DRAFT FOR PUBLIC REVIEW

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

January 2007

Post-Council Meeting New Information:

In late-December 2006, new information became available from USFWS and researchers at Oregon State University regarding the **occurrences of the endangered short-tailed albatross in areas overlapping with the proposed action area**. Since 2002, the movements of 21 short-tailed albatrosses have been monitored for short periods of time by satellite transmitters affixed to the bodies of the birds. The satellite tag locations are represented in Figure 16 and location points are most common in the waters of the Aleutian Islands and the Bering Sea continental shelf area. **However, some location points from a couple of birds tagged in 2006 were in IPHC Area 4E, waters of Southeast Alaska (NMFS Area 659), specifically Cross Sound, and in Canadian waters of Dixon Entrance.** This new information is described in more detail in section 3.1.1 and 3.5.5 and is considered in the analysis of alternatives. **As a result of this new information, an additional area of consideration was included in Alternative 3.**

This action is tentatively scheduled for Final Action at the NPFMC February 2007 meeting in Portland, Oregon.

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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. This proposed action is 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). This 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. This analysis also contains options that eliminate the required use of a second "other device" and the Seabird Avoidance Plan as specified in current regulations. 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 is scheduled to take final action in February of 2007. The objective of this proposed regulatory amendment is to revise the current seabird avoidance requirements to improve their effectiveness at reducing the incidental take of short-tailed albatrosses and other seabird species, while relieving unnecessary regulatory burden and its associated costs.

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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 Gulf of Alaska (GOA and the Pacific halibut fishery in U.S. Convention waters off Alaska.

In June 2006, the North Pacific Fishery Management Council (Council) received a report on recent research on seabird distribution in the inside waters of southeast Alaska and Prince William Sound (PWS). The research, conducted by the Washington Sea Grant (WSG), indicates that pelagic seabirds such as the endangered short-tailed albatross are extremely rare in southeast inside waters and suggests that seabird avoidance gear requirements may be eliminated for fisheries in certain inside waters. The Council also heard a report on additional WSG research indicating that more specific construction and deployment requirements would improve the efficacy of seabird avoidance gear for fisheries in areas where pelagic seabirds are commonly observed. The Council subsequently initiated the present analysis to assess the potential impacts of regulatory changes commensurate with the results of the WSG research.

The proposed changes would eliminate seabird avoidance requirements in designated inside waters of southeast Alaska, Prince William Sound, and State waters of the Cook Inlet and would require certain refinements of seabird avoidance techniques for fisheries in other areas. 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 improve their effectiveness in areas where they are.

The Council plans to conduct an initial review of this proposed action in December 2006 based on analysis of the alternatives analyzed herein. The alternatives are as follows:

Alternative 1: Status quo: no change to existing regulations. Current regulations require the use of seabird avoidance measures according to vessel size and configuration, gear type, and operational area as indicated in 50 CFR 679.24 (including Table 20 to 50 CFR part 679 presented in this document as Table 2-1).

Alternative 2: Revise seabird avoidance measure requirements as follows:

A. Eliminate seabird avoidance gear requirements for all hook-and-line vessels fishing in PWS (NMFS Area 649), state waters of Cook Inlet, and Southeast Alaska (NMFS Area 659). See Figure 1.

B. Require standards of all hook-and-line vessels fishing in the exclusive economic zone (EEZ) as follows:

1. Vessels >26 and ≤55 length overall (LOA) with mast, poles, or rigging and using snap-on hook-and-line gear are required to deploy one streamer line while setting gear. Specifically, the streamer line must be

a minimum of 45 m long and must be maintained with a minimum aerial extent of 20 m.

2. Vessels >26 and ≤55 LOA with mast, poles or rigging and not using snap-on hook-and-line gear are required to deploy one streamer line while setting hook-and-line gear. Specifically, the streamer line must be a minimum of 90 m long and must be maintained with a minimum aerial extent of 40 m.
3. Vessels >26 and ≤55 LOA without mast, 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 as to deter birds from the sinking hookline, without fouling on the gear, as they deploy hook-and-line gear.
4. All vessels using hook-and-line gear in the EEZ are no longer required to use a second seabird avoidance measure (adding weight, deploying a second streamer line or buoy or strategic offal discharge).

Option 1: Eliminate Seabird Avoidance Plan (SAP) requirement.

Option 2: Weather Safety Standard: Use of seabird avoidance devices would be discretionary for vessels 26-55 ft LOA when winds exceed 30 knots.

Option 3: 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 26-32 ft LOA fishing in the EEZ waters of Area 4E are exempt from seabird avoidance regulations.

Alternative 3: Revise seabird avoidance measure requirements as follows:

A. As in Alternative 2, eliminate seabird avoidance gear requirements, except in the following areas of Southeast Alaska, where hook-and-line vessels fishing in these areas would be subject to the same seabird avoidance gear requirements and standards as when fishing in the EEZ (see charts in Figure 2):

1. Area around Chatham Strait defined as ADF&G groundfish statistical areas 345603 and 345534, or:.

   Sub-option: Area around Chatham Strait south of a straight line at 56.17.25 North latitude between Point Harris and Port Armstrong, or other suitable line.

2. Area around Dixon Entrance defined as ADF&G groundfish statistical areas 325431 and 325401.

3. Area around Cross Sound, defined as ADF&G groundfish statistical area 365804, or:.

   Sub-option: Area around Cross Sound from a longitude line west of Inian Islands at 136.21.17 East longitude, or other suitable line.

B. Require standards of all hook-and-line vessels fishing in the EEZ as in Alternative 2.

Option 1: Eliminate Seabird Avoidance Plan (SAP) requirement.

Option 2: Weather Safety Standard: Use of seabird avoidance devices would be discretionary for vessels 26-55 ft LOA when winds exceed 30 knots.

Option 3: 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.

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

Table 1-1. Seabird Avoidance Measures Alternatives for Hook and Line Gear

<table>
<tr><td>Location</td><td colspan="4">Inside Waters[1]</td><td colspan="3">EEZ[2]</td></tr>
<tr><td rowspan="2">Vessel Size & Config</td><td>>26' to ≤ 32'</td><td>>26' to ≤ 55'</td><td>>32' to ≤ 55'</td><td>>55'</td><td>>26' to ≤ 55'</td><td>>26' to ≤ 55'</td><td>>55'</td></tr>
<tr><td>w/ masts, poles, or rigging</td><td>wo/ masts, poles, or rigging</td><td>w/ masts, poles, or rigging</td><td></td><td>wo/ masts, poles, or rigging</td><td>w/ masts, poles, or rigging</td><td></td></tr>
<tr><td>Alt 1 (Status Quo)</td><td>1 buoy bag line</td><td>1 buoy bag line</td><td>1 streamer line</td><td>1 streamer line with standard</td><td>1 buoy bag line plus 1 other device</td><td>1 streamer line plus 1 other device</td><td>1 streamer line with standard plus 1 other device (snap gear)
Paired streamer lines with standard (other than snap-on gear)</td></tr>
<tr><td>Alt 2</td><td colspan="4" rowspan="2">Eliminate current seabird avoidance gear requirements as described in Alternative 1</td><td rowspan="2">N/C</td><td>1 streamer line with standard (snap-on gear)[5]</td><td rowspan="2">N/C</td></tr>
<tr><td>1 streamer line with standard (other than snap-on gear)[6]</td></tr>
<tr><td></td><td colspan="4"></td><td colspan="2">Eliminate "other device" requirement[4]</td></tr>
<tr><td>options</td><td colspan="7">Eliminate Seabird Avoidance Plan Requirement[7]; Weather Safety Standard[8]; 4E small vessel buoy bag only[9]</td></tr>
<tr><td>Alt 3</td><td colspan="4" rowspan="2">Eliminate current seabird avoidance gear requirements as described in Alternative 1 with noted area exceptions[3] and options[10]</td><td rowspan="2">N/C</td><td>1 streamer line with standard (snap-on gear)[5]</td><td rowspan="2">N/C</td></tr>
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</table>

[1] NMFS Area 649, Area 659, & State waters of Cook Inlet. See Figure 1 and note 2 for additional info.

[2] EEZ and 0-3 nm for IFQ Halibut & Sablefish and CDQ Halibut, except vessels <32 in IPHC area 4E shoreward of EEZ

[3] Vessels fishing in ADF&G areas 345603/345534 (Chatham strait), 325431/325401 (Dixon entrance), and 365804 (Cross Sound) would use gear.

[4] Current "other devices" include weights added to groundline, another buoy bag line or streamer line, or strategic offal discharge.

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

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

[7] Seabird avoidance plan would no longer be required, but would remain as a voluntary measure to reduce bycatch.

[8] Use of seabird avoidance devices would be discretionary for vessels 26-55 ft LOA when winds exceed 30 knots.

[9] Require that a buoy bag line be used on vessels 26-32 ft fishing in the EEZ waters of Area 4E.

[10] Delineate transition areas based on groundfish statistical areas or lines based on current seabird observations and oceanographic boundaries.

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.

Recent research by the Washington Sea Grant (WSG) and the Alaska Sea Grant Marine Advisory Program (ASGMAP) has indicated ways of further refining seabird avoidance measures to improve the efficacy of seabird avoidance gear. WSG research has also improved our understanding of the distribution of seabird species in the inside waters of Southeast Alaska, Prince William Sound, and Cook Inlet. In June 2006, the Council heard reports on this research and initiated analysis of alternatives commensurate with the results of these studies.

This document constitutes the environmental assessment (EA) of those alternatives. 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 and Need

The purpose of the proposed action is to revise the seabird avoidance measures based on the best available information regarding seabird occurrence and efficient application of the measures. Seabird avoidance measures reduce the incidental mortality of seabirds in the hook-and-line fisheries off of Alaska. Based on new research results, the seabird requirements 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, first, eliminating seabird avoidance gear requirements in designated 'inside' waters where pelagic seabirds (particularly the endangered short-tailed albatross and other species of concern) are rarely observed; and, second, increasing the effectiveness of existing requirements for hook-and-line vessels fishing in the EEZ where seabirds are more commonly observed and therefore more likely to interact with fishing gear.

Relieving seabird avoidance gear requirements in 'inside' waters is intended to remove unnecessary restrictions and the associated economic burden to vessels. Standards for small vessels in the EEZ would provide specific deployment requirements with the intent of improving avoidance device effectiveness, reducing seabird bycatch. Taken together these revisions provide an example of adaptive management using the best available information to focus regulatory requirements where they are needed and to ensure requirements are effective and efficient.

This action is needed to reduce seabird mortality incidental to fishing operations and to remove unnecessary burdens on the fishing industry. 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 regulatory relief to groundfish fisheries in Alaska.

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). Based largely on WSG research on seabird avoidance on larger vessels, these initial measures required streamer lines on hook-and-line vessels longer than 55 ft in length overall (LOA) and were believed at the time to be necessary to mitigate potential adverse effects of hook-and-line fisheries on ESA-listed and other seabird species. The Council's Scientific and Statistical Committee (SSC), however, identified the need for additional study of methods for reducing incidental take of seabirds on smaller vessels (>26-55 ft LOA), especially those fishing the inside waters of Alaska.

The Washington and Alaska Sea Grant Programs have now completed several research projects on the performance of seabird avoidance gear on >26–55 ft LOA hook-and-line vessels, on the frequency of observations of seabirds in inside waters, and on the efficacy of various types of seabird avoidance gear on small vessels. These research projects indicate that vessels using hook-and-line gear in Prince William Sound (NMFS Area 649), state waters of Cook Inlet, and Eastern Gulf of Alaska (GOA) Regulatory Area Southeast Inside District (NMFS Area 659) may not need to use seabird avoidance measures because of the scarcity of seabirds in these areas, particularly albatross and other Procellariiform seabirds. These studies further indicate that smaller vessels fishing in the EEZ should use seabird avoidance measures that meet specified standards, given both the improved efficacy of measures employing certain standards and the potential overlap with seabirds.

June 2006 Council Meeting: After hearing reports on this research at its June 2006 meeting, the Council made the following recommendations:

Seabird Avoidance Requirements in Inside Waters

- Based on data showing that sensitive seabirds are rare to absent in inside waters, the Council recommends that seabird avoidance requirements be eliminated for hook-and-line vessels fishing in the inside waters of Prince William Sound (NMFS Area 649), Southeast Alaska (NMFS Area 659), and state waters of Cook Inlet. Current regulations require vessels >26-32 ft and >32-55 ft (without masts, poles, or rigging) to tow one buoy bag line, and vessels >32-55 ft (with masts, poles, or rigging) and > 55 ft to tow a single streamer line while setting hook-and-line gear in inside waters. This action affects 42% of the Alaska hook-and-line fleet, which lands 10% of the Alaska hook-and-line catch. Of this affected segment of the fleet, 85% are small vessels (< 55 ft LOA) and over half fish with snap-on gear.

- The Council recommends, for the purpose of seabird avoidance regulations only, that ADFG statistical areas 345603 and 345534 in Chatham Strait, and 325431 and 325401 in Dixon Entrance be reclassified as "outside waters" where seabird avoidance regulations would continue to be required. This recommendation addresses the finding that black-footed albatrosses, northern fulmars, and shearwaters sometimes occur in southern Chatham Strait and Dixon Entrance of the Southeast Alaska region suggesting increased risk to seabirds from hook-and-line fishing in these small areas.

- Based on seabird distribution data from hook-and-line surveys and other sources, the Council notes that effective seabird avoidance requirements are essential in *all* outside waters.

Seabird Avoidance Measures for Small Vessels (>26 to 55 feet LOA) fishing in outside waters

- Based on the most recent research, the Council recommends the following revisions to seabird avoidance requirements for small hook-and-line vessels fishing in outside waters (as amended above):

- All vessels > 26 LOA with mast, poles or rigging and using snap-on gear are required to deploy one streamer line while setting hook-and-line gear. Specifically, the streamer line must be a minimum of 45 m long and must be maintained with a minimum aerial extent of 20 m. This recommendation extends the current streamer line requirement for snap-on gear vessels over 55 ft LOA with infrastructure to all snap-on gear vessels >26 ft LOA with mast, poles or rigging.

- Vessels with mast, poles or rigging and using hook-and-line gear are required to deploy one streamer line while setting gear. Specifically, the streamer line must be a minimum of 90 m long and must be maintained with a minimum aerial extent of 40 m. Current requirements for vessels >26–55 ft LOA setting hook-and-line gear and with mast, poles, or rigging do not include a performance standard for streamer lines.

- Vessels without mast, poles or rigging, and not capable of adding poles or davits to accommodate a streamer line, must tow a buoy in such a way as to deter birds from the sinking hookline as they deploy hook-and-line gear.

- The Council recommends that the requirement for small vessels fishing outside waters to use a second seabird avoidance measure (adding weight, deploying a second streamer line or buoy or strategic offal discharge) be eliminated. The uncertainty that led to this requirement is addressed by the specific requirements for streamer line gear standards recommended here. In addition, this change addresses the fact that this requirement is difficult to enforce.

- Recognizing that the newly developed light streamer lines currently available to the Alaska hook-and-line fleet at no cost through US Fish and Wildlife Service (USFWS) facilitate compliance with these revised seabird avoidance requirements for small hook-and-line vessels, the Council strongly recommends that these lighter streamer lines continue to be made available to Alaska hook-and-line vessels at no cost.

Institutionalize Seabird Surveys

- Seabird sighting data collected in the course of fish stock assessment surveys have proven extremely valuable with regard to ecosystem-based fisheries management. The Council strongly supports efforts to institutionalize the collection, management and analysis of these seabird observation data from fish stock assessment surveys by NMFS and IPHC, and strongly supports making these data available through the North Pacific Pelagic Seabird Database.

- The Council strongly encourages efforts to expand this seabird survey protocol to all Alaska surveys to broaden the temporal and spatial scope of this data set for application to other

fisheries. Incorporating this protocol into North Pacific Groundfish Observer Program data collection should also be explored to expand temporal and spatial coverage.

December 2006 Council Meeting: After reports from its Advisory Panel (AP) and Science and Statistical Committee (SSC), the Council unanimously approved a motion to release the EA/RIR/IRFA document for public review with the following modifications:

1. Add an option to alternatives 2 and 3 to establish a weather safety standard for small vessels (26-55 feet) of 30 knots, such that in winds exceeding 30 knots, the use of seabird avoidance devices is discretionary.
2. Add an option to alternatives 2 and 3 that all vessels 26-32 feet are only required to use a buoy bag in Area 4E.
   Sub-option: All vessels 26-32 feet are exempt from seabird avoidance regulations in Area 4E.
   NOTE: Without this modification, alternatives 2 and 3 would require vessels 26-32 feet with masts, poles, or rigging to use a streamer line with a standard.
3. Alternative 3, Part B is modified as follows:
   Eliminate seabird avoidance gear requirements in inside waters as in alternative 2, except in the following areas:
   Chatham Strait – Require the use of seabird avoidance gear in Chatham Strait as described by:
   a. ADF&G groundfish statistical areas 345603 and 345534; OR
   b. Inside waters south of a latitude line from the northern-most 'species of conservation concern' observation, or other suitable line
      (this includes all of 345534 and part of 345603)
4. Incorporate SSC comments to the extent possible.

Per its report, the SSC recommended releasing the draft analysis for public review pending additional consideration of the following issues:

1) There should be a brief discussion of other stressors on these seabirds such as risk of oil spills and entanglement in gillnets. *This information is now contained in the cumulative effects section (5.0) and in Table 5-1.*

2) There should be a brief mention of the possibility that deployment of streamers might increase loss of gear and subsequent entanglement of marine mammals. *This information is now contained in the cumulative effects section (5.0).*

3) On pages 30 and 45, the habitats used by eiders needs to be clarified. The Steller's eider most likely uses habitats in winter different from those used by spectacled eider. Neither species is likely to be encountered by the hook and line fishery. *This text was edited in section 3.1.1*

4) On p. 15 in Melvin et al., 2006, there is mention of an unconfirmed sighting of a short-tailed albatross in the mouth of Chatham Strait. This observation, in addition to those of black-footed albatrosses in the mouth of Chatham Strait and in Dixon Entrance, despite only modest survey effort in these areas, suggests that Alternative 3 would be considerably more precautionary than Alternatives 1 or 2. *Alternative 3 is considered the most precautionary alternative in the analysis..*

5) It would be helpful to the reader to provide the number of observations in each of the statistical areas in

Dixon Entrance and the mouth of Chatham Strait. *These data are presented in Table 4-6.*

6) In Figure 5, include 2005 data, if available, and include the number of hooks set each year so that one can see the increasing effort. *Total number of hooks are now presented in Figure 5B.*

7) In Table 4.2, it would be useful to insert the Alaska populations of each seabird species listed to back up the claim that the numbers taken are trivial on a population level. *Table 4-2 now includes this.*

8) Throughout the document- It would be most helpful to ensure that all figures and tables are fully labeled and presented in the order that they are cited in the text. Table 2.1 had problems in the printing process. *All figures are now included in Appendix 2 in the order they are referenced in the document. All tables are contained within the document.*

9) Kittiwakes are gulls and not Procellariformes. *Correction noted.*

10) Please check pages 39, 47, 50 and 52 for stray question marks and editorial comments that were not edited from the review copy distributed to the SSC. *Corrections noted.*

11) The new information that streamer lines will no longer be available free of cost from the Fish and Wildlife Service needs to be addressed. *This is discussed in section 4.4.*

The SSC commended the authors and Ed Melvin for conducting the research and helping to redraft regulations such that increased protection of seabirds has been accomplished while at the same time relieving the regulatory burden on a significant proportion of the fishery.

Post-Council Meeting New Information: In late-December 2006, new information became available from USFWS and researchers at Oregon State University regarding the occurrences of the endangered short-tailed albatross in areas overlapping with the proposed action area. Since 2002, the movements of 21 short-tailed albatrosses have been monitored for short periods of time by satellite transmitters affixed to the bodies of the birds. The satellite tag locations are represented in Figure 16 and location points are most common in the waters of the Aleutian Islands and the Bering Sea continental shelf area. However, some location points from a couple of birds tagged in 2006 were in IPHC Area 4E, waters of Southeast Alaska (NMFS Area 659), specifically Cross Sound, and in Canadian waters of Dixon Entrance. This new information is described in more detail in section 3.1.1 and 3.5.5 and is considered in the analysis of alternatives. As a result of this new information, an additional area of consideration was included in Alternative 3.

1.3 Goals and Objectives of this Action

The goal of this proposed regulatory amendment is to reduce the incidental take of the short-tailed albatross and other seabird species. This potentially could benefit the endangered short-tailed albatross population, populations of other seabird species, and also reduce the risk of potential serious economic impacts to the Alaska hook-and-line fisheries if the incidental take statement from the section 7 ESA consultation was exceeded and fishery closures are required. (USFWS 2003b).

This environmental assessment addresses the Council's motion from the June 2006 Kodiak meeting. The proposed action is intended to improve the seabird avoidance measures requirements for the BSAI and

GOA 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 'inside' waters where seabird interactions are less common. Alternatives in this action include eliminating the "other device" requirement and the Seabird Avoidance Plan to make the regulations more efficient and enforceable. The proposed addition of standards for seabird avoidance requirements for small vessels fishing in the EEZ is intended also to offset the effects of the elimination of the "other device" requirement.

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 IFQ and CDQ halibut fishery occurs 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).

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). The subject waters are divided into two management areas; the BSAI area and the GOA. The BSAI groundfish fisheries effectively cover all the Bering Sea under U.S. jurisdiction, extending

southward to include the waters south of the Aleutian Islands west of 170° W. longitude to the border of the U.S. EEZ. The GOA FMP applies to the U.S. EEZ of the North Pacific Ocean, exclusive of the Bering Sea, between the eastern Aleutian Islands at 170° W. longitude and Dixon Entrance at 132°40' W. longitude. These regions encompass those areas directly affected by fishing, and those that are likely affected indirectly by the removal of fish at nearby sites. The area affected by the fisheries necessarily includes adjacent State of Alaska and international waters. These seabird avoidance measures affect groundfish fishing with hook-and-line gear throughout the BSAI and GOA management areas.

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 Fishery Conservation and Management Act (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 Individual Fishing Quota (IFQ) Program under authority of the Northern Pacific Halibut Act of 1982 (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 Endangered Species Act (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. 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 reasonable and prudent measure 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 Assessment). 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 Socialists 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 frequency 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 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 Endangered Species Act, 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 Summary

In this chapter we have established the purpose and need for this federal action. In light of newly available scientific information on seabird distribution and on efficient application of seabird avoidance techniques, the Council proposes to revise seabird avoidance measures in the hook-and-line groundfish and Pacific halibut fisheries off Alaska. 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 EA/RIR/IRFA considers the following alternatives.

2.1 Alternative 1: Status quo: no change to existing regulations.

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; buoy bag lines; weighted groundlines; and diversionary discharges of offal.

For example, a vessel which has a mast, poles, or rigging and is between 32 and 55 ft LOA and fishes the inside waters must use a minimum of a single streamer line. A vessel of the same length fishing the same waters but which does not have a mast, poles, or rigging is required to use a minimum of one buoy bag line.

Table 2-1 lists the seabird avoidance gear requirements by vessel size, configuration, and area fished.

Table 2-1. Seabird Avoidance Gear Requirements for Vessels, based on Area, Gear, and Vessel Type. (See § 679.24(e) for complete seabird avoidance program requirements; see 679.24(e)(1) for applicable fisheries) This is Table 20 to Part 679.

If you operate a vessel deploying hook-and-line gear, including snap gear, in inside waters ["NMFS Reporting Area 649 (Prince William Sound), 659 (Eastern GOA Regulatory Area, Southeast Inside District) or in state waters of Cook Inlet"], and your vessel is...	**Then you must use this seabird avoidance gear in conjunction with requirements at § 679.24(e)...**
>26 ft to 32 ft LOA	minimum of one buoy bag line
>32 ft to 55 ft LOA and does not have masts, poles, or rigging	minimum of one buoy bag line
>32 ft to 55 ft LOA and has masts, poles, or rigging	minimum of a single streamer line
>55 ft LOA	minimum of a single streamer line of a standard specified at § 679.24(e)(5)(ii)
If you operate a vessel deploying hook-and-line gear, other than snap gear, in the EEZ, not including any inside waters listed above, and your vessel is...	**Then you must use this seabird avoidance gear in conjunction with requirements at § 679.24(e)...**
>26 ft to 55 ft LOA and does not have masts, poles, or rigging	minimum of one buoy bag line and one other device[1]
>26 ft to 55 ft LOA and has masts, poles, or rigging	minimum of a single streamer line and one other device[1]
>55 ft LOA	minimum of paired streamer lines of a standard specified at § 679.24(e)(5)(iii)

If you operate a vessel deploying hook-and-line gear, in the EEZ, not including any inside waters listed above, and it is snap gear, and your vessel is...	**Then you must use this seabird avoidance gear in conjunction with requirements at § 679.24(e)...**
>26 ft to 55 ft LOA and does not have masts, poles, or rigging	minimum of one buoy bag line and one other device[1]
>26 ft to 55 ft LOA and has masts, poles, or rigging	minimum of a single streamer line and one other device[1]
>55 ft LOA	minimum of a single streamer line of a standard specified at § 679.24(e)(5)(iv) and one other device[1]
If you operate a vessel deploying hook-and-line gear other than snap gear, in state waters of IPHC Area 4E, and your vessel is...	**Then you must use this seabird avoidance gear in conjunction with requirements at § 679.24(e)...**
>32 ft to 55 ft LOA and does not have masts, poles, or rigging	minimum of one buoy bag line and one other device[1]
>32 ft to 55 ft LOA and has masts, poles, or rigging	minimum of a single streamer line and one other device[1]
>55 ft LOA	minimum of paired streamer lines of a standard specified at § 679.24(e)(5)(iii)
If you operate a vessel deploying hook-and-line gear, in state waters of IPHC Area 4E, and it is snap gear, and your vessel is...	**Then you must use this seabird avoidance gear in conjunction with requirements at § 679.24(e)...**
>32 ft to 55 ft LOA and does not have masts, poles, or rigging	minimum of one buoy bag line and one other device[1]
>32 ft to 55 ft LOA and has masts, poles, or rigging	minimum of a single streamer line and one other device[1]
>55 ft LOA	minimum of a single streamer line of a standard specified at § 679.24(e)(5)(iv) and one other device[1]

[1]other device = weights added to groundline, another buoy bag line or single streamer line, or strategic offal discharge [see § 679.24(e)(6) for more details]

Construction Standards

The following construction standards for specified vessels are part of the final rule published on January 13, 2004 (69 FR 1930) and § 679.24(e).

Buoy Bag Line Standard (applicable only for vessels less than 55 ft LOA):

i. In winds exceeding 45 knots (storm or Beaufort 9 conditions), the deployment of a buoy bag line is discretionary.

Single Streamer Standard (applicable for vessels greater than 55 ft LOA):

i. A single streamer line must be deployed in such a way that streamers are in the air for a minimum of 131.2 ft (40 m) aft of the stern and within 6.6 ft (2 m) horizontally of the point where the main groundline enters the water.

ii. Exception: In winds exceeding 45 knots (storm or Beaufort 9 conditions), the deployment of a single streamer line is discretionary. (Note: this weather safety factor also applies to 26-55 ft vessels that are required to use a single streamer line).

iii. Materials Standard (applicable for vessels greater than 55 ft LOA) : The minimum streamer line specifications are as follows: *Length*: 300 feet (91.4 m)

Spacing of streamers: Every 16.4 ft (5 m) until performance standard is achieved.

Streamer material: Brightly colored, UV-protected plastic tubing or 3/8 inch polyester line or material of an equivalent density. An individual streamer must hang from the mainline to 9.8 in (0.25 m) of the water in the absence of wind.

Paired Streamer Standard (applicable for vessels greater than 55 ft LOA):

i. Deploy a minimum of two streamer lines while setting hook-and-line gear. If both streamer lines cannot be deployed prior to the first hook being set, at least one streamer line must be deployed before the first hook is set and both streamers must be fully deployed within 90 seconds.

ii. Exceptions: In conditions of wind speeds exceeding 30 knots (near gale or Beaufort 7 conditions), it is acceptable to fly a single streamer from the windward side of the vessel. In winds exceeding 45 knots (storm or Beaufort 9 conditions), the deployment of streamer lines is discretionary.

iii. Paired streamer lines must be deployed in such a way that streamers are in the air for a minimum of 131.2 ft (40 m) aft of the stern for vessels under 100 ft (30.5 m) and 196.9 ft (60 m) aft of the stern for vessels 100 ft (30.5 m) or over.

a. For vessels deploying gear from the stern, the paired streamer lines must be deployed from the stern, one on each side of the main groundline.

b. For vessels deploying gear from the side, the paired streamer lines must be deployed from the stern, one over the main groundline and the other on either side of the main groundline.

iv. Materials Standard: The minimum streamer line specifications are as follows: *Length*: 300 feet (91.4 m)

Spacing of streamers: Every 16.4 ft (5 m) until performance standard is achieved.

Streamer material: Brightly colored, UV-protected plastic tubing or 3/8 inch polyester line or material of an equivalent density. An individual streamer must hang from the mainline to 9.8 in (0.25 m) of the water in the absence of wind.

Snap Gear Streamer Standard (applicable for vessels greater than 55 ft LOA):

i. A single streamer line [147.6 ft (45 m) length] deployed in such a way that streamers are in the air for 65.6 ft (20 m) aft of the stern and within 6.6 ft (2 m) horizontally of the point where the main groundline enters the water.

ii. Exception: In winds exceeding 45 knots (storm or Beaufort 9 conditions), the deployment of a single streamer line is discretionary. (Note: this weather safety factor also applies to 26-55 ft vessels that are required to use a single streamer line).

General Standard: Requirements for all operators of applicable vessels using hook-and-line gear. Seabird avoidance devices as described above must:

i. Be onboard the vessel.
ii. Be made available for inspection upon request by an authorized officer (USCG, NMFS Enforcement Officer or other designated official)
iii. Meet certain specified standards.
iv. Be used while hook-and-line gear is being deployed.

Seabird Avoidance Plan: Currently, each vessel using hook-and-line gear must have onboard a Seabird Avoidance Plan (SAP). The SAP must be:

i. Written and onboard the vessel.
ii. Contain the following information:
   A. Vessel Name.
   B. Master's Name.
   C. Type of bird avoidance measures utilized.
   D. Positions and responsibilities of crew for deploying, adjusting, and monitoring performance of deployed gear.
   E. Instructions/Diagrams outlining the sequence of actions required to deploy and retrieve the gear to meet specified gear standards.
   F. Procedures for strategic discharge of offal, if any.
   G. Must be prepared and signed by vessel Master. Master's signature shall indicate all crewmembers have read the plan and are familiar with it.
iii. Copy of plan will be given to NMFS observer upon observer's embarkation. A pre-departure meeting is strongly encouraged to discuss the seabird avoidance plan and other observer issues.
iv. Made available for inspection upon request by an authorized officer (USCG boarding officer, NMFS Enforcement Officer or other designated official).

Regulatory Exception for Specified Vessels in IPHC Area 4E: Operators of vessels 32 ft LOA or less using hook-and-line gear in IPHC Area 4E in waters shoreward of the EEZ (i.e. 0 to 3 nm) are exempt from seabird avoidance regulations.

2.2 Alternative 2: Revise existing regulations as follows:

- Eliminate seabird avoidance gear requirements for all hook-and-line vessels fishing in PWS (NMFS Area 649), state waters of Cook Inlet, and Southeast Alaska (NMFS Area 659). These waters are sometimes referred to as 'inside waters'. (Figure 1).

- Require standards of all hook-and-line vessels fishing in the EEZ as follows:
    A. Vessels >26 and ≤55 LOA with mast, poles or rigging and using snap-on hook-and-line gear are required to deploy one streamer line while setting gear. Specifically, the streamer line must be a minimum of 45 m long and must be maintained with a minimum aerial extent of 20 m.
    B. Vessels >26 and ≤55 LOA with mast, poles or rigging and not using snap-on hook-and-line gear are required to deploy one streamer line while setting hook-and-line gear. Specifically, the streamer line must be a minimum of 90 m long and must be maintained with a minimum aerial extent of 40 m.
    C. Vessels >26 and ≤55 LOA without mast, 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 as to deter birds from the sinking hookline, without fouling on the gear, as they deploy hook-and-line gear
    D. All vessels using hook-and-line gear in the EEZ are no longer required to use a second seabird avoidance measure (adding weight, deploying a second streamer line or buoy or strategic offal discharge).

- Option 1: Eliminate Seabird Avoidance Plan (SAP) requirement.

The first option under Alternative 2 is the elimination of the Seabird Avoidance Plan requirement. NMFS recommended eliminating the Seabird Avoidance Plan requirement in a letter to NPFMC dated May 25, 2006, based on recommendations from the NOAA Office of Law Enforcement and the Protected Resources Division (pers. comm. Jeff Passer).

- Option 2: Weather Safety Standard.

The second option under Alternative 2 is adding a weather safety standard to the seabird avoidance regulations. In December 2006, the Council requested analysis of an option that would make the use of seabird avoidance gear discretionary for vessels 26-55 ft LOA when winds exceed 30 knots. During times of such inclement weather, the small crews of these vessels may need to be fully engaged in boat operations for safety.

- Option 3.: Require that a buoy bag line be used on vessels 26-32 ft fishing in the EEZ waters of Area 4E.

The Council also requested this option that would provide that a buoy bag be the only seabird avoidance device required of vessels 26-32 ft LOA fishing in the EEZ waters of Area 4E. Under Alternatives 2 and 3, these smaller vessels would be required to use a streamer line with specified standards when fishing the EEZ waters of 4E. By current regulation, vessels less than 32 ft LOA are exempt from seabird avoidance requirements when fishing with hook-and-line gear shoreward of the EEZ (0 to 3 nm).

A sub-option to Option 3 is that vessels 26 to 32 ft LOA would be exempt from seabird

avoidance requirements when fishing with hook-and-line gear in the EEZ of IPHC Area 4E.

2.3 Alternative 3

Revise existing regulations as in Alternative 2, except continue to require that seabird avoidance measures be employed by vessels fishing with hook-and-line gear in the following areas (Figure 2):

1. Area around Chatham Strait defined as ADF&G groundfish statistical areas 345603 and 345534, or:.
   Sub-option: Area around Chatham Strait south of a straight line at 56.17.25 North latitude between Point Harris and Port Armstrong, or other suitable line.
2. Area around Dixon Entrance defined as ADF&G groundfish statistical areas 325431 and 325401.
3. Area around Cross Sound, defined as ADF&G groundfish statistical area 365804, or:.
   Sub-option: Area around Cross Sound from a longitude line west of Inian Islands at 136.21.17 East longitude, or other suitable line.

Vessels fishing with hook-and-line gear in these designated areas would be required to use the same seabird avoidance measures as those required in the EEZ.

2.4 Other Alternatives Considered but not carried forward

Potential Alternative: *Vessels should use a gear setting speed that maximizes sink rate in order to shorten the 2m seabird access window.*

Melvin and Wainstein (2006) report that slower vessel setting speeds can significantly reduce the likelihood of seabird mortality. At slower setting speeds, the gear sinks more quickly, and these actions shorten the 2m access window in which seabirds interact with the gear. Please refer to section 3.2 for more information on gear performance and description of seabird interactions. Although vessel setting speed was reported as an important factor in determining the likelihood of seabird interactions, this performance measure was not considered a viable alternative because of the difficulty of enforcing a maximum speed, and the possibility of gear entanglement at slower speeds. Conversations with enforcement personnel confirmed this difficulty, and this alternative was not carried forward in the analysis (pers. comm. Jeff Passer).

3.0 AFFECTED ENVIRONMENT

The marine environment of the BSAI and GOA is made up of physical, biological and human components that may be affected by the groundfish fisheries and the halibut fishery off Alaska. The physical components include geological, oceanographic and climatic conditions. None of the alternatives has the potential to affect the physical component of the marine environment since they are limited to management measures in the hook-and-line fisheries. The most complete, detailed descriptions of the physical and marine habitat of the BSAI and GOA are in the PSEIS (NMFS 2004a). The effects of fishing on the marine habitat and EFH are analyzed in section 4.9.6 of the PSEIS?. The proposed alternatives 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 manage 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. The effect on a part of the environment could be either direct or indirect and beneficial or adverse. All of the alternatives could have a direct effect on seabird species and on the socioeconomic components of the environment.

As stated in Section 1.6, this EA/RIR/IRFA incorporates information presented in the PSEIS (NMFS 2004a). To reduce the length of descriptive information about the affected environment, readers are referred to the PSEIS 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

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 draft EIS (NMFS 2006b), 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).

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 • Black-footed • Short-tailed • Laysan	Gulls • Glaucous-winged • Glaucous • Herring • Mew • Bonaparte's • Sabine	Murres • Common • Thick-billed
Northern fulmar	Jaegers • Long-tailed • Parasitic • Pomarine	Guillemots • Black • Pigeon
Shearwaters • Short-tailed • Sooty	Eiders • Common • King • Spectacled • Steller's	Murrelets • Marbled • Kittlitz's • Ancient
Storm petrels • Leach's • Fork-tailed	Kittiwakes • Black-legged • Red-legged	Auklets • Cassin's • Parakeet • Least • Whiskered • Crested
Cormorants • Pelagic • Red-faced • Double-crested	Terns • Arctic • Aleutian	Puffins • 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 .

3.1.1 ESA Listed Seabirds

Three species of seabirds that range into the BSAI and/or GOA are listed under the Endangered Species Act (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.

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 and highlighted 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.

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. In September 2004, the USFWS received a petition to list the black-footed albatross as threatened or endangered under the ESA. The petition is currently under review (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. USFWS anticipates completing a population status assessment in 2007.

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. 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 species 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 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), and 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 (pers com. K. Rivera).

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, murres, 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 (pers com. K. Rivera).

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 seabirds 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 section 6.6 of this document. 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 both the BSAI and GOA fisheries 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 th 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

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 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 edier 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.

New information from short-tailed albatross tagging studies indicates that in August-September 2006, satellite-tagged short-tailed albatrosses were widely distributed throughout the Aleutian Island chain, in the Bering Sea along the shelf break including IPHC Area 4E, and scattered throughout the Gulf of

Alaska. Tag locations were also present in Cross Sound, an area transitioning from the inside waters of NMFS Area 659 to the waters of the Gulf of Alaska (Figure 16, see sections 3.1.1 and 3.5.5). Alternative 2 would eliminate seabird avoidance requirements in Southeast Alaska (NMFS Area 659). Alternatives 2 and 3 both contain a sub-option that would provide for the exemption from all seabird avoidance requirements for vessels 26-32 ft LOA fishing with hook-and-line gear in the EEZ waters of IPHC Area 4E. Given the documented occurrence of a short-tailed albatross in Cross Sound (within NMFS Area 659) and 2 individuals in some sections 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. If Alternative 2 or the buoy bag line option of Alternatives 2 and 3 or the sub-option of Alternatives 2 and 3 exempting 26-32 ft LOA vessels in the EEZ of IPHC Area 4E from using seabird avoidance measures is chosen, then NMFS would reinitiate a formal section 7 consultation with USFWS to consider the effects of this action on the short-tailed albatross.

Alternative 3 maintains seabird avoidance requirements in the EEZ of IPHC Area 4E and the Cross Sound transition area where short-tailed albatross occurrences have been documented. An option of Alternative 3 calls for 26-32 ft LOA vessels using hook-and-line gear in the EEZ of IPHC Area 4E to use buoy bag lines to deter seabirds. Without the option, these vessels would be required to use a streamer line of a specified standard. If Alternative 3 is chosen, then NMFS could likely determine that the action would not adversely affect listed species and seek concurrence of this determination by the USFWS through an informal section 7 consultation.

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.

3.5 Recent Seabird Research Studies

We summarize WSG research from two recent studies below. Melvin et al (2006) discusses three years of seabird distribution data collected on hook-and-line stock assessment surveys. Melvin and Wainstein (2006) report on the use of seabird avoidance measures for hook-and-line vessels less than 55 feet LOA. Additionally, we summarize two Alaska Seagrant Marine Advisory Program projects for research and development of light-weight streamerlines for use on small vessels. The term longline in these research projects is synonymous with the term hook-and-line in § 679.2.

3.5.1 The Distribution of Seabirds on the Alaskan Hook-and-line Fishing Grounds: Implications for Seabird Avoidance Regulations (Melvin et al 2006)

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.

3.5.2 Seabird Avoidance Measures for Small Alaskan Longline Vessels (Melvin and Wainstein 2006)

WSG research in 1999 and 2000 that led to current seabird avoidance measures focused exclusively on vessels over 55 ft LOA fishing with hook-and-line "fixed gear" (sometimes called "stuck" gear) where individual gangions are permanently attached to the groundline (NMFS 2002, Melvin 2001). As described in section 1.2, the Council strongly encouraged the advancement of a cooperative research program to develop seabird bycatch mitigation measures for small vessels and all vessels using snap-on gear.

This study was conducted from May to June 2002 on eight vessels ranging from >26 to 55 ft in length. Two vessels were salmon trollers with infrastructure (mast, poles, and rigging) deploying snap-on gear, three vessels were combination vessels with infrastructure deploying hook-and-line fixed gear, and three vessels were bowpickers with no infrastructure deploying snap-on gear. Please refer to Melvin and Wainstein (2006) for experimental design. Addressing the effectiveness of seabird avoidance measures required characterizing two variables: (1) the "2-m access window," or the distance astern that hooks were accessible to surface foraging Alaska seabirds, which generally dive no deeper than 2 m; and (2) the distance astern that streamer lines were maintained aloft, because it is this aerial extent that deters birds from the sinking hooks.

Melvin and Wainstein (2006) determined that the current single streamer line requirement for snap-on gear vessels over 55 ft (a 45-m streamer line with a minimum aerial distance of 20 m) was achievable and practical, especially with a lighter streamer line design, and highly likely to be an effective seabird deterrent for vessels under 55 ft as well. For bowpickers, current seabird deterrent recommendations include deploying buoys beyond the entry point of the groundline. This research demonstrated that the suggested gear standards could not be met without significant risk of fouling gear.

For small vessels setting hook-and-line fixed gear, the mean 2-m access window was 90 m, a distance over twice that of trollers and bowpickers setting snap-on gear. This 90-m access window exceeded the mean for fixed gear set by large vessels (68 m) and was more in the range of that measured for large auto-bait freezer/longline vessels fishing cod in the Bering Sea (66–107 m). Large vessels (>55 ft) fishing

groundfish are currently required to deploy streamer lines in pairs and to meet gear standards based on vessel length (40 m if vessel length is 55–100 ft, 60 m if vessel length is ≥100 ft). These results suggest that gear type and vessel setting speed are more important than vessel length in determining risk to seabirds. Melvin and Wainsten (2006) concluded that the current requirement of a single streamer line with no mandatory material or gear standards for this vessel category (≥26–55 ft setting fixed gear and with mast, boom, and rigging) was unlikely to provide sufficient protection to seabirds, should hook-and-line fishing overlap with seabirds.

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)

3.5.3 Field Evaluation of Seabird Deterrent Gear and Alternatives for Alaska Small Longline Vessels (Rice et al 2006)

In 2003 and 2004, the Alaska Sea Grant Marine Advisory Program (ASGMAP) undertook a collaborative demonstration project, with funds provided by the USFWS, to develop practical ways of reducing bird interactions with hook-and-line gear deployed by small vessels. Six projects were undertaken with halibut hook-and-line vessels from ports ranging from Southeast Alaska to Kodiak. The purpose was to test only for logistical and economic practicality, not for the effectiveness of deterring seabirds. Please refer to Rice et al (2006) for a complete description of all 6 projects. Note that researchers saw no seabirds actively pursuing baited hooks during any of the 6 studies.

Streamer lines distributed by the Pacific States Marine Fisheries Commission for USFWS are too heavy to be used effectively on many small hook-and-line vessels, but lighter-weight streamer lines that are easier to deploy with smaller crews can still achieve the required gear standards. Researchers recommended testing the effectiveness of seabird deterrence with lighter-weight streamer lines, and if found effective, lighter-weight streamer lines be constructed and distributed for free to small boat

operators.

3.5.4 Design and Distribution of Free Lightweight Streamer Lines for Longline Vessels in Alaska (Rice and Cullenberg 2006)

The Alaska Sea Grant Advisory Program (ASGAP) has been working with industry to design light-weight streamer lines that work effectively on small vessels. The USFWS and Pacific States Marine Fisheries Commission (PSMFC) in conjunction with the Seattle-based large boat hook-and-line fleet, designed and distributed free streamer lines for voluntary use on this fleet prior to the seabird avoidance regulations. These lines were very effective in deterring seabird attacks on bait on the large hook-and-line vessels. When the regulations were implemented in 2003, smaller vessels obtained these free lines and used them on their vessels, as well.

The main line of these streamers was 300 ft long and constructed of 3/8-in blue steel poly, a sturdy material chosen for its durability. When used on smaller vessels with lower or no masts, the relatively heavy main line would sag to the water, increasing the likelihood of it becoming entangled with the hook-and-line gear as it was being set. Two vessels in the research project described above (Rice et al 2006) experimented with creating streamer lines of lighter-weight material and found that doing so allowed the streamer to remain airborne farther behind the vessel and minimized the chances of entanglement in the fishing gear. In response, USFWS committed to fund the design, testing, production and free distribution of lightweight streamer lines for small hook-and-line vessels. Under the advice of Ed Melvin with Washington Sea Grant and the USFWS, Mark Lundsten was contracted to design the lightweight streamer lines that would be produced and distributed at no cost to the hook-and-line fleet.

Lundsten's streamer design and report are Appendix B of Rice and Cullenberg (2006).
Field tests concluded that the performance standard for snap gear is easily met with this lighter-weight line, in all wind directions tested.

Streamerline distribution described in Rice and Cullenberg (2006)

Lines can be requested online at the PSMFC websites, through a mail-in form, via email, or at the following distribution points: Dutch Harbor, Kodiak, Homer, Seward, Cordova, Yakutat, Juneau, Sitka, Petersburg, Ketchikan, Craig, and Seattle. Flyers were mailed directly to all Federal Fisheries Permit holders with vessels under 55' LOA detailing the availability of the lines.

Basic instructions for use of the lines, as well as advice from fishermen on tips for using the lines are included in every bucket. These are included as Appendix C in Rice and Cullenberg (2006).
As of March 2006, 592 pairs of free streamer lines had been distributed by PSMFC to the Alaskan hook-and-line fleet. Of those, 230 were the original heavier lines, 60 were 150-ft lightweight lines with snap-on streamers, 140 were 150-ft lightweight lines with attached streamers, and 162 were 300-ft lightweight lines.

3.5.5 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 birds (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.

3.5.6 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: 1988-2004 records from seabird observers on the USFWS's research vessel M/V Tiglax; incidental sightings by biologists, fishermen, seamen, fisheries observers and birdwatchers provided to the USFWS; IPHC; the Alaska Natural Heritage Program; historical sightings documented in published literature; and 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 albatross 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, they may have been reasonably common nearshore (thus the term "coastal" albatross) but only where upwelling "hotspots" occurred in proximity to 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 compiled would have revealed that pattern.

3.6 The Human Environment

3.6.1 Description of the Fisheries

Please refer to Section 6.6 of this document for a thorough description of the hook-and-line fisheries off Alaska targeting sablefish, Pacific cod, rockfish, Pacific halibut, and other flatfish.

3.6.2 Economic Aspects of the Fisheries

The analyses presented in Chapter 6 of this document provide qualitative estimates of the benefits and

costs of the measures under consideration by the Council. The analysis has identified several impact categories for which the alternatives are not likely to create effects. These include commercial fisheries use value, non commercial (e.g. subsistence) use value, fishing vessel revenue, related fisheries, communities, equipment costs, consumers, USGC enforcement, and fisheries management. Thus, any effects that may result from the proposed alternatives are likely to be limited to operational cost, vessel safety, recordkeeping and reporting, and NMFS enforcement.

Alternative 2 eliminates seabird avoidance requirements in inside waters. Thus, Alternative 2 does not impose additional costs on inside waters vessels and would be expected to reduce operational costs associated with the time to deploy, de-snag, retrieve, and maintain seabird avoidance devices, which may also marginally improve vessel safety. Based on a characterization of the Alaska longline fleet (halibut and groundfish) by vessel size and area fished in 2004 (Melvin et al 2006), 666 vessels fished inside waters (Table 3-5). This number of vessels represent approximately 42% of the entire longline fleet (total fleet = 1,579) and about 10% of the 2004 harvest of groundfish and halibut.

Table 3-5: Vessel size and area distribution from Melvin et al, 2006.

Area fished	Boats	Pounds	%Boats	%Pounds
Inside only	390	6,048,988	24.7	1.5
Inside + Outside	276	33,526,131	17.5	8.3
Total inside	666	39,575,119	42.2	9.8
Outside only	913	365,599,545	57.8	90.2
Grand total	1,579	405,174,664	100	100

Hook-and-line vessels that are 26 to 55 feet in length, lack superstructure (i.e. mast, pole, or rigging), and fish in the EEZ would continue to be required to deploy a buoy bag line under Alternative 2. However, the present requirement of a second seabird avoidance device would be eliminated. The elimination of a second seabird avoidance device would tend to decrease vessel operational costs associated with the time required to deploy and retrieve the device and may marginally lead to greater vessel safety. This would also be true for vessels that are equipped with superstructure in this size/area class. They would not have to deploy a second seabird avoidance device. However, they would be required to meet a new standard, depending on their gear type (snap vs. stuck). Research shows that the seabird avoidance equipment presently available to operators, free of charge, is capable of meeting the new standard. Nonetheless, some small cost may be associated with greater diligence in monitoring seabird avoidance devices and ensuring they are properly deployed. However, any costs associated with meeting the standard are likely to be small and will be offset, partially at least, by eliminating the time required to deploy and retrieve a second seabird avoidance device. In 2005, the number of catcher vessels 26 to 55 ft LOA harvesting groundfish in all of Alaska was 367 (Table 3-6). If we make conservative assumptions that all these vessels operate in the EEZ and have superstructure from which to deploy a single streamer line of a specified standard, then under Alternative 2, 367 small vessels would be required to use a streamer line of specified standard while fishing with hook-and-line gear in the EEZ.

Table 3-6: Hook-and-line fishery participation by vessel size, 2005, from 2005 Economic SAFE.

Area	<26	26-30	30-35	35-40	40-45	45-50	50-55	55-60	<60	60-125	Total

GOA	**12**	**3**	**60**	**49**	**95**	**93**	**57**	**122**	**491**	**75**	**566**
BSAI	**2**	**0**	**8**	**1**	**6**	**2**	**6**	**24**	**49**	**15**	**64**
All	**13**	**3**	**66**	**49**	**96**	**94**	**59**	**126**	**506**	**78**	**584**

The option to Alternative 2, and 3, would eliminate the requirement to prepare a seabird avoidance plan. This option has been suggested by NOAA Enforcement as a way to improve efficiency and reduce the enforcement burden. Thus, the option will have beneficial effects by eliminating the time necessary for the vessel operator and crew to prepare the plan and by reducing the enforcement burden of reviewing the plan during boarding.

Alternative 3 would adopt the same changes as proposed in Alternative 2; however, Alternative 3 would require vessels in the specified inside waters transition areas (Chatham Strait, Dixon Entrance, Cross Sound) to use the same seabird avoidance measures as those required in the EEZ. The potential impacts of Alternative 3 are nearly identical as those of Alternative 2. However, Alternative 3 would require that vessels that fish in these specified transition areas to use the same seabird avoidance devices as those required for their vessel and gear type in the EEZ. Thus, Alternative 3 is slightly more restrictive because it does not eliminate seabird avoidance requirements in the specified transition areas as Alternative 2 proposed to do. Melvin estimated about 666 vessels fished with hook-and-line gear in inside waters in 2004 (Table 3-5). NMFS made separate estimates for vessels fishing groundfish and halibut in the three transition areas of Chatham Strait, Dixon Entrance, Cross Sound (Table 4-6). It is very likely that some of the same vessels fished both groundfish and halibut and fished in multiple areas, thus the numbers do not necessarily represent unique vessels. Summing these vessel numbers would provide a conservative estimate of 473 vessels fishing either groundfish or halibut in these 3 transition areas. Thus, under Alternative 3, 473 vessels would be required to continue using seabird avoidance measures. The remaining 193 vessels that do not fish in these transition areas would not be required to use seabird avoidance measures.

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 inside (elimination of all requirements) and outside (elimination of second device) waters However, vessel operational cost of production data is not presently being collected. Thus, it is not possible to quantify the net effect on operational costs that might occur under each alternative. However, the alternatives to the status quo are not expected to impose more than a slight additional burden if any at all.

Though defensible quantitative estimates of potential effects are not possible at this time, the qualitative analysis provided indicates that, 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 the threshold for a "significant" action (as that term is defined in E.O. 12866)

4.0 ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

This chapter analyzes the impacts of the alternatives. Where possible, to keep the present document brief, we incorporate by reference analyses from the PSEIS (NMFS 2004a), which contains 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. Our analyses here focus on the specific actions proposed in the alternatives and summarize pertinent information that has become available since publication of the PSEIS and that, in fact, drives the proposal of these new alternatives for preventing interactions between fishing operations and seabirds.

The alternatives affect only the hook-and-line fisheries for four target species: Pacific cod, Pacific halibut, Greenland turbot, and sablefish (NMFS 2004a). No other fisheries or target species are affected directly or indirectly by the actions proposed in the alternatives. The alternatives would revise seabird avoidance regulations in two ways: first, they would relieve the burden on fishermen of having to deploy seabird avoidance devices in areas where no seabird species of concern have been observed; second, they would impose gear standards on the seabird avoidance devices deployed. 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 Alternatives on Other Impact Categories

Protected Species

Potential effects on seabird populations are discussed at length 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 Alternatives on Seabird Mortality

As described in section 3.2, the PSEIS identifies how BSAI and GOA 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. Sections 4.1 through 4.3 describe potential effects from the action alternatives on seabird mortality. 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.

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

4.1 Effects of Alternative 1 (Status Quo) on Seabird Mortality

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. Refer to Section 3.2 for more information on seabird mortality in Alaska hook-and-line fisheries. 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.

4.1.1 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.

4.1.2 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.

4.1.3 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).

4.1.4 Alternative 1 Effects on Seabird 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 seabirds are insignificant.

4.2 Effects of Alternative 2 on Seabird Mortality

4.2.1 Eliminating seabird avoidance requirements in inside waters

The first of the changes proposed in Alternative 2 would eliminate seabird avoidance gear requirements for all hook-and-line vessels fishing in PWS (NMFS Area 649), state waters of Cook Inlet, and Southeast Alaska (NMFS Area 659). A risk analysis conducted by Melvin *et al* (2006) resulted in a recommendation that seabird mitigation requirements be adjusted or eliminated wherever seabird mortalities from interaction with fisheries are minimal or absent. On the basis of this research the WSG recommends that, while continuing existing seabird avoidance requirements for all outside waters, seabird avoidance requirements be eliminated for hook-and-line vessels fishing in the inside waters of Prince William Sound (NMFS Area 649), Southeast Alaska (NMFS Area 659), and state waters of Cook Inlet.

Data sources strongly suggest that albatrosses and other seabird species of concern are rare or absent in Alaskan inside waters, therefore incidental take of these species by the hook-and-line fisheries in inside waters are considered insignificant. None of the common seabird species sighted in inside waters (northern fulmars and shearwaters in highly localized areas of PWS and CI, black-legged kittiwakes in PWS, and gulls in all inside waters), are USFWS-identified birds of conservation concern (USFWS 2002). In Southeast Alaska, locations where tubenoses were encountered were few and adjacent to outside waters. New information from a satellite tagging study indicates the occurrence of a short-tailed albatross in Cross Sound, the western most boundary of inside waters of NMFS Area 659 (Southeast Inside District).

The only species group consistently observed in all inside waters of the Melvin et al (2006) study was

gulls. Not only have management agencies not identified gulls as species of conservation concern, permitted lethal control programs in Alaska took an estimated 770 gulls statewide at airfields, landfills, and military bases in 2005 alone (K. Blejwas, ADFG, pers. comm.). In addition to gulls, alcid species have been observed at seabird colonies in inside waters. As described in section 4.1.1, groundfish interactions with gulls and alcids (puffins, auklets, guillemots, and murrelets), and associated mortality from incidental take, is considered insignificant (PSEIS 2004a). Further, most alcid mortality from groundfish fisheries comes almost entirely from the trawl sector. Alcids, including the tufted puffin are rarely taken in hook-and-line fisheries, and are not likely to interact with hook-and-line gear (PSEIS 2004a).

Incidental take of these species by hook-and-line fishing in inside waters is considered insignificant for several reasons. NMFS (2006) reports average annual estimates of 96 gulls taken from 1993 – 2004 in the GOA demersal hook-and-line fishery, 4 Alcids, 1 'other' seabird, and 46 unidentified seabirds. All of these numbers represent insignificant effects at the population levels for these species. Of these insignificant GOA totals, seabird takes in inside waters are likely a small percentage because 85.3% of vessels fishing inside waters are smaller than 55 feet and have a low total effort when compared to other Alaska fishing grounds. Individually, small vessel fishing behaviors (including setting fewer hooks, setting gear at slower speeds so hooks sink more quickly, and producing less or no offal) generally attract few seabirds. During research trials on eight different small vessels in the summer of 2002, no seabirds were observed interacting with hook-and-line gear (Melvin and Wainstein 2006). Similarly, Rice et al (2006) reported that no seabirds were seen actively pursuing baited hooks during their field trials on small halibut hook-and-line vessels.

Research recommendations include continuing the requirements for seabird avoidance measures in outside waters (EEZ) due to the widespread distribution of seabirds, including species of concern, in these waters. Refer to Appendix 1 for maps of seabird distribution maps by species. Typically, larger vessels with higher effort (greater number of hooks) fish in these off-shore waters, creating a greater likelihood for interaction with seabirds than inside waters.

Under Alternative 2, given the rare or infrequent occurrence of black-footed albatross in some areas of NMFS Area 659 (southern Chatham Strait, western Cross Sound, and Dixon Entrance) and the rare occurrence of a short-tailed albatross in western Cross Sound, it is possible, though not very likely, that these species may interact with vessels fishing these inside waters with hook-and-line gear and no seabird avoidance requirements. See sections 3.5.5 and 3.5.6 for a discussion on the short-tailed albatross satellite tagging study and distribution of short-tailed albatrosses. Inside waters are not likely habitat for albatrosses. It is possible that they use these edge or transition areas are for foraging due to oceanographic features such as upwellings.

Given the documented occurrence of a short-tailed albatross in Cross Sound (NMFS Area 659), that vessels fishing with hook-and-line gear without seabird avoidance measures in those areas may possibly affect listed species. If Alternative 2 is chosen, then NMFS would reinitiate a formal section 7 consultation with USFWS to consider the effects of this action on the short-tailed albatross.

Additional seabird distribution data exploration

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). A review of this dataset supports findings from Melvin et al (2006) that species of conservation concern which are likely to interact with hook-and-line gear are rare or absent in inside waters (Figure 10).

Figure 11 in this analysis show the locations of seabird colonies in inside waters. This dataset contains current and historical data on breeding population sizes, the locations and names of seabird breeding colonies in Alaska (AK) and Russia (RU), the species of birds that nest in each colony, and the numbers of each species. Population data in the database were obtained by counting or estimating breeding bird numbers using standardized techniques (USFWS 1999). These data have been collected over many years, by different observers, and using differing survey methods; thus inhibiting long-term comparisons due to the variable data quality. In most cases the most representative estimate is the most recent (Stephensen, 2003).

The majority of seabirds observed at these colonies are glaucous-winged gulls, and other species observed include pigeon guillemot, rhinoceros auklet, tufted puffin, and ancient murrelet. Figure 12 shows seabird species composition at inside waters colonies. No species of conservation concern have been observed at these colonies due to their species' life history and colonial behavior characteristics: short-tailed albatross colonies are on Torishimo Island in Japan; black-footed albatrosses nest primarily in remote northwestern Hawaiian Islands (USFWS, 2006); red-legged kittiwakes have colonies in the Bering Sea only; and Kittlitz's murrelet do not nest in colonies, but on the ground inland near glaciers (USFWS, 2006).

4.2.2 Requiring gear standards

The second of the changes proposed by Alternative 2 would require new standards of 26-55 ft LOA hook-and-line vessels fishing in the EEZ. The research conducted by Melvin and Wainstein (2006) also found that gear type (whether snap-on gear or fixed gear) and gear-setting speed are more appropriate factors than vessel length in determining appropriate mitigation measures, as they best predict the risk posed to seabirds by hook-and-line fishing gear. The WSG thus made the following recommendations for gear standards:

Snap-on gear

- The current streamer line requirement for snap-on gear vessels over 55 ft with infrastructure (45-m streamer line and the minimum 20-m performance standard) should be extended to all snap-on gear vessels greater than 26 ft LOA with infrastructure.
- Given that seabird avoidance measures are difficult to deploy from bowpickers (which typify vessels greater than 26–32 ft without infrastructure) and that such vessels pose the same or more risk to seabirds as do vessels with infrastructure using the same gear, either the buoy line should be adapted so that the buoy can be positioned over the sinking groundline without fouling on the gear or other mitigation options should be developed.

Fixed gear

- Current measures for fixed-gear vessels greater than 26–55 ft LOA with mast, poles, and rigging (single streamer line with no mandatory material or gear standards) are unlikely to be able to provide sufficient protection to seabirds. Additional seabird avoidance measures should be

developed in consultation with industry. Alternatives might include using one or two lightweight 90-m streamer lines with a maximized aerial extent approaching 60 m.

Melvin et al (2001) reported that streamer line effectiveness is a function of the distance astern that the streamers fly above the water and streamer spacing and materials. Standards were derived from experimentation on the active commercial fishing vessels in both the IFQ sablefish and halibut fishery in the GOA and Aleutian Islands and the Pacific cod freezer-longliner fleet in the BSAI. Longer aerial extent means less chance of fouling on the groundline, and more effective deterrence of seabirds. The gear standards recommended in Melvin et al (2001) were based on species-specific data on seabird attacks by distance astern. For example, 90% of all northern fulmar attacks occurred up to 40 meters astern, and 94% up to 60 meters astern. This research led to the inclusion of gear standards with seabird avoidance measures on vessels greater than 55 feet LOA. Applying standards on these vessels was intended to enhance the effectiveness of the streamer lines and improve the enforceability of regulations requiring such measures.

Melvin and Wainstein (2006) show that gear type is more important than vessel size in determining interactions with seabirds, and that vessels less than 55 feet can utilize light-weight streamer lines and meet current gear standards. Research recommendations for vessels fishing in outside waters are that all snap-on gear vessels greater than 26 ft LOA use the 45-m streamer line and the minimum 20-m performance standard. Additionally, researchers recommend that two lightweight 90-m streamer lines with a maximized aerial extent approaching 60 m be used on fixed gear vessels greater than 26 ft LOA.

These additional requirements on vessels between 26 ft and 55 ft LOA will reduce potential takes of seabirds by hook-and-line vessels in the EEZ. Melvin and Wainstein (2006) did note that testimony to the Council has also emphasized that many of the 26-55 ft vessels, for which this study is relevant, fish exclusively or primarily in inside waters, where seabird species of concern are believed to be rare. Under alternatives 2 and 3, avoidance measures are eliminated in these areas. These new requirements would only be for outside waters, and therefore would only affect vessels fishing outside.

Alternative 2 includes eliminating the 'other device' requirement. Other devices in the current regulations at §679.24(e)(6) include weights added to groundline, another buoy bag line or single streamer line, or strategic offal discharge. NOAA Office of Law Enforcement reports that these other devices are difficult or impossible to enforce. Increased seabird protection afforded by standards in areas where birds are more frequent (EEZ) would offset any protection eliminated with this requirement.

The impacts of gear standards for 26-55 ft vessels in the EEZ are therefore insignificant. Seabird bycatch will likely decrease, but not at a level that would have population level effects.

Since adoption of the current requirements for 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. The distribution has recently included the newly designed lighter weight streamer line which meets the proposed standard and can be constructed for minimal cost (Rice and Cullenberg, 2006; Rice, Baker and Cullenberg, 2006). PSFMC is already distributing these lightweight streamer lines free of charge. As of March, 2006, 230 of the original heavy streamer lines and 362 of various types of lightweight streamer lines have been distributed (Rice and Cullenberg, 2006). At the December 2006 Council meeting, the USFWS indicated that its funding source for this free streamer line distribution program had ended. Thus, once the current inventory had been distributed, free lines would no longer be available. NMFS is currently seeking funding sources to allow for the continuation of this streamer line distribution program administered by PSFMC. It is the intent that

the program can proceed without interruption.

4.2.3 Option for eliminating the Seabird Avoidance Plan (SAP) requirement.

An option under Alternative 2 is the elimination of the Seabird Avoidance Plan requirement. NMFS recommended eliminating the Seabird Avoidance Plan requirement in a letter to the Council dated May 25, 2006, based on recommendations from the NOAA Office of Law Enforcement and the Protected Resources Division (pers. comm. Jeff Passer). In combination with the potential changes to the seabird avoidance measures, the Seabird Avoidance Plan would be unnecessary.

As amended, this change to seabird avoidance measures is not likely to have any effect on the incidental take of seabirds, considering the compliance with the seabird avoidance measures even when a number of vessels have violation for having a SAP. Because the requirement for a seabird avoidance plan does not seem to impact the use of seabird avoidance gear, the amount of incidental take by vessels not required to have a SAP is expected to remain the same. Therefore the elimination of the SAP requirements would likely have an insignificant effect on seabird populations.

4.2.4 Option for adding a weather safety standard for small vessels (26-55 feet)

In December of 2006, the Council requested analysis of an option for a weather safety factor that would make the use of seabird avoidance gear discretionary for vessels 26-55 ft LOA when winds exceed 30 knots. The Council raised concerns that the use of seabird avoidance gear on these small vessels in winds exceeding 30 knots may be unsafe because many of these smaller vessels have few crew members that need to be engaged fully in vessel operations during inclement weather instead of deploying and retrieving seabird avoidance gear. Also, streamer lines and buoy bags pose a greater risk of fouling on the fishing gear during high winds. Currently, the seabird regulations allow the discretionary use of seabird avoidance gear in winds greater than 45 knots and allow that in winds between 30 and 45 knots vessels normally required to use paired streamer lines (vessels longer than 55 ft LOA) use only a single streamer line deployed from the windward side of the vessel. This new option would extend these weather safety allowances to make the use of any seabird avoidance gear discretionary for small vessels (26-55 ft LOA) in winds exceeding 30 knots.

The National Weather Service National Data Buoy Center gathers continuous winds data from moored buoys in the Gulf of Alaska and Bering Sea (Figure 18). Each buoy reports a ten-minute average wind speed 24 hours a day, 365 days per year. A number of these moored buoys overlap with the hook-and-line fishery effort of small vessels (26-55 ft LOA) when fishing in the EEZ and provide the best source of data on wind speed in this area. Buoys depicted as blue squares in Figure 18 provided the data from 2002-2005 that is included in this analysis. Only nine buoys overlap with hook-and-line effort and have time series data for the entire period, and were used for this analysis.

Data from nine buoys in the GOA and BSAI exhibit the number of days per month when wind speeds exceeded 30 knots for any 10-minute interval. Figure 19 depicts the maximum number of days out of the month when wind speeds exceeded 30 knots. Some buoys reported more high wind days than others, and the maximum number is shown here, showing the worst case scenario for number of windy days. In the years 2002 to 2005a, more high wind days occurred during the fall and winter months than at any other time of year, with the highest number of high wind days occurring in October, November, December, and January.

To analyze the impacts of this option, we correlated the wind speed data with landings reported on

ADF&G fish tickets and data from NMFS RAM office. The Pacific halibut and Pacific cod fisheries both operate in months with high numbers of windy days. Vessels less than 55 feet fishing for Pacific cod in the EEZ land most of their fish in January (Figure 20), during which month the winds exceeded 30 knots at a minimum of one 10-minute interval at one buoy on 12 days in 2002, 10 days in 2003, 10 days in 2004, and 5 days in 2005.

If January continues to be a windy month, under this option we could reasonably expect small vessels in the Pacific cod fishery to choose not to use avoidance gear about one-third of the month when they make the most landings.

Table 4-3: Halibut Fishery open and close dates, 2002-2005.

Year	Open Date	Close Date
2002	March 18	November 18
2003	March 1	November 15
2004	February 29	November 15
2005	February 27	November 15

Halibut fishery landings are more evenly distributed from March through October, with smaller amounts landed in November during the IFQ season (Figure 21). If the halibut IFQ season retains similar open and close dates to that in Table 4-3, October and November would be the months most likely to see small vessels in the Pacific halibut fishery choosing not to employ seabird avoidance gear because of high winds.

Under this option, vessels less than 55 feet are allowed discretionary use of use seabird avoidance gear in winds exceeding 30 knots. This could occur to various degrees as discussed above. However, the impact to seabird population levels are expected to be insignificant because these near-gale winds also make it less likely that seabirds would interact with fishing gear. Reid and Sullivan (2003) note that attempts by seabirds to forage from fishing gear decrease as wind speeds increase, with the greatest mortality occurring at wind speeds of 4-16 knots (Beaufort Scale 2-4). (Under the Beaufort Scale, 30-knot winds are classified as force 7 "Near Gale" winds.) Any potential impact on seabirds from the weather safety standard is thus expected to be offset by the lesser likelihood that seabirds would interact with fishing gear during high winds.

4.2.5 Option to allow that a buoy bag line only could be used on all vessels 26-32 ft fishing in the EEZ waters of IPHC Area 4E.

In the current regulation, vessels less than 32 ft LOA fishing with hook-and-line gear in waters shoreward of the EEZ of IPHC Area 4E (i.e. 0 to 3 nm) are exempt from the use of seabird avoidance measures. When fishing in the EEZ of IPHC Area 4E, however, vessels 26-32 ft with masts, poles, or rigging would be required under Alternatives 2 and 3 to use a streamer line with performance standards. If vessels without masts, pole, or rigging are not capable of adding poles or davits to accommodate a streamer line, then they would be allowed to use a buoy bag line for seabird deterrence. This option would alleviate that

requirement and require instead that all vessels 26-32 ft LOA fishing with hook-and-line gear in EEZ waters of IPHC Area 4E use a buoy bag line only.

Because of the characteristics of the fleet and the few seabird observations in this area, we expect the effects of this option on seabird population levels to be insignificant. Hook-and-line effort in IPHC Area 4E comes primarily from vessels fishing for CDQ halibut In 2005, 45 vessels from 26-30 ft LOA and 21 vessels from greater than 30 ft to 35 ft LOA landed halibut (NMFS data query, RAM Division). The vessels between 26 and 32 ft LOA have a low total effort and deploy gear at low setting speeds. In the most recent two years, total effort in IPHC Area 4E has been less than one percent of the total halibut harvested in all areas, Table 4-4.

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

Halibut Landed Catch (pounds)	**2005**	**2006**
Total catch in Area 4E	363, 842	354,314
All CDQ Catch – all areas	2,043,262	1,908,673
All IFQ Catch – all areas	55,192,929	52,217,429
Total Halibut (CDQ + IFQ)	57,236,191	54,126,102
4E catch as a percent of CDQ halibut catch	17.81%	18.56%
4E catch as a percent of total halibut	0.635%	0.655%

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.

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 (pers. comm. Robert Williams). 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.

The 2006 IPHC stock assessment survey documented any interactions with seabirds at all survey stations. In IPHC Area 4E, no species of conservation concern were observed. Only 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 4-5) (pers.comm. Tracee Geernaert). Appendix II show observations of seabird species in available datasets. IPHC Area 4E fishermen report no sightings of albatross species or any problems with seabird interactions (pers. Comm., Andy Ruby).

Table 4-5: Numbers of Seabirds Observed in IPHC 2006 Stock Assessment Survey in Alaska.

IPHC Area	Numbers of Observed Seabirds
2C	1,140
3A	13,468
3B	20,946
4A	8,596
4B	7,038
4C	1,799
4D	9,253
4E	227
Closed Area	631

Research from Oregon State University documents 2 short-tailed albatrosses observations in IPHC Area 4E: one in 2003, and one in 2006, both in August, in the Eastern Bering Sea between the Pribilof Islands and Kuskokwim Bay (Figure 16). See section 3.5.5 for details of the short-tailed albatross satellite tagging study. Halibut fishing has been very minimal in this area in August in recent years, and the majority of short-tailed albatross locations were in the southern portion of IPHC Area 4E and farther from shore than most of the hook-and-line vessels that operate in this large area.. If this option is chosen, seabird interactions should be monitored frequently to ensure that vessels are not coming into contact with short-tailed albatross in IPHC Area 4E.

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. If this option is chosen to allow for the use of a buoy bag line by 26-32 ft LOA vessels fishing with hook-and-line gear in the EEZ of IPHC Area 4E, then this or a similar buoy bag line standard could be required.

Because of the likely low level of seabird interaction due to low fishing effort, characteristics of small

vessel operations which result in fewer interactions, and few seabird observances, this option is not expected to have significant effects on population levels of seabird species in Alaska.

If this option is not chosen, requiring a streamer lines of a specified standard on vessels fishing with hook-and-line gear in the EEZ could have impacts on these small vessels. Based on a query of the NMFS-RAM database, at most 66 vessels (26-35 ft LOA) landed halibut in IPHC Area 4E in 2005. Thus, 66 vessels could be impacted by this option.

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. Also, 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 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). Hence, the alternatives reviewed here contain also an option for a weather safety standard that, if adopted, would make the use of seabird avoidance gear discretionary for small vessels when the wind speed is 30 knots or more.

Of the 66 small vessels landing halibut in IPHC Area 4E in 2005, 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 that fish shoreward of the EEZ (i.e. 0-3 nm) are already exempt from seabird avoidance requirements (§679.24(e)(8)). 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 would only be required to deploy a buoy bag line, not a streamer line. Thus, not all of these vessels would be impacted by a requirement for a streamer line of a specified standard.

4.2.5.1 Sub-option to exempt all vessels 26 to 32 ft LOA fishing with hook-and-line gear in the EEZ waters of IPHC Area 4E from seabird avoidance regulations.

This sub-option would mean that these vessels are not required to use streamer lines or buoy bags when fishing with hook-and-line gear in EEZ waters of IPHC Area 4E. The exemption for waters shoreward of the EEZ would remain in place.

Although seabird observations are rare in this area, the area has not been extensively surveyed specifically for seabirds. Species such as shearwaters and fulmars, while not currently of conservation concern, do come in contact with hook-and-line gear, and seabird mortality for these species is reported on an annual basis. OSU research indicates a very limited number of short-tailed albatross sightings in offshore waters of IPHC Area 4E. Bird species distributions change from year to year, and more data is becoming available each year on which to base these decisions. Currently, using a buoy bag line provides some seabird protection at minimal costs to the fleet. Exempting these vessels from all seabird avoidance gear requirements could result in an unknown effect on the population level of seabirds.

Given the documented occurrence of 2 short-tailed albatross (one in 2003, one in 2006) in some sections 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. If Alternative 2, its buoy bag line option, or its sub-option exempting 26-32 ft LOA vessels in the EEZ of IPHC Area 4E from using seabird avoidance

measures is chosen, then NMFS would reinitiate a formal section 7 consultation with USFWS to consider the effects of this action on the short-tailed albatross.

4.2.6 Summary of Effects of Alternative 2 on Seabird Mortality

Alternative 2 and its option are expected to have insignificant effects on seabirds in both inside waters and in the EEZ .

ESA Listed Species

Short-tailed albatross and eider species were not observed in inside waters during research surveys in 2002-2004 (Melvin et al 2006). A single short-tailed albatross was documented just inside the western boundary of Cross Sound (NMFS Area 659) in September 2006 and 2 short-tailed albatross were documented in some section of IPHC Area 4E through a satellite tagging study. Eliminating seabird avoidance measures in inside waters is not expected to affect bird species that are rarely observed in those waters. These birds are more commonly observed in outside waters where standards will ensure effective gear deployment, further limiting potential seabird interactions. Maintaining some level of effective seabird avoidance measures in IPHC Area 4E will also limit potential seabird interactions with listed species. The option to eliminate the SAP is not expected to affect incidental take of these species.

Other Species of Concern

Similarly, red-legged kittiwakes, and black-footed albatrosses are rarely observed in inside waters, but more commonly observed in the EEZ. Kittlitz's murrelets are found in some inside waters, but they are not likely to come into contact with hook-and-line gear. Eliminating seabird avoidance measures in inside waters is not expected to affect bird species that are rarely observed in those waters, and would not likely come into contact with hook-and-line gear if present. These birds are observed in outside waters where standards will ensure effective gear deployment, further limiting potential seabird interactions. The option to eliminate the SAP is not expected to affect incidental take of these species.

Other Seabirds

Bycatch of other seabird species including northern fulmars, alcids, gulls, cormorants, storm-petrels and auklets are all low compared to population sizes. Many of these species are not likely to interact with hook-and-line gear, especially in inside waters, and the historical level of incidental mortality is very low. The standards will ensure effective gear deployment, further limiting potential seabird interactions. The option to eliminate the SAP is not expected to affect incidental take of these species.

4.3 Effects of Alternative 3 on Seabird Mortality

Alternative 3 differs from Alternative 2 in one respect: while eliminating seabird avoidance gear requirements in most inside waters, Alternative 3 would require that seabird avoidance measures continue to be required by hook-and-line vessels fishing in certain inside waters of Southeast Alaska.

In the initial draft of this EA presented to the Council in December 2006, Alternative 3 included two areas

of inside waters where species of conservation concern (specifically, the black-footed albatross) have been observed: Chatham Strait (ADF&G groundfish statistical areas 345603 and 345534) and Dixon Entrance (ADF&G groundfish statistical areas 325431 and 325401). In late-December 2006, new information became available from USFWS and researchers at Oregon State University regarding the occurrences of the endangered short-tailed albatross in areas overlapping with the proposed action area. Since 2002, the movements of 21 short-tailed albatrosses have been monitored for short periods of time through the application of satellite transmitters affixed to the bodies of the birds. The satellite tag locations are represented in Figure 16 and location points are most common in the waters of the Aleutian Islands and the Bering Sea continental shelf area. However, some location points from a couple of birds tagged in 2006 were in IPHC Area 4E, waters of Southeast Alaska (NMFS Area 659), specifically Cross Sound, and in Canadian waters of Dixon Entrance. This new information is described in more detail in section 3.1.1 and 3.5.5. As a result of this new information, an additional area of consideration was included in Alternative 3.

The Canadian waters of the Dixon Entrance are adjacent to two of the subject areas already addressed in this alternative: ADF&G groundfish statistical areas 325431 and 325401. However, the evidence of a short-tailed albatross's presence in Cross Sound raises concerns about the possibility that this endangered species may interact with hook-and-line vessels fishing in the area. Additionally, there was one black-footed albatross observed in Cross Sound by the WSG study (Figure 17).

This revised EA therefore includes an option for Cross Sound (ADF&G groundfish statistical area 365804) as an additional transition area where hook-and-line vessels would be required to use the same seabird avoidance measures and standards required of hook-and-line vessels fishing in the EEZ. Cross Sound would be considered a transition area in the same manner as for Chatham Strait and Dixon Entrance.

Regarding short-tailed albatrosses in IPHC Area 4E, the majority of satellite-tag locations were in the southern portion of IPHC Area 4E and farther from shore than most of the hook-and-line vessels that operate in this large area. Moreover, both Alternatives 2 and 3 include options that, while exempting 26-32 ft hook-and-line vessels from requirements to use streamer lines, require that such vessels deploy buoy bags to deter seabirds from interacting with fishing gear (Figure 16).

As noted in Section 4.2, the WSG recommends that seabird avoidance requirements be eliminated for hook-and-line vessels fishing in the inside waters of Prince William Sound (NMFS Area 649), Southeast Alaska (NMFS Area 659), and state waters of Cook Inlet. However, the presence of black-footed albatrosses, northern fulmars, and shearwaters in southern Chatham Strait, Dixon Entrance, and Cross Sound in the Southeast Alaska region and the documented occurrence of a short-tailed albatross in the western area of Cross Sound suggest increased risk to these seabirds from hook-and-line fishing in these small areas. If this risk is deemed significant, the regulations could be amended to require that hook-and-line vessels in these areas be subject to the same seabird avoidance requirements as when fishing in the EEZ. Specifically, seabird avoidance regulations applicable in the EEZ would continue to be required of hook-and-line vessel operators in ADF&G statistical areas 345603 and 345534 in Chatham Strait, 325431 and 325401 in Dixon Entrance, and 365804 in Cross Sound.

Section 4.2.1 above describes the management implications of seabird distribution survey results from Melvin and Wainstein (2006). Seabird species of concern are rare to absent in inside waters. However, black-footed albatrosses were observed during the Melvin et al seabird distribution work in inside waters only in southern Chatham Strait, western Cross Sound, and Dixon Entrance (Figure 9). The North Pacific Pelagic Seabird Database also shows the presence of other species likely to interact with hook-

and-line gear, including Northern fulmars and shearwaters, in the Chatham Strait statistical areas (Figure 10).

The presence of *procellariiformes* (black-footed albatrosses, northern fulmars, and shearwaters) in southern Chatham Strait, western Cross Sound, and Dixon Entrance and the new information of the documented occurrence of a short-tailed albatross in the western area of Cross Sound suggests the potential for increased risk of incidental take to these seabirds from hook-and-line fishing in these small transition areas. The species were not seen anywhere else in inside waters during the three years of the Melvin *et al* (2006) research surveys. As discussed in Chapter 3, black-footed albatrosses are considered endangered under the ICUN criteria, and a petition for listing under the ESA has been filed. Because of these conservation concerns, the areas where these birds have been observed warrant similar avoidance measures to other waters where the birds are observed.

Under Alternative 3, hook-and-line vessels fishing in ADFG statistical areas 345603 and 345534 in Chatham Strait, 325431 and 325401 in Dixon Entrance, and 365804 in Cross Sound would be subject to the same seabird avoidance regulations as when fishing in the EEZ. As amended, this change to seabird avoidance measures could potentially decrease the risk of incidental take for these species, but would have an insignificant effect at the population level.

Sub-options for the Designation of the Geographic Boundaries for Transition Areas

Chatham Strait: At its December 2006 meeting, the Council requested analysis of an option to Alternative 3 that would consider reducing the size of the Chatham Strait transition area from that defined by the 2 ADFG statistical areas (345603 and 345534) to the inside waters south of a latitude line from the northern-most 'species of conservation concern' observation, or other suitable line (this includes all of 345534 and part of 345603). The intent would be to have an area that more closely and narrowly matched the bird observation points, rather than the use of existing management lines i.e. statistical areas. One suggested sub-option was for the northern boundary of the Chatham Strait transition area to be bound by a straight line at 56.17.25 N latitude between Point Harris and Port Armstrong, or other suitable line (Figure 10).

Additional details of references points are as follows: Point Harris, the N entrance point to Port Malmesbury, is a bare rocky platform, 40 to 50 feet high, that extends 0.2 mile out from the tree line. Point Harris Light (56°17'25"N., 134°17'58"W.), 32 feet (9.8 m) above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on the point. Back of the point the land rises gradually at first and then more abruptly, to form a prominent detached peak. This mountain has a dark green growth of timber on the W slope and a large yellow landslide on the S slope.

Port Armstrong is 1.5 miles N of Point Conclusion. From Point Eliza, the S point at the entrance, a narrow ledge, which uncovers shortly after high water, extends E for about 200 yards in a continuation of the point. Vessels should keep about 0.5 mile offshore until abreast of the entrance. Port Malmesbury is on the E side of Chatham Strait, 17 miles N of Cape Decision. On the SE side of the port are two arms; one about 1.7 miles inside the entrance and the other near the head. The NW side has a short arm about halfway between the entrance and the head of the port.

Cross Sound: The ADFG statistical area encompassing the location points of the individual short-tailed albatross there in September 2006 is 365804. Given the Council's request for analysis of a sub-area of the Chatham Strait transition area, a similar analysis was done for Cross Sound. One suggested sub-

option was to require the use of gear and standards west of a longitude line west of Inian Islands at 136.21.17 East longitude, or other suitable line (Figure 17).

Just as Alternative 3 considers sub-options for reducing the size of the transition areas where albatross have been documented to occur in NMFS Area 659 (Chatham Strait and Cross Sound), it is possible that a sub-area of IPHC Area 4E could be considered that would limit the size of the EEZ area in 4E where seabird avoidance requirements would be applicable. One possibility would be to draw a latitude line that marked the northern boundary of the location points for the 2 short-tailed albatross documented to occur in Area 4E. Time has not been available to analyze this potential option.

Designation of the entire ADFG statistical areas around Chatham Strait and Cross Sound provide a more precautionary approach in identifying an area where seabird avoidance measures would be required. Although general patterns of albatross distribution and habitat preference in Alaska waters are becoming better known and understood (Suryan et al 2006a,b; Piatt et al 2006), variability is known to occur temporally and by the age and gender of the bird. Numerous oceanographic factors and prey availability also likely determine where the birds forage and these factors can vary at a gross scale from year to year. Thus, to identify geographic boundaries for these transition areas based on a very small sample size of bird observations is challenging. Perhaps the most prudent approach, particularly given the implications to an endangered species, would be to more cautiously apply the larger area and to then continue efforts to document distribution and abundance of these rare species in coastal transition areas and in waters of IPHC Area 4E.

Table 4-6: Observations of Species of Conservation Concern in inside waters of Southeast Alaska, during Washington Sea Grant Research 2002-2004, and corresponding effort in groundfish and halibut fisheries in these areas (Fisheries data from NMFS Sustainable Fisheries Division and

Restricted Access Management Division, Juneau, AK; queries of ADFG fish ticket database and IFQ database).

	Fishery Effort				Bird Surveys		
Transition Area	Average number of vessels halibut fishing	Total number of landed halibut pounds	Average number of vessels fishing for groundfish	Total landed groundfish pounds	Total number of survey stations in stat areas	Total number of survey observations in stat areas	Total number of species of conservation concern observations (BFAL)
Cross* Sound 365804	206	2,247,455	57	109,199	2	6	1
Chatham Strait 345603 and 345534	103	1,330,350	74	764,912	13	39	47
Dixon Entrance 325431 and 325401	11	64,666	22	492,341	8	24	1

*One individual tagged short-tailed albatross was tracked by satellite in Cross Sound, September 2006 (Suryan pers.com.).

Option for a weather safety standard: Alternative 3 also includes an option for a weather safety standard for small vessels (26-55 ft LOA). See section 4.2.4 and the analysis of Alternative 2 with this same option.

Option and sub-option for IPHC Area 4E: Alternative 3 also includes an option to allow that a buoy bag line only could be used on all vessels 26-32 ft fishing in the EEZ waters of IPHC Area 4E and a sub-option that would exempt all vessels 26 to 32 ft LOA fishing with hook-and-line gear in the EEZ waters of IPHC Area 4E from seabird avoidance regulations. See sections 4.2.5 and 4.2.5.1, respectively, for the analyses of this same option and sub-option under Alternative 2.

Given the documented occurrence of a short-tailed albatross in Cross Sound (within NMFS Area 659) and 2 individuals in some sections 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. If the option for a buoy bag line or the sub-option of Alternatives 2 and 3 exempting 26-32 ft LOA vessels in the EEZ of IPHC Area

4E from using seabird avoidance measures is chosen, then NMFS would reinitiate a formal section 7 consultation with USFWS to consider the effects of this action on the short-tailed albatross.

Alternative 3 maintains seabird avoidance requirements in the EEZ of IPHC Area 4E and the Cross Sound transition area where short-tailed albatross occurrences have been documented. An option of Alternative 3 calls for 26-32 ft LOA vessels using hook-and-line gear to use buoy bag lines to deter seabirds. Without the option, these vessels would be required to use a streamer line of a specified standard. If Alternative 3 is chosen, then NMFS could likely determine that the action would not adversely affect listed species and seek concurrence of this determination by the USFWS through an informal section 7 consultation.

Summary of Effects of Alternative 3 on Seabird Mortality

Alternative 3 is expected to have insignificant effects on seabirds in both inside waters and in the EEZ .

ESA Listed Species

Short-tailed albatross and eider species were not observed in inside waters during research surveys in 2002-2004 (Melvin et al 2006). A single short-tailed albatross was documented just inside the western boundary of Cross Sound (NMFS Area 659) in September 2006 and 2 short-tailed albatross were documented in some section of IPHC Area 4E through a satellite tagging study. Eliminating seabird avoidance measures in inside waters is not expected to affect bird species that are rarely observed in those waters. These birds are more commonly observed in outside waters where standards will ensure effective gear deployment, further limiting potential seabird interactions. Maintaining some level of effective seabird avoidance measures in IPHC Area 4E will also limit potential seabird interactions with listed species. The option to eliminate the SAP is not expected to affect the incidental take of these species. The additional protections offered short-tailed albatross by requiring seabird avoidance measures in the transition areas of NMFS Area 659 (Chatham Strait, Dixon Entrance, and Cross Sound) will be the most precautionary approach to limiting any potential for interaction with vessels using hook-and-line gear and this endangered species. Alternative 3 would have no effect on these species beyond those already described for Alternative 2.

Other Species of Concern

Black-footed albatrosses were observed in the transition areas as described above. Eliminating seabird avoidance measures in inside waters could negatively affect this species, but historic levels of incidental mortality show that fisheries interactions affect only a small percentage of the estimated population. Black-footed albatrosses are also widely observed in outside waters where standards will ensure effective gear deployment, further limiting potential seabird interactions. Alternative 3 would have the same effects on these species as described above for Alternative 2 except additional protection would be provided in those transitional areas where vessels would continue to be required to use seabird avoidance gear and to now use standards.

Other Seabirds

Northern fulmars and shearwaters were observed in the transition areas as described above. Eliminating seabird avoidance measures in inside waters could negatively affect these species, but historic levels of incidental mortality show that fisheries interactions affect only a small percentage of the estimated

population sizes. These species are also widely observed in outside waters where standards will ensure effective gear deployment, further limiting potential seabird interactions. Alternative 3 would have the same effects on these species as described above for Alternative 2 except additional protection would be provided in those transitional areas where vessels would continue to be required to use seabird avoidance gear and to now use standards.

4.4 Summary of the Effects of the Alternatives on Seabirds

The proposed alternatives address revisions to seabird avoidance measures to improve the effectiveness of the seabird avoidance measures required of the vessels using hook-and-line gear off Alaska. Although this analysis does not quantitatively compare the potential beneficial effects of each of the alternatives, a qualitative assessment can be made.

All action alternatives have insignificant effects on target and non-target fisheries and fish populations, protected species, and habitat and ecosystems.

The effects of incidental take of seabirds under the status quo alternative (Alternative 1) were described in the PSEIS (NMFS 2004a) and the Alaska Groundfish Harvest Specifications draft EIS (NMFS, 2006). Incidental take in the BSAI and GOA groundfish fisheries from these alternatives is insignificant at the population level on all seabird species analyzed.

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 could be slowing the recovery (NMFS, 2004).

The effects of incidental take of seabirds under alternatives 2 and 3 are also considered insignificant at the population level. Alternatives 2 and 3 both eliminate seabird gear requirements in inside waters where species of concern are extremely rare. Seabird species of concern that are observed in these waters are unlikely to interact with hook-and-line gear due to foraging behavior. Current levels of take in all groundfish fisheries combined are considered insignificant for these species at the population level. However, the selection of Alternative 2 does create possibility for interaction between hook-and-line gear and short-tailed albatross in Cross Sound. Because the short-tailed albatross is listed as endangered under the ESA, this new information on its appearance in Cross Sound would trigger a formal section 7 consultation with the US Fish and Wildlife Service. Alternative 3 would prevent this interaction by continuing to require the use of seabird avoidance gear in 3 transitional areas where species of conservation concern have been observed: Cross Sound, Chatham Strait, and Dixon Entrance.

Some additional protection to seabirds is afforded by new streamer line standards on vessels fishing in the EEZ, where more seabird species of concern have been observed. The net result of these two actions might result in a slight decrease in seabird incidental mortality, but this would be an insignificant effect on seabird takes at the population level. Alternative 3 provides slightly more protection to seabirds, since it requires hook-and-line vessels fishing in Chatham Strait, Dixon Entrance, and Cross Sound to use the same seabird avoidance measures as required in the EEZ, but it is still considered insignificant. The option under either Alternative 2 or 3 to eliminate the SAP is likely to have no effect on seabird incidental takes.

Since adoption of the current requirements for 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. The distribution has recently included the newly designed lighter weight streamer line which meets the proposed standard and can be constructed for minimal cost, approximately $150-200 per line (Rice and Cullenberg, 2006; Rice, Baker and Cullenberg, 2006). PSFMC is already distributing these lightweight streamer lines free of charge. As of March, 2006, 230 of the original heavy streamer lines and 362 of various types of lightweight streamer lines have been distributed (Rice and Cullenberg, 2006). At the December 2006 Council meeting, the USFWS indicated that its funding source for this free streamer line distribution program had ended. Thus, once the current inventory had been distributed, free lines would no longer be available. NMFS is currently seeking funding sources to allow for the continuation of this streamer line distribution program administered by PSFMC. It is the intent that the program can proceed without interruption.

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 draft EIS (NMFS, 2006). 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 draft 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 draft 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 nclude collisions with aircrafts 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 fishing 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

This Regulatory Impact Review (RIR) describes the costs and benefits of a suite of alternatives to status quo seabird avoidance measures presently required in the hook-and-line fisheries off Alaska. 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 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 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 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 Unites 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 this action is to revise the existing seabird avoidance regulations. These revisions are based on results of a three-year (2002-2004) 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 and Halibut fisheries. 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.

6.5 Alternatives Considered

A detailed presentation of the alternatives, including a thorough discussion of the complex set of regulations that define the status quo alternative, are discussed in Section 2 of the EA. Presented here is a simplified version of the two action alternatives. See Table 1-1 for a comparison of the three alternatives.

Alternative 2: Revise seabird avoidance measure requirements as follows:

A. Eliminate seabird avoidance gear requirements for all hook-and-line vessels fishing in PWS (NMFS Area 649), state waters of Cook Inlet, and Southeast Alaska (NMFS Area 659). See Figure 1.

C. Require standards of all hook-and-line vessels fishing in the exclusive economic zone (EEZ) as follows:

1. Vessels >26 and ≤55 length overall (LOA) with mast, poles, or rigging and using snap-on hook-and-line gear are required to deploy one streamer line while setting gear. Specifically, the streamer line must be a minimum of 45 m long and must be maintained with a minimum aerial extent of 20 m.
2. Vessels >26 and ≤55 LOA with mast, poles or rigging and not using snap-on hook-and-line gear are required to deploy one streamer line while setting hook-and-line gear. Specifically, the streamer line must be a minimum of 90 m long and must be maintained with a minimum aerial extent of 40 m.
3. Vessels >26 and ≤55 LOA without mast, 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 as to deter birds from the sinking hookline, without fouling on the gear, as they deploy hook-and-line gear.
4. All vessels using hook-and-line gear in the EEZ are no longer required to use a second seabird avoidance measure (adding weight, deploying a second streamer line or buoy or strategic offal discharge).

Option 1: Eliminate Seabird Avoidance Plan (SAP) requirement.

Option 2: Weather Safety Standard: Use of seabird avoidance devices would be discretionary for vessels 26-55 ft LOA when winds exceed 30 knots.

Option 3: 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 26-32 ft LOA fishing in the EEZ waters of Area 4E are exempt from seabird avoidance regulations.

Alternative 3: Revise seabird avoidance measure requirements as follows:

B. As in Alternative 2, eliminate seabird avoidance gear requirements, except in the following areas of Southeast Alaska, where hook-and-line vessels fishing in these areas would be subject to the same seabird avoidance gear requirements and standards as when fishing in the EEZ (see charts in Figure 2):

1. Area around Chatham Strait defined as ADF&G groundfish statistical areas 345603 and 345534, or:.

   Sub-option: Area around Chatham Strait south of a straight line at 56.17.25 North latitude between Point Harris and Port Armstrong, or other suitable line.

2. Area around Dixon Entrance defined as ADF&G groundfish statistical areas 325431 and 325401.

3. Area around Cross Sound, defined as ADF&G groundfish statistical area 365804, or:.

   Sub-option: Area around Cross Sound from a longitude line west of Inian Islands at 136.21.17 East longitude, or other suitable line.

C. Require standards of all hook-and-line vessels fishing in the EEZ as in Alternative 2.

Option 1: Eliminate Seabird Avoidance Plan (SAP) requirement.

Option 2: Weather Safety Standard: Use of seabird avoidance devices would be discretionary for vessels 26-55 ft LOA when winds exceed 30 knots.

Option 3: 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.

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 fishery description provides background information on these fisheries. The Federal groundfish hook-and-line fisheries for Sablefish, Pacific cod, rockfish, and flatfish other than halibut are given a comprehensive review in the annual Economic SAFE document prepared by the Alaska Fisheries Science Center (Hiatt et al, 2005). However, 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 annual report of the IPHC (IPHC, 2005) will be used here.

Table 6-1 provides data on the groundfish (not including halibut) catch off Alaska for the hook-and-line fleet from 2000-2004. This data is an excerpt from Table 2 of the 2005 Economic SAFE. In the GOA, hook-and-line catcher vessels (CVs) generally harvest considerably more (e.g. 77 percent of the 2004 total) of the catch than catcher processors (CPs), while the reverse is true in the BSAI. Overall, BSAI CPs account for the largest proportion of hook-and-line groundfish catch; likely because of the much larger allocation of target species to the BSAI hook-and-line fleet than the GOA hook-and-line fleet. The BSAI allocation is primarily pacific cod.

Table 6-1: Hook and Line Groundfish catch off Alaska by area, vessel type, and species, 2000-04 (1,000 metric tons, round weight).

Species	Year	Gulf of Alaska			Bering Sea and Aleutians			All Alaska		
		Catcher vessels	Catcher processors	Total	Catcher vessels	Catcher processors	Total	Catcher vessels	Catcher processors	Total
Sablefish	2000	11	1	12	1	1	1	11	2	13
	2001	9	1	11	1	0	1	10	2	12
	2002	9	2	11	1	1	1	10	2	12
	2003	11	2	13	1	1	1	12	2	14
	2004	12	2	14	0	0	1	13	2	15
Pacific cod	2000	7	5	12	1	97	98	8	102	109
	2001	6	4	10	1	108	108	7	112	118
	2002	7	8	15	1	103	103	7	111	118
	2003	7	6	13	1	107	108	8	113	121
	2004	9	5	13	1	111	112	10	115	125
Flatfish	2000	1	0	1	0	7	8	2	8	9
	2001	1	0	1	1	5	6	1	5	7
	2002	0	0	1	0	5	5	1	5	6
	2003	0	0	0	1	5	5	1	5	6
	2004	0	0	0	0	4	5	0	5	5
Rockfish	2000	1	0	1	0	1	1	1	1	2
	2001	2	0	2	0	1	1	2	1	2
	2002	1	0	1	0	0	1	1	1	2
	2003	1	0	1	0	0	0	1	1	2
	2004	1	0	1	0	0	0	1	1	2
All Groundfish	2000	22	7	29	3	124	126	25	131	156
	2001	19	6	25	2	135	138	21	141	163
	2002	18	11	29	2	130	132	20	140	161
	2003	21	9	30	2	137	140	24	146	169
	2004	24	7	31	1	140	142	25	147	173

Table 6-2 provides estimates of the ex-vessel value of groundfish catch off Alaska by hook-and-line vessels. It is an excerpt of Table 19 from the 2005 Economic SAFE (Hiatt et al, 2005). It is important to note that CP product tons have been converted to round weight equivalent tons and then are multiplied by ex-vessel values in order to make these comparisons. Of particular note is that CPs harvest considerably more of the available allocation than CVs; however, CVs earn a similar level of total revenue as CPs. This is due to the relatively high value and greater relative amount of harvest of sablefish by CVs.

Table 6-2: Ex-vessel value of the groundfish catch off Alaska by area, vessel category, gear, and species, 2000-04, ($ millions).

		Gulf of Alaska			Bering Sea and Aleutians			All Alaska		
Species	Year	Catcher vessels	Catcher processors	Total	Catcher vessels	Catcher processors	Total	Catcher vessels	Catcher processors	Total
All species	2000	69.4	11.6	81	3.8	72.8	76.5	73.2	84.3	157.6
	2001	53.9	9	62.9	5.6	66.7	72.3	59.4	75.8	135.2
	2002	71.7	11.8	83.5	7.7	58.7	66.4	79.4	70.5	149.9
	2003	67.2	12.3	79.4	3.9	73.6	77.5	71.1	85.9	156.9
	2004	64.8	10.7	75.5	2.4	69.9	72.3	67.2	80.5	147.8
Sablefish	2000	59.1	7.1	66.2	3	3.1	6	62.1	10.1	72.2
	2001	46.9	6	52.9	4.4	1.5	6	51.3	7.5	58.8
	2002	47.6	6.6	54.2	4.4	1.8	6.3	52	8.4	60.5
	2003	60.5	8	68.4	3.4	2.3	5.7	63.9	10.3	74.1
	2004	57.6	7.4	65.1	1.9	1.5	3.3	59.5	8.9	68.4
Pacific cod	2000	5.9	4.3	10.2	0.6	65.3	65.9	6.5	69.6	76.2
	2001	5.1	2.9	8	0.9	62.5	63.4	5.9	65.4	71.4
	2002	22.2	5	27.1	3	54.4	57.4	25.2	59.3	84.5
	2003	4.7	3.9	8.6	0.4	67.9	68.3	5.1	71.8	76.9
	2004	5.4	2.9	8.3	0.5	64.3	64.8	5.8	67.2	73
Flatfish	2000	0.5	0	0.5	0.1	3.1	3.2	0.5	3.1	3.7
	2001	-	0	0	0.1	1.2	1.3	0.1	1.2	1.3
	2002	-	0	0	0	1	1	0	1	1
	2003	-	0	0	-	0.9	0.9	-	0.9	0.9
	2004	-	0	0	-	0.7	0.7	-	0.7	0.7
Rockfish	2000	2.2	0.2	2.4	0.1	0.3	0.4	2.3	0.5	2.8
	2001	1.9	0.2	2.1	0.2	0.2	0.4	2.1	0.4	2.5
	2002	2	0.2	2.1	0.2	0.2	0.3	2.1	0.3	2.5
	2003	1.6	0.2	1.8	0.1	0.2	0.3	1.7	0.5	2.2
	2004	1.7	0.2	2	0.1	0.2	0.2	1.8	0.4	2.2

Table 6-3 provides data on participation in the Federal groundfish fisheries from 2002-2004. This data is comparable to data presented in tables 36 and 37 of the 2005 Economic SAFE (Hiatt et al, 2005). Note that some hook-and-line vessels fish in both the GOA and the BSAI. In total, 630 vessels fished with hook-and-line gear in the GOA, and 100 fished with hook-and-line gear in the BSAI in 2004. A combined unique total of 674 vessels fished in Federal hook-and-line fisheries in outside waters off Alaska in 2004. Some of these vessels also fished for halibut in the waters off Alaska.

Table 6-3: Participation in Federal Hook and Line Groundfish Fisheries Off Alaska, 2002-2004.

Year	Gulf of Alaska			Bering Sea and Aleutians			All Alaska		
	Catcher Vessels	Catcher/ Process	All Vessels	Catcher Vessels	Catcher/ Process	All Vessels	Catcher Vessels	Catcher/ Process	All Vessels
2002	619	23	642	78	42	120	633	42	675
2003	640	25	665	72	40	112	662	42	704
2004	611	19	630	60	40	100	633	41	674

Halibut Fishery data provided by the IPHC are presented in Table 6-4 below. In addition to the IPHC participation and catch data, average price data from the Alaska Commercial Fisheries Entry Commission (CFEC) has been used to value catch. In total, 1,523, vessels of various sized are reported to have landed halibut in the waters off Alaska in 2004. IPHC reports total catch at $60.7 million pounds with an ex-vessel value, based on CFEC prices, of just over $177 million.

Table 6-4: Number of vessels, catch (1000's of pounds), and value ($millions) of Pacific Halibut by vessel length class in the 2004 Commercial Halibut Fishery.

All Alaska Regulatory Areas Combined			
Overall Vessel Length	**No. of Vessels**	**Catch (000's lbs.)**	**Average Value ($million using $2.92/lb.)**
Unknown	70	272	0.8
0 to 25 ft.	196	338	1.0
26 to 30 tf.	124	760	2.2
31 to 35 ft.	254	5,569	16.3
36 to 40 ft.	199	3,124	9.1
41 to 45 ft.	175	4,590	13.4
46 to 50 ft.	152	6,377	18.6
51 to 55 ft.	74	4,093	12.0
56 + ft.	279	34,942	102.0
Total	**1,523**	**60,665**	**177.1**

Source: 2004 IPHC Annual Report Table 4A and CFEC value data available at http://www.cfec.state.ak.us

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 is done to simplify and focus 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:

Benefits: Use Value

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.

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. Thus, it is not likely that commercial fisheries use value would be affected by the alternatives. Further, the endangered short-tailed albatross does not possess a present-day consumptive value. In the case of other seabird species, Alaska Native populations have a traditional "subsistence" harvest right to the seabird resource. However, 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 subsistence use value would be adversely affected by the alternatives.

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 subsistence 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 those requirements in inside waters and adopting gear standards elsewhere. 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.

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 the State of Alaska (i.e. inside waters). Specific measures depend on vessel size, superstructure, and area fished. In simple terms, however, a vessel will be required to use a buoy bag line, a single streamer, or paired streamers under the status quo regulations.

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 minimal 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. As pointed out in the final rule adopting these standards and regulations (FR69-8, January 13, 2004, page 1935-1936), "These lines, when property deployed, meet the performance and material standards specified in the revised regulations." However, recent research has shown that small vessels may have difficulty meeting streamer line performance standard with the original heavy line provided by PSFMC but can meet the standard with a newly designed lightweight streamer line, which can be constructed at minimal cost (Rice and Cullenberg, 2006; Rice, Baker and Cullenberg, 2006). PSFMC is already distributing these lightweight streamer lines free of charge. As of March, 2006, 230 of the original heavy streamer lines and 362 of various types of lightweight streamer lines have been distributed (Rice and Cullenberg, 2006).

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. Further, it is expected that the current practice of providing streamer lines free of charge will continue, and that replacement of lost, damaged, or ineffective (heavy) streamer lines will occur without cost to vessel operators.

Consumers of Fishery Products

Potential domestic consumer losses resulting from the proposed action would fall into two parts. One part, corresponding to the loss of benefits from fish products that are no longer produced, would be a total loss to society. This is often referred to as a deadweight loss. As is discussed above, this action will not affect TAC, allocations, or the production of fishery products and is not expected to result in a deadweight loss effect on consumers.

The second part, corresponding to a reduction in consumer benefits, because consumers have to pay higher prices for the fish they continue to buy, would be offset by a corresponding increase in revenues to industry. While this second part is a loss to consumers, it is not necessarily a loss to society. It is a measure of the benefit that consumers used to enjoy, but that now accrues to industry in the form of increased prices and additional revenues. However, harvesters in the affected fisheries do not possess sufficient market power to influence the prices they receive for their ex-vessel and/or first wholesale products. Prices paid for such products are determined in a global market and harvesters are essentially "price takers." While some changes in operational costs may be associated with the proposed alternatives, harvesters generally are not able to pass those costs on to fish buyers or, eventually, to consumers. Thus, 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 option to each alternative, will likely have an effect on NOAA enforcement activities. Potential effects are identified in section 6.7.2 below. The alternatives, however, would not likely alter U.S. Coast Guard (USCG) operations. The Coast Guard, consistently reports that it considers all activities to support the commercial fisheries off Alaska as part of a national budget. That is to say, the agency has a long standing commitment to enforce, to the best of its ability, any fishery management measure the Council proposes and the Secretary of Commerce approves, and to do so within existing budgetary and resource constraints. Thus, Coast Guard resource levels can generally be regarded as fixed within the federal budget cycle, and the proposed action is not expected to change those resource levels or how they are applied.

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

Table 6-5 through Table 6-7 below provide a breakdown of the alternatives designed to clearly identify what the alternatives would require and how they differ from the status quo. The reader will find it very helpful to refer to these tables when reviewing the discussions presented below.

Impacts of Alternative 2

Alternative 2 contains several elements, depending on gear type and area fished, that alter seabird avoidance regulations, as well as an option to eliminate a record keeping requirement. The potential effects of each of these elements are discussed below.

Vessels Operating in Inside Waters

Alternative 2 eliminates seabird avoidance requirements for all (inclusive of snap and stuck gear) hook-and-line vessels fishing in the inside waters of Prince William Sound, Cook Inlet, and Southeast Alaska. Depending on vessel length and superstructure, these vessels are presently required to use a buoy bag line or a single streamer line, when deploying hook-and-line gear. Under Alternative 2, however, seabird avoidance measures would no longer be required of any hook-and-line vessels in the inside waters of Prince William Sound, Cook Inlet, and Southeast Alaska. Thus, alternative 2 does not impose additional costs on these vessels and would be expected to reduce operational costs associated with the time to deploy, de-snag, retrieve, and maintain seabird avoidance devices, which may marginally improve vessel safety. Vessel operational cost of production data is not presently being collected. Thus, it is not possible to quantify the savings that might occur under this element of Alternative 2.

Table 6-5: Hook and Line Snap on Gear in inside waters ["NMFS Reporting Area 649 (Prince William Sound), 659 (Eastern GOA Regulatory Area, Southeast Inside District) or in state waters of Cook Inlet"]

Vessel Characteristics	Status Quo Requirements	Alternative 2 Requirements	Alternative 3 Requirements
>26 ft to 32 ft LOA	minimum of one buoy bag line	none	minimum of one buoy bag line in stat areas 345603, 345534, 325431, and 325401; nothing in rest of inside waters.
>32 ft to 55 ft LOA and does not have masts, poles, or rigging	minimum of one buoy bag line	none	minimum of one buoy bag line in stat areas 345603, 345534, 325431, and 325401; nothing in rest of inside waters.
>32 ft to 55 ft LOA and has masts, poles, or rigging	minimum of a single streamer line	none	In stat areas 345603, 345534, 325431, and 325401; snap gear requires single streamer line a minimum of 45 m long with a minimum aerial extent of 20 m; nothing in rest of inside waters.
>55 ft LOA	minimum of a single streamer line of a standard specified at § 679.24(e)(5)(ii)	none	In stat areas 345603, 345534, 325431, and 325401; snap gear requires single streamer line of a standard specified at § 679.24(e)(5)(iv); nothing in rest of inside waters.

Table 6-6: Hook-and-line fixed gear, in the EEZ, not including any inside waters.

Vessel Characteristics	Status Quo Requirements	Alternative 2 Requirements	Alternative 3 Requirements
>26 ft to 55 ft LOA and does not have masts, poles, or rigging	minimum of one buoy bag line and one other device	minimum of one buoy bag line and no other device required	minimum of one buoy bag line and no other device required
>26 ft to 55 ft LOA and has masts, poles, or rigging	minimum of a single streamer line and one other device	one streamer line, a minimum of 90 m long with a minimum aerial extent of 40 m.	one streamer line, a minimum of 90 m long with a minimum aerial extent of 40 m.
>55 ft LOA	minimum of paired streamer lines of a standard specified at § 679.24(e)(5)(iii)	no change	no change

Table 6-7: Hook-and-line Snap on Gear, in the EEZ, not including any inside waters.

Vessel Characteristics	Status Quo Requirements	Alternative 2 Requirements	Alternative 3 Requirements
>26 ft to 55 ft LOA and does not have masts, poles, or rigging	minimum of one buoy bag line and one other device	minimum of one buoy bag line and no other device required	minimum of one buoy bag line and no other device required
>26 ft to 55 ft LOA and has masts, poles, or rigging	minimum of a single streamer line and one other device	one streamer line, a minimum of 45 m long and with a minimum aerial extent of 20 m.	one streamer line, a minimum of 45 m long and with a minimum aerial extent of 20 m.
>55 ft LOA	minimum of a single streamer line of a standard specified at § 679.24(e)(5)(iv) and one other device	no change	no change

Vessels Operating in the EEZ

Alternative 2 would change seabird avoidance measures for vessels up to 55 feet in length in this gear/area class. It would not change seabird avoidance measures currently in place for vessels over 55 feet in length.

Alternative 2 would affect 26' to 55' vessels in this gear/area class that do not have masts, poles, or rigging and use either stuck or snap gear by eliminating the requirement that they deploy a second seabird avoidance device in addition to the buoy bag line. However, vessels in these categories would still be required to deploy a buoy bag line. The elimination of a second seabird avoidance device would tend to decrease vessel operational costs associated with the time required to deploy and retrieve the device and may marginally lead to greater vessel safety. Vessel operational cost of production data is not presently being collected. Thus, it is not possible to quantify the savings that might occur under this element of Alternative 2.

Alternative 2 would affect 26' to 55' vessels in this gear/area class that are equipped with masts, poles, or rigging by eliminating the requirement that they deploy a second seabird avoidance device in addition to the single streamer line. However, this alternative would also now impose the performance standard depending on gear type. For vessels that use stuck gear in the EEZ, the new performance standard will require use of a single streamer line that must be a minimum of 90 meters long and with an aerial extent not less than 40 meters. For vessels that use snap gear in the EEZ, the new performance standard will require use of a single streamer line that must be a minimum of 45 meters long and with an aerial extent not less than 20 meters. As has been pointed out above, vessels in these gear/area classes have already been provided with streamer lines that have been designed to meet this standard when properly deployed. Thus, the effect of this alternative on this class of vessel is to reduce the compliance burden by eliminating the second device while continuing to require the streamer lines currently being used, but with a formal performance standard.

The added performance standard imposes a greater risk of citation for infraction if a vessel operator is not deploying the streamer line properly. Thus, it is likely that greater diligence may be required of the vessel operator and crew in proper use and monitoring of the streamer line. However, any costs associated with meeting the performance standard are likely to be small and will be offset, partially at least, by eliminating the time required to deploy and retrieve a second seabird avoidance device. Vessel operational cost of production data is not presently being collected. Thus, it is not possible to quantify the net effect on operational costs that might occur under this element of Alternative 2. However, this element of Alternative 2 is not expected to impose more than a slight additional burden if any at all.

Option to Alternative 2

The option to Alternative 2 would eliminate the seabird avoidance plan presently required of all vessel operators. This option has been suggested by NOAA Enforcement as a way to reduce the enforcement burden. Thus, the option will have beneficial effects by eliminating the time necessary for the vessel operator and crew to prepare the plan and by reducing the enforcement burden of reviewing the plan during boarding.

Impacts of Alternative 3

Alternative 3 would adopt the same changes as proposed in Alternative 2; however, Alternative 3 would require vessels fishing with hook-and-line gear in these designated areas to use the same seabird avoidance measures that those required in the EEZ. The reason for this change is that seabird surveys have determined that Procellariiform seabirds occur within these four statistical areas but not in the remainder of the inside waters of Cook Inlet, Prince William Sound, and Southeast Alaska. Alternative 3 modifies Alternative 2 by addressing the fact that black-footed albatrosses are present in the four statistical areas. This alternative would thus require of vessels using snap or fixed hook-and-line gear in these inside areas the same seabird avoidance devices required of vessels fishing the outside waters (i.e. EEZ), as discussed under the impacts of Alternative 2 and as shown in Table 6-6 and Table 6-7.

Due to their similarities, the potential impacts of Alternative 3 are nearly identical as those of Alternative 2 and are not restated here. Recall, however, that under the status quo, hook-and-line vessels less than 55 feet that do not have masts, poles, or rigging, are required to deploy a buoy bag line when fishing in inside waters. Such vessels are also required to use a buoy bag line and one other device when fishing outside waters. Alternative 2 eliminates the inside waters requirement and drops the other device requirement in outside water for this class of vessel. Alternative 3 would require that such vessels that have historically fished in the four statistical areas in question would continue to be required to use a buoy bag line. Thus, Alternative 3 is slightly more restrictive than Alternative 2 with regards to 26-55 foot vessels that lack superstructure. Unfortunately, data on vessel configuration is insufficient to allow a quantitative analysis of the numbers of vessels that may be affected by the reclassification.

Similarly, Alternative 3 is slightly more restrictive than Alternative 2 with regards to 26 to 55 foot vessels that have mast, poles, or rigging and fish the four statistical areas in question. Such vessels are presently required to use a streamer line in either inside or outside waters. Alternative 2 eliminates that requirement in inside waters including the four statistical areas in question. Alternative 3 would similarly eliminate those requirement in inside waters except in the four statistical areas where a single streamer line would continue to be required, and it would have to meet the performance standard dictated by the gear type being used. This is also true of vessels greater than 55 feet. Under Alternative 2 they would not be required to use streamer lines in the four statistical areas in question but would be required to do so under the reclassification of Alternative 3. Thus, Alternative 3 is slightly more restrictive than Alternative 2.

6.8 Summary of the Analysis of Alternatives

The analyses presented above provide qualitative estimates of the benefits and costs of the measures under consideration by the Council. The analysis has identified several impact categories for which the alternatives are not likely to create effects. These include commercial fisheries use value, non commercial (e.g. subsistence) use value, fishing vessel revenue, related fisheries, communities, equipment costs, consumers, USGC enforcement, and fisheries management. Thus, any effects that may result from the proposed alternatives are likely to be limited to operational cost, vessel safety, recordkeeping and reporting, and NMFS enforcement.

Alternative 2 eliminates seabird avoidance requirements in inside waters. Thus, Alternative 2 does not impose additional costs on inside waters vessels and would be expected to reduce operational costs

associated with the time to deploy, de-snag, retrieve, and maintain seabird avoidance devices, which may also marginally improve vessel safety.

Hook-and-line vessels that are 26 to 55 feet in length, lack superstructure, and fish in the EEZ would continue to be required to deploy a buoy bag line under Alternative 2. However, the present requirement of a second seabird avoidance devise would be eliminated. The elimination of a second seabird avoidance device would tend to decrease vessel operational costs associated with the time required to deploy and retrieve the device and may marginally lead to greater vessel safety. This would also be true for vessels that are quipped with superstructure in this size/area class. They would not have to deploy a second seabird avoidance device. However, they would be required to meet a new gear standard, depending on their gear type (snap vs. stuck). Research shows that the seabird avoidance equipment presently available to operators, free of charge, is capable of meeting the new standard. Nonetheless, some small cost may be associated with greater diligence in monitoring seabird avoidance devices and ensuring they are properly deployed. However, any costs associated with meeting the performance standard are likely to be small and will be offset, partially at least, by eliminating the time required to deploy and retrieve a second seabird avoidance device.

The option to Alternative 2, and 3, would eliminate the requirement to prepare a seabird avoidance plan. This option has been suggested by NOAA Enforcement as a way to reduce the enforcement burden. Thus, the option will have beneficial effects by eliminating the time necessary for the vessel operator and crew to prepare the plan and by reducing the enforcement burden of reviewing the plan during boarding.

Alternative 3 would adopt the same changes as proposed in Alternative 2; however, Alternative 3 would reclassify four inside waters statistical areas as outside waters for the purposes of seabird avoidance. The potential impacts of Alternative 3 are nearly identical as those of Alternative 2. However, Alternative 3 would require that vessels that have historically fished in the four statistical areas in question would have to use seabird avoidance devices required for their vessel and gear type in the EEZ. Thus, Alternative 3 is slightly more restrictive because it does not eliminate seabird avoidance requirements in the four statistical areas as Alternative 2 proposed to do.

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 inside (elimination of all requirements) and outside (elimination of second device) waters However, vessel operational cost of production data is not presently being collected. Thus, it is not possible to quantify the net effect on operational costs that might occur under each alternative. However, the alternatives to the status quo are not expected to impose more than a slight additional burden if any at all.

Though defensible quantitative estimates of potential effects are not possible at this time, the qualitative analysis provided indicates that, 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 the threshold 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 objective of this proposed regulatory amendment is to revise the current seabird avoidance requirements to improve their effectiveness at reducing the incidental take of short-tailed albatrosses and other seabird species. This could be achieved by: 1) providing gear standards for applicable measures, 2)

adding new measures, and/or 3) deleting current measures.

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 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 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 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 Unites 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.

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) and 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 and catcher/processors, 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 Alaska managed fisheries), are less than or equal to $4.0 million in a year. Further, fishing vessels were considered to be large if they were affiliated with an AFA fishing cooperative in 2004. The members of these cooperatives had revenues that exceeded the $4.0 million threshold. Vessels affiliated with cooperatives have retained their separate identities for the purposes of counting numbers of entities; that is, 10 vessels affiliated with an AFA cooperative are treated as 10 large entities, not as one large entity.

The entities that would be directly regulated by the alternatives are those vessels that fish for ground fish and/or halibut with hook-and-line gear in the waters off Alaska. 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 off Alaska. 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) 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 and not the IFQ level. This analysis is complicated by the fact that the halibut fishery is managed somewhat separately than the Federal groundfish fisheries. Thus, data from multiple sources and years have been used to estimate the numbers of large and small entities.

Section 6.6 of the RIR provides a description of these fisheries and estimates the numbers of unique vessels that presently participate. As shown in Table 6-4 and Table 6-3, approximately 1,523 vessels participated in the Pacific halibut fishery off Alaska, and 674 vessels participated in the Federal hook-and-line groundfish fisheries off Alaska in 2004. Logbook research (Melvin and Wainstein, 2006) indicates that 506 of the vessels that caught halibut also used hook-and-line gear to harvest groundfish in the waters off Alaska in 2004. Thus, there are approximately 1,017 (1,523-506) hook-and-line vessels that caught halibut but not groundfish and there are approximately 168 (674-506) hook-and-line vessels that caught groundfish but not halibut. The total of these two counts is 1185 unique vessels.

This analysis uses actual revenue reported by fishing entities for the year 2005 as compiled and supplied in a comprehensive database by the Alaska Fish Information Network (AKFIN). The analysis revealed that 141 eligible vessels had total gross revenue from all directed fishing sources that was greater than $4 million in 2005. This implies that, ignoring affiliations, 1,071 vessels could be considered small entities. A review of American Fisheries Act permit data revealed that none of the vessels with gross revenue less than $4 million in 2004 are AFA permitted vessels.

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 Paperwork Reduction Act. Further, the option to each alternative being considered that would eliminate preparation of a seabird avoidance plan would reduce the record keeping an reporting requirements presently in place. However, the alternatives to the status quo would continue to require measures not subject to the Paperwork Reduction Act. Specifically, the present regulation

requires the use of certain types of seabird avoidance devices when fishing with hook-and-line gear in the waters off Alaska. The alternatives to the present regulation would reduce some of the requirements while adopting a specific performance standard.

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 briefly 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 the alternatives directly regulated entities, the vast majority of which are small entities.

Since the initial adoption of seabird avoidance regulations research has been conducted to more precisely identify the 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 and whether those devices are effective or unnecessary. The proposed alternatives 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 inside waters where endangered birds are not present, and where many small entities operate. The proposed alternatives also adopt gear standards, rather than design standards, in outside waters. The proposed alternatives also base requirements on vessel capability (i.e having superstructure or not). Further, an option to the proposed alternatives would eliminate preparation of a seabird avoidance plan. If this option is adopted by the Council, it would ease the compliance and reporting requirements for all affected entities, include the large number of small entities that are potentially directly affected by the proposed alternatives. In addition, a program is in place to provide streamer lines, free of charge, to those vessels that must presently use them. This program is anticipated to continue.

7.8 Impacts of the Alternatives

The analyses presented in section 6.7 of the RIR provides qualitative estimates of the benefits and costs of the measures under consideration by the Council. The analysis has identified several impact categories for which the alternatives are not likely to create effects. These include commercial fisheries use value, non commercial (e.g. subsistence) use value, fishing vessel revenue, related fisheries, communities, equipment costs, consumers, USGC enforcement, and fisheries management. Thus, any effects that may result from the proposed alternatives are likely to be limited to operational cost, vessel safety, recordkeeping and reporting, and NMFS enforcement.

Alternative 2 eliminates seabird avoidance requirements in inside waters. Thus, Alternative 2 does not impose additional costs on inside waters vessels and would be expected to reduce operational costs associated with the time to deploy, de-snag, retrieve, and maintain seabird avoidance devices, which may also marginally improve vessel safety.

Hook-and-line vessels that are 26 to 55 feet in length, lack superstructure, and fish in the EEZ would continue to be required to deploy a buoy bag line under Alternative 2. However, the present requirement of a second seabird avoidance devise would be eliminated. The elimination of a second seabird avoidance device would tend to decrease vessel operational costs associated with the time required to deploy and retrieve the device and may marginally lead to greater vessel safety. This would also be true for vessels that are quipped with superstructure in this size/area class. They would not have to deploy a second seabird avoidance device. However, they would be required to meet a new performance standard, depending on their gear type (snap vs. stuck). Research shows that the seabird avoidance equipment presently available to operators, free of charge, is capable of meeting the new standard. Nonetheless, some small cost may be associated with greater diligence in monitoring seabird avoidance devices and ensuring they are properly deployed. However, any costs associated with meeting the performance standard are likely to be small and will be offset, partially at least, by eliminating the time required to deploy and retrieve a second seabird avoidance device.

The option to Alternative 2, and 3, would eliminate the requirement to prepare a seabird avoidance plan. This option has been suggested by NOAA Enforcement as a way to reduce the enforcement burden. Thus, the option will have beneficial effects by eliminating the time necessary for the vessel operator and crew to prepare the plan and by reducing the enforcement burden of reviewing the plan during boarding.

Alternative 3 would adopt the same changes as proposed in Alternative 2; however, Alternative 3 would reclassify four inside waters statistical areas as outside waters for the purposes of seabird avoidance. The potential impacts of Alternative 3 are nearly identical as those of Alternative 2. However, Alternative 3 would require that vessels that have historically fished in the four statistical areas in question would have to use seabird avoidance devices required for their vessel and gear type in the EEZ. Thus, Alternative 3 is slightly more restrictive because it does not eliminate seabird avoidance requirements in the four statistical areas as Alternative 2 proposed to do.

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 inside (elimination of all requirements) and outside (elimination of second device) waters However, vessel operational cost of production data is not presently being collected. Thus, it is not possible to quantify the net effect on operational costs that might occur under each alternative. However, the alternatives to the status quo are not expected to impose more than a slight additional burden if any at all.

Though defensible quantitative estimates of potential effects are not possible at this time, the qualitative analysis provided indicates that, 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 the threshold for a "significant" action (as that term is defined in E.O. 12866).

8.0 Conclusion

National Oceanic and Atmospheric Administration Administrative Order 216-6 (NAO 216-6) (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality regulations at 40 C.F.R. 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." In accordance with NAO 216-6 and the CEQ's context and intensity criteria, each criterion listed below is relevant in making a finding of no significant impact and shall be considered individually, as well as in combination with the others, in determining the significance of the impacts of the preferred alternative.

1) Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

2) Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?

3) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?

4) Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety?

5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

6) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

7) Are significant social or economic impacts interrelated with natural or physical environmental effects?

8) Are the effects on the quality of the human environment likely to be highly controversial?

9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?

10) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of

significant scientific, cultural or historical resources?

13) Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

15) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species

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.

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 i n 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.

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.

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.

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 Regualtory 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.

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".

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 scagenging 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 Alask. 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.

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.

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.

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.

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