MEASURES TO MINIMIZE TAKE OF SHORT-TAILED ALBATROSS IN THE PACIFIC COAST GROUNDFISH FISHERIES Including the ENVIRONMENTAL ASSESSMENT (EA) AND INITIAL REGULATORY FLEXIBILITY ANALYSIS (IRFA)

Preliminary DRAFT

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• 1.0 INTRODUCTION

This Environmental Assessment (EA) analyzes the implementation of a Seabird Avoidance Program in the Pacific Coast Groundfish Fishery. It specifically addresses proposed regulations to minimize the take of ESA-listed short-tailed albatross (*Phoebastria albatrus*). The proposed provisions are pursuant to a U.S. Fish and Wildlife Service Biological Opinion (B.O.) that requires NMFS to implement regulations mandating the use of seabird avoidance measures by vessels greater than or equal to 55 feet length overall (LOA) using bottom longline gear to harvest groundfish. The seabird avoidance measures are modeled after a similar regulatory program in effect for the Alaskan groundfish fishery.

1.1 PURPOSE AND NEED FOR ACTION

The purpose of the proposed action is to reduce interactions between seabirds and groundfish longline gear. Many seabirds attack baited hooks as the longline is being set and become lethally hooked and drowned (USFWS 2008, p. 20). The proposed action would amend the regulations governing the Pacific Coast groundfish fishery to require seabird avoidance measures – specifically the use of streamer lines and related provisions currently mandated in the Alaskan groundfish fishery – by vessels 55 ft LOA or greater in the bottom longline fishery.

The proposed action is needed to minimize takes of endangered short-tailed albatross and comply with a 2012 B.O. issued by the U.S. Fish and Wildlife Service. The 2012 B.O. evaluated the risks of continued operation of the Pacific Coast groundfish fishery on ESA-listed seabirds, including short-tailed albatross. The 2012 B.O. included a Term and Condition requiring NMFS to promulgate regulations mandating the use of streamer lines by longline vessels 55 feet LOA or greater, patterned on the Alaska streamer line regulations. Accordingly, for the fishery to be exempt from the ESA Section 9 restrictions regarding take of a listed species, streamer line regulations must be in effect by November 21, 2014. The 2012 B.O. anticipates the yearly average take of one short-tailed albatross killed from longline hooks or trawl cables. As the short-tailed albatross population is expanding, it is expected to result in more interactions with the Pacific Coast Groundfish Fisheries. This action would implement one of the terms and conditions of the 2012 B.O. and reduce the risk of exceeding the take limits of short-tailed albatross, which in turn would reduce the risk of economic harm to the fishing industry that could result from the incidental take limit being exceeded.

1.2 PROPOSED ACTION

The proposed action would require streamer lines, sometimes referred to as tori or bird-scaring lines, to be deployed as the longline gear is being set. A streamer line effectively fences off the longline from seabird interactions. The streamer line is a line (typically 50-fathom or 90-meter) that extends from a high point near the stern of the vessel to a drogue (usually a buoy with a weight). As the vessel moves forward the drogue creates tension in the line producing a span from the stern where the streamer line is aloft. The aloft section includes streamers made of UV protected, brightly colored tubing spaced every 16 feet (5 meters). Streamers must be heavy enough to maintain a near-vertical fence in moderate to high winds. Individual streamers should extend to the water, to prevent aggressive birds from

getting to the groundline. When deployed in pairs – one from each side of the stern – streamer lines create a moving fence around the sinking groundline reducing or eliminating bird interactions (see Figure 1) (Melvin 2000). Streamer lines have been effective at reducing seabird bycatch in fisheries throughout the world including Alaskan fisheries that are similar to West Coast groundfish fisheries (USFWS 2008; Ed Melvin, personal communication; Bob Alverson, personal communication).

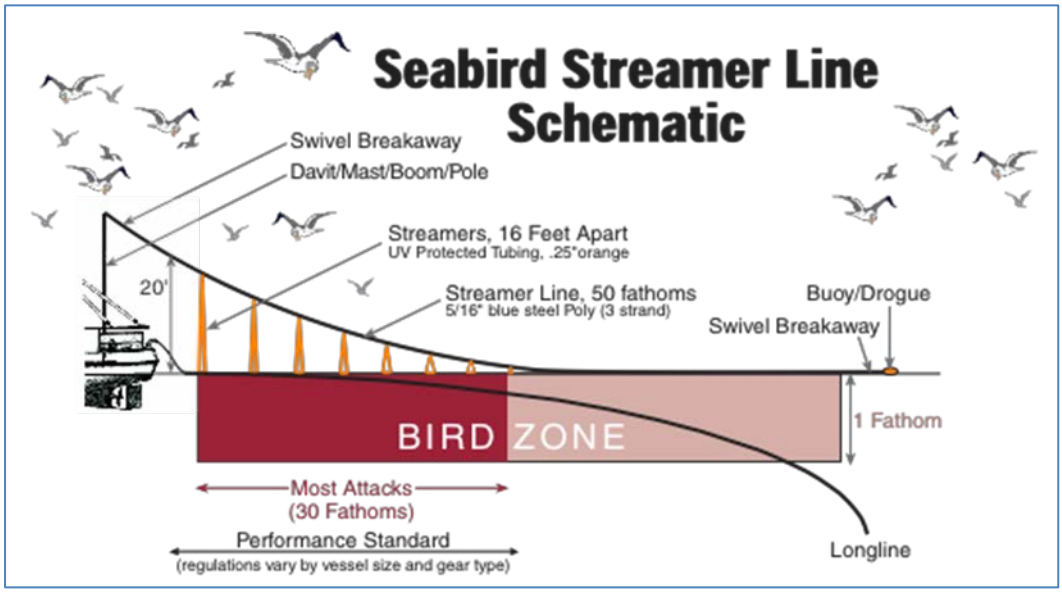

Figure 1: Schematic of streamer lines to reduce seabird bycatch (modified from Melvin 2000).

1.3 ACTION AREA

The action area is the area off the Pacific coast where West Coast groundfish vessels using bottom longline gear operate, defined by regulation at 50 CFR 660.11 subpart C as: "the Exclusive Economic Zone off the coasts of Washington, Oregon, and California between 3 and 200 nm offshore, and bounded on the north by the Provisional International Boundary between the U.S. and Canada, and bounded on the south by the International Boundary between the U.S. and Mexico (see Figure 2). The inner boundary of the fishery management area is a line coterminous with the seaward boundaries of the States of Washington, Oregon, and California (the "3-mile limit"). The outer boundary of the fishery management area is a line drawn in such a manner that each point on it is 200 nm from the baseline from which the territorial sea is measured, or is a provisional or permanent international boundary between the U.S. and Canada or Mexico."

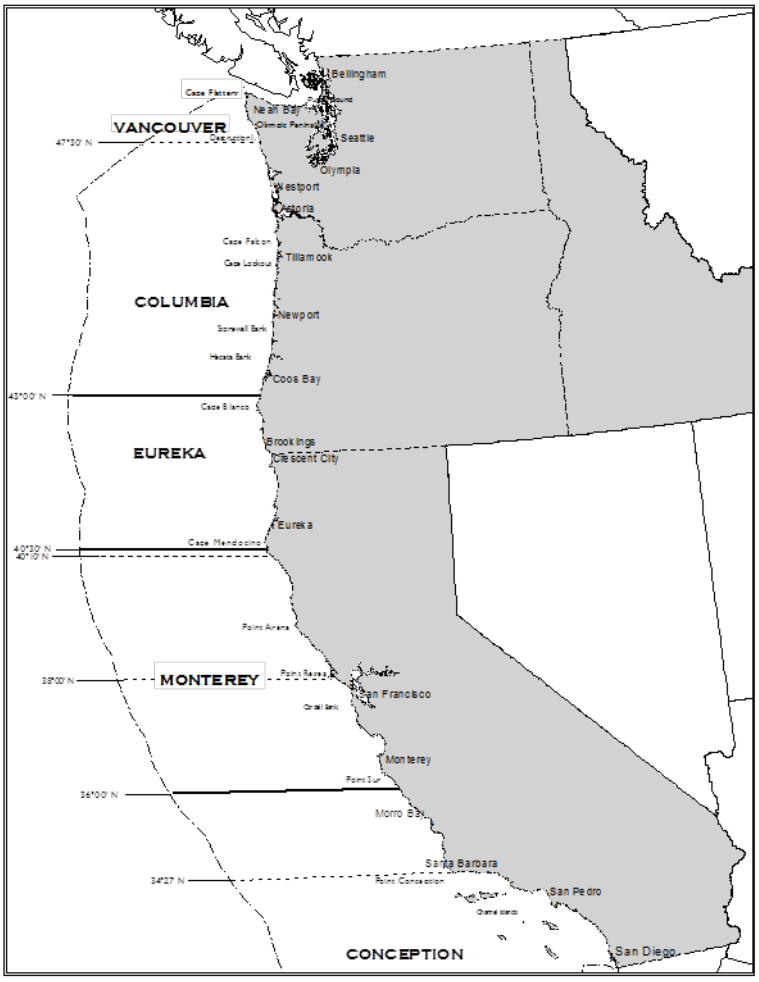

Figure 2: The action area, showing major coastal communities and groundfish management areas.

1.4 Background of Related Non-regulatory Actions

In addition to the regulatory action analyzed in this EA, NMFS has worked in collaboration with academia, NGOs, the fishing industry, coastal tribes, and Washington Sea Grant to develop a multi-dimensional seabird conservation initiative for the West Coast groundfish fishery. The initiative includes research, industry outreach, and subsidies to encourage voluntary use of the seabird avoidance measures described below. The initiative was catalyzed in 2011 by the take of a short-tailed albatross in the groundfish longline fishery off Oregon (see Section 3.1).

1.4.1 Research

Washington Sea Grant and Oregon State University are leading a research program in collaboration with the fishing industry to develop effective and practical tools to reduce the mortality of albatrosses and other seabirds in the West Coast longline fishery targeting sablefish. Industry partners currently include the Fishing Vessel Owners Association, Washington coastal tribes, and others. NMFS, the Packard Foundation, and the National Fish and Wildlife Foundation are funding this project. A specific goal is to develop streamer lines suited to the diversity of longline gear used in this fishery and to promote their voluntary use.

At the conclusion of this research effort, recommendations for seabird bycatch avoidance will be provided to the Pacific Fishery Management Council for its consideration based on results and consultation with the fishing industry and other stakeholders. Research protocol is provided in Appendix C. The research program is pursuant to the 2012 B.O. requirement for an adaptive management process to revise the regulatory provisions considered in this EA as needed. The B.O. provides:

> "*It is expected that new information and research shall reveal new or improved methods of reducing bycatch of short-tailed albatross that are safe and effective for the Fishery to use . . . (*USFWS 2012, p. 35*)"*

1.4.2 Industry Outreach

The purpose of the outreach program is to raise awareness of the need for albatross bycatch mitigation, share solutions developed for Alaskan fisheries and other demersal fisheries around the world, encourage voluntary use of streamer lines, and foster innovation. The project is:

- developing and distributing outreach materials on seabird bycatch prevention strategies;
- raising industry awareness on the availability of free streamer lines;
- serving as the point of contact on technical aspects of seabird bycatch mitigation measures to stakeholders; and,
- conducting targeted outreach to fishery stakeholders.

Appendix B contains a 2011 outreach summary.

1.4.3 Subsidy

NMFS has provided funding to the Pacific States Marine Fisheries Commission (PSMFC) to build (or procure) streamer lines and distribute them free of charge to any bottom longline vessel fishing on the West Coast. The program has resulted in the distribution of 221 streamer lines since 2009 that have been deployed on a voluntary basis. It is expected that the outreach efforts described above will result in increased interest by the fleet and the distribution of additional free streamer lines.

• 2.0 ALTERNATIVES

This section presents alternatives for analysis as well as a summary of NMFS' scoping process, including alternatives that were considered but rejected from further analysis.

2.1 ALTERNATIVE 1 – NO ACTION

The No Action alternative would maintain the current regulations that do not include seabird avoidance measures. The non-regulatory actions described in Section 1.4 would continue as long as funding is available.

2.2 ALTERNATIVE 2 – REGULATORY SEABIRD AVOIDANCE PROGRAM

Alternative 2 would amend the regulations governing the Pacific Coast groundfish fishery to require seabird avoidance measures – specifically the use of streamer lines and related provisions currently mandated in the Alaskan groundfish fishery (50 CFR 679.24(e)) – by vessels 55 ft LOA or greater using bottom longline gear pursuant to the Pacific Coast Groundfish Fishery Management Plan (FMP). In sum, the regulation would:

- Require the use of streamer lines in the commercial longline fishery of the Pacific Coast Groundfish Fishery for non-tribal vessels 55 feet in length or greater;
- Require vessels to deploy one or two streamer lines depending on the type of longline gear being set;
- Require that streamer lines meet technical specifications and be available for inspection;
- Allow for a rough weather exemption from using streamer lines for safety purposes; and,
- Require that vessels take additional measures to avoid seabird interactions including:
    - Ensuring that baited hooks sink quickly; and,
    - Discharging offal in a manner that distracts birds from hooks.

Details associated with Alternative 2 are presented as draft regulatory language in Appendix A.

The non-regulatory actions described in Section 1.4 would continue as long as funding is available.

2.3 SCOPING SUMMARY

Pursuant to the NMFS Policy Directive 30-131, NMFS convened an Internal Scoping Meeting with subject matter experts to scope alternatives, identify issues or resources for analysis, and make preliminary determinations regarding the context and intensity of likely effects of the proposed action on the human environment.

2.3.1 Alternatives Considered but Rejected from Further Analysis

An alternative to require seabird avoidance measures on all vessels using longline gear was considered during scoping and rejected from further analysis due to ongoing research that makes such an alternative premature. As described in Section 1.4, Washington Sea Grant is conducting research to develop streamer lines suited to the diversity of longline gear used in the Pacific Coast Groundfish Fishery. While the research may influence streamer line design for all vessel sizes, smaller vessels may be subject to risk of safety problems arising from the streamer lines becoming entangled during gear-setting (Guy 2013, pers comm). Designing safe gear for smaller vessels is a priority of the research. Pending the completion of that research, it would be premature to consider reglations on vessels smaller than 55 ft LOA. Alternatives to pattern seabird avoidance measures on other fishery management programs (e.g., Hawaii longline) were considered and rejected for further analysis because the B.O. specifically requires the measures to be patterned after the program for the Alaskan groundfish fishery.

• 3.0 AFFECTED ENVIRONMENT

This section describes the affected environment of those resources directly associated with implementation of the proposed action.

3.1 SEABIRDS

3.1.1 ESA-Listed Seabirds[1]

ESA-listed endangered seabirds in the project area include short-tailed albatross (*Genus species name*), California least tern (*Sterna antillarum browni*), and Marbled murrelet (*Brachyramphus marmoratus*), but of those, only short-tailed albatross is known to interact with the groundfish fishery (USFWS 2011). For that reason, the remainder of this discussion is devoted to short-tailed albatross.

Short-tailed albatrosses are large, pelagic seabirds with long, narrow wings adapted for soaring just above the water surface. Short-tailed albatross are central place foragers and bring food back to nestlings after surface feeding on primarily squid (especially the Japanese common squid [*Todarodes pacificus*]), shrimp, fish (including bonitos [*Sarda* sp.], flying fishes [Exocoetidae] and sardines [Clupeidae]), flying fish eggs, and other crustaceans (Hasegawa and DeGange 1982, Tickell 1975, Tickell 2000). There is little information on non-breeding diet, but it is thought that squids, crustaceans, and fishes are important prey (Hasegawa and DeGange 1982).

Marine Range
At-sea sightings since the 1940s indicate that short-tailed albatross are distributed widely throughout their historic foraging range in the temperate and subarctic North Pacific Ocean (Sanger 1972). While observations are concentrated along the edge of the continental shelf, in the northern Gulf of Alaska, Aleutian Islands, and Bering Sea (McDermond and Morgan 1993, Sherburne 1993), individual short-tailed albatross have been recorded along the West Coast of North America and as far south as the Baja Peninsula, Mexico (Palmer 1962).

From December through April, short-tailed albatross foraging is primarily concentrated near the breeding colonies, although individual trips may extend hundreds of miles or more from the colony sites. During the non-breeding season, short-tailed albatross range along the Pacific Rim from southern Japan to northern California, primarily along continental shelf margins. Post-breeding birds either disperse rapidly north to the western Aleutian Islands or stay within the coastal waters of northern Japan and the Kuril Islands throughout the summer, moving in early September into the western Aleutian Islands; once in the Aleutians, most birds travel east toward the Gulf of Alaska (Suryan et al. 2006).

[1] This section adapted from NWFSC 2011.

Juveniles and sub-adults are prevalent off the West Coasts of Canada and the U.S. (Environment Canada 2008). In late September, large flocks of short-tailed albatross have been observed over the Bering Sea canyons (Piatt et al. 2006); these are the only known concentrations of this species away from their breeding islands. Short-tailed albatross forage extensively along continental shelf margins, spending the majority of time within national EEZs, particularly the U.S. (off Alaska), Russia, and Japan, rather than over international waters (Suryan et al. 2007a, Suryan et al. 2007b).

Critical habitat
Critical habitat has not been designated for this species. In the 2000 final listing rule, the USFWS determined that designation of critical habitat was not prudent, due to the lack of habitat-related threats to the species, the lack of specific areas in U.S. jurisdiction that could be identified as meeting the definition of Critical Habitat, and the lack of recognition or educational benefits accruing to the American people as a result of such designation (65 FR 147:46651-46653).

Status
The short-tailed albatross was originally listed as endangered in 1970. Due to an administrative error, the species was listed as endangered throughout its range except within the United States (50 CFR 17.11). The error was corrected on 31 July 2000, when the U.S. Fish and Wildlife Service published a final rule listing the short-tailed albatross as endangered under the ESA
throughout its range, including the United States (65 FR 147:46643-46654). The Short-Tailed Albatross Recovery Plan was finalized in 2008 (USFWS 2008).

Abundance and trend
As of spring 2011, the global population estimate of short-tailed albatross was 3,463 individuals (P. Sievert and H. Hasegawa, unpubl. data). Pre-exploitation global population estimates of short-tailed albatross are not known, but Dr. Hiroshi Hasegawa estimated there were at least 300,000 breeding pairs on Torishima Island alone (cited in USFWS 2008). From 1881 to 1903, an estimated five million short-tailed albatross were harvested from the breeding colony on Torishima Island, and they were harvested into the 1930s (except for a few years following a 1903 volcanic eruption); by 1949, there were no short-tailed albatross breeding at any of the historically-known breeding sites, including Torishima Island, and the species was thought to be extinct (Austin 1949) however a small number of birds are thought to have been at sea that later returned to re-populate Torishima Island.

Threats (from Recovery Plan (USFWS 2008) or Listing documents)
Short-tailed albatross face significant threats on breeding colonies and at sea. The major threat of over-exploitation that led to the species' original endangered status no longer occurs. Current threats listed in the Recovery Plan include catastrophic events, such as a volcanic eruption on the main breeding site on Torishima Island. Other catastrophic events, particularly monsoons, can also threaten habitat and nesting success. Past volcanic activity has restricted breeding to sparsely vegetated and steep slopes of loose volcanic soil, and monsoon rains result in frequent mudslides and severe erosion, which can reduce habitat, destroy nests, and reduce breeding success. Global threats may also include indirect adverse effects related to climate change and oceanic regime shifts.

While known and potential threats from commercial fishing include U.S. and international demersal longline, pelagic longline, gillnet, jig/troll, and trawl fisheries, short-tailed albatross populations are not declining due to seabird bycatch in commercial fisheries (USFWS 2008). Other threats include contamination from organochlorines, pesticides, metals, and oil, and consumption of plastics. There has been an observed increase in the occurrence of plastics in birds on Torishima Island over the last decade, but the effect on survival and population growth is not known (USFWS 2008).

Past Fishery Impacts
There have been 16 reported lethal takes of short-tailed albatross in commercial fisheries since 1983; mostly in hook-and-line fisheries. The most recent reports—two takes in the Alaskan cod longline fishery and one take in the West Coast sablefish longline fishery—were the first reported in U.S. fisheries since 1998.

California, Oregon, Washington One known lethal take of short-tailed albatross has been reported off the West Coast of the continental U.S. In April 2011, a single short-tailed albatross juvenile was reported caught by longline gear in the limited entry sablefish fishery approximately 65 kilometers off the Oregon coast (WCGOP, unpubl. data).

Japan, Russia There is virtually no seabird bycatch information reported from Japanese fisheries, although it is likely that take has occurred in pelagic fisheries off Japan. During brood rearing, adults forage for food off the east coast of Honshu, and individuals on Torishima Island have been observed with fishhooks in their mouths of the same type used in Japanese commercial fisheries (USFWS 2008). There is also inadequate seabird bycatch information from Russian fisheries, although demersal longline fisheries in the Russian EEZ are a known threat to short-tailed albatross (USFWS 2008), and short-tailed albatross have been taken in driftnet fisheries that still operate in the Russian EEZ.

Alaska and Hawaii No known takes of short-tailed albatross have been reported in domestic pelagic longline fisheries in the North Pacific. Demersal longline fisheries in the U.S. EEZ off Alaska (Bering Sea/Aleutian Islands area and Gulf of Alaska) are a known threat to short-tailed albatross, with almost all known takes occurring in demersal longline groundfish fisheries; no takes have been reported in groundfish trawl or pot fisheries. Two separate analyses for the demersal groundfish longline fisheries have estimated that, on average, one short-tailed albatross is taken in the Bering Sea hook-and line fishery each year (Stehn et al. 2001), and mitigation measures have likely reduced this rate since those estimates were developed. U.S.-based pelagic longline swordfish and tuna fisheries in the vicinity of the Hawaiian Islands have the potential to affect short-tailed albatross; overall seabird (and albatross) bycatch rates have declined in Hawaii's pelagic longline fishery since bycatch reduction regulations were promulgated (Gilman and Kobayashi 2005, NMFS 2011). A recent analysis of the continued operation of the Hawaii-based pelagic longline fisheries (NMFS 2011) calculated rates of incidental take of short-tailed albatross of one per year for both the shallow-set longline and deep-set longline fisheries. The rate of incidental takes of seabirds in general and albatross in particular has declined markedly in Alaskan demersal longline fisheries since bycatch reduction regulations were instituted (USFWS 2008).

3.1.2 Other Seabirds[2]

The US West Coast supports a diversity of seabird species, which exhibit a wide range of life history characteristics. Seabirds for which takes have been documented in the West Coast groundfish fishery include species that breed locally such as Brandt's cormorant, brown pelican, common murre, Leach's strom petrel and the western gull. Takes have also been documented for seabird species that pass through the California Current system during migration or foraging periods, but breed elsewhere such as the black-footed albatross, northern fulmar and the sooty shearwater.

All of the California Current system seabirds (breeding or transitory) are highly mobile and require an abundant food source to support their high metabolic rates (Ainley et al. 2005). Because of these shared characteristics, the abundance of most seabird species along the US West Coast is influenced by the same physical and biological factors, e.g., oceanic productivity and prey availability (Tyler et al. 1993, Ainley et al. 2005). Specifically, the seasonal and latitudinal distribution of seabirds is defined by the intensity of coastal upwelling, which delivers nutrient rich water and supports greater prey biomass in surface waters accessible to seabirds (Tyler et al. 1983). On the US West Coast, upwelling is most intense south of Cape Blanco, OR (42° 50' N latitude) (Bakun et al. 1974, Barth et al. 2000), which supports a large percentage of the nesting sites of locally breeding seabirds (Tyler et al. 1993). The location of stable nesting sites reflects oceanographic conditions that support long-term food availability (Tyler et al. 1993). Transient species to the California Current system are also most abundant in areas of strong upwelling intensity and high productivity (Briggs and Chu 1986, Hyrenbach et al. 2002).

In addition to varying by latitude, both coastal upwelling and the distribution of seabirds also vary by season. Three distinct oceanic seasons have traditionally been defined for the US West Coast: the Upwelling, Oceanic, and Davidson Current seasons (Ford et al. 2004). The Upwelling season coincides with late spring and summer, when northerly winds transport surface waters southward and away from the coast. The distribution of breeding species in summer largely reflects the location of nesting colonies, which are most prevalent adjacent to the central and northern portion of the California Current system (Tyler et al. 1993, Ford et al. 2004). However, during this time, breeders are outnumbered by visiting species, which are attracted by greater oceanic productivity and prey abundance associated with upwelling. Commonly observed visiting species in summer include the sooty shearwater (*Puffinus griseus*), Northern fulmar *(Fulmarus glacialis*), and black-footed albatross (*Phoebastria nigripes*) (Tyler et al. 1993). In the fall (Oceanic season), northerly winds and upwelling intensity decrease, and sea surface temperature reaches its annual maximum. Several species that nest farther south in Mexico and southern California move northward, including the brown pelican (*Pelecanus occidentalis*) and storm-petrels. As winter approaches, these species again return south and breeders from boreal nesting colonies become more abundant, particularly off of California (Tyler et al. 1993). The winter months along the West Coast are characterized by warmer water delivered by the Davidson Current and reduced levels of primary production (Davidson Current season). Seabird abundance during this time is generally low (Tyler et al. 1993).

[2] This section adapted from Jannot et al. 2011.

3.2 SOCIOECONOMIC AFFECTED ENVIRONMENT

Of the many types of fishing gear used in the groundfish fishery, only vessels that use fixed gear, specifically bottom longline, will be affected by the proposed action. There are three major sectors in the fixed gear groundfish fishery that would be affected: the LE sablefish endorsed sector, the LE non-sablefish-endorsed sector, and the Federal open access sector. In addition, a new sector has emerged since the implementation of the ITQ program that allows trawlers to "gear switch" and harvest their trawl quota with longline gear (50 CFR 660.140(k)).

3.2.1 Affected Sectors

Limited Entry Sablefish Primary Tier-Endorsed Fixed Gear

Vessels participating in the LE sablefish-endorsed sector range in size from 33 to 95 feet and operate north of 36-degrees N. latitude. Fishing generally occurs in depths greater than 80 fathoms. Nearly all of the vessels participating in this sector deliver their iced catch to shoreside processors. Catch in the LE sablefish-endorsed fishery is composed mostly of sablefish, with bycatch primarily composed of spiny dogfish shark, Pacific halibut, rockfish species, and skates. LE sablefish-endorsed permits provide the permit holder with an annual share of the sablefish catch. Sablefish-endorsed permits are assigned to Tier 1, 2, or 3. Each Tier 1 permit receives 1.4% of the primary-season sablefish allocation, with Tiers 2 and 3 receiving 0.64% and 0.36%, respectively. Each year, these shares are translated into amounts of catch (in pounds), or "tier limits", which could be caught during the primary fishery. Regulations allow for up to three LE sablefish-endorsed permits to be 'stacked' on a single vessel. Permit stacking was implemented to increase the economic efficiency of the fleet and promote fleet capacity reduction. Stacking more than one sablefish-endorsed permit on a vessel allows the vessel to land sablefish up to the sum of the associated tier limits. However, permit stacking does not convey additive landing limits for any other species. LE sablefish-endorsed primary season fishing currently takes place over a seven-month period from April 1 to October 31. The seven-month season was first implemented in 2002. Permit holders land their tier limits at any time during the seven-month season. Once the primary season opens, all sablefish landed by a sablefish-endorsed permit is counted toward attainment of its tier limit. Vessels that have LE sablefish-endorsed permits can fish in the LE non-sablefish-endorsed fishery under trip limits once their quota of primary season sablefish has been caught or when the primary season is closed, from November 1 through March 31.

Limited Entry Non-Sablefish-Endorsed Fixed Gear

The LE non-sablefish-endorsed fixed gear sector occurs coastwide but operates primarily out of southern California ports. The fishery operates year-round, but the majority of fishing activity occurs during the summer months when weather conditions improve. Vessels in the LE non-sablefish-endorsed sector range in size from 17 to 60 feet, with an average length of 34 feet. Vessels catch a variety of groundfish species, including thornyheads, sablefish, rockfish, and flatfish. The fleet typically operates in depths greater than 80 fathoms. Nearly all of the vessels participating in this fishery deliver their iced catch to fresh fish markets. LE non-sablefish-endorsed fixed gear permits are subject to daily and weekly trip limits for sablefish, thornyheads, and other groundfish species.

Gear Switching

Under the trawl rationalization program, vessels are no longer restricted to a specific gear type. Vessels that were previously limited to trawl gear may now opt to use non-trawl gear. As with other elements of the trawl rationalization program, it is unknown how this will influence fishing effort profiles. Market analysis suggests it may be economically beneficial for some fishermen to harvest sablefish by bottom-longline instead of trawl; however, it is not yet known if this will occur or, if it does, the magnitude of change. As mentioned above, starry flounder, "other flatfish," and chilipepper rockfish south of 40º10'N latitude have been allocated to nontrawl fisheries in excess of historical amounts. Similar to sablefish, it is not possible to determine if this will result in a net increase in non-trawl effort. NMFS is actively monitoring changes in the fishery that result from the trawl rationalization program.

Open Access Fixed Gear

As the open access sector of the fixed gear groundfish fishery does not require Federal or state permits (state requirements for commercial fishing licenses notwithstanding), characterizing the participants can be difficult. Vessels range in size from 10 to 97 feet, with an average length of 33 feet. Vessels catch a variety of groundfish species, including sablefish, spiny dogfish, and skates. Vessels operate out of all three coastal states and generally fish in waters shoreward of 30 fathoms or seaward of 100 fathoms. Open access fixed gear vessels are subject to daily and weekly trip limits for sablefish, spiny dogfish shark, and other groundfish species. Flatfish species—including dover sole, arrowtooth flounder, petrale sole, English sole, starry flounder, and all other flatfish—are managed as a single group for the open access fishery.

3.3 SAFETY-AT-SEA

The deployment of streamer lines raises potential safety issues. For example, lines may become entangled during the setting of the longline and create a safety hazard. There are not data available to quantify the frequency of safety issues related to the deployment of streamer lines; however, industry experts with experience in the Alaskan groundfish fisheries suggest safety issues are rare there because of long-term experience using streamer lines and a regulatory exemption from using streamer lines in rough weather. Further, low-tensile strength "break-aways" are sewn into streamer lines so that if entanglements occur, the line breaks without creating a safety hazard such as entanglement in the prop (Guy 2013; pers comm). NMFS' funded outreach is expected to reduce the risk of safety hazards by teaching fishermen safe deployment techniques.

3.3.1 Comparison of the Safety-at-Sea Consequences of the Alternatives

Safety-at-sea issues are present under either alternative because NMFS is encouraging the voluntary use of streamer lines that may become a hazard through entanglement. Alternative 2 has a higher risk of safety hazards due to the regulatory requirement for vessels 55 ft LOA and larger. For both alternatives, there are mitigating factors, including outreach on the safe use of streamer lines and the use of low-tensile strength "break-aways." Further, the incidence of entanglements is expected to be reduced over time as the fleet gains experience. Risks associated with Alternative 2 are mitigated by a rough weather exemption in which the requirement to deploy streamer lines is held in abeyance whenever winds exceed 45 knots (storm or Beaufort 9 conditions).

• 4.0 ENVIRONMENTAL CONSEQUENCES

The proposed action would have a negligible influence on normal fishing operations. For example, the proposed action would not affect when, where, or to what degree a fishermen will fish and therefore, impacts would not be expected on the following resources or issues: groundfish (including overfished species), non-groundfish, listed species with the exception of short-tailed albatross, non-listed species with the exception of seabirds, the marine ecosystem, habitat, tourism and recreation, environmental justice, human health, cultural resources, and climate change. The full range of environmental consequences associated with normal fishing operations are fully considered in and hereby tiers off the following EIS: Proposed Harvest Specifications and Management Measures for the 2013-2014 Pacific Coast Groundfish Fishery and Amendment 21-2 to the Pacific Coast Fishery Management Plan, Final Environmental Impact Statement (PFMC and NMFS 2012). Issues directly associated with implementation of the proposed action and therefore considered in the following analyses are: (a) seabirds; (b) cost to vessels of procuring streamer lines; and, (c) safety issues associated with deploying streamer lines.

4.1 SEABIRD RESOURCES

4.1.1 ESA-Listed Seabirds

Impact of West Coast Groundfish fisheries on population growth rate

Based on the information summarized above, West Coast groundfish fisheries are imposing some additional (non-natural) mortality on short-tailed albatross. The number of takes per year is very likely higher than the number of takes observed (one lethal take over the period of 2002–2011), and based on the black-footed albatross mortality rate, is probably ~1/year and unlikely to be >2/year. On its own, this level of mortality is very small compared to the annual growth rate of the population (~6.5%; currently >200 birds/year). Even when combined with known mortality from other fisheries on a global scale, there is no reason to change the conclusion from the USFWS Recovery Plan that mortality from fishing is not a significant impediment to the growth and recovery of the species (USFWS 2008). Analyses of the impacts of Alaskan trawl mortality on the Torishima Island short-tailed albatross population suggest that trawl-related bycatch exceeding the current expected incidental take in that fishery (two takes in any 5-year period) by even a factor of 10 would have little impact on when the species' proposed recovery goals are achieved (Zador et al. 2008). NMFS'

Biological Assessment quantifies the level of mortality in another set of fisheries, but does not change the basic conclusion that, at present, the level of estimated fishing mortality is small compared to the annual growth rate of the population. Use of mitigation measures, such as streamer lines or integrated weighted lines like those employed in Alaskan fisheries, would be expected to reduce take even further (NWFSC 2011; USFWS 2008; and, WA Sea Grant 2011).

Comparison of the Alternatives
Neither alternative will result in significant impacts to short-tailed albatross; both alternatives are expected to reduce take due to voluntary use of seabird avoidance devices; and, implementation of a regulatory requirement for vessels 55 ft LOA or larger to follow seabird avoidance measures under alternative 2 is expected to reduce take of short-tailed albatross more than no-action.

USFWS concluded that take levels associated with the no-action alternative are not likely to result in jeopardy to short-tailed albatross and provided for an average incidental take of one bird per year (USFWS 2011). As described above, alternative 1 is not significantly impeding a relatively robust recovery rate.

Both alternatives include outreach and subsidies to encourage voluntary use of streamer lines as described in section 1.4. As such, fishery interactions with short-tailed albatross will be less likely to result in lethal hooking events as the use of streamer lines is likely to increase under either alternative. As of 2011, 221 streamer lines were distributed free of charge to West Coast longline vessels at the vessels request for voluntary use. However, it is not possible at this time to quantify how many vessels will voluntarily deploy streamer lines or how effective the streamer lines will be at reducing short-tail albatross mortality. Alternative 2 would hedge against low voluntary compliance by ensuring that, at a minimum, large vessels use streamer lines and associated seabird avoidance measures. In addition, research on the practical application of streamer lines may result in a re-design of streamer lines to be more appropriate for the West Coast longline fleet. Over time, this could result in increased voluntary deployment under either alternative.

4.1.2 Other Seabirds

In 2009, northern fulmars comprised the largest proportion of seabird bycatch in West Coast groundfish fisheries, followed by unspecified tubenoses and unspecified alcids. Bycatch estimates for 2009 could not be provided for cormorants, gulls, or murres because CVs exceeded 80%. Shearwaters, gulls, and cormorants were commonly observed seabird bycatch from 2002-2008. Seabird bycatch was most common from April through October, which coincides with the limited entry fixed gear sablefish endorsed season. Although bycatch rates for most seabird species were highest in association with longline gear, common murres, cormorants, and storm petrels were also caught by trawl gear.

In 2009, there were no observed takes of black-footed albatross in West Coast groundfish fisheries. There was a single opportunistic take of black-footed albatross in the at-sea hake fishery in 2009. During 2002-2008, seabird bycatch estimates were greatest for the black-footed albatross, which was primarily caught by longlines in the limited entry sablefish endorsed (primary) sector from May through October. Black-footed albatross bycatch

exhibited an increasing trend from 2002 to 2007, followed by a slight reduction in 2008. Takes for this species occur on approximately 2.6% of observed sablefish longline trips, with 1-2 birds typically caught at a time. Bycatch estimates could not be provided for several species in 2006 and 2007 because of high CV values. Annual coverage in the limited entry sablefish primary sector was close to 24% in both of these years, and the total number of takes in this sector was 13 and 48, respectively. However, bycatch events of black-footed albatross in 2006 and 2007 were unusual in that they were concentrated on consecutive sets within the same trip. For instance, one observed vessel caught 32 individuals across several sets off the coast of southern Oregon, representing 2/3 of the total number of observed takes for that year. This resulted in high variance among takes from one trip to the next and produced bycatch estimates with CVs as high as 96%.

Comparison of the Alternatives
Both alternatives are expected to reduce seabird mortality due to voluntary use of seabird avoidance devices; and, implementation of a regulatory requirement for vessels 55 ft LOA or larger to follow seabird avoidance measures under alternative 2 is expected to reduce seabird mortality more than no-action.

Both alternatives include outreach and subsidies to encourage voluntary use of streamer lines as described in Section 1.4. As such, fishery interactions with seabirds will be less likely to result in lethal hooking events as the use of streamer lines increases under either alternative. However, it is not possible at this time to quantify how many vessels will voluntarily deploy streamer lines or how effective the streamer lines will be at reducing short-tail albatross mortality. Alternative 2 would hedge against low voluntary compliance by ensuring that, at a minimum, large vessels use streamer lines and associated seabird avoidance measures. In addition, research on the practical application of streamer lines may result in a re-design of streamer lines to be more appropriate for the West Coast longline fleet. Over time, this may result in increased voluntary deployment under either alternative.

4.2 SOCIOECONOMIC RESOURCES

4.2.1 Fishing Industry

The number of vessels that would be affected by the proposed action changes from year to year. There were 227 LE fixed gear permits in 2009. LE fixed gear permits are either sablefish-endorsed or non-sablefish-endorsed. In addition, all LE fixed gear permits have gear endorsements (longline, pot/trap, or both). Of the 227 LE fixed gear permits in 2009, 164 had sablefish-endorsements. Of these, 132 were associated with longline gear, 32 were 8 associated with pot/trap gear, and 4 were associated with both longline and pot/trap gear. The remaining 63 limited entry non-sablefish-endorsed permits were all associated with longline gear. The open access fixed gear sector does not require Federal or state permits. Therefore, the total number of participants varies widely from year to year. Open access vessels can use any type of hook-and-line or pot/trap gear, including longline, fishing pole, and vertical longline.

A reasonable approximation of affected vessels is the total number of vessels 55 ft LOA or greater that deployed longline gear in 2011. Out of 408 total vessels deploying longline gear, 43 or 10.3% met the length requirement. Table 3.1 shows a break-down by state.

Table 3.1: Affected Universe of Vessels (Source: Pacific Fishery Management Council, September 2012 Groundfish Management Team report)

State	Longline Vessels 55 ft LOA or larger
Washington	18
Oregon	12
California	13
	Total=43 (10.3% of total longline vessels)

Cost of Streamer Lines

As described in Section 1.4, direct cost of the proposed action to industry is zero for as long as NMFS continues to fund the subsidy and free lines are available. Under current funding, the subsidy is expected to last a minimum of 2-3 years but it probably will continue into the foreseeable future. In the event that NMFS discontinued the subsidy, the affected industry would be required to build or purchase streamer lines. Estimates for the cost of streamer lines range from $100-$150 each ($200-300/pair) (Melvin pers comm & Colpo pers comm).

Comparison of the Alternatives

Direct costs associated with the alternatives are limited to the costs of streamer lines, which for the foreseeable future, is subsidized by NMFS. Therefore, direct costs are zero under either alternative. If in the future, NMFS discontinues the subsidy, alternative 1 would still be a zero cost however alternative 2 would impose a $100-300 cost each time the vessel needs to purchase streamer lines. For purposes of this analysis, we assume the vessel would need to purchase streamer lines once/year thereby imposing a direct cost of $100-300 per vessel per year under alternative 2.

4.2.2 Human Safety

The deployment of streamer lines raises potential safety issues. For example, lines may become entangled during the setting of the longline and create a safety hazard. There are not data available to quantify the frequency of safety issues related to the deployment of streamer lines; however, industry experts with experience in the Alaskan groundfish fisheries suggest safety issues are rare there because of long-term experience using streamer lines and a regulatory exemption from using streamer lines in rough weather. Further, low-tensile strength "break-aways" are sewn into streamer lines so that if entanglements occur, the line breaks without creating a safety hazard such as entanglement in the prop (Guy 2013; pers comm). NMFS' funded outreach is expected to reduce the risk of safety hazards by teaching fishermen safe deployment techniques.

Comparison of the Alternatives

Safety-at-sea issues are present under either alternative because NMFS is encouraging the voluntary use of streamer lines that may become a hazard through entanglement. Alternative 2 has a higher risk of safety hazards due to the regulatory requirement for vessels 55 ft LOA and larger. For both alternatives, there are mitigating factors, including outreach on the safe use of streamer lines and the use of low-tensile strength "break-aways." Further, the incidence of entanglements is expected to be reduced over time as the fleet gains experience.

Risks associated with Alternative 2 are mitigated by a rough weather exemption in which the requirement to deploy streamer lines is held in abeyance whenever winds exceed 45 knots (storm or Beaufort 9 conditions).

4.3 CUMULATIVE EFFECTS

To be Completed

• REFERENCES

Austin, O.L. 1949. The Status of Steller's Albatross. Pacific Science 3: 283-295. Environment Canada, 2008. Recovery Strategy for the Short-tailed Albatross (*Phoebastria albatrus*) and the Pink-footed Shearwater (*Puffinus creatopus*) in Canada [Final]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 44 pp.

Fischer, K.N., R.M. Suryan, D.D. Roby, and G.R. Balogh. 2009. Post-breeding season distribution of black-footed and Laysan albatrosses satellite-tagged in Alaska: Inter-specific differences in spatial overlap with North Pacific fisheries. Biological Conservation 142: 751-760.

Flint, B. 2009. Hawaiian Islands National Wildlife Refuge and Midway Atoll National Wildlife Refuge – Annual Nest Counts through Hatch Year 2009. USFWS, Pacific Remote Islands National Wildlife Refuge Complex, 21 p.

Gilman, E., Brothers, N., and Kobayashi, D. 2005. Principles and approaches to abate seabird bycatch in longline fisheries. Fish and Fisheries 6(1): 35-49.

Harrison, P. 1985. Seabirds, an Identification Guide. Boston: Houghton Mifflin Co., 448 pp.

Hasegawa, H. 1984. Status and conservation of seabirds in Japan, with special attention to the Short-tailed Albatross. Pp. 487-500 in Croxall, J.P., P.G.H. Evans and R.W. Schreiber, (eds.). Status and Conservation of the World's Seabirds.

Hasegawa, H. and A. DeGange. 1982. The short-tailed albatross Diomedea albatrus, its status, distribution and natural history. American Birds 6: 806-814.

Jannot J., E. Heery, M. Bellman, and J. Majewski . 2011. Estimated bycatch of marine mammals, seabirds, and sea turtles in the US west coast commercial groundfish fishery, 2002-2009. West Coast Groundfish Observer Program. National Marine Fisheries Service, NWFSC, 2725 Montlake Blvd E., Seattle, WA 98112.

Kaplan I, 2009. Evaluating trophic impacts of California Current groundfish fisheries on protected species. Northwest Fisheries Science Center, Conservation Biology Division, Integrated Marine Ecology Program.

Kaplan, I. Fulton, E.A., Holland, D. Unpublished Manuscript. Linking ecology, economics, and fleet dynamics to evaluate alternative management strategies for US West Coast trawl fisheries.

Kuro-o, M., Yonekawa, H., Saito, S., Eda, M., Higuchi, H., Koike, H., and Hasegawa, H. 2010. Unexpectedly high genetic diversity of mtDNA control region through severe bottleneck in vulnerable albatross Phoebastria albatrus. Conserv. Genet. 11, 127–137.
Lian, C., Singh, R., & Weninger, Q. (December 01, 2009). Fleet restructuring, rent generation, and the design of individual fishing quota programs: Empirical evidence from the Pacific Coast groundfish fishery. Marine Resource Economics, 24, 4, 329-359.

Manuwal, D. A., H. R. Carter, T. S. Zimmerman, and D. L. Orthmeyer, Editors. 2001. Biology and conservation of the common murre in California, Oregon, Washington, and British Columbia. Volume 1: Natural history and population trends. U.S. Geological Survey, Biological

Resources Division, Information and Technology Report USGS/BRD/ITR– 2000-0012, Washington, D.C. 132 pp.

Marchal, P., Lallemand, P., and Stokes, K. 2009. The relative weight of traditions, economics, and catch plans in New Zealand fleet dynamics. Canadian Journal of Fisheries and Aquatic Sciences, 66: 291–311.

McDermond, D.K., and K.H. Morgan. 1993. Status and conservation of North Pacific albatross. Pages 70-81 in Vermeer, K., Briggs, K.T., Moran, K.H., and D. Seigel-Causey (eds.), The status, ecology, and conservation of marine birds of the North Pacific. Canadian Wildlife Service Special Publication, Ottawa.

McShane, C., T. Hamer, H. Carter, G. Swartzman, V. Friesen, D. Ainley, R. Tressler, K. Nelson, A. Burger, L. Spear, T. Mohagen, R. Martin, L. Henkel, K. Prindle, C. Strong, and J. Keany. 2004. Evaluation report for the 5-year status review of the marbled murrelet in Washington, Oregon, and California. Unpublished report. EDAW, Inc. Seattle, Washington. Prepared for the U.S. Fish and Wildlife Service, Region 1. Portland, Oregon.

Melvin, E.F. 2000. Streamer lines to reduce seabird bycatch in longline fisheries. Washington Sea Grant Program, University of Washington. WS-AS-03.

Moore, E., S. Lyday, J. Roletto, K. Litle, J.K. Parrish, H. Nevins, J. Harvey, J. Mortenon, D. Greig, M. Piazza, A. Hermance, D. Lee, D. Adams, S. Allen, and S. Kell. 2009. Entanglements of marine mammals and seabirds in central California and the north-west coast of the United States 2001–2005. Marine Pollution Bulletin 58: 1045–1051.

Northwest Fisheries Science Center (NWFSC). 2011. Risk assessment of U.S. West Coast groundfish fisheries to threatened and endangered marine species. Northwest Fisheries Science Center, National Marine Fisheries Service. 2725 Montlake Blvd E, Seattle, WA.

PFMC (Pacific Fishery Management Council) and NMFS (National Marine Fisheries Service). 2012. Proposed Harvest Specifications and Management Measures for the 2013-2014 Pacific Coast Groundfish Fishery and Amendment 21-2 to the Pacific Coast Fishery Management Plan, Final Environmental Impact Statement. Pacific Fishery Management Council, Portland, OR. September 2012.

Sanger, G. A. 1972. The recent pelagic status of the short-tailed albatross (Diomedea albatrus). Biological Conservation 4(3): 186-193.

Sherburne, J. 1993. Status Report on the Short-tailed Albatross Diomedea albatrus. Unpublished Rep. for the U.S. Fish and Wildlife Service. Alaska Natural Heritage Program. 33pp.

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

Suryan, R.M. 2008. Oregon State University. Unpublished data.

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

Suryan, R.M., G.R. Balogh, and K.N. Fischer. 2007a. Marine Habitat Use of North Pacific Albatross During the Non-breeding Season and Their Spatial and Temporal Interactions with Commercial Fisheries in Alaska. North Pacific Research Board Project 532 Final Report. 69pp.

Suryan, R.M., K.S. Dietrich, E.F. Melvin, G.R. Balogh, F. Sato, and K. Ozaki. 2007b. Migratory routes of short-tailed albatross: use of exclusive economic zones of North Pacific Rim countries and spatial overlap with commercial fisheries in Alaska. Biological Conservation 137: 450-460.

U.S. Fish and Wildlife Service (USFWS). 2008. Short-tailed albatross recovery plan. Anchorage, AK, 105 pp.

USFWS. 2011. Biological opinion regarding the effects of the continued operation of the Pacific coast groundfish fishery as governed by the Pacific coast groundfish fishery management plan and implementing regulations at 50 CFR part 660 by NMFS on California least tern, southern sea otter, bull trout, marbeled murrelet, and short-tailed albatross. FWS 01EOFW00-2012-F-0086.

Zador, S.G., Punt, A.E., Parrish, J.K., 2008. Population impacts of endangered short-tailed albatross bycatch in the Alaskan trawl fishery. Biological Conservation 141: 872–882.

• APPENDIX A –DRAFT REGULATION

NMFS proposes to amend 50 CFR part 660 as follows:

PART 660 – FISHERIES OFF WEST COAST STATES AND IN THE WESTERN PACIFIC

1. The authority citation for part 660 continues to read as follows:

Authority: 16 U.S.C. 1801 *et seq*. and 16 U.S.C. 773 *et seq*.

2. In § 660.11, add the definition for "seabird" in alphabetical order and add new paragraph (6)(v) to the definition of "fishing gear" to read as follows:

§ 660.11 General definitions

* * * * *

Seabird means those bird species that habitually obtain their food from the sea below the low water mark.

* * * * *

Fishing gear * * *

(6) * * *

(i)(A) Snap gear means a type of bottom longline gear where the hook and gangion are attached to the groundline using a mechanical fastener or snap.

* * * * *

3. In §660.12, paragraph (a)(15) is added to read as follows:

§ 660.12 General groundfish prohibitions.

In addition to the general prohibitions specified in § 600.725 of this chapter, it is unlawful for any person to:

(a) * * *

(15) Fail to comply with the requirements of the Seabird Avoidance Program described in §660.61 when commercial fishing for groundfish using bottom longline gear.

4. § 660.61 is added to read as follows:

§ 660.61 Seabird Avoidance Program

This section contains the requirements of the Seabird Avoidance Program.

a. Purpose. The purpose of the Seabird Avoidance Program is to minimize interactions between fishing gear and seabird species, including short-tailed albatross (*Phoebastria albatrus*).

b. Applicability. The requirements specified in paragraph (c) of this section apply to the following fishing vessels:

1. Vessels greater than or equal to 55 ft (16.8 m) LOA engaged in commercial fishing for groundfish with bottom longline gear pursuant to the gear switching provisions of the Limited Entry Trawl Fishery, Shoreside IFQ Program as specified in §660.140(k) or pursuant to Subparts E or F of this Part, except as provided in paragraph (b)(2) of this section.
2. Exemptions: The requirements specified in paragraph (c) of this section do not apply to Pacific Coast treaty Indian fisheries, as described at §660.50, or to anglers engaged in recreational fishing for groundfish, as described in Subpart G of this Part.

c. Seabird Avoidance Requirements

1. General Requirements: The operator of a vessel described in 660.61(b)(1), must:
   i. Gear onboard. Have onboard the vessel seabird avoidance gear as specified in paragraph (c)(2) of this section;
   ii. Gear inspection. Upon request by an authorized officer or observer, make the seabird avoidance gear available for inspection;
   iii. Gear use. Use seabird avoidance gear as specified in paragraph (c)(2) of this section that meets the standards specified in paragraph (c)(3) of this section while hook-and-line gear is being deployed.
   iv. Sink baited hooks**.** Ensure that baited hooks sink as soon as they are put in the water.
   v. Offal discharge.
      A. If offal is discharged while gear is being set or hauled, discharge offal in a manner that distracts seabirds from baited hooks, to the extent practicable. The discharge site must be either aft of the hauling station or on the opposite side of the vessel from the hauling station.
      B. Remove hooks from any offal prior to discharging the offal.

C. Eliminate directed discharge through chutes or pipes of residual bait or offal from the stern of the vessel while setting gear. This does not include baits falling off the hook or offal discharges from other locations that parallel the gear and subsequently drift into the wake zone well aft of the vessel.

D. For vessels not deploying gear from the stern, eliminate directed discharge of residual bait or offal over sinking hook-and-line gear while gear is being deployed.

vi. Handling of hooked short-tailed albatross.

A. Safe release of live short-tailed albatross. . Make every reasonable effort to ensure short-tailed albatross brought on board alive are released alive and that, wherever possible, hooks are removed without jeopardizing the life of the bird(s). If the vessel operator determines, based on personal judgment, that an injured bird is likely to die upon release, the vessel operator is encouraged to seek veterinary care in port. Final disposition of an injured bird will be with a Wildlife Rehabilitator. If needed, phone the U.S. Fish and Wildlife Service at 503-231-6179 to assist in locating a qualified Wildlife Rehabilitator to care for the short-tailed albatross.

B. Dead short-tailed albatross must be kept as cold as practicable while the vessel is at sea and frozen as soon as practicable upon return to port. Carcasses must be labeled with the name of vessel, location of hooking in latitude and longitude, and the number and color of any leg band if present on the bird. Leg bands must be left attached to the bird. Phone the U.S. Fish and Wildlife Service at 503-231-6179 to arrange for the disposition of dead short-tailed albatross.

C. All hooked short-tailed albatross must be reported to U.S. Fish and Wildlife Service Law Enforcement by the vessel operator by phoning 360-753-7764 (WA) 503-682-6131 (OR) or 916-414-6660 (CA). as soon as practicable upon the vessel's returning to port.

D. If a NMFS-certified fisheries observer is on board at the time of a hooking event, the observer shall be responsible for the disposition of dead, injured, or sick short-tailed albatross and reporting requirements to U.S.

Fish and Wildlife Service Law Enforcement . Otherwise, the vessel operator shall be responsible.

2. Gear Requirements. The operator of a vessel identified in paragraph (b)(1) of this section must comply with the following gear requirements:
   i. Snap gear. Vessels using snap gear as defined at §660.11 must deploy a minimum of a single streamer line in accordance with the requirements of paragraphs (c)(3)(i)-(ii) of this section, except as provided in paragraph (c)(2)(iii)(A) of this section.
   ii. Other than snap gear. Vessels not using snap gear must deploy a minimum of one pair of streamer lines in accordance with the requirements of paragraphs (c)(3)(i) and (c)(3)(iii) of this section, except as provided in paragraph (c)(2)(iii)(B) of this section.
   iii. Weather Safety Exception.
      A. The use of streamer lines is discretionary for vessels using snap gear when wind speeds exceed 45 knots (storm or Beaufort 9 conditions).
      B. When wind speeds exceed 30 knots (near gale or Beaufort 7 conditions) but are less than or equal to 45 knots, vessels not using snap gear must deploy from the windward side of the vessel a single streamer line meeting the standards of paragraphs (c)(3)(i) and (c)(3)(iii)(A)-(C) of this section. The use of streamer lines by such vessels is discretionary when wind speeds exceed 45 knots.
3. Gear performance and material standards:
   i. Material standards for all streamer lines. All streamer lines must:
      A. Have streamers spaced a maximum of every 16.4 ft (5 m);
      B. Have individual streamers that hang attached to the mainline to 9.8 in (0.25 m) above the waterline in the absence of wind.
      C. Have streamers constructed of material that is brightly colored, UV-protected plastic tubing or 3/8 inch polyester line or material of an equivalent density.
   ii. Snap gear streamer standards. For vessels using snap gear, a streamer line must:
      A. Be a minimum length of 147.6 ft (45 m).
      B. Be deployed so that streamers are in the air a minimum of 65.6 ft (20 m) aft of the stern and within 6.6 ft (2 m)

horizontally of the point where the main groundline enters the water before the first hook is set.

iii. Standards for gear other than snap gear. Vessels not using snap gear must use paired streamer lines meeting the following requirements:

A. Streamer lines must be a minimum length of 300 feet (91.4 m);

B. Streamer lines must be deployed so that streamers are in the air a minimum of 131.2 ft (40m) aft of the stern for vessels under 100 ft (30.5 m) LOA and 196.9 ft (60m) aft of the stern for vessels 100 ft (30.5 m) or over.

C. At least one streamer line must be deployed in accordance with paragraph (c)(3)(iii)(B) before the first hook is set and a second streamer line must be deployed within 90 seconds thereafter.

D. For vessels deploying hook-and-line gear from the stern, the streamer lines must be deployed from the stern, one on each side of the main groundline.

E. For vessels deploying hook-and-line gear from the side, the streamer lines must be deployed from the stern, one over the main groundline and the other on one side of the main groundline.

5. In § 660.140, paragraph (k)(1)(viii) is added to read as follows:

§ 660.140 Shoreside IFQ Program

* * * * *

(k) * * *

(1) * * *

(iv) The vessel must comply with prohibitions applicable to limited entry fixed gear fishery as specified at § 660.212, gear restrictions applicable to limited entry fixed gear as specified in §§ 660.219 and 660.230(b), and management measures specified in § 660.230(d), including restrictions on the fixed gear allowed onboard, its usage, and applicable fixed gear groundfish conservation area restrictions, except that the vessel will not be subject to limited entry fixed gear trip limits when fishing in the Shorebased IFQ Program. Vessels using bottom longline gear as defined at §660.11 are subject to the requirements of the Seabird Avoidance Program described in §660.61.

6. In § 660.230, paragraph (b)(5) is added to read as follows:

§ 660.230 Fixed gear fishery-management measures.

* * * * *

(b) * * *

(5) Vessels fishing with bottom longline gear as defined at §660.11 are subject to the requirements of the Seabird Avoidance Program described in §660.61.

* * * * *

7. In § 660.330, paragraph (b)(2)(i) is revised to read as follows:

§ 660.330 Open access fishery-management measures.

* * * * *

(b) * * *

(2) * * *

(i) Fixed gear (longline, trap or pot, set net and stationary hook-and-line gear, including commercial vertical hook-and-line gear) must be attended at least once every 7 days. Vessels fishing with bottom longline gear as defined at §660.11 are subject to the requirements of the Seabird Avoidance Program described in §660.61.

* * * * *

• APPENDIX B – OUTREACH REPORT

Bringing albatross conservation to West Coast groundfish fisheries: progress on outreach efforts in the longline fleet.

Washington Sea Grant, University of Washington

24 August 2011

Introduction

The recent take of a short-tailed albatross in the West Coast Groundfish Fishery has focused attention on seabird conservation efforts. Alaska has a long history with seabird mitigation, and approaches pioneered in Alaska are currently being adapted to the West Coast. A brief history of bycatch mitigation research and a summary of conservation efforts occurring throughout the west coast are provided below.

Alaska Mitigation and Outreach

In 1999 and 2000, Washington Sea Grant (WSG) led a research program in collaboration with industry, National Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service (USFWS) testing a host of seabird bycatch mitigation measures in the Alaska longline fisheries. The streamer line, sometime referred to as tori line or bird scaring line, was shown to be the most effective mitigation measure trialed; it reduced the mortalities of surface foraging seabirds such as albatrosses by 100% when used in pairs bracketing the sinking longline and by 96% when used singly (Melvin et al. 2001). The streamer lines used in Alaska fisheries consist of a 90 m line that runs from a high point at the stern to device that creates drag at its terminus (Melvin 2000, Figure 5). As the vessel moves forward the drag acts to suspend a section of line in the air. Brightly colored streamers hang from the aerial extent and scare birds from sinking baits.

Based on the results of WSG's research, streamer lines with performance and material standards were adopted almost immediately by the Alaska industry two years prior to seabird avoidance regulation changes. Through 2006 (the most current summary of observer data available) seabird bycatch rates in the Alaska longline fisheries were reduced by 78% from pre-research levels (9,000 to 26,000 birds/year; Fitzgerald et al. 2008, Figure 1). With funding from the USFWS and NMFS, streamer lines designed by WSG and built and distributed though the Pacific States Marine Fisheries Commissions, have been made available to the Alaska longline fleet since 1999. After 12 years with no short-tailed albatross takes in the Alaska longline fisheries, two were taken in the Bering Sea in 2010. During this time period the short-tailed albatross population doubled. Incidental take statement limits specified in the ESA Biological Opinion have not been exceeded to date for either the Alaskan groundfish or Pacific halibut longline fisheries (USFWS 2003).

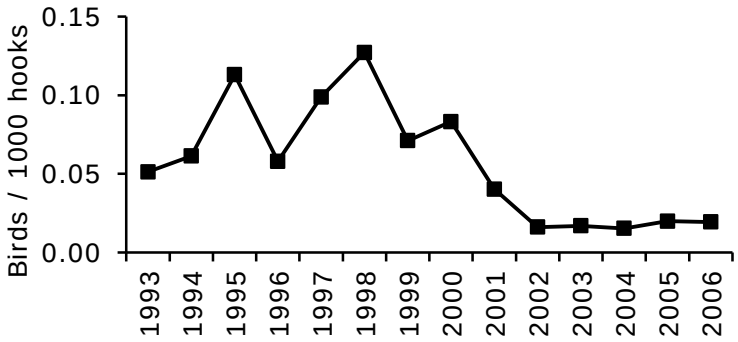

Figure 1. The seabird bycatch rate in the Alaska longline groundfish fishery. Seabird mortality rate has decreased by 78% and albatross mortality has been reduced by 88% since streamer lines were introduced in 1999 – 2000 (Based on Fitzgerald et al. 2008).

Further research in 2002 clarified appropriate streamer line configuration for smaller vessels and for vessels using snap-on gear (Melvin and Wainstein, 2006). Data from seabird surveys designed by WSG and carried out by NMFS and the International Halibut Commission from 2004 to 2006 showed that seabird bycatch mitigation was unnecessary in Alaskan inside waters of Southeast Alaska, Prince William Sound and Cook Inlet (Melvin et al 2006). Alaska seabird bycatch regulations were changed again in 2008 to reflect these new findings.

WSG led research continued in 2005 developing and testing integrated weight longlines as a means to further reduce seabird mortality for the Bering Sea cod freezer-longline vessels (Dietrich et al. 2009). Additional studies developed and tested methods to prevent seabird strikes and related mortality with trawl cables on pollock catcher processors in the Bering Sea (Melvin et al. 2011).

West Coast Outreach

In 2008, West Coast Groundfish Observer Program (WCGOP) data showed black-footed albatross were incidentally killed in the West Coast groundfish fisheries (NWFSC 2008). At this time, use of seabird bycatch mitigation in the fishery was rare and awareness of seabird bycatch issues among industry stakeholders was low. Growing conservation concern for black-footed albatross, and a recent increase in sightings of the ESA listed short-tailed albatross, highlighted the need for a proactive course of action. In response, WSG published a press release and distributed informational pamphlets to stakeholders along the west coast from Neah Bay, WA to Morro Bay, CA to raise awareness of the need for albatross conservation and to inform fishermen of the success of streamer lines at reducing seabird bycatch in similar Alaskan fisheries. In August 2008, the Fishing Vessel Owner's Association (FVOA) in a letter to its membership recommended they voluntarily use streamer lines in accordance with Alaskan regulations when fishing in West Coast waters.

The WCGOP bycatch data and fishery/seabird overlap analysis (Guy et al. In Prep.) suggested that outreach efforts should focus on the fixed gear sablefish fishery. The west coast hook and line fleet consists of approximately 300 vessels. WCGOP observers began documenting the use and characteristics of seabird avoidance gear starting in 2009. In addition, the WCGOP compiled a photographic library of over 243 vessels coast wide. WSG analyzed these photographs and determined that 84% of West Coast longline vessels have the infrastructure (mast or poles) necessary for deploying streamer lines.

Streamer Line distribution

In a 2009-2011 pilot project, WSG facilitated the extension of free streamer line program in Alaska to the West Coast longline fleet. WSG conducted visits to major Washington and Oregon ports in partnership with Englund Marine and Industrial Supply to raise awareness and promote voluntary use of streamer lines. Streamer lines and best-practice information were delivered to volunteer fisherman in Neah Bay, La Push, Westport, Ilwaco, Astoria, Newport, Charleston, and Port Orford. Additionally, streamer lines were made available at the ports of Eureka, Crescent City and Fort Bragg via Englund Marine and Industrial Supply's network of stores and partners. As of July 2011, 221 Alaskan-style streamer lines have been distributed to federal and tribal longline vessels (Table 1).

Table 1. The number of steamer lines distributed to West Coast longline vessels. Some vessels use more than one streamer line so the total number of vessels equipped with steamer lines is unknown.

Year	Federal	Tribal	Grand Total
2009	52	115	167
2010	52		52
2011	2		2
Grand Total	106	115	221

The infrastructure to provide free streamer lines to the WC longline vessels is in place. Based on feedback from volunteers and experiences in other fisheries, WSG developed an Alaska-style streamer line that is designed to improve performance for the West Coast fleet. Design changes included using lighter materials to reduce weight and thus increase aerial extent, and substituting material and hardware to reduce streamers tangling.

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References

Northwest Fisheries Science Center (NWFSC). 2008 Report on the bycatch of marine mammals and seabirds by the US west coast groundfish fleet. NOAA, West Coast Groundfish Observer Program. Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA.

Dietrich, K. S., E. F. Melvin, and L. Conquest. 2008. Integrated weight longlines with paired streamer lines – Best practice to prevent seabird bycatch in demersal longline fisheries. Biol. Cons. 141:1793-1805.

Dietrich, K. S., J. K. Parrish, and E. F. Melvin. 2009. Understanding and addressing seabird bycatch in Alaska demersal longline fisheries. Cons. Biol. 142: 2642-2656

Fitzgerald SM, Perez MA, Rivera KS (2008) Summary of seabird bycatch in Alaskan groundfish fisheries, 1993 through 2006. In: Boldt J (ed) Ecosystem considerations 2009. Appendix C of the Bering Sea/Aleutian Islands and Gulf of Alaska Groundfish Stock Assessment and Fishery Evaluation Report. North Pacific Fishery Management Council, 605 W 4th Ave., Suite 306, Anchorage, AK 99501, pp 116–141

Guy, T., Jennings S., Suryan R., Melvin E., Anderson D., Ballance L., Blackie B., Croll D., Deguchi T., Henry R., Hester M., Hyrenbach D., Jahncke J., Ozaki K., Roletto J., Sato F., Schaffer S., Sydeman W., and Zamon J. Assessment of spatial overlap between North Pacific albatrosses and the U.S. West Coast groundfish fishery. In Preparation.

Melvin, E. F. 2000. Streamer lines to reduce seabird bycatch in longline fisheries. Washington Sea Grant Program.

Melvin, E.F., and J.K. Parrish, K.S. Dietrich, and O.S. Hamel, 2001. Solutions to seabird bycatch in Alaska's demersal longline fisheries. Washington Sea Grant Program. Project A/FP-7. Available on loan from the National Sea Grant Library, and from publisher. WSG-AS 01-01

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

Melvin, E. F., M. D. Wainstein, K. S. Dietrich, K. L. Ames, T. O. Geernaert, and L. L. Conquest. 2006. The distribution of seabirds on the Alaskan longline fishing grounds: implication for seabird avoidance regulations. WSG-AS06-01, Washington Sea Grant Program.

Melvin, E. F., K. S. Dietrich, S. Fitzgerald, and T Cardoso. 2011. Reducing seabird strikes with trawl cables in the pollock catcher-processor fleet in the eastern Bering Sea. Polar Biol (2011) 34:215–226

USFWS (2003) Biological opinion on the effects of the total allowable catch (TAC)- setting process for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) groundfish fisheries to the endangered short-tailed albatross (*Phoebastria albatrus*) and threatened Steller's eider (*Polysticta stelleri*). U.S. Fish and Wildlife Service, Anchorage, AK

• APPENDIX C – RESEARCH PROTOCOL

Reducing the Mortality of Albatrosses and Other Seabirds in the West Coast Longline Fishery for Sablefish

Washington Sea Grant and Oregon State University

Program Description
Washington Sea Grant and Oregon State University are leading a research program, funded by NOAA Fisheries, the Packard Foundation, and the National Fish and Wildlife Foundation and in collaboration with fishing industry, to develop practical and safe tools to reduce seabird bycatch in west coast longline fisheries. Industry partners currently include the Fishing Vessel Owners Association, Washington coastal tribes, and others. A specific objective is to develop streamer line designs and configurations that are best suited to the diversity of longline gear used in this fishery and to promote their voluntary use. Results will be used to develop recommendations on effective and practical seabird bycatch mitigation options for the sablefish longline fleet in collaboration with stakeholders for possible Council action.

Mitigation Treatments
We will evaluate the performance of two streamer lines treatments, one vs. two streamer lines, to a control of no streamer lines across the variety of longline gears used by the west coast sablefish fleet (snap-on, tubs, skate-bottom, auto-bait…etc.) in the course of production fishing. Host vessels will be partially compensated for participation to offset increased costs (insurance, food and possible bait loss) and to provide an incentive. Streamer line configuration – aerial extent, height of attachment, towed device, and number and type of streamers – will be manipulated as needed to match streamer lines to specific longline gears. To start streamer lines will be those designed by Washington Sea Grant and currently being made available to the West Coast fleet via PSMFC with funding from NOAA Fisheries (Figure 1). We will also explore increasing the sinking speed of longlines by manipulating line weights and/or floats as necessary.

Experimental Design
Longline sets will be made during daylight hours to allow researchers to monitor seabird behavior in response to the mitigation treatments (one vs. two vs. none streamer lines). To reduce bias due to environmental factors, treatments will be deployed in a random sequence within day and from day to day within a give fishing trip. The host captain, in consultation with researchers, will determine the number of hooks per set, and the number of sets per day. If a short-tailed albatross is observed interacting, or about to interact with longline gear, we will maximize protection of baited hooks by immediately deploying two streamer lines (if the vessel has the capacity) or terminate/relocate fishing operations.

Fishery researchers will collect data on seabird attacks on baited hooks and seabird numbers during each set. A primary "attack" is any unambiguous attempt by a bird to take bait off a hook – typically a dive or plunge directly over a sinking hook. A secondary attack is another bird or a group of birds attempting to steal a bait or baited hook at the surface from a bird that made a primary attack. The number of attacks will be recorded for the duration of each research set, or for a minimum of 15 minutes depending on the number of hooks deployed in a given set. Researchers will record the number of attacks occurring within 100 m of the stern in 10-m increments and lateral position relative to streamer lines (to port or starboard of a single streamer lines or within or to port or starboard of two streamer liens). Markers inserted into the streamer lines or a measuring line (with no streamer line controls), will serve as reference

points to judge distance. Immediately prior to and following each attack rate observation, researchers will record the number of seabirds (on the water and in the air) by species in a 100 m hemisphere centered at the midpoint of the stern. Data will also be collected on the performance of streamer lines (aerial extent and design variants), the physical environment (wind speed, wind direction, swell height, cloud cover) and vessel operations (speed in knots, bait type and quality, presence of weights or floats; etc.)

During each haul, researchers will record the catch of all seabirds (expected to be rare) and fishes to species or species group for a minimum of 50% of the haul. To the extent possible, we will track the catch of fish and birds relative to weights and floats along the groundline. Special attention will be paid to quantifying the number of fish damaged by hagfish depredation relative to the proximity of weights and floats. Researchers will also estimate the number of seabirds within 50 m of the hauling station by species and the presence or absence of discards associated with fish processing (heading and gutting).

Wildlife Computer MK9s time-depth-recorders will be used to determine the sink rate of longlines and to the extent possible the position of longlines on the sea floor. Sink rates will be used to estimate the distance astern that longline sink beyond the benchmark depth of 2 m, our assumed diving depth of North Pacific albatrosses. This sinking distance will be compared to attack rate by distance data for each streamer line treatment to inform streamer line design and configuration. Bottle lines, 750 ml plastic bottles attached to a 2-m length of gangion will also be used to demonstrate to crew where lines sink beyond 2 m.

As fishing locations and catch data are confidential, they will not be shared or graphically represented only in an aggregated form.

Analysis

Because seabird bycatch events are rare in west coast longline fisheries, we will evaluate mitigation strategies based on multiple metrics:

- Intensity and location of seabird attacks on baited hooks during the set;
- Catch rates of target and non-target species;
- Depredation damage to target species;
- Streamer line(s) configuration, performance, and alignment with fishing gear sink profiles;
- Compatibility with safe and efficient fishing operations as evaluated by the captain and crew.

Data on gear sink rates, bird attack rates as a function of distance astern, bird abundance and bird catch rates (to the extent it is available) will be used to inform streamer line configurations necessary to protect birds for each gear type. Generalized linear modeling techniques will be used to evaluate seabird bycatch, fish catch rates (target and non-target), and attack rates as a function of mitigation treatments and other relevant environmental and operation factors. To the extent possible we will also evaluate the relationships among seabird abundance, attack rates and bycatch rates.