were foraging regularly in coastal and shelf waters of Alaska, the data would have revealed that pattern.

3.6 The Human Environment

See attached RIR/IRFA preliminary package.

4.0 ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

This chapter analyzes the impacts of the alternatives. In order to keep the present document as brief as possible, much information is incorporated by reference from both the PSEIS (NMFS 2004a) and the previous seabird analysis package (NMFS 2007), including extensive discussions of the impacts of the groundfish fisheries on target species, marine mammals, seabirds, forage species, habitat, and prohibited species, as well as other components of the physical and chemical environment. The analysis here focuses on the specific actions proposed in the alternatives and summarizes pertinent information that has become available since publication of those documents.

The alternatives affect only the hook-and-line fisheries for Pacific cod and Pacific halibut in IPHC area 4E. No other hook-and-line fisheries currently occur in this area. The alternatives would revise seabird avoidance regulations to relieve the burden on fishermen of having to deploy seabird avoidance devices in areas where seabird species of concern are less likely to occur. These changes have no potential to affect the target species' populations or the volume and spatial and temporal distribution of harvest of these species. None of these alternative actions would have any significant effects on target fish species.

Effects of all Alternatives on Other Impact Categories

Protected Species

Potential effects on seabird populations are discussed below. No other threatened or endangered species would be affected, directly or indirectly, by the actions proposed in these alternatives. As noted above, the specific changes proposed in these alternatives pertain, first, to relieving a regulatory burden on fishermen by not requiring seabird avoidance measures where they are not necessary and, second, to refining the efficacy of seabird avoidance devices. These changes have no bearing on vessel interactions with other protected species and thus have no potential to impact such species.

Forage and Non-target Species

For the reasons noted above for target species and protected species, these alternatives have no potential to affect the catch volume, composition, spatial or temporal distribution, or any other aspect of forage and non-target species.

Habitat and Ecosystem

Seabird avoidance gear on hook-and-line vessels is directed at interactions between fisheries and seabirds during the setting of hook-and-line gear. To the extent that seabird avoidance gear such as streamer lines is lost or discarded at sea, such ‘ghost’ avoidance gear may occur. Because the avoidance gear has negligible impact below the water, no impact on benthic, pelagic, or coastal habitats can be expected to accrue to habitat. Any effects on the ecosystem are expected to be minimal because the alternatives affect the gear interaction with essentially only the seabird component of the ecosystem, at the surface. The alternatives either increase the effectiveness of the avoidance gear by requiring standards or relieve requirements that are not necessary. The scope of the impact is very limited in terms of the ecosystem which is analyzed in larger scale. Therefore, little to no change is expected at an ecosystem level because of the limited area and scope of impact and the nature of the changes to the seabird avoidance measures.

Effects of all Alternatives on Seabird Mortality

As described in section 3.2, the PSEIS identifies how BSAI groundfish fisheries activities may affect seabird populations directly and indirectly. Section 4.9.7 of the PSEIS (NMFS, 2004a) provided a rationale for the consideration of potential direct and indirect fishery effects on different seabird taxonomic groups. The seabird taxonomic groups represented in observed hook-and-line hauls are listed in Table 8 of the PSEIS. Those most likely to be directly impacted by incidental take in hook-and-line gear are northern fulmar, gulls (glaucous-winged, glaucous, herring), shearwaters (sooty and short-tailed), and albatrosses (Laysan’s, black-footed, and short-tailed). Other seabird species of concern present in the project area, including the threatened spectacled eider and Steller’s eider, are not likely to be incidentally taken in hook-and-line gear because their range does not overlap with the fishery’s and because these species forage near the shore.

The effects of incidental take of seabirds (from fishing gear and vessel strikes) are described in section 4.9.7 of the PSEIS (NMFS 2004a). The criteria used in the present analyses for determining significance for the impact from incidental take are similar to those used in the PSEIS and in the 2002 seabird protection measures environmental assessment (NMFS, 2002), except that in this EA, we simplify the criteria by not using the “conditional” ratings. Table 4-1 provides the significance criteria used to determine the effects of the alternatives on seabirds.

Table 4-1. Significance criteria for analyzing effects to seabird populations.

<u>Significant (-)</u>	<u>Insignificant</u>	<u>Unknown</u>
Take number and/or rate increases substantially and impacts the population level.	Take number and/or rate is similar or slightly reduced.	Take number and/or rate is not known.

Effects of Alternative 1 (Status Quo) on Seabird Populations

Despite increasing groundfish hook-and-line effort (as measured by numbers of hooks) in recent years, aggregate hook-and-line bycatch of seabirds has tended to decline since 1998 (Figure 5A). The increasing effort levels have been offset by decreasing seabird bycatch rates, leading to generally declining hook-and-line seabird bycatch. AFSC estimates of seabird bycatch for all areas off Alaska (AI, BS, GOA), and all groundfish fisheries, extrapolated from observer data, provide a useful supplement to the information summarized in the PSEIS. Bycatch estimates from 2000-2004 are summarized in Table 4-2. These numbers are very low in comparison to available population estimates.

The PSEIS's summary of the available information on takes and their effects on seabird populations in the BSAI and GOA suggests that the estimated seabird bycatch is low relative to seabird populations. Information on total seabird takes is based on extrapolations of observer samples of catch and bycatch. The PSEIS compared takes from the 1990s and early 2000s to population estimates from early 2002 and made the following conclusions:

Table 4-2. AFSC average annual estimates of Alaska seabird takes in Alaskan demersal groundfish hook-and-line fisheries, 2000-2004 and Seabird Population Estimates (NMFS, 2003 and 2006).

Species or group	GOA	BS	AI	Pop Estimate GOA	Pop Estimate BSAI	Pop Estimate world
Short-tailed albatross	0	0	0			<2,000
Laysan albatross	42	126	111			2.5 million
Blackfooted albatross	88	6	2			250,000
Unidentified albatross	4	4	1			
Northern fulmar	166	3,970	468	600,000	1,500,000	
Shearwaters	4	415	23			>53 million
Unidentified procelarids	0	63	0			
Gulls	98	2,411	33	>400,000	>200,000	
Alcids	9	14	0			
Other seabirds	0	27	4			
Unidentified seabirds	17	749	14			
Totals	428	7,785	656			

The hook-and-line fisheries in the BSAI primarily target Pacific cod, sablefish, and Greenland turbot. In most years, the Pacific cod TAC is the most fully harvested in the fisheries for these target species, is less likely to be constrained by halibut bycatch levels, and accounts for most of the hook-and-line harvest. Beginning in the latter half of 2000, the annual Pacific cod TAC is allocated to sectors based on gear type (hook-and-line, pot, trawl), vessel type (catcher processor, catcher vessel), and vessel length (greater than or equal to 60 ft [18.3 m] LOA and less than 60 ft [18.3 m] LOA). At the Council's request, NMFS presented summary incidental take information for seabird and halibut bycatch by the freezer longliner (catcher processor) fleet (which targets Pacific cod primarily in the BSAI) for 1998 through 2000 (NMFS, 2001c).

The vessel-specific bird incidental take rates (number of birds per 1000 hooks) varied by two orders of magnitude. There was also considerable difference in the percentage of sets with bird incidental take. Comparing the overall incidental take rates with the percentage of sets with bird incidental take indicated that some vessels catch birds often and have many sets with bird incidental take, but do not catch many birds in each set. Other vessels have a lower percentage of sets with birds, but higher incidental take rates, indicating that more birds are caught in each set. These different scenarios highlight several different contributing factors to bird incidental take. As noted previously, bird distribution, abundance, and proximity to vessels and the diligent use of effective seabird avoidance measures by vessel operators determine the likelihood of birds being taken.

Effects of Alternative 1 (Status Quo) on ESA Listed Species

The PSEIS compared takes from the 1990s and early 2000s to population estimates from early 2002 and made the following conclusions:

- No shorttailed albatross have been taken in the BSAI and GOA groundfish fisheries since 1998 (NMFS 2004a, p. 4.9-225).
- Spectacled and Steller's eider takes are "at levels approaching zero" (NMFS 2004a, p. 4.9-247).
- For some species there is little overlap between seabird habitat and the location of groundfish operations (NMFS 2004a, pp. 4.9-240, 247).

Based on 1993 to 1999 data, it has been recently estimated that two short-tailed albatross are probably taken in the BSAI hook-and-line fisheries every year and none in the GOA hook-and-line fisheries. At the current population level and the continuing 7-8% annual growth rate, the level of mortality resulting from hook-and-line fisheries is not thought to represent a threat to the species' continued survival, although it likely is slowing the recovery (NMFS, 2001a). Because of its critically small population size, the hook-and-line mortality of short-tailed albatrosses is a conservation concern. The expected result of hook-and-line fishing activity in 1999 and 2000 was the continuation of a lower population growth rate than that which would have occurred in the absence of fishery related mortality. Two individual albatrosses per year at a population level of

approximately 1,100 birds represented a 0.2% decrease in population growth rate (USFWS, 1999). In consideration of this fishery-related mortality, USFWS recently noted that in the event of a major population decline resulting from a natural environmental catastrophe (such as a volcanic eruption on Torishima) or an oil spill, the effects of hook-and-line fisheries on short-tailed albatrosses could be significant under ESA (USFWS, 2000). If such a catastrophic event were to occur, it would constitute new information requiring the reinitiation of a Section 7 consultation under the ESA.

While designated Steller's and spectacled eider critical habitat does overlap with areas fished with hook-and-line gear, these species have never been documented to have been taken by the hook-and-line fisheries (USFWS 2003a and 2003b). Therefore, impacts to these species are not analyzed in this document.

Effects of Alternative 1 (Status Quo) on Other Species of Concern

The PSEIS compared takes from the 1990s and early 2000s to population estimates from early 2002 and made the following conclusions:

- Other albatross and shearwater takes are less than one percent of the populations at risk (NMFS 2004a, p. 4.9-231).
- Bycatch of piscivorous red-legged kittiwakes, and Marbled and Kittlitz's murrelets is rare.

The incidental mortality of black-footed albatross from hook-and-line fisheries has been extremely variable over time (NMFS, 2005). Most takes occur in the GOA hook-and-line fisheries. After a peak of nearly 700 black-footed albatross taken in Alaska hook-and-line fisheries in 1996, this number has undergone a steady downward trend. Numbers rose again in 2003, partly due to a slight increase in bycatch rates coupled with a larger increase in overall effort in the GOA. The combined annual estimated take of black-footed albatrosses in the BSAI and GOA groundfish hook-and-line fisheries is 96 birds for the 2000-2004 period (Table 4-2). This incidental mortality represents 0.07% of the lower population estimates (NMFS, 2005). This level of take is an insignificant impact to the black-footed albatross population.

Effects of Alternative 1 (Status Quo) on Other Seabirds

The PSEIS compared takes from the 1990s and early 2000s to population estimates from early 2002 and made the following conclusions:

- Fulmar mortality was estimated to be less than one percent of the BSAI and GOA population (NMFS 2004a, p. 4.9-233).
- Bycatch of other piscivorous species, including alcids, gulls, and cormorants, are all low compared to populations sizes (NMFS 2004a, pp. 4.9-237, 240).
- Takes of other seabirds, including storm-petrels and auklets, are also low compared to population levels (NMFS 2004a, p. 4.9-244).

Alternative 1 Effects on Seabirds - Conclusions

Because the take of all species of seabirds is such a small proportion of the population for the species, it is not likely that the status quo removals of seabirds by the hook-and-line fisheries would have a population level effect. Therefore the impacts of Alternative 1 on seabird populations are insignificant.

Effects of Alternative 2, 3, and 4 on Seabird Populations

Alternatives 2, 3, and 4 all eliminate the required use of seabird avoidance measures in IPHC area 4E. They differ by which vessels would be no longer required to use seabird avoidance measures. Alternative 2 only exempts vessels 26-32 feet LOA, while Alternative 3 exempts vessels 26-55 feet LOA, and Alternative 4 exempts all vessels. The main alternatives eliminate the requirements for seabird avoidance measures inside the entire IPHC area 4E, but Options 1 and 2 dictate the requirement of some measures inside the STAL (short-tailed albatross) area of 4E. The STAL was defined by performing spatial and statistical analyses on available datasets to determine what portion of 4E has greater potential to be utilized by short-tailed albatross, increasing the likelihood of an interaction with a HAL fishing vessel. The development of the STAL area is described below, and the analysis of implementing the options follows.

STAL use of the Bering Sea

Piatt et al (2006) discuss oceanic areas of seabird concentrations; they explain that STAL hotspots are characterized by vertical mixing and upwelling caused by currents and bathymetric relief and which persist over time. The continual upwelling brings food to the surface and, thus, draws predators back for repeated foraging, especially Albatross species which forage at the surface due to their limited diving ability (Hyrenback et al, 2002). Similar findings in Byrd et al (2005) confirm the frequent presence of surface-feeding piscivores near the medium and large passes that create the bathymetric conditions for vertical mixing and upwelling. These STAL hotspots occur most frequently in shelf-edge habitats in the Gulf of Alaska and Bering Sea, and at passes in the Aleutian Islands.

In the context of this analysis, the pertinent STAL hotspots in the Bering Sea are located along the Zhemchug, St Matthew, and Pervenets canyons along the continental shelf (Figure 2). Piatt et al report large groups (10-136 birds) of STAL concentrated along the Bering Sea canyons and call attention to a 2004 STAL flock sighting where approximately 10% of the world's population gathered at one hotspot near Pervenets canyon. Note that these canyons are well outside the boundary of IPHC area 4E (Figure 1).

Washington Sea Grant Survey data

Melvin *et al* (2006) provide the most current and comprehensive data on seabird distribution patterns on the Alaskan hook-and-line fishing grounds, based on an inter-agency collaborative program that collected seabird distribution data during Pacific halibut and sablefish stock assessment surveys on hook-and-line vessels in the summers of 2002, 2003, and 2004.

Seabird data were collected from four summer hook-and-line stock assessment surveys: IPHC halibut surveys, NMFS sablefish surveys, ADFG Southeast Inside sablefish surveys, and ADFG Prince William Sound sablefish surveys (see Melvin *et al* [2006] for survey protocol and description). Figure 8 shows survey stations sampled during the stock assessment surveys by agency. Seabird observations were compared among eight geographic regions, including two inside waters areas (PWS and SEAK) and six outside waters areas. There was only one survey station in the inside waters of Cook Inlet (CI), so data from CI were not included in the quantitative analyses of inside waters.

Researchers observed a total of 230,452 birds over three years at an average of 1,456 stations surveyed each year. 85% of all birds sighted were tubenose seabirds, and of these, most were northern fulmars (71% of all birds sighted) or albatrosses (13% of all birds sighted). Albatrosses occurred throughout the fishing grounds in outside waters. Sightings of the endangered short-tailed albatrosses (Figure 6) were extremely rare (0.03% of all sightings) and had a similar distribution to Laysan albatrosses (Figure 13): rare or absent east and south of the Western GOA and most abundant in the Aleutian Islands. Black-footed albatrosses were observed in all outside waters (Figure 9). Albatrosses and other tubenose species (fulmars and shearwaters) were not observed in PWS, and geographically limited in SEAK to the entrance of Cross Sound, the mouth of Chatham Strait, and Dixon Entrance.

Note that this effort did not include surveys inside IPHC area 4E, but does give information about STAL use of Bering Sea habitat and corroborates other studies which reference STAL preference for continental shelf break and slope areas (Suryan 2006, Piatt 2006).

Seabird observations from IPHC surveys

The 2006 IPHC stock assessment survey documented any interactions with seabirds at all survey stations. In IPHC Area 4E, no birds of conservation concern (those listed under the ESA or on other international endangered or vulnerable lists) were observed. Northern fulmars, black-legged kittiwakes, and some unidentified shearwaters were observed in the survey in this area. In addition, fewer total seabirds were observed in this IPHC management area than any other area (Table 2) Tracee Geernaert, IPHC (pers. comm.). In addition, IPHC Area 4E fishermen report no sightings of albatross species or any problems with seabird interactions according to Andy Ruby (pers. comm.).

Table 4-3. Numbers of Seabirds Observed in IPHC 2006 Survey in Alaska.

IPHC Area	Numbers of Observed Seabirds	Numbers of Counts
2C	1,140	122
3A	13,468	372
3B	20,946	229
4A	8,596	117
4B	7,038	89
4C	1,799	25
4D	9,253	92
4E	227	22
Closed Area	631	17

STAL takes in Alaska fisheries

Table X reports the short-tailed albatrosses reporting taken in Alaska fisheries since 1983. Except for the 2nd take in 1998, leg bands were recovered from all of the above albatrosses allowing scientists to verify identification and age. Since 1977, Dr. Hiroshi Hasegawa has banded all short-tailed albatross chicks at their breeding colony on Torishima Island, Japan. See Figure X for a map of these locations.

Table 4-4. Reported takes of STAL in Alaska fisheries. NPPSD, 2004.

Date of Take	Location	Fishery	Age when taken
July 1983	BS	brown crab	juvenile (4 mos)
1 Oct 87	GOA	halibut	juvenile (6 mos)
28 Aug 95	EAI	hook-and-line	sub-adult (16 mos)
8 Oct 95	BS	hook-and-line	sub-adult
27 Sept 96	B	hook-and-line	sub-adult (5yrs)
21 Sept 98	BS	Pacific cod hook-and-line	adult (8yrs)
28 Sept 98	BS	Pacific cod hook-and-line	sub-adult

Opportunistic sightings of STAL in the Bering Sea

The North Pacific Pelagic Seabird Database (NPPSD) represents a consolidation of pelagic

seabird data collected from the Central and North Pacific Ocean, the Bering Sea, the Chukchi Sea, and the Beaufort Sea. The NPPSD was created to synthesize numerous disparate datasets including at-sea boat based surveys, stations, land based observations, fixed-wing and helicopter aerial surveys, collected since 1972 (Drew and Piatt, 2004). Opportunistic sightings of short-tailed albatross are drawn in Figure X.

Satellite tracking of STAL (Suryan, 2006a and 2006b)

The USFWS and Oregon State University have placed 52 satellite tags on Laysan, black-footed, and short-tailed albatrosses in the central Aleutian Islands over the past 4 years (USFWS 2006) to study movement patterns of the birds in relation to commercial fishing activity and other variables (Figure 16). The tagging study has also been a collaborative project with Japan with birds tagged at the main breeding colony on Torishima Island. From 2002 to 2006, 21 individual short-tailed albatrosses (representing about 1% of the entire population) were tagged, including adults, sub-adults, and hatching-year birds. Short-tailed albatross feeding grounds are continental shelf breaks and areas of upwelling and high productivity. The satellite data suggest that they move north after the breeding season to the southern tip of the Kamchatka Peninsula, and then east to the western Aleutian Islands. During 2002 and 2003, satellite transmitters were deployed on birds immediately prior to their departure from a breeding colony at Torishima (n = 11), or at-sea in the Aleutian Islands (n = 3) (Suryan et al 2006b). Tracking durations ranged from 51 to 138 days for a total of 6709 locations. The ages of 11 of 14 albatrosses (three were unbanded) tracked during this study ranged from <1 to 18 years, with an unequal sex ratio of nine males to four females, and one individual of undetermined gender. Individuals were tracked from May to November and engaged in area-restricted search patterns along flight paths primarily over shelf break and slope regions. During the non-breeding season, short-tailed albatross ranged along the Pacific Rim from southern Japan through Alaska and Russia to northern California, primarily along continental shelf margins (Suryan et al 2006a). Movement patterns differed between gender and age classes. Upon leaving Torishima, females spent more time offshore of Japan and the Kurile Islands and Kamchatka Peninsula, Russia, compared to males which spent more time within the Aleutian Islands and Bering Sea. Age-specific differences in movement patterns were evident for < 1-yr-old birds. These two individuals traveled nearly twice the distance per day and total distance on average than all older albatrosses (Suryan et al 2006a). Birds spent little time in the western gyre (Kuroshio and Oyashio regions). Eleven of the 14 birds had sufficient data to analyze movements within Alaska. Within Alaska, albatrosses spent varying amounts of time amount NMFS reporting zones, with six of the zones (521, 524, 541, 542, 543, 610) being the most frequently used (Suryan et al 2006a). Albatrosses arriving from Japan spent the greatest amount of time in the western and central Aleutian Islands (541-543), whereas albatrosses tagged in Alaska were more widely distributed among fishing zones in the Aleutian Islands, Bering Sea, and the Alaska Peninsula. In the Aleutian Islands, area-restricted search patterns occurred within straits, particularly along the central and western part of the archipelago (Suryan et al 2006b). In the Bering Sea, area-restricted search patterns occurred along the northern continental shelf break, the Kamchatka Current region, and east of the Commander Islands. Non-breeding short-tailed albatross concentrate foraging in oceanic

areas characterized by gradients in topography and water column productivity. Of the 14 short-tailed albatross tagged in 2002 and 2003, one ventured into the outer perimeter of IPHC Area 4E, none occurred in Southeast Inside District (NMFS Area 659).

Telemetry data demonstrate that short-tailed albatrosses did not disperse widely throughout the subarctic North Pacific (Suryan et al 2006b). The primary hot spots for short-tailed albatrosses in the Northwest Pacific Ocean and Bering Sea occur where a variety of underlying physical processes enhance biological productivity or prey aggregations. In this study, albatrosses made mainly transitory excursions along the northern boundary of the Kuroshio Extension and Oyashio Front while enroute to the Aleutian Islands and Bering Sea. The Aleutian Islands, in particular, were a primary foraging destination for short-tailed albatrosses. Passes within the Aleutian Islands with the greatest albatross area-restricted search pattern activity included Near, Buldir, Shumagin, and Seguam. Currents flowing through these relatively narrow and shallow passes cause localized upwelling, frontal zone formation, and eddies that enhance mixing, nutrient supply, and productivity. The significance of passes as feeding zones for breeding and migratory seabirds is well documented and their use by short-tailed albatrosses have been described from ship-based observations (Piatt et al, 2006). The few excursions of albatrosses onto the Bering Sea shelf occurred in the region south of St. Matthew Island and in the southeast, both areas where frontal zones commonly occur. The fact that short-tailed albatrosses spent little time in the central Bering Sea is consistent with ship-based observations indicating low seabird densities over deeper waters of the central Bering Sea (Suryan et al 2006b).

In late June and early July 2006, USFWS and Oregon State University continued the satellite tagging study with at-sea tagging of 6 individuals in the Aleutian Islands, south of Amlia Island and in Seguam Pass. Five of these hatching-year and subadult albatrosses were successfully tracked from June to September 2006. Two of these individuals were tracked within IPHC Area 4E, one in August 2003 and one in August 2006. Both of these birds were hatch-year birds. The 2006 tagging used the same deployment procedures and methodologies as those birds tagged in 2002 and 2003 (Suryan et al 2006a and 2006b). Satellite tags from 2007 show no occurrences in area 4E (Figure 3).

Defining a STAL area in 4E

A spatial analysis of the tagging data in the Bering Sea was conducted to statistically determine what portion of 4E might be more likely to be used by short-tailed albatrosses. Three separate statistical treatments of these data are discussed below.

1. IDW – Inverse Distance Weighting (IDW) is a quick deterministic interpolator that is exact. There are very few decisions to make regarding model parameters. It can be a good way to take a first look at an interpolated surface. However, there is no assessment of prediction errors, and IDW can produce "bulls eyes" around data locations. There are no assumptions required of the data. Weight of the value decreases as the distance increases from the prediction location.
2. Kernel density – Kernel Density calculates the density of features in a neighborhood around those features. Conceptually, a smoothly curved surface is fitted over each point.

The surface value is highest at the location of the point and diminishes with increasing distance from the point, reaching zero at the Search radius distance from the point. Only a circular neighborhood is possible. The volume under the surface equals the Population field value for the point, or one if NONE is specified. The density at each output raster cell is calculated by adding the values of all the kernel surfaces where they overlay the raster cell center. The kernel function is based on the quadratic kernel function described in Silverman (1986). Increasing the radius will not greatly change the calculated density values. Although more points will fall inside the larger neighborhood, this number will be divided by a larger area when calculating density. The main effect of a larger radius is that density is calculated considering a larger number of points, which can be further from the raster cell. This results in a more generalized output raster. Larger radius equals more generalized output. Calculated on the location of points themselves as opposed to a value at a point

3. Kriging – Kriging is a moderately quick interpolator that can be exact or smoothed depending on the measurement error model. It is very flexible and allows you to investigate graphs of spatial autocorrelation. Kriging uses statistical models that allow a variety of map outputs including predictions, prediction standard errors, probability, etc. The flexibility of kriging can require a lot of decision-making. Kriging assumes the data come from a stationary stochastic process, and some methods assume normally-distributed data. Empirical semivariogram measures how alike pairs of points are, assuming a pair of points that is close together is more similar.

Refer to map set for output results of these techniques. Using a combination of this output and data from other sources, including IPHC surveys, WSG surveys, and opportunistic sightings data, it is evident that STAL are using the southern portion of 4E in some capacity. Although tags from only 2 birds showed up inside 4E, this is a large percentage of those tagged and could represent hundreds of individuals' use of the area. Opportunistic sightings from research and fishing vessels in the 1980s and 1990s also report STAL inside and near the southern portion of 4E. Suryan (2006) reports that STAL tagged in 2002 and 2003 spent most time in Alaska waters in continental shelf break and slope regions, although individual STAL did make frequent trips onto the Bering Sea shelf, and spent more time in the shelf areas of the Bering Sea than in shelf areas of other regions, suggesting "significant potential for interactions with large-scale walleye Pollock and Pacific cod fisheries in this area." Note that IPHC area 4E only contains a portion of the Bering Sea shelf. Fisheries harvest is discussed in the next section.

NMFS and FWS are consulting on the division of 4E into the STAL and non-STAL areas. The results of this consultation will be presented at the February meeting.

Fishing Harvest in IPHC Area 4E

HAL effort in IPHC Area 4E comes primarily from vessels fishing for CDQ halibut. Numbers of vessels and total harvest are shown in tables below. In recent years, total effort in IPHC Area 4E has been up to one percent of the total halibut harvested in all areas, Table 1. In general, small vessels (less than 32 feet) discharge less offal, have fewer baited hooks, and generally attract

fewer seabirds than larger vessels, so interactions are less common.

Table 4-5: Halibut Catch in 4E compared to Total Catch for 2005, 2006, and 2007.

Data from NMFS RAM division

Halibut Landed Catch (pounds)	2005	2006	2007
Total catch in Area 4E	363, 842	354,314	580,737
All CDQ Catch – all areas	2,043,262	1,908,673	2,134,471
All IFQ Catch – all areas	55,192,929	52,217,429	49,328,713
Total Halibut (CDQ + IFQ) all areas	57,236,191	54,126,102	51,463,184
4E catch as a percent of CDQ halibut catch	17.81%	18.56%	27.21%
4E catch as a percent of total halibut	0.635%	0.655%	1.128%

Table 4-6. Numbers of vessels participating in Halibut fisheries in 4E and their catch.

Data from NMFS RAM division. * denotes confidential information

	2003		2004		2005		2006		2007	
Vessel Size	Vessel Count	Pounds	Vessel Count	Pounds	Vessel Count	Pounds	Vessel Count	Pounds	Vessel Count	Pounds
>26 and <=32	81	265,306	68	203,142	67	215,380	64	197,661	66	317,916
>32 <=55	2	*	4	36,374	3	21,055	2	*	4	75,028
>55	1	*	2	*	1	*	0	0	0	0

Two CDQ groups have halibut allocation inside IPHC area 4E: the Bristol Bay Economic Development Council (BBEDC) has 30% of the CDQ halibut allocation in 4E and the Coastal Villages Relief Fund (CVRF) has the remaining 70%. Two additional CDQ groups have an allocation in 4D that can be taken in 4E: the Norton Sound Economic Development Council (NSEDC) and the Yukon Delta Fisheries Development Association (YDFDA).

The Bristol Bay CDQ fleet of 33 registered halibut CDQ vessels has a 32 foot limit on all 4E halibut vessels to coincide with the length limits on Bristol Bay salmon drift vessel lengths. Most fishermen prosecute the halibut resource between spring herring fisheries and summer salmon fisheries. These vessels mainly use snap-on gear, and set it at maximum speeds near 4 knots (pers. com. Andy Ruby), so the gear sinks quickly and affords seabirds less chance to interact with fishing gear (as described in chapter 3). Vessels fishing in Togiak are mainly 26 to 28 foot bowpickers with outboard motors.

The Norton Sound CDQ fleet had fewer than 10 fishermen participating in 2006, with all but one using snap gear (pers. com. Simon Kinneen). They use a setting speed of 3-4 knots. Most vessels are 32 feet, with the largest vessel in the fleet being 42 ft LOA. These vessels fish outside of state waters, and those with masts, poles, or rigging fishing in the EEZ are currently required to

use a streamer line. Those without masts, poles, or rigging, are currently required to use a buoy bag line.

The Coastal Villages Region Fund CDQ fleet is relatively new to commercial fishing. They use average setting speeds of 2-4 knots (Robert Williams pers. comm.). In 2006, 65% of their halibut CDQ landings were caught with jig gear, and only 35% (84,000 pounds) with hook-and-line gear. Most of their landings occur outside of state waters. Jig gear does not require the use of seabird avoidance measures.

Of the small vessels landing halibut in IPHC Area 4E, it is not known how many fish in the EEZ or how many do not have masts, poles, or rigging or the ability to accommodate a pole or davit from which to deploy a streamer line. Those 26-32' LOA vessels that fish shoreward of the EEZ (i.e. 0-3 nm) are already exempt from seabird avoidance requirements (§679.24(e)(8)) and that does not change under any alternative or option in this analysis. Those vessels that do not have masts, poles, or rigging or the ability to accommodate a pole or davit from which to deploy a streamer line are only required to deploy a buoy bag line, not a streamer line. Those vessels that do have masts, poles, or rigging are now required to use a streamer line of a specified standard according to the new seabird regulations in place in 2008.

There is also some HAL Pacific cod harvest in the southern portion of 4E, mostly by large vessels which would only be affected by alternative 4 in this analysis. The harvest and numbers of vessels participation are presented in a table below. Note that all Pacific cod catch reported here is by vessels in the >55' LOA category, so they are currently required to use either 1 streamer line (snap-on gear) or paired streamer lines (other than snap-on gear) in the EEZ waters of 4E.

Table 4-7. Pacific cod HAL harvest in 4E by vessel size.
Data from NMFS Regional Catch in Areas database.

Vessel Size	2003		2004		2005		2006	
	Vessel Count	Tons	Vessel Count	Tons	Vessel Count	Tons	Vessel Count	Tons
<=60	0	0	0	0	0	0	0	0
>60 <=125	5	511.45	2	1,096.80	4	164.11	4	170.03
>125	16	4,216.58	12	3,415.05	15	6,524.448	14	7,430.68

Effects of Alternatives 2, 3, and 4 on listed species

Although seabird observations are rare in this area, the area has not been extensively surveyed specifically for seabirds. WSG research did not include surveys of IPHC area 4E, and although the 2006 IPHC survey of 4E did not record observations of STAL, it was a one-time survey and

STAL distribution is known to shift dramatically from year to year. Given the documented occurrence of 2 short-tailed albatross (one in 2003, one in 2006) in the southern portion of IPHC Area 4E, it is possible that vessels fishing with hook-and-line gear without seabird avoidance measures in those areas may affect listed species. These two individuals could reflect usage of 4E by a larger number of STAL. Relieving the requirement for certain vessels to use seabird avoidance measures in IPHC area 4E in Alternatives 2, 3, and 4 could cause unknown impacts to short-tailed albatross; therefore, the Council created options for each alternative that would mitigate any potentially significant impacts that might possibly follow from implementation of Alternatives 2, 3, or 4.

Effects of Alternatives 2, 3, and 4 on Other Species of Concern

Alternatives 2, 3, and 4 have no additional impact on other species of conservation concern beyond what is discussed in the status quo alternative. Two species of conservation concern that occur in Alaska waters are not likely to come in contact with HAL gear. Red-legged kittiwakes nest in the Pribilof Islands near, but not inside, IPHC area 4E, and have not been taken in Alaska HAL fisheries. While the breeding distribution of Kittlitz's murrelets does extend into 4E (specifically Bristol Bay and western edge of the Seward Peninsula), their nearshore preferences, foraging techniques, diet composition, and the fact that they don't follow fishing vessels or congregate around them, reduce the likelihood of incidental take in groundfish fisheries (K. Rivera, NMFS, pers. comm.) (USFWS 2006).

Although a few Black-footed albatrosses have been reported near Nunivak Island in the Bering Sea (which is inside area 4E), none were observed in the 2006 IPHC survey of 4E. Albatross species are more likely than other species of conservation concern to come in contact with HAL gear, but observed takes of BFAL in HAL fisheries are less than one percent of the estimated population (NMFS 2004a, p. 4.9-231). The incidental mortality of black-footed albatross from hook-and-line fisheries has been extremely variable over time (NMFS, 2005), but most takes occur in the GOA hook-and-line fisheries. The combined annual estimated BSAI and GOA incidental mortality represents 0.07% of the lower population estimates (NMFS, 2005). Given the lower level of effort and few observations of birds likely to be at risk, eliminating seabird avoidance measures in 4E is not expected to affect these species.

Effects of Alternatives 2, 3, and 4 on Other Seabirds

Bycatch of other seabird species including northern fulmars, alcids, gulls, cormorants, storm-petrels and auklets are all low compared to population sizes. Fulmars and shearwaters are more likely to interact with hook-and-line gear than other seabird species, but their populations

number in the millions, and the current level of bycatch or even a very minimal increase in bycatch due to eliminating the requirement for using seabird avoidance measures in 4E is not expected to have a significant impact on these species.

Applying Options 1 and 2 under the Alternatives

While the main alternatives without options eliminate the requirements for seabird avoidance measures inside the entire IPHC area 4E, Options 1 and 2 dictate the requirement of some measures inside the STAL area of 4E and therefore mitigate any potentially significant impacts to listed species from eliminating the requirement of using seabird avoidance measures.

Option 1. Require status quo seabird avoidance measures inside the STAL area of 4E

Option 1 under alternatives 2, 3, and 4 would require the use of seabird avoidance measures as specified in the current regulation and described in Alternative 1 in the STAL area of 4E. Requiring these measures inside the STAL area would afford status-quo level of protection to seabirds and is the most precautionary option. Outside the STAL area of 4E, there would be no requirements for the use of seabird avoidance measures for vessels 26-32' LOA (Alternative 2), for vessels 26-55' LOA (Alternative 3), or for all vessels (Alternative 4). Most of the effort in the non-STAL portion of 4E is small vessels 26-32' LOA. These vessels deploy fewer hooks, set gear at slower speeds, and self-report few interactions with seabirds in general.

Option 2. Require a buoy bag line inside the STAL area of 4E

Option 2 under alternatives 2, 3, and 4 would only require the use of a buoy bag line inside the STAL area in 4E. While eliminating the requirements for streamer lines in this area, some level of protection would remain. The difference in applying this option in these alternatives is which vessels would only be using a buoy bag line. Alternative 2 would allow vessels 26-32' LOA to use only a buoy bag inside the STAL area in 4E. Alternative 3 would allow vessels 26-55' LOA to use a buoy bag, and Alternative 4 would allow all vessels to use a buoy bag inside this area.

One of the last documented incidental takes of a short-tailed albatross occurred on a large freezer-longliner vessel that was using a buoy bag line as a seabird avoidance measure. The take occurred in September 1998 in the Bering Sea (57.30 N, 173.57W) and NMFS interviews of the fishery observer onboard indicated that the buoy bag line was set from the stern off to the side (10 to 20 ft) and extended back for only 50 to 75 ft. The groundline with baited hooks was seen to be resurfacing about 150 ft back from the stern. This suggests that the buoy bag line was not adequately protecting the vulnerable zone where baited hooks are accessible to seabirds prior to sinking to fishing depth, thus was ineffective and resulted in an endangered short-tailed albatross being accidentally caught.

In 1998, the use of buoy bag lines by larger vessels was an allowable seabird avoidance measure under the regulations at that time (e.g. Tow a buoy, board, stick or other device during deployment of gear, at a distance appropriate to prevent birds from taking hooks). When regulations were revised in 2004, the use of a buoy bag line was no longer allowed as an acceptable seabird avoidance measure on large vessels over 55 ft LOA. The allowable use of a buoy bag line was restricted to smaller vessels (26-55 ft LOA) that did not have the masts, poles, or rigging necessary to deploy streamer lines. Further, the proposed rule for this action (68 FR 6386 February 7, 2003) suggested voluntary guidelines for small vessels using buoy bag lines: a buoy bag line (32.8 to 131.2 ft (10 to 40 m) length) is deployed so that it is within 6.6 ft (2 m) horizontally of the point where the main groundline enters the water; the buoy bag line should extend beyond the point where the main groundline enters the water.

Because of the likely low level of seabird interaction due to lower fishing effort in the STAL area, characteristics of small vessel operations which result in fewer interactions, and few seabird observances in this area, this option is not expected to have significant effects on population levels of seabird species. However, this option is not as precautionary as Option 1 which requires the use of streamerlines on vessels 32-55' LOA with masts, poles, or rigging.

4.4 Summary of the Effects of the Alternatives on Seabirds

The proposed alternatives address revisions to seabird avoidance measures that would relax requirements in areas where seabird interactions are less common, and maintain current levels of protection in areas where interactions are more likely to occur. The action alternatives have no significant effects on target and non-target fisheries and fish populations, protected species other than seabirds, and habitat and ecosystems.

The effects of incidental take of seabirds under Alternative 1 (status quo) have not substantially changed since the dramatic decrease in seabird bycatch in 2001. The effects are described in the PSEIS (NMFS 2004a) and the Alaska Groundfish Harvest Specifications EIS (NMFS, 2007). Incidental take of seabirds in the status quo BSAI groundfish fisheries is not significant at the population level for all seabird species analyzed. At the current STAL population level and the continuing 7-8% annual growth rate, the status quo level of mortality resulting from hook-and-line fisheries is not thought to represent a threat to the species' continued survival, although it could be slowing the recovery (NMFS, 2004).

Relieving the requirement for certain vessels to use seabird avoidance measures in IPHC area 4E in Alternatives 2, 3, and 4 could cause unknown impacts to short-tailed albatross; therefore, the Council created options for each alternative that would mitigate any potentially significant impacts that might possibly follow from implementation of Alternatives 2, 3, or 4. Options 1 and 2 both offer some protection to STAL in area 4E in the STAL area. Option 1 which requires the status quo measures inside the STAL area is more precautionary than Option 2 which only

requires the use of a buoy bag. If one of the options is chosen to afford protection for STAL inside the STAL area of 4E, then only vessels fishing in the non-STAL area of 4E would no longer be required to use seabird avoidance measures. Nearly all of the effort in the non-STAL effort is by vessels 26-32' LOA, so Alternatives 3 or 4 would provide very limited additional relief.

5.0 CUMULATIVE IMPACTS OF THE ALTERNATIVES

Cumulative effects are defined in federal regulations as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant action taking place over a period of time” (40 CFR 1508.7). In this case changes in management of the Alaskan groundfish fisheries represent sequential actions that may, or may not, overlap in time. Each policy change contributes an increment to the total cumulative effect, while working in combination with the effects of other fisheries, other human activities, and natural phenomena.

A detailed discussion of cumulative effects of the status quo fisheries on seabirds can be found in section 4.13 of the PSEIS (NMFS 2004a) and section 9.1 of the Alaska Groundfish Harvest Specifications EIS (NMFS, 2007). The PSEIS’s cumulative effects analyses describe the potential direct and indirect effects of groundfish fishing on seabirds, identify external factors that may have additive or synergistic effects, and evaluate the significance of the effects. Section 9.3 of the groundfish EIS has the latest information on potential future actions and the impacts on seabirds.

Section 4.3.3 of the PSEIS (NMFS 2004a) provides rationale for the consideration of potential direct and indirect fishery effects on different seabird taxonomic groups. This analysis displays only those effects that are additional and/or attributable to promulgation of revised regulations for seabird avoidance measures in the hook-and-line fisheries off Alaska to reduce incidental take of the short-tailed albatross (*Phoebastria albatrus*) and other seabird species. The environmental issues include direct effects of gear use and entanglement/entrapment of non-target organisms in active fishing gear. The intended effect of the proposed regulatory amendment is to reduce the direct effect of hook-and-line gear on seabirds and to reduce the incidental take of seabirds in this gear.

Past effects on seabird species include hunting and harvesting for feathers, eradication of nests and relocation of adults in military programs to reduce the interaction of seabirds with military aircraft, the introduction of new species (such as rabbits) into nesting habitat, and predation by introduced species. Fisheries outside of Alaska have also likely contributed to population decline. These stressors have affected some species more than others, including black-footed albatross, short-tailed albatross, red-legged kittiwakes, and Kittlitz’s murrelet, (Table 5.1)

Table 5-1: Stressors on seabird species in Alaska.

Human Activity Stressor	Species affected
Gillnet fisheries	Kittlitz’s murrelet
Oil spills and leaks	Kittlitz’s murrelet, red-legged kittiwake, Short-tailed albatross
Other hook and line fisheries	Black-footed albatross
Tourism/vessel traffic	Kittlitz’s murrelet
Feather Hunting	Short-tailed albatross, Black-footed albatross
Ingestion of Plastics	Short-tailed albatross, Black-footed albatross
Collisions with fishing vessels	Short-tailed albatross
Introduced species	Black-footed albatross, red-legged kittiwake
Military eradication programs	Black-footed albatross

Previous regulations on hook and line fisheries in Alaska are likely to have decreased fishery bycatch rates since 2001 (Figure 5A).

The future actions identified in the groundfish specifications EIS were ecosystem-sensitive management, fisheries rationalization, traditional management tools, actions by other Federal, State, and International agencies and private action. In nearly all cases, future actions were likely to reduce the impacts on seabirds, except for subsistence harvest.

Current and future threats to seabirds other than those analyzed in this document include collisions with aircrafts, vessels, and cables on fishing vessels, plastics ingestion, and oil spills and ship bilge dumping, high seas driftnets and gillnet fisheries, and increased flightseeing near glaciers (specifically for kittlitz’s murreletts).

Because these changes in the use of seabird avoidance gear are operationally conducted at the surface of the water, effects on other ecosystem components of this action, as well as the cumulative effects of similar actions, are minimal. No effects on the seafloor or other sub-surface habitat structures are expected. One potential effect on the ecosystem is the discard of streamer lines and buoy bags as marine debris when lines become entangled and unrecoverable. Discarded gear also has the potential to affect marine mammals due to the risk of entanglement. Such losses of streamer lines and buoy bags occur at a greater frequency in high winds, and the weather safety factor option in this analysis could minimize the amount of gear discarded in the ocean and thus mitigate these effects.

6.0 REGULATORY IMPACT REVIEW

6.1 Introduction

In February 2007, the North Pacific Fishery Management Council (Council) approved changes to seabird avoidance requirements for certain vessels fishing in inside waters where the presence of Endangered Species Act (ESA) listed seabirds appears to be negligible. The Council's February 2007 action was based on new data from the United States Fish and Wildlife Service (USFWS) on Short Tailed Albatross (STAL) distribution in the Bering Sea and Aleutian Islands (BSAI). The Council's action specified that seabird avoidance will not be required in the inside waters of Southeast Alaska, Prince William Sound, and Cook Inlet. The action further specified that seabird avoidance will be required in waters of the entire EEZ and three areas of southeast Alaska: outer Chatham Strait, Dixon Entrance, and outer Cross Sound. In these waters, the use of seabird avoidance devices by all hook and line vessels will continue to be required but performance standards for small vessels ($>26 \leq 55$ ft LOA) will change, depending on vessel rigging and vessel length. The Council also approved eliminating the "other device" requirement and the seabird avoidance plan.

As part of the February 2007 action, the Council asked for an analysis of relaxing seabird avoidance measures in International Pacific Halibut Commission (IPHC) area 4E (see Figure 1) of the Eastern Bering Sea. The main fishery in these waters is a small boat halibut fishery operated under allocations made to regional Community Development Quota (CDQ) Corporations. Vessels used are generally small and harvest small amounts of halibut at a slow rate. Gear is set manually, and the use of buoy bags or other deterrence devices likely would be unwieldy to deploy, and may be dangerous in harsh weather. Seabird attraction to this small boat fishery is minimal, and the probability of encounters with STAL in parts of area 4E is small. Thus, the costs to deploy seabird deterrence measures in parts of Area 4E may be high and the protection afforded by such measures may be unnecessary. The Council requested staff to use spatial analysis of available STAL data (i.e. kriging of satellite telemetry data and incorporation of other pertinent data) to help define areas within Area 4E where STAL are not likely to occur and thus where requirements for seabird avoidance measures might be relaxed.

This Regulatory Impact Review (RIR) provides an analysis of the potential costs and benefits of a suite of alternatives to status quo seabird avoidance measures presently required in the hook-and-line fisheries in IPHC area 4E of the Eastern Bering Sea. A benefit/cost framework is the appropriate way to evaluate the relative economic and socioeconomic merits of the alternatives under consideration in this Regulatory Impact Review (RIR). When performing a benefit/cost analysis, the principal objective is to derive informed conclusions about probable net effects of each alternative under consideration (e.g., net revenue impacts). However, in the present case, necessary empirical data (e.g., operating costs, capital investment, debt service, opportunity costs) are not available to the analysts, making a quantitative net benefit analysis impossible. Furthermore, empirical studies bearing on other important aspects of these alternative actions (e.g., non-use value, domestic and international seafood demand) are also unavailable, and time and resource constraints prevent their preparation for use in this analysis.

Nonetheless, the following RIR uses the best available information and quantitative data, combined with accepted economic theory and practice, to provide the fullest possible assessment (both quantitative and qualitative) of the potential economic benefits and presumptive costs attributable to each alternative action. Based upon this analysis, conclusions are offered concerning the likely economic and

socioeconomic effects of each of the alternatives. This analytical approach is consistent with applicable policy and established practice for implementing Executive Order (EO) 12866.

6.2 What is a Regulatory Impact Review?

The preparation of an RIR is required under Presidential Executive Order (E.O.) 12866 (58 FR 51735: October 4, 1993). The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following Statement from the E.O.:

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

E.O. 12866 requires that the Office of Management and Budget (OMB) review proposed regulatory programs that are considered to be “significant.” A “significant regulatory action” is one that is likely to:

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

6.3 Statutory Authority

Under the Magnuson-Stevens Act, the United States has exclusive fishery management authority over all marine fishery resources found within the Exclusive Economic Zone (EEZ), which extends between 3 nm and 200 nm from the baseline used to measure the territorial sea. The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in the Regional Councils. In the Alaska Region, the Council has the responsibility for preparing Fishery Management Plans (FMPs) for the marine fisheries it finds that require conservation and management pursuant to the Magnuson-Stevens Act and for submitting their recommendations to the Secretary. Upon approval by the Secretary, the National Marine Fisheries Service (NMFS) is charged with carrying out the Federal mandates of the Department of Commerce with regard to marine and anadromous fish. The groundfish fisheries in the EEZ off Alaska are managed under the FMP for the Groundfish Fisheries of the Gulf of Alaska (GOA) and the FMP for the Groundfish Fisheries of the Bering Sea and Aleutian Island (BSAI). The crab fisheries in the EEZ off Alaska are managed under the FMP for the Crab Fisheries of the BSAI. The scallop fisheries in the EEZ off Alaska are managed under the FMP for the Scallop Fisheries of Alaska.

The Pacific halibut fishery is managed by the International Pacific Halibut Commission (IPHC), which was established by a Convention between the governments of Canada and the United States. The IPHC’s mandate is research on and management of the stocks of Pacific halibut within the Convention waters of both nations. The Convention is implemented in the United States by the Northern Pacific Halibut Act of

1982 (Halibut Act), which authorizes regional fishery management councils to develop additional regulations governing the halibut fisheries. Regulations developed by a Council become effective only if they are approved by the Secretary of Commerce (16 U.S.C. 773 c(c)).

Actions taken to amend and implement FMPs and implement regulations pursuant to the Halibut Act must meet the requirements of Federal laws and regulations. In addition to the Halibut Act and the Magnuson-Stevens Act, the most important of these are the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), EO (EO 12866), the Regulatory Flexibility Act (RFA), the Migratory Bird Treaty Act of 1918, and EO 13186 on the Responsibilities of Federal Agencies to Protect Migratory Birds.

6.4 Purpose and Need for Action

The purpose of the proposed action is to revise the seabird avoidance measures so that, based on the best available information regarding seabird occurrence, these measures may be applied most efficiently, i.e., providing adequate protection to seabirds while imposing no unnecessary burden on fishermen. Seabird avoidance measures reduce the incidental mortality of seabirds in the hook-and-line fisheries off of Alaska. Recent analyses suggest that these measures can be focused on certain sectors of the hook-and-line vessel fleet and in specified geographic areas where interactions are more likely to occur between hook-and-line vessels and seabirds, particularly ESA-listed seabird species and species of concern. The proposed action thus has the dual purpose of continuing to protect seabirds while eliminating seabird avoidance gear requirements in waters where pelagic seabirds (particularly the endangered short-tailed albatross and other species of concern) are rarely observed. These revisions exemplify the principles of adaptive management, using the best available information to focus regulatory requirements where they are needed and to ensure that those requirements are effective and efficient.

This action furthers the goals and objectives of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Northern Pacific Halibut Act of 1982 (Halibut Act), the Migratory Bird Treaty Act (MBTA), and the ESA, while providing relief from unnecessary regulatory burdens on hook-and-line fishermen in IPHC Area 4E.

6.5 Alternatives Considered

A detailed presentation of the alternatives is presented in the accompanying EA. Presented here is a simplified version of the action alternatives. Each alternative can be paired with one of two options for continued seabird avoidance requirements within the, as yet undefined, STAL area.

Alternative 1: Status Quo for vessels greater than 26 ft LOA in IPHC area 4E:

- a. Vessels less than 55 ft LOA with masts, poles, or rigging using snap-on hook-and-line gear are required to deploy one streamer line while setting gear. Specifically, the streamer line must be at least 45 m long and must be maintained with a minimum aerial extent of 20m.
- b. Vessels less than 55 ft LOA with masts, poles, or rigging not using snap-on hook-and line gear (conventional gear) are required to deploy one streamer line while setting gear. Specifically, the streamer line must be at minimum of 90 m long and must be maintained with a minimum aerial extent of 40 m.
- c. Vessels less than 55 ft LOA without masts, poles, or rigging and not capable of adding

poles or davits to accommodate a streamer line (including bowpickers) must tow a buoy in such a way to deter birds from the sinking groundline, without fouling on the gear, while setting hook-and-line gear.

d. Vessels less than or equal to 32 ft LOA in IPHC area 4E shoreward of EEZ (inside 3 nm) are currently not required to use seabird avoidance measures.

e. Vessels greater than 55 ft LOA with snap-on gear are required to use one streamer line that meets the standard. Vessels greater than 55 ft LOA with other than snap-on gear are required to use paired streamer lines with standard.

Alternative 2: EXEMPTION IN NON-STAL AREA FOR UP TO 32' VESSELS: Maintain status quo seabird protection measures except that vessels less than 32 ft LOA are not required to use seabird avoidance measures in IPHC area 4E.

Alternative 3: EXEMPTION IN NON-STAL AREA FOR 26-55' VESSELS: Maintain status quo seabird protection measures except that vessels greater than 26 and less than or equal to 55 ft LOA are not required to use seabird avoidance measures in area 4E.

Alternative 4: EXEMPTION IN NON-STAL AREA FOR ALL VESSELS OVER 26': Seabird avoidance measures are not required in area 4E.

Options to Alternatives 2 through 4.

The following options would continue to require seabird avoidance measures in the STAL subarea of 4E and could be paired with any one of the action alternatives.

Option 1. Vessels fishing in the STAL subarea of 4E are required to use seabird avoidance regulations as detailed in alternative 1, above (i.e. status quo in the STAL area).

Option 2. Vessels fishing in the STAL subarea of 4E are required to use only a buoy bag to deter seabirds.

6.6 Description of the Fisheries

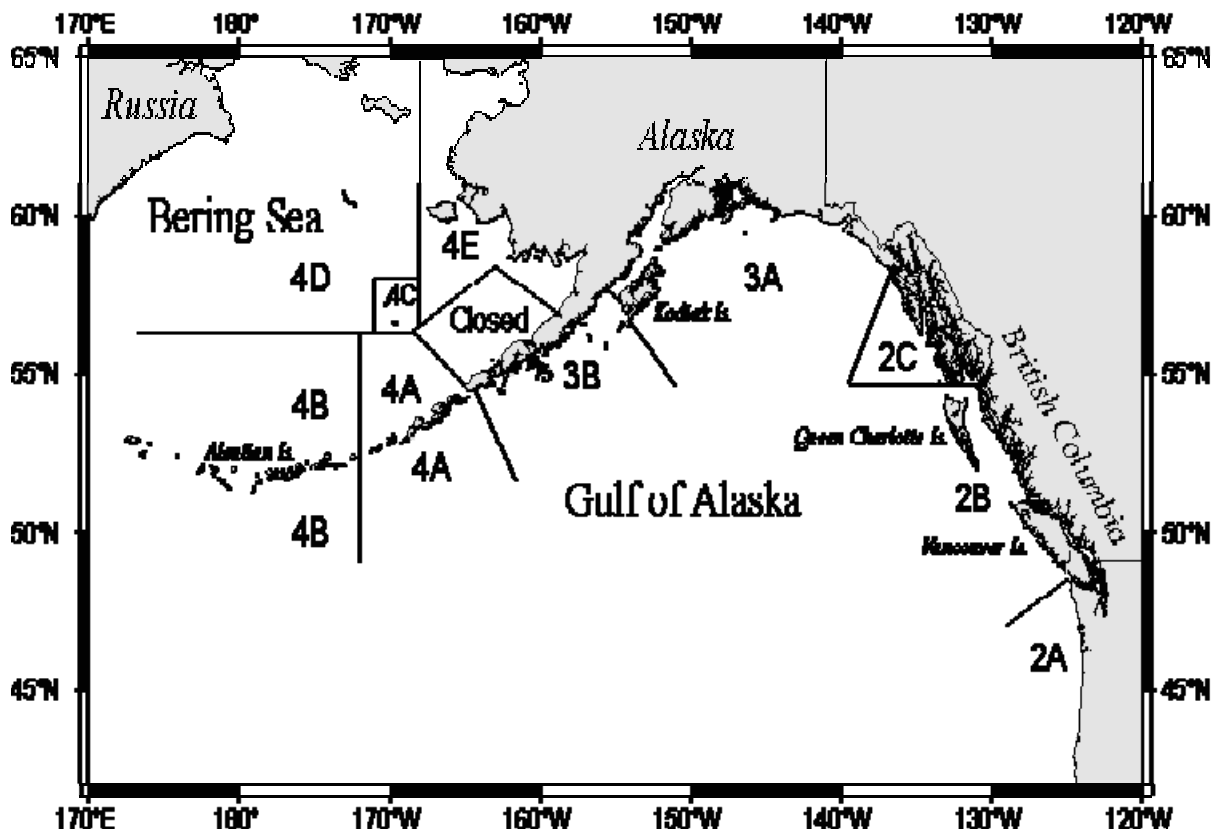
Current seabird avoidance regulations affect several classes of hook-and-line (i.e., longline) vessels operating in the BSAI and GOA. These include Federally permitted groundfish vessels in inside and outside waters, as well as vessels fishing for Pacific halibut in U.S. Convention waters off Alaska. This analysis considers the potential effects of relaxing seabird avoidance requirements in IPHC Area 4E (see Figure 1). The primary reason for considering this action is the potential adverse effect that present seabird avoidance requirements may have on small vessels operating in the CDQ halibut fishery in area 4E. However, the alternatives include provisions that could affect larger hook and line vessels that operate in the Bering Sea.

Preliminary analysis suggests that a small amount of Pacific Cod is taken by hook and line vessels in the southwest portion of IPHC area 4E. These vessels operate under Federal License Limitation Program (LLP) endorsements for the entire Bering Sea, which contains IPHC area 4E. Thus, these larger hook and line vessels can fish in Area 4E and may be affected by the alternatives under consideration. As a result, this description of the fisheries will describe participation and catch history for all hook and line vessels in the BSAI (due to reporting convention) as well as describing the vessels and catch history for the CDQ

Halibut fishery currently being prosecuted within IPHC Area 4E.

The Federal groundfish hook-and-line fisheries for sablefish, Pacific cod, rockfish, and flatfish are given a comprehensive review in the annual Economic SAFE document prepared by the Alaska Fisheries Science Center (Hiatt et al., 2007). The Pacific halibut fishery is managed separately from groundfish and catch and value data for the halibut fishery are not directly integrated into the Economic SAFE document. To provide background on the halibut fishery, data from the Alaska Region Restricted Access Management Program (RAM) of the National Marine Fisheries Service. RAM tabulates annual allocation and catch data for the Federal IFQ and CDQ halibut fisheries.

Figure 1: IPHC Regulatory Areas.



provides data on the groundfish catch in the BSAI by the hook-and-line fleet from 2002-2006. These data are excerpted from Table 2 of the 2006 Economic SAFE. BSAI Catcher Processors (CPs) targeting Pacific cod account for the largest proportion of hook-and-line groundfish catch. However, it is important to note that although the

Table 6-1: BSAI Hook and Line Groundfish Catch by species, 2002-2006 (1,000 metric tons, round weight).

Species	Year	Bering Sea and Aleutians		
		Catcher vessels	Catcher processors	Total
Sablefish	2002	1	1	1
	2003	1	1	1
	2004	0	0	1
	2005	0	1	1
	2006	0	1	1
Pacific cod	2002	1	103	103
	2003	1	109	110
	2004	1	110	111
	2005	1	115	116
	2006	1	98	99
Flatfish	2002	0	5	5
	2003	1	5	5
	2004	0	5	5
	2005	0	5	5
	2006	0	5	5
Rockfish	2002	0	0	1
	2003	0	0	0
	2004	0	0	0
	2005	0	0	0
	2006	0	0	0
All Groundfish	2002	3	130	132
	2003	2	139	142
	2004	2	140	141
	2005	2	146	148
	2006	1	122	123

provides estimates of the ex-vessel value of groundfish catch in the BSAI by hook-and-line vessels. It has been excerpted from Table 19 of the 2006 Economic Stock Assessment and Fishery Evaluation (Econ SAFE) report (Hiatt et al., 2006). It is important to note that CP product tons have been converted to round weight equivalent tons and then are multiplied by a set of species-specific equivalent ex-vessel values in order to make these comparisons. This exercise is necessary because there is no actual ex-vessel transaction between harvester and processor on CPs, and, thus, comparing Catcher Vessel (CV)and CP catch values cannot otherwise be readily done.

Table 6-2: Ex-vessel value of the BSAI Hook and Line groundfish catch off Alaska 2002-2006, (\$ millions).

Species	Year	Bering Sea and Aleutians		
		Catcher vessels	Catcher processors	Total
All species	2002	7.7	58.7	66.4
	2003	3.9	73.3	77.2
	2004	2.4	66.9	69.3
	2005	4.2	92.3	96.4
	2006	4.0	99.2	103.1
	Sablefish	2002	4.4	1.8
2003		3.4	2.3	5.7
2004		1.9	1.5	3.4
2005		3.6	2.1	5.7
2006		3.1	2.6	5.7
Pacific cod		2002	3.0	54.4
	2003	.4	68.4	68.8
	2004	.5	61.1	61.6
	2005	.5	78.0	78.5
	2006	.8	89.7	90.5
	Flatfish	2002	.0	1.0
2003		-	.9	.9
2004		-	.7	.7
2005		-	.9	.9
2006		-	1.1	1.1
Rockfish		2002	.2	.2
	2003	.1	.2	.3
	2004	.1	.2	.3
	2005	.1	.2	.3
	2006	.1	.3	.4

provides data on participation in the Federal hook and line groundfish fisheries in the BSAI from 2002-2006. These data are comparable to data presented in tables 36 and 37 of the 2006 Economic SAFE (Hiatt et al., 2006). Participation in this sector of the BSAI groundfish fishery had been declining in recent years. In 2002, for example, 122 vessels participated but by 2006 that number had fallen to 92 vessels.

Table 6-3: Participation in Federal Hook and Line Groundfish Fisheries in the BSAI by Target Species, 2002-2006.

Species	Year	Bering Sea and Aleutians		
		Catcher vessels	Catcher processors	Total
Sablefish	2002	48	12	60
	2003	52	8	60
	2004	41	6	47
	2005	41	11	52
	2006	31	10	41
Pacific cod	2002	37	40	77
	2003	32	39	71
	2004	31	39	70
	2005	34	39	73
	2006	30	39	69
Flatfish	2002	2	17	19
	2003	7	13	20
	2004	1	13	14
	2005	1	12	13
	2006	2	13	15
Rockfish	2002	5	2	7
	2003	4	2	6
	2004	1	2	3
	2005	1	3	4
	2006	1	3	4
All Groundfish	2002	80	42	122
	2003	74	40	114
	2004	63	40	103
	2005	64	40	104
	2006	52	40	92

While 92 vessels participated in the BSAI hook and line fisheries in 2006, not all of those vessels harvested groundfish within IPHC Area 4E. Table 6.4 provides the number of vessels and their catch within IPHC Area 4E by size of the vessels. As shown in the table, there were no Pacific Cod hook and line vessels under 60 feet in length operating in IPHC Area 4E in recent years. In the 60 to 125 foot

category, four vessels caught 170 metric tons of Pacific Cod in 2006 while 14 vessels landed 7,431 metric tons in the greater than 125 foot category.

Table 6-4: Hook and Line Vessel Participation and Pacific Cod Catch in IPHC Area 4E, by vessel size.

Vessel Size	2003		2004		2005		2006	
	Number	Catch	Number	Catch	Number	Catch	Number	Catch
up to 60 feet	0	0	0	0	0	0	0	0
60 to 125 feet	5	511	2	1,097	4	164	4	170
Greater than 125 feet	16	4,217	12	3,415	15	6,524	14	7,431

Source: NMFS Alaska Region RAM Division.

IPHC Area 4E CDQ Halibut fishery data, provided by the RAM division of the Alaska Region of NMFS, are presented in below. All allocations of IPHC Area 4E halibut quota are made to regional CDQ Corporations under a catch sharing plan. This data shows that IPHC Area 4E catch has been an increasingly important share of overall CDQ halibut catch, however, it is a relatively small proportion of the overall halibut (IFQ and CDQ combined) catch in the waters off Alaska.

Table 6-5: Halibut Catch in IPHC Area 4E.

Halibut Landed Catch (pounds)	2005	2006	2007
Total catch in IPHC Area 4E	363,842	354,314	580,737
All CDQ catch – all areas	2,043,262	1,908,673	2,134,471
All IFQ catch- all areas	55,192,929	52,217,429	49,328,713
Total halibut (CDQ + IFQ) in all areas	57,236,191	54,126,102	51,463,184
Area 4E halibut catch as a percent of CDQ catch	17.81%	18.56%	27.21%
Area 4E halibut catch as a percent of total halibut catch.	0.635%	0.655%	1.128%

Source: NMFS Alaska Region RAM Division.

Table 6-6: Participation in the IPHC Area 4E CDQ fishery by vessel size.

Vessel Size	2003	2004	2005	2006	2007
26 to 32 feet	81	68	67	64	66
32 to 55 feet	2	4	3	2	4
Greater than 55 feet	1	2	1	0	0

Source: NMFS Alaska Region RAM Division.

6.7 Analysis of the Alternatives

This analysis of the alternatives begins with a treatment of impact categories not thought to be affected by the proposed alternatives. This simplifies and focuses the discussion on those impact categories where impacts, either positive or negative, are likely. Finally, this section concludes with a summary of this analysis of the alternatives.

6.7.1 Impact Categories Not Affected by the Alternatives:

The marine ecosystems and associated fish, mammal, and bird species may provide a range of benefits to humans. These benefits span a spectrum from use benefits associated with direct physical use or personal consumption (e.g. subsistence harvest) of products or services derived from these environmental assets, to benefits accruing to individuals who do not use the assets but who derive value from knowing they are being protected.

Benefits: Use Value

The production rates of FMP species and other species in the areas of interest and surrounding environs are not directly affected by the alternatives to the status quo under the proposed action. Thus, although some cost savings are anticipated, it is not likely that commercial fisheries revenue would be substantially affected by the alternatives. Further, the endangered short-tailed albatross does not possess a present-day consumptive value.

Benefits: Non-use Value

The most relevant consideration for distinguishing among the alternatives' effects on non-use value is the degree to which each alternative may affect seabird populations. Section 3 of the attached EA has found that the alternatives do not have a significant effect on seabird populations. Thus, it is not likely that non-use value would be significantly adversely affected by the alternatives.

Revenue, Related Fisheries, and Communities

The proposed alternatives to the status quo would generally amend seabird avoidance requirements by relaxing requirements in IPHC area 4E. It is important to note that these changes do not affect the determination of total allowable catch (TAC), or the allocation of TAC, in any fishery. Further, these changes will not directly affect the ability of harvesters to catch all that is available to them. Thus, the alternatives to the status quo will not affect the revenue stream earned by participants in affected fisheries in any way. Further, the proposed action is not expected to have a significant effect on related fisheries. Given that the proposed action is not expected to affect revenue in directly affected or related fisheries, it follows that significant effects on fishing communities are not likely. If there are, as suggested, possible fishing safety gains attributable to this action, especially for small boat operations, then adoption of any of the alternatives to the status quo have the potential to contribute to the general well-being of fishery dependent communities.

Equipment Costs

Federal regulations presently require vessel operators to use seabird avoidance measures when deploying hook-and-line gear in Federal waters of the EEZ, and when operating in federally managed fisheries shoreward of 3 nautical miles (nm) (i.e. inside State waters). Specific requirements depend on vessel size, superstructure, and area fished.

The present regulation does not define a construction standard for buoy bag lines. However, recommended configuration for a buoy bag line is 32.8 ft (10 m) to 131.2 ft (40 m) length deployed so that it is within 6.6 ft (2 m) horizontally of the point where the main groundline enters the water. The materials needed to construct such a line are readily available on most fishing vessels or can be purchased at negligible cost. This analysis assumes that vessels that are required to use a buoy bag line are presently equipped with gear that allows compliance with this standard.

Since adoption of the present set of seabird avoidance measures, the U.S. Fish and Wildlife Service, in cooperation with the Pacific States Marine Fisheries Commission (PSFMC), has provided streamer lines to hook-and-line vessels, free of charge. Thus, at present, all vessels that are required to use seabird avoidance measures have acquired, or been provided with, the measures that would continue to be required under both of the alternatives to the status quo. Thus, the alternatives to the status quo are not expected to impose additional equipment cost over the status quo condition.

Consumers of Fishery Products

It is not likely that the supply of fishery products, fishery product prices, or consumers of fishery product would be affected by the alternatives.

Regulatory and Enforcement Programs

The alternatives, and specifically the options to each alternative, will likely have an effect on NOAA enforcement activities. Based upon advice from NOAA Alaska OLE, the proposed action would be expected to ‘reduce’ the enforcement burden on the Agency, albeit, only marginally. Potential effects are identified in section 6.7.2 below. The alternatives, however, would not likely alter U.S. Coast Guard (USCG) operations in support of fisheries management in the subject region.

Fisheries Management

The proposed alternatives do not affect the determination of total allowable catch (TAC), or the allocation of TAC, in any fishery. Further, these changes will not directly affect the ability of harvesters to catch all that is available to them. Thus, it is not likely that the proposed alternatives will affect fisheries management.

6.7.2 Impacts of the Alternatives

The three action alternatives under consideration, and the two options to each action alternative, differ only by the size, and therefore number and type, of vessel that they affect. Each alternative expands the number of affected vessels by increasing the size range included in the alternative. All of the vessels affected by Alternative 2 are also included in Alternative 3. Similarly, all of the vessels included in Alternatives 2 and 3 are included in Alternative 4, with the addition of all of the larger vessels not included in Alternatives 2 and 3. Thus, the effects of the alternatives are additive with Alternative 2 having the least total effect, although perhaps the greatest proportion of total effects. Alternative 3 provides additively more effect than Alternative 2, as does Alternative 4 with respect to Alternative 3.

Alternative 2 would eliminate the buoy bag line and/or streamer line requirements for all vessels up to 32 feet in length that fish in the waters of the EEZ in IPHC area 4E. Under the status quo regulations, vessels up to 32 feet in length fishing shoreward of the EEZ (from 0 to 3 nautical miles from shore) are not required to use seabird avoidance measures. This alternative would not affect vessels that are less

than 32 feet in length that fish exclusively within 0-3 nautical miles because there is currently no seabird avoidance regulatory burden for such vessels. Thus, Alternative 2 directly affects only the 66 (NMFS RAM division 2007 data) vessels that are up to 32 feet in length, fish in the EEZ, and are presently required to deploy the appropriate seabird avoidance device.

Alternative 3 includes vessels up to 55 feet in length. Thus, it includes all of the vessels of Alternative 2 and an additional 4 vessels between 32 and 55 feet in length that harvested CDQ Halibut in IPHC area 4E in 2007 (NMFS RAM, 2007), and there were no vessels up to 55 feet in length that harvested Pacific cod within IPHC area 4E (NMFS Catch in Areas Database).

Alternative 4 would eliminate seabird avoidance requirements for all hook and line vessels operating in IPHC area 4E. Thus, the vessels affected by Alternative 4 would include those defined for Alternatives 2 and 3 as well as the larger (greater than 55 feet in length) hook and line CP and CV vessels that operate in the Bering Sea. Actual hook and line vessel participation and landings data, shown in tables 6.2 and 6.3 above, indicate that 52 CVs and 40 CPs harvested groundfish worth \$4 million and \$99.2 million, respectively, using hook and line gear in the BSAI in 2006. A review of spatial data (NMFS Alaska Region Catch in Areas Database) shows that 18 of the 92 hook and line vessels that harvested BSAI groundfish in 2006 reported harvests totaling approximately 7,600 metric tons in IPHC area 4E.

The small boat (26-32 ft LOA) IPHC Area 4E halibut fishery is still in its development stages. These small vessels have few crew members and any further restrictions, requirements, or operational costs could make this fishery cost prohibitive and/or unsafe to prosecute (pers. Comm.. Andy Ruby and Robert Williams). Some minimal costs in materials, crew training, and maintenance would be associated with a new streamer line requirement and standard. Thus, the elimination of requirements to deploy seabird avoidance devices in IPHC area 4E would tend to decrease vessel operational costs in this emerging fishery. The benefits of reduced cost for these small vessels are contained in all three alternatives.

Elimination of requirements to deploy seabird avoidance devices in IPHC area 4E would have generally beneficial impacts. Each alternative would decrease affected vessel operational costs associated with the time required to train crew, deploy and retrieve the devices, and perform maintenance. However, vessel operating cost data are not presently available. Thus, it is not possible to quantify the savings that might occur under the alternatives or the options to the alternatives. Further, it is not possible to quantify the difference in benefits between the alternatives.

All of the alternatives have the potential to improve vessel safety. Recall that all of the alternatives include small vessels; some of which are 26 to 28 foot bowpickers, and many of which have been built to comply with a 32 foot length limit in the Bristol Bay Gillnet salmon fishery. In an effort to maximize deck and hold space, while complying with the length restriction, these vessels have evolved to become as wide as 16 feet and some have blunt fore end rather than the more traditional V bow profile. It is also important to understand that these vessels must fish relatively shallow waters in the Bristol Bay salmon fishery. As a result, these vessels are not deep draft vessels and often have relatively flat aft section bottoms and/or skegs to allow beaching on the river banks during low tides. There is limited space on board these smaller vessels to safely store, deploy, and maintain gear. Deployment of seabird avoidance gear with small crews in harsh Eastern Bering Sea weather could also be considered a safety concern on small vessels. Disentangling streamer lines is very dangerous while setting gear in windy, volatile seas, and buoy bags in cross currents can drag small vessels in the direction of the bag (pers. com R. Williams).

The elimination of seabird avoidance requirements in IPHC area 4E would alleviate some of the safety concerns for vessels affected by the alternatives, particularly the smallest vessels. The additional vessels between 32 and 55 feet in length (Alternative 3) may provide additional benefits associated with vessel

safety because these vessels are still relatively small when considering that they are fishing in the open waters of the Eastern Bering Sea. This may also be true, but perhaps to a lesser extent, for vessels greater than 55 feet that would be included under Alternative 4.

The effect of the options to the Alternatives is to continue to require seabird avoidance requirement in the STAL area. Option 1 would continue to require the status quo seabird avoidance requirements in the STAL area, while Option 2 would change the current requirements by requiring only a buoy bag line for all vessels affected by the alternative regardless of their rigging configuration and gear type. Thus, Option 2 is slightly less restrictive, than Option 1, because it would eliminate the streamer line requirements and performance standards for vessels that have masts, poles, or rigging while operating in the STAL area. Thus, Option 2 would tend to reduce the regulatory burden a bit more than Option 1.

6.8 Summary of the Analysis of Alternatives

This analysis has found that the alternatives to the status quo are not likely to impose significant costs on industry or affect other use or non-use values. The alternatives have the potential to create benefits by reduce the regulatory burden on vessels operating in the waters of IPHC area 4E. However, vessel operating cost data with which to quantitatively confirm these results are not presently available. Thus, it is not possible to quantify the net effect on operating costs that might occur under each alternative. However, the alternatives to the status quo are not expected to impose any additional burden and would likely reduce operational costs for affected vessels, while improving vessel safety for the smallest of the potentially affected vessels.

Based on the best available information, the proposed action does not appear to have the potential to produce an annual effect on the economy of \$100 million or more, or “adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities.” The proposed action would not be expected to meet or exceed any of the threshold criteria for a “significant” action (as that term is defined in E.O. 12866).

7.0 INITIAL REGULATORY FLEXIBILITY ACT ANALYSIS

7.1 The Purpose of an IRFA

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

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

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

Data on cost structure, affiliation, and operational procedures and strategies in the fishing sectors subject to the proposed regulatory action are insufficient, at present, to permit preparation of a "factual basis" upon which to certify that the preferred alternative does not have the potential to result in significant adverse economic impacts on a substantial number of small entities (as those terms are defined under RFA). Because, based on all available information, it is not possible to 'certify' this outcome, should the proposed action be adopted, a formal IRFA has been prepared and is included in this package for Secretarial review.

7.2 What is Required in an IRFA?

Under 5 U.S.C., Section 603(b) and (c) of the RFA, each IRFA is required to contain:

- A description of the reasons why action by the agency is being considered;
- A succinct statement of the objectives of, and legal basis for, the proposed rule;
- A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;

- A description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule;
- A description of any significant alternatives to the proposed rule which accomplish the stated objectives (*of the proposed action*), consistent with applicable statutes, and which would minimize any significant economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as:
 1. The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;
 2. The clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;
 3. The use of performance rather than design standards; and
 4. An exemption from coverage of the rule, or any part thereof, for such small entities.

7.3 Reasons for Considering the Proposed Action

The purpose of this action is to revise the existing seabird avoidance regulations. These revisions are based on results of a 2002 Seabird distribution study (see appendix 2) and on a 2002 cooperative research study on seabird avoidance measures for vessels less than 55 feet, and for all vessels using snap-on gear (see Appendix 1).

Concerns exist relating to the incidental take of the endangered short-tailed albatross and other seabird species in the hook-and-line fisheries off Alaska. A Biological Opinion issued by the U.S. Fish & Wildlife Service (USFWS) (1999) requires that the National Marine Fisheries Service (NMFS) investigate the effectiveness of seabird avoidance measures currently used in Alaska's hook-and-line groundfish fishery. If so warranted by the research results, the NMFS is required to modify the existing seabird avoidance regulations to improve the effectiveness of measures or devices that are required, and minimize the likelihood of short-tailed albatross mortalities.

7.4 Objectives and Legal Basis of the Proposed Rule

7.4.1 Objectives of the Proposed Rule

The purpose of the proposed action is to revise the seabird avoidance measures so that, based on the best available information regarding seabird occurrence, these measures may be applied most efficiently, i.e., providing adequate protection to seabirds while imposing no unnecessary burden on fishermen. Seabird avoidance measures reduce the incidental mortality of seabirds in the hook-and-line fisheries off of Alaska. Recent analyses suggest that these measures can be focused on certain sectors of the hook-and-line vessel fleet and in specified geographic areas where interactions are more likely to occur between hook-and-line vessels and seabirds, particularly ESA-listed seabird species and species of concern. The proposed action thus has the dual purpose of continuing to protect seabirds while eliminating seabird avoidance gear requirements in waters where pelagic seabirds (particularly the endangered short-tailed

albatross and other species of concern) are rarely observed. These revisions exemplify the principles of adaptive management, using the best available information to focus regulatory requirements where they are needed and to ensure that those requirements are effective and efficient.

This action furthers the goals and objectives of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Northern Pacific Halibut Act of 1982 (Halibut Act), the Migratory Bird Treaty Act (MBTA), and the ESA, while providing relief from unnecessary regulatory burdens on hook-and-line fishermen in IPHC Area 4E.

7.4.2 Legal Basis of the Proposed Rule

Under the Magnuson-Stevens Act, the United States has exclusive fishery management authority over all marine fishery resources found within the Exclusive Economic Zone (EEZ), which extends between 3 nm and 200 nm from the baseline used to measure the territorial sea. The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in the regional councils. In the Alaska Region, the Council has the responsibility for preparing Fishery Management Plans (FMPs) for the marine fisheries it finds require conservation and management pursuant to the Magnuson-Stevens Act, and for submitting their recommendations to the Secretary. Upon approval by the Secretary, the National Marine Fisheries Service (NMFS) is charged with carrying out the Federal mandates of the Department of Commerce with regard to marine and anadromous fish. The groundfish fisheries in the EEZ off Alaska are managed under the FMP for the Groundfish Fisheries of the Gulf of Alaska (GOA) and the FMP for the Groundfish Fisheries of the Bering Sea and Aleutian Island (BSAI). The crab fisheries in the EEZ off Alaska are managed under the FMP for the Crab Fisheries of the BSAI. The scallop fisheries in the EEZ off Alaska are managed under the FMP for the Scallop Fisheries of Alaska. The salmon fisheries in the EEZ off Alaska are managed under the FMP for salmon fisheries.

The halibut fishery is managed by the International Pacific Halibut Commission (IPHC), which was established by a Convention between the governments of Canada and the United States. The IPHC's mandate is research on and management of the stocks of Pacific halibut within the Convention waters of both nations. The Convention is implemented in the United States by the Northern Pacific Halibut Act of 1982 (Halibut Act), which authorizes regional fishery management councils to develop additional regulations governing the halibut fisheries. Regulations developed by a Council become effective only if they are approved by the Secretary of Commerce (16 U.S.C. 773 c(e)).

Actions taken to amend and implement FMPs and implement regulations pursuant to the Halibut Act must meet the requirements of Federal laws and regulations. In addition to the Halibut Act and the Magnuson-Stevens Act, the most important of these are the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), EO (EO 12866), the Regulatory Flexibility Act (RFA), the Migratory Bird Treaty Act of 1918, and EO 13186 on the Responsibilities of Federal Agencies to Protect Migratory Birds.

7.5 Description and Number of Small Entities to which the Proposed Rule will Apply

7.5.1 Definition of a Small Entity

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

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

The SBA has established size criteria for all major industry sectors in the United States, including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of \$4.0 million for all its affiliated operations worldwide. A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the \$4.0 million criterion for fish harvesting operations. Finally, a wholesale business servicing the fishing industry is a small business if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide.

The SBA has established “principles of affiliation” to determine whether a business concern is “independently owned and operated.” In general, business concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern’s size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805 are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when (1) A person is an affiliate of a concern if the person owns or controls, or has the power to control 50 percent or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock, or (2) If two or more persons each owns, controls or has the power to control less than 50 percent of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors, or general partners controls the board of directors and/or the management of

another concern. Parties to a joint venture also may be affiliates. A contractor and subcontractor are treated as joint ventures if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

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

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

7.5.2 Estimated Number of Small Entities to which Proposed Rule Applies

Fishing vessels, both catcher vessels (CVs) and catcher/processors (CPs), are considered small, for RFA purposes, if their annual gross receipts, from all their economic activities combined, as well as those of any and all their affiliates anywhere in the world, (including fishing in Federally managed non-groundfish fisheries, and in State of Alaska managed fisheries), are less than or equal to \$4.0 million. Further, fishing vessels were considered to be large for the purposes of this analysis, if they were affiliated with an AFA fishing cooperative in 2004.

The entities that would be directly regulated by the proposed action are those vessels that fish for ground fish and/or halibut with hook-and-line gear in the waters off Alaska within an area identified by the International Pacific Halibut Commission as area 4E. It is important to note that the seabird avoidance measures presently in place, as well as the alternatives being considered, apply directly to the operator of a vessel deploying hook-and-line gear in the waters of IPHC area 4E. That is to say, these regulations apply to the operation of a vessel and not necessarily directly to the holder of an Individual Fishing Quota (IFQ) or Community Development Quota (CDQ) for halibut or sablefish (unless also the owner/operator of a vessel). Multiple IFQ’s can, and are, used on a single vessel. Thus, this analysis of large and small entities is conducted at the vessel level. This analysis is complicated by the fact that the halibut fishery is managed somewhat separately from the Federal groundfish fisheries. Thus, data from multiple sources have been used to estimate the numbers of large and small entities potentially affected by the proposed action.

The accompanying Regulatory Impact Review provides a description of potentially affected fisheries and estimates the numbers of unique vessels that presently participate. Approximately 70 vessels ranging between 26 feet and 55 feet in length participated in the CDQ Pacific halibut fishery in IPHC area 4E.

The 70 vessels that fished in the CDQ halibut fishery in IPHC area 4E are mostly small vessels (66 are less than 33 feet in length) that fish in the salmon and herring fisheries in the Bristol Bay and Togiak Bay areas of Alaska. None of these vessels harvest groundfish in other Federal fisheries, thus, comprehensive annual revenue data is not available for these vessels in the way that it is for vessels that participate in Federal groundfish fisheries. However, given the small size of these vessels and the scale of the fisheries they participate in, it is not expected that any of these vessels would earn more than \$4 million in annual revenue. Thus, for the purposes of this analysis, these 70 vessels are considered small entities.

Comprehensive annual revenue data, from all sources, is available for the 92 vessels that participated in

the Federal hook-and-line groundfish fisheries in the BSAI in 2006. This data is compiled in the annual Economic Stock Assessment and Fishery Evaluation (Econ. SAFE) report prepared by the Alaska Fisheries Science Center (Hiatt et.al., 2006). In 2006, 52 hook and line Catcher Vessels (CVs) and 6 hook and line Catcher Processors (CPs) reported that they caught and processed less than \$4 million in ex-vessel or product value. Thus, these 58 vessels are considered small entities. (Hiatt, et. al., 2006, Table 36 and 37) In total, this analysis has identified 128 vessels that are considered to be small entities

A review of American Fisheries Act permit data revealed that none of the vessels with gross revenue less than \$4 million in 2006, are AFA permitted vessels. It is possible that the estimated 1,071 small entities that would be directly regulated by the proposed action overstates the true number of such entities, although by an unknown amount. This is so because multiple vessel ownership, ownership in shares of multiple vessels, family and joint-venture affiliations, as well as formal contracted relationships are all common practices observed in commercial fisheries in and off Alaska. Notwithstanding this fact, empirical data on these interlocking relationships are not currently systematically collected, compiled, and analyzed by any source.

7.6 Description of the Projected Reporting, Record Keeping, and Other Compliance Requirements of the Proposed Rule

The alternatives being considered would not directly mandate additional “reporting” or “record keeping” within the meaning of the Regulatory Flexibility Act.

Identification of Relevant Federal Rules that may Duplicate, Overlap or Conflict with the Proposed Rule

This analysis did not uncover any Federal rules that duplicate, overlap, or conflict with the proposed rule.

7.7 Description of Significant Alternatives

An IRFA must consider all significant alternatives that accomplish the stated objectives of the action, consistent with applicable statutes, and simultaneously minimize any significant economic impacts of the proposed rule on small entities. “Significant alternatives” are those with potentially lesser impacts on small entities (versus large-scale entities) as a whole. The kinds of alternatives that are possible will vary based on the particular regulatory objective and the characteristics of the regulated industry. However, section 603(c) of the RFA gives agencies some alternatives that they must consider at a minimum:

1. Establishment of different compliance or reporting requirements for small entities or timetables that take into account the resources available to small entities.
2. Clarification, consolidation, or simplification of compliance and reporting requirements for small entities.
3. Use of performance rather than design standards.
4. Exemption for certain or all small entities from coverage of the rule, in whole or in part.

The alternatives accepted by the Council for consideration in this EA/RIR/IRFA are described in detail in Chapter 2 of the EA and are also described in Section 6.5 of the RIR. The RIR for this action analyzes potential economic impacts of the suite of available alternatives. At present, the alternatives before the Council contain explicit provisions in regard to mitigating the potential adverse effects, of existing regulations requiring use of seabird avoidance requirements, on directly regulated entities, the vast majority of which are recognized by the Council as being small entities.

Since the initial adoption of seabird avoidance regulations, research has been conducted to more precisely identify the geographical distribution and range of endangered seabirds, as well as on the efficacy of required seabird avoidance devices. Recent research has addressed whether small vessels can properly deploy seabird avoidance devices, given a small vessel's inherent physical limitations, and whether those devices are effective and necessary. The proposed alternatives, which explicitly seek to reduce the economic and operational burden placed upon (especially the small) entities operating in these fisheries are a direct result of this research.

The present suite of alternatives directly incorporates many of the recommendations of the RFA. The proposed alternatives alleviate the small entity compliance burden by eliminating seabird avoidance measures in IPHC area 4E, where endangered birds are not, or only very rarely, present, and where many small entities operate.

8.0 CONCLUSIONS - forthcoming

9.0 REFERENCES

AFSC (Alaska Fisheries Science Center) 2006. Summary of Seabird Bycatch in Alaskan Groundfish Fisheries, 1993 through 2004. Available at <http://www.afsc.noaa.gov/refm/reem/doc/Seabird>. Updated 13 April 2006.

Balogh, G. L. Piatt, J. Wetzel, and G. Drew. 2006. Opportunistic short-tailed albatross sightings database. U.S. Fish and Wildlife Service and U.S Geological Survey. Anchorage, AK. Unpublished data.

Byrd, G. V., H .M. Renner, M. Renner. 2005. Distribution patterns and population trends of breeding seabirds in the Aleutian Islands. *Fisheries Oceanography* 14:139-159.

Colpo, Dave., 2007. Personal communication with Dave Colpo of Pacific States Marine Fisheries Commission, Portland Oregon. January 8, 2007 via electronic mail.

Cousins, K. 2001. "The black-footed albatross population biology workshop: a step to understanding the impacts of longline fishing on seabird populations." *Proceedings - Seabird Bycatch: Trends, Roadblocks, and Solutions*, E. F. Melvin and J. K. Parrish, eds., University of Alaska Sea Grant Press, pp. 95-114.

Cousins, K., and J. Cooper. 2000. The Population biology of the black-footed albatross in relation to mortality caused by longline fishing., Honolulu, HI, 159 pp.

Dragoo, E. E., G.V. Byrd Jr., and D.B. Irons. 2000. "Breeding status and population trends of seabirds in Alaska in 1999." *AMNWR 2000/02*, U.S. Fish and Wildlife Service.

Dragoo, E.E., G.V. Byrd, and D.B. Irons. 2006. Breeding status, populatino trends and diets of seabirds in Alaska, 2003. USFWS Report AMNWR 06/13. Homer, Alaska.

Drew, G.S. and John F. Piatt. The North Pacific Pelagic Seabird Database Users Manual. U.S. Geological Survey, Alaska Science Center, Anchorage, AK.

Environmental Systems Research Institute. 1999-2006. ArcMap 9.2 Build 1380. Spatial Analyst and Geostatistical Analyst extensions utilized.

FAO 1995. Code of Conduct for Responsible Fisheries, Rome.

FAO 1999. International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries, Rome.

Fall, J.A. 1990. The Division of Subsistence of the Alaska Department of Fish and Game: An overview of its research program and findings: 1980-1990. *Arctic Anthropology* 27:68-92.

Gales, R., Brothers, N., and Reid, T. 1998. Seabird mortality in the Japanese tuna longline fishery around Australia, 1988-1995. *Biol. Conserv.* 86:37-56.

Geernaert, T.O., H.L. Gilroy, S.M. Kaimmer, G.H. Williams, and R.T. Trumble. 2001. A Feasibility Study that Investigates Options for Monitoring Bycatch of the Short-tailed Albatross in the Pacific Halibut Fishery off Alaska. Prepared for NMFS by the staff of the International Pacific Halibut Commission, Seattle, WA, and Trumble Research and Consulting, St. Petersburg, FL, revised February 1.

Geernaert, Tracee. International Pacific Halibut Commission. Personal Communication, December 2006.

Greig, A., Holland, D., Lee, T. and Terry, J. 1998. SAFE Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries Off Alaska, 1997. NOAA, NMFS, AFSC, REFM Division, November 25.

Hyrenback, K.D., P. Fernandez, and D.J. Anderson. 2002. Oceanographic habitats of two sympatric North Pacific albatrosses during the breeding season. *Marine Ecology Progress Series* 233, 283-301.

Hiatt, T., Carothers, C., Fell, H., Felthoven, R., Haynie, A., Layton, D. 2005. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island area: Economic status of the groundfish fisheries off Alaska, 2004. AFSC, NMFS, 7600 Sand Point Way N.E., BIC C15700, Seattle, WA 98115.

Hilborn, R. and Mangel, M. 1997. *The Ecological Detective: Confronting Models with Data*. Chapter 4: Incidental Catch in Fisheries: Seabirds in the New Zealand Squid Trawl Fishery. Princeton University Press, Princeton, New Jersey, pp. 94-105.

Hill, P. S. and DeMaster, D. P. 1998. "Alaska Marine Mammal Stock Assessments, 1998." in *NOAA Technical Memorandum NMFS-AFSC-97* National Marine Fisheries Service, National Marine Mammal Laboratory, 7600 Sand Point Way NE, Seattle, WA 98115. 166 pp.

IPHC 1998. IPHC Annual Report 1997. Winterholm Press, 80 pp.

IPHC 2005. IPHC Annual Report 2004. IPHC, P.O. Box 95009, Seattle, WA. ISSN: 0074-7238

Kineen, Simon. Norton Sound Economic Development Corporation. Personal Communication January, 2007.

Matthiopoulos, J., B. McConnell, C. Duck, and M. Fedak. 2004. Using satellite telemetry and aerial counts to estimate space use by grey seals around the British Isles. *Journal of Applied Ecology* 41: 476-491.

Melvin, E.F., J.K. Parrish, K.S. Dietrich, and O.S. Hamel. 2001. Solutions to seabird bycatch in Alaska's demersal longline fisheries. Washington Sea Grant, August, xx pp.

Melvin, E. F., M. D. Wainstein, K. S. Dietrich, K. L. Ames, T. O. Geernaert, and L. L. Conquest. 2006. The distribution of seabirds on the Alaskan longline fishing grounds: Implications for seabird avoidance regulations. Washington Sea Grant. Project A/FP-7.

Melvin, E.F. and M.D. Wainstein, 2006. Seabird avoidance measures for small Alaskan longline vessels. Washington Sea Grant. Project A/FP-7.

Merrigan, Gerry. Personal Communication, December 2006.

NMFS 1992. Final Environmental Impact Statement/Supplemental Environmental Impact Statement for the IFQ Program, March 27.

NMFS 1997a. Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for a Regulatory Amendment to Reduce the Incidental Seabird Mortality in Groundfish Hook-and-Line Fisheries Off Alaska, NMFS, Alaska Region Office, April 4.

NMFS 1997b. Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for a Regulatory Amendment to Reduce the Incidental Seabird Mortality in the Pacific Halibut Fishery in U.S. Convention Waters off Alaska and a Regulatory Exemption for Small Vessels in the Pacific Halibut Fishery in U.S. Convention Waters off Alaska and the Groundfish Hook-and-Line Fisheries Off Alaska, NMFS, Alaska Region Office, October 20.

NMFS. 1999a. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for a Regulatory Amendment to Revise Regulations for Seabird Avoidance Measures in the Hook-and-Line Fisheries Off Alaska to Reduce Bycatch of the Short-tailed Albatross and other Seabird Species. Draft for Public Review, Prepared by NMFS, Alaska Region Office, March, 98 pp.

NMFS 1999b. North Pacific Groundfish Observer Manual. US Dept. Of Commerce, NOAA, NMFS, Alaska Fisheries Science Center, Seattle, Washington, June 30 version.

NMFS, 2003. NPFMC Bering Sea/Aleutian Islands and Gulf of Alaska SAFE 2003. Ecosystem Considerations Chapter, p. 209.

NMFS. 2004a. Programmatic Supplemental Environmental Impact Statement for the Alaska Groundfish Fisheries Implemented Under the Authority of the Fishery Management Plans for the Groundfish Fishery of the Gulf of Alaska and the Groundfish of the Bering Sea and Aleutian Islands Area. June 2004. DOC, NOAA, NMFS P.O. Box 21668, Juneau, AK 99802. Available at <http://www.fakr.noaa.gov/sustainablefisheries/seis/intro.htm>.

NMFS 2004b. Evaluating Bycatch: A National Approach to Standardized Bycatch Monitoring Programs. NOAA Technical Memorandum NMFS-F/SPO-66. October 2004.

NMFS 2005. North Pacific Groundfish Stock Assessment and Fishery Evaluation Reports for 2006, Ecosystem Considerations Chapter.

NMFS. 2006a. Environmental Assessment/Final Regulatory Impact Analysis for the Total Allowable Catch Specifications for the Years 2006 and 2007 Alaska Groundfish Fisheries. National Marine Fisheries Service, Alaska Region, P.O. Box 21668, Juneau, Alaska 99802-1668. January 2006. Available at <http://www.fakr.noaa.gov/index/analyses/analyses.asp> .

NMFS. 2006b. Draft Environmental Impact Statement for the Alaska Groundfish Harvest Specifications. September 2006. National Marine Fisheries Service, Alaska Region, P.O. Box 21668, Juneau, Alaska 99802-1668. Available at <http://www.fakr.noaa.gov/index/analyses/analyses.asp> .

NMFS 2006c. Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility analysis for Amendments 65/65/12/7/8 to the BSAI Groundfish FMP (#65), GOA Groundfish FMP (#65), BSAI Crab FMP (#12), Scallop FMP (#7), and Salmon FMP (#8) and Regulatory Amendments to Provide Habitat Areas of Particular Concern. April 2006.

NMFS 2007. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for A Regulatory Amendment to Revise Regulations for Seabird Avoidance Measures in the Hook-and-line Fisheries off Alaska To Reduce the Incidental Take of the Short-tailed Albatross And Other Seabird Species.

North Pacific Fishery Management Council (NPFMC). 2005a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area. Anchorage: January, 2005. Accessed at <http://www.fakr.noaa.gov/npfmc/fmp/bsai/BSAI.pdf> on August 15, 2005.

NPFMC. 2005b. Fishery Management Plan for Groundfish of the Gulf of Alaska. Anchorage: January, 2005. Accessed at <http://fakr.noaa.gov/npfmc/fmp/goa/GOA.pdf> on August 15, 2005.

NPFMC 2006. SAFE Report for BSAI and GOA 2007 Fisheries. Seabird section in chapter, "Ecosystem Considerations for 2007".

North Pacific Pelagic Seabird Database. 2004. Short-tailed Albatross, Version 2004.06.15., USGS Alaska Science Center & U.S. Fish and Wildlife Service, Anchorage. www.absc.usgs.gov/research/NPPSD/

Otis, D.L. and C. G. White. 1999. Autocorrelation of location estimates and the analysis of radiotracking data. *Journal of Wildlife Management*, 63, 1039-1044.

Piatt, J.F., J. Wetzel, K. Bell, A.R. DeGange, G.R. Balogh, G.S. Drew, T. Geernaert, C. Ladd, and G.V. Byrd. 2006. Predictable hotspots and foraging habitat of the endangered short-tailed albatross (*Phoebastria albatrus*) in the North Pacific: Implications for conservation. *Deep-Sea Research II* 53:387-398.

Reid, T.A., and B.J. Sullivan. 2003. Longliners, blackbrowed albatross mortality and bait scavenging in Falkland Island waters: what is the relationship? *Polar Biology* (2004) 27:131-139.

Rice, Sunny, and Paula Cullenberg. Design and Distribution of Free Lightweight Streamer Lines for Longline Vessels in Alaska. Alaska Sea Grant Marine Advisory Program, University of Alaska Fairbanks. Prepared for Greg Balogh, United States Fish and Wildlife Service Endangered Species Program.

Rice, Sunny, Torie Baker, and Paula Cullenberg. March 2006. Field Evaluation of Seabird Deterrent Gear and Alternatives for Alaska Small Longline Vessels. Alaska Sea Grant Marine Advisory Program, University of Alaska Fairbanks. Prepared for Greg Balogh, U.S. Fish and Wildlife Service Endangered Species Program.

Ruby, Andy. Bristol Bay Economic Development Corporation. Personal Communication, December 2006.

Silverman, B.W. Density Estimation for Statistics and Data Analysis. New York: Chapman and Hall, 1986.

Stehn, R.A., K.S. Rivera, S. Fitzgerald, and K.D. Wohl (2001). Incidental catch of seabirds by longline fisheries in Alaska. In: Seabird bycatch: trends, roadblocks, and solutions. (Ed) E.F. Melvin and J.K. Parrish. Proceedings of the Symposium, Seabird Bycatch: Trends, Roadblocks, and Solutions, February 26-27, 1999, Blaine, Washington, Annual Meeting of the Pacific Seabird Group. University of Alaska Sea Grant, AK-SG-01-01.

Stephensen, S.W., Irons, D.B. 2003. Comparison of colonial breeding seabirds in the eastern Bering Sea and Gulf of Alaska, *Marine Ornithology* 31: 167-173.

Suryan, R. M., K.S. Dietrich, E.F. Melvin, G.R. Balogh, F. Sato, and K. Ozaki. 2006a. Migratory routes of short-tailed albatrosses: Use of exclusive economic zones of North Pacific Rim countries and spatial overlap with commercial fisheries in Alaska. *Biological Conservation* *in review*.

Suryan, R. M., F. Sato, G.R. Balogh, K.D. Hyrenbach, R.P Sievert, and K. Ozaki. 2006b. Foraging destinations and marine habitat use of short-tailed albatrosses: A multi-scale approach using first-passage time analysis. *Deep-Sea Research II* 53: 370-386.

Suryan, R. M. and G. R. Balogh. 2006. Maine habitat of endangered short-tailed albatrosses

and spatial and temporal interactions with north Pacific commercial fisheries. NPRB Project 322 Final Report, July 2006.

U.S. FISH & WILDLIFE SERVICE. (USFWS) 1999. Beringian Seabird Colony Catalog manual for censusing seabird colonies. U.S. Fish and Wildlife Service Report, Migratory Bird Management. Anchorage, Alaska. 27 pp.

USFWS 2001a. Federal Register Notice 50 CFR Part 17 US Fish and Wildlife Service. Feb 2001. RIN 1018-AF92. pp. 9146-9185. Final Determination of Critical Habitat for the Spectacled Eider.

USFWS 2001b. Federal Register Notice 50 CFR Part 17 US Fish and Wildlife Service. Feb 2001. RIN 1018-AF95. pp. 8850-8884. Final Determination of Critical Habitat for the Alaska breeding Population of Steller's Eider.

USFWS. 2002. Birds of conservation concern 2002. Division of Migratory Bird Management, Arlington, Virginia. 99 pp. Online version available at <http://migratorybirds.fws.gov/reports/bcc2002.pdf>

USFWS. 2003a. "Programmatic Biological Opinion on the effects of the Fishery Management Plans (FMPs) for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) groundfish fisheries on the endangered short-tailed albatross (*Phoebastria albatrus*) and threatened Steller's eider (*Polysticta stelleri*)". Anchorage Fish and Wildlife Field Office. Available from NMFS website: <http://www.fakr.noaa.gov/protectedresources/seabirds.html>.

USFWS. 2003b. Biological Opinion on the Effects of the Total Allowable Catch-Setting Process for the Gulf of Alaska and Bering Sea/Aleutian Islands Groundfish Fisheries to the Endangered Short-tailed Albatross (*Phoebastria albatrus*) and Threatened Steller's Eider (*Polysticta stelleri*), September 2003. Available from <http://www.fakr.noaa.gov/protectedresources/seabirds/section7/biop0903/esaseabirds.pdf>. 42 pp.

USFWS. 2004. Federal Register: May 4, 2004 (Volume 69, Number 86)] [Page 24875-24904] Part III 50 CFR Part 17. Kittlitz's murrelet (*Brachyramphus brevirostris*) assigned a listing priority number of 5.

USFWS. 2006. Report to the North Pacific Fishery Management Council, October 2006. Agenda Item B(5).

USGS. 2006. North American Bird Banding Manual, Electronic Version. Access 10/17/06 at <http://www.pwrc.usgs.gov/bbl/manual>.

Vlietstra, L.S., K. O. Coylse, N.B. Kachel, and G.L. Hunt. 2005. Tidal front affects the size of prey used by a top marine predator, the short-tailed shearwater. *Fisheries Oceanography* 14: 196-211.

Williams, G. H. 1997. Pacific halibut discard mortality rates in the 1990-1996 Alaskan groundfish fisheries, with recommendations for monitoring in 1998. In: Preliminary Stock Assessment and fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Regions. NPFMC 1997.

Williams, Robert C., Deputy Director, Coastal Villages Region Fund. Personal Communication, January, 2007.

Woodby, D. and Lee Hulbert. 2006 Update of state fisheries with regards to SSL. ADF&G Special Publication No. 06-23.

Woodby, D. 2005. Commercial Fisheries in Alaska.

10.0 LIST OF PREPARERS AND AGENCIES AND INDIVIDUALS CONSULTED

Kristin Mabry, Kim Rivera, Scott Miller, Melanie Brown, Jim Hale, Ben Muse, Steve Lewis,
Toni Fratzke
NOAA/NMFS, Alaska Region
PO Box 21668
Juneau, AK 99802

Bill Wilson
NPFMC
Anchorage, AK

Ed Melvin, Michelle Wainstein, Kim Dietrich
Washington Sea Grant
Seattle, WA

Alison Rice
Alaska Sea Grant Program
PO Box 1329
Petersburg, AK 99833

Shannon Fitzgerald, Mike Perez
NMFS, AFSC
7600 Sandpoint Way NE, Bldg. 4
Seattle, WA 98115-0070

Greg Balogh
USFWS–Ecological Services
605 W. 4th Ave., Rm. 62
Anchorage, AK 99501

Shawn Stephenson
USFWS
Anchorage, AK

Robert Suryan
Oregon State University, Hatfield Marine Science Center
2030 S.E. Marine Science Dr.
Newport, OR 97365

Tracee Geernaert and Gregg Williams
International Pacific Halibut Commission
Seattle, WA

11.0 APPENDICES

Letter from FWS to NPFMC dated January 27, 2007



United States Department of the Interior

FISH AND WILDLIFE SERVICE

1011 E. Tudor Rd.

Anchorage, Alaska 99503-6199

IN REPLY REFER TO:

FWS/AFES/AFWFO

JAN 26 2007

Ms. Stephanie Madsen, Chair
North Pacific Fishery Management Council
605 West 4th, Suite 306
Anchorage, Alaska 99501-2252

Dear Ms. Madsen:

The North Pacific Fishery Management Council has worked effectively with the U.S. Fish and Wildlife Service (Service) and the National Oceanic and Atmospheric Administration (NOAA) Fisheries in implementing measures to protect the endangered short-tailed albatross (*Phoebastria albatrus*), and other seabirds from incidental take in Alaska's longline fishery. When it first became apparent that regulations were needed to help protect the short-tailed albatross, the Council, in 1997, adopted its version of the Commission for the Conservation of Antarctic Marine Living Resources regulations. Modifications to these regulations only occurred after the University of Washington's Sea Grant Program (WSG) completed precedent-setting seabird bycatch research in Alaska and made science-based recommendations for regulation changes in 2003, which the Council then adopted in 2004. To further address the needs of smaller vessels fishing in protected waters, the WSG and the Alaska Marine Advisory Program launched new studies to: 1) develop more applicable seabird deterrent devices for small vessels; and 2) determine whether seabirds were at risk of bycatch in inside waters. The Service supported all of these efforts, and even funded a large portion of the research.

The Council has a strong history of making decisions based upon scientific data. When sufficient data have not been available, the Council supported gathering the necessary information and deferred decision-making until that information was available. However, the Council is currently considering options for International Pacific Halibut Commission area 4E that go beyond the data presented in Edward Melvin et al. (2006), as well as more recent short-tailed albatross satellite telemetry data included in the January 2007 Draft Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (Draft EA). We believe that this new information should be considered before final action on revised seabird regulations is taken. We are concerned that the Council could remove protection measures for the short-tailed albatross in the absence of data supporting that decision. We have evaluated the options as contained in the Draft EA, and our recommendations follow.

4E Exemptions

The Service and its research partners have tagged between 1 and 2 percent of the total short-tailed albatross population with satellite transmitters. We have meaningful tracking information for less than 1 percent of the total population in Alaskan waters (greater than 2 weeks of transmissions within the Alaska Exclusive Economic Zone). At least two of our tagged birds spent time in the southwest portion of area 4E. Simple extrapolation of this sparse data suggest that perhaps hundreds of short-tailed albatrosses have used area 4E during the course of our study. Consequently, our data do not support modifying alternatives 2 and 3 of the EA to allow 26-32 foot vessels to set longline gear in 4E while towing only a buoy bag. Similarly, the data do not support the suboptions exempting vessels of this size class from using all seabird avoidance measures. We note that the short-tailed albatross adult caught on September 21, 1998, was caught by a vessel that was towing a buoy bag. The vessel that was towing this buoy bag was doing so in an ineffective, albeit legal manner. However, regulations still do not stipulate performance measures for buoy bag deployment. Adoption of Alternative 2/Option 3 or Alternative 3/Option 3 will trigger reinitiation of formal Section 7 consultation between the Service and NOAA Fisheries.

Consideration could be given to subdividing area 4E, allowing for sub-areas to be exempted from seabird regulations. However, we believe that subdivision of this area should be undertaken with caution and backed by scientific justification. Spatial analysis methods, such as kriging of short-tailed albatross satellite telemetry data, could provide the scientific basis to justify removal of seabird deterrent regulations in certain sub-areas.

Inside Waters

The Service supports the proposed revisions for waters around Chatham Strait, Dixon Entrance, and Cross Sound as described in alternatives 3.A.1., 3.A.2., and 3.A.3. Alternative 3.A.3. Sub-option 1 further subdivides Alaska Department of Fish and Game (ADF&G) statistical area 365804 based upon a fairly obvious breaking point; a point at which four islands and two peninsulas shelter waters of Glacier Bay and Icy Strait from the sea conditions of the Gulf of Alaska. We support this proposed Cross Sound line, noting only that it should be slightly altered so that it connects Point Lavinia and Point Wimbleton. This modification would then include the sheltered waters of Dundas Bay as inside waters.

Alternative 3.A.1. Sub-option 1 draws a line across Chatham Strait just north of documented sightings of black-footed albatrosses (*Phoebastria nigripes*); the nearest short-tailed albatross telemetry records are adjacent to the southern edge of this ADF&G statistical area (345603). Although this area could be subdivided to allow portions of area 345603 to be considered inside waters, the seabird survey samples in this area are limited and the northernmost observations of albatross in 345603 are likely to change from year to year. Unlike Cross Sound, there is no obvious geographic barrier to discourage albatross from wandering further into Chatham Strait. Therefore, lacking a geographic basis for drawing a border between inside and outside waters, we recommend that the line subdividing ADF&G statistical area 345603 be placed at a point where bathymetric or oceanographic features (or some other feature) indicate a change from outside to inside water conditions. If no such features exist, we hope that the Council remains

open to revising the border in the future should short-tailed albatross be found further north into inside waters of Chatham Strait. Having noted these points, the Service is supportive of Alternative 3 without options.

Should you have any questions regarding our albatross satellite tracking data or other aspects of this letter, please contact Leonard Corin, the Service's representative on the Council, at (907) 786-3619, or Greg Balogh, Endangered Species Branch Chief, Anchorage Fish and Wildlife Field Office, at (907) 271-2778.

Sincerely,

A handwritten signature in black ink, appearing to read "Leonard P. Corin". The signature is fluid and cursive, with the first name "Leonard" being the most prominent.

U.S. Fish and Wildlife Service
Representative to the NPFMC

Enclosure

Literature Cited

Melvin, E.F., M.D. Wainstein, K.S. Dietrich, K.L. Ames, T.O. Geernaert, and L.L. Conquest. 2006. The distribution of seabirds on the Alaskan longline fishing grounds: implications for seabird avoidance regulations. Washington Sea Grant Program. Project A/FP-7, 20 pp.

National Marine Fisheries Service. 2007. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for a regulatory amendment to revise regulations for seabird avoidance measures in the hook-and-line fisheries off Alaska to reduce the incidental take of short-tailed albatross and other seabird species. Draft for public review. Alaska Regional Office, 102 pp.