BIOLOGICAL OPINION

For the
Effects of the Pacific Halibut Fisheries in Waters off Alaska on the
Endangered Short-tailed Albatross (*Phoebastria albatrus*)

Consultation with the
National Marine Fisheries Services

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1.0 INTRODUCTION

This document transmits the U.S. Fish and Wildlife Service's (USFWS) Biological Opinion (BO) based on our review of the National Marine Fisheries Service (NMFS) proposed authorization of the commercial, sport, and subsistence Pacific halibut (*Hippoglossus stenolepis*) fisheries in U.S. Convention waters off Alaska within International Pacific Halibut Commission (IPHC) Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E and its anticipated effects on the endangered short-tailed albatross (*Phoebastria albatrus*), in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.).

We have based this BO on the best available scientific and commercial information from a variety of sources including the Biological Assessment (BA) prepared by the NMFS, Sustainable Fisheries Division, published literature, agency and researchers' biological surveys and reports, and personal communication with species experts. We can make a record of this consultation available at the Anchorage Fish and Wildlife Conservation Office.

Section 7(a)2 of the ESA states that Federal agencies must ensure that their activities are not likely to:

- Jeopardize the continued existence of any listed species, or
- Result in the destruction or adverse modification of designated critical habitat.

Consultation History

October 1987: A short-tailed albatross was accidentally killed by a commercial halibut fishing vessel in the Gulf of Alaska. This incident established that there was potential for take of short-tailed albatross by the halibut fishery.

February 1989: The NMFS requested formal consultation with the USFWS regarding the interim incidental take exemption program on several listed species which occur in U.S. Convention waters and/or occur in the Fishery Conservation Zone (54 Federal Register (FR) 16072), including short-tailed albatross. In response, the USFWS issued a BO, concluding that although commercial fishing, and especially commercial longline and gillnet fishing, would adversely affect the short-tailed albatross, it would not jeopardize its continued existence.

February 1998: The USFWS issued a BO that concluded that the commercial Pacific halibut fishery off Alaska was not likely to jeopardize the continued existence of the short-tailed albatross and exempted the incidental take of up to two short-tailed albatross in a 2-year period.

August 12, 2015: The NMFS requested reinitiation of formal consultation on the effects of the Federal and State parallel groundfish fisheries in the Gulf of Alaska and Bering Sea Islands on the short-tailed albatross and the Alaska-breeding population of Steller's eider (*Polysticta stelleri*).

December 23, 2015: The USFWS issued a BO that concluded that the groundfish fisheries are not likely to jeopardize the continued existence of the short-tailed albatross, and exempted the incidental take of up to six short-tailed albatross in a 2-year period.

September 1, 2017: The NMFS requested reinitiation of formal consultation on the effects of the halibut fisheries in U.S. Convention waters off Alaska on the short-tailed albatross, and requested concurrence with their determination that authorization of the halibut fisheries was not likely to adversely affect the Alaska breeding population of Steller's eider, spectacled eider (*Somateria fischeri*), or their critical habitats. The reason for NMFS' request to reinitiate consultation is that the likelihood of observing short-tailed albatross takes in the halibut fisheries has increased due to the addition of observer coverage to the commercial halibut fishery in 2013 and increasing short-tailed albatross population.

September 29, 2017: The USFWS acknowledged to the NMFS that information was adequate and formal consultation was initiated on September 1, 2017.

2.0 DESCRIPTION OF THE PROPOSED ACTION

Alaska fisheries in Federal waters are managed under fishery management plans (FMPs) authorized by the Magnuson Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and adopted by the North Pacific Fishery Management Council (Council). The Federal fisheries are managed in the waters of the Exclusive Economic Zone (EEZ; 3 to 200 nautical miles offshore) of Alaska. The NMFS coordinates with the IPHC on development of regulations governing the subsistence, sport, and commercial Pacific halibut fisheries in U.S. Convention waters off Alaska within IPHC Regulatory Areas 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E (Figure 1).

The Northern Pacific Halibut Act of 1982 (Halibut Act) provides the Secretary of Commerce with the authority and general responsibility to carry out the requirements of the Convention between Canada and the United States for the Preservation of the Halibut Fishery of the North Pacific Ocean and Bering Sea (Convention), signed at Ottawa, Ontario, on March 2, 1953, as amended by a Protocol Amending the Convention (signed at Washington, D.C., on March 29, 1979) and the Halibut Act. The regional fishery management councils may develop, and the Secretary of Commerce may implement, regulations governing harvesting privileges among U.S. fishermen in U.S. Convention waters that are in addition to, and not in conflict with, approved IPHC regulations. The Council has exercised this authority most notably in developing halibut management programs for three fisheries that harvest halibut in Alaska: the subsistence, sport, and commercial fisheries.

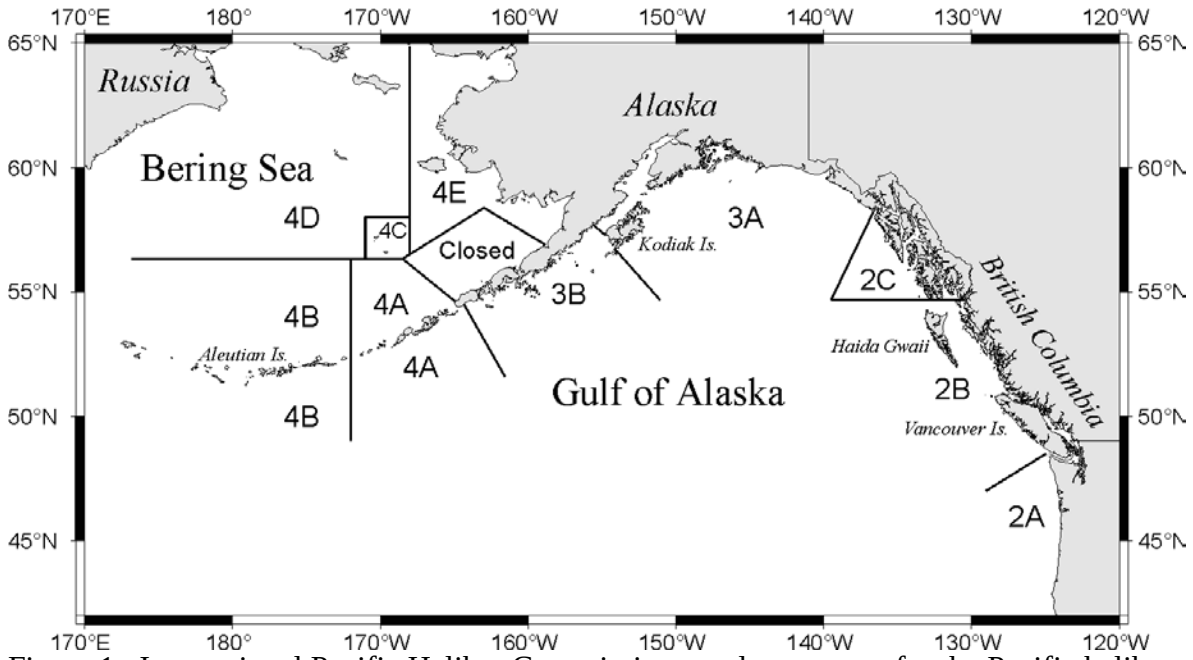

Figure 1. International Pacific Halibut Commission regulatory areas for the Pacific halibut fisheries (downloaded on October 30, 2017, from http://www.iphc.int/library/regulations.html). Regulatory areas in Alaska and specific to the Biological Opinion include: 2C, 3A, 3B, 4A, 4B, 4C, 4D, and 4E.

The subsistence, sport, and commercial fisheries are three separate fisheries for halibut that are governed by separate regulations. Subsistence and sport halibut fishery regulations for Alaska are codified at 50 CFR part 300. Commercial halibut fisheries in Alaska are subject to the Halibut and Sablefish Individual Fishing Quota (IFQ) Program and the Western Alaska Community Development Quota (CDQ) Program (50 CFR part 679) regulations, and the area-specific catch sharing plans.

Within Alaska, the IPHC apportions catch limits for the Pacific halibut fisheries among regulatory areas: Area 2C (Southeast Alaska), Area 3A (Central Gulf of Alaska), Area 3B (Western Gulf of Alaska), and Area 4 (subdivided into 5 areas, 4A through 4E, in the Bering Sea and Aleutian Islands of Western Alaska; Figure 1). The Alaska Department of Fish and Game licenses anglers and sport fishing businesses and guides, monitors and reports on sport and subsistence harvests, and assists Federal agencies with preparation of regulatory analyses. All direct and indirect effects to short-tailed albatross related to the activities authorized by the Council FMPs are believed to occur within these areas, as defined.

Seabird bycatch in the halibut fisheries off Alaska has only been reported in fisheries employing hook-and-line gear. Birds dive after baited hooks as they are being set, get hooked, and drown while being dragged below the water's surface with the sinking line. Most commercial halibut

fisheries use hook-and-line gear with fixed hooks strung along a ground line. The ground line can be several miles long, and can have thousands of baited hooks attached. Typically, the ground line is around 1,800 feet and composed of sixline skates and hooks that are spaced from 3 feet to 24 feet, depending on gear and fishing target (IPHC 2014). The skates are tied together and set in strings of 4 to 12 skates each. Each end of the string is attached to an anchor and buoy line and marked at the surface with a buoy, flagpole, and flag. When fishing at night or in heavy fog, lights or radar reflectors are used on each flagpole to aid in locating the gear. Depending upon the grounds, time of year, and bait used, most of the gear is left in the water for 4 to 24 hours, but the average soak for each skate is about 12 hours. Most fishing is conducted in depths ranging from 15 to 150 fathoms (88 to 898 feet); up to 700 fathoms (4,199 feet) if also fishing for sablefish. Baits used in the halibut fishery are either fresh or frozen and include herring, octopus, salmon, squid, shad, and "shack" or "gurdy" bait which consists of species caught incidentally on the halibut gear (IPHC 2014).

Vessels that participate in the halibut fishery can be divided into two categories: vessels that catch fish and vessels that process or transport fish (Cahalan et al. 2014). Vessels that catch fish include catcher/processor (CPs), which catch and process fish while at sea, and catcher vessels (CVs), which deliver their catch to either a shoreside processing facility or a vessel with the ability to process fish, including CPs. Majority of commercial halibut fishing vessels are CVs.

The number of vessels fishing for halibut in U.S. Convention waters off Alaska decreased from 2009 to 2016 for all gear types (Appendix A). This is due to a reduction in the halibut population and subsequent reductions in the halibut total allowable catch (Figure 2).

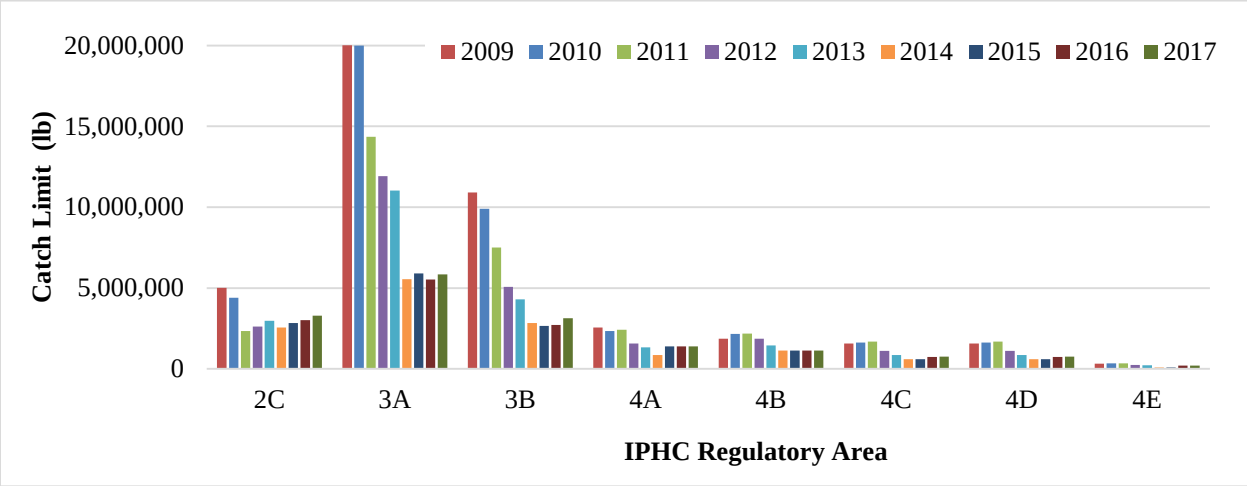

Figure 2. Halibut Total Allowable Catch from 2009 – 2017. Commercial catch limit data from International Pacific Halibut Commission (IPHC) annual reports, available at: http://www.iphc.washington.edu/library/regulations.html.

3.0 AVOIDANCE AND MINIMIZATION MEASURES

3.1 Streamer lines

Streamer lines were one of the options for mandatory avoidance measures in 1997 (62 FR 23176, April 29, 1997; Figure 3). Many fishermen voluntarily adopted the use of streamer lines in 2002. Regulations for groundfish and halibut vessels using hook-and-line gear off Alaska were revised in 2004 to require the use of streamer lines with standards of proven effectiveness (69 FR 1930, January 13, 2004).

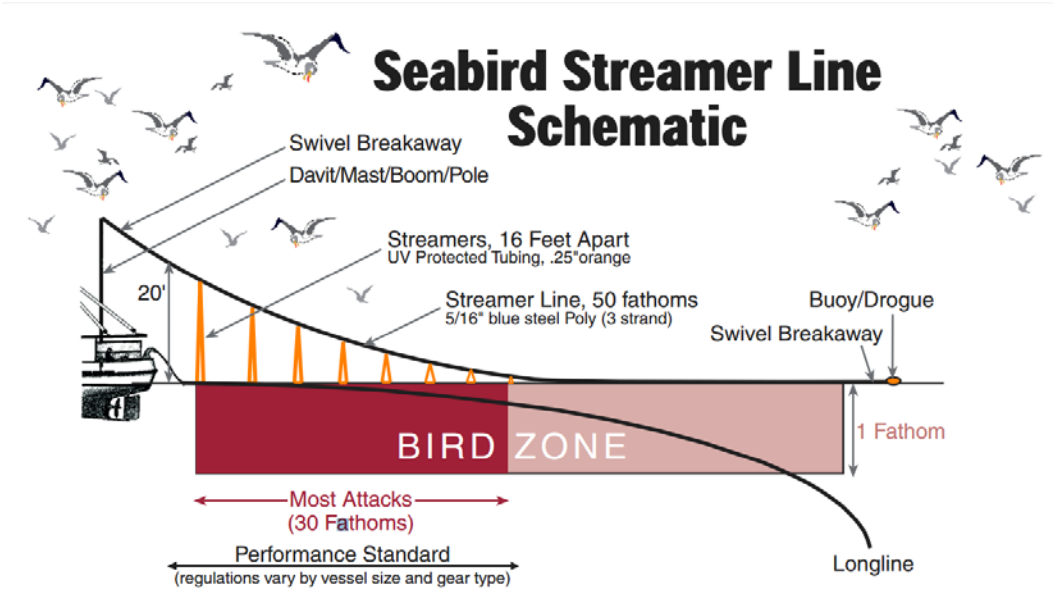

Figure 3. Streamer lines used to reduce seabird bycatch in fisheries using hook-and-line gear (Melvin 2000).

The type of streamer line required depends on the area fished, the length of the vessel, and the type of hook-and-line gear (e.g., snap gear). Larger vessels (those greater than 55 feet length overall (LOA)) in the EEZ must use a minimum of a paired streamer line of a specified performance and material standard. Smaller vessels (those greater than 26 feet LOA and less than or equal to 55 feet LOA) must use a minimum of a single streamer line or, in limited instances, a minimum of one buoy bag line. See Appendix B for more specific seabird avoidance measures requirements related to streamer lines.

Controlled and large-scale field studies have demonstrated that properly deployed paired streamer lines are effective at reducing seabird attacks on the gear by 85 to 100 percent (Melvin et al. 2001). Dietrich et al. (2009) found seabird bycatch rates have decreased in Alaska by 78 percent since the implementation of streamer lines. Further analyses found a small number of vessels were responsible for the majority of seabird bycatch (Dietrich and Fitzgerald 2010). The

effectiveness of streamer lines is documented in the bycatch data, which shows continued reduction in bycatch rate since fishermen began using streamer lines in 1999 (NMFS 2015). The dramatic effect of streamer lines on seabird bycatch can be seen in Figure 4.

Single streamer lines are slightly less effective than paired lines, reducing seabird bycatch by 96 percent and 71 percent for the sablefish and Pacific cod fisheries, respectively (Melvin et al. 2001). The use of integrated weight longlines, used simultaneously with paired streamer lines, reduces seabird mortality almost completely (Dietrich et al. 2008).

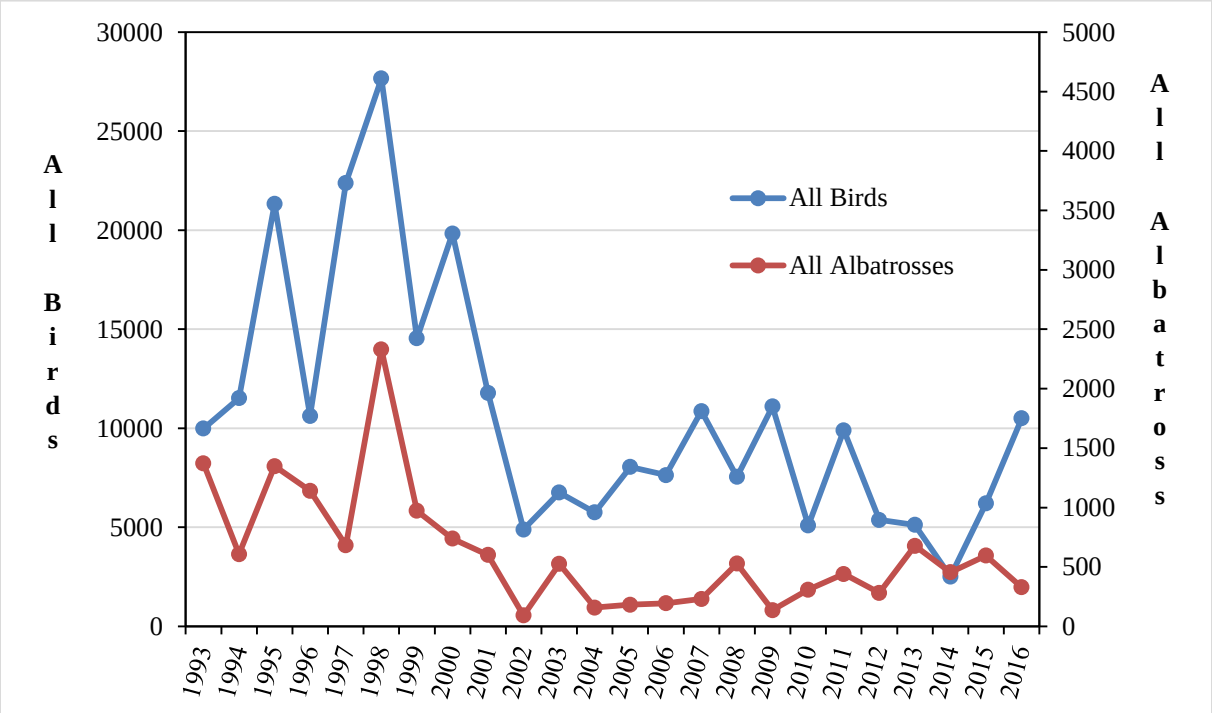

Figure 4. Seabird bycatch in Alaska groundfish (from 1993 to 2016) and halibut (from 2013 to 2016) fisheries (hook-and-line, trawl, and pot), noting bycatch estimates for all birds (left indices) and for albatross only (right indices). Note the difference in scale. Different data analysis methodologies are present: data from 1993 through 2006 are described in Fitzgerald et al. 2008; data from 2007 – 2015 are from the Catch Accounting System. Source: NMFS 2017.

3.2 Observer Program

Fisheries observers have been deployed by the NMFS since 1972. The Observer Program, run by the NMFS, monitors fish, bycatch, and marine mammal and seabird interactions in Alaska's federally managed halibut and groundfish fisheries. Information collected by observers, used in conjunction with reporting and weighing requirements, provides the foundation for in season fisheries management and for tracking species-specific catch and bycatch amounts. The purpose

of the Observer Program is to allow observers to collect Alaska fisheries data deemed by the NMFS Regional Administrator to be necessary and appropriate for management, compliance monitoring, and research of halibut and groundfish fisheries and for the conservation of marine resources and their environment (50 CFR 679.50). In addition, the observers are trained on how to identify dead seabirds, as well as specific information for the identification of species of interest, including: short-tailed albatross, red-legged kittiwake (*Rissa brevirostris*), Steller's eider, spectacled eider, marbled murrelet (*Brachyramphus marmoratus*), and Kittlitz's murrelet (*B. brevirostris*).

Substantial changes to the structure of the Observer Program annual deployment plan (ADP) took effect in January 2013 (77 FR 70062, November 21, 2012). These changes increased the statistical reliability of data collected by the program and expanded observer coverage to previously unobserved fisheries. The restructured Observer Program dramatically reduced the proportion of trips in the commercial halibut fleet that are not subject to observer coverage, which provides data that better represents the fishery. Under the current Observer Program, majority of halibut fishing vessels are CVs and fall under the partial observer coverage, where the NMFS determines when and where observer coverage is needed.

The information collected by the NMFS certified observers provides scientific information for managing the commercial halibut and groundfish fisheries and minimizing bycatch; there is no observer coverage for subsistence or sport halibut fisheries. No short-tailed albatross have been recorded as bycatch in the commercial halibut fishery since the Observer Program expanded coverage to the commercial halibut fishery in 2013.

3.3 Offal

If offal is discharged while gear is being set or hauled, offal will be discharged in a manner that distracts seabirds from baited hooks, to the extent practicable. The discharge site on board a vessel must be either aft of the hauling station or on the opposite side of the vessel from the hauling station. Directed discharge will be eliminated through chutes or pipes of residual bait or offal from the stern of the vessel while setting gear. For vessels not deploying gear from the stern, directed discharge of residual bait or offal will be eliminated over sinking hook-and-line gear while gear is being deployed. See 50 CFR 679.24(e)(2)(v) for more specific requirements.

4.0 FRAMEWORK FOR JEOPARDY ANALYSES

Section 7(a)(2) of the ESA requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. Jeopardize the continued existence of means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02).

The jeopardy analysis in this BO relies on four components: (1) the Status of the Species, which describes the range-wide condition of the short-tailed albatross, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the short-tailed albatross in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the short-tailed albatross; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the short-tailed albatross; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities, that are reasonably certain to occur in the action area, on the short-tailed albatross.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the short-tailed albatross, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the short-tailed albatross in the wild by reducing the reproduction, numbers, and distribution of that species.

5.0 STATUS OF THE SHORT-TALIED ALBATROSS

5.1 Taxonomy and Species Description

The short-tailed albatross is a large pelagic bird with long, narrow wings adapted for soaring above the water surface. The short-tailed albatross is the largest albatross species in the North Pacific with a body length of 33 to 37 inches and wingspan of 84 to 90 inches. Adults have a white head and body and golden cast to the crown and nape. The tail is white with a black terminal bar. A disproportionately large pink bill distinguishes it from the other two North Pacific albatross species (Laysan albatross [*Phoebastria immutabilis*] and black-footed albatross [*P. nigripes*]) and its hooked tip becomes progressively bluer with age. Short-tailed albatross juveniles are blackish-brown, progressively whitening with age and are the only North Pacific albatross that develops an entirely white back at maturity (USFWS 2008).

5.2 Listing Status

The short-tailed albatross was federally listed as endangered throughout its range, including the United States, on July 31, 2000 (65 FR 46643). At the time of listing, designation of critical habitat was determined to be not prudent (65 FR 46651). The Short-tailed Albatross Recovery Plan was finalized in 2008 (USFWS 2008).

5.3 Historic and Current Distribution

Historically, the short-tailed albatross was probably the most abundant albatross in the North Pacific, with 14 known breeding colonies in the northwestern Pacific and potentially in the North Atlantic (Olson and Hearty 2003; USFWS 2008). However, from the late 1800's, millions were

hunted for feathers, oil, and fertilizer (USFWS 2008), and by 1949, no birds were observed breeding and the species was thought to be extinct. The species began to recover during the 1950s, and currently occurs throughout the North Pacific Ocean.

Today, breeding colonies exist primarily on two small islands in the North Pacific Ocean (Figure 5). Torishima, a Japanese island that is an active volcano, is estimated to contain 80 to 85 percent of the existing breeding population. The remaining population is believed to nest in the Senkaku Islands (USFWS 2008). The Senkaku Islands breeding population estimate is an unverified projection from growth of this breeding colony since 2002, the last time the site was visited. The Senkaku Islands are in disputed ownership between China, Japan, and Taiwan, and are politically difficult to access. Therefore, no nest searches have occurred since 2002. The estimates of the Senkaku Islands population data are extrapolated from the 2002 data under the assumption that factors affecting population growth have remained similar to those observed on Torishima Island.

In 2008, 10 chicks were translocated to a former colony site on Mukojima, a non-volcanic island south of Torishima Island, in the hope of re-establishing a colony on this island. All translocated chicks survived to fledging. From 2009 to 2012, an additional 15 chicks per year have been moved to Mukojima Island and reared to fledging. All but 1 of the 70 translocated chicks from 2008 to 2012, have fledged successfully. The translocation effort may be attracting additional breeding adults to this island; an egg was laid by a pair in 2012 and 2013. In 2016, an 8-year-old translocated male and a wild female, thought to be from the Senkaku Islands, successfully fledged the first chick on Mukojima Island. During the 2017 breeding season, 1 chick successfully hatched, and 10 short-tailed albatross adults were reported on Mukojima Island.

As of 2016, there were also two breeding sites in addition to Mukojima with in the Ogasawara (Bonin) Islands: one on Nakodojima approximately 3.1 miles south of Mukojima and one on Yomejima approximately 12.42 miles south of Mukojima (Deguchi et al. 2016). A chick was fledged from Nakodojima in 2014, and the Yomejima chick was observed in 2016. Since the translocation, three pairs have produced four chicks in the Ogasawara Islands (Deguchi et al. 2016, Deguchi, pers. comm. 2017).

In the Northwestern Hawaiian Islands, one short-tailed albatross pair was breeding at the Midway Atoll (having fledged a chick in 2011, 2012, and 2014) and another suspected female-female pair has been attempting to breed at Kure Atoll since 2010. The hatching in 2011 marked the first confirmed hatching of a short-tailed albatross outside of the islands surrounding Japan in recorded history. Prior to that, observations of infertile short-tailed albatross eggs and reports from the 1930's suggested that short-tailed albatross may have nested on Midway Atoll in the past.

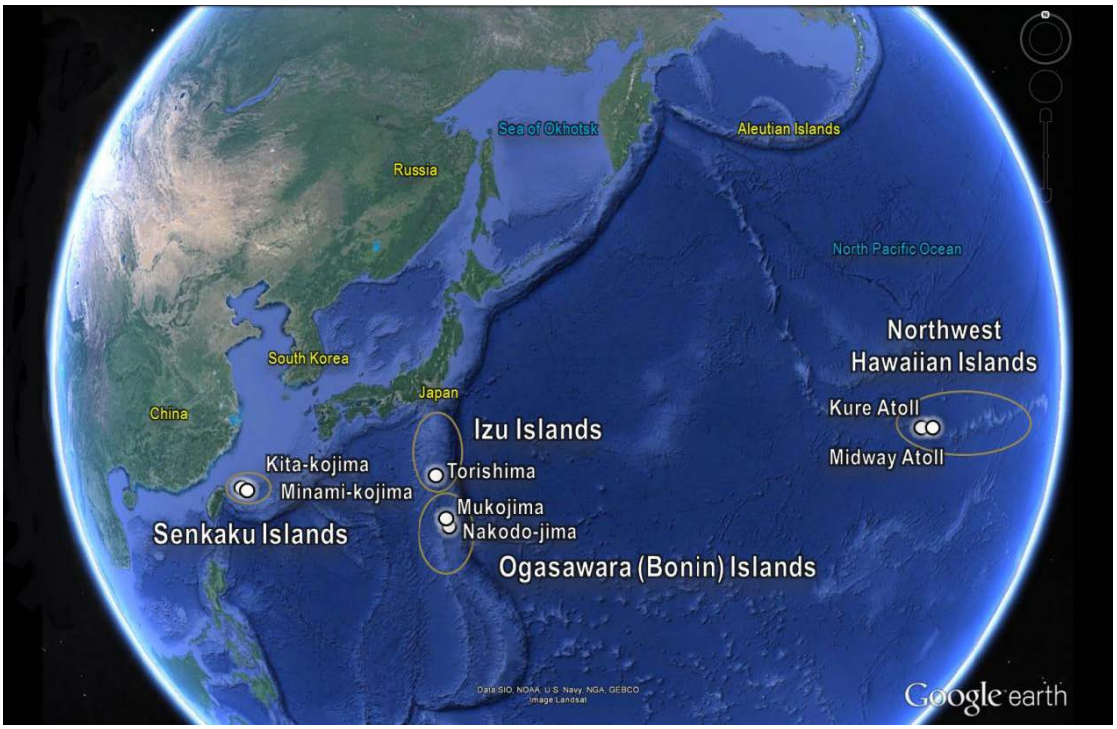

Figure 5. Short-tailed albatross breeding locations in the North Pacific.

5.4 Life History

The short-tailed albatross is a colonial, annual breeding species; each breeding cycle lasts about 8 months. Birds may breed at 5 years of age, but first year of breeding is more commonly at 6 years of age. Birds arrive on Torishima Island in October, but as many as 25 percent of breeding age adults may not return to the colony in a given year, instead they spend the year at sea, often in Alaskan waters. A single egg is laid in late October to late November, and is not replaced if destroyed. Bi-parental incubation lasts 64 to 65 days. Hatching occurs from late December through January (Hasegawa and DeGange 1982). Chicks begin to fledge in late May through June.

Nest sites may be flat or sloped, with sparse or full vegetation. Nests consist of a concave scoop about 2 feet in diameter on the ground, lined with sand and vegetation. Tickell (1975) described short-tailed albatross nests as scoops in volcanic ash lined and sometimes built up with grass.

Parents alternate foraging trips that may last 2 to 3 weeks while taking turns incubating the egg. When one bird is foraging, the other stays on the nest without eating or drinking. The first few days after hatching, the chick is fed on stomach oil, which is rich in calories and Vitamin A. This oil also provides a source of water once metabolized. Soon after hatching, the chicks are fed more solid food, such as squid and flying fish eggs. During the first few weeks after

hatching, one adult broods the chick and the other forages at sea. Later, when the chick can thermoregulate, both parents leave the chick, while they forage simultaneously.

By late May or early June, the chicks are almost fully grown, and the adults begin abandoning the colony site (Hasegawa and DeGange 1982). The chicks fledge soon after the adults leave the colony (Austin 1949) and by mid-July, the breeding colony is empty. Non-breeders and failed breeders disperse earlier from the breeding colony, during late winter through spring (Hasegawa and DeGange 1982).

Short-tailed albatross are monogamous and highly philopatric to nesting areas (they return to the same breeding site year after year). Chicks hatched at Torishima Island return there to breed. However, young birds may occasionally disperse from their natal colonies to attempt to breed elsewhere, as evidenced by the appearance of adult birds on Midway Atoll that were banded as chicks on Torishima Island (Richardson 1994). In summer (non-breeding season), short-tailed albatross disperse widely throughout the temperate and subarctic North Pacific Ocean (Sanger 1972; Suryan et al. 2007a).

5.5 Habitat Description

5.5.1 Distribution

Juveniles and younger sub-adult birds (up to 2 years old) have a wider range than adults and can be found in the Sea of Okhotsk, a broad region of the Bering Sea, and the west coast of North America (O'Connor et al. 2013; Figure 6). Sub-adult birds also travel greater daily distances (mean distance of 119 miles/day in first year of flight, 112 miles/day in second year of flight; O'Connor et al. 2013) than adults (83 miles/day; Suryan et al. 2007b). Post-fledging juvenile birds ranged widely throughout the North Pacific rim, and some individuals also spent time in the oceanic waters between Hawaii and Alaska (Deguchi et al. 2014). Although the highest concentrations of short-tailed albatross are found in the Aleutian Islands and Bering Sea (primarily outer shelf) regions of Alaska, sub-adults appear to be distributed along the west coast of the U.S. more than has been previously reported (Guy et al. 2013).

5.5.2. Foraging Ecology and Diet

The diet of short-tailed albatross is not well-known, but observations of food brought to nestlings and of regurgitated material (Austin 1949), as well as at-sea observations during feeding, indicate that the diet includes squid, shrimp, fish (including bonitos [*Sarda* sp.], flying fishes [Exocoetidae] and sardines [Clupeidae]), flying fish eggs, and other crustaceans (Hasegawa and DeGange 1982; Tickell 1975). This species has also been reported to scavenge discarded marine mammals and blubber from whaling vessels, and they readily scavenge fisheries offal (Hasegawa and DeGange 1982). Short-tailed albatross forage diurnally and possibly nocturnally (Hasegawa and DeGange 1982), either singly or in groups (occasionally in the hundreds) predominantly taking prey by surface-seizing (Piatt et al. 2006).

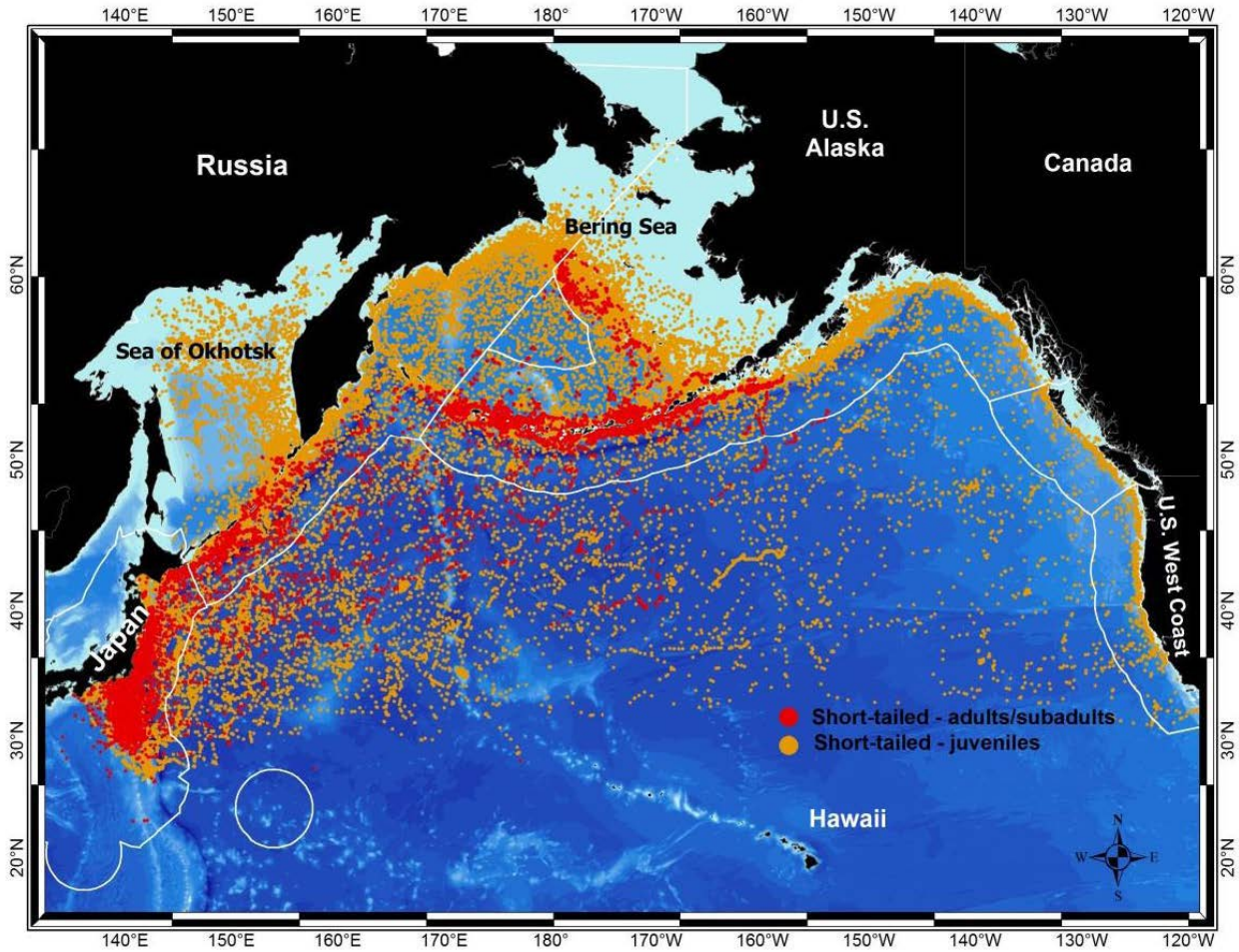

Figure 6. Locations of 99 short-tailed albatross tracked between 2002 – 2012, showing adult and juvenile distributions in the North Pacific (Suryan et al. 2006, 2007a, 2008, Suryan and Fischer 20010, Deguchi et al. 2014). White lines represent the Exclusive Economic Zones of countries within the range of short-tailed albatross.

In an analysis of historic and current distribution of North Pacific albatrosses, Kuletz et al. (2014) speculated that the increase in albatrosses (including short-tailed albatross) and changes in their distribution over the last decade was due to possible increases in squid biomass in the Bering Sea and Aleutian Islands region. Overall, the much higher abundance of albatrosses in the Aleutian Islands compared to the Bering Sea mirrored the relative density of squid, which is estimated to be approximately seven times higher in the Aleutian Islands (Ormseth 2012).

5.5.3. Breeding Habitat

Short-tailed albatross nest on isolated, windswept, offshore islands, with restricted human access. On Torishima Island, most birds nest on a steep site containing loose volcanic ash (Tsubamezaki), however, a new colony on a vegetated gentle slope (Hatsunezaki) is growing

rapidly. Nesting at the eroding Tsubamezaki site may be an artifact of where commercial harvest did not occur, due to the difficulty of access for humans. Torishima Island, where vegetated, is dominated by a clump-forming grass, *Miscanthus sinenesis* var. *condensatus*. The grass helps to stabilize the soil, provide protection from weather, and acts as a beneficial visual barrier between nesting pairs that minimizes antagonistic interactions. In addition, it allows for safe, open takeoffs and landings.

5.6 Threats

5.6.1. Natural Events

Habitat destruction from volcanic eruption continues to pose a significant threat to short-tailed albatross at the primary breeding colony on Torishima Island (USFWS 2014). The main colony site, Tsubamezaki, is on a sparsely vegetated steep slope of loose volcanic soil that is subject to severe erosion, particularly during monsoon rains. A landslide at Tsubamezaki buried up to 10 chicks in February 2010 (Yamashina Institute for Ornithology, unpublished data). Future eruptions or landslides could result in a significant loss to the primary nesting area and the population as a whole.

5.6.2. Commercial Fishing

Albatross, like many seabirds, attack baited hooks of both pelagic and demersal longlines after the hooks are deployed; if they are hooked or snagged, they are likely to be injured or pulled underwater with the rest of the gear and drowned (USFWS 2008). Interactions with trawls may occur when seabirds fly behind vessels or float in offal plumes that trail behind vessels. Individuals can strike the trawl cables (warp cables) or the sonar cable (third wire) attached to the net or become entangled on the outside of nets towed at or near the surface; the former in particular are unlikely to be detected as they do not show up on the vessels' deck to be sampled (USFWS 2008).

In U.S. Convention waters, there were two reported fishery-related mortalities of short-tailed albatross in the 1980's. The first bird was found dead in a fish net north of St. Matthew Island, Bering Sea, in July 1983. The second one was killed in October 1987, by a halibut vessel in the Gulf of Alaska. Both mortalities were reported by fishermen (USFWS 2008). Since 1990, fisheries observers have documented 7 short-tailed albatross mortalities in the Gulf of Alaska and Bering Sea Islands hook-and-line Pacific cod groundfish fishery, 2 mortalities from the IFQ sablefish fishery in the Gulf of Alaska and Bering Sea Islands, 2 mortalities from the Hook-and-line CP targeting Greenland turbot in the Bering Sea, and 1 mortality from the West Coast sablefish fishery (Appendix C).

<u>Commercial Fishing in Russia</u>

Russian longline cod fisheries implemented experimental use of streamer lines from 2004 to 2008 (Artukhin et al. 2013). The frequency of reported seabird attacks was 5 to 9 times lower on boats with paired streamer lines, and total catch of fish was 4 to 12 percent higher. The study recommended wide application of streamer lines in the Far Eastern Seas of Russia. Although consistent funding has been a problem, the World Wildlife Fund has continued to work with

Russian partners to educate the Russian commercial fishing communities about the benefits of using streamer lines and promote their use to reduce seabird bycatch and improve fishing success (World Wildlife Fund 2014).

Commercial Fishing in Japan

Japan developed a National Plan of Action for seabird conservation and management (Fisheries Agency of Japan 2004, 2009). In areas where short-tailed albatrosses occur (north of 23° N latitude), vessels must employ two of the following measures, one of which must be from the first four listed, and streamer lines are obligatory within 20 miles of Torishima Island in October through May: side setting with a bird curtain and weighted branch lines, night setting with minimum deck lighting, streamer lines, weighted branch lines, blue-dyed bait, deep setting line shooter, and/or management of offal discharge. Japan has also implemented an observer program on their longline and purse seine fisheries to observe bycatch of non-target species, including seabirds (Uosaki et al. 2013, 2014). The only observed seabirds incidentally caught north of the 23˚N latitude were a black-footed albatross in 2012 and an unidentified petrel in 2013 (Uosaki et al. 2013, 2014). However, only a small percentage of deployed hooks are observed.

Japanese fishermen pioneered the use of streamer lines to deter seabirds, and researchers have continued to assess their use. Researchers have continued to examine methods to improve the effectiveness of streamer lines. Yokota et al. (2011) and Sato et al. (2012) assessed types and lengths of streamer lines for their effectiveness and found that lighter lines with shorter streamers are as effective as those with long streamers, although the shorter lines are thought to be safer and less likely to tangle. Sato et al. (2013) further examined the use of paired versus single streamer lines and determined that paired lines were more effective than single lines in reducing bait attacks and seabird mortality. The continuing research by Japan has been an important contribution to minimizing longline fisheries bycatch of short-tailed albatross.

Driftnet Fishing in the North Pacific

United Nations General Assembly Resolutions 44/225, 45/197, and 46/215 (United Nations 1989, 1990, 1991) called for a global driftnet moratorium on the high seas by June 30, 1992, and the resolution has been re-adopted biennially. The NMFS and the State Department worked to implement the moratorium for the U.S. According to the NMFS (2013), high seas driftnet fishing continues to occur in the North Pacific Ocean. The fishing effort targets species of squid and occurs toward the end of the fishing season. Both of these factors increase the threat to short-tailed albatross. While the number of sightings and apprehensions of vessels driftnetting in the North Pacific high seas appear to be decreasing, non-compliance with the moratorium continues to pose a risk of mortality to short-tailed albatrosses entangled in nets.

Canadian Fishing Operations

Off Canada's west coast, deployment of seabird avoidance gear has been mandatory for all hook and line groundfish and halibut fisheries since 2002. Most bycatch monitoring in these fisheries is done by on-board Electronic Monitoring Systems. Following each fishing trip, approximately

10 percent of the imagery is audited. Although there have been no reported takes of short-tailed albatross bycatch in the halibut fisheries (or groundfish fisheries), in a recent examination of imagery collected between 2006 and 2012, 79 albatrosses were detected; a third of which were identified only as "albatross species." Based on the proportions of sets audited, an estimated 120 albatrosses were predicted to have been caught each year (range 0 to 269). Given the high proportion of albatrosses that are not identified to species and the fact that more than a third of all birds detected during the audits were listed as "unidentified bird," one might expect that one or two short-tailed albatrosses are killed each year in Canadian west coast groundfish longline fisheries (COSEWIC 2013).

U.S. West Coast Fishing Operations

One short-tailed albatross was killed in 2011 in the sablefish demersal fishery off Oregon (USFWS 2012), but no other deaths are recorded from the U.S. west coast fisheries (Washington, Oregon, and California; Jannot *et al.* 2011, USFWS 2012).

5.6.3. *Invasive Species*

Black rats (*Rattus rattus*) were introduced to Torishima Island at some point during human occupation. The effect of these rats on short-tailed albatross is unknown, but rats are known to feed on chicks and eggs of other seabird species (Atkinson 1985), and there have been numerous efforts to eradicate rats to protect other seabird colonies (Taylor et al. 2000).

5.6.4. *Disease and Parasites*

Diseases and parasites are not currently a threat to the short-tailed albatross. Tick parasites, feather louse, and a carnivorous beetle have been documented infesting short-tailed albatross on Torishima Island, although not recently (USFWS 2008). No diseases have been documented in short-tailed albatross.

5.6.5. *Predation*

Shark predation is documented among other albatross species, but has not been observed for short-tailed albatross (USFWS 2008). This predation would likely include sharks preying upon fledgling short-tailed albatross as they depart their natal colony.

5.6.6. *Oil Pollution*

There is potential for oil spills to occur in the action area, which could affect short-tailed albatross. Oil contamination can adversely affect short-tailed albatross either through acute toxicity from being directly oiled or as a result of chronic or sublethal exposure to low levels of oil. Petroleum exposure may: (1) compromise seabirds' thermoregulations through fouling of feathers; (2) cause direct toxicity through ingestions (during preening); (3) contaminate the birds food resources; (4) reduce prey availability from toxic effects on prey species; and (5) cause embryo toxic effects (USFWS 2008, 2009).

5.6.7. *Plastic Pollution*

Plastics have been found in most, if not all, species of albatross. Both black-footed and Laysan albatross are well known to ingest plastics in the course of foraging. Lavers and Bond (2016)

have recently examined the role of plastic as a vector for trace metals in Laysan albatrosses. Lavers et al. (2014) studied sub-lethal effects of plastic ingestion in flesh-footed shearwaters (*Puffinus carneipes*) and found birds with high levels of ingested plastic exhibited reduced body condition and increased contaminant load ($p < 0.05$; Lavers et al. 2014). Tanaka et al. (2013) analyzed polybrominated dephenyl ethers in the abdominal adipose of short-tailed shearwaters (*P. tenuirostris*). Some of the birds were found to contain higher-brominated constituents, which were not present in their pelagic fish prey. These same birds were found to contain plastics in their stomach. Plastic ingestion is therefore not only a direct dietary risk but may contribute to chronic accumulation of contaminants that adhere to and are absorbed by plastics in albatross.

5.6.8. Contaminants

Radiation

Approximately 80 percent of the radiation released from the Fukushima Daiichi Nuclear Plant in Japan, which was damaged by a March 11, 2011, earthquake and tsunami, was believed to have entered the Pacific Ocean (Tanabe and Subramanian 2011; Steinhauser et al. 2013, 2014). The area east of the plant is a primary feeding area for nesting short-tailed albatross. Although recent analysis has shown no detectable levels of radiation in short-tailed albatross, the impact of these continuing releases on short-tailed albatrosses or their food resources is unknown.

Organochlorines, pesticides, and metals

Albatross and other birds may be exposed to organochlorine contaminants such as polychlorinated biphenyls (PCBs) and pesticides, and to toxic metals (e.g., mercury, lead) via atmospheric and oceanic transport. Vo et al. (2011) examined mercury and methylmercury in tissues of black-footed albatross. They compared the levels of mercury and methylmercury in museum specimens ($n = 25$) from a 120-year collection period (1880 to 2002). They found no temporal trend in mercury concentrations, but measured significantly higher concentrations of methylmercury through time. Finkelstein et al. (2007) found mercury concentrations in black-footed albatross were associated with decreased immune response. Similar effects would be expected for short-tailed albatross.

High concentrations of lead at Midway Atoll are a concern. Taylor et al. (2009) described neurological impacts of lead-based paints on Laysan albatross chicks. Since then, the USFWS has initiated removal and remediation of lead-based paint and contaminated soils on Sand Island (NW Demolition and Environmental 2015). Although only one pair has successfully nested on Midway at Eastern Island, this remediation will reduce exposure to any offspring or future nesting birds on Sand Island. The degree to which any of these or other toxins impact short-tailed albatross remains uncertain, and further research is needed to examine the prevalence of these contaminants in short-tailed albatrosses and their impact on the population.

5.6.9. Global Changes

Climate change impacts to short-tailed albatross could include changes to nesting habitat or changes to prey abundance or distribution. Fortunately, the nesting habitats on Torishima Island,

the Ogasawara Islands, and the Senkaku Islands are high enough above sea level (above 70 feet) to avoid inundation by projected sea level rise. Models for the Northwestern Hawaiian Islands indicate nesting habitat used by short-tailed albatross on low-lying Midway and Kure Atolls is likely to be lost by the end of the century due to sea level rise and increased storm frequency and intensity (Storlazzi et al. 2013).

Sea-ice retreat in the Arctic may potentially open new foraging habitat or provide a new migration corridor between the Pacific and Atlantic Oceans. A juvenile short-tailed albatross was recently sighted in the Arctic (Chukchi Sea) and evidence from other species (e.g., northern gannet [*Morus bassanus*], ancient murrelet [*Synthliboramphus antiquus*]) indicates some bird species might use ice-free portions of the Arctic as a migration or population dispersion route (Gall et al. 2013). The alteration of ice, prey, and seabird distribution is expected to continue, but how these changes will affect short-tailed albatrosses is unknown.

5.6.10. Nesting Habitat Destruction

Non-native plants, such as shrubs, can limit or destroy suitable nesting habitat on breeding islands. Although there is currently no known invasive plant problem on Torishima Island, accidental introduction remains a threat. Catastrophic events listed under *Natural Events* above, can change habitat at breeding colonies. These events can result in permanent loss of habitat.

5.7 Population

A species thought to be extinct in the 1940's, the short-tailed albatross estimated population has steadily increased to around 5,856 individuals following the 2016 to 2017 breeding season (Appendix D). The population is increasing at an average annual rate of 8.5 percent (Sievert and Hasegawa, unpublished population model, 2017).

6.0 ENVIRONMENTAL BASELINE

6.1 Action Area

The implementing regulations for section 7(a)(2) of the ESA define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 Code of Federal Regulations 402.02).

We have defined the action area the IPHC regulatory areas for the Pacific halibut fisheries except areas 2A and 2B (Section 2.0; Figure 1).

6.2 Status of the species in the Action Area

The short-tailed albatross, a wide-ranging seabird, is found within the action area throughout the North Pacific and Bering Sea and may be found in the action area year round. Waters around the Aleutian Islands are important for feeding, particularly during the summer non-breeding season. A small number of recent sightings have occurred in the Chukchi Sea as well, suggesting that

they may be increasing their range into Arctic waters. Juveniles and up to 25 percent of adults each year will forego returning to the North Pacific and Japanese nesting habitat and remain in waters around Alaska (Piatt et al. 2006). No breeding habitat is located within the action area.

After fledging, immature short-tailed albatross either move immediately north to the western Aleutian Islands, or remain within northern Japan and Kuril Islands for the remainder of the summer, and in September move north to the Aleutian Islands. During the non-breeding season, short-tailed albatross range along the continental shelf and slope regions of the North Pacific. Short-tailed albatross tend to favor the steeply sloped edges of the Gulf of Alaska and Bering Sea shelf. Piatt et al. (2006) identified hot spots where short-tailed albatross feed and possibly molt along the shelf areas and canyons. Large groups of short-tailed albatross have been seen over the Bering Sea canyons (primarily IPHC Regulatory Areas 4CDE; Figure 1). Short-tailed albatross are continental shelf specialists due to their limited diving ability (Hyrenbach et al. 2002). The continental shelf brings prey close to the surface, providing easy access to a bird with a poor diving ability (Piatt et al. 2006).

The Aleutian Islands and Bering Sea may be especially important during molting. Data from albatrosses captured at sea in the Aleutian Islands showed that most birds were undergoing extensive flight feather molt (R. Suryan and K. Courtot, unpublished data). Satellite tracking data indicated individuals were spending an average of 19 consecutive days (maximum of 53 days) within a 62-mile radius of some Aleutian passes (R. Suryan and K. Courtot, unpublished data). O'Connor et al. (2013) examined locations of sub-adult short-tailed albatross and fishing locations of vessels from 2008 to 2011 and found albatross-vessel association hot spots at several canyons along the Bering Sea shelf. Seasonal distribution among juveniles was found to shift from the Bering Sea shelf in the summer, to the Aleutian Islands in the winter (O'Connor et al. 2013).

6.3 Factors Affecting the Species' Environment within the Action Area

Other actions that are already affecting the species within the action area include commercial groundfish longline fishing, which has an estimated incidental take of up to six short-tailed albatross every 2 years based on analysis in the USFWS's 2015 BO.

6.3.1 Commercial Fishing

The commercial Pacific halibut fishery off Alaska has documented take of one short-tailed albatross in 1987. In U.S. Convention waters off Alaska, most commercial halibut fishing vessels use hook-and-line gear, followed by troll and mechanical jig gear (Appendix A). Participants in the halibut fisheries have generally used longline hook-and-line gear because it is more efficient than jig, troll, or handline gear. Historically, this component of the proposed action (in relation to the others discussed below) has resulted in the only documented mortality of a short-tailed albatross.

6.3.2 Sport fishing

There have been no reported take of short-tailed albatross in the sport halibut fishery. The impact of sport halibut fishing on the short-tailed albatross is primarily limited to the potential disturbance by fishing vessels. Overall effort of the sport halibut fishery in U.S. Convention waters off Alaska (approximately 5 million pounds; Dykstra 2017) is less than that of commercial halibut fishery (approximately 14 million pounds; NMFS 2017). Commercial fishery gear uses millions of hooks. Gear used in the sport halibut fishery is a single line with no more than two hooks attached, or a spear. Additionally, the hook-and-line gear used in the sport halibut fishery is heavily weighted and therefore sinks fast, reducing the time available for a bird to attempt to take the bait.

6.3.3. Subsistence fishing

There has been no reported take of short-tailed albatross in the subsistence halibut fishery. Subsistence fishing is limited to setline gear and hand-held gear, including longline, handline, rod and reel, spear, jig, and hand-troll gear (see 50 CFR 300.65(h)(1)). Power troll gear is not allowed. The impact of subsistence halibut fishing on the short-tailed albatross is primarily limited to the potential disturbance by fishing vessels.

6.3.4 Oil Spills

The number and volume of oil and other hazardous materials spills in the marine waters of the State of Alaska is highly variable. Between 1995 and 2012, the number of marine spills reported annually ranged from 11 to 37, and total annual spill volume ranged from 5,017 to 352,602 gallons. Most spills in Alaska marine waters from 1995 through 2012 were non-crude oil spills (primarily diesel and other lighter fuels). Crude oil spills were much less frequent ranging from zero to two per year, with total volumes ranging from 0 to 924 gallons. The Aleutian Islands region had the greatest volume of spills in marine waters from 1995 to 2006 (ADEC 2007). Shipping traffic is a major source of spills in the Aleutian Islands and Bering Sea. Shipping between North America and East Asian countries is increasing, especially among deep draft shipping vessels travelling along the Great Circle Route (DNV and ERM 2010a, 2010b, Nuka 2014).

Another major source of spills is from oil and gas industries. Currently, the Aleutian Islands have limited potential for oil and gas development. Approximately 1.75 million offshore acres along the Alaska Peninsula are available for development, but current restrictions require development to be conducted from onshore facilities. Potential in the area is considered low to moderate and no large-scale oil exploration or development is being conducted.

6.4 Short-tailed Albatross Recovery Plan

The Recovery Plan for the Short-tailed Albatross (USFWS 2008) recommends the following Recovery Actions:

1. Support ongoing population monitoring and habitat management on Torishima Island
2. Monitor the Senkaku Islands population

3. Conduct telemetry studies to determine at-sea habitat use
4. Establish one or more nesting colonies on non-volcanic islands
5. Continue research on fisheries operations and mitigation measures
6. Conduct other research that will facilitate recovery
7. Conduct other management-related activities
8. Conduct outreach and international negotiations as appropriate
9. Develop models and protocols as needed

Specific to Recovery Action 5, the NMFS and the USFWS are working with the commercial fishing industry to minimize injury and mortality of the short-tailed albatross in U.S. Convention waters. The NMFS's 2004 revised seabird bycatch regulations require Alaska longline vessels over 55 feet to deploy streamer lines while setting gear (USFWS 2009). Great progress has been made in developing seabird bycatch avoidance measures that minimize seabird bycatch in the Alaska demersal longline fisheries. This work needs to be continued and further research needs to be conducted on other aspects of commercial fisheries (e.g. trawl fisheries; USFWS 2008).

In 2008, efforts were undertaken to begin establishment of a nesting colony on a non-volcanic island (Recovery Action 4) and former breeding site, Mukojima. Seventy chicks from Torishima Island were translocated to Mukojima Island from 2008 to 2012 and hand-reared until fledging. All but one translocated chicks fledged successfully. Hand-reared birds are now making their way back to Mukojima Island (Yamashina Institute 2015). However, deterministic population models do not project the population to reach 50 breeding pairs until 2046, and 75 breeding pairs in 2052 (USFWS 2014).

The short-tailed albatross may be delisted under the following conditions:

- The total breeding population of short-tailed albatross reaches a minimum of 1,000 pairs; (population totaling 4,000 or more birds); AND
- The 3-year running average growth rate of the population as a whole is greater than or equal to 6 percent for at least 7 years; AND
- At least 250 breeding pairs exist on two island groups other than Torishima, each exhibiting greater than or equal to 6 percent growth for at least 7 years; AND
- A minimum of 75 pairs occur on a site or sites other than Torishima Island and the Senkaku Islands.

7.0 EFFECTS OF THE ACTION

Effects of the action refer to the permanent or temporary direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Indirect effects are those that are caused by the proposed action, occur later in time, but are still reasonably certain to occur.

7.1 EFFECTS TO THE SPECIES

7.1.1 Direct Effects

Short-tailed albatross visit and follow commercial fishing vessels in Alaska that target Pacific halibut, sablefish, Pacific cod, and pollock (USFWS 2008; Suryan et al. 2007b). Since 1987, a single short-tailed albatross mortality has been recorded in the commercial halibut fisheries and 11 short-tailed albatross mortalities have been recorded in the Alaska groundfish fisheries (Appendix C).

In U.S. Convention waters off Alaska, most commercial halibut fishing vessels use hook-and-line gear (Appendix A). Seabirds are attracted to baited hooks when the gear is set and thus are at risk of bycatch (Table 1). As with other seabirds, short-tailed albatross are susceptible to being captured as bycatch. Birds that attempt to steal bait can be hooked, pulled underwater as the mainline is set, and drowned. Birds may also sustain injuries from interactions with baited hooks during the process of setting and hauling the mainline, which could impair their ability to fly or forage, ultimately resulting in mortality. Discarded fish offal is also an attractant to birds, with the likelihood of bycatch increasing when offal is dumped in proximity to hooks in the water. We anticipate that bycatch caused by hook-and-line gear is likely to be the primary source of short-tailed albatross injury and mortality associated with the proposed action.

Table 1. Estimated seabird bycatch in the Bering Sea/Aleutian Islands (BSAI) and Gulf of Alaska (GOA) commercial halibut fishery. All hook-and-line gear. Source: NMFS 2017.

	2013	**2014**	**2015**	**2016**	**Grand Total**
BSAI					
Black-footed Albatross	0	29	0	0	29
Laysan Albatross	17	0	21	0	38
Northern Fulmar	0	0	0	106	106
Gull spp.	14	0	0	29	43
Unidentified spp.	20	0	0	0	20
GOA					
Black-footed Albatross	51	33	0	0	84
Laysan Albatross	0	0	19	0	19
Northern Fulmar	0	19	41	59	119
Gull spp.	75	99	144	42	359

We can expect this effect to occur most frequently where halibut fishery activities intersect with short-tailed albatross occurrence. The location of effort for the halibut IFQ fishery is described in Section 2.0. In Areas 3A and 3B, where the highest concentration of effort (by weight of halibut caught and by number of hooks deployed) occurs, the effort has decreased since 2009

(Figure 2; Figure 7). However, we expect that the seasonal focus of the halibut fishery may not coincide with peak period of activity and thus exposure for short-tailed albatross. Although commercial halibut fishery interactions with short-tailed albatross, especially juveniles, could occur at any time in areas of overlap, the greatest chance of interaction between the fishing vessels and short-tailed albatross adults is likely in IPHC Regulatory Areas 3A and 3B from May through August. This overlap occurs during the short-tailed albatross non-breeding season, May through November, and the period of highest halibut harvest (by weight). Historically, most of the short-tailed albatross mortalities associated with the groundfish fisheries off Alaska have been juveniles taken between September and October (Appendix C), which is the end of the halibut fishing year, when the least amount of catch is harvested (NMFS 2017). Therefore, we expected the frequency of interactions leading to bycatch may be reduced based on the natural separation of focal period for the fisheries in relation to the periods of peak seasonal juvenile activities of albatross.

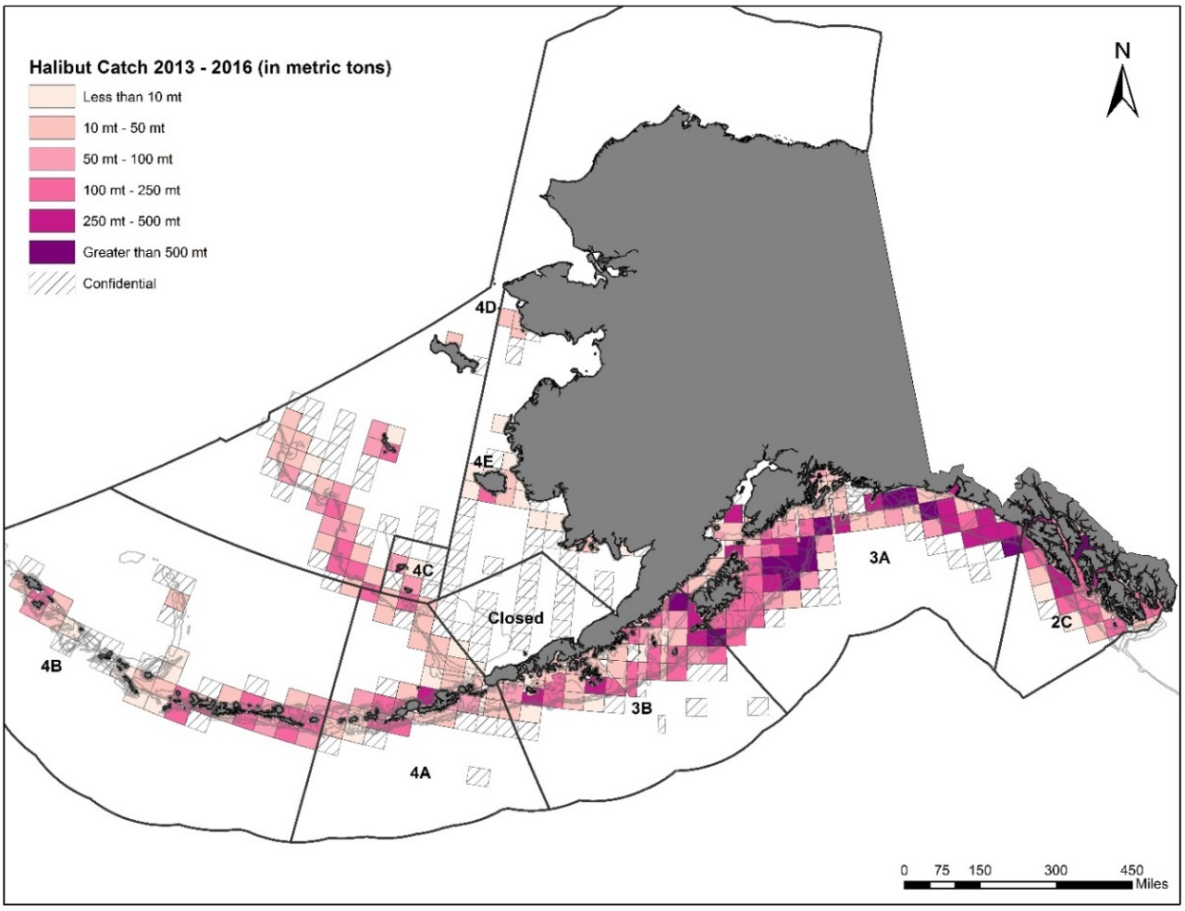

Figure 7. Commercial halibut catch in each International Pacific Halibut Commission regulatory area (NMFS 2017).

The NMFS proposes avoidance and minimization measures to further reduce the risk of bycatch. To reduce the occurrence of bycatch, the NMFS will require vessels to use of streamer lines in association with their hook-and-line gear. As previously discussed, streamer lines are a protective measure designed to reduce the likelihood of seabird bycatch by discouraging seabirds from diving at the baited hooks. The NMFS has also instituted a marine observer program to improve detection of sensitive species in the vicinity of vessels. Observers are able to recommend cessation of fishing activities if the risk of bycatch appears to be unacceptably high. We expect implementation of these measures should greatly reduce the effects of bycatch on the short-tailed albatross.

Overall, we expect interaction with commercial halibut fisheries gear or vessels is expected to pose a continued risk of death or injury to short-tailed albatross. However, through the implementation of the NMFS' proposed avoidance and minimization measures, we expect the magnitude of this effect to be relatively small.

7.1.2 Indirect Effects

Debris

Derelict fishing gear and debris lost off of fishing vessels can accumulate within the action area. Debris that floats in the water column can be consumed by seabirds, including the short-tailed albatross, when the birds are foraging. The ingestion of plastic may hurt seabirds and can result in dehydration and starvation, intestinal blockage, internal injury, and exposure to dangerous toxins (Sievert and Sileo 1993). Short-tailed albatross on Torishima Island commonly regurgitate large amounts of plastic debris (USFWS 2003). We expect fishing vessels associated with the proposed action may occasionally lose fishing gear and other debris overboard. As a result, we expect this potential effect to continue. Based on the sporadic and accidental nature of these events, it is difficult to determine the frequency and geographic distribution of this effect. However, we expect the likelihood of short-tailed albatross ingesting debris directly linked to the proposed action to be rare. Therefore, we expect the magnitude of this effect to be minimal.

Contaminants

The potential release of contaminants due to fishing activities also exists. Vessels that are damaged or sink may release oil from fuel tanks. Contaminants from onboard seafood processing discharge may also be an indirect effect. However, little research has been done to quantify the amount of contaminants in the discharge.

In general, we anticipate discharges of contaminants are likely to be small and infrequent. However, if contaminants are discharged in areas with short-tailed albatross activity, the effects could reduce short-tailed albatross's ability to breed and could make them more susceptible to illness. Because we expect these occurrences to be uncommon, we expect the magnitude of this effect to be relatively small.

7.1.3 Population Effects

The operation of the Federal and State parallel groundfish fisheries in the Gulf of Alaska and Bering Sea/Aleutian Islands is imposing additional (non-natural) mortality on short-tailed albatross. In addition to directly reducing the population size, harm of these individual short-tailed albatross will also result in a reduction to the population growth rate as a result of lost future reproductive success of the birds killed, and temporary loss of reproductive success of the mates of any adult birds killed by this action. A further indirect effect of albatross-fisheries interactions is the lowered future reproductive and survival potential by those individuals who may suffer short or long-term debilitating injuries that do not necessarily result in mortality.

In the Incidental Take Statement (ITS) for short-tailed albatross in the 1998 biological opinion (USFWS 1998), the USFWS anticipated up to two short-tailed albatross could be reported taken biannually (every 2 years) as a result of the halibut fishing activities in U.S. Convention waters off Alaska. The commercial halibut fishery in U.S. Convention waters off Alaska has not exceeded the incidental take specified in the ITS.

The current growth rate of the short-tailed albatross is estimated at 8.5 percent (Sievert and Hasegawa, unpublished population model, 2017), and this is occurring with the operation of the Federal halibut fisheries in Alaska. Mortality from the fishery has and will prevent killed birds from producing young and contributing to recovery.

Short-tailed albatross mortality and population growth rate will need to be monitored into the future to ensure that the halibut fisheries in Alaska stay within expected impacts to the species. Mortality from the fishery is likely to change due to fishery changes, such as changes in fishing effort or gear type, and increased observer coverage. Mortality may increase with a growing short-tailed albatross population, and may decrease with additional minimization measures. The population growth rate is likely to change due to changes in threats, and is likely to slow as the population grows.

Additionally, continued implementation of streamer lines and other seabird bycatch reduction measures will help reduce the likelihood that a short-tailed albatross will be injured or drowned from commercial halibut fisheries. We believe seabird bycatch reduction methods will help to keep short-tailed albatross mortality at a low level in this fishery, even with a growing short-tailed albatross population.

8.0 CUMULATIVE EFFECTS

Cumulative effects are the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area. Future Federal actions that are unrelated to the proposed action are not considered in this section if they require separate consultation pursuant to section 7 of the ESA.

8.1 State Managed Fisheries

State managed fisheries occur 0 to 3 nautical miles offshore, with the exception of the Tanner crab fishery, which extends into Federal waters. The salmon, herring, and shellfish State managed fisheries have the potential to overlap with short-tailed albatross in State waters. However, short-tailed albatross is a continental edge specialist. They can be common nearshore, but only where upwelling hotspots occur (Piatt et. al 2006). There is little chance of interaction between short-tailed albatross and the State managed fisheries, except near the Aleutian Islands.

8.2 Increased Marine Traffic

Increased marine traffic could affect short-tailed albatross through disturbance, collisions, and more significantly from accidental fuel spills. In the Chukchi and Beaufort Seas, decline in the extent of Arctic sea-ice in the summer and increase in the length of the ice-free season has prompted interest in shipping within and through Arctic waters via the Northwest Passage (Brigham and Ellis 2004). Ships operating, or that could operate in the area, include military vessels, pleasure craft, cruise ships, barges, scientific research vessels, and vessels related to oil, gas, or mineral development.

Thousands of vessels transit the Great Circle Route through the Aleutian Islands each year and the level of use is expected to double into the next several decades (Nuka 2005). DNV and ERM (2010a) conducted an evaluation of existing and future spill risk through the Aleutians. Using models incorporating the frequency of use, the occurrence and consequences of spills, and projected future conditions, they estimated the amount of material spilled to increase by 48 to 83 percent by 2034, and frequency of accidents to increase by 11 percent. However, the average amount of material spilled per accident is expected to decline due to increasing numbers of vessels with double-hulled protection (required for new tankers; DNV and ERM 2010b). Increased spill risk in the Aleutian Islands will increase baseline risk of contaminant exposure for listed species. New and improved risk reduction measures have been proposed and would benefit listed species (Nuka 2005).

The risk of oil spills in the Bering and Chukchi Seas is also increasing. As sea-ice recedes due to climate change, the potential for increases in Arctic shipping continues to grow. Although short-tailed albatross have only rarely been observed in the Chukchi Sea, the reduction in sea-ice and the increasing numbers of widely ranging sub-adult short-tailed albatrosses may result in a greater number of albatrosses in Arctic waters (Day et al. 2013; Gall et al. 2013) where they could be exposed to petroleum products spilled in Arctic shipping accidents.

Although the risk of spills and potential for impacts to short-tailed albatrosses exists in many places throughout their range, most spills occurring in the action area would not affect enough albatross to raise concerns for the well-being of the population. This is because short-tailed albatross have a very broad range, spills generally have localized effects, and large spills with wide-spread impacts are highly unlikely to occur.

9.0 CONCLUSION

After reviewing the current status of the short-tailed albatross, the environmental baseline for the action area, the effects of the proposed action on the short-tailed albatross, and the cumulative effects, it is the USFWS's biological opinion that the activity, as proposed, is not likely to jeopardize the continued existence of the short-tailed albatross. Our conclusion is based on the following:

1. We expect few, if any, short-tailed albatrosses will be killed or injured as a result of bycatch caused by the halibut fishery in U.S. Convention waters off Alaska;
2. We expect other proposed methods of fishing, not covered by the NMFS Observer Program, to have a very low likelihood of causing significant injury or death to short-tailed albatross; and
3. We do not expect the estimated rate of injury or death caused by the halibut fishery to reduce the survival or recovery of the species, nor substantially delay the rate at which the species could recover in the absence of this injury or mortality.

This conclusion is consistent with the Short-tailed Albatross Recovery Plan, which states that the short-tailed albatross is not declining due to seabird bycatch in commercial fisheries (USFWS 2008). However, the plan does state that it is important that we continue to make efforts to acquire adequate seabird bycatch information from all fisheries within the range of the short-tailed albatross, so that we can detect which fisheries may begin to have deleterious population-level effects upon this species in the future (USFWS 2008). Given that the population has increased at a relatively rapid rate while this fishery has been operating, and that the current estimated annual mortality is one bird per year, it is the USFWS's opinion that the proposed action will not appreciably reduce the likelihood of the short-tailed albatross recovery.

10.0 INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened wildlife species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the USFWS to include significant habitat modification or degradation that results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the USFWS as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking

under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement (ITS).

In June 2015, the USFWS finalized new regulations implementing the incidental take provisions of section 7(a)(2) of the ESA. The new regulations also clarify the standard regarding when the USFWS formulates an ITS [50 CFR 402.14(g)(7)], from "…if such take may occur" to "…if such take is reasonably certain to occur." This is not a new standard, but merely a clarification and codification of the applicable standard that the USFWS has been using and is consistent with case law. The standard does not require a guarantee that take will result; only that the USFWS establishes a rational basis for a finding of take. The USFWS continues to rely on the best available scientific and commercial data, as well as professional judgment, in reaching these determinations and resolving uncertainties or information gaps.

The likelihood of documenting short-tailed albatross take in the halibut fisheries has increased due to the addition of observer coverage to the commercial halibut fishery in 2013 and increasing short-tailed albatross population. However, the number of commercial halibut vessels has decreased since 2009 and the data do not seem to indicate a concurrent increase in number of short-tailed albatross takes. There have been no known takes since 1987, and no evidence to suggest there would be future takes.

11.0 AMOUNT OR EXTENT OF TAKE

The USFWS anticipates a take of no more than one (1) short-tailed albatross in a typical year as a result of this continuing action. The incidental take is expected to be in the form of mortality, due to birds drowning as a result of bycatch from hook-and-line halibut gear. To account for inter-annual variability in the actual take observed and document by the marine observers, a floating 2-year period (based on calendar year, January 1 through December 31), will be used to quantify the total reported take in each 2-year take average. The reported take should not exceed two (2) albatross in a 2-year period.

12.0 REASONABLE AND PRUDENT MEASURES

The measures below are non-discretionary, and must be undertaken by the NMFS so that they become binding conditions of any grant or permit issued to any applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The NMFS has a continuing duty to regulate the activities covered by this ITS. If the NMFS (1) fails to assume and implement the terms and conditions or (2) fails to require cooperators to adhere to the terms and conditions of the ITS through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the NMFS must report the progress of the action and its impact on the species the USFWS as specified in this ITS [50 CFR §402.14(i)(3)].

The USFWS believes the following reasonable and prudent measure (RPM) is necessary and appropriate for the NMFS to minimize take of short-tailed albatross:

RPM 1: The NMFS must ensure that the effects of their action are commensurate with the analysis contained within this BO.

13.0 TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the ESA, the NMFS must comply with the following terms and conditions, which implement the reasonable and prudent measures, described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

Terms and conditions (T&C) include monitoring, review, reporting, (see 50 CFR 402.14(i)(3)) and disposition of specimens (see 50 CFR 402.14(i)(1)(v)):

T&C 1: The NMFS will continue to coordinate a multi-stakeholder Alaska Groundfish and Halibut Seabird Working Group as an advisory body to the NMFS and the USFWS for the purposes of reducing fishery interactions with short-tailed albatross and other seabirds. In coordination with the Alaska Groundfish, Halibut, and Seabird Working Group, NMFS will be responsible for review of new information and developing recommendations regarding changes to the groundfish and halibut fisheries off Alaska that will reduce risk of harm to short-tailed albatross. Example recommendations may include developing new analyses or reports, changes to sampling protocols, recommending additional conservation measures, updating species risk assessments, and advise if reinitiation is warranted.

T&C 2: The USFWS anticipates no more than one (1) short-tailed albatross will be incidentally taken in a typical year as a result of the proposed action. However, to account for inter-annual variation, the USFWS anticipates no more than two (2) short-tailed albatross will be incidentally taken over a floating 2-year period (based on calendar year, January 1 through December 31). If, during the course of the proposed action, this level of incidental take is exceeded (no more than two short-tailed albatross in a 2-year floating period), such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The NMFS must immediately provide an explanation of the causes of the taking and review with the USFWS the need for possible modification of the reasonable and prudent measures.

14.0 REPORTING REQUIREMENTS

Pursuant to 50 CFR 402.14(i)(3), the NMFS must report the progress of the action and its impact on the species to the USFWS as specified in this incidental take statement.

1. The NMFS will continue to require that all short-tailed albatross caught, regardless of gear type, and regardless of whether the mortality occurs in a sampled portion of the haul, be retained and reported immediately to the NMFS. The NMFS will then inform the USFWS of any mortality within two (2) business days of the initial reporting. The following USFWS notifications should be made:

   Alaska U.S. Fish and Wildlife Law Enforcement Office: 800-858-7621,
   Anchorage Fish and Wildlife Conservation Office, Field Supervisor: 907-271-2787.

2. The NMFS will continue to provide to the USFWS, on an annual basis, bycatch estimates of the number of short-tailed albatross taken, in the commercial hook-and-line halibut fisheries. Reports should be sent to the Anchorage Fish and Wildlife Conservation Office, Field Supervisor, 4700 BLM Rd., Anchorage, Alaska 99507, by June of the following year.

15.0 DISPOSITION OF DEAD OR INJURED SPECIMENS

The NMFS will request that all fishing vessels temporarily keep all unidentified albatross taken during a haul until the observer has had the opportunity to identify as a listed or non-listed species. If no observer is on board, carcasses should be retained for confirmation of non-listed albatross, or pictures documenting the species should be taken for verification.

The NMFS will advise fishery observers and fishermen that every effort should be made to recover any dead short-tailed albatross, including gaffing them if they fall off of the hook. Short-tailed albatross specimens should be frozen immediately, with identification tags attached directly to the carcass, and a duplicate identification tag attached to the bag or container. Identification tags should include species, date of mortality, name of vessel, location (latitude and longitude) of mortality, observer or skipper name, and any band numbers. The specimen must remain frozen and shipped as soon as possible. Coordinate with the Anchorage Fish and Wildlife Conservation Office prior to shipping.

If an injured or sick short-tailed albatross is located, call the Alaska Sea Life Center stranded animal hotline: 1-888-774-7325. Then inform the USFWS at 1-800-858-7621. Live birds must be retained in a safe location. Release overboard shall occur if it looks normal and exhibits all of the following traits: the bird is capable of holding its head erect, and the bird response to noise and motion stimuli; the bird breathes without noise; the bird can flap both wings, and it can

retract the wings to a normal folded position on the back; and the bird is capable of elevating itself to stand on both feet, with its toes pointed in the proper position (forward); and it is dry.

16.0 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The USFWS believes the following conservation recommendations will reduce the impact of the proposed action on the short-tailed albatross within the action area:

1. Continue to implement the use of streamer lines to minimize the chances of interaction between the short-tailed albatross and hook-and-line gear, and continue to explore and research additional seabird conservation measures that could further reduce the risk of injury or mortality.
2. To the maximum extent practicable, fishing vessels should avoid setting hook-and-lines when short-tailed albatross are in the immediate area.
3. To the maximum extent practicable, fishing vessels should not discharge offal while setting or retrieving hook-and-lines.
4. The NMFS should work with the fisheries to report to the Council and to the Alaska Groundfish, Halibut, and Seabird Working Group additional seabird bycatch minimization measures, if any, employed on a vessel.

The USFWS requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

17.0 REINITIATION NOTICE

This concludes formal consultation on the action outlined in your BA. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to

section 7(o)(2) may have lapsed and any further take could be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending reinitiation.

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Appendix A

Table A-1. Vessel counts unique to each gear type. The number of vessels that exclusively use a particular gear type are shown with the number of vessels that use that gear type in addition to another gear type are shown in parentheses. Source: NMFS 2017.

	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Hook-and-line	1,123 (1,192)	1,088 (1,161)	1,101 (1,154)	1,049 (1,112)	994 (1,034)	923 (963)	859 (887)	842 (879)
Troll	99 (169)	107 (177)	113 (167)	95 (154)	102 (144)	27 (63)	27 (52)	25 (55)
Jig	21 (24)	15 (20)	17 (24)	19 (23)	22 (23)	2 (6)	3 (6)	4 (11)

Appendix B

Table B-1. Seabird avoidance gear requirements for vessels, based on area, gear, and vessel type.

If you operate a vessel deploying hook-and-line gear, other than snap gear, in waters specified at § 679.24(e)(3), and your vessel is...	then you must use this seabird avoidance gear in conjunction with requirements at § 679.24(e)...
>26 feet to ≤55 feet LOA and without masts, poles, or rigging	minimum of one buoy bag line
>26 feet to ≤55 feet LOA and with masts, poles, or rigging	minimum of a single streamer line of a standard specified at § 679.24(e)(4)(ii)
>55 feet LOA	minimum of a paired streamer line of a standard specified at § 679.24(e)(4)(iii)
If you operate a vessel deploying hook-and-line gear and use snap gear in waters specified at § 679.24(e)(3), and your vessel is...	then you must use this seabird avoidance gear in conjunction with requirements at § 679.24(e)...
>26 feet to ≤55 feet LOA and without masts, poles, or rigging	minimum of one buoy bag line
>26 feet to ≤55 feet LOA and with masts, poles, or rigging	minimum of a single streamer line of a standard specified at § 679.24(e)(4)(iv)
>55 feet LOA	minimum of a single streamer line of a standard specified at § 679.24(e)(4)(iv)
If you operate any of the following hook-and-line vessels...	then...
<32 feet LOA in the State waters of IPHC Area 4E	you are exempt from seabird avoidance measures.
in NMFS Reporting Area 649 (Prince William Sound)	
in State waters of Cook Inlet	
in NMFS Reporting Area 659 (Eastern GOA Regulatory Area, Southeast Inside District), but not including waters in the areas south of a straight line at 56°17.25 N. lat. between Point Harris and Port Armstrong in Chatham Strait, State statistical areas 325431 and 325401, and west of a straight line at 136°21.17 E. long. from Point Wimbledon extending south through the Inian Islands to Point Lavinia	
≤55 feet LOA in IPHC Area 4E but not including waters south of 60°00.00 N. lat. and west of 160°00.00 W. long.	

Because short-tailed albatross are not known to frequent these following inside waters (69 FR 1930, January 13, 2004), seabird avoidance requirements are not required for hook-and-line vessels fishing in Prince William Sound (NMFS Area 649), the State waters of Cook Inlet, and Southeast Alaska (NMFS Area 659) *except* for three areas in the inside waters of Southeast Alaska (Figure 3 and 4). The three transition areas where seabird avoidance gear must be used are:

- Lower Chatham Strait south of a straight line between Point Harris (latitude 56° 17.25 N.) and Port Armstrong;
- Dixon Entrance defined as the State of Alaska groundfish statistical areas 325431 and 325401; and
- Cross Sound west of a straight line from Point Wimbledon extending south through the Inian Islands to Point Lavinia (longitude 136° 21.17 E.).

Figure B-1. Exemptions from seabird avoidance measures include hook-and-line vessels: A) <32 feet length overall (LOA) in the State waters (0 to 3 nautical miles) of IPHC Area 4E; B) ≤55 feet LOA in IPHC Area 4E but not including waters south of 60°00.00 N. lat. and west of 60°00.00 W. long.; C) In State waters (0 to 3 nautical miles) of Cook Inlet; D) In the NMFS Reporting Area 649 (Prince William Sound); and E) In Southeast Alaska – NMFS Reporting Area 659, excluding transition areas (see Figure 4). Source: NMFS 2017.

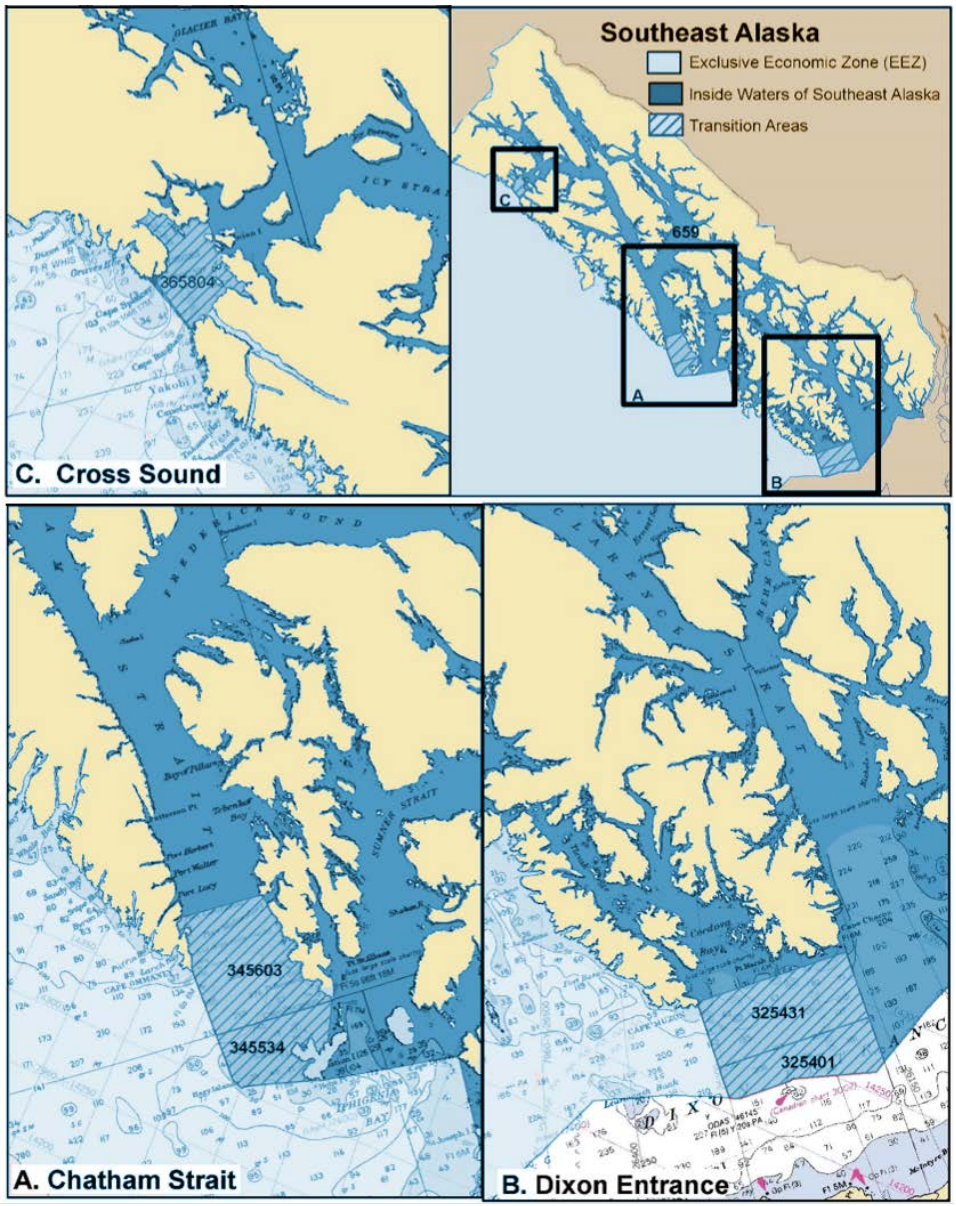

Figure B-2. Transition areas for A) Chatham Strait, B) Dixon Entrance, and C) Cross Sound. In these transition areas, as in EEZ waters, seabird avoidance gear and standards are required. Available at: http://alaskafisheries.noaa.gov/protectedresources/seabirds/ea/figure1_2.pdf.

As covered in the “Disposition of Dead or Injured Specimens” section and as specified at 50 CFR 679.24(e)(2)(vi), every reasonable effort will be made to ensure that short-tailed albatross brought on board alive are released alive. The NMFS proposes to implement the safe release procedures for live birds as contained in the USFWS BO for groundfish fishery (USFWS 2015). Live birds will be released overboard if the bird looks normal and exhibits all of the following traits: the bird is capable of holding its head erect, and the bird responds to noise and motion stimuli; the bird breathes without noise; the bird can flap both wings, and it can retract the wings to a normal folded position on the back; the bird is capable of elevating itself to stand on both feet, with its toes pointed in the proper position (forward); and the bird is dry.

Vessels greater than 26 feet LOA and less than or equal to 55 feet LOA may use discretion with seabird avoidance requirements when winds exceed 30 knots (near gale or Beaufort 7 conditions).

Appendix C

Table C-1. Reported short-tailed albatross mortalities associated with Pacific fishing activities since 1983 (Eich et al. 2016).

Date	Fishery	Observer Program	In sample*	Bird Age	Location	Source
7/15/1983	Net	No	n/a	4 months	Bering Sea	USFWS 2014
10/1/1987	Halibut	No	n/a	6 months	Gulf of Alaska	USFWS 2014
8/28/1995	IFQ sablefish	Yes	No	1 year	Aleutian Islands	USFWS 2014
10/8/1995	IFQ sablefish	Yes	No	3 years	Bering Sea	USFWS 2014
9/27/1996	Hook-and-line CP targeting Pacific cod	Yes	Yes	5 years	Bering Sea	USFWS 2014
4/23/1998	Russian salmon drift net	n/a	n/a	< 1 year	Bering Sea, Russia	USFWS 2014
9/21/1998	Hook-and-line CP targeting Pacific cod	Yes	Yes	8 years	Bering Sea	USFWS 2014
9/28/1998	Hook-and-line CP targeting Pacific cod	Yes	Yes	Sub-adult	Bering Sea	USFWS 2014
7/11/2002	Russian **	n/a	n/a	3 months	Sea of Okhotsk, Russia	USFWS 2014
8/29/2003	Russian demersal hook-and-line	n/a	n/a	3 years	Bering Sea, Russia	USFWS 2014
8/31/2006	Russian **	n/a	n/a	1 year	Kuril Islands, Russia	USFWS 2014
8/27/2010	Hook-and-line CP targeting Pacific cod	Yes	Yes	7 years	Bering Sea/ Aleutian Islands	USFWS 2014
9/14/2010	Hook-and-line CP targeting Pacific cod	Yes	Yes	3 years	Bering Sea/ Aleutian Islands	USFWS 2014
4/11/2011	Sablefish demersal hook-and-line	Yes	Yes	1 year	Pacific Ocean, Oregon	USFWS 2014
10/25/2011	Hook-and-line CP targeting Pacific cod	Yes	Yes	1 year	Bering Sea	USFWS 2014
5/24/2013	Hook-and-line seabird bycatch research	No	n/a	1 year	Pacific Ocean, Japan	USFWS 2014
9/7/2014	Hook-and-line CP targeting Greenland turbot	Yes	No	5 years	Bering Sea	NMFS 2014

9/7/2014	Hook-and-line CP targeting Greenland turbot	Yes	Yes	Sub-adult	Bering Sea	NMFS 2014b
12/16/14	Hook-and-line CP targeting Pacific cod	Yes	Yes	< 1 year	Bering Sea	NMFS 2015

CP = catcher/processor
* *In sample* refers to whether a specimen was in a sample of catch analyzed by a fisheries observer.
**Specifics regarding the type of fishery are unknown.

Appendix D

Table D-1. Short-tailed albatross population estimates on Torishima Island, Senkakus Islands, and Bonin Islands, Japan (Sievert and Hasegawa, unpublished population model, 2017).

	Torishima		**Senkakus**		**Bonin**		
Winter-Spring	***Breeding***	***Non-Breeding***	***Breeding***	***Non-Breeding***	***Breeding***	***Non-Breeding***	**Total**
2008-2009	1256	1292	238	240	0	0	3027
2009-2010	1365	1400	257	263	0	0	3285
2010-2011	1482	1519	278	286	0	0	3566
2011-2012	1609	1648	302	311	0	0	3870
2012-2013	1747	1789	327	338	6	12	4219
2013-2014	1895	1943	355	366	7	13	4580
2014-2015	2056	2110	386	396	7	14	4971
2015-2016	2232	2291	420	430	8	16	5396
2016-2017	2422	2486	456	467	9	17	5856