

FINAL DRAFT

Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for
a Regulatory Amendment to Revise Regulations for
Seabird Avoidance Measures
in the Hook-and-line Fisheries off Alaska in International Pacific Halibut Commission Area 4E



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ABSTRACT

This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis analyzes the impacts of potential revisions to seabird avoidance measures used in the hook-and-line fisheries conducted in the Bering Sea. This proposed action is based on a review of satellite tagging studies depicting endangered short-tailed albatrosses' usage of Bering Sea habitat and hook-and-line fisheries' spatial and temporal harvest of Pacific halibut and Pacific cod in the eastern Bering Sea. This seabird/fisheries interaction analysis concludes that the requirement of using seabird avoidance measures in a portion of IPHC Area 4E may be unnecessary due to limited usage of this area by seabirds of conservation concern, and in particular, a low probability of fishing vessels encountering short-tailed albatrosses. Alternatives in this analysis eliminate or modify the required use of seabird avoidance measures for different vessel size classes in IPHC Area 4E. The objective of this proposed regulatory amendment is to improve the efficiency of current seabird avoidance requirements by relieving unnecessary regulatory burden and its associated costs in areas where the incidental take of short-tailed albatrosses and other species of conservation concern is extremely low.

EXECUTIVE SUMMARY

Purpose and Need

This environmental assessment/regulatory impact review/initial regulatory flexibility analysis (EA/RIR/IRFA) assesses the potential environmental, economic, 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 and the Pacific halibut fishery in U.S. Convention waters off Alaska.

The intent of these changes is to relieve an unnecessary regulatory burden on fisheries in areas where seabird avoidance measures are not needed and to maintain their use in areas where they are. The Council conducted an initial review of this proposed action in April 2008 based on analysis of the alternatives, presented herein.

Status Quo and Action Alternatives

The alternatives are listed below and in Table 1-1, and the action area is shown in Figure 1.

Alternative 1 – No Action. Status Quo for vessels greater than 26 ft length overall (LOA) in IPHC Area 4E:

- a. Vessels less than 55 ft LOA with masts, poles, or rigging using snap-on hook-and-line gear are required to deploy one streamer line while setting gear. Specifically, the streamer line must be at least 45 m long and must be maintained with a minimum aerial extent of 20 m.
- b. Vessels less than 55 ft LOA with masts, poles, or rigging not using snap-on hook-and-line gear (conventional gear) are required to deploy one streamer line while setting gear. Specifically, the streamer line must be a minimum of 90 m long and must be maintained with a minimum aerial extent of 40 m.
- c. Vessels less than 55 ft LOA without masts, poles, or rigging and not capable of adding poles or davits to accommodate a streamer line (including bowpickers) must tow a buoy bag in such a way as to deter birds from the sinking groundline, while setting gear.
- d. Vessels greater than 55 ft LOA with snap-on gear are required to use one streamer line while setting gear. Specifically, the streamer line must be at least 45 m long and must be maintained with a minimum aerial extent of 20 m.
- e. Vessels greater than 55 ft LOA with other than snap-on gear are required to use paired streamer lines 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.

Alternative 2. EXEMPTION FOR 26 ft to 32 ft LOA VESSELS

Maintain status quo seabird protection measures, except that vessels greater than 26 ft and less than or equal to 32 ft LOA are not required to use seabird avoidance measures in IPHC Area 4E. One of the following options would continue to require seabird avoidance measures in the short-tailed albatross (STAL) subarea of IPHC Area 4E:

Option 1. Vessels fishing in the STAL subarea of IPHC Area 4E are required to comply with seabird avoidance regulations as detailed in Alternative 1, above.

Option 2. Vessels fishing in the STAL subarea of IPHC Area 4E are required to tow a buoy bag in such a way as to deter birds from the sinking groundline, while setting gear.

Alternative 3. EXEMPTION FOR 26 ft to 55 ft LOA VESSELS

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

Option 1. Vessels fishing in the STAL subarea of IPHC Area 4E are required to comply with seabird avoidance regulations as detailed in Alternative 1, above.

Option 2. Vessels fishing in the STAL subarea of IPHC Area 4E are required to tow a buoy bag in such a way as to deter birds from the sinking groundline, while setting gear.

Alternative 4. EXEMPTION FOR ALL VESSELS OVER 26 ft LOA

Seabird avoidance measures are not required in IPHC Area 4E, except as required by one of the following options:

Option 1. Vessels fishing in the STAL subarea of IPHC Area 4E are required to comply with seabird avoidance regulations as detailed in Alternative 1, above.

Option 2. Vessels fishing in the STAL subarea of IPHC Area 4E are required to tow a buoy bag in such a way as to deter birds from the sinking groundline, while setting gear.

NOTES:

1. Vessels less than or equal to 32 ft LOA in IPHC Area 4E shoreward of the EEZ (inside 3 nm) are not required to use seabird avoidance measures (i.e., are not governed by any alternatives under consideration in this analysis).
2. The weather safety standard would continue to apply to any vessel using seabird avoidance gear; that is:
 - a. Use of seabird avoidance devices would be discretionary for vessels 26 ft to 55 ft LOA when sustained winds exceed 30 knots.
 - b. Use of seabird avoidance gear is discretionary in winds greater than 45 knots for all vessels, and in winds between 30 knots and 45 knots, vessels normally required to use paired streamer lines (vessels longer than 55 ft LOA) may use only a single streamer line deployed from the windward side of the vessel.
3. This action applies only to vessels using hook-and-line gear. Fishermen using jig gear are not required to use seabird avoidance measures.
4. All requirements described here are minimum standards. Vessels may choose to use additional measures to limit interactions with seabirds.

Summary of the Effects to Seabird Species in the Bering Sea

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

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

Relieving the requirement for certain vessels to use seabird avoidance measures in IPHC Area 4E in Alternatives 2, 3, and 4 could cause unknown impacts to short-tailed albatrosses; therefore, the Council created options for each alternative that would mitigate any potentially significant or unknown impacts that might be caused by implementation of Alternatives 2, 3, or 4. With the use of these options, no significant or unknown impacts to seabird populations are expected to occur.

Options 1 and 2 both offer some protection to STAL in the STAL area of IPHC Area 4E. Option 1, which requires the status quo measures inside the STAL area, is more precautionary than Option 2, which only requires the use of a buoy bag. If one of the options is chosen to afford protection for STAL inside the STAL area of IPHC Area 4E, then only vessels fishing in the non-STAL area of IPHC Area 4E would no longer be required to use seabird avoidance measures. Nearly all of the effort in the non-STAL area is by vessels 26 ft to 32 ft LOA, which would get relief under Alternatives 2, 3, or 4. Alternatives 3 and 4 would provide very limited additional relief to larger vessels at current levels of participation.

Summary of the Cumulative Effects

Past effects on seabird species, include hunting and harvesting for feathers; eradication of nests; military programs to relocate adults 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 likely have contributed to population decline. These stressors have affected some species more than others, including black-footed and short-tailed albatrosses. Red-legged kittiwakes and Kittlitz's murrelet have been affected by oil spills and climate change (Table 7-1).

Previous regulations on hook-and-line fisheries in Alaska are likely to have decreased fishery bycatch rates since 2001 (Figure 5). Future actions identified in the Alaska Groundfish Harvest Specifications EIS that could impact seabirds were ecosystem-sensitive management, fisheries rationalization, traditional management tools, actions by other Federal, State, and International agencies, and private action. In nearly all cases, future actions were likely to reduce the impacts on seabirds, except for subsistence harvest. Current and future threats to seabirds, other than those analyzed in this document, include collisions with aircrafts, vessels, and cables on fishing

vessels, plastics ingestion, oil spills and ship bilge dumping, and high seas driftnets and gillnet fisheries.

Because these changes in the use of seabird avoidance gear are operationally conducted at the surface of the water, effects on other ecosystem components of this action, as well as the cumulative effects of similar actions, are minimal. No effects on the seafloor or other sub-surface habitat structures are expected. One potential effect on the ecosystem is the discard or loss of streamer lines and buoy bags as marine debris when lines become entangled and unrecoverable. Gear could enter the ecosystem by either the disposal of gear into the water or by the breakage of gear from the vessel (Brent Pristas, NOAA Office of Law Enforcement, personal communication, August 28, 2008). Derelict 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 action could minimize the amount of gear discarded or lost and, thus, mitigate these effects.

Preferred Alternative and Option

In June 2008, the Council recommended Alternative 3 with option 1. This alternative and option was selected because most of the vessels participating in the hook-and-line fishery in Area 4E are less than 55 feet in length. The use of seabird avoidance gear on these vessels can be difficult because there may not be deck space available for the gear or superstructure to support the lines. Smaller vessels also are likely to have fewer crewmembers available to handle the gear. Larger vessels are more likely to have the deck space, superstructure, and crew available to allow for safe and effective use of seabird avoidance gear. Because of the presence of short-tailed albatross in the STAL area of Area 4E, the Council recommended option 1 for vessels fishing in this area, to ensure the continued protection of short-tailed albatross from potential incidental takes by any hook-and-line vessel.

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

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

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

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

³ STAL subarea – southwestern portion of 4E where albatross are more likely to occur. See Figure 1.

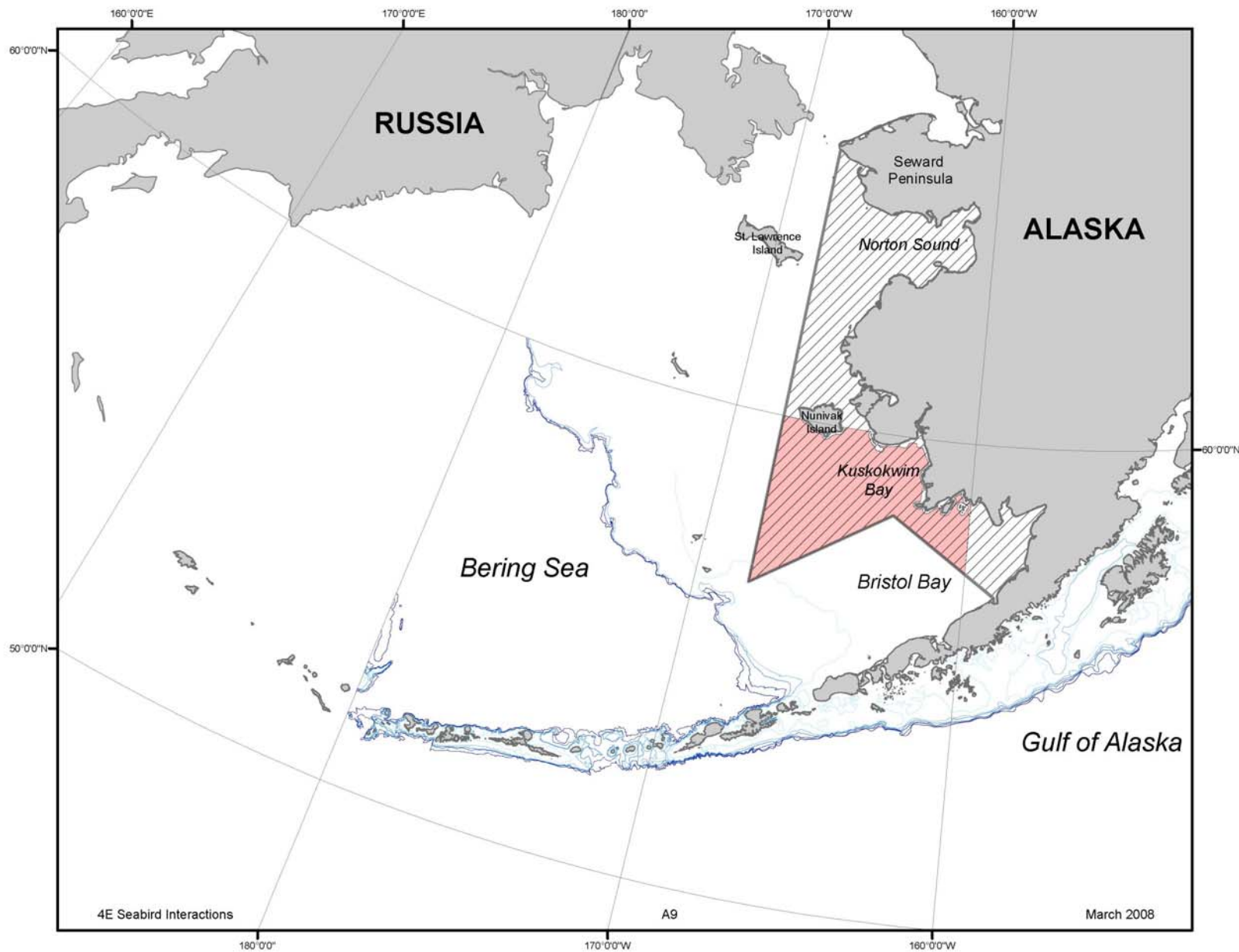


Figure 1 IPHC Area 4E shown in diagonal hatch and STAL subarea inside 4E south of 60N and west of 160W shown in pink. 0-3 nm waters are not included in the STAL area.

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1.0 INTRODUCTION AND BACKGROUND

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

This environmental assessment (EA) analyzes alternatives that include eliminating the required use of seabird avoidance measures in a portion of the Eastern Bering Sea, where seabirds of concern are less likely to be encountered. The EA is followed by a regulatory impact review (RIR) and initial regulatory flexibility analysis (IRFA) for assessing the economic and socioeconomic impacts of the alternatives, as well as impacts accruing uniquely to small entities. In this chapter, we establish the purpose and need for federal action, describe the geographical scope of the action area, provide background information for the reader, and discuss the specific statutory requirements for such action.

Purpose and Need for this Action

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

This action furthers the goals and objectives of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Northern Pacific Halibut Act of 1982 (Halibut

Act), the Migratory Bird Treaty Act (MBTA), and the ESA, while providing relief from unnecessary regulatory burdens on hook-and-line fishermen in IPHC Area 4E.

Action Area

The groundfish fisheries occur in the North Pacific Ocean and Bering Sea in U.S. Exclusive Economic Zone (EEZ) adjacent to Alaska, from 50°N to 65°N latitude. 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." The seabird avoidance measures in this document only affect groundfish and halibut fishing with hook-and-line gear in IPHC Area 4E (Figure 1), which encompasses a portion of the eastern Bering Sea shelf from Bristol Bay to Norton Sound. These fisheries are also conducted in adjacent State of Alaska waters from the shore to 3 nautical miles offshore. The short-tailed albatross (STAL) sub-area of IPHC Area 4E is also depicted in Figure 1, shown in solid pink. The STAL area was defined, based on spatial analysis and consultation with FWS, as discussed in detail in this document.

Background on Seabird Actions in Alaska Waters

NMFS issued final regulations for seabird avoidance measures in the Gulf of Alaska (GOA) and Bering Sea Aleutian Islands (BSAI) groundfish hook-and-line fisheries on April 29, 1997 (62 FR 23176) and in the Pacific halibut fishery off Alaska on March 6, 1998 (63 FR 11161). Since that time, the Council has continued to refine the regulations based on seabird/fisheries interaction research. Final action, taken in 2007, resulted in regulatory changes that relieved the requirements in inside waters where seabird species of conservation concern are rare, and added a standard to the usage of seabird avoidance gear in EEZ waters where those species are more common.

This EA draws heavily on the EA prepared in support of that earlier regulatory change (NMFS 2007a) and hereby incorporates that document by reference. The analyses contained in that EA were based on results from research projects suggested by the Council's Science and Statistical Committee (SSC), and conducted by Washington and Alaska Sea Grant Programs (SGP). The research included: 1) hook-and-line surveys in waters off Alaska which revealed a rarity of seabird presence in inside waters; and 2) experiments conducted to test the 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 the use of construction standards in waters where seabirds are more common, while eliminating requirements in waters where seabirds are rarely observed. That EA also analyzed options that would eliminate both the Seabird Avoidance Plan and the use of a second "other device"—both of which were required by regulations at that time. The final research results of the Washington SGP study were presented to the Council at its June 2006 meeting, the Council took initial action

at its December 2006 meeting, and they took final action in February of 2007. The regulatory changes were implemented by final rule at 72 FR 71601, published December 18, 2007, and effective January 17, 2008.

In the final preferred alternative for the 2007 seabird action, the Council also requested analysis of the impacts of “*removal of seabird avoidance measures in IPHC Area 4E and potential subareas to identify whether similar actions, [as taken in the GOA], might be taken in IPHC Area 4E to both protect endangered seabirds and reduce restrictions imposed on fishermen where they may not be applicable.*”

This environmental assessment constitutes that analysis. In October 2007, staff presented to the Council an update on the preparation of this analysis and on on-going consultation with FWS on the ESA issues surrounding interactions with the STAL. A preliminary draft EA/RIR/IRFA was presented in February 2008, and the SSC provided comments. Those comments are listed below and staff response is detailed in italics.

- Black-footed albatross may become a new species of conservation concern, but have not been included in this analysis.
Blackfooted albatrosses are discussed on pages 41, 44, 50, 61, and Figures 9 and 21.
- The analysis should note that the small vessels fishing within 3nm of shore [in IPHC Area 4E] are exempt from seabird avoidance requirements and will continue to be so under all of the proposed alternatives. Maps and text should make this clearer.
See page 4 and Figure 1.
- The analysis should differentiate between the southeastern and southwestern portions of IPHC Area 4E as it seems unlikely the short-tailed albatrosses frequent inner Bristol Bay at this time.
Figure 1 shows the STAL area as part of IPHC Area 4E south of 60 N lat. and west of 160 W long. The eastern portion of Bristol Bay is not included in the STAL area.
- The analysis should include a description of when the various fisheries are prosecuted in IPHC Area 4E and how the timing of the fisheries affects their likely interaction with seabirds. For example, shearwaters are present in the region in high numbers in summer, but not in winter. Likewise, eiders are present mostly/only in winter. Clarifying temporal overlap patterns might further reduce concern about seabird bycatch in the area.
Please refer to pages 54, 60, and Figure 19.
- If STAL numbers increase, it is likely that they will increasingly occupy areas of their former range, including inshore habitats. When this occurs, either special protection measures will no longer be required, as they will have been de-listed, or appropriate measures for protecting them can be instituted.
Please refer to page 37.
- The analysis should clearly indicate that the standards in the alternative are minimum standards.
This is mentioned in section 2 near the end of the description of alternatives.

- The analysis would be clearer if the alternatives were reworded to only apply to the STAL area, rather than all of IPHC Area 4E, and then have the options refer to the STAL area.

The current alternative set was approved by the Council in October 2007 and mirrors the procedures from the previous seabird action in exempting a large area (IPHC Area 4E), but requiring gear use in a smaller subarea where birds of conservation concern have been observed (STAL area). In the Feb 2007 final action, the large exempted area was southeast Alaska inside waters, and the three small subareas where conservation measures continued to be required were Chatham Strait, Cross Sound, and Dixon Entrance where short-tailed and blackfooted albatrosses were observed.

This initial draft EA/RIR/IRFA was presented to the Council in April 2008, and final action by the Council with the selection of a preferred alternative was taken June 2008. At the June 2008 meeting, the Council made the following motion.

“The Council adopts Alternative 3, Option 1, as its preferred alternative for revised seabird deterrence requirements in IPHC Area 4E. For hook and line vessels fishing in IPHC Area 4E north of 60 degrees or east of 160 degrees, vessels $\leq 55'$ LOA will not be required to use seabird deterrence devices. For hook and line vessels fishing in IPHC Area 4E south of 60 degrees latitude and west of 160 degrees longitude (this area is called the “STAL Subarea”), requirements for seabird deterrence devices are status quo.”

Public Participation

Public testimony on seabird/fisheries interactions was invited at the October 2007 Council meeting in Anchorage, at the February 2008 meeting in Seattle where a preliminary presentation of this EA/RIR/IRFA package was given, at the April 2008 meeting in Anchorage where the Council took initial action, and finally at the June 2008 meeting in Kodiak where the Council took final action to select a preferred alternative.

Applicability of All Alternatives

Management of the Federal groundfish fishery located off Alaska in the 3 nm to 200 nm U.S. EEZ is conducted under the BSAI and GOA groundfish fishery management plans (FMPs) (NPFMC 2008a and 2008b). 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 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 Woodby (2005), for additional detail about these fisheries. Regulation 5 AAC 28.055 adopts by reference Federal regulations for all hook-and-line fisheries

for groundfish in State waters (Appendix 1). Management of the Individual Fishing Quota (IFQ) and Community Development Quota (CDQ) halibut fisheries occur in U.S. Convention waters off Alaska, which extends 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; 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). The Council has worked with the State of Alaska to ensure seabird avoidance measures in State waters mirror those applied in federal waters.

To more closely reflect the respective fishery management authorities and policies of Federal and State Governments, federal 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 nm 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 nm to 200 nm).

As described later in the document, fishing effort inside IPHC Area 4E is mainly comprised of CDQ halibut fishing, with some Pacific cod hook-and-line fishing taking place in the southern portion.

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 2008a) and *The Fishery Management Plan for Groundfish of the Gulf of Alaska* (NPFMC 2008b). The Council developed (and the Secretary of Commerce approved) these FMPs and their amendments pursuant to the Magnuson-Stevens Act and other applicable Federal laws and executive orders (E.O.s). The FMPs manage the groundfish fisheries for optimum yield (OY) and allocate harvest among user groups, while preventing overfishing and conserving marine resources. The FMPs, certain amendments, and additional actions necessary to conserve public trust resources are developed by the Council and NMFS. The Pacific halibut fishery off Alaska is managed by the IFQ Program under authority of the Halibut Act.

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

Magnuson-Stevens Act

Under the Magnuson-Stevens Act, the United States has exclusive fishery management authority over all marine fishery resources found within the EEZ, which extends to between 3 and 200 nautical miles from the baseline used to measure the territorial sea. The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in regional fishery management councils. In the Alaska Region, the Council has the responsibility to prepare FMPs for the marine fisheries it finds that require conservation and management. NMFS is charged with carrying out the federal mandates of the Department of Commerce with regard to marine fish. The mission of NMFS is the stewardship of living marine resources for the benefit of the nation through their science-based conservation and management and promotion of the health of their environment. The goals for accomplishing this mission are sustainable fisheries, recovered protected species, and healthy living marine resource habitat. NMFS Alaska Regional Office and Alaska Fisheries Science Center provide research, analysis and technical support for management actions recommended by the Council. Conservation and management measures to reduce seabird-fishery interactions in groundfish fisheries may be implemented under authority of the Magnuson-Stevens Act.

Halibut Act

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

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

Endangered Species Act

The Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.; ESA), provides the primary legal framework for the conservation and recovery of species in danger of or threatened with extinction. The purposes of the ESA include “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species ...” (16 U.S.C. § 1531(b)). Section 7(a)(2) of the ESA requires that each Federal agency ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat of such species. When the action of a Federal agency may affect a protected species or its critical habitat, that agency (i.e., the “action” agency) is required to consult with either the NMFS or the U.S. Fish and Wildlife Service (FWS), 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 FWS issued program and project level biological opinions on the groundfish fisheries as implemented under the FMPs and on the annual harvest specifications. (FWS 2003a and 2003b). These biological opinions found that the groundfish fisheries and the harvest specifications were not likely to jeopardize the continued existence of ESA-listed seabirds, including the short tailed albatross. Reasonable and prudent measures (RPM) included the continuation of seabird avoidance measures and monitoring of incidental takes in the groundfish fisheries. This federal action includes the implementation of management measures consistent with the objectives of the RPM included in both 2003 biological opinions.

National Environmental Policy Act

NEPA (42 U.S.C. 4331, *et seq.*) establishes our national environmental policy, provides an interdisciplinary framework for environmental planning by Federal agencies, and contains 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 CEQ is 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 also has prepared environmental review procedures for implementing NEPA (NOAA Administrative Order 216-6). This Administrative Order describes NOAA's policies, requirements, and procedures for complying with NEPA and the implementing regulations issued by the CEQ. A 1999 revision and update to the Administrative Order includes specific guidance regarding categorical exclusions, especially as they relate to endangered species, marine mammals, fisheries, and habitat restoration. The Administrative Order also expands on guidance for consideration of cumulative impacts and "tiering" in the environmental review of NOAA actions. This Administrative Order provides comprehensive and specific procedural guidance to NMFS and the Council for preparing and adopting FMPs. Federal fishery management actions subject to NEPA requirements include the approval of FMPs, FMP amendments, and regulations implementing FMPs. Such approval requires preparation of the appropriate level of NEPA analysis (Categorical Exclusion, Environmental Assessment, or Environmental Impact Statement). NEPA and the Magnuson-Stevens Act requirements for schedule, format, and public participation are compatible and allow one process to fulfill both obligations.

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

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

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

- The PSEIS (NMFS 2004a) contains analysis of a fisheries management policy framework that emphasizes increased protection of marine mammals and seabirds.
- The Alaska Groundfish Harvest Specifications EIS (NMFS 2007b) 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. If an Agency can present a factual basis demonstrating that an action is not likely to have a “significant adverse economic impact on a substantial number of small entities,” then the RFA allows it to *certify* this result, through a formal written statement to the Small Business Administration, accompanied by the aforementioned factual basis. These

must also be published in the *Federal Register*. See section 7 of this EA/RIR/IRFA for the IRFA.

When an agency cannot *certify* that an action is not likely to have a “significant adverse economic impact on a substantial number of small entities,” preparation of an initial regulatory flexibility analysis (IRFA) is required. For purposes of the RFA analyses, small entities include (1) small businesses which, for commercial fishing are firms with total gross receipts of up to \$4.0 million, annually, from all affiliated sources, worldwide. For fish processing businesses, a small entity is one with 500 or fewer employees (in any status), when all affiliates are combined, worldwide; (2) small non-profit organizations; and (3) small governmental jurisdictions (i.e., entities with a population of up to 50,000 persons). NMFS has published guidelines for RFA analyses that include criteria for determining if an action would likely have a significant adverse impact on a substantial number of small entities.

Migratory Bird Treaty Act

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

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 (FWS) 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 have, or are 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 August 2008, these elements have not yet been identified and no MOU exists between NMFS and the FWS.

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 pre-dissemination 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 U.S.'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 1998, NMFS developed its National Bycatch Strategy (NMFS 1998). The strategy outlines how NMFS will improve upon and expand current bycatch reduction efforts and undertake new bycatch initiatives, such as: assessing regional progress toward meeting national bycatch objectives and strategies; developing a national approach that standardizes bycatch reporting; implementing the national bycatch goal through regional implementation plans; expanding international approaches to bycatch reduction; undertaking new education and outreach efforts; and identifying long-term funding requirements.

After careful review of the various definitions of bycatch and associated terms, NMFS considered the definitions contained in the Magnuson-Stevens Act as the basis for development of an inclusive definition of bycatch. The Magnuson-Stevens Act defines bycatch as “fish which are harvested in a fishery, but which are not sold or kept for personal use . . .” To fully meet the agency's responsibilities, as defined principally by the Magnuson-Stevens Act, the Marine Mammal Protection Act, and the ESA, NMFS expanded this definition. Specifically, living marine resources *other than* “fish”, as defined in the Magnuson-Stevens Act (i.e., marine mammals and seabirds), were included in the “bycatch” definition to account for all species taken or encountered in marine fisheries. It follows that, for completeness, “retained catch of non-target species” must also be included. The National Bycatch Strategy uses this inclusive definition of bycatch (NMFS 1998).

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>.

2.0 DESCRIPTION OF THE ALTERNATIVES

This chapter presents the detailed alternatives to revise seabird avoidance measures for groundfish and Pacific halibut fisheries off Alaska. This action has the following four alternatives. See Table 1-1 for a graphical comparison of alternatives and Figure 1 for the accompanying map.

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

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

- a. Vessels less than 55 ft LOA with masts, poles, or rigging, using snap-on hook-and-line gear, are required to deploy one streamer line while setting gear. Specifically, the streamer line must be at least 45 m long and must be maintained with a minimum aerial extent of 20 m.
- b. Vessels less than 55 ft LOA with masts, poles, or rigging, not using snap-on hook-and-line gear (conventional gear), are required to deploy one streamer line while setting gear. Specifically, the streamer line must be a minimum of 90 m long and must be maintained with a minimum aerial extent of 40 m.
- c. Vessels less than 55 ft LOA without masts, poles, or rigging, and not capable of adding poles or davits to accommodate a streamer line (including bowpickers), must tow a buoy bag in such a way as to deter birds from the sinking groundline while setting gear.
- d. Vessels greater than 55 ft LOA with snap-on gear are required to use one streamer line while setting gear. Specifically, the streamer line must be at least 45 m long and must be maintained with a minimum aerial extent of 20 m.
- e. Vessels greater than 55 ft LOA with other than snap-on gear are required to use paired streamer lines 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.

Additional Alternatives

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

LOA, while Alternative 3 exempts vessels less than or equal to 55 feet LOA, and Alternative 4 exempts all vessels.

Options refer to a subarea of area IPHC Area 4E as the STAL area. The STAL area was defined in consultation with FWS by performing spatial analyses on available datasets to determine what portion of IPHC Area 4E has greater potential to be utilized by STALs, increasing the likelihood of an interaction with hook-and-line fishing vessels. The STAL area is shown in Figure 1.

Alternative 2. EXEMPTION FOR VESSELS 26 ft to 32 ft LOA

Maintain status quo seabird protection measures except that vessels greater than 26 ft and less than or equal to 32 ft LOA are not required to use seabird avoidance measures in IPHC Area 4E. One of the following options would continue to require seabird avoidance measures in the short-tailed albatross (STAL) subarea of IPHC Area 4E:

Option 1. Vessels fishing in the STAL subarea of IPHC Area 4E are required to comply with seabird avoidance regulations, as detailed in Alternative 1, above.

Option 2. Vessels fishing in the STAL subarea of IPHC Area 4E are required to tow a buoy bag in such a way as to deter birds from the sinking groundline while setting gear.

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

Option 1. Vessels fishing in the STAL subarea of IPHC Area 4E are required to comply with seabird avoidance regulations as detailed in Alternative 1, above.

Option 2. Vessels fishing in the STAL subarea of IPHC Area 4E are required to tow a buoy bag in such a way as to deter birds from the sinking groundline, while setting gear.

Alternative 4. EXEMPTION FOR ALL VESSELS OVER 26 ft LOA: Seabird avoidance measures are not required in IPHC Area 4E, except as required by one of the following options:

Option 1. Vessels fishing in the STAL subarea of IPHC Area 4E are required to comply with seabird avoidance regulations as detailed in Alternative 1, above.

Option 2. Vessels fishing in the STAL subarea of IPHC Area 4E are required to tow a buoy bag in such a way as to deter birds from the sinking groundline, while setting gear.

NOTES:

1. Vessels less than or equal to 32 ft LOA in IPHC Area 4E shoreward of the EEZ (inside 3 nm) are not required to use seabird avoidance measures under any alternatives in this analysis.
2. The weather safety standard would continue to apply to any vessel using seabird avoidance gear; that is:
 - a. Use of seabird avoidance devices would be discretionary for vessels 26 ft to 55 ft LOA when winds exceed 30 knots.
 - b. Use of seabird avoidance gear is discretionary in winds greater than 45 knots for all vessels. In winds between 30 knots and 45 knots, vessels normally required to use paired streamer lines (vessels longer than 55 ft LOA) may use only a single streamer line, deployed from the windward side of the vessel.
3. This action applies only to vessels using hook-and-line gear. Fishermen using jig gear are not required to use seabird avoidance measures.
4. All requirements described here are minimum standards. Vessel operators may choose to use additional measures to limit interactions with seabirds.

Other Alternatives Considered but not carried forward

At the February 2008 Council meeting in Seattle, public testimony requested that the hook-and-line fleet in IPHC Area 4C be included in the alternatives for analysis for potential relief from the required use of seabird avoidance measures. However, after review of the density distribution of STAL use in the area of IPHC Area 4C, and after consultation with FWS, the Council has not carried this alternative forward for analysis. STAL tend to forage at shelf break regions and areas of upwelling where nutrients are drawn to the surface of the water column. Such conditions exist immediately to the west of the Pribilof Islands in IPHC Area 4C. The satellite tags show many hours of STAL usage of this and surrounding areas (Figures 2 and 14). STAL have been frequently observed in this area (Figure 12), and a sub-adult STAL was taken with hook-and-line gear in this area in 1995 (Figure 11). Therefore, eliminating the requirements for use of seabird avoidance gear in an area of known STAL usage, such as Area 4C, would be inconsistent with the purpose of this action; namely, to provide relief from some seabird avoidance requirements in areas where STAL do not appear to be present.

Preferred Alternative and option

In June 2008, the Council recommended Alternative 3 with option 1. This alternative and option was selected as the preferred alternative and option because most of the vessels participating in the hook-and-line fishery in Area 4E are less than 55 feet in length. The use of seabird avoidance gear on these vessels can be difficult, because there may not be sufficient deck space available for the gear or superstructure to support the lines. Smaller vessels also are likely to have fewer crewmembers available to handle the gear. Larger vessels are more likely to have the deck space, superstructure, and crew available to allow for safe and effective use of seabird avoidance gear. Because of the presence of short-tailed albatross in the STAL area of Area 4E, the Council recommended option 1 for vessels fishing in this area, to ensure the continued

protection of short-tailed albatross from potential incidental takes by any hook-and-line vessel.

3.0 THE BERING SEA - AFFECTED ENVIRONMENT

Detailed descriptions of the physical and marine habitat of the Bering Sea are presented in the Alaska Groundfish Harvest Specifications EIS (NMFS 2007b). The effects of fishing on the marine habitat and EFH are analyzed in section 4.9.6. The proposed alternatives in this analysis address revisions to the use of seabird avoidance measures, which are only 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 rather than any other components, because they require the use of measures to reduce incidental take of seabirds and affect the socioeconomic condition of those participating in the fishery. Both endangered species (short-tailed albatross) and numerous other seabird species could potentially be affected by each action alternative. The action alternatives could increase the numbers of seabirds hooked on hook-and-line fisheries in the Bering Sea. Fishermen and their socioeconomic condition could be affected by having reduced costs due to no longer deploying seabird avoidance gear in part or all of 4E.

To keep the present document as brief as possible, much information is incorporated by reference from the PSEIS (NMFS 2004a), the previous seabird analysis package (NMFS 2007a), and the 2007 Groundfish Harvest Specifications EIS, including extensive discussions of the impacts of the groundfish fisheries on target species, marine mammals, seabirds, forage species, habitat, and prohibited species, as well as other components of the physical and chemical environment. The analysis in this document focuses on the specific actions proposed in the alternatives and summarizes pertinent information that has become available since publication of those other NEPA analyses.

The alternatives in this action affect only the hook-and-line fisheries for Pacific cod and Pacific halibut in IPHC Area 4E. No other hook-and-line fisheries currently occur in this area. The alternatives would revise seabird avoidance regulations to relieve the burden on fishermen of having to deploy seabird avoidance devices in areas where seabird species of concern are less likely to occur. These changes have no potential to affect the target fish 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, non-target fish species or forage fish species.

Effects of Alternatives on other Environmental Impact Categories

Protected Species

Potential effects on protected seabird species are discussed in detail in this document. Aside from the interactions with short-tailed albatross, 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 relieve a regulatory burden on fishermen by not requiring seabird avoidance measures where they are not necessary. These changes have no bearing on vessel interactions with other protected species and thus have no potential to impact such species.

Habitat and Ecosystem Effects

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, but no data are available to identify any potential effects of this type of lost gear. Because the use of avoidance gear has negligible impact below the water, no impact on benthic, pelagic, or coastal habitats can be expected to occur. Any effects on the ecosystem are expected to be minimal because the alternatives affect the gear interaction with only the seabird component of the ecosystem, at the surface of the water column. 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.

4.0 STATUS OF SEABIRD SPECIES IN THE BERING SEA

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. The U.S. Fish and Wildlife Service (FWS) 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 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 FWS Beringian Seabird Colony Catalog (1999) represents the location, population size, and species composition for each colony based on the most recent information available (Figure 6). These population estimates are based on opportunistic surveys of colonies, and may rely on historical information at some locations (Stephensen, FWS, personal communication, January 2007). Colonies in IPHC Area 4E include large numbers of cormorants, murre, puffins, auklets, black-legged kittiwakes, and gulls.

Table 4- 1 Seabird species in the BSAI (NMFS 2004a)

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

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 EEZ off Alaska may be found in several NMFS, Council, and FWS documents:

- The URL for the USFWS Migratory Bird Management program 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. The seabird component of the environment affected by the groundfish FMPs is described in detail in section 3.7 of the PSEIS (NMFS, 2004a). the seabird species in the action area are discussed on pp. 3.7-18 to 3.7-87). The PSEIS 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 the seabird environmental component affected by fishing. Back issues of the Ecosystem SAFE reports may be accessed at <http://www.afsc.noaa.gov/REFM/REEM/Assess/Default.htm>, and the 2007 issue is available at <http://www.afsc.noaa.gov/REFM/stocks/assessments.htm>.
- The Seabird Fishery Interaction Research webpage of the Alaska Fisheries Science Center is located at <http://www.afsc.noaa.gov/refm/reem/Seabirds/Default.htm>.
- The NMFS Alaska Region's Seabird Incidental Take Reduction webpage is located at <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>.
- Chapter 9 of the Alaska Groundfish Harvest Specifications EIS also contains a detailed discussion of the seabirds in the environment affected by the groundfish fisheries (NMFS 2007b).

ESA-Listed Seabirds in the Bering Sea

Three species of seabirds that range into the Bering Sea are listed under the ESA: the endangered short-tailed albatross (*Phoebastria albatrus*), the threatened spectacled eider (*Somateria fischeri*) and the threatened Steller's eider (*Polysticta stelleri*).

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 percent rate based on egg counts from 1990-1998. The 2007 world total population was estimated at 2,350 individuals (Greg Balogh, USFWS, personal communication, January 2008). Eighty to Eighty-five percent 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 (FWS 2005). Efforts are currently underway to move STAL chicks to a new breeding colony without the volcanic threat. 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).

STAL 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 (Rob Suryan, Oregon State University, personal communication, January 2008).

While designated critical habitat for Spectacled and Steller's eiders does overlap with areas fished with hook-and-line gear, there has never been an observed take of these species in hook-and-line fisheries off Alaska (FWS 2003a and 2003b). Spectacled eider observations are reported in the North Pacific Pelagic Seabird Database (NPPSD) in Bristol Bay inside IPHC Area 4E (Figure 21), but the species is unlikely to interact with the fisheries there. Therefore, impacts to these species are not analyzed in this document.

Status of Endangered Species Act Consultations on Groundfish and Halibut Fisheries

The FWS 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 FWS 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 FWS on the effects of the Pacific halibut fishery off Alaska on the short-tailed albatross. FWS 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 (FWS 1998). FWS 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, FWS identified non-discretionary reasonable and prudent measures that NMFS must implement to minimize the impacts of any incidental take.

Two updated FWS 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 (FWS 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 (FWS 2003a).

Although FWS has determined that the short-tailed albatross is adversely affected by hook-and-line Pacific halibut and groundfish fisheries off Alaska, both FWS opinions concurred with NOAA Fisheries and concluded that the GOA and BSAI fishery actions are not likely to jeopardize the continued existence of the short-tailed albatross or Steller's eider or result in adverse modification of Steller's eider critical habitat. The FWS 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 biological opinion 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 term and condition is the implementation of seabird deterrent measures that preceded this analysis (NMFS 1999a). 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 STAL, and continued research and reporting on the incidental take of STAL in trawl gear.

The FWS 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, 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. FWS estimates that the STAL may be delisted in the year 2030, if new colony establishment is successful.

STAL use of the Bering Sea

Piatt et al. (2006) discuss oceanic areas of seabird concentrations; they explain that STAL hotspots are characterized by vertical mixing and upwelling caused by currents and bathymetric relief and which persist over time (Figure 22). The continual upwelling brings food to the surface and, thus, draws predators back for repeated foraging, especially albatross species which forage at the surface due to their limited diving ability (Hyrenbach et al. 2002). Sightings data were compiled from the following sources: from 1988-2004 records from seabird observers on the FWS's research vessel *M/V Tiglax*; from incidental sightings by biologists, fishermen, seamen, fisheries observers and birdwatchers provided to the FWS; from the IPHC; from the Alaska Natural Heritage Program; historical sightings documented in published literature; and from the North Pacific Pelagic Seabird Database. Researchers analyzed over 1400 sightings, the majority of which were located on the continental shelf edge of Alaska, abundance being greatly diminished along the east Gulf of Alaska coast and south to Southeast Alaska. Researchers concluded that the short-tailed albatross is most recently consistently associated with upwelling in Aleutian passes and along continental shelf margins in Alaska. The opportunistic sightings data suggest that the albatrosses appear persistently and predictably in some marine "hotspots." They were closely associated with shelf-edge habitats throughout the northern Gulf of Alaska and Bering Sea. In addition to Ingenstrom 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). Similar findings in Byrd et al. (2005) confirm the frequent presence of surface-feeding piscivores near the medium and large passes that create the bathymetric conditions for vertical mixing and upwelling. Researchers surmise that prior to decimation of the short-tailed albatross population by feather hunters around the turn of the century, the albatrosses may have been reasonably common nearshore (thus the term "coastal" albatross) but only where upwelling "hotspots" occurred near the coast. As short-tailed albatross numbers increase, it is likely that their distribution will shift into areas less utilized currently, including the coastal areas.

In the context of this analysis, the pertinent STAL hotspots in the Bering Sea are located along the Zhemchug, St Matthew, Pervenets, and Pribilof canyons along the continental shelf (Figure 8). Piatt et al. report large groups (10-136 birds) of STAL concentrated along the Bering Sea canyons and call attention to a 2004 STAL flock sighting where approximately 10 percent of the world's population gathered at one hotspot near Pervenets canyon. Note that these canyons on the shelf break are well outside the boundary of IPHC Area 4E. The shelf break is denoted by blue bathymetric lines in Figure 1, west of IPHC Area 4E.

Washington Sea Grant Survey data

Melvin et al. (2006a) provide the most current and comprehensive data of seabird distribution patterns in the U.S. EEZ off Alaska's coast, based on an inter-agency collaborative program that collected seabird distribution data during 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. (2006a) for survey protocol and description).

Researchers observed a total of 230,452 birds over three years at an average of 1,456 stations surveyed each year. Of all birds sighted, 85 percent were tubenose seabirds, and of these, most were northern fulmars (71 percent of all birds sighted) or albatrosses (13 percent of all birds sighted). Albatrosses occurred throughout the fishing grounds in outside waters. Sightings of the endangered short-tailed albatrosses (Figure 3) were extremely rare (0.03 percent of all sightings) and had a similar distribution to Laysan albatrosses: 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.

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

North Pacific Pelagic Seabird Observer Program

Between February 1 and October 31, 2007, seabird observers conducted surveys onboard ships of opportunity for a total of 275 days in the Bering, Chukchi, and Beaufort seas, including some parts of IPHC Area 4E. While surveyors did observe short-tailed, blackfooted, and Laysan albatrosses in the Bering Sea, their distributions were mostly limited to the Bering Sea shelf break, although the STAL portion of IPHC Area 4E was not well covered by the surveys (Figure 9). Some Laysan albatrosses were observed up on the shelf, but no albatross species were observed inside IPHC Area 4E. There may be a seasonal component to the lack of albatross observations in IPHC Area 4E because the surveys in this area partially occurred during ice cover when albatross species were less likely to be there.

Seabird observations from IPHC surveys

The 2006 IPHC stock assessment survey documented any interactions with seabirds at all survey stations and did survey the southern portion of IPHC Area 4E (Figure 10). The nature of the stern count survey makes it biased towards observing birds that would be attracted to the vessel, and therefore, the birds that would interact with the gear. In IPHC Area 4E, no birds of conservation concern (those listed under the ESA or on other international endangered or

vulnerable lists) were specifically reported. Northern fulmars, black-legged kittiwakes, and unidentified shearwaters were observed during the survey in this area. In addition, fewer total seabirds were observed in this IPHC management area than any other area (Table 4-2). The IPHC survey did not go into IPHC Area 4E in 2007, but is scheduled to again in 2008.

Table 4- 2 Numbers of Seabirds Observed in IPHC 2006 Survey in Alaska

Data from IPHC.

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

STAL takes in Alaska fisheries

Table 4-3 details the short-tailed albatrosses reported taken in Alaska fisheries since 1983. Except for the 2nd take in 1998, leg bands were recovered from all of the albatrosses allowing scientists to verify identification and age. Since 1977, Dr. Hiroshi Hasegawa has banded all short-tailed albatross chicks at their breeding colony on Torishima Island, Japan. See Figure 11 for a map of the take locations and note that all takes occurred outside of IPHC Area 4E.

Table 4- 3 Reported takes of STAL in Alaska fisheries NPPSD, 2004.

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

28 Sept 98	BS	Pacific cod hook-and-line	sub-adult
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Opportunistic sightings of STAL in the Bering Sea

Balogh et al (2006) report opportunistic sightings of short-tailed albatrosses. These reported sightings are drawn in Figure 12. Similar to other reports, more opportunistic sightings occurred over shelf-break areas than on the shelf. This pattern partially reflects where fishing effort occurred and STAL observed, and does not equally represent sightings in areas where fishing effort is less common. Large numbers of STAL were observed near the Bering Sea canyons (Figure 8). Very few opportunistic sightings of STAL occurred in IPHC Area 4E, and those are limited to the southwestern portion of IPHC Area 4E and continue south into Bristol Bay towards the shelf break.

North Pacific Pelagic Seabird Database (NPPSD)

The 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). Bird observations in IPHC Area 4E from the NPPSD are shown in Figure 21 and include murre, loons, auklets, gulls, puffins, eiders, terns, northern fulmars, black-legged kittiwakes, short-tailed and sooty shearwaters and other species in smaller numbers. This database does not report any albatross species inside IPHC Area 4E.

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

The FWS 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 (FWS 2006) to study movement patterns of the birds in relation to commercial fishing activity and other environmental variables. The tagging study has been a collaborative project with Japan. Japanese researchers tag birds at the main breeding colony on Torishima Island. From 2002 to 2006, 21 individual short-tailed albatrosses (representing about 1 percent of the entire population) were tagged, including adults, sub-adults, and hatch-year birds. The 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, STAL 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 among NMFS reporting area, with six of the areas (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 reporting areas 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 (Figure 2).

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, FWS 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. The 2006 tagging used the same deployment procedures and methodologies as those birds tagged in 2002 and 2003 (Suryan et al. 2006a and 2006b). Five of

these hatching-year and subadult albatrosses were successfully tracked from June to September 2006.

Two birds have been tracked within IPHC Area 4E, one in August 2003 and one in August 2006. Both of these birds were hatch-year birds. Satellite tags from 2007 show no occurrences in IPHC Area 4E (Figure 13).

Other Seabird Species of Conservation Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the FWS 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 (FWS 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, FWS (2002) lists 28 species of birds in Region 7 (Alaska Region). Many of these species do not interact with Alaska hook-and-line fisheries, and thus are not addressed in this analysis.

Black-footed albatross

Although not an ESA-listed species, the black-footed albatross (BFAL) is of concern because some of the major colony population counts may be decreasing or are 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 (FWS, 2006). Most of the population (95 percent) breeds in the Hawaiian Islands. Conservation concerns in the last century have included albatross mortalities by feather hunters, the degradation of nesting habitat due to introduced species such as 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 albatrosses incidentally. On October 1st, 2004, the U.S. Fish and Wildlife Service received a petition to list the black footed albatross (*Phoebastria nigripes*) as a threatened or endangered species, and to designate critical habitat at the time of listing. The FWS’s response to the 90-day finding was deferred until October 9th, 2007, due to insufficient resources. At that time, the FWS found that the petition warranted further review. Following the publication of the black-footed albatross population status review, the FWS began developing its 12-month finding indicating whether it believes a proposal to list this species as threatened or endangered is warranted. On October 7, 2007, the FWS announced the decision that there is substantial scientific or commercial data to consider the ESA-listing of black footed albatross, and the agency has begun a 12 month review (<http://www.fws.gov/news/newsreleases/showNews.cfm?newsId=86F95AAF-9C18-F3FF->

ADE990D4A97C9B83).

Melvin et al (2006) 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 FWS has been working with Dr. Paul Sievert and Dr. Javier Arata of the U.S. Geological Survey (USGS) to develop a status assessment of Laysan and black-footed Albatrosses. This assessment is in response to growing concerns regarding the current status and population trends of these two north Pacific albatrosses, particularly the black-footed.

Black-footed albatrosses occur in Alaska waters mainly in the northern Gulf of Alaska, but a few have been reported near Nunivak Island in the Bering Sea (FWS, 2006). A few BFAL are reported in the NPPSD in Bristol Bay, southwest of IPHC area 4E near the shelf edge (Figure 21).

Red-legged kittiwake

The red-legged kittiwake is a small gull that breeds at only a few locations in the world, all of which are in the Bering Sea, but outside of IPHC Area 4E (FWS, 2006). 80 percent of its worldwide population nests at St. George Island, with the remainder nesting at St. Paul, the Otter Islands, Bogoslof and Buldir Islands. The total population is estimated at around 209,000 birds (FWS, 2006). They are listed as a FWS bird of conservation concern because recent severe population declines remain unexplained (NMFS 2004b), but could be due to irregular food supplies in the Pribilof Islands. Red-legged kittiwakes are present in the eastern Bering Sea and in IPHC Area 4E as reported by the NPPSD (Figure 21), but are not expected to interact with hook-and-line fishing gear since none are reported as taken by fisheries observers.

Kittlitz's murrelet

Kittlitz's murrelet is a small diving seabird that forages in shallow waters for capelin, Pacific sandlance, zooplankton and other invertebrates. It feeds near glaciers, 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 percent), Malaspina Forelands (up to 75 percent), Kenai Fjords (up to 83 percent) 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. FWS 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 FWS (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 listing priority elevated from 5 to 2 in 2007 in recognition that climate change will have a more immediate effect on this species than previously believed.

The FWS has conducted surveys for Kittlitz's murrelet in the Alaska Maritime National Wildlife Refuge over the past few years (FWS, 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 (NMFS 2004a). Their breeding distribution does extend into IPHC Area 4E (specifically Bristol Bay and western edge of the Seward Peninsula), a few have been observed in Bristol Bay and Norton Sound according to the NPPSD (Figure 21), and the 2006-2007 at-sea surveys observed them inside IPHC Area 4E. However, their foraging techniques, diet composition, and the fact that they don't follow fishing vessels or congregate around them, reduce the likelihood of incidental take in groundfish fisheries (K. Rivera, NMFS, personal communication.).

5.0 FISHERIES AND SEABIRD INTERACTIONS IN THE BERING SEA

The PSEIS identifies how BSAI 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 and is unlikely to impact those factors listed above that may cause indirect effects, this action is not expected to indirectly affect seabird populations. Direct effects, including incidental take of seabirds, are discussed in more detail below.

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, 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 5-1). 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). Additionally, their nearshore preferences, foraging techniques, diet composition, and the fact that they don't follow fishing vessels or congregate around them, reduce the likelihood of incidental take in groundfish fisheries (K. Rivera, NMFS, pers. comm.).

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

Table 5- 1 Seabirds species groups and risk of hook-and-line fishery interactions

Species groups potentially at risk of interaction with hook and line gear	Species groups not likely to be at risk of interaction with hook and line gear
Albatross* Fulmars Shearwaters Gulls	Cormorants Terns* Guillemots Murrelets* Rhinoceros auklet Puffins Eiders* Loons*

** groups contains a species that is listed as a bird of conservation concern with the FWS, the IUCN, or listed as endangered or threatened under the ESA.*

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

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.

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 5), with bycatch rates in all three regions decreasing since highs in the 1998-1999 period, although large inter-annual variation in seabird

bycatch is common and effort (measured as number of hooks) has increased over the same period in the BS and GOA. Table 5-2 shows annual estimated seabird mortality by region 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 16 and 3 percent.

Also of note, the incidental take rates in the BSAI are approximately 3 times higher than in the GOA (AFSC 2006).

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 percent of the bycatch (Figure 7A). In the Gulf of Alaska, Laysan albatross are 12 percent and black-footed albatross are 20 percent of the bycatch (Figure 7B). In the Bering Sea, gulls are 22 percent of the bycatch, and albatross are much lower (Figure 7C).

**Table 5- 2 Estimated average annual seabird mortality by region from 2000-2004
Data from AFSC, 2006.**

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			
percent Fulmars	39	51	71
percent Gulls	23	31	5
percent Albatrosses	31	2	17
percent other	7	16	7
(including shearwaters and unidentified seabirds)			

Note the low percentage of albatross in the Bering Sea as compared to the Gulf of Alaska and Aleutian Islands. Most of the Bering Sea albatross bycatch is Laysan albatross which while likely to interact with hook-and-line gear, is not currently a species of conservation concern because of the large estimated world population (Table 5-3).

Table 5- 3 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 2006a).

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			

Efforts to Reduce Seabird Incidental Take in Hook-and-line Fisheries off Alaska

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 1998)
- Consistent with the Code of Conduct for Responsible Fisheries, the FAO 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.

Recent Seabird-Fisheries Interaction Research

Information from several recent studies is pertinent to this analysis. This information is summarized below and described in more detail in NMFS (2007a).

The current seabird avoidance regulations differ according to vessel length and gear-type. Melvin et al. (2006b) 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 5-4 summarizes the speed, sink rate and 2 m access window for snap-on and fixed gear.

Table 5- 4 Differences in average setting speeds and access windows between snap-on and fixed gear. Results from Melvin et al. 2006b.

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)

6.0 EFFECTS OF THE ALTERNATIVES ON SEABIRDS IN THE BERING SEA

Effects of the Alternatives on Seabird Mortality

The PSEIS identifies how BSAI groundfish fisheries activities may affect seabird populations directly and indirectly. Section 4.9.7 of the PSEIS (NMFS 2004a) provided a rationale for the consideration of potential direct and indirect fishery effects on different seabird taxonomic groups. 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.

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, in the 2002 seabird protection measures environmental assessment (NMFS, 2002), and in the 2007 seabird action (NMFS 2007a). Table 6-1 provides the significance criteria used to determine the effects of the alternatives on seabird populations.

Table 6- 1 Significance criteria for analyzing effects to seabird populations.

<u>Significant (-)</u>	<u>Insignificant</u>	<u>Unknown</u>
Take number and/or rate increases substantially.	Take number and/or rate is similar or slightly reduced and population level effect is not likely.	Take number and/or direction of take rate is not known.

Effects of Alternative 1 (Status Quo) on Seabird Populations

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

from 2000-2004 are summarized in Table 5-2. 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. See Table 6-2 for a list of effects of the status quo alternative on seabird populations in the Bering Sea.

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 percent 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 (FWS, 2003b). 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 percent decrease in population growth rate (FWS, 1999). In consideration of this fishery-related mortality, FWS 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 (FWS, 2003b). 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 observed taken by the hook-and-line fisheries (FWS 2003a and 2003b). Therefore, impacts to these species are not analyzed in this document.

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 5-2). This incidental mortality represents 0.07 percent of the lower population estimates (NMFS, 2005). This level of take is an insignificant impact to the black-footed albatross population.

Of particular interest among the numerous other seabird species in the Bering Sea are large occurrences of short-tailed shearwaters and some Laysan albatrosses, both of which are likely to interact with fishing gear, but are not currently species of conservation concern. Hunt et al (1981) show large distributions of shearwaters in the late summer and fall months in IPHC Area

4E and across the continental shelf of the eastern Bering Sea. Because most hook-and-line fishing effort in IPHC Area 4E occurs in January-February (Pacific cod) and in June (Pacific halibut) (Figure 19), this fishing effort likely decreases here seasonally before the large numbers of shearwaters migrate into this area.

Suryan and Fisher (unpublished) report satellite telemetry information showing that Laysan albatrosses (LAAL) are by far less likely to interact with fisheries than either black-footed or short-tailed albatrosses. Due to the sheer abundance of LAAL, there may be more interactions between them and fishing boats, but the rate of interactions per bird seems to be much lower, owing to their propensity to forage off the continental shelf while the other two species inhabit shallower waters. Figure 21 shows NPPSD locations of LAAL on the shelf break with only two sightings on the shelf near Bristol Bay, all outside of IPHC Area 4E.

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

Table 6- 2 Effects of the Status Quo Alternative on Seabirds in the Bering Sea.

ESA-listed Seabird Species	Other Seabird Species of Conservation Concern	Other Seabirds
No short-tailed albatross have been taken in the BSAI and GOA GF fisheries since 1998 (NMFS 2007b)	Other albatross and shearwater takes are less than one percent of the populations at risk (NMFS 2004a, p. 4.9-231).	Takes of Laysan albatross are small compared to population levels.
Spectacled and Steller’s eider takes are “at levels approaching zero” (NMFS 2004a, p. 4.9-247).	Bycatch of piscivorous red-legged kittiwakes, and Marbled and Kittlitz’s murrelets is rare.	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). For some species there is little overlap between seabird habitat and the location of groundfish operations (NMFS 2004a, pp. 4.9-240, 247)

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

Alternatives 2, 3, and 4 all eliminate the required use of seabird avoidance measures in IPHC Area 4E. They differ by which vessels would be no longer required to use seabird avoidance measures. Alternative 2 exempts only vessels 26-32 feet LOA, while Alternative 3 exempts vessels 26-55 feet LOA, and Alternative 4 exempts all vessels. Alternatives 2, 3, and 4 eliminate the requirements for seabird avoidance measures inside IPHC Area 4E, but Options 1 and 2 dictate the requirement of some measures inside the STAL area of IPHC Area 4E. In order to analyze the impacts of these alternatives, the spatial and temporal overlap of fishing effort and seabird use of IPHC Area 4E is described below.

Fishing Harvest in IPHC Area 4E

Hook-and-line effort in IPHC Area 4E comes primarily from vessels fishing for CDQ halibut. Numbers of vessels and total harvest are shown in tables below. In recent years, total effort in IPHC Area 4E has been up to one percent of the total halibut harvested in all areas (Table 6-3) and has been harvested primarily by small vessels (Table 6-4). In general, small vessels (less than 32 feet) discharge less offal, have fewer baited hooks, and generally attract fewer seabirds than larger vessels, so interactions are less common.

Table 6-3 Halibut Catch in IPHC Area 4E compared to Total Catch for 2005-2007.

Data from NMFS RAM Program

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

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

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

Source: Data from NMFS RAM Program.

* denotes confidential information

Note that of the comparatively small amount of halibut harvested inside IPHC Area 4E, an even smaller percentage was taken inside the STAL area (Table 6-5). Also note that all of the halibut CDQ harvest inside the STAL area of IPHC Area 4E was harvested by small vessels, 26-32' LOA between 2003 and 2007 (Table 6-6). This catch occurred south of Nunivak Island along the 60 degree parallel, in Kuskokwim Bay, and south of Hagemeister Island (Figure 18). Some of these vessels use jig gear which does not require the use of seabird avoidance gear.

The harvest outside of the STAL area in IPHC Area 4E is also mostly taken by small vessels 26-32 ft LOA nearshore in Bristol Bay, north of Nunivak Island, and in Norton Sound (Figure 18). Alternative 2 would eliminate seabird avoidance requirements in IPHC Area 4E for vessels 26-32 ft LOA. Because harvest in IPHC Area 4E is taken mostly by vessels under 32 ft LOA, the elimination for those requirements for vessels 26-55 ft LOA (Alt 3) or for all vessels (Alt 4) would affect few vessels not already included under Alternative 2.

Table 6- 5 Halibut harvest inside the STAL area as a percentage of total IPHC Area 4E harvest.

2003	2004	2005	2006	2007
11.07%	2.90%	8.59%	11.57%	2.83%

Table 6- 6 Numbers of vessels participating in Halibut fisheries in the STAL area of IPHC Area 4E and their catch.

Vessel Size	2003		2004		2005		2006		2007	
	Vessel Count	Pounds	Vessel Count	Pounds	Vessel Count	Pounds	Vessel Count	Pounds	Vessel Count	Pounds
>26 and ≤32	21	33,099	17	6,942	15	20,308	17	25,450	13	11,135
>32 and ≤55	0	0	0	0	0	0	0	0	0	0
>55	0	0	0	0	0	0	0	0	0	0

Source: Data from NMFS RAM Program.

Two CDQ groups have halibut allocation inside IPHC Area 4E: the Bristol Bay Economic Development Corporation (BBEDC) has 30 percent of the CDQ halibut allocation in IPHC Area 4E, and the Coastal Villages Relief Fund (CVRF) has the remaining 70 percent. Two additional CDQ groups have an allocation in 4D that can be taken in IPHC Area 4E: the Norton Sound Economic Development Corporation (NSEDC) and the Yukon Delta Fisheries Development Association (YDFDA). Harvest by CDQ group is presented in Table 6-7 below.

The Bristol Bay Economic Development Corporation CDQ fleet of 33 registered halibut CDQ vessels has a 32 foot limit on all IPHC Area 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 (Andy Ruby, Bristol Bay Economic Development Corporation, personal communication, December 2006), so the gear sinks quickly and affords seabirds less chance to interact with fishing gear. Vessels fishing in Togiak are mainly 26 to 28 foot bowpickers with outboard motors.

The Norton Sound Economic Development Corporation 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 knots to 4 knots (Robert Williams, Norton Sound Economic Development Corporation, personal communication, January 2007). In 2006, 65 percent of their halibut CDQ landings were caught with jig gear, and only 35 percent (84,000 pounds) with hook-and-line gear. Most of their landings occur outside of state waters. Fishermen using jig gear are not required to use seabird avoidance measures.

Table 6-7 CDQ Halibut catch inside and outside of the STAL area in IPHC Area 4E

See Figure 1.

CDQ group	2003			2004			2005			2006			2007		
	#Vsl	percent Harvest		#Vsl	percent Harvest		#Vsl	percent Harvest		#Vsl	percent Harvest		#Vsl	percent Harvest	
	IN	IN	OUT	IN	IN	OUT	IN	IN	OUT	IN	IN	OUT	IN	IN	OUT
BEDC	13	18.6	81.4	6	4.6	95.4	5	9.9	90.1	5	8.8	91.2	1	*	*
CVRF	8	5.6	94.4	11	4.0	96.0	10	11.7	88.3	12	18.1	81.9	12	5.5	94.5
NSEDC	0	0	100	0	0	100	0	0	100	0	0	100	0	0	100
YDFDA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Data from NMFS RAM Program.

* denotes confidential information. #Vsl means numbers of vessels. IN means inside STAL area and OUT means outside of STAL area, but inside IPHC Area 4E.

Most harvest occurred in the summer months of 2003 through 2007 with about 40 percent of all halibut taken in June (Figure 19). Many small boats begin fishing for salmon after this large halibut harvest in early summer.

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

There is also some hook-and-line Pacific cod harvest in the southern portion of IPHC Area 4E, mostly by large vessels which would only be affected by alternative 4 in this analysis. The harvest and numbers of vessels participating are presented below in Table 6-8. Note that all Pacific cod catch reported here is by vessels in the >55' LOA category, so they are currently required to use either 1 streamer line (snap-on gear) or paired streamer lines (other than snap-on gear) in the EEZ waters of IPHC Area 4E. This harvest occurs mostly in the winter months (Figure 19) and is predominately located inside the southwestern corner of the STAL area (Figure 20).

Table 6- 8 Pacific cod HAL harvest in IPHC Area 4E by vessel size.

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

Source: Data from NMFS RAM Program.

* denotes confidential information.

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

STAL use of IPHC area 4E is not well documented. WSG research did not include surveys of IPHC Area 4E, and although the 2006 IPHC survey of IPHC Area 4E did not record observations of STAL, it was a one-time survey and STAL distribution is known to shift dramatically from year to year. FWS surveys did not encounter STAL in IPHC Area 4E, but there may be some seasonal mismatch between the survey effort and actual STAL usage of the area.

Given the documented occurrence of two short-tailed albatross (one in 2003, one in 2006) in the south-western portion of IPHC Area 4E, it is possible that vessels fishing with hook-and-line gear without seabird avoidance measures in those areas may affect listed species. These two individuals could reflect usage of IPHC Area 4E by a larger number of STAL. It is hard to draw any conclusions about the temporal overlap of STAL use of IPHC Area 4E and the fisheries occurring there, due to the limited temporal data available on tagged birds (Figure 23). The two birds tracked in IPHC Area 4E were there in August. While most Pacific cod effort is in January and February, and the majority of Pacific halibut harvest in IPHC Area 4E occurs in June/July, there is still some halibut fishing occurring in August.

Relieving the requirement for certain vessels to use seabird avoidance measures in IPHC Area 4E in Alternatives 2, 3, and 4 could cause unknown impacts to short-tailed albatrosses; therefore, the Council created options for each alternative that would mitigate any potentially significant or unknown impacts that might be caused by implementation of Alternatives 2, 3, or 4. These options are discussed below.

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

Alternatives 2, 3, and 4 have no additional impact on other species of conservation concern beyond what is discussed in the status quo alternative. Two species of conservation concern that

occur in Alaska waters are not likely to come in contact with hook-and-line gear. Red-legged kittiwakes nest in the Pribilof Islands near, but not inside, IPHC Area 4E, and have not been taken in Alaska HAL fisheries. While the breeding distribution of Kittlitz's murrelets does extend into IPHC Area 4E (specifically Bristol Bay and the western edge of the Seward Peninsula), their foraging techniques, diet composition, and the fact that they don't follow fishing vessels or congregate around them, reduce the likelihood of incidental take in groundfish fisheries (K. Rivera, NMFS, pers. comm.) (FWS 2006).

Although a few Black-footed albatrosses (BFAL) have been reported near Nunivak Island in the Bering Sea, none were observed in the 2006 IPHC survey of IPHC Area 4E, and none were observed inside IPHC Area 4E in the FWS 2007 seabird surveys (Figure 9). A few BFAL are reported in the NPPSD in Bristol Bay, although outside of IPHC Area 4E (Figure 21). Albatross species are more likely than other species of conservation concern to come in contact with hook-and-line gear, but observed takes of BFAL in hook-and-line fisheries are less than one percent of the estimated population (NMFS 2004a, p. 4.9-231). The incidental mortality of black-footed albatross from hook-and-line fisheries has been extremely variable over time (NMFS, 2005), but most takes occur in the GOA hook-and-line fisheries. The combined annual estimated BSAI and GOA incidental mortality represents 0.07 percent of the lower population estimates for this species (NMFS, 2005). Given the lower level of effort and few observations of birds likely to be at risk, eliminating seabird avoidance measures in IPHC Area 4E is not expected to affect these species.

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

Bycatch of other seabird species, including northern fulmars, shearwaters, alcids, gulls, cormorants, storm-petrels, and auklets are all low compared to population sizes. Fulmars and shearwaters are more likely to interact with hook-and-line gear than other seabird species. Fairly high densities of shearwaters can occur in the fall in the northern portion of IPHC Area 4E and in the summer in the STAL area (Figure 21). Northern fulmars occur throughout IPHC Area 4E. Because their populations number in the millions, the current level of bycatch or even a minimal increase in bycatch due to eliminating the requirement for using seabird avoidance measures in IPHC Area 4E, is not expected to have a significant impact on these species at the population level.

Applying Options 1 or 2 under the Alternatives

While Alternatives 2, 3, and 4 without options would eliminate the requirements for seabird avoidance measures inside IPHC Area 4E, adoption of either Option 1 or Option 2 would re-impose the requirement of use of some avoidance measures inside the STAL area of IPHC Area 4E and, therefore, mitigate any residual impacts to listed species, no matter how unlikely. Alternatives 2, 3, or 4 without Options 1 or 2 are not expected to cause significant effects to

short-tailed albatrosses at the population level, but the FWS may choose to initiate formal consultation under the ESA if any of those alternatives are chosen without one of the mitigating options, or if the option does not, in the opinion of the FWS, sufficiently mitigate the potential risk to STAL.

Defining a STAL area in IPHC Area 4E

A spatial analysis of the tagging data in the Bering Sea was conducted to determine what portion of IPHC Area 4E might be more likely to be used by short-tailed albatrosses. Three separate treatments of these data were initiated: inverse distance weighting (IDW), kriging, and kernel density. Kernel density distributions are presented in this analysis for ease of understanding and display, and as the most viable interpretation of the dataset.

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

Satellite tags were first interpolated to hourly values assuming a straight-line path between locations. The hourly data points were then summed over a 0.5 degree latitude by 0.5 degree longitude grid, to obtain the number of short-tailed albatross hours per grid cell. This number is represented by the various sized dots in Figures 14-17. The points were then smoothed into a kernel density distribution based on location and the number of hours at the location.

Figure 14 shows a kernel density distribution of all tags. Figure 15 shows a kernel density distribution of only hatch-year birds, and Figure 16 shows only adult birds. Note the difference between the distributions of these age groups, but that the south-western portion of IPHC Area 4E was utilized by both adults and hatch-year birds. Figure 17 shows all ages' use of the Bering Sea shelf habitat. In Figure 14-17 the darker shade and the bigger points in the distribution indicate a greater probability of encountering STAL in that area.

It is evident from available data sources that STAL are using the southwestern portion of IPHC Area 4E in some capacity. Although tags from only 2 birds showed up inside IPHC Area 4E, this is a large percentage of those tagged and could represent hundreds of individuals' use of the area. Opportunistic sightings from research and fishing vessels in the 1980s and 1990s also report STAL inside and near the southern portion of IPHC Area 4E. Suryan (2006) reports that STAL tagged in 2002 and 2003 spent most time in waters off Alaska in continental shelf break and slope regions, although individual STAL did make frequent trips onto the Bering Sea shelf, and spent more time in the shelf areas of the Bering Sea than in shelf areas of other regions, suggesting "significant potential for interactions with large-scale walleye pollock and Pacific cod fisheries in this area." Note that IPHC Area 4E only contains a portion of the Bering Sea shelf.

The following two options were considered as part of the 2007 Council action.

1. Require that a buoy bag line be used on vessels 26 ft to 32 ft fishing in the EEZ waters of IPHC Area 4E.
2. All vessels 26 ft 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.

A consultation letter from FWS stated that selection of either of these options as part of that action would trigger a formal consultation (FWS 2007). The letter is quoted below and included in its entirety as Appendix 1.

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

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

NMFS consulted with FWS on the methods of analysis and on the division of IPHC Area 4E into the STAL and non-STAL areas. Figure 1 shows IPHC Area 4E divided into areas where STAL are more likely to interact with fishing gear (pink block south of 60N and west of 160W), contrasted with areas where they are not (hatched areas without pink), based upon the density distribution of the satellite tag data (Figures 14-17). The identification of the STAL area in IPHC Area 4E where seabird avoidance measures would continue to be required under Options 1 or 2 represents an effort to strike a fair compromise between 1) protecting the resource; 2) requiring only necessary seabird avoidance gear on the small number of small vessels longlining in IPHC Area 4E; and 3) imposing requirements that are reasonably easy to understand and enforce, all while considering the small sample size of birds tracked and the incomplete temporal data set.

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

Option 1 under Alternatives 2, 3, and 4 would continue the required use of seabird avoidance measures in the STAL area of IPHC Area 4E by certain vessel size classes, as specified in the current regulation and described in Alternative 1. The STAL area is shown in Figure 1. Continuing to require these measures inside the STAL area would afford status-quo level of protection to seabirds and is the most precautionary option outside of the status-quo Alternative 1.

Within IPHC Area 4E outside the STAL area, there would be no requirements for the use of seabird avoidance measures for vessels 26-32ft LOA (Alternative 2), for vessels 26-55' LOA (Alternative 3), or for all vessels (Alternative 4). Most of the effort in the non-STAL portion of IPHC Area 4E is small vessels 26-32ft LOA fishing for halibut. These vessels deploy fewer hooks, set gear at slower speeds, and self-report few interactions with seabirds in general. All of the Pacific cod effort inside IPHC Area 4E is also inside the STAL area and would be required to use seabird avoidance gear under this option. No significant effects to short-tailed albatrosses or other seabirds at the population level are expected with this option.

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

Option 2 under alternatives 2, 3, and 4 would only require the use of a buoy bag line to deter seabirds for vessels fishing for Pacific cod and Pacific halibut with hook and line gear inside the STAL area. The difference in applying this option under these alternatives is which vessels would only be using a buoy bag line. Alternative 2 would require vessels 26-32ft LOA to use only a buoy bag inside the STAL area in IPHC Area 4E. Alternative 3 would require vessels 26-55ft LOA to use a buoy bag, and Alternative 4 would require all vessels to use a buoy bag inside this area.

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

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, and thus was ineffective, resulting in an endangered short-tailed albatross being accidentally caught.

Note that 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.

Summary of the Effects of the Alternatives on Seabirds

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

The effects of incidental take of seabirds under Alternative 1 (status quo) have not substantially changed since the dramatic decrease in seabird bycatch in 2001. The effects are described in the PSEIS (NMFS 2004a) and the Alaska Groundfish Harvest Specifications EIS (NMFS, 2007b). Incidental take of seabirds in the status quo BSAI groundfish fisheries is not significant at the population level for all seabird species analyzed. At the current STAL population level and the continuing 7-8 percent annual growth rate, the status quo level of mortality resulting from hook-

and-line fisheries is not thought to represent a threat to the species' continued survival, although it could be slowing the recovery (NMFS 2004).

Relieving the requirement for certain vessels to use seabird avoidance measures in IPHC area 4E in Alternatives 2, 3, and 4 could cause unknown impacts to short-tailed albatrosses; therefore, the Council created options for each alternative that would mitigate any potentially significant or unknown impacts that might be caused by implementation of Alternatives 2, 3, or 4. With the use of these options, no significant or unknown impacts to seabird populations are expected to occur.

Options 1 and 2 both offer some protection to STAL in the STAL area of IPHC Area 4E. Option 1 which requires the status quo measures inside the STAL area is more precautionary than Option 2 which only requires the use of a buoy bag. If one of the options is chosen to afford protection for STAL inside the STAL area of IPHC Area 4E, then only vessels fishing in the non-STAL area of IPHC Area 4E would no longer be required to use seabird avoidance measures. Nearly all of the effort in the non-STAL area is by vessels 26-32' LOA which would get relief under Alternatives 2, 3 or 4. Alternatives 3 and 4 would provide very limited additional relief to larger vessels at current levels of participation.

An informal consultation on the preferred alternative and option was completed on September 15, 2008 (Balogh 2008). The FWS concurred with NMFS finding that Alternative 3 with option 1 was not likely to adversely affect ESA-listed seabird species or any designated critical habitat.

7.0 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. Because this analysis found that effects were limited to those on seabirds, this cumulative effects analysis is also limited to seabirds.

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

Section 4.3.3 of the PSEIS (NMFS 2004a) provides a 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 maintain current protections for seabirds by using seabird avoidance measures where they are needed due to known fishery and seabird interactions.

Past effects on seabird species, include hunting and harvesting for feathers; eradication of nests; the relocation in military programs of adult birds 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 such as rats. Fisheries outside of Alaska also have 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 7-1)

Table 7- 1 Stressors on seabird species of concern in Alaska.

Human Activity Stressor	Species affected
Gillnet fisheries	Kittlitz’s murrelet, Steller’s eider
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, Laysan albatross
Collisions with fishing vessels	short-tailed albatross, Steller’s eider, spectacled eider
Introduced species	black-footed albatross, red-legged kittiwake
Military eradication programs	black-footed albatross, Laysan albatross

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

The 2007 Alaska Groundfish Harvest Specifications EIS identified the following future actions that could impact seabirds: ecosystem-sensitive management, fisheries rationalization, traditional management tools, actions by other federal, state, and international agencies and private action (NMFS 2007b). In nearly all cases, future actions were likely to reduce the impacts on seabirds, except for subsistence harvest.

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

Because these changes in the use of seabird avoidance gear are operationally conducted at the surface of the water, effects on other ecosystem components of this action, as well as the cumulative effects of similar actions, are minimal. To the extent that seabird avoidance gear such as streamer lines is lost or discarded at sea, such ‘ghost’ avoidance gear may occur, but no data area available indicating an effect from such gear. Little to no change is expected cumulatively at an ecosystem level because of the limited amount of fishing in this area, and the nature of the changes to the seabird avoidance measures. The effects of the past, present, and reasonably foreseeable future actions on seabirds in combination with the potential effects of the alternatives and options for this action are not likely to result in substantial changes in seabird populations and therefore the cumulative impacts are insignificant.

8.0 REGULATORY IMPACT REVIEW

Introduction

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

As part of the February 2007 action, the Council asked for an analysis of relaxing seabird avoidance measures in International Pacific Halibut Commission (IPHC) area 4E (see Figure 1) of the Eastern Bering Sea. The main fishery in these waters is a small boat halibut fishery operated under allocations made to regional Community Development Quota (CDQ) non-profit groups. Vessels used are generally small and harvest small amounts of halibut at a slow rate. Gear is set manually, and the use of buoy bags or other deterrence devices likely would be unwieldy to deploy, and may be dangerous in harsh weather. Seabird attraction to this small boat fishery is minimal, and the probability of encounters with STAL in parts of area 4E is small. Thus, the costs to deploy seabird deterrence measures in parts of Area 4E may be high and the protection afforded by such measures (i.e., benefits) may be disproportionately small. The Council requested staff to use spatial analysis of available STAL data (i.e., kriging of satellite telemetry data, as described in chapter 6.0 and incorporation of other pertinent data) to help define areas within Area 4E where STAL are not likely to occur and thus where requirements for seabird avoidance measures might be relaxed.

The Regulatory Impact Review (RIR) provides an analysis of the potential costs and benefits of a suite of alternatives to the status quo seabird avoidance measures, presently required in the hook-and-line fisheries in IPHC Area 4E of the Eastern Bering Sea. A benefit/cost framework is the appropriate way to evaluate the relative economic and socioeconomic merits of the alternatives under consideration in this Regulatory Impact Review (RIR). When performing a benefit/cost analysis, the principal objective is to derive informed conclusions about probable net effects of each alternative under consideration (e.g., net revenue impacts). However, in the present case, necessary empirical data (e.g., operating costs, capital investment, debt service, opportunity costs) are not available to the analysts, making a quantitative net benefit analysis

impossible. Furthermore, empirical studies bearing on other important aspects of these alternative actions (e.g., non-use value, domestic and international seafood demand) are also unavailable, and time and resource constraints prevent their preparation for use in this analysis.

Nonetheless, the following RIR uses the best available information and quantitative data, combined with accepted economic theory and practice, to provide the fullest possible assessment (both quantitative and qualitative) of the potential economic benefits and presumptive costs attributable to each alternative action. Based upon this analysis, conclusions are offered concerning the likely economic and socioeconomic effects of each of the alternatives. This analytical approach is consistent with applicable policy and established practice for implementing Executive Order 12866.

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.

Statutory Authority

Under the Magnuson-Stevens Act, the United States has exclusive fishery management authority over all marine fishery resources found within the Exclusive Economic Zone (EEZ), which extends between 3 nm and 200 nm from the baseline used to measure the territorial sea. The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in the Regional Fishery Management 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 Groundfish of the Gulf of Alaska (GOA) and the FMP for Groundfish of the Bering Sea and Aleutian Island Management Area (BSAI).

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

Actions taken to amend and implement FMPs and implement regulations pursuant to the Halibut Act must meet the requirements of Federal laws and regulations. In addition to the Halibut Act and the Magnuson-Stevens Act, the most important of these are the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), Executive Order 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.

Purpose and Need for Action

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

avoidance gear requirements in waters where pelagic seabirds (particularly the endangered short-tailed albatross and other species of concern) are rarely observed. Although the elimination of some seabird gear avoidance gear requirements may slightly increase bycatch of other seabird species in the area, we expect such increased bycatch to be minimal; seabird avoidance requirements that remain in place in the Bering Sea would be sufficient to continue adequate protection for gulls, fulmars, shearwaters, and other seabirds. These revisions exemplify the principles of adaptive management, using the best available information to focus regulatory requirements only where they are needed, and to ensure that those requirements are effective and efficient.

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

Alternatives Considered

A detailed presentation of the alternatives is presented in the accompanying EA. Presented here is a simplified version of the action alternatives. Each alternative can be paired with one of two options for continued seabird avoidance requirements within STAL area. Note that seabird avoidance measures apply to vessels greater than 26 feet LOA which is not changed by any of the alternatives considered.

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

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

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

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

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

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

Options to Alternatives 2 through 4.

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

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

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

Description of the Fisheries

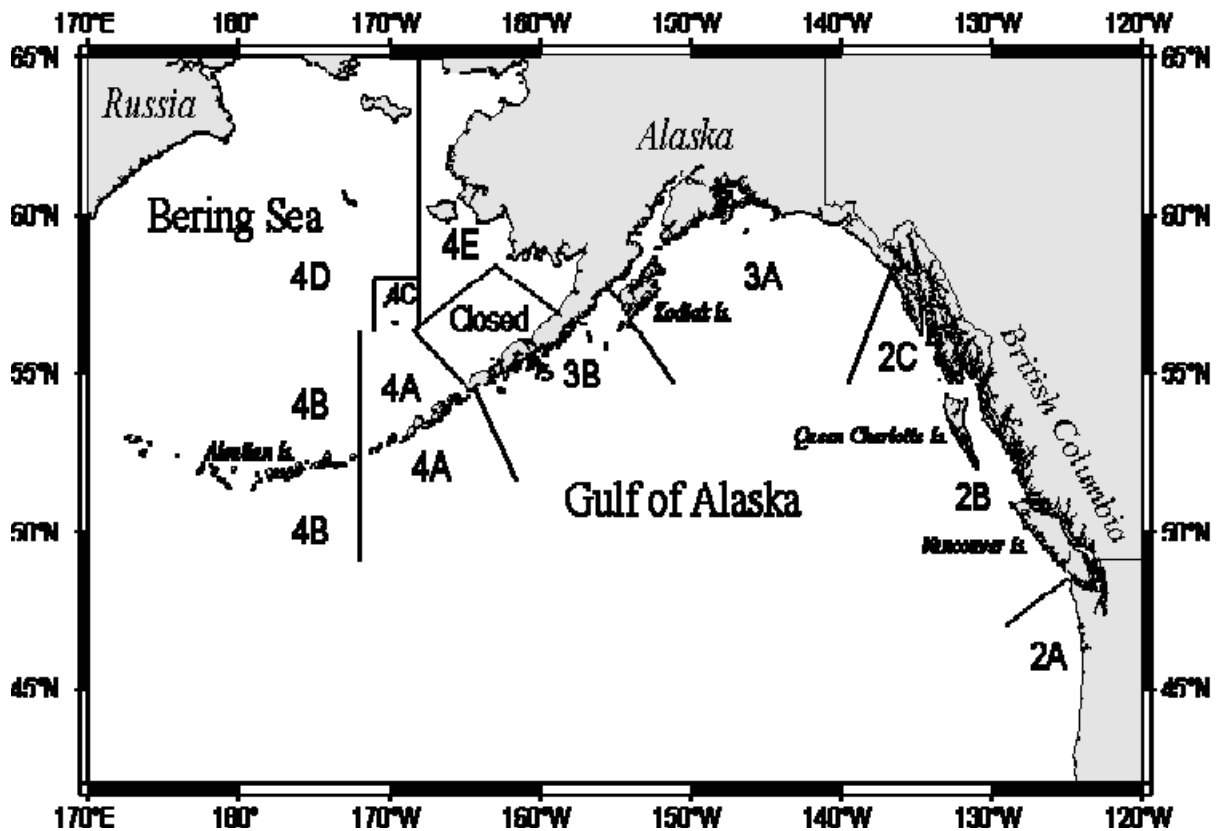
Current seabird avoidance regulations affect several classes of hook-and-line (i.e., longline) vessels operating in the BSAI and GOA. These include federally permitted groundfish vessels in inside and outside waters, as well as vessels fishing for Pacific halibut in U.S. Convention waters off Alaska. This analysis considers the potential effects of relaxing seabird avoidance requirements in IPHC Area 4E (see Figure 8-1). The primary reason for considering this action is the potential adverse effect that present seabird avoidance requirements may have on small vessels operating in the CDQ halibut fishery in area 4E. However, the alternatives include provisions that could affect larger hook-and-line vessels that operate in the Bering Sea.

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

convention), as well as describing the vessels and catch history for the CDQ halibut fishery currently being prosecuted within IPHC Area 4E.

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

Figure 8-1 IPHC Regulatory Areas.



Data on the groundfish catch in the BSAI by the hook-and-line fleet from 2002 through 2006 is presented in Table 8-1. These data are excerpted from Table 2 of the 2007 Economic SAFE. BSAI Catcher Processors (CPs) targeting Pacific cod account for the largest proportion of hook-and-line groundfish catch.

Table 8-1 BSAI Hook-and-Line Groundfish Catch by species, 2002-2006 (1,000 metric tons, round weight).

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

Source: 2007 Economic SAFE, Table 2
 *The reader will observe that some rows in Table 8-1 sum to the reported total catch, while others do not. It may be the case that rows that do not sum reflect a rounding protocol. Absent specific attribution, it is not possible to know if the fraction (i.e., < 1,000 mt round weight) is associated with the smaller or the larger catch estimate.

Estimates of the gross ex-vessel value of groundfish catch in the BSAI by hook-and-line vessels from 2002 through 2006 is presented in Table 8-2, which has been excerpted from Table 19 of the 2006 Economic Stock Assessment and Fishery Evaluation (Econ SAFE) report (Hiatt et al., 2006). It is important to note that CP product tons have been converted to round weight equivalent tons and then multiplied by a set of species-specific gross ex-vessel equivalent values in order to make these

comparisons. This exercise is necessary, because there is no actual ex-vessel transaction between harvester and processor on CPs, and, thus, Catcher Vessel (CV) and CP gross catch values cannot otherwise be readily compared.

Table 8-2 Gross Ex-vessel Equivalent Value of the BSAI Hook-and-Line groundfish catch off Alaska 2002-2006 (\$ millions).

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

* Denotes confidential data

Data on participation in the Federal hook-and-line groundfish fisheries in the BSAI from 2002 through 2006 are presented in Table 8-3. Participation in this sector of the BSAI groundfish fishery has been declining in recent years. In 2002, for example, 122 vessels participated, but by

2006, that number had fallen to 92 vessels.

Table 8-3 Participation in Federal Hook-and-Line Groundfish Fisheries in the BSAI by Target Species, 2002-2006.

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

Source: 2007 Economic SAFE, Table 41

While 92 vessels participated in the BSAI hook-and-line fisheries in 2006, not all of those vessels harvested groundfish within IPHC Area 4E. Table 8-4 shows the number of vessels and their catch within IPHC Area 4E, by size of the vessels. As shown in the table, no Pacific cod hook-and-line vessels under 60 feet in length operated in IPHC Area 4E in recent years. In the 60 ft to 125 ft category, four vessels caught 170 metric tons of Pacific cod in 2006, while 14 vessels landed 7,431 metric tons in the greater than 125 ft category.

Table 8-4 Hook-and-Line Vessel Participation and Pacific Cod Catch in IPHC Area 4E, by vessel size.

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

Source: NMFS Alaska Region Sustainable Fisheries Division Inseason Management. * Denotes confidential data.

IPHC Area 4E CDQ halibut fishery data, provided by the RAM Program of the Alaska Region of NMFS, are presented in Table 8-5 below. All allocations of IPHC Area 4E halibut quota are made to regional CDQ Corporations under a catch sharing plan. These data show that IPHC Area 4E catch has been an increasingly important share of overall CDQ halibut catch, however, it is a relatively small proportion of the overall halibut (IFQ and CDQ combined) catch in the waters off Alaska.

Table 8-5 Halibut Catch in IPHC Area 4E.

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

Source: NMFS Alaska Region RAM Program.

As shown in the tables below, harvest of CDQ halibut in IPHC Area 4E has been taken mostly by small vessels (up to 32 feet). The portion of this harvest that has been taken inside the STAL area represents a comparatively small amount of the halibut harvested inside IPHC area 4E. All of the halibut CDQ harvest inside the STAL area of 4E was harvested by small vessels, 26’ through 32’ LOA, between 2003 and 2007 (Table 6-6). This catch occurred south of Nunivak Island along the 60 degree parallel, in Kuskokwim Bay, and south of Hagemeister Island (Figure 18 in EA). Some of these vessels use jig gear, which does not require the use of seabird avoidance gear. The harvest outside of the STAL area in 4E is also mostly taken by small vessels 26’ through 32 ft LOA, nearshore in Bristol Bay, north of Nunivak Island, and in Norton Sound (Figure 18 in EA).

Table 8-6 Participation in the IHPC Area 4E CDQ halibut fishery by vessel size.

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

Source: NMFS Alaska Region RAM Program.

Table 8-7 Catch in the IHPC Area 4E CDQ halibut fishery by vessel size (pounds).

Vessel Size	2003	2004	2005	2006	2007
26 to 32 feet	265,306	203,142	215,380	197,661	317,916
32 to 55 feet	*	36,374	21,055	*	75,028
Greater than 55 feet	*	*	*	0	0

Source: NMFS Alaska Region RAM Program. * denotes confidential information.

Table 8-8 Halibut harvest inside the STAL area as a percentage of total 4E harvest.

2003	2004	2005	2006	2007
11.07 percent	2.90 percent	8.59 percent	11.57 percent	2.83 percent

Table 8-9 Numbers of vessels participating in halibut fisheries in the STAL area of 4E and their catch, 2003-2007.

Vessel Size	2003		2004		2005		2006		2007	
	Vessel Count	Pounds	Vessel Count	Pounds	Vessel Count	Pounds	Vessel Count	Pounds	Vessel Count	Pounds
26 ft to 32 ft	21	33,099	17	6,942	15	20,308	17	25,450	13	11,135
32 ft to 55ft	0	0	0	0	0	0	0	0	0	0
>55 ft	0	0	0	0	0	0	0	0	0	0

Data from NMFS RAM Program.

Two CDQ groups have halibut allocation inside IPHC Area 4E: the Bristol Bay Economic Development Corporation (BBEDC) has 30 percent of the CDQ halibut allocation in 4E, and the Coastal Villages Relief Fund (CVRF) has the remaining 70 percent. Two additional CDQ groups have an allocation in 4D that may be taken in 4E: the Norton Sound Economic Development

Corporation (NSEDC) and the Yukon Delta Fisheries Development Association (YDFDA). Harvest, by CDQ group, is presented in tables below.

The Bristol Bay Economic Development Corporation 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 driftnet vessels. 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. Vessels fishing in Togiak are mainly 26 to 28 foot bowpickers with outboard motors.

The Norton Sound Economic Development Corporation 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 to 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 to 4 knots (Robert Williams pers. comm.). In 2006, 65 percent of their halibut CDQ landings were caught with jig gear, and only 35 percent (84,000 pounds) with hook-and-line gear. Most of their landings occur outside of State waters. Jig gear does not require the use of seabird avoidance measures.

Table 8-10 Vessel Participation Inside the STAL area in IPHC Area 4E by CDQ Group, 2003-2007.

CDQ group	2003	2004	2005	2006	2007
BBEDC	13	6	5	5	1
CVRF	8	11	10	12	12
NSEDC	0	0	0	0	0
YDFDA	0	0	0	0	0

Data from NMFS RAM Program.

Table 8-11 IPHC Area 4E CDQ halibut harvest: Percent inside and outside of the STAL area, 2003-2007

CDQ group	2003		2004		2005		2006		2007	
	percent Harvest		percent Harvest		percent Harvest		percent Harvest		percent Harvest	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
BBEDC	18.6	81.4	4.6	95.4	9.9	90.1	8.8	91.2	0.2	99.8
CVRF	5.6	94.4	4.0	96.0	11.7	88.3	18.1	81.9	5.5	94.5
NSEDC	0	100	0	100	0	100	0	100	0	100
YDFDA	0	0	0	0	0	0	0	0	0	0

Data from NMFS RAM Program. * denotes confidential information.

Analysis of the Alternatives

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

Impact Categories Not Expected to be Affected by the Alternatives:

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

Benefits: Use Value

The biological productivity of FMP species and other species in the areas of interest and surrounding environs are not directly affected by the alternatives to the status quo under the proposed action. Thus, although some cost savings are anticipated, it is not likely that commercial fisheries revenue would be substantially affected by the alternatives, and certainly not to a sufficient extent to, for example, induce additional fishing effort. Further, the endangered short-tailed albatross, which is a primary, but not exclusive species of concern of seabird avoidance requirement in this area, does not possess a present-day consumptive use value.

Benefits: Non-use Value

The most relevant consideration for distinguishing among the alternatives' effects on non-use value is the degree to which each alternative may affect seabird populations. Although FWS has determined that the short-tailed albatross is adversely affected by hook-and-line Pacific halibut and groundfish fisheries off Alaska, both FWS biological opinions (see Chapter 4 of the accompanying EA) have concurred with NMFS and conclude that the GOA and BSAI groundfish 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 FWS also concluded that these fisheries are not likely to adversely affect the threatened spectacled eider. The Biological Opinion on the groundfish 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 biological opinion is in effect (approximately 5 years).

Chapter 4 of the attached EA has found that the alternatives do not have a significant effect on seabird populations. Thus, it is not likely that non-use value would be significantly adversely affected by the alternatives.

Revenue, Related Fisheries, and Communities

The proposed action alternatives to the status quo would generally amend seabird avoidance requirements by relaxing requirements in IPHC Area 4E. It is important to note that these changes do not affect the determination of total allowable catch (TAC), or the allocation of TAC, in any fishery. Further, these changes will not directly affect the ability of harvesters to catch all that is legitimately available to them. Thus, the alternatives to the status quo will not likely affect the gross revenue stream earned by participants in regulated fisheries in any discernable way. It is well understood that “gross” measures of economic performance (e.g., ex-vessel revenues) are in no way indicative of realized “net” performance (e.g., profits). However, in the present circumstance, data with which to estimate “net results” are unavailable to analysts. Thus, reliance on “gross” performance is, by default, the second-best alternative available for interpreting expected economic impacts across alternatives, keeping in mind the caveat just articulated.

Beyond the subject hook-and-line fisheries in Area 4E, the proposed action is not expected to have a significant effect on related fisheries (i.e., commercial or subsistence), either through modifying catch or derived gross value. Given that the proposed action is not expected to affect gross value (e.g., ex-vessel gross revenue) in directly affected or related fisheries, it follows that significant economic effects on fishing communities are not likely. If there are, as some advocating the adoption of seabird avoidance gear exemptions assert, fishing safety gains attributable to this action, especially for small boat operations, then implementation of any of the alternatives to the status quo has the potential to contribute to the general well-being of fishery dependent communities.

Equipment Costs

Federal regulations presently require vessel operators to use seabird avoidance measures when deploying hook-and-line gear in Federal waters of the EEZ, and when operating in federally managed fisheries shoreward of 3 nautical miles (nm) (i.e., inside State waters). Specific requirements depend on vessel size, superstructure and operational configuration, and area fished. The suite of seabird avoidance gear-types includes buoy bag lines and streamer-lines of various lengths, as well as accompanying performance minimums.

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) in length, deployed so that it is within 6.6 ft (2 m) horizontally of the point where the main groundline enters the water. The materials needed to construct such a line are readily available on most fishing vessels or can be purchased at negligible cost. This analysis assumes that vessels that are required to use a buoy bag line are presently equipped with gear that allows compliance with this standard.

Since adoption of the present set of seabird avoidance measures, the U.S. Fish and Wildlife Service, in cooperation with the Pacific States Marine Fisheries Commission (PSFMC), has provided streamer lines to hook-and-line vessels, free of charge. Thus, at present, all vessels that are required to use seabird avoidance measures have acquired, or been provided with, the measures that would continue to be required under both of the alternatives to the status quo. Thus, the alternatives to the status quo are not expected to impose additional equipment cost, over the status quo condition. Indeed, “surplus” seabird avoidance gear (or components) may be made available at low or no cost, if an exemption alternative is implemented.

Consumers of Fishery Products

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

Regulatory and Enforcement Programs

The alternatives, and specifically the options to each alternative, will likely have an effect on NOAA enforcement activities. Based upon advice from NOAA Alaska Office of Law Enforcement (OLE), the proposed action would be expected to ‘reduce’ the enforcement burden on the Agency, albeit, only marginally. Potential effects are identified in section 8.7.2, below. The alternatives, however, would not likely alter U.S. Coast Guard (USCG) operations in support of fisheries management in the subject region.

Fisheries Management

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

Impacts of the Alternatives

The three action alternatives under consideration, and the two options to each action alternative, differ only by the size, and therefore number and type, of vessel that they regulated. All of the vessels affected by Alternative 2 are also impacted by Alternative 3. Similarly, all of the vessels included in Alternatives 2 and 3 are included in Alternative 4, with the addition of all of the larger vessels not included in Alternatives 2 and 3. Thus, the effects of the alternatives are additive with Alternative 2 impacting the smallest population of entities, resulting in the least total effect (although, perhaps, the greatest proportion of aggregate effects). Alternative 3 provides additively more effects (and effected entities) than under Alternative 2, as does Alternative 4 with respect to Alternative 3.

Alternative 2 would eliminate the buoy bag line and/or streamer line requirements for all vessels up to 32 feet in length that fish in the waters of the EEZ in IPHC Area 4E. Under the status quo regulations, vessels up to 32 feet in length fishing shoreward of the EEZ (from 0 to 3 nm from the baseline) are not required to use seabird avoidance measures. This alternative would not affect vessels that are less than 32 feet in length that fish exclusively within 0 to 3 nautical miles, because there is currently no seabird avoidance regulatory burden for such vessels. Thus, Alternative 2 directly affects (i.e., lifts any economic or operational burden current seabird avoidance device mandates impose upon) only the 66 vessels (NMFS RAM Program 2007 data) that are up to 32 feet in length, fish in the EEZ, and are presently required to deploy the appropriate seabird avoidance device(s). Alternative 3 includes vessels up to 55 feet in length. Thus, it includes all of the 66 vessels of Alternative 2 and an additional 4 vessels between 32 feet and 55 feet in length. Records reveal that these four vessels harvested CDQ halibut in IPHC Area 4E in 2007 (NMFS RAM, 2007). There were, in recent years, no vessels between 32 feet and 55 feet in length that harvested Pacific cod within IPHC Area 4E (NMFS Catch in Areas Database).

Alternative 4 would eliminate seabird avoidance requirements for all hook-and-line vessels operating in IPHC Area 4E. Thus, the vessels affected by Alternative 4 would include those defined for Alternatives 2 and 3, as well as the larger (greater than 55 feet in length) hook-and-line CP and CV vessels that operate in the Bering Sea. Actual hook-and-line vessel participation and landings data, shown in tables 8.2 and 8.3 above, indicate that 52 CVs and 40 CPs harvested groundfish with an estimated gross ex-vessel value of \$4 million and \$99.2 million, respectively, using hook and line gear in the BSAI in 2006. A review of spatial data (NMFS Alaska Region Catch in Areas Database) shows that 18 of the 92 hook-and-line vessels that harvested BSAI groundfish in 2006, reported harvests totaling approximately 7,600 metric tons in IPHC Area 4E.

The small boat (26 ft to 32 ft LOA) IPHC Area 4E halibut fishery is still in its developmental 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. Thus, the elimination of requirements to deploy seabird avoidance devices in IPHC Area 4E would tend to decrease vessel operational costs (in the broadest sense) in this emerging fishery. The benefits of reduced regulation for these small vessels are contained in all three alternatives.

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

cost savings, while imposes no loss of protection to seabirds, then the more operations to which the action applies the greater the relative benefit.

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

The elimination of seabird avoidance requirements in IPHC Area 4E would alleviate some of the safety concerns for vessels affected by the status quo alternative, particularly the smallest vessels. The additional vessels between 32 feet and 55 feet in length (Alternative 3) may provide additional benefits associated with vessel safety, because these vessels are still exceedingly small, considering that they are commercial fishing in the open waters of the Eastern Bering Sea. This may also be true, but perhaps to a lesser extent, for vessels greater than 55 feet that would be included under Alternative 4.

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

Summary of the Analysis of Alternatives

This analysis has found that the alternatives to the status quo are not likely to impose significant costs on industry or affect other use or non-use values. The alternatives have the potential to create benefits, by reducing the regulatory burden on vessels operating in the waters of IPHC

Area 4E However, vessel operating cost data, with which to quantitatively confirm these results, are not presently available. Thus, it is not possible to quantify the net effect on operating costs that might occur under each alternative. However, the alternatives to the status quo are not expected to impose any additional burden and would likely reduce operational costs for affected vessels, while improving vessel safety for the smallest of the potentially affected vessels. No reduction in seabird protection is anticipated with the adoption of any of the alternatives to the no action alternative.

It is worth noting, again, that “gross” measures of economic performance (e.g., ex-vessel revenues) are in no way indicative of realized “net” performance (e.g., profits). There is ample empirical evidence, drawing on the broader economy, that firms may record positive gross receipts, while simultaneously incurring net losses. However, in the present circumstance, data with which to estimate “net results” are unavailable. Thus, reliance on “gross” performance indicators is, by default, the second-best alternative available with which to meet the Agency’s and Council’s legal obligations to interpret expected changes in economic impacts across alternatives, to the fullest extent practicable. This does not diminish the reader’s need to keep the caveat just articulated in mind.

9.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS

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.

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.

Reasons for Considering the Proposed Action

Seabird avoidance measures reduce the incidental mortality of seabirds in the hook-and-line fisheries off of Alaska. Recent analyses suggest that these measures can be focused on certain sectors of the hook-and-line vessel fleet and in specified geographic areas where interactions are more likely to occur between hook-and-line vessels and seabirds, particularly ESA-listed seabird species and species of concern. The reason for considering this action is that it has the dual purpose of continuing to protect seabirds while eliminating seabird avoidance gear requirements in waters where pelagic seabirds (particularly the endangered short-tailed albatross and other species of concern) are rarely observed.

The purpose of the proposed action is to revise the seabird avoidance measures so that, based on the best available information regarding seabird occurrence, these measures may be applied most efficiently (i.e., providing adequate protection to seabirds, while imposing no unnecessary

economic, operational, or safety burdens on fishermen).

Objectives and Legal Basis of the Proposed Rule

Objectives of the Proposed Rule

The objective of this proposed rule is to revise the existing seabird avoidance regulations by using the best available information to focus regulatory requirements where they are needed and to ensure that those requirements are effective and efficient. 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 FWS (1999) requires that the NMFS investigate the effectiveness of seabird avoidance measures currently used in hook-and-line groundfish fishery off Alaska. If so warranted by the research results, 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.

This action furthers the goals and objectives of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Northern Pacific Halibut Act of 1982 (Halibut Act), the Migratory Bird Treaty Act (MBTA), and the ESA, while providing relief from unnecessary regulatory burdens on hook-and-line fishermen in IPHC Area 4E. For additional detail on objective see Chapter 1 of the attached Environmental Assessment.

Legal Basis of the Proposed Rule

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

The halibut fishery is managed by the International Pacific Halibut Commission (IPHC), which was established by a Convention between the governments of Canada and the United States. The

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

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

Definition of a Small Entity

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

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

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

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

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

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors, or general partners controls the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor and subcontractor are treated as joint ventures if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

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

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

Estimated Number of Small Entities to which Proposed Rule Applies

Fishing vessels, both catcher vessels (CVs) and catcher/processors (CPs), are considered small, for RFA purposes, if their annual gross receipts, from all their economic activities combined, as well as those of any and all their affiliates anywhere in the world, (including fishing in Federally managed non-groundfish fisheries, and in State of Alaska managed fisheries), are less than or equal to \$4.0 million. Further, fishing vessels were considered to be large for the purposes of this analysis, if they were affiliated with an AFA fishing cooperative in 2006.

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

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

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

Comprehensive annual revenue data, from all sources, are available for the 92 vessels that participated in the Federal hook-and-line groundfish fisheries in the BSAI in 2006. These data

are compiled in the annual Economic Stock Assessment and Fishery Evaluation (Econ. SAFE) report prepared by the Alaska Fisheries Science Center (Hiatt et al., 2006). In 2006, 52 hook and line Catcher Vessels (CVs) and 6 hook-and-line Catcher Processors (CPs) reported that they caught and processed less than \$4 million in gross ex-vessel or gross first wholesale product value. Thus, these 58 vessels are considered small entities. (Hiatt, et al., 2006, Table 36 and 37) In total, this analysis has identified 128 vessels that are believed to be directly regulated small entities, as defined by SBA criteria, and are treated as such in this IRFA.

A review of American Fisheries Act permit data revealed that none of these 128 vessels with gross revenue less than \$4 million, in 2006, are AFA permitted vessels. It is possible that the estimated 128 small entities that would be directly regulated by the proposed action overstates the true number of such entities, although by an unknown amount. This is so, because multiple vessel ownership, ownership in shares of multiple vessels, family and joint-venture affiliations, as well as formal contracted relationships are all common practices observed in commercial fisheries off Alaska. Notwithstanding this fact, empirical data on these interlocking relationships are not currently systematically collected, compiled, and analyzed by any source.

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

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

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

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

Description of Significant Alternatives

An IRFA must provide a description of any significant alternatives to the proposed rule that accomplish the stated objectives (*of the proposed action*), consistent with applicable statutes, and that would minimize any significant economic impact of the proposed rule on small entities.

The alternatives identified by the Council for consideration in this EA/RIR/IRFA are described in detail in Chapter 2 of the EA, and are also described in Section 8.5 of the RIR. The RIR for this action analyzes potential economic impacts of the suite of available alternatives. The alternatives contain explicit provisions to mitigate the potential adverse effects of existing regulations requiring use of seabird avoidance measures on 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 geographical distribution and range of endangered seabirds, as well as on the efficacy of required seabird avoidance devices. Recent research has addressed whether small vessels can properly deploy seabird avoidance devices, given a small vessel's inherent physical limitations, and whether those devices are effective and necessary. The proposed alternatives alleviate the small entity compliance burden by exempting these classes of operations from seabird avoidance measures in IPHC Area 4E, where endangered birds are not, or only very rarely, present, and where many small entities operate.

Alternative 1 is the status quo which would require the continued use of seabird avoidance measures for all hook-and-line vessels fishing for groundfish or halibut in the federal waters of Area 4E. This alternative would not provide economic relief: and therefore, does not meet the objectives of this action.

Alternative 2 would exempt hook-and-line vessels from 26 feet to 32 feet in length from seabird avoidance measures while fishing for groundfish or halibut in Area 4E. This alternative would provide economic relief to only vessels in this size class, partially meeting the objectives of the action for the hook-and-line fleet.

Alternative 3 (preferred) would exempt hook-and-line vessels from 26 feet to 55 feet in length from seabird avoidance measures while fishing for groundfish or halibut in Area 4E. This alternative would provide more economic relief to the hook-and-line fleet than Alternatives 1 and 2.

Alternative 4 would exempt all hook-and-line vessels from seabird avoidance measures while fishing for groundfish or halibut in Area 4E. This alternative would provide the most economic relief to the fleet compared to the other alternatives, but the economic relief in comparison to Alternative 3 is not likely a large difference. Very few vessels over 55 feet in length participate in the hook-and-line fishery in 4E, and the larger vessels have the capability to use seabird avoidance gear based on larger deck space, adequate superstructure, and available crew.

Two options were also considered for this action. Option 1 (preferred) would require full compliance with the seabird avoidance measures inside the STAL area while option 2 would require only the use of a buoy bag. Option 1 would require more costs to deploy seabird avoidance gear that meets the streamer standards than option 2, which required a buoy bag and no supporting superstructure for streamer lines. Because the buoy bag is not likely as effective as the streamer lines, option 1 is more protective of short-tailed albatross and other seabirds that may occur in the STAL area.

The preferred action is Alternative 3 with option 1, which provides more economic relief than Alternatives 1 and 2 with option 1. Alternative 3 and option 1 were selected because most of the vessels participating in the hook-and-line fishery in Area 4E are less than 55 feet in length. The use of seabird avoidance gear on these vessels can be difficult because of limited deck space for the gear or the lack of superstructure to support the streamer lines. Smaller vessels also are likely to have fewer crewmembers available to handle the gear. Only Alternative 4 has smaller

economic impacts on the directly regulated small entities than Alternative 3. Because very few large vessels participate in the Area 4E fishery, Alternative 4 is not likely to provide much more economic relief than Alternative 3. Alternative 4 was not chosen because larger vessels are more likely to have adequate deck space, superstructure, and crew available to allow for safe and effective use of seabird avoidance gear. Because of the presence of short-tailed albatross in the STAL area of Area 4E, the Council recommended option 1 for vessels fishing in this area to ensure the continued protection of short-tailed albatross from potential incidental takes by any hook-and-line vessel. Option 1 has a marginally greater potential adverse economic impact on directly regulated small entities than does option 2, but option 1 more fully achieves the objectives of the proposed action and is necessary for the protection of short-tailed albatross and other seabirds that may occur in the STAL area, making it more compliant with other applicable law (e.g., ESA).

10.0 CONCLUSIONS

This proposed action would eliminate or modify the required use of seabird avoidance measures for different vessel size classes in IPHC Area 4E. The existing requirements for the use of seabird avoidance measures by hook-and-line vessels fishing in a portion of IPHC Area 4E may be unnecessary, due to limited use of this area by seabirds of conservation concern; in particular, a review of recent satellite tagging studies shows a low probability of fishing vessels encountering short-tailed albatrosses. The objective of this proposed regulatory amendment is to improve the efficiency of current seabird avoidance requirements by relieving an unnecessary regulatory burden and its associated costs in areas where the incidental take of short-tailed albatrosses and other species of conservation concern is extremely low.

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 CFR 1508.27 state that the significance of an action should be analyzed both in terms of “context” and “intensity.” The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ’s context and intensity criteria. Each criterion listed below is relevant in making a finding of no significant impact and was considered individually, as well as in combination with the others.

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

Response: No. This action does not affect the sustainability of any target species. This action proposes changes to seabird avoidance measures that will remove seabird avoidance requirements for hook-and-line vessels 55 feet or less in length overall (LOA) operating in portions of Area 4E. The proposed action would change the locations for setting gear in ways that preclude interaction with seabirds in part of Area 4E, and does not affect overall harvest of target species. Because the harvest of target species is not likely affected, the changes have no potential to impact the sustainability of target species. See section 3.0 of the EA.

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

Response: No. This action does not affect the sustainability of any non-target species. This action proposes changes to seabird avoidance measures that will remove seabird avoidance requirements for hook-and-line vessels 55 feet or less in length overall (LOA) operating in portions of area 4E. The proposed action would change the locations for setting gear in ways that preclude interaction with seabirds in part of area 4E, and does not affect overall harvest of non-target species. Because the harvest of non-target species is not likely affected, the changes have no potential to impact the sustainability of any non-target species. See section 3.0 of the EA.

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?

Response: No. Because this action is limited to the hook-and-line fisheries in portions of Area 4E, this action does not affect habitat. The use of seabird avoidance gear has negligible impact below the water because it is used at the water's surface. Because seabird avoidance gear is used on the fishing vessel above the surface of the water, no impacts on the benthic habitat, essential fish habitat, or coastal habitats are expected. See section 3.0 of the EA.

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

Response: No. This action does not have potential to adversely affect public health or safety. By relieving small vessels from using seabird avoidance gear in portions of Area 4E, this action provides a potential safety benefit. Small vessels have limited deck space, rigging, and crew for handling seabird avoidance gear. These features of small vessels may present a safety concern during the deployment of seabird avoidance gear, especially in bad weather. See section 8.7.2 of the EA.

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

Response: No. The only ESA-listed species identified as potentially affected by this action was the short-tailed albatross. No critical habitat is affected by this action. An informal consultation with the U. S. Fish and Wildlife Service (FWS) for this action was completed in September 2008. NMFS determined that this action was not likely to adversely affect ESA-listed species or critical habitat, and the FWS concurred with this determination. See sections 3.0 and 6.0 of the EA.

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.)?

Response: No. Because the use of avoidance gear has negligible impact below the water, no impact on benthic productivity is expected to occur. The continued use of the seabird avoidance measures in the portion of Area 4E where short-tailed albatross occur ensures continued biodiversity for seabird species. Any effects on the ecosystem are expected to be minimal because the action affects the gear interaction with only the seabird component of the ecosystem, at the surface of the water column. The impact on seabirds where vessels are exempt from using seabird avoidance measures is not expected to have population level effects. Therefore, little to no change is expected at an ecosystem level because of the limited area and scope of any

potential impacts. See sections 3.0 and 6.0 of the EA.

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

Response: No significant social or economic impacts interrelated with natural or physical environmental effects were identified in the EA or the RIR. The action would relieve hook-and-line fishermen of a regulatory burden that research has shown to be unnecessary to protect seabird species of concern. See section 8.7 of the EA.

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

Response: No. Seabird avoidance measures have been in place for the groundfish and halibut fisheries for over 10 years. Most hook-and-line vessels began using the streamer lines voluntarily to prevent seabird interactions before the original regulations were put in effect. The relief of seabird avoidance measures where birds of concern are not likely present is not controversial to either members of the hook-and-line fleet or to the FWS, which is responsible for the management and protection of seabird species. No issues of controversy were identified during the public process of developing this action. See sections 1.0 and 2.0 of the EA.

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?

Response: No. No historic or cultural resources, park lands, prime farmlands, wetlands or wild and scenic rivers occur in the action area. Ecologically critical areas may occur in the this portion of the Bering Sea, but this action applies to fishing vessels using seabird avoidance gear at the surface of the water, and has no potential to affect ecologically critical area. See sections 1 and 2 of the EA.

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

Response: No. This action is based on extensive research and relatively certain conclusions that, in the pertinent portion of IPHC Regulatory Area 4E, infrequent occurrence of seabird species of concern will allow certain requirements for the use of seabird avoidance measures to be lifted without risk of interactions between seabirds and hook-and-line vessels. Moreover, most vessels are already using the streamer lines, and began doing so voluntarily before the original regulations were put in place. This action proposes a small change to who is required to use the avoidance gear in a portion of area 4E, so effects on the human environment should be very small. No unique or unknown risks are involved. See section 1 of the EA.

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

Response: No. This action would revise the location in which hook-and-line vessels deploy seabird protection devices and has no potential to contribute to other actions to have a cumulatively significant impact. The analysis of cumulative impacts concluded that this action has no potential to contribute to other, related actions in a way that might have cumulatively significant impacts. See section 7.0 of the EA.

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?

Response: No. The implementation area for this action is in the Bering Sea on fishing vessels at the surface of the water, so no scientific, historic, or cultural resources would be affected. See section 3.0 of the EA.

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

Response: No. This action deals only with small changes to the location in which seabird avoidance gear is no longer required to be used. It does not affect which vessels participate in the fishery or location of fishing activities and therefore does not affect the potential introduction or spread of nonindigenous species. See section 1.0 of the EA.

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?

Response: No. The proposed action would modify seabird avoidance requirements that are already in effect and which result from directed study of seabird distribution and the efficacy of established seabird avoidance measures. Because the action is based on the latest scientific information, the action neither establishes a precedent nor represents a decision in principle not already in effect. See section 1.0 of the EA.

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?

Response: No. The analysis discusses the potential action's compliance with applicable laws and requirements for the protection of the environment. No violation of laws for the protection of the environment was identified. See section 1.0 of the EA.

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?

Response: No. This action would have no effect on any target or non-target species nor create any means to contribute to effects from other actions to have any cumulative adverse effects on target or non-target species. This action proposes changes to seabird avoidance measures that affect only which hook-and-line vessels use seabird avoidance gear in a portion of Area 4E. Because no direct or indirect effects were expected on target and non-target species, no cumulative effects would occur for target and non-target species. See sections 3.0 and 7.0 of the EA.

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