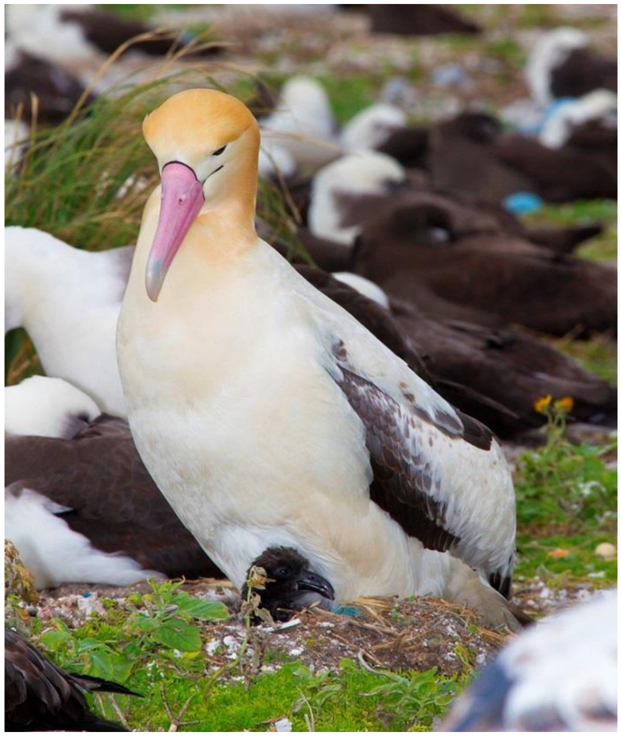
5-Year Review: Summary and Evaluation



Short-tailed Albatross
(Phoebastria albatrus)

U.S. Fish and Wildlife Service
Anchorage Fish and Wildlife Field Office
Anchorage, Alaska

1.0 GENERAL INFORMATION

1.1 Reviewers:

Lead Regional or Headquarters Office:
Steve Klosiewski, Region 7, Alaska

Lead Field Office:
Ellen Lance, Anchorage Fish and Wildlife Office, USFWS, Alaska

Cooperating Field Office(s):
Laura Todd, Oregon Fish and Wildlife Office (Newport), Oregon
Jeff Chan, Washington Fish and Wildlife Office, Washington

Cooperating Regional Office(s):
Sarah Hall/Grant Canterbury, Region 1, Oregon

1.2 Purpose of 5-Year Reviews:

The U.S. Fish and Wildlife Service (USFWS) is required by section 4(c)(2) of the Endangered Species Act (Act) to conduct a status review of each listed species once every 5 years. The purpose of a 5-year review is to evaluate whether or not the species' status has changed since it was listed (or since the most recent 5-year review). Based on the 5-year review, we recommend whether the species should be removed from the list of endangered and threatened species, be changed in status from endangered to threatened, or be changed in status from threatened to endangered. Our original listing as endangered or threatened is based on the species' status considering the five threat factors described in section 4(a)(1) of the Act. These same five factors are considered in any subsequent reclassification or delisting decisions. In the 5-year review, we consider the best available scientific and commercial data on the species, and focus on new information available since the species was listed or last reviewed. If we recommend a change in listing status based on the results of the 5-year review, we must propose to do so through a rule-making process including public review and comment.

1.3 Methodology Used to Complete the Review:

The USFWS reviewed the science and assessed the status of the short-tailed albatross *(Phoebastria albatrus)* using the following information: 1) available information and reviewed activities undertaken since the completion of the previous 5-year review in 2009; 2) progress of recovery actions (USFWS 2008); 3) new information regarding the status of threats to the species; and 4) the recovery criteria in the recovery plan (USFWS 2008). This review was conducted by the Anchorage Fish and Wildlife Office.

In addition, we reviewed the best scientific and commercial data received from the public and information from knowledgeable individuals, including Rob Suryan and Amanda Gladics at Oregon State University, who provided recent data relevant to the status of the species. The Short-Tailed Albatross Recovery Team reviewed section 2.2 Review Summary and provided input on the recommendations needed to address information gaps and continue progress toward recovery of the species.

More information on short-tailed albatross can be found at:
http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B00Y.

1.4 FR Notice citation announcing initiation of this review:

Federal Register 79:86 (May 5, 2014) p 25613

2.0 REVIEW ANALYSIS

2.1 Application of the 1996 Distinct Population Segment (DPS) Policy:

Not Applicable

2.2 Review Summary

2.2.1 Most recent status review available

The short-tailed albatross was originally listed as endangered in accordance with the Endangered Species Conservation Act of 1969 (ESCA) as a foreign species. On July 31, 2000, the listing was revised to reflect the short-tailed albatross as endangered throughout its range (Federal Register 65:147 [July 31, 2000] p 46643). Under the Endangered Species Act, a final recovery plan was completed on September 17, 2008, (USFWS 2008), and a 5-year review was completed on September 24, 2009, (USFWS 2009). That 5-year review assessed information since the 2000 listing decision and concluded with a recommendation of no change in the endangered classification for the short-tailed albatross. The 2009 5-year review comprises a complete listing history, five factor analysis, and discussion on the species status including biology and habitat, threats, management efforts, and meeting of recovery criteria. Information stated in the Recovery Plan or the 2009 5-year review is not repeated in this document.

2.2.2 New information since previous status review

2.2.2.1 Accomplishment of recovery criteria:

Recovery Criteria: The short-tailed albatross may be **reclassified from endangered to threatened** under the following conditions:

- The total breeding population of short-tailed albatross reaches a minimum of 750 pairs; AND
- At least 3 breeding colonies each exhibiting a 3-year running average growth rate of >6 percent for >7 years, at least 2 of which occupy island groups other than Torishima with a minimum of >50 breeding pairs each.

The species 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 >6 percent for >7 years; AND
- At least 250 breeding pairs exist on 2 island groups other than Torishima, each exhibiting >6 percent growth for >7 years; AND
- A minimum of 75 pairs occur on a site or sites other than the Senkaku Islands.

The short-tailed albatross is making good progress toward meeting some of the recovery criteria, but because most birds still nest on Torishima (Figure 1), the potential for catastrophic events devastating the main breeding colonies still puts the entire population at risk. Overall population size of 750 breeding pairs required for reclassification to threatened was estimated to have been met in 2013 and the delisting criteria of 1,000 breeding pairs is estimated to be met in 2017 (P. Sievert, pers. comm. 2010). The distribution of these breeding pairs is approximately 78 percent on Torishima and 22 percent in the Senkaku Islands. Whereas the numbers of breeding pairs on Torishima are verifiable by annual nest counts, 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 3-year running average (defined as the average of the present year and two previous years) growth rate for the population on Torishima meets the recovery criteria for delisting (see section on current population status below).

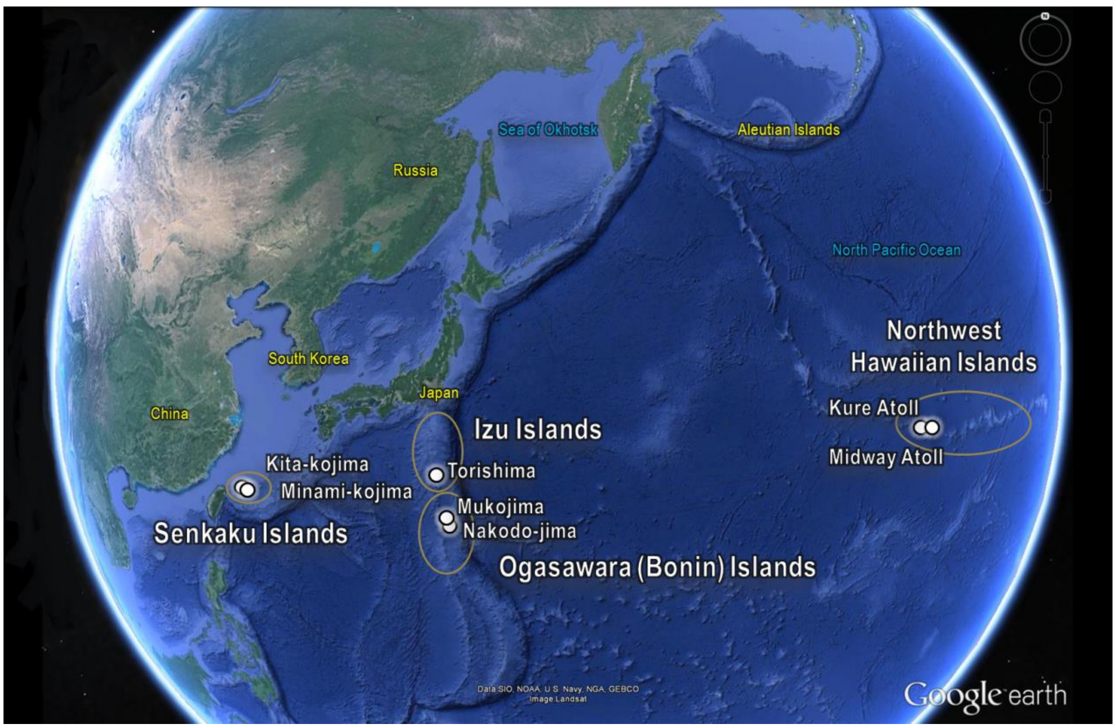


Figure 1. Current short-tailed albatross breeding locations in the North Pacific. Specific islands and their island groups are indicated.

The challenge to recovering the species will be the growth of the new colonies at islands other than Torishima and the Senkakus. Following the intensive translocation effort from 2008-2012, there have been early successes in establishing a colony at Mukojima in the Ogasawara (Bonin) Islands. One pair nested on Mukojima in 2012 and 2013, but did not successfully hatch an egg, and another pair having a nearly fledged chick was discovered at nearby Nakodo-jima (also in the Ogasawara Island group) in 2014 (Ogasawara Institute of Boninology unpubl. data). However, based on a deterministic population model, the population in the Ogasawara (Bonin) Islands is not projected to reach the 50 breeding pairs needed for reclassification until 2046 and 75 breeding pairs required for delisting until 2052 (P. Sievert, pers. comm. 2010).

It is possible that significant immigration of birds to the Ogasawara (Bonin) Islands from the other colonies could greatly accelerate growth, reaching the target population size before the projected date. There also have been recent breeding attempts at Kure Atoll in the northwest Hawaiian Islands, and successful breeding during three seasons by a pair at Midway Atoll in the Northwestern Hawaiian Islands (USFWS, unpubl. data). It is important to emphasize that both reclassification and delisting criteria require verified information about actual colony growth at in the Senkaku Islands (Minami-kojima and Kita-kojima).

2.2.2.2 New information on the species' biology, life history, habitat, and ecosystem:

Breeding biology

There is little new information on the breeding biology of short-tailed albatross since the most recent 5-year review (USFWS 2009). A female-female pair of short-tailed albatrosses has been suspected at Kure Atoll in the Northwestern Hawaiian Islands (Figure 1); two eggs have been observed at this nest and neither egg has successfully hatched. The eggs appear to be infertile, possibly because of the absence of a male short-tailed albatross at the site. Successful breeding and the adaptive benefits of female-female pairings in small, growing colonies have been documented in the closely related Laysan albatross (Young et al. 2008, Young and VanderWerf 2014).

Breeding habitat

There is no new information on breeding habitat since the most recent 5-year review (USFWS 2009). Please see section below on breeding distribution for new information on newly re-occupied breeding sites.

Marine Habitat

The general description of marine habitat for adult short-tailed albatrosses provided in the most recent 5-year review (USFWS 2009) has changed little in the intervening years, with the exception of additional evidence for the importance of waters around the Aleutian Islands for feeding while undergoing extensive molt. 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, unpubl. data). Furthermore, satellite tracking data indicated individuals were spending an average of 19 consecutive days (maximum of 53 days) within a 62-mile (mi) (100 kilometer (km)) radius of some Aleutian passes (R. Suryan and K. Courtot, unpubl. data). In addition, at-sea surveys from 2009-2013 have increased data on pelagic distribution of albatrosses in the Bering Sea and Aleutian Islands, with concurrent data gathered on physical and biological characteristics, which will provide additional information on habitat and prey associations.

Satellite tagging of younger age classes has continued and is providing more details about the marine habitats of 1-3 year old short-tailed albatrosses (Figure 2). As of 2014, scientists from Japan and the United States have attached satellite tags on 99 birds (Table 1).

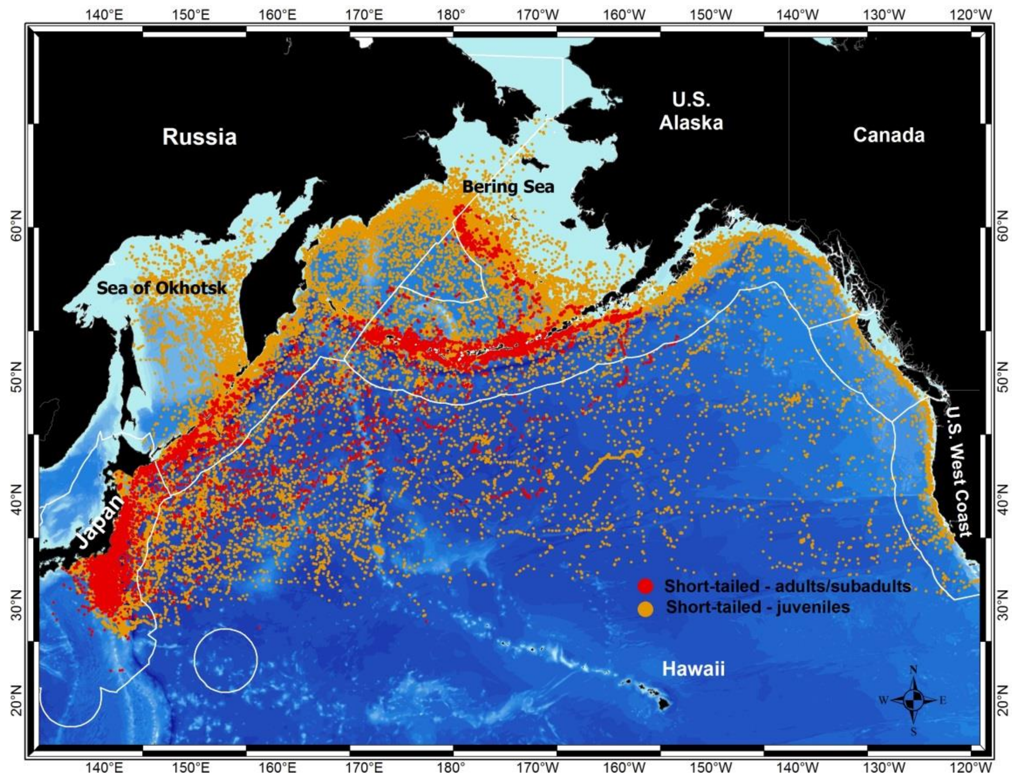


Figure 2. Locations of 99 short-tailed albatrosses tracked between 2002-2012, showing adult and juvenile distributions in the North Pacific (Suryan et al. 2006, 2007, 2008, Suryan and Fischer 2010, Deguchi et al. 2014, Yamashina Institute for Ornithology and Oregon State University, unpublished data). White lines represent the exclusive economic zones of countries within the range of short-tailed albatrosses.

A total of 62 chicks were fitted with satellite tags just prior to fledging in 2008-2012 to study post fledging dispersal and survival of translocated and naturally-reared chicks (Deguchi et al. 2014). Data from 9 of the 62 chicks were not usable for post-fledging analyses due to suspected post-fledging mortality. 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). Juvenile short-tailed albatross have a distinct distribution from adults (Figure 2). Juvenile and younger sub-adult birds (up to 2 years old) range much more widely than the adult birds, inhabiting the Sea of Okhotsk, a broader region of the Bering Sea, and the west coast of North America (O'Connor 2013). Sub-adult birds also travel greater daily distances (mean = 191 km/day [119 mi/day] in first year of flight, 181 km/day [112 mi/day] in second year of flight; O'Connor 2013) than adults (133 km/day [83 mi/day]; Suryan et al. 2007).

Although the highest concentrations of short-tailed albatross are found in the Aleutian Islands and Bering Sea (primarily outer shelf) regions of Alaska, subadults appear to be distributed along the west coast of the U.S. more than has been previously reported (Figure 3) (Guy et al. 2013).

Table 1. Sample sizes for satellite tracking of various ages and breeding stages of 99 short-tailed albatrosses satellite-tagged during 2002-2012. The year(s) tagging occurred on specific ages and breeding status are marked with "X".

	# of Birds*	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Incubation	5							X				
Chick-rearing	26					X	X	X				
Post-breeding (adult/subadult)	40	X	X		X	X	X	X				
Juveniles (<1 yr)	59		X			X		X	X	X	X	X
Total	99	X	X		X	X	X	X	X	X	X	X

*The number of birds tagged are those with sufficient data for analysis, in some cases a single bird will contribute to samples in multiple categories (e.g., a bird that is tracked during, incubation, chick-rearing, and post-breeding)

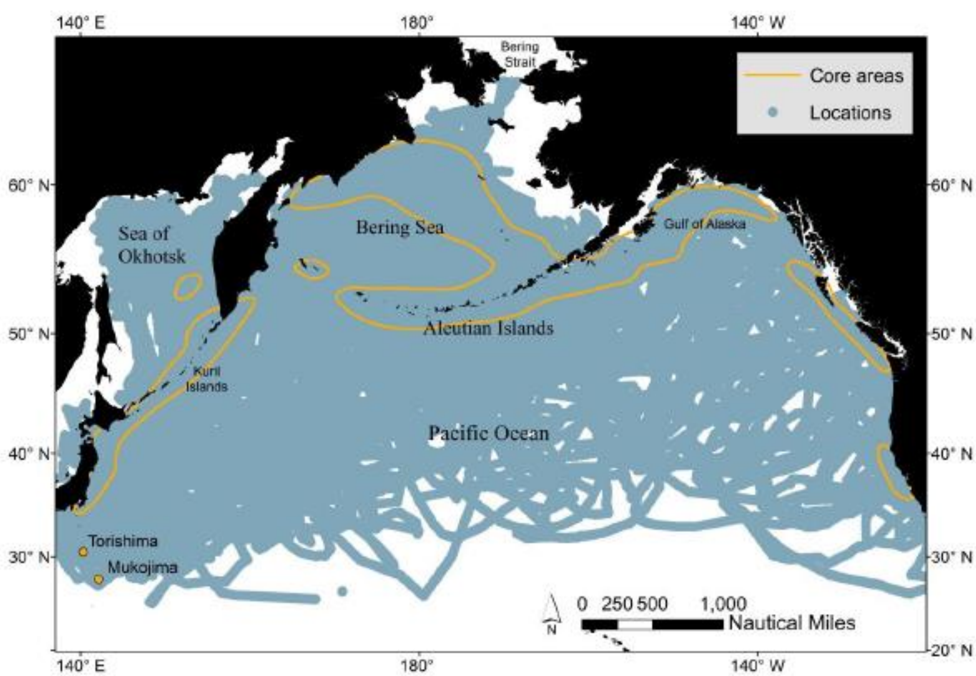


Figure 3. Core habitat (50 percent kernel) and point locations showing extent of travel for immature short-tailed albatross (O'Connor 2013).

Building on the earlier work of Zador et al. (2008) in characterizing marine distribution of short-tailed albatross in relation to trawl fisheries in Alaska, new research has been conducted on short-tailed albatross marine distribution in relation to the spatial and temporal distribution of commercial fisheries in the Bering Sea (O'Connor 2013) and on the U.S. west coast (Guy et al. 2013). O'Connor (2013) examined locations of sub-adult short-tailed albatross and fishing locations of vessels in 2008-2011 for fine scale spatial and temporal associations (≥10 km (6 mi) and ≥ 2 hours). She found albatross-vessel association hotspots at several canyons along the Bering Sea shelf, but that some recent short-tailed albatross mortalities occurred outside of these association hotspots (O'Connor 2013).

Guy et al. (2013) examined North Pacific albatross locations (GPS tracking locations, at-sea sightings, and known mortalities) for overlap with groundfish and shrimp commercial fishing effort on the U.S. west coast. They found that distribution for the more common black-footed albatross (*Phoebastria nigripes*) is similar to short-tailed albatrosses, and therefore can be used as a proxy for short-tailed albatross distribution on the U.S. west coast in assessing fishery interaction. Additionally, the longline fishery for sablefish had the greatest degree of overlap with these two albatrosses (Guy et al. 2013). Off the west coast of Canada, longline fisheries for halibut and sablefish overlap the most with the distribution of black-footed and short-tailed albatrosses (K. Morgan, unpubl. data).

Foraging Ecology and Diet

Please see the most recent 5-year review (USFWS 2009) for complete description of foraging ecology and diet of short-tailed albatross. New information on diet includes an unpublished study conducted by the Yamashina Institute for Ornithology following the catastrophic failure of the Fukushima Daiichi Nuclear Power Plant on March 11, 2011, and the subsequent release of radiation into the surrounding coastal waters. The study examined regurgitations from short-tailed albatrosses at Torishima and failed to detect radiation in the diets.

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 in the Bering Sea/Aleutian Islands region. Overall the much higher abundance of albatrosses in the Aleutians compared to the Bering Sea mirrored the relative density of squid, which is estimated to be approximately seven times higher in the Aleutians (Ormseth 2012). Suryan and Fischer (2010) conducted dietary stable isotope analysis of blood from albatrosses in the Aleutian Islands/Bering Sea and found short-tailed and black-footed albatrosses had a more similar diet than that of Laysan albatrosses. This finding was consistent with the use of more similar marine habitats for black-footed and short-tailed albatross compared to Laysans during concurrent satellite tracking studies.

2.2.2.3 New information on trends in populations, demography, and spatial distribution:

Current Population Status

Following the methods from the most recent 5-year review (USFWS 2009), population estimates were derived from Torishima colony direct counts of adults, eggs, chicks, and productivity estimates made by Dr. Hiroshi Hasegawa and staff of the Yamashina Institute for Ornithology. Dr. Hasegawa has also made four counts of birds in the Senkaku Islands (1990, 1991, 2001, 2002), but none since 2002. In making total population estimates, we extrapolate Senkaku population data under the assumption that factors affecting population growth have remained similar to those observed on Torishima. As noted above, the Senkaku breeding population estimate is an unverified projection beyond 2002 (due to restricted access to the island), unlike Torishima which is visited annually to verify population growth. Population estimates are calculated using a deterministic population model (P. Sievert, unpublished data, 2014).

Estimate of adult (breeding age) birds:

- Torishima - The 2013-2014 population counts of short-tailed albatross **indicate 609 breeding pairs** (or 1,218 breeding adults) (H. Hasegawa unpublished report, February 2014; Appendix 1). Assuming that 25 percent of breeding-age adults do not return to breed each year (H. Hasegawa pers. comm. December 2002), this would represent an **adult population of 1,624 at Torishima** at the start of the 2013-2014 nesting season.
- Senkaku Islands - In the spring of 2002, H. Hasegawa counted 33 fledglings, 32 at Minami-kojima and 1 at Kita-kojima. Assuming a breeding success rate of 67 percent (mean rate for Torishima colony over the last 15 years), this would represent 49 nesting pairs, or 98 adults in 2002-03 (P. Sievert, pers. comm. 2014). During the same visit in 2002, H. Hasegawa counted 77 immature/adult birds on Minami-kojima and 4 immature birds on Kita-kojima for a total of 81 immature/adult individuals on site. If this population is growing at 7.5 percent per year (growth rate of Torishima colony), the total adult population might be 220 in 2013-2014, representing 110 breeding pairs. Assuming that here too, some 25 percent of the adults do not return to breed each year, we estimate **the population of breeding-age adults that potentially nest on the Senkaku Islands to be about 293 at the start of the 2013-2014 nesting season**.
- Other breeding sites – As of 2013-2014, there are four other documented active breeding sites for short-tailed albatross. Two pairs have been documented in the Ogasawara (Bonin) Island group, at Muko-jima and Nakodo-jima. In the Northwestern Hawaiian Islands, one pair is breeding at 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. Other breeding age adults that are not pair-bonded have been reported at these sites, and therefore if we assume the same 25 percent of breeding-age adults do not return to breed each year, this would represent an **adult population of 11 at these breeding sites**.

Therefore, the **total population estimate for breeding age short-tailed albatrosses as of the 2013-2014 nesting season is 1,928 individuals**.

The estimates derived from a deterministic population model (Sievert 2003) show good congruence (within 2 percent) with observed number of eggs (direct counts) at Torishima, which lends credibility to the estimates for the Senkaku Islands, assuming no external conditions are limiting successful nesting there. Assuming that adults comprise 50 percent of the total population of short-tailed albatross (based on the age structure of the Torishima population), we estimate the population at the end of the 2013-2014 breeding season to be 4,299 (1,928 adults/0.50379), plus 472 fledglings, plus 55 estimated chicks that survived from the 5 years of translocations to Mukojima. Thus, the **total population estimate of short-tailed albatrosses is 4,354 individuals.**

The population growth rate is determined by annual increases in eggs laid (by breeding pairs) at Torishima. The 3-year running average population growth rate based on eggs laid at Torishima since 2000 ranges from 5.2 - 9.4 percent (Table 2, H. Hasegawa, pers. comm. 2014).

Table 2. Count of adult breeding pairs and estimated population growth rates for short-tailed albatross on Torishima, 2000-2013 (H. Hasegawa, pers. comm. 2014).

Year	Breeding Pairs	Annual Growth Rate (percent)	3-yr Running Mean Growth Rate	Running Growth Rate S.D. (percent)
2000	238		-	-
2001	251	5.46	-	-
2002	267	6.37	-	-
2003	277	3.75	5.19	1.09
2004	302	9.03	6.38	2.16
2005	325	7.62	6.80	2.23
2006	341	4.92	7.19	1.70
2007	382	12.02	8.19	2.93
2008	418	9.42	8.79	2.93
2009	446	6.70	9.38	2.17
2010	481	7.85	7.99	1.12
2011	512.	6.44	7.00	0.61
2012	538	5.08	6.46	1.13
2013	609	13.20	8.24	3.55

Population Viability Analysis

Although the population viability analysis (Finkelstein et al. 2010) was published after the most recent 5-year review (USFWS 2009), the analysis had been made available to the Short-tailed Albatross Recovery Team and had been incorporated in the 2009 review (USFWS 2009). No additional information has become available since the 2009 5-year review.

Demography

Tracking studies have provided better estimates of post-fledging survival of short-tailed albatross, suggesting that 85 percent of fledglings survive to sustained flight (>5 km/h [>3 mph]; Deguchi et al. 2014). No other new estimates of demographic parameters exist. All 70 translocated short-tailed albatross and all chicks at the Hatsunezaki sub-colony on Torishima (since 2004) were marked with field readable color plastic bands. Therefore, a sufficiently large and growing number of individuals (421) over the past 10 years have been marked with field readable color bands to permit future demographic estimates using mark-recapture methods.

Historical Spatial Distribution

There is no new information on the historical spatial distribution on the short-tailed albatross since the 5-year review was completed in 2009.

Current Breeding Distribution

As of 2014, 60 percent (450 eggs at Tsubamezaki / 762 estimate total number of eggs total among all colonies) of the known breeding population of short-tailed albatross continues to use a single colony, Tsubamezaki, on Torishima, Japan. A new colony, Hatsunezaki, at a safer, less actively eroding site on Torishima continues to grow rapidly (Appendix 1) as a result of social attraction efforts (decoys and audio playback) put forth by Yamashina Institute for Ornithology in Japan. In 2013, there were 159 breeding pairs using the new Hatsunezaki site (H. Hasegawa, pers. comm. 2014). The Hatsunezaki colony is now well established and the decoys and audio playback are no longer being used.

As stated in the most recent 5-year review (USFWS 2009), efforts to translocate chicks from Torishima to Mukojima began in 2008 and continued through 2012 (Figure 1). In total, 70 chicks were translocated. These efforts were undertaken in hopes of establishing a third breeding colony on a volcanically inactive or politically stable island within the historic breeding range of the short-tailed albatross. Naturally reared albatrosses were sighted at the Mukojima translocation site in 2008, and hand-reared birds from the 2008 and 2009 cohorts began returning to Mukojima in 2010 (Deguchi et al. 2014). An albatross pair that includes a hand-reared bird has already recruited to the Mukojima breeding site, and the pair laid and incubated an egg in both 2012 and 2013 (Deguchi et al. 2014). Unfortunately, neither egg was viable (T. Deguchi pers. comm., 2012, 2013). The hand-reared bird in this pair is a male from the 2008 cohort and the female is unbanded (suspected to be from the Senkaku Islands). On May 7, 2014, a short-tailed albatross chick near fledging age was discovered on Nakodo-jima, an island 5 km (3 mi) south of Mukojima, in the Ogasawara (Bonin) Island group.

In the Northwestern Hawaiian islands, a pair of short-tailed albatrosses have nested and successfully fledged three chicks on Eastern Island at Midway Atoll since 2010 (Cooper 2013). There is also a pair that is presumed to be female-female (based on two-egg nests) that has nested at Kure Atoll since 2010, but have not successfully hatched a chick (Young 2010).

Current Marine Distribution

As noted above in the Marine Habitat section, extensive satellite tracking of short-tailed albatrosses has occurred, especially breeding adults in 2006-2008 and juveniles in 2008-2012, to provide information on the marine distribution of this species

(Table 1). Tracking efforts have expanded upon the information summarized in the most recent 5-year review (USFWS 2009) based on at-sea sightings (Piatt et al. 2006, Zador et al. 2008). Tracking of all age classes has helped to provide a more complete understanding of the range for this species, and differences between adult and juvenile birds (Figure 2). Both adult and juvenile birds extensively use areas of the western Pacific east of Japan. During most of the incubation period and all of chick-rearing, adult albatrosses foraged extensively in these waters (Suryan et al. 2008, Yamashina Institute for Ornithology and Oregon State University unpubl. data). The distribution of adult and juvenile short-tailed was also similar in their extensive use of the waters among the Kurile Islands, Aleutian Islands, and the outer Bering Sea Continental shelf (Suryan et al. 2006, Suryan and Fischer 2010, Deguchi et al. 2014; Kuletz et al. 2014). Albatrosses used the outer Bering Sea shelf most during summer and fall, with a clear pattern of moving north to the northern submarine canyons (Navarin, Pervenets, Zemchug) in late summer and fall (Zador et al. 2008, O'Connor 2013). During winter birds moved south, but in Alaska they continued to occupy the southeastern Bering Sea, Aleutian Islands, and Gulf of Alaska (O'Connor 2013).

It is clear that juvenile (≤ 1 year old) short-tailed albatrosses travel much more broadly throughout the North Pacific than adult birds (Figure 2). Seasons of overlap in tracking of non-breeding adult and juvenile/sub-adult albatrosses (those individuals not having to return to the breeding colony to tend eggs or chicks) included summer and early fall (May-September). During summer and early fall, juvenile albatrosses traveled extensively in the Sea of Okhotsk, Russia, and western Bering Sea where few adults ventured (Figures 2 and 3). Juvenile albatrosses traveled to the west coast of North America and more extensively throughout the North Pacific transition zone between Hawaii and Alaska (Figures 2 and 4). Additionally, juvenile albatrosses were tracked to Arctic regions of the Bering Strait (Deguchi et al. 2014; Figure 2) and at least one individual was sighted from two different survey vessels in the Chukchi Sea in 2012 (Day et al. 2013; Gall et al. 2013). From multi-year tracking studies of juvenile to sub-adult birds, we see that distribution patterns and habitat use of sub-adult birds become similar to adults by age three (Suryan et al. 2013).

Kuletz et al. (2014) examined 4 decades of data from the North Pacific Pelagic Seabird Database, and showed that short-tailed albatrosses, along with Laysan and black-footed albatrosses, have increased in abundance in the Aleutians and Bering Sea between 1970s and 2000s. Furthermore, the centers of distribution in the Bering Sea have shifted northward, most dramatically for short-tailed albatrosses, at ~ 17 km (10.5 mi)/year. For short-tailed albatross, as the numbers of observations have increased, so has their occupation of northern areas of the outer domain and shelf slope regions.

Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem)

Please see the most recent 5-year review (USFWS 2009) and the Recovery Plan (USFWS 2008) for a complete overview of habitat conditions at the breeding sites. There continues to be abundant suitable habitat available at the current breeding sites and throughout their historic breeding range. The ecosystem conditions throughout the species range have generally remained intact since population pressures from overharvest abated in the early 1900s. As stated in the most recent 5-year review (USFWS 2009), it is difficult to assess and compare change or trends in oceanic conditions. Despite some marine ecosystem changes affecting prey distribution (e.g, in the northern part of this species range; Kuletz et al. 2014), the current population is still well below historic levels and the very rapid population growth of this species infers that the species is not currently limited by breeding or marine habitat.

One documented change in the marine habitat since the most recent review was the release of radiation from the Fukushima Daiichi Nuclear Plant. However, radiation at detectable levels was not documented in short-tailed albatross diets (Yamashina Institute for Ornithology, unpublished data), and therefore exposure to radiation from this event is not expected to lead to any long-term effects on the population.

2.2.2.4 New information on genetics and taxonomic classification:

Genetics, genetic variation, trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding, etc)

Short-tailed albatross retained a high level of genetic variation despite the severe population bottleneck, and therefore inbreeding depression is unlikely to be a factor in species recovery (Kuro-O et al. 2010). Based on mitochondrial DNA, carbon and nitrogen stable isotope ratios, and morphological data from archeological remains of short-tailed albatrosses, Eda et al. (2011) suggested that modern short-tailed albatrosses breeding at Torishima and in the Senkaku Islands descended from two distinct historical populations. The difference between these historic populations is comparable to the differences observed between “sister species” of closely related albatrosses in the Southern Ocean (Eda et al. 2011). However, these findings are currently being treated with caution because they are based on very few modern samples (n =45; 41 from Torishima, 4 from the Senkaku Islands). This topic and new information was discussed by the Short-tailed Albatross Recovery Team in 2012. The team recommended no change in current management practices and recovery objectives at this time. The team decided that it would be premature to recommend changes in management activities without additional genetic analyses from short-tailed albatrosses nesting on the Senkaku Islands. This important genetic information along with verification of population growth reaffirms the importance of gathering more information from the Senkaku population to evaluate recovery goals and activities.

Taxonomic Classification or Changes in Nomenclature

There have been no changes in taxonomic classification or nomenclature since the most recent 5-year review (UFSWS 2009) (but see discussion above regarding recent genetic information).

2.2.2.5 New information about conservation measures:

Habitat Enhancement at Torishima

Since the most recent 5-year review (USFWS 2009), the social attraction efforts with decoys and sound at Hatsunezaki were discontinued. The sub-colony continues to grow, and the social attraction efforts were deemed no longer necessary.

Additional soil stabilization efforts have occurred at the main colony site at Tsubamezaki since 2009. After the February, 2010, mudflows entered the west area of the original colony at Tsubamezaki and killed up to 10 chicks (Yamashina Institute for Ornithology unpubl. data), the Yamashina Institute for Ornithology and the Ministry of the Environment, Japan removed the soils from the central drainage to recover its function. In July 2013, H. Hasegawa built a gabion over the mudflow area to stabilize the ground and transplanted grass along the gabion to further stabilize the slope. In September 2013, the Ministry of the Environment, Japan conducted erosion control efforts at the top of Tsubamezaki cliff. A bypass for water flow to the eastern drainage (running along the base of the eastern cliff) was created with pipes and hoses to reduce the amount of water and mudflows into the central drainage. Rain absorbed into the ground was collected and guided into this bypass. These are areas of continued erosion with erosion control structures that require continued maintenance and replacement of structures. The Ministry of Environment plans to continue erosion control and other habitat management actions for several years to come.

Translocation to Mukojima

As stated above (See "Current Breeding Distribution"), translocation efforts were undertaken in the hopes of establishing a third breeding colony on a volcanically inactive or politically stable island within the historic breeding range of the short-tailed albatross. Between 2008 -2012, a total of 70 chicks were translocated from the Hatsunezaki sub-colony on Torishima to Mukojima. Details on hand-rearing techniques used can be found in Deguchi et al. (2012). Information on post-fledging survival, dispersal and marine habitat use can be found in Deguchi et al. (2014). Additional translocation efforts will not be considered until after a 5-year post translocation evaluation period, during which time researchers will continue to monitor the new colony site at Mukojima and elsewhere to document breeding attempts. As of the 2013-2014 breeding season, two translocated albatrosses (one confirmed and one suspected) have successfully paired and incubated eggs in the Ogasawara Islands (Figure 1). The second bird suspected to have paired may have also reared a chick to fledging. This nest was found on Nakodo-jima, an island 8 km (5 mi) south of Mukojima, late in the breeding season. The parents of the short-tailed albatross chick could not be confirmed, but a translocated albatross was observed near this site earlier in the breeding season. In the 2012-2013 and 2013-2014 breeding seasons, one female albatross translocated in 2008 successfully paired with a naturally-reared bird and reared chicks (probably to fledging) at Hatsunezaki, Torishima.

Fisheries Bycatch Mitigation

Bycatch of short-tailed albatrosses in commercial fisheries continues to be a major conservation concern, especially for younger age classes (82 percent of the 17 reported fishing mortalities were < 4 years old; Yamashina Institute for Ornithology and NMFS unpubl. data). Since the most recent 5-year review (USFWS 2009), five short-tailed albatross mortalities have been observed during commercial fishing activities, three in Alaska, one off Oregon, and one off Japan (Figure 4).

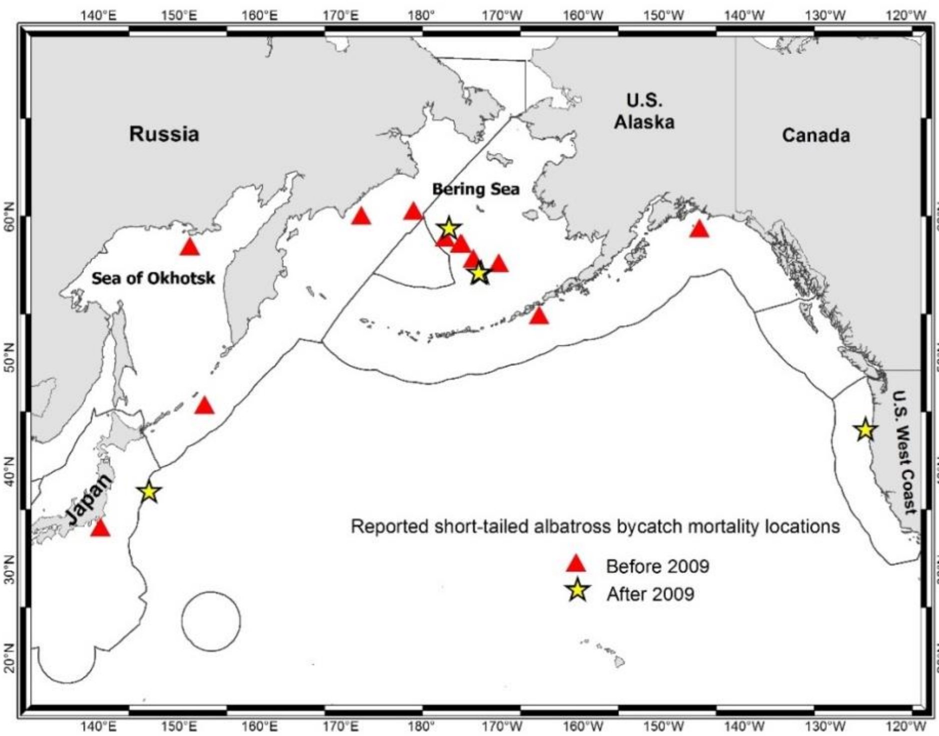


Figure 4. Reported short-tailed albatross mortalities associated with commercial fishery bycatch, 1983- 2014. The 17 bycatch locations are divided into before (n = 12) and after (n = 5) 2009, when the last 5-year review was prepared. Two of the five post-2009 bycatch locations in the Bering Sea were very close to each other and therefore the two locations appear to nearly completely overlap (Yamashina Institute for Ornithology and National Marine Fisheries Service unpubl. data).

For the U.S., these were the first observed mortalities of short-tailed albatrosses in over 12 years (since 1998). During that 12-year period (1998-2010), however, there were three reported mortalities in Russian fisheries (2002, 2003, 2006). Following the mortality of a short-tailed albatross off the U.S. west coast in 2011, the Pacific Fisheries Management Council (PFMC), which provides oversight to fisheries management in the Pacific, adopted recommendations for seabird bycatch mitigation in November 2013. The mitigation requires that streamer lines be deployed during setting operations on commercial fixed gear vessels 55 feet (ft) (17 meters (m)) or greater in length with a safety exception in the event of rough weather (PFMC 2013). The rulemaking process has not yet been completed, but the regulation is expected to be implemented in 2014. Research is underway to develop seabird bycatch options in the west coast sablefish fishery for vessels less than 55 ft (17 m) in length and to confirm the effectiveness of pending new regulations for vessels 55 ft (17 m) and longer (E. Melvin and R. Suryan, pers. comm.). Additionally, efforts are continuing to increase seabird bycatch awareness and the use of seabird deterrents throughout the range of this species (see "Threats" section).

2.2.3 Threats analysis

There are few known new or potential threats to the short-tailed albatross beyond those discussed in the most recent 5-year review (USFWS 2009); however the extent or scope of those threats may have changed since 2009.

2.2.3.1 Present or threatened destruction, modification or curtailment of its habitat or range

Catastrophic Events – Habitat Alteration and Loss

Volcanic activity

Habitat destruction from volcanic eruption continues to pose a significant threat to short-tailed albatross at the primary breeding colony on Torishima. The magnitude of this threat has not changed appreciably since the most recent 5-year review (USFWS 2009).

Erosion/Monsoon Rains

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 unpubl. data). The colony at Hatsunezaki is on more stable ground. Despite the continued growth of both colonies, erosion or slides at Tsubamezaki site could still result in a significant loss to the primary nesting area and the population as a whole.

Global Changes

Climate Change and Ocean Regime Shift

Our analyses under the Act include consideration of ongoing and projected changes in climate. The terms "climate" and "climate change" are defined by the Intergovernmental Panel on Climate Change (IPCC). "Climate" refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007). The term "climate change" thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007). Various types of changes in climate can have direct or indirect effects on species. These effects may be positive, neutral, or negative and they may change over time, depending on the species and other relevant considerations, such as the effects of interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007). In our analyses, we

use our expert judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change.
Although much of the information regarding climate change in the most recent 5-year review (USFWS 2009) continues to be applicable, more research is being conducted to better assess the short and long-term impacts of a changing climate in vulnerable ecosystems such as the North Atlantic, Bering Sea and other Arctic marine environments.

Climate change impacts to short-tailed albatrosses could be direct (e.g., changes to nesting habitat) or indirect (e.g., changes to prey abundance or distribution). Fortunately, the nesting habitat on Torishima, the Ogasawara Islands, and the Senkaku Islands is high enough elevation (above 20 m [70 ft]) to avoid inundation by projected sea level rise within the timeframe of this species meeting recovery criteria. Models for the Northwestern Hawaiian Islands indicate nesting habitat used by short-tailed albatrosses 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 (see “Habitat or Ecosystem Conditions”) may potentially open new foraging habitat or provide a new migration corridor between the Pacific and Atlantic Oceans. As noted above in “Current Marine Distribution” 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.

2.2.3.2 Overutilization for commercial, recreational, scientific, or educational purposes:

Commercial Fishing
Since the most recent 5-year review (USFWS 2009), progress has been made toward understanding the extent of and minimizing the impact of commercial fisheries in the U.S. Reported short-tailed albatross bycatch has remained low (Table 3), and additional conservation efforts have begun in the Eastern Pacific. Since 2009, five short-tailed albatross mortalities associated with commercial fisheries have been reported, three in the Alaskan cod fishery one in the Pacific Coast groundfish fishery, and one during bycatch mitigation research in Japan (Table 3). The reported level of mortality is below the estimated level of individuals that would trigger management concerns, as described in the most recent 5-year review (USFWS 2009).

Table 3. Known short-tailed albatross mortalities associated with North Pacific and west coast fishing activities since 1983.

Date	Fishery	Observer program	In sample*	Bird age	Location	Source
7/15/1983	Net	No	n/a	4 months	Bering Sea	USFWS (2008, page 20)
10/1/1987	Halibut	No	n/a	6 months	Gulf of Alaska	USFWS (2008, page 20)
8/28/1995	IFQ sablefish	Yes	No	1 year	Aleutian Islands	USFWS (2008, page 18)
10/8/1995	IFQ sablefish	Yes	No	3 years	Bering Sea	USFWS (2008, page 18)
9/27/1996	Hook-and-line	Yes	Yes	5 years	Bering Sea	USFWS (2008, page 18)
4/23/1998	Russian salmon drift net	n/a	n/a	Hatch-year	Bering Sea, Russia	USFWS (2008, page 18)
9/21/1998	Pacific cod hook-and-line	Yes	Yes	8 years	Bering Sea	USFWS (2008, page 18)
9/28/1998	Pacific cod hook-and-line	Yes	Yes	Sub-adult	Bering Sea	USFWS (2008, page 18)
7/11/2002	Russian **	n/a	n/a	3 months	Sea of Okhotsk, Russia	Yamashina Institute of Ornithology (YIO; 2011, page 1)
8/29/2003	Russian demersal longline	n/a	n/a	3 years	Bering Sea, Russia	YIO (2011, page 1)
8/31/2006	Russian **	n/a	n/a	1 year	Kuril Islands, Russia	YIO (2011, page 1)
8/27/2010	Cod freezer longline	Yes	Yes	7-year old	Bering Sea/Aleutian Islands	NOAA (2010, page 1)
9/14/2010	Cod freezer longline	Yes	Yes	3-year old	Bering Sea/Aleutian Islands	NOAA (2010, Page 1)
4/11/2011	Sablefish demersal longline	Yes	Yes	1-year old	Pacific Ocean/Oregon	USFWS (2012, page 5)
10/25/2011	Cod freezer longline	Yes	Yes	1-year old	Bering Sea	NOAA (2011, page 1)
5/24/2013	Longline, seabird bycatch mitigation research	No	n/a	1-year old	Pacific Ocean, Japan	YIO, pers. comm. (2014)

* "In sample" refers to whether a specimen was in a sample of catch analyzed by a fisheries observer
** Specifics regarding the type fishery are unknown

Groundfish fishery in the U.S.

As a result of the mortality off the Oregon coast in 2011, the National Marine Fisheries Service (NMFS) consulted with the USFWS to address the impact of the Pacific Coast Groundfish Fishery on short-tailed albatross (USFWS 2012a). The estimated mortality for the Pacific Coast Groundfish Fishery was estimated at two individuals over a running 2-year average. Similar to the regulations for fisheries in Alaska and Hawaii (described in the most recent 5-year review, USFWS 2009), the outcome of that consultation resulted in the following measures to minimize take (i.e., harm or mortality) of short-tailed albatross:

1. Minimize the risk of short-tailed albatross interacting with hooks and lines and reduce the likelihood that they will attack the baited hooks.
2. Establish a multi-stakeholder, Pacific Coast Groundfish and Endangered Species Working Group as an advisory body to the NMFS and USFWS for the purposes of reducing risk to short-tailed albatross. This group will work toward eliminating data gaps and facilitate adaptive management to minimize and avoid take of short-tailed albatross.
3. NMFS shall monitor and report all observed, reported and estimated take, based on the surrogate approach using black-footed albatross, of short-tailed albatross interactions with longline fishing vessels and gear, and report on the efficacy of avoidance and minimization measures.
4. Salvage, for scientific and educational purposes, short-tailed albatross carcasses taken by longline fishing vessels.

The PFMC and the NMFS are continuing to work cooperatively to manage and monitor seabird mortality and avoidance. The PFMC approved Pacific Coast Groundfish Fisheries regulations that require that streamer lines on commercial fixed gear vessels 55 ft (17 m) or greater in length with a safety exception in the event of rough weather, which would be triggered by a National Weather Service forecast of a gale force wind warning (PFMC 2013). In addition, NMFS assists in public awareness and education to improve compliance and voluntary use of streamers on smaller vessels. Their cooperation has helped to minimize short-tailed albatross mortality.

Pelagic longline fishing in the U.S.
Since the most recent 5-year review (USFWS 2009), NMFS and USFWS have reinitiated consultation on the effects of the Hawaiian-based longline fisheries (USFWS 2012b). The estimated mortality anticipated from the fishery was three individuals over a 5-year period, one from the shallow set fishery and two from the deep set fishery. To minimize impacts of the anticipated *take* (i.e., harm or mortality), the USFWS required NMFS to:

- Minimize attraction of short-tailed albatross to fishing gear used by the Hawaii-based pelagic longline fisheries through monitoring, observation, and consideration of techniques to reduce seabird attraction.
- Monitor the level of take and measures to minimize take via the NMFS Observer Program.

Trawl fishing in the U.S.
Melvin et al. (2011) tested three mitigation measures (third wire snatch block, warp boom, and paired streamer lines) on two trawlers in the eastern Bering Sea. The intent was to determine whether these measures minimized aerial strikes with the warp cables and sonar inducer (third-wire) cables associated with trawlers. Short-tailed albatrosses comprised 15 percent of the bird species observed attending the trawlers. Mortality following a strike is difficult to detect, and the study was the first to quantify seabird cable strikes in a northern hemisphere pelagic trawl fishery. Melvin et al. (2011) determined that bird strikes could be diminished by deploying

streamer lines at least a meter above the third-wire block and by minimizing the aerial extent of the third wire. Further research is needed to better understand the impact of trawl fisheries on seabirds and how to better detect and mitigate impacts from associated cable strikes.

Commercial fishing in Russia
Efforts to reduce seabird bycatch in Russian fisheries have been initiated since the most recent 5-year review (USFWS 2009). Russian longline cod fisheries implemented the experimental use of streamers in 2004-2008 (Artukhin et al. 2013). The frequency of reported seabird attacks was 5-9 times lower on boats with paired streamers, and total catch of fish was 4-12 percent higher. The study recommended wide application of streamer line in the Far Eastern Seas of Russia. Although consistent funding has been a problem, World Wildlife Fund (WWF) 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 (H. Brandon, pers. comm. 2014).

Commercial Fishing in Japan
Japan developed a National Plan of Action (NPOA), which was revised in 2005 and 2009 in part to comply with international seabird conservation and management measures (Fisheries Agency of Japan 2004, 2009). The fisheries licensed by the national government and covered under this plan include:

- Distant-water tuna longline fisheries,
- Offshore tuna longline fisheries,
- Coastal tuna longline fisheries, and
- Other longline fisheries (operating in the fishing ground in Japan's coastal and offshore areas).

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 32 km (20 mi) of Torishima October through May:

- Side setting with a bird curtain and weighted branch lines (counts as two measures),
- Night setting with minimum deck lighting,
- Streamer (tori) lines,
- Weighted branch lines,
- Blue-dyed bait,
- Deep setting line shooter, and/or
- Management of offal discharge.

Other required activities include education, vessel monitoring through an observer program, and continued research into bycatch minimization measures.

National Research Institute of Far Seas Fisheries and the Fisheries Agency of Japan have been monitoring their fisheries (Uosaki et al. 2013, 2014), and their Annual Reports to the Commission have been provided since the most recent 5-year review (USFWS 2009). Longline fisheries have declined by approximately 12 percent in Japan since 2009 (Uosaki et al. 2013, 2014). 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 longline observer program began in 2008, and the purse seine program in 2011 (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 (Table 4).

Japanese fishermen pioneered the use of streamer (tori) lines to deter seabirds, and researchers have continued to assess their use. Researchers have continued to examine methods to improve and document the effectiveness of streamer lines, Yokota et al. (2011), Sato et al. (2012) assessed types and lengths of streamers 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 and their research partners has been an important contribution to minimizing longline fisheries bycatch of short-tailed albatrosses and reduces threats to the species if the improved techniques are implemented.

Table 4. Effort, observed, and estimated seabird captures by the Japanese longline fisheries, north of the 23˚N latitude (Uosaki et al. 2013).

Year	Fishing effort				Observed seabird captures	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
2008	354	86,344,947	35,991	0.0	0	0
2009	332	79,946,310	44,700	0.1	0	0
2010	330	80,150,640	10,280	0.0	0	0
2011	319	72,587,261	115,870	0.2	8	0.069
2012	262	47,363,759	104,748	0.2	1	0.010

Driftnet Fishing in the North Pacific

United Nations General Assembly (UNGA) 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 UNGA has adopted the resolution biennially. NMFS and the State Department work to implement the moratorium for the U.S. According to NMFS (2013), high seas driftnet fishing continues to exist in the North Pacific Ocean. The fishing effort targets species of squid and occurs toward the end of the fishing season, both of which pose a greater threat to short-tailed albatrosses. While the numbers of sightings and apprehensions of vessels driftnetting in the North Pacific high seas appear to be decreasing (Table 5), non-compliance with the moratorium continues to pose a risk of mortality to short-tailed albatrosses that could be entangled in the nets. International efforts are continuing to enforce the moratorium (NMFS 2013), but driftnet fisheries will continue to pose threats to albatrosses.

Table 5. North Pacific high seas driftnet vessel sightings and apprehensions, 2002–2013 (NMFS 2013).

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Canada	0	1	2	1	26	9	7	0	0	0	0	0
Japan	3	0	1	17	67	21	5	0	1	2	0	0
Russia	0	0	0	0	0	2	0	0	0	0	0	0
China	0	0	11	0	0	0	0	1	1	0	0	0
Taiwan	0	0	0	1	0	7	2	1	0	0	0	0
U.S.	2	24	8	5	5	8	10	0	1	0	1	0
Total Sightings*	5	25	22	24	98	47	24	2	3	2	1	0
Apprehended**	0	6	1	0	0	7	2	1	1	1	1	0

* May include multiple sightings of the same vessel or vessels.

** Out of the total number of vessels sighted.

Other Non-U.S. fishing Operations

Off Canada's west coast, the deployment of seabird avoidance gear (e.g., streamers, weighted groundlines, thawed bait, etc.) has been a mandatory requirement for fishing licenses for all hook and line groundfish fisheries since 2002-2005 (depending on the fishery). Most bycatch monitoring in these fisheries is now done by on-board Electronic Monitoring Systems (EMS). Following each fishing trip, approximately 10 percent of the EMS video imagery is audited. Although there have been no EMS (or other) reports of short-tailed albatross bycatch in the groundfish fisheries, the incidental take of black-footed albatrosses (plus unidentified albatrosses) in the longline fisheries (for 2006-2009) was estimated to be approximately 85 birds per year (range 25-128, Fisheries and Oceans Canada 2012).

In a recent examination of bycatch (for the period March 2006 through September 2012), 79 albatrosses were detected via EMS audits; a third of the albatrosses 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 0-269). Wiese and Smith (2003, unpublished) derived similar estimates of albatross bycatch off Canada's west coast; using the most spatially and temporally explicit model possible given the available data, they estimated that between 67 and 162 black-footed albatrosses were killed annually in rockfish and halibut longline fisheries (range 22- 253, Fisheries and Oceans Canada 2007). Of the various longline fleets, vessels targeting halibut and sablefish caught the highest number of albatrosses.

Given the high proportion of albatrosses that are not identified to species (in the EMS audit data), exacerbated by 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. (K. Morgan, pers. comm. 2014).

Fishing vs. Albatross Food Supply
No new information exists since the most recent 5-year review (USFWS 2009).

2.2.3.3 Disease or predation:

Disease
No new information has become available since the most recent 5-year review (USFWS 2009).

Parasites
A cestode (*Tetrabothrius* sp.) and the nematode (*Stegophoms stellaepolaris*) were collected from the alimental canal of a dead short-tailed albatross from Torishima (Iwaki et al. 2006). Their morphology and differentiation from other species are described. This was the first report of *S. stellaepolaris* from short-tailed albatross in Japan. The population effects of these organisms and their prevalence are unknown. This represents the only new information that was not previously included in the most recent 5-year review (USFWS 2009).

Predation
No new information has become available since the most recent 5-year review (USFWS 2009).

2.2.3.4 Inadequacy of existing regulatory mechanisms:

Invasive Species
Although the information in the most recent 5-year review (USFWS 2009) remains accurate, some attempts to remove invasive species may have opportunistically created nesting habitat on Nakodo-jima in the Ogasawara (Bonin) Islands (Tokyo Metropolitan Government 2014). Feral goats were removed from Nakodo-jima in 1997-1999, and the nesting populations of black-footed and Laysan albatrosses have since rebounded. Surprisingly however, in 2014, a short-tailed albatross chick was discovered on the island, approximately 5 km (3 mi) south of the translocated population on Mukojima (Tokyo Metropolitan Government 2014). The increase in the albatross populations on Nakodo-jima is at least partially attributable to the habitat improvement resulting from the eradication of feral goats.

Fisheries
The inadequacy of regulation of fisheries discussed in the most recent 5-year review continues to remain a concern. As mentioned previously, domestic and international efforts have been ongoing to minimize fisheries impacts on short-tailed albatross. Threats have been reduced in some areas through the establishment or improvement of regulations to minimize seabird bycatch, such as the area of the U.S. Pacific Coast groundfish fishery and in longline tuna fishery in Japan (USFWS 2012, Fisheries Agency of Japan 2009). Even with regulatory measures to minimize impacts on short-tailed albatross, bycatch and other injury and mortality associated with fisheries in the North Pacific remain a concern, and the magnitude of the ongoing impacts is uncertain.

2.2.3.5 Other natural or manmade factors affecting its continued existence:

Contaminants

Contaminants and toxins discussed in the most recent 5-year review (USFWS 2009) remain a concern. Since then, the Tohoku, Japan Earthquake and resulting tsunami occurred on March 11, 2011. As a consequence, the Fukushima Daiichi Nuclear Plant was badly damaged, causing explosions in at least three reactors and the release of an estimated 520 (340–800) PBq of radiation (Tanabe and Subramanian 2011; Steinhauser et al. 2013, 2014). The area east of the plant is the primary feeding area for nesting short-tailed albatrosses, and 80 percent of the contaminant releases are believed to have entered the Pacific Ocean. 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.

In addition to the radiation releases, the tsunami caused considerable damage to much of the coastal development along much of the eastern Japanese coast, sweeping away entire villages, residences, industrial and agricultural sites, and more. The chemical toxicants from degrading tsunami debris are a potential long term concern for the marine environment and short-tailed albatross (Tanabe and Subramanian 2011).

Organochlorines, pesticides and metals

As was reported in the most recent 5-year review (USFWS 2009), 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. Little new information is available regarding the presence or effect of contaminants on short-tailed albatross.

The only recent study completed since the most recent 5-year review (USFWS 2009) examined mercury and methylmercury in tissues of black-footed albatross (Vo et al. 2011). They compared the levels of mercury and methylmercury in museum specimens (n = 25) from a 120-year collection period (1880-2002). They found no temporal trend in mercury concentrations but measured significantly higher concentrations of methylmercury in after. Finkelstein et al. (2007) found mercury concentrations in black-footed albatross were associated with decreased immune response. Since short-tailed albatrosses are so closely related to black-footed albatrosses and their distribution overlaps, similar results are expected for short-tailed albatross. However, mercury, methylmercury, and the associated impacts need further study.

The most recent 5-year review (USFWS 2009) mentioned the high concentrations of lead found in Laysan albatrosses at Midway Atoll (Finkelstein et al. 2003) and the neurological impact of lead-based paints on Laysan albatross chicks (Taylor et al. 2009). Since 2009, the USFWS has initiated a removal and remediation of lead-based paint and contaminated soils on Sand Island (USFWS 2010). 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 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.

Oil

The effects of oil on short-tailed albatross were described in the most recent 5-year review (USFWS 2009).

Oil spills can occur in many parts of the short-tailed albatross' marine range. The risk of oil spills in the North Pacific and Aleutians has increased since 2009 (Det Norske Veritas and ERM-West, Inc. 2010a, 2010b). As sea ice recedes, the potential for increases in Arctic shipping is substantially greater than described in the most recent 5-year review (USFWS 2009). Eight Arctic nations have signed onto agreements that acknowledge the need for improved safety information and response (i.e., *Agreement on Cooperation in Aeronautical and Maritime Search and Rescue in the Arctic* [Arctic Council 2011], *Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic* [Arctic Council 2013]). These agreements recognize the increased marine shipping traffic and the increased potential for oil pollution in the harsh Arctic environment. Although short-tailed albatross have only rarely been observed in the Chukchi Sea, the reduction in sea ice and the increasing numbers of subadult short-tailed albatrosses that range widely may continue to bring albatrosses into Arctic waters (Day et al. 2013; Gall et al. 2013) where they could be exposed to petroleum products spilled in Arctic shipping accidents.

In addition to Arctic routes, increased shipping is anticipated in the Aleutian Islands and Bering Sea (Det Norske Veritas and ERM-West, Inc. 2010a, 2010b; Aleutian Risk Assessment Team 2011) where the overlap with short-tailed albatross distributions is greatest. These increases primarily consist of deep draft shipping vessels travelling between North America and East Asian countries (Det Norske Veritas and ERM-West, Inc. 2010a). Most of the ships observed in 2008-2009 were bulk carriers and container ships. The greatest increase in traffic is anticipated to be in chemical carriers and container ships. According the Aleutian Islands Risk Assessment (Det Norske Veritas and ERM-West, Inc. 2010b), both the proportion and the absolute total of cargo spill risk over the next 20 years are reduced compared to 2009 because of the introduction of double hulled barges by 2034. However, the interim risk is unclear while traffic increases and the proliferation of double-hulled barges are unrealized. Geographically, the greatest spill risk from cargo vessels is predicted along the Aleutian Island chain, particularly at Unimak Pass and Akutan Pass, where short-tailed albatross concentrations tend to be high (Det Norske Veritas and ERM-West, Inc. 2010b). Due to the high overlap with important foraging areas for short-tailed albatross (Figure 2) and high risk of spills in these areas, substantial impacts to adult and juvenile birds could occur. In addition, these increases would also result in greater numbers of vessels travelling along the west coast of Canada and the contiguous U.S., where a high proportion of immature short-tailed albatrosses have been tracked (Guy et al. 2013).

In the event of a spill, short-tailed albatrosses could experience impacts not just from the oil itself but also from the dispersants and in-situ burning techniques used to respond to the spill. Potential impacts from these techniques may include (U.S. Coast Guard and U.S. Environmental Protection Agency 2014):

- Impaired breathing or lung damage from the aspiration of dispersants, dispersed oil or smoke inhalation following burning;
- Degradation of the insulating properties of feathers following exposure to dispersants, resulting in hypothermia;
- Potential changes in abundance and composition of prey affected by oil and dispersant toxicity;
- Tissue irritation caused by exposure to dispersants, dispersed oil, or smoke inhalation following burning; and
- Short-term habitat degradation due to changes in water or air quality from burnt residues or use of dispersants.

Plastics

Plastic consumption continues to be a factor possibly affecting the species' survival. Plastics have been found in most, if not all, species of albatross, and have been cause for scientific and public concern. Both black-footed and Laysan albatross are well known to ingest plastics in the course of foraging. This phenomenon in Laysan albatrosses was documented as early as 1969 (Kenyon and Kridler 1969) and studied regularly since then by a number of authors (Auman 1997; Auman et al. 1997; Sievert and Sileo, 1993; Fry et al. 1987; Gray et al. 2012; and Young et al. 2009). Lavers and Bond (in review) have recently examined the role of plastic as a vector for trace metals in Laysan albatrosses. Lavers and colleagues also studied sub-lethal effects of plastic ingestion in shearwaters. They sampled breast feathers and stomach contents from flesh-footed shearwater (*Puffinus carneipes*) fledglings in eastern Australia. 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 (PBDEs) in the abdominal adipose of short-tailed shearwaters (*Puffinus tenuirostris*) collected from fisheries bycatch in the North Pacific Ocean. While only 12 birds were examined, all were found to contain PBDEs (0.3-186ng/g-lipid weight). Three of the birds were found to contain higher-brominated constituents (BDE209 and BDE 183), which were not present in their pelagic fish prey. These same birds were found to contain plastics in their stomach with the same higher-brominated chemical constituents. BDE209 was not detected in one bird that contained plastics in its stomach, which was thought to indicate that the plastics had not been in the stomach long enough to absorb the chemicals. The absorption rates and release of chemicals from ingested plastic needs further study, but given the propensity for albatrosses to ingest plastics, the threat of absorption of toxicants from ingested plastics continues to be a concern for short-tailed albatrosses.

San Diego State University, in partnership with Tokyo University and NOAA Alaska Fisheries Science Center proposed a study to examine the relationship between mass-ingested plastic and persistent organic pollutant levels in key internal organs, primarily the liver (R. Lewison, pers. comm. 2011). Focusing on targeted and non-targeted plastic additives, they propose to test if flame retardants, phthalate, nonylphenol, bisphenol-A, and anti-oxidants (UV stabilizers) are present in higher levels in liver tissue in seabirds found with higher levels of ingested plastic in their stomach. Such research would be an important step in further examining the effects of ingested plastics that were described in the most recent 5-year review (USFWS 2009).

Alternative Energy Development

The development of offshore wind and wave energy has been initiated or proposed at several sites off the west coast of the contiguous U.S. Proposed projects include test facilities, large wave “parks”, and offshore platform-based wind turbines. Most of these facilities, particularly those associated with wave-generated energy, would be located within approximately 3-10 km (2-5 mi) offshore and would be unlikely to overlap with short-tailed albatrosses (Federal Energy Regulatory Commission 2010, 2011).

Larger wind energy turbines are currently proposed off Oregon’s south coast. The proposed project, Windfloat Pacific, would consist of five 6-megawatt floating offshore wind turbines generators mounted on floating foundations, anchored to the seafloor in 1,200 to 1,600 ft (366 to 488 m) water depth, approximately 24 km (15 mi) off the coast of Coos Bay, Oregon (Bureau of Ocean Energy Management 2014). Rotors on these turbines could strike and kill short-tailed albatrosses, particularly given that they are located far enough offshore to overlap the west coast distribution of sub-adult albatrosses (Guy et al. 2013). As alternative energy interests increase, it will become more crucial to research measures to avoid bird strikes and monitor the effects of these structures on short-tailed albatrosses.

Air Strikes

No new information has become available since the most recent 5-year review (USFWS 2009).

Other Human Activities

No new information has become available since the most recent 5-year review (USFWS 2009).

Stochastic and Genetic Factors

Finkelstein et al. (2010) completed a population viability analysis and discussed the threats to the short-tailed albatross. As mention previously, this information was published after the most recent 5-year review (USFWS 2009). However, the analysis had been made available to the Short-tailed Albatross Recovery Team and had been incorporated in the 2009 review (USFWS 2009). No additional information has become available since then.

2.3 Synthesis

The status of the species appears to be improving and the overall threats may be diminishing, although potential new threats are appearing as the climate changes and global resource use and development patterns shift. The uncertainty associated with the population status on Minami-kojima in the Senkaku Islands is cause for concern, and may hinder realization of some recovery goals. Additionally, the population on this island is in a politically unstable environment and sits atop vast natural gas reserves. The future of this island is unpredictable, and the status of the current population uncertain. Its loss would severely diminish the species recovery potential.

The primary threat to this species continues to be the limited breeding distribution. Although the species is currently growing near its maximum biological potential, catastrophic loss of the Tsubamezaki site on Torishima, an area experiencing substantial erosion and subsequent nesting habitat and nestling loss, could have severe detrimental effects on the population. Progress continues as alternative breeding sites have been established at Mukojima (in the Ogasawara Islands), the Hatsunezaki sub-colony on Torishima, and single pairs of short-tailed albatrosses that have naturally colonized Nakodo-jima, and Midway and Kure Atolls. As of 2014, 40 percent of the population is now breeding outside the vulnerable Tsubamezaki subcolony on Torishima, up from 15 percent in 2009. However, Tsubamezaki is still vulnerable to erosion, volcanic activity, high winds, and flash floods.

A variety of other threats will continue to affect the short-tailed albatross. Efforts to minimize the impact of commercial fisheries continue, and mortalities associated with U.S. fisheries are thought to be infrequent and low. However, the degree to which regulated and unregulated fisheries outside of U.S. waters cause albatross mortality is unknown. Plastics may be increasing exposure of short-tailed albatrosses to contaminants and heavy metals but there is little information available about these effects. The prevalence and extent of plastic impacts needs further investigation to determine its acute and long-term effects on the short-tailed albatross. Shipping conflicts and potential oil spills appear to be growing threats but the likelihood and magnitude is uncertain. Global climate change may be causing changes in the distribution of the short-tailed albatross in the North Pacific, but the overall impact of that change is also unknown. The lack of information about the magnitude or impact of these threats on the short-tailed albatross results in uncertainty about the future recovery of the population.

Overall, the high population growth rates continue, and some substantial threats are being addressed in much of the species' range. However, to ensure the continuing recovery of the species, it is important to consider sources of uncertainty and work toward reducing those threats that adversely affect short-tailed albatrosses. The population does not yet meet the recovery goals for downlisting or delisting, and therefore, the short-tailed albatross remains endangered throughout its range.

3.0 RESULTS

3.1 Recommended Classification: Make a recommendation with regard to the listing classification of the species.

____ Downlist to Threatened

____ Uplist to Endangered

____ Delist (Indicate reasons for delisting per 50 CFR 424.11):

____ Extinction
____ Recovery
____ Original data for classification in error

_X__ No change is needed

3.2 New Recovery Priority Number (indicate if no change; see Appendix E): 8 (no change)

Brief Rationale: The status of the species has not changed enough since listing to warrant a change in classification. Approved recovery and reclassification thresholds have not been reached.

3.3 Listing and Reclassification Priority Number, if reclassification is recommended (see Appendix E)

Reclassification (from Threatened to Endangered) Priority Number: N/A

Reclassification (from Endangered to Threatened) Priority Number: N/A

Delisting Priority Number: N/A

Brief Rationale: N/A

4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

For a complete discussion of the actions needed for recovery, see the Short-tailed albatross Recovery Plan (USFWS 2008). Many of the 56 listed tasks are being, or have recently been implemented. The Short-tailed Albatross Recovery Team reviewed the biology and threats to the species and by concensus, recommended the following actions as the highest priority for continued recovery and to fill existing information gaps.

4.1 Establishment of New Colonies

The most recent 5-year review (USFWS 2009) recommended establishment of additional colonies on protected sites not subject to volcanic activity, which was the highest priority recovery action identified. This goal has been partially achieved through establishment of an additional colony on a more protected area of Torishima (Hatsunezaki), translocation of chicks to Mukojima in the Ogasawara (Bonin) Islands, and continuing to locate breeding pairs on new sites such as Midway and Kure Atolls and Nakodo-jima. The translocation itself has been completed and the site has been monitored to assess the long-term success of the project. Pairs have returned to breed, and although the eggs have been infertile, unsuccessful attempts are not unusual with young albatross pairs. Continued maintenance of the integrity of the Tsubamezaki and Hatsunezaki colony sites on Torishima remain a top priority. All of these sites should continue to be monitored to document future breeding and determine the success of nesting attempts.

4.2 Population Monitoring

The Tsubamezaki breeding colony on Torishima has been monitored annually since the mid-1950s, and essentially all chicks have been banded by Dr. Hasegawa since 1977. This monitoring is expected to continue. Ongoing monitoring of activity on Mukojima Island, site of the chick translocation project, will occur as well.

Monitoring of the Senkaku population has not occurred since at-sea observations of fledglings in 2002. Access to that colony is difficult both logistically and politically. However, surveys of the Senkaku Islands population are critical to determining the worldwide population of the short-tailed albatross and remain one of the highest priority recovery actions for the species. Additional genetic sampling of this population would also clarify any differentiation from the rest of the short-tailed albatross population as suggested by Eda et al. (2011).

4.3 Breeding Site Enhancement

Breeding site enhancements at the Tsubamezaki colony have improved nesting success. These efforts are anticipated to continue in the future as needed and as funding is available.

4.4 Fisheries-Related Research and Management

The gains in fisheries-related bycatch research and reduction efforts discussed in the most recent 5-year review (USFWS 2009) continues to refine seabird bycatch avoidance methods and improve the understanding of the geographic distribution of fisheries impacts. This work has resulted in improvements in existing designs of streamer lines, consideration of new techniques, and expansion of bycatch minimization measures into the Pacific Coast of the contiguous U.S. and some foreign countries. Greater accuracy in determining the impact of both U.S. and those foreign fisheries continue to remain a high priority.

Research into the following areas is needed to continue to minimize bycatch of short-tailed albatross and improve the effectiveness of their design:

- Streamer Lines: Continued research into the use and design of streamer lines is important to ensure safe and effective deployment in geographically diverse fisheries that employ a variety of techniques and gear that target many different fish species.

- Integrated Weight Lines – In addition to their streamer line work, Washington Sea Grant Program, in cooperation with the Alaska demersal longline industry, has investigated whether integrated-weight groundlines, with faster sink rates, are effective in reducing seabird bycatch. Used alone, integrated weight lines were approximately as effective as paired streamer lines at reducing seabird bycatch (Melvin et al. unpublished data).

- Reducing Wire Strikes – Melvin et al. (2011) conducted at-sea trials investigating methods to minimize interactions between birds and cables (see "Trawl fishing in the U.S."). The study was the first to quantify seabird cable strikes in a northern hemisphere pelagic trawl fishery (Melvin et al. 2011). NMFS and USFWS should continue to improve seabird monitoring techniques and assess the trawl fisheries to determine if additional measures are needed to minimize seabird mortality.

- New techniques – As fisheries bycatch becomes a worldwide concern, more work is being done to find new solutions and improve existing techniques. One emerging technology that is being considered for testing in the Pacific Coast Groundfish Fishery is laser deterrents. Mustad (2014) is promoting the use of a 1.5-Watt stern-mounted laser to be used with or without acoustic projection to deter birds from longline fishing gear. A 1.5-watt laser is categorized as a class IV laser, and is considered potentially dangerous (Laser Institute of America 2007). Ed Melvin, Washington Sea Grant, is considering options for testing the effects of lasers on albatrosses and other seabirds and eventual field testing of a safe laser deterrent.

As in the U.S., Canada, Japan, and Russia have conducted seabird bycatch minimization research, and Japan and Canada have implemented measures to reduce and monitor seabird bycatch (See "Commercial Fishing" section for discussion). These actions are important in continuing to reduce short-tailed albatross mortality associated with fisheries in the North Pacific.

Russia is working with WWF to conduct research and outreach for longline fishing fleets regarding methods for seabird bycatch reduction. Since there are no mandatory gear restrictions on the Russian fishing fleet, researchers and WWF hope that results will confirm reduction in bait loss and increased catch (Artukhin et al. 2013) when using streamer lines and other bird deterrent devices, thus convincing fishers to employ the devices.

4.5 Satellite Telemetry

Satellite telemetry of breeding birds is mostly complete. The effort has resulted in a much more complete understanding of the movements of short-tailed albatross throughout the North Pacific and Bering Sea (see Marine Habitat and Current Marine Distribution for a summary of results). Continued tracking along the west coast of the contiguous U.S. and Canada would further elucidate the distribution of juveniles and adults and their use of marine habitats. These data would be particularly useful given existing and emerging threats associated with fisheries bycatch, climate change, alternative energy development, and increased shipping with the associated potential for chronic and catastrophic oil spill.

Almost nothing is known about the feeding patterns or non-breeding distribution of the short-tailed albatross that breed in the Senkaku Islands. Conservation of these birds has relied on the assumption that their behavior patterns are similar to the Torishima birds. Tracking of this population would improve understanding of the distribution patterns of birds that breed in the Senkaku Islands and ensure adequate conservation of the species. If terrestrial access to the Senkaku Island cannot be gained due to political constraints, then albatrosses can be captured off-shore and fitted with satellite tags onboard a vessel.

4.6 Outreach

As described in the most recent 5-year review (USFWS 2009), several recovery tasks outlined in the Recovery Plan (USFWS 2008) have an outreach component implied as part of the action. The recommendations listed in the most recent 5-year review (USFWS 2009) remain unchanged.

4.7 Additional Recovery Tasks

The remaining high-priority recovery tasks address threats that fall under Factor E, Other Factors mentioned in the final listing rule (Federal Register 65:147 [July 31, 2000] p 46643). As discussed in section 2.2.3 Threats analysis, several emerging threats require further research and may need action.

Molting – The behavior and geographic location of molting short-tailed albatrosses has conservation implications. Since preliminary evidence indicates that albatrosses undergoing extensive flight feather molt may be congregating in the Aleutians (R. Suryan, unpublished data), they may be particularly vulnerable to harm from oil spill or collision with vessels. Research needs to be conducted to further understand the behavior of short-tailed albatrosses during molt.

Climate Change – As climate change progresses, shifts in prey and short-tailed albatross distribution and abundance may occur. Although these changes are likely to occur slowly as weather patterns and ocean regimes change, these patterns should be examined to understand the changing dynamics and to determine whether conservation measures can be adapted to ensure recovery of the species in the long-term. We recommend inclusion of the short-tailed albatross in future studies of changing marine ecosystems as a result of climate change.

Contaminants – Contaminants have been a continuing potential concern, and sampling is needed to determine the degree to which contaminants are absorbed by short-tailed albatrosses and to what extent environmental contaminants may be affecting individual short-tailed albatross health, and survival or reproductive rates. The recovery plan recommends conducting contaminants analysis on addled eggs, feathers, and dead chicks on an "as-available" basis. A standard contaminants sampling and analysis protocol is recommended as well, but the protocol used to analyze mercury and methylmercury in black-footed albatrosses on Midway should provide direction (Vo et al. 2011). Additional recovery tasks may become appropriate as new information is obtained.

The recovery program for the short-tailed albatross differs from that of most of the U.S. listed species in that many major recovery actions for this species will likely be conducted outside the United States. Recovery implementation for this species will involve coordination with foreign governments and institutions and will require much at-sea work. Achieving recovery objectives for this species will thus require extensive funding and a truly long-term commitment from all partners.

Restoration – The surprise finding of a short-tailed albatross chick on Nakodo-jima showcases the positive outcomes that may result from restoring islands. An inventory of potential nesting islands and an assessment of restoration opportunities may highlight islands of high importance/priority for invasive control and other restoration efforts.

5.0 LITERATURE CITED

Aleutian Risk Assessment Team. 2011. Aleutian Risk Assessment Project, Phase A Summary Report. Aleutian Risk Assessment Project. Seldovia, Alaska. 57 pp.

Arctic Council. 2011. Agreement on Cooperation in Aeronautical and Maritime Search and Rescue in the Arctic. Tromsø, Norway.

Arctic Council. 2013. An Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic. Tromsø, Norway.

Artukhin Y.B., A.V. Vinnikov, D.A. Terentiev, and O.I. Il'in 2013. Streamer lines — effective seabird scarer for demersal longline fishery. Proceedings TINRO (Pacific Fisheries Research Center). Vol. 175:277–290.

Auman, H.J., J.P. Ludwig, C.L. Summer, D.A. Verbrugge, K.L. Froese, T. Colburn, and J.P. Giesy, 1997. PCBs, DDE, DDT, and TCDD-eq in two species of albatross on Sand Island, Midway Atoll, North Pacific Ocean. Env. Tox. And Chem. 16: 498–504.

Auman, H. 1997. Plastic ingestion by Laysan Albatross chicks on Sand Island, Midway Atoll, in 1994 and 1995. Albatross Biology and Conservation, pp. 239-44.

Bureau of Ocean Energy Management. 2014. Notice of Intent To Prepare an Environmental Assessment for Proposed Wind Energy-Related Development Activities on the Pacific Outer Continental Shelf (OCS) Offshore Oregon and Notice of Public Scoping Meetings. Federal Register 79:30876-30877.

Cooper, J. 2013. Short-tailed Albatrosses return once more to Midway Atoll National Wildlife Refuge and to Kure Atoll. Available at: http://acap.aq/index.php/en/news/news-archive/60-2013-news-archive/1553-short-tailed-albatrosses-return-once-more-to-midway-atoll-national-wildlife-refuge [Accessed 30 June 2014].

Day, R. H., A. E. Gall, T. C. Morgan, J. R. Rose, J. H. Plissner, P. M. Sanzenbacher, J. D. Fenneman, K. J. Kuletz, and B. A. Watts. 2013. Seabirds new to the Chukchi and Beaufort seas, Alaska: response to a changing climate? Western Birds 44:174–182.

Deguchi, T., J. Jacobs, T. Harada, L. Perriman, Y. Watanabe, F. Sato, N. Nakamura, K. Ozaki, and G. Balogh. 2012. Translocation and hand-rearing techniques for establishing a colony of threatened albatross. Bird Conservation International 22:66-81.

Deguchi, T., R. M. Suryan, K. Ozaki, J. F. Jacobs, F. Sato, N. Nakamura, and G. R. Balogh. 2014. Early successes in translocation and hand-rearing of an endangered albatross for species conservation and island restoration. Oryx 48:195-203.

Det Norske Veritas and ERM-West, Inc. 2010a, Aleutian Islands Risk Assessment Phase A – Preliminary Risk Assessment,TASK 1: Semi-quantitative Traffic Study Report. Report prepared for Prepared For: National Fish and Wildlife Foundation, United States Coast Guard, Alaska Department of Environmental Conservation.

Det Norske Veritas and ERM-West, Inc. 2010b. Aleutian Islands Risk Assessment Phase A – Preliminary Risk Assessment, Task 2A: Marine Spill Frequency and Size Report. Report prepared for Prepared For: National Fish and Wildlife Foundation, United States Coast Guard, Alaska Department of Environmental Conservation.

Department of Energy. 2012. Oregon State University and Northwest National Marine Renewable Energy Center Wave Energy Test Project Final Environmental Assessment. U.S. Department of Energy. Golden, Colorado. 166 pp.

Eda, M., H. Koike, M. Kuro-O, S. Mihara, H. Hasegawa, and H. Higuchi. 2011. Inferring the ancient population structure of the vulnerable albatross *Phoebastria albatrus*, combining ancient DNA, stable isotope, and morphometric analyses of archaeological samples. Conservation Genetics:1-9.

Federal Regulatory Energy Commission. 2010. Environmental Assessment for Hydropower License Reedsport OPT Wave Park Project—FERC Project No. 12713-002 Oregon. Federal Regulatory Energy Commission. Washington, D.C. 289 pp.

Federal Regulatory Energy Commission. 2011. Adoption of the Federal Energy Regulatory Commission Environmental Assessment (FERC Project No. 12713-002) and the issuance of a U.S. Department of Energy Finding of No Significant Impact (FONSI). Federal Regulatory Energy Commission. Washington, D.C. 7 pp.

Finkelstein, M.E., R.H. Gwiazda, and D.R. Smith. 2003. Lead poisoning of seabirds: environmental risks from leaded paint at a decommissioned military base. Environmental Science and Technology 37: 3256-3260.

Finkelstein, M., S. Wolf, M. Goldman, and D. Doak. 2007. A Stochastic Population-based Model for the Short-tailed Albatross (*Phoebastria albatrus*) Unpublished Report to the Short-tailed Albatross Recovery Team, April 17th, 2007. Ecology and Evolutionary Biology Department, University of California, Santa Cruz.

Finkelstein, M.E., S. Wolf, M. Goldman, D.F. Doak, P.R. Sievert, G. Balogh, and H. Hasegawa. 2010. The anatomy of a (potential) disaster: Volcanoes, behavior, and population viability of the short-tailed albatross (*Phoebastria albatrus*). Biological Conservation 143(2010):321-331.

Fisheries Agency of Japan. 2004. Implementation of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (JPOA-IUU). Fisheries Agency, Government of Japan. 11 pp.

Fisheries Agency of Japan. 2009. Japan's National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries Revised Version. Fisheries Agency, Government of Japan. 8 pp.

Fisheries and Oceans Canada. 2007. National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries. 33 pages. http://www.dfo-mpo.gc.ca/npoa-pan/npoa-pan/NPOA-Seabirds_e.pdf [Accessed July 20, 2014].

Fisheries and Oceans Canada. 2012. Canada's Progress Report on the Implementation of Key Actions Taken Pursuant to the National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries (March 2007). 23 pages. http://www.dfo-mpo.gc.ca/npoa-pan/npoa-pan/seabirds-oiseauxmer-eng.pdf [Accessed July 20, 2014].

Fry, M.D., Fefer, S.I., Sileo, L. 1987. Ingestion of plastic debris by Laysan Albatrosses and Wedge-tailed Shearwaters in the Hawaiian Islands. Marine Pollution Bulletin 18(6): 339-343.

Gall, A.E., R.H. Day, and T.C. Morgan. 2013. Distribution and Abundance of Seabirds in the Northeastern Chukchi Sea, 2008–2012, Final Report. Prepared by ABR, Inc. - Environmental Research & Services, Fairbanks, Alaska for ConocoPhillips Company, Shell Exploration & Production Company and Statoil USA E & P, Inc, Anchorage, Alaska. 88 pp.

Gray, H., G.L. Lattin, C.J. Moore. 2012. Incidence, mass and variety of plastics ingested by Laysan (*Phoebastria immutabilis*) and Black-footed Albatrosses (*P. nigripes*) recovered as by-catch in the North Pacific Ocean. Mar Pollut Bull. 64(10):2190-2.

Guy, T.J., S.L. Jennings, R.M. Suryan, E.F. Melvin, M.A. Bellman, L.T. Ballance, B.A. Blackie, D.A. Croll, T. Deguchi, T.O. Geernaert, R.W. Henry, M. Hester, K.D. Hyrenbach, J. Jahncke, M.A. Kappes, K. Ozaki, J. Roletto, F. Sato, W.J. Sydeman, and J.E. Zamon. 2013. Overlap of North Pacific albatrosses with the U.S. west coast groundfish and shrimp fisheries. Fisheries Research. 147:222-234.

IPCC. 2007. Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K., and A. Reisinger (eds.)]. Geneva, Switzerland: IPCC.

Iwaki, T., Y. Yokohata, H. Kajigaya, F. Sato, and T. Hiraoka, 2006. *Tetrabothrius* sp. (Cestoda: Tetrabothriidae) and *Stegophorus stellaepolaris* (Nematoda: Acuariidae) Collected from a Short-tailed Albatross (*Diomedea albatrus*). Japanese Journal of Zoo and Wildlife Medicine, 11(2): 83-86. (in Japanese with an English abstract)

Kenyon, K.W., and Kridler, E. 1969. Laysan Albatross swallow indgestible matter. Auk 86: 339-34.

Kuletz, K. J., M. Renner, E. A. Labunski, and G. L. Hunt Jr. 2014. Changes in the distribution and abundance of albatrosses in the eastern Bering Sea: 1975–2010. Deep Sea Research Part II: Topical Studies in Oceanography. DOI: 10.1016/j.dsr2.2014.05.006.

Kuro-O, M., H. Yonekawa, S. Saito, M. Eda, H. Higuchi, H. Koike, and H. Hasegawa. 2010. Unexpectedly high genetic diversity of mtDNA control region through severe bottleneck in vulnerable albatross *Phoebastria albatrus*. Conservation Genetics 11:127-137.

Laser Institue of America. 2007. ANSI Z136.1 – 2007, American National Standard for Safe Use of Lasers. Laser Institute of America, Orlando, Florida. 249 pp.

Lavers J.L. and A.L. Bond. in review. Ingested plastic as a vector for trace metals in Laysan Albatross (*Phoebastria immutabilis*) and Bonin Petrel (*Pterodroma hypoleuca*) from Midway Atoll.

Lavers, J.L., A.L. Bond, and I. Hutton, 2014. Plastic ingestion by Flesh-footed Shearwaters (*Puffinus carneipes*): implications for fledgling body condition and the accumulation of plastic-derived chemicals. Environmental Pollution 187:124–129.

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

Moore, S.E., E. Logerwell, L. Eisner, E. Farley, L. Harwood, K. Kuletz, J. Lovvorn, J. Murphy, L. Quakenbush. 2014. Marine fishes, birds and mammals as sentinels of ecosystem variability and reorganization in the Pacific Arctic Region. Chapter 11 *in:* The Pacific Arctic Region: Ecosystem Status and Trends in a Rapidly Changing Environment. J.M. Grebmeier and W. Maslowski (eds). Springer-book. e-book at: http://link.springer.com/book/10.1007%2F978-94-017-8863-2.

Mustad Autoline. 2014. Seabird Saver Customer Information Pack 2014. http://mustadautoline.com/filer/Produkt/SeaBird_Saver_/201406_Productsheet_SeaBird_Saver_ENG.pdf [accessed August 8, 2014].

National Marine Fisheries Service. 2013. 2013 Report of the Secretary of Commerce to the Congress of the United States concerning U.S. actions taken on foreign large-scale high seas driftnet fishing. National Marine Fisheries Service, Washington, D.C. 15 pp.

Ochi, D., N. Sato, N. Katsumata, T. Guy, E. Melvin. and H. Minami. 2011. At-sea experiment to evaluate the effectiveness of multiple mitigation measures on pelagic longline operations in western North Pacific. Report to Western and Central Pacific Fisheries Commission. Pohnei, Federated States of Micronesia. 39 pp.

O'Connor, A. J. 2013. Distributions and fishery associations of immature short-tailed albatrosses *Phoebastria albatrus*, in the North Pacific. Oregon State University, Corvallis, Oregon.

Ormseth, O.A., 2012. Assessment of the squid stock complex in the Bering Sea and Aleutian Islands, *In* Stock assessment and fisheries evaluation report, North Pacific Fisheries Management Council, Anchorage, Alaska, pp. 1850-1886. http://www.afsc.noaa.gov/REFM/stocks/plan_team/BSAIsquid.pdf.

Pacific Fisheries Management Council (PFMC). 2013. Decision summary document, November 1-6, 2013. Pacific Fisheries Management Council. Portland, Oregon. 6 pp.

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

Sato, N., D. Ochi, H. Minami, K. Yokawa. 2012. Evaluation of the Effectiveness of Light Streamer Tori-Lines and Characteristics of Bait Attacks by Seabirds in the Western North Pacific. PLoS ONE 7(5): e37546.

Sato, N., H Minami, N. Katsumata, D. Ochi, and K. Yokawa. 2013. Comparison of the effectiveness of paired and single tori lines for preventing bait attacks by seabirds and their bycatch in pelagic longline fisheries. Fisheries Research 140: 14–19.

Sievert, P. R. and Sileo, L. 1993. The effects of ingested plastic on growth and survival of albatross chicks. Pp. 212-17 in The status, ecology, and conservation of marine birds of the North Pacific ed by K. Vermeer, K. T. Briggs, K. H. Morgan and D. Siegal-Causey. Canadian Wildlife Service Special Publication: Ottawa.

Steinhauser, G., A. Brandl, T.E. Johnson. 2013. Comparison of the Chernobyl and Fukushima nuclear accidents: A review of the environmental impacts. Science of the Total Environment 487:575.

Steinhauser, G., A. Brandl, T.E. Johnson. 2014. Erratum to “Comparison of the Chernobyl and Fukushima nuclear accidents: A review of the environmental impacts” Science of the Total Environment 470–471:800–817].

Storlazzi, C.D., P. Berkowitz, M.H. Reynolds and J.B. Logan. 2013. Forecasting the impact of storm waves and sea-level rise on Midway Atoll and Laysan Island within the Papahānaumokuākea Marine National Monument—a comparison of passive versus dynamic inundation models: U.S. Geological Survey Open-File Report 2013-1069.78 pp.

Suryan, R. M., D. J. Anderson, S. A. Shaffer, D. D. Roby, Y. Tremblay, D. P. Costa, P. R. Sievert, F. Sato, K. Ozaki, G. R. Balogh, and N. Nakamura. 2008. Wind, waves, and wing loading: Morphological specialization may limit range expansion of endangered albatrosses. PLoS ONE 3:e4016. doi:4010.1371/journal.pone.0004016.

Suryan, R. M., T. Deguchi, and G. R. Balogh. 2013. Short-tailed albatross new colony establishment phase 2: post-fledging survival and marine habitat use of hand-reared vs. naturally-reared chicks. North Pacific Research Board project #723 & #1014 final report, Anchorage, Alaska. Oregon State University, Newport, Oregon. 148 pp.

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

Suryan, R. M. and K. N. Fischer. 2010. Stable isotope analysis and satellite tracking reveal interspecific resource partitioning of nonbreeding albatrosses off Alaska. Canadian Journal of Zoology 88:299-305.

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

Tanabe, S. and, A. Subramanian. 2011. Great Eastern Japan Earthquake – Possible marine environmental contamination by toxic pollutants (Editorial). Marine Pollution Bulletin 62:883-884.

Tanaka, K., H. Takada, R. Yamashita, K. Mizukawa, M. Fukuwaka, and Y.Watanuki. 2013. Accumulation of plastic-derived chemicals in the tissues of seabirds ingesting marine plastics. Marine Pollution Bulletin. 69(1-2):219-222.

Taylor, S.K., C.S. Gorbics, E. Luciani, C. Zeeman, J. Gibson, and A. Little. 2009. Ecological Risk assessment for lead in soil and Laysan albatross chicks on Sand Island, Midway Atoll National Wildlife Refuge. U.S. Fish and Wildlife Service. Carlsbad, California. 47 pp.

Tokyo Metropolitan Government. 2014. An Albatross Chick that seemed to be the Short-tailed Albatross (*Phoebastria albatrus*), was found on the Nakodojima Island of the Mukojima Island Group of the Ogasawara Archipelago after WWII period. Press Release, May 12, 2014. Tokyo Metropolitan Government, Bureau of the Environment 2pp. (Translated by Kazuo Horikoshi, June 10, 2014.)

United Nations. 1989. United Nations General Assembly Resolution 44/225: Large-scale pelagic driftnet fishing and its impact on the living marine resources of the world's oceans and seas. United Nations General Assembly. http://www.un.org/documents/ga/res/44/a44r225.htm.

United Nations. 1990. United Nations General Assembly Resolution 45/197: Large-scale pelagic driftnet fishing and its impact on the living marine resources of the world's oceans and seas. United Nations General Assembly. http://www.un.org/documents/ga/res/45/a45r197.htm.

United Nations. 1991. United Nations General Assembly Resolution 46/215: Large-scale pelagic drift-net fishing and its impact on the living marine resources of the world's oceans and seas. United Nations General Assembly. http://www.un.org/documents/ga/res/46/a46r215.

Uosaki, K., H. Minami, O. Abe1, K. Satoh, O. Sakai, T. Matsumoto, and Y. Akatsuka. 2013. National tuna fisheries report of Japan, annual report to the Commision, Part1: Information on fisheries, research and statistics. Western and Central Pacific Fisheries Commission. Pohnpei, Federated States of Micronesia. 39 pp.

Uosaki, K., H. Minami, O. Abe1, K. Satoh, T. Matsumoto, and Y. Akatsuka. 2014. National tuna Fisheries report of Japan, annual report to the Commision, Part1: Information on fisheries, research and statistics. Western and Central Pacific Fisheries Commission. Pohnpei, Federated States of Micronesia. 39 pp.

U.S. Coast Guard and Environmental Protection Agency. 2014. Biological Assessment of the Alaska Federal/State preparedness plan for response to oil and hazardous substance discharges/releases (Unified Plan). Prepared by Windward Environmental LLC and ERM. 426 pp w/appendices.

USFWS. 2008. Short-tailed albatross recovery plan. Anchorage, AK, 105 pp.

USFWS. 2009. Short-tailed albatross (*Phoebastria albatrus*) 5-Year review: Summary and evaluation. Anchorage, AK. 78pp

USFWS. 2010. Approval memorandum for expanding an engineering evaluation/cost analysis to develop proposed non-time-critical removal action alternatives. U.S. Fish and Wildlife Service, Portland, Oregon. June 3, 2010. 3 pp.

USFWS. 2011. Short-tailed albatross fledges at Midway Atoll National Wildlife Refuge press release, U.S. Fish and Wildlife Service, Portland, Oregon. June 20, 2011. http://www.fws.gov/pacific/news/news.cfm?id=2144374825, accessed September 5, 2014.

USFWS. 2012a. Biological opinion regarding the effects of the continued operation of the Pacific Coast Groundfish Fishery. Fish and Wildlife Service, Portland, Oregon, 48 pp.

USFWS. 2012b. Biological opinion of the U.S. Fish and Wildlife Service for the operation of Hawaii-based pelagic longline fisheries, shallow set and deep set, Hawaii. Honolulu, Hawaii, 49 pp.

USFWS. 2012c. Short-tailed albatross fledges at Midway Atoll National Wildlife Refuge. press release, U.S. Fish and Wildlife Service, Portland, Oregon, June 14, 2012. http://www.fws.gov/pacific/news/news.cfm?id=2144375051, accessed September 5, 2014.

Yamashina Institute of Ornithology. 2011. Short-tailed albatross band recoveries through August 2011. Spreadsheet. 2pp.

Vo, A.E., M.S. Bank, J.P. Shinec, and S.V. Edwards. 2011. Temporal increase in organic mercury in an endangered pelagic seabird assessed by century-old museum specimens. Proceedings of the National Academy of Science. 108(18):7466–7471.

Yokota, K., H, Minami, M. Kiyota. 2011. Effectiveness of tori-lines for further reduction of incidental catch of seabirds in pelagic longline fisheries. Fisheries Science 77:479–485.

Young, L. C. 2010. The Short-tailed Albatross lays eggs on Kure Atoll, Hawaii. http://www.acap.aq/index.php/en/news/news-archive/23-2010-news-archive/691-the-short-tailed-albatross-lays-eggs-on-kure-atoll-hawaii, accessed September 5, 2014.

Young L.C., C. Vanderlip, D.C. Duffy, V. Afanasyev, S.A. Shaffer. 2009. Bringing home the trash: Do colony-based differences in foraging distribution lead to increased plastic ingestion in Laysan Albatrosses? PLoS ONE 4(10): e7623.

Young, L. C. and E. A. VanderWerf. 2014. Adaptive value of same-sex pairing in Laysan albatross. Proceedings of the Royal Society B: Biological Sciences 281.

Young, L. C., B. J. Zaun, and E. A. VanderWerf. 2008. Successful same-sex pairing in Laysan albatross. Biology Letters 4:323-325.

Zador, S. G., J. K. Parrish, A. E. Punt, J. L. Burke, and S. M. Fitzgerald. 2008. Determining spatial and temporal overlap of an endangered seabird with a large commercial trawl fishery. Endangered Species Research 5:103-115.

PERSONAL COMMUNICATIONS

Brandon, Heather. World Wildlife Fund, Anchorage, Alaska.

Deguchi, Tomohiro. Yamashina Institute for Ornithology, Konoyama, Abiko, Japan.

Hasegawa, Hiroshi. Yamashina Institute for Ornithology and Toho University, Ōta, Tokyo, Japan.

Lewison, Rebecca. Conservation Ecology Laboratory, San Diego State University, San Diego, California.

Melvin, Edward. Senior Scientist for Washington Sea Grant and University of Washington School of Aquatic and Fisheries Sciences, Seattle, Washington.

Morgan, Ken. Canadian Wildlife Service, Environment Canada, Institute of Ocean Sciences, Sidney, British Columbia.

Sievert, Paul. United States Geological Sirvey - Massachusetts Cooperative Fish and Wildlife Research Unit, Department of Natural Resources Conservation, University of Massachusetts at Amherst, Amherst, Massachusetts.

Suryan, Robert. Hatfield Marine Science Center, Oregon State University, Newport, Oregon.

Appendix 1. Breeding status of the Short-tailed Albatrosses on Torishima (H. Hasegawa, unpublished data).

	Original colony			New colonies											
Lay	Tsubame-zaki slope			Cliff-top			Northwest slope			Torishima Total			Chicks translocated to Mukojima		Birds (max.)
Year	Eggs	Chicks	Success	Eggs	Chicks	Success	Eggs	Chicks	Success	Eggs	Chicks	Success			
2000	237	172	72.6				1	1	100.0	238	173	72.7			423
2001	250	161	64.4				1	0	0.0	251	161	64.1			481
2002	266	170	63.9				1	1	100.0	267	171	64.0			569
2003	276	192	69.6				1	1	100.0	277	193	69.7			603
2004	296	147	49.7	2	0	0.0	4	4	100.0	302	151	50.0			617
2005	306	181	59.2	4	1	25.0	15	13	86.7	325	195	60.0			614
2006	314	213	67.8	3	2	66.7	24	16	66.7	341	231	67.7			671
2007	343	241	70.3	4	4	100.0	35	25	71.4	382	270	70.7	10	(73.3)*	631
2008	362	264	72.9	6	5	83.3	50	37	74.0	418	306	73.2	15	(76.8)	683
2009	382	277	72.5	7	5	71.4	57	45	78.9	446	327	73.3	15	(76.7)	699
2010	396	253	63.9	6	1	16.7	79	56	70.9	481	310	64.4	15	(67.6)	793
2011	403	275	68.2	7	6	85.7	102	72	70.6	512	353	68.9	15	(71.7)	882
2012	412	296	71.8	4	3	75.0	122	80	65.6	538	379	70.4			982
2013	450	299	66.4	11	4	36.4	148	97	65.5	609	400	65.7			1027

* Percentage fledged chicks including the translocated to Mukojima out of the eggs laid on Torishima.

U.S. FISH AND WILDLIFE SERVICE

5-YEAR REVIEW of Short-tailed Albatross

Current Classification: Endangered

Recommendation resulting from the 5-Year Review:

___ Downlist to Threatened

___ Uplist to Endangered

___ Delist

_x__ No Change Needed

Appropriate Listing/Reclassification Priority Number, if applicable:

Review Conducted By: Ellen W. Lance

FIELD OFFICE APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

Approve ____________ Date 9.8.2014

REGIONAL OFFICE APPROVAL:

Lead Regional Director, Fish and Wildlife Service

Approve ____________ Date 9/23/2014

ACTING Cooperating Regional Director, Fish and Wildlife Service

✓ Concur ____ Do Not Concur

____________ Date 9-22-14