Agreement on the Conservation of Albatrosses and Petrels

Third Meeting of the Parties

Bergen, Norway, 27 April – 1 May 2009

Species Information—Short-tailed Albatross (*Phoebastria albatrus*)

USA

Short-tailed albatross

Phoebastria albatrus

Albatros rabon
Albatros à queue courte
アホウドリ
短尾信天翁

CRITICALLY ENDANGERED | ENDANGERED | **VULNERABLE** | NEAR THREATENED | LEAST CONCERN | NOT LISTED

Sometimes referred to as
Steller's Albatross
Coastal albatross
Ahō-dori

Short-tailed albatross (P. albatrus) *adult tending to its chick on Torishima Island, Japan. Photo by Hiroshi Hasegawa.*

TAXONOMY

Order Procellariiformes
Family Diomedeidae
Genus *Phoebastria*
Species *albatrus*

The type specimen for this species was collected by George Steller offshore of Kamchatka, Russia in the Bering Sea during the 1740's and was described by P.S. Pallas as *Diomedea albatrus* in 1769 [1]. Following the results of genetic studies [2], the family Diomedeidae was arranged into four genera. The genus *Phoebastria*, North Pacific albatrosses, now includes the short-tailed albatross (Figure 1), the Laysan albatross (*P. immutabilis*), the black-footed albatross (*P. nigripes*), and the waved albatross (*P. irrorata*) [1]. Recent analyses, based on complete nucleotide sequencing of mitochondrial cytochrome *b* gene, confirm this arrangement [3].

CONSERVATION LISTINGS AND PLANS

International

- 2007 IUCN Red List of Threatened Species, Vulnerable, VU D2 [4]
- Convention on International Trade of Endangered Species (Appendix I) [5]
- Convention on Migratory Species - Listed Species (Appendix I; as *Diomedea albatrus*) [6]
- North American Waterbird Conservation Plan – High Conservation Concern [7]

National – Canada

- Migratory Bird Convention Act [8]
- COSEWIC (Committee on the Status of Endangered Wildlife in Canada) – Threatened [9]
- Species At Risk Act [10], Listed as Threatened [11]
- Recovery Strategy for the Short-tailed Albatross (*Phoebastria albatrus*) and the Pink-footed Shearwater (*Puffinus creatopus*) in Canada [12]
- Wings Over Water: Canada's Waterbird Conservation Plan – High Conservation Concern [13]

- National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries [14]

National - China

- Law of the People's Republic of China on the Protection of Wildlife [15]
- Protected under Treaty between Japan and China (listed as *Diomedea albatrus*) [16]

National – Japan

- Natural Monument (1958) [17]
- Special Natural Monument (1962) [17]
- Special Bird for Protection (1972) [18]
- Wildlife Protection and Hunting Law [19]
- Law for the Conservation of Endangered Species of Wild Fauna and Flora (1992, Law No 75) [19]
- Domestic Endangered Species (1993) [20]
- Short-tailed Albatross Recovery Plan (1993) [20]
- Japan's National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries [21]
- Red Data Book of Japan (listed as *Diomedea albatrus*) – Vulnerable [22]

National - Mexico

- Protected under Treaty between Mexico and USA (family Diomedeidae listed) [23]

National - Russia

- On the Protection and Use of Wild Animals [15]
- Protected under the Union of Soviet Socialist Republic, Convention Concerning the Conservation of Migratory Birds and Their Environment. (USA-Russia) 1976. (listed as *Diomedea albatrus*) [24]

National – United States

- Migratory Bird Treaty Act of 1918 [25]
- Endangered Species Act (1973) (ESA) [26]
  - Listed as endangered throughout its range in 2000
- Short-tailed Albatross Draft Recovery Plan (2005) [27]
- United States's National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries [27a]

Taiwan (Chinese Taipei)

- Taiwan's National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries [27b]

Regional - Alaska, USA

- Listed as Endangered [28]
- Ranked as S1 (Critically Imperilled) [29]

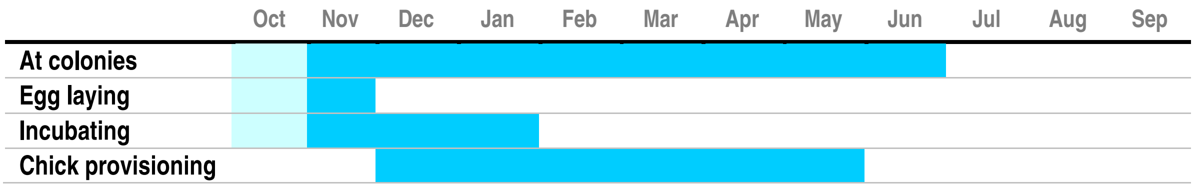
Regional - Hawaii, USA

- Ranked as S1 (Critically Imperilled) [29]

BREEDING BIOLOGY

P. albatrus is a colonial, annual breeding species; each breeding cycle lasts about 8 months. Birds arrive on Torishima in October. A single egg is laid in late October to late November. Bi-parental incubation lasts 64 to 65 days. Hatching occurs from late December through January [17]. During the brood-rearing period, most foraging bouts are along the eastern coastal waters of Honshu Island, Japan [30]. Chicks begin to fledge in late May into June [31] (Table 1).There is little information on timing of breeding on Minami-kojima.

Table 1. Breeding cycle of P. albatrus. [17, 31]



BREEDING SITES

P. albatrus breeds primarily on two islands: Torishima in Japan, and Minami-kojima in the Senkaku Islands, the ownership of which is disputed (Figure 1). The species was extirpated from at least 12 other islands (Table 2). In 2006-2007, there were an estimated 1,026 breeding *P. albatrus* [32], 80-85% of which bred in a single colony (Tsubame-zaki) located on a steep eroding fluvial outwash plain at the base of Torishima's active volcano[33]. A small additional colony on Torishima (Hatsune-zaki) has exhibited rapid growth in recent years as birds emigrate to it from Tsubame-zaki [34] (Table 3). Despite apparent emigration, growth of the Tsubame-zaki colony remains robust (Figure 2). Nesting sites at Hatsune-zaki are more stable and the maximum potential colony size is larger. The only other *P. albatrus* breeding site of consequence is in the Senkaku Island group, on Minami-kojima [35], where the remaining 15-20% of the world population breeds. In 2002 a single *P. albatrus* chick fledged from Kita-kojima, an island near Minami-kojima [36]. Isolated attempts at breeding have recently been noted on Yomejima in the Bonin Islands of Japan, and on Midway Atoll in the Northwest Hawaiian Islands, but were unsuccessful [32]. Chick translocation and decoy-based attraction efforts began in 2007-2008 on Mukojima, in Japan's Bonin Islands, in the hopes of establishing a breeding colony on this non-volcanic island.

Table 2. Sites from which P. albatrus *has been extirpated* [27].

Islands with Extirpated Colonies	Alternate Name	Island Group	North Latitude (degrees. decimal degree)	East Longitude (degrees. decimal degree)
Nishinoshima	Rosario Island	Bonin	27.25°	140.90°
Mukojima Island		Bonin	27.69°	142.18°
Yomeshima		Bonin	27.50°	142.20°
Kitanoshima		Bonin	27.72°	142.10°
Kita-daitojima		Daito	25.95°	131.03°
Minami-daitojima		Daito	25.83°	131.23°
Okino-daitojima		Daito	24.47°	131.18°
Kobisho		Senkaku Retto of southern Ryukyu Islands	25.93°	123.68°
Uotsurijima		Senkaku Retto of southern Ryukyu Islands	25.74°	123.47°
Iwo Jima	Sulphur Island	Volcano Islands	24.78°	141.32°
Agincourt Island	P'eng-chia-Hsu	unknown	25.63°	122.08°
Byosho Island		Pescadore Islands	23.57°	119.60°

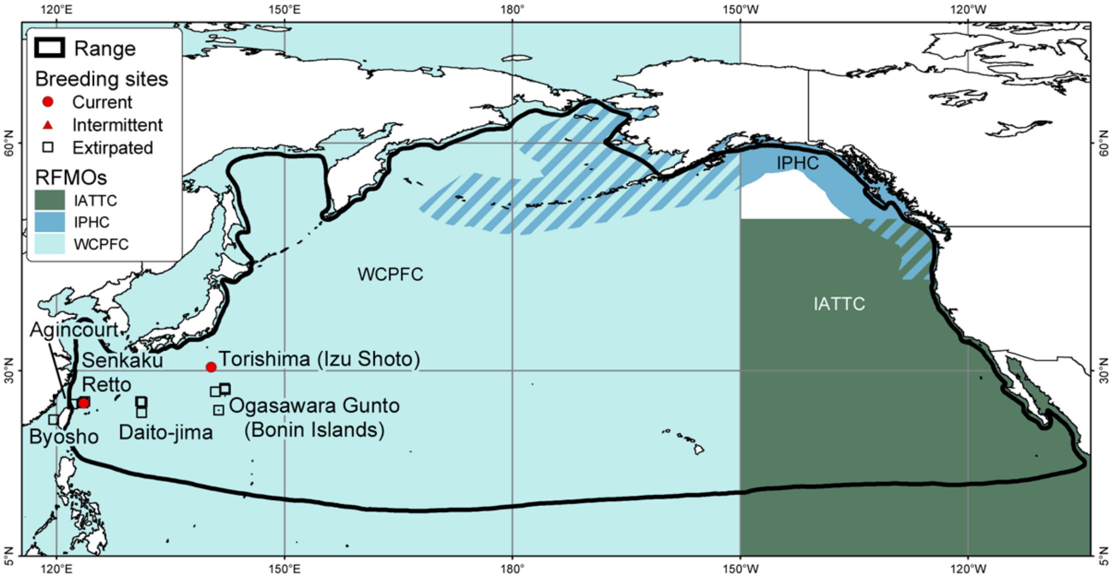


Figure 1. *North Pacific Range of* Phoebastria albatrus *showing the two existing breeding islands, islands from which the species is known to be extirpated, and the species overlap with Regional Fishery Management Organizations (IATTC = Inter-American Tropical Tuna Commission, IPHC = International Pacific Halibut Commission, WCPFC = Western and Central Pacific Fisheries Commission). All waters within the US EEZ are also managed by Regional Fishery Management Councils: the North Pacific Fishery Management Council (for waters off Alaska), the Pacific Fishery Management Council (for waters off the west coast of the contiguous 48 states), and the West Pacific Regional Fishery Management Council (for waters surrounding the Hawaiian Archipelago and other US Territories in the Central Pacific).*

Table 3. Growth of the Hatsune-zaki colony, Torishima, 1995/1996 through 2007/2008 breeding seasons [34].

Breeding Season	P. albatrus eggs	P. albatrus fledglings
1995-96	1	1
1996-97	2	0
1997-98	1	1
1998-99	1	1
1999-00	1	1
2000-01	1	1
2001-02	1	0
2002-03	1	1
2003-04	1	1
2004-05	4	4
2005-06	15	14
2006-07	24	16
2007-08	36	23

CONSERVATION LISTINGS AND PLANS FOR THE BREEDING SITES

International

Ogasawara Islands

- UNESCO World Heritage Site (tentative) [37]'

Papahānaumokuākea Marine National Monument

- UNESCO World Heritage Site (tentative) [37]

National - Japan

Torishima

- National Wildlife Protection Area (1954) [17]
- Natural Monument (1958) [17]

Mukojima

- National Wildlife Protection Area (1954) [38]
- Ogasawara National Park (1972) [38]
- Feral Goat Eradication Plan (1997-2004) [38]

Ogasawara Islands

- IUCN Management Categories II and V (National Park, Protected landscape) [39, 40]

National – United States

- Papahānaumokuākea Marine National Monument and Draft Management Plan 2008 [41]

Senkaku Retto/ Diaoyu Islands – disputed territory

Minami-kojima

- none

POPULATION TRENDS

At the beginning of the 20th century, *P. albatrus* approached extinction, primarily as a result of commercial harvest on the breeding colonies in Japan. Albatrosses were killed primarily for their feathers; the down feathers were used for quilts and pillows, and wing and tail feathers were used for writing quills. In addition, their carcasses were rendered for oil, and processed into fertilizer; and, their eggs were collected for food [31]. Pre-exploitation worldwide population estimates of *P. albatrus* are not known. The total number of birds harvested provides the best estimate of the pre-exploitation population size; between about 1885 and 1903, an estimated five million *P. albatrus* were harvested from the breeding colony on Torishima [31], with the harvest continuing until the early 1930s. By 1949, there were no *P. albatrus* breeding at any of the historically known breeding sites, including Torishima, and the species was thought to be extinct [31].

In 1950, *P. albatrus* was reported nesting on Torishima [42, 43]. In January, 1951, about 10 birds were observed visiting Torishima [44]; And, by 1954 there were 25 birds and at least 6 breeding pairs [45]. Since then, the population has increased steadily at 6-8% / year [46] (Figure 2).

In 1971, 12 adult *P. albatrus* were discovered on Minami-kojima at a formerly-used breeding colony site [47]. Aerial surveys in 1979 and 1980 revealed an estimated 16 to 35 adults respectively. In April 1988, the first confirmed chicks on Minami-kojima were observed; and, in March 1991, 10 chicks were seen. In 1991, the estimate for the population on Minami-kojima was 75 birds and 15 breeding pairs [48]. In 2002, H. Hasegawa counted 33 fledglings at this breeding colony. Assuming a fledging success rate of 64 percent, this would represent 52 nesting pairs (Table 4). There is no information available on historical numbers at this breeding site.

In 2006-2007, the world population estimate, including breeding and non-breeding birds of both Torishima and Minami-kojima origin was estimated to be about 2,350 birds [32] and is rapidly increasing (Figure 2, Table 5). The global population estimate assumes that the population structure and growth at Minami-kojima are similar to that observed at Torishima.

Table 4. Monitoring methods and estimates of the population size (annual breeding pairs) for each breeding site. Table based on unpublished data from the Yamashina Institute for Ornithology and Toho University.

Breeding site location	Jurisdiction	Years monitored	Monitoring method	Monitoring accuracy	Breeding pairs (last census)
Torishima Island 30° 29'N, 140° 18'E	Japan	1953-2008	A,B (100%)	High	341 (2007)
Minami-kojima 25° 44'N, 123° 34' E	Disputed	1979, 1980, 1988,1991, 2002	A, B (100%)	Unknown	c. 52 (2002)

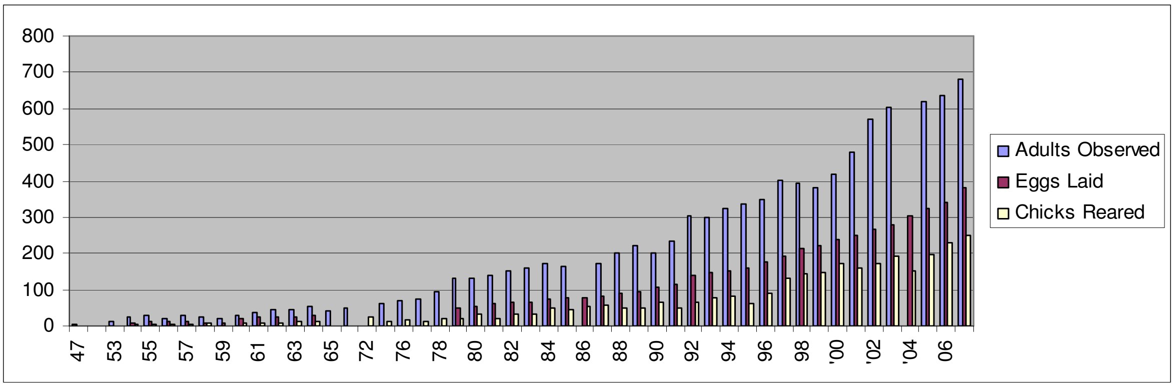


Figure 2. *Counts of* P. albatrus *breeding adults, eggs, and nearly-fledged chicks on Torishima Island, Japan, from 1947-2007. Figure based on unpublished data from H. Hasegawa.*

Table 5: Trend analysis for P. albatrus*. From H. Hasegawa unpublished data.*

Breeding site	Current Monitoring	Trend Years	% average change per year (95% Confidence Interval) [49]	Trend
Torishima Island	Yes	1994 - 2007*	7.03 (6.09, 7.97)	Steep Increase

*based on eggs counted, by laying year

FORAGING ECOLOGY AND DIET

The diet of *P. albatrus* during breeding is not well-known, but observations of food brought to nestlings [50] and of regurgitated material [31] indicate that the diet includes squid (especially the Japanese common squid [*Todarodes pacificus*]), shrimp, fish (including bonitos [*Sarda* sp.], flying fishes [*Exocoetidae*] and sardines [*Clupeidae*]), flying fish eggs, and other crustaceans [17, 43, 51]. *P. albatrus* may formerly have scavenged salmon (*Oncorhynchus* sp.) from shallow coastal estuaries [51]. This species has also been reported to scavenge discarded marine mammals and blubber from whaling vessels, and they readily scavenge fisheries offal [17]. *P. albatrus* forages diurnally and possibly nocturnally [17], either singly or in groups (occasionally in the 100's) [52] predominantly taking prey by surface-seizing [52, 53, 54].

What little diet information exists for this species at sea during the non-breeding season suggests that squids, crustaceans, and fishes are important prey [17]. In the Bering Sea, prey items comprised of mid-water squid concentrations (primarily *Berryteuthis magister*, and *Gonatopsis borealis* in the upper layer [200–500 m]) were greatest near the outer continental shelf and slope [55]. Mid-water prey may become available to albatrosses through: scavenging on discards from subsurface predators and fisheries; positively buoyant post-mortem organisms; and vertical migration [56, 57]. The Japanese common squid, a known diet item of *P. albatrus* [58], is abundant within the Kuroshio-Oyahio transition zone west of 160° E [59], a region that was visited by all albatrosses tracked from Torishima Island.

Researchers from the Yamashina Institute have observed rafts of *P. albatrus* off the Tsubame-zaki colony on Torishima, feeding on what was likely dead giant squid (*Architeuthis spp.*) tissue (2m by 2m in size). They have also observed that chicks and adults regurgitate small squid and squid beaks, primarily during May, prior to chick fledging [60]. Rafts of *P. albatrus*, possibly feeding aggregations, have also been observed in the northern Bering Sea above canyons along the Bering Sea shelfbreak [52] (Figure 3).

This species of albatross visits and follows commercial fishing vessels in Alaska that target sablefish (*Anoplopoma fimbria*), Pacific cod (*Gadus macrocephalus*), Pacific halibut (*Hippoglossus stenolepis*), and pollock (*Theragra chalcogramma*) [61]. Although at-sea processing offal and commercial longlining bait is not likely a part of *P. albatrus* normal diet, it may now constitute a notable portion of the caloric intake for these birds.

MARINE DISTRIBUTION

The range of *Phoebastria albatrus* covers most of the North Pacific Ocean, as well as a few observations from the Sea of Okhotsk and the East China Sea [62]. The species occurs throughout international waters and within the Exclusive Economic Zones (EEZs) of Mexico, the United States (US), Canada, Russia, Japan, China, North and South Korea, the Federated States of Micronesia, and the Republic of the Marshall Islands. Although *P. albatrus* has been observed near the Diomede Islands (65° 45'N) [51], it is likely that they seldom occur north of St. Lawrence Island (approx. 63° N, Figure 5). The southern limit of *P. albatrus* is unknown, but probably coincides with the northern edge of the North Equatorial Current.

Historic records suggested that the species was presumably abundant in coastal North America [17, 63]. The bones of *P. albatrus* have been found in midden sites from many locations along the west coast of North America, including California (USA) [64], British Columbia (Canada) [65] and Alaska (USA) [66, 67, 68, 69]. Based upon those midden records, as well as the relative scarcity of pelagic observations, *P. albatrus* has been characterized as either a coastal [17] or a nearshore species [64]. Prior to the late 1990's, nearly all known sightings of *P. albatrus* at sea were from US-based fishermen and fishery observers [52]. The resulting distribution suggested that this was a coastal and shelfbreak associated species. However, because sightings came mostly from heavily fished areas near the coastal and shelfbreak zones, the resulting distribution was likely biased. It was not until the advent of satellite telemetry that an unbiased view of this species distribution began to be realized. Telemetry data indicate that *P. albatrus* generally does not disperse widely throughout the subarctic North Pacific [58].

Satellite tagging efforts have been conducted regularly on *P. albatrus* since the late 1990's, with small numbers of birds tagged every year since 2000. As of 2008, scientists from Japan and the USA have collaborated in attaching satellite tags to 56 birds (over 2% of the world population); 23 of which were non-breeding adults, post-breeding adults, or subadults tagged on Torishima [70]. Between 2006 and 2008, 21 P. albatrus breeding on Torishima were tagged to determine where they foraged to provision their chicks (Figure 4); as well as to study post-breeding dispersal (Figure 6) [70]. In addition, 12 *P. albatrus* were captured at sea in Alaska and fitted with satellite tags [70]. A few of the birds that were tagged at sea were newly fledged, and exhibited markedly different movement patterns than older birds, with the immatures covering more than twice the average daily distance flown by older birds [71]. In 2008, joint US and Japan efforts began tagging fledglings to study post fledging dispersal and survival of both translocated and naturally-reared chicks. All tags have been attached to birds' back feathers and molt off within months of attachment (Figure 8) [70]. Initial dispersal patterns of naturally-reared and translocated fledglings are remarkably similar [30].

Figure 3. Flock of P. albatrus *observed above Pervenets Canyon along the Bering Sea shelfbreak near the US Russia Border in the Bering Sea. Photo by Josh Hawthorne of the F/V Blue Gaddus*

During the non-breeding season, *P. albatrus* ranges along the Pacific Rim from southern Japan to northern California, primarily along continental shelf margins. The North Pacific marine environment most heavily used by *P. albatrus* is characterized by regions of upwelling and high productivity along the northern edge of the Gulf of Alaska, along the Aleutian Chain, and along the Bering Sea shelfbreak from the Alaska Peninsula out towards St. Matthew Island [33, 51]. The shelfbreak in these areas has been described as a "greenbelt" of high chlorophyll concentration and primary productivity [72]. The interaction of strong tidal currents, with the abrupt, steep shelfbreak, promotes upwelling that brings nutrients to the surface [58, 71]. As a result, primary production in these areas remains elevated throughout summer [58]. Satellite tracked *P. albatrus* foraged along the Bering Sea shelfbreak where surface chl a standing stocks were at a maximum (although they also foraged at other locations where the concentrations of chl a was far lower) [58].

Tagged *P. albatrus* also used the less productive abyssal waters away from regions of upwelling, but the paucity of observations from those areas suggests that the birds that were tracked there may simply have been transiting between preferred foraging habitats [71]. *P. albatrus* adults spent less than 5% of their time over waters exceeding 3000m deep [58, 71]; whereas, adults and subadults frequented areas with waters shallower than 1000m deep more than 70% of the time, and juveniles almost 80% of the time [58].

The distribution of squids is one plausible explanation for the association of *P. albatrus* with shelfbreak and slope regions of the Northwest Pacific Ocean and the Bering Sea [58]. Further, the telemetry data showed that *P. albatrus* did not disperse widely throughout the subarctic North Pacific and were consistent with ship-based observations in the gyres [58, 63, 73]. Consequently, it has been suggested that *P. albatrus* may be relatively common nearshore, but only where upwelling "hotspots" occur in proximity to the coast; and that it would be more accurate to label the species as a "continental shelf-edge specialist" than a coastal or nearshore species [52].

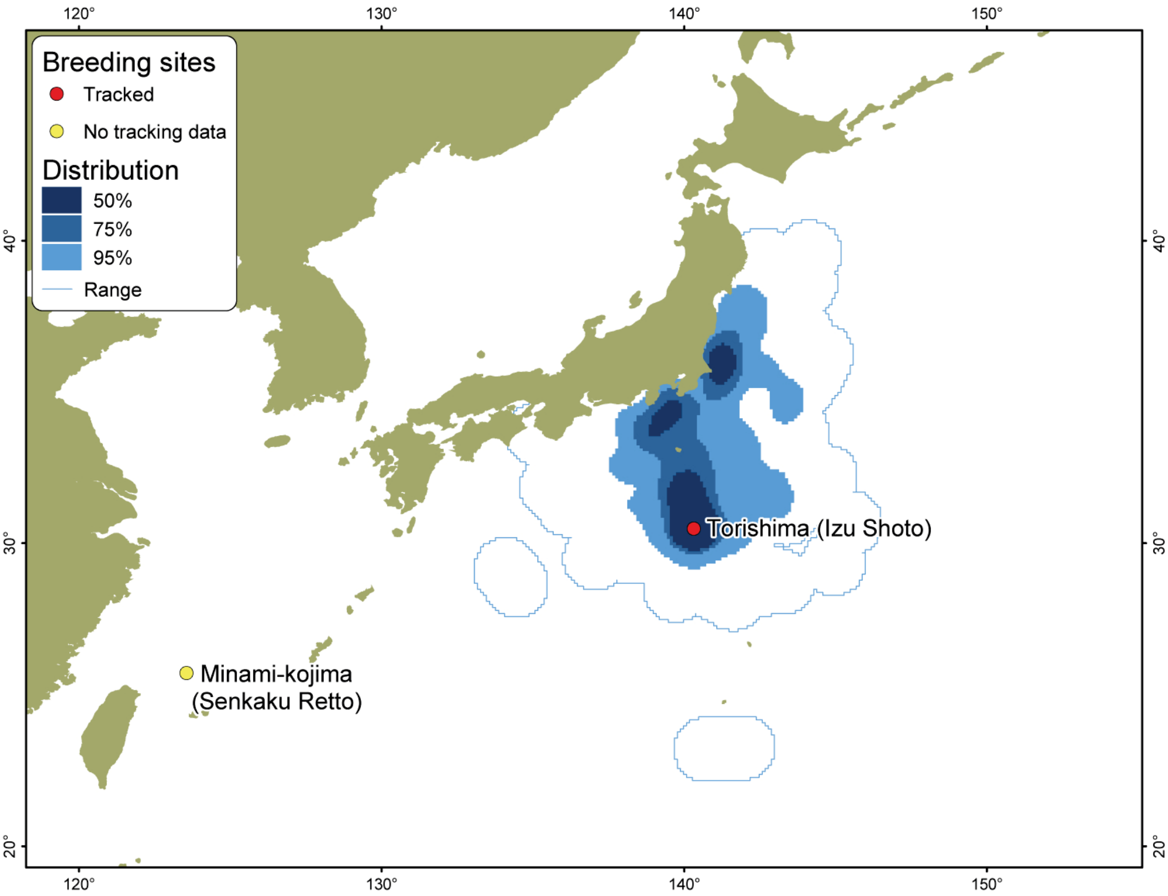


Figure 4. Range and distribution isopleths for breeding Phoebastria albatrus *captured and satellite-tagged during brood-rearing in 2006 and 2007. Data from R. Suryan, Oregon State University.*

Other than the Waved Albatross (*P. irrorata*), which forages almost exclusively over a relatively small triangle between the Galapagos Islands and the continental shelf off Ecuador and Peru [51,73], no other species of albatross has such a narrow and predictable range of foraging habitat as *P. albatrus* (at least in Alaskan waters) [52]. From December through April, the distribution of adult and immature *P. albatrus* is primarily concentrated near the breeding colonies [63, 70], although foraging trips may extend hundreds of miles or more from the colony sites [27, 70]. Immature birds exhibit two patterns of post-breeding dispersal: while some move relatively rapidly north to the western Aleutian Islands, other individuals stay within the coastal waters of northern Japan and the Kuril Islands throughout the summer. Then, in early September these individuals move into the western Aleutian Islands; once in the Aleutians, most birds travel east toward the Gulf of Alaska [58, 74]. Both satellite data and at-sea opportunistic sightings indicate a prevalence of juvenile and sub-adult *P. albatrus* off the west coasts of Canada and the USA [75, 76, 77, 78]. In late September, large flocks of *P. albatrus* have been observed over the Bering Sea canyons [52] (Figure 3); these are the only known concentrations of this species away from their breeding islands.

Movement patterns may differ between gender and age classes. Limited data suggests that upon leaving Torishima, females tend to spend more time offshore of Japan and the Kuril Islands and Kamchatka Peninsula, Russia, compared to males, which spend more time within the Aleutian Islands and Bering Sea north of 50° N latitude [58, 71]. Tagged yearlings traveled nearly twice the distance per day (245 ± 8 km/d) on average than all older albatrosses (133 ± 8 km/d). In general, *P. albatrus* are more active during the day (mean movement rate = 14 km/h ± 1.5 SE) than at night [58, 71]. Seven of 11 tagged birds with sufficient data for comparison had significantly greater movement rates during the day than at night, which is consistent with reports from the other two species of North Pacific albatrosses [71, 79, 80]. Because *P. albatrus* foraged extensively along continental shelf margins, the majority of time was spent within national EEZs, particularly US (off Alaska), Russia, and Japan, rather than over international waters [33, 71].

Overall, *P. albatrus* spent the greatest proportion of time off Alaska, and secondarily Russia, during the post-breeding season, regardless of whether the birds were tagged in Japan or Alaska. Satellite-tagged birds spent relatively little time in central gyres but did transit these regions north of 35°N latitude [33]. During their post-breeding migration, females may have a prolonged exposure to fisheries in Japanese and Russian waters compared to males, which spent more time within the Aleutian Islands and Bering Sea. Juvenile birds have greater exposure to fisheries on the Bering Sea shelf and off the west coasts of Canada and the US [33].

P. albatrus has the greatest potential overlap with fisheries that occurred in the shallower waters along continental shelf break and slope regions, e.g., sablefish and Pacific halibut longline fisheries off the coasts of Alaska and British Columbia. However, tagged birds also frequented the extensive Bering Sea shelf and shelfbreak areas, suggesting significant potential for interactions with the commercial pollock and Pacific cod fisheries [71]. However, overlap between the distribution of birds and fishery effort does not mean that interactions between birds and boats necessarily occurs.

Based upon satellite data during the breeding season, the at sea range of *P. albatrus* overlaps almost exclusively with the WCPFC area; whereas, birds tracked from their capture sites near the Aleutian Islands during the non-breeding season, overlapped extensively with the WCPFC and the IPHC areas and to a limited extent with IATTC waters (Figures 1 and 5).

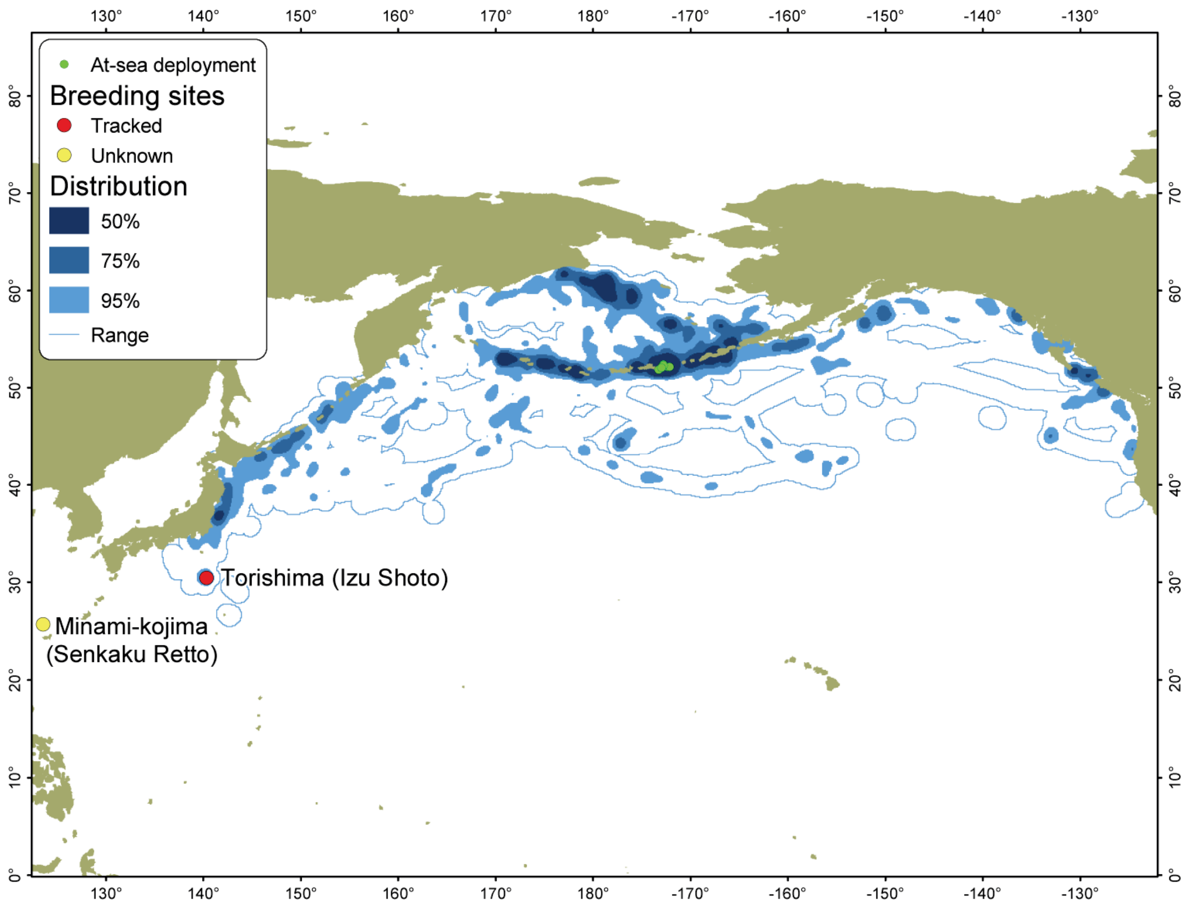


Figure 5. *Range and distribution isopleths for* Phoebastria albatrus. *Information was derived from birds that were captured and satellite-tagged at two locations; on Torishima island, where breeding, non-breeding and post-breeding birds (n = 23) were tagged between 2006-2008; and near Seguam Pass, where birds were captured and satellite-tagged from 2003-2006 (n = 12). Data from R. Suryan, Oregon State University.*

BREEDING SITES: THREATS

Threats to *P. albatrus* on Torishima remain high, despite habitat management efforts that have been undertaken there (Table 6). Despite intensive erosion control efforts undertaken by the Japanese government, erosion and flooding remain a threat. High winds can also blow chicks off their nests and down the steep slope, where parents cannot relocate them. Modelling suggests that a worst-case scenario volcanic eruption could remove about 40% of the world population in a single event [81, 82]. Such an eruption could also render breeding habitat unsuitable and would cause a lingering widow-effect as birds formed new pair bonds over subsequent years.

Threats to the species on Minami Kojima are moderate to high, mostly because of vast natural gas reserves located beneath the ocean floor in the area. However, these threats are not immediate. Development of these reserves is not currently underway, likely due to the disputed ownership of the territorial waters surrounding the Senkaku Islands [27].

Table 6. *Summary of known threats at the breeding sites of* P. albatrus. *Table based on the draft US Short-tailed Albatross Recovery Plan* [27].

Breeding site	Human disturbance	Human take	Natural disaster	Disease	Habitat alteration (human)	Habitat alteration (alien species)	Predation (alien species)	Increased impact by native species	Contamination
Torishima Island	Unknown [a]	No	High [c]	No	Yes [d]	Unknown [e]	No [g]	No	No
Minami Kojima	Unknown [b]	No	No	No	No	Unknown [f]	Unknown [f]	Unknown [f]	Unknown [f]

[a] Anthropogenic disturbance on Torishima is essentially limited to activities associated with the conservation management of the species.

[b] Anthropogenic disturbance on Minami-kojima is limited to unlawful trespass activities on the island, and fishing and military activities near the island.
[c] The Tsubame-zaki colony on Torishima Island is subjected to erosion, flooding, and severe wind gusts that can kill or displace eggs and chicks. Both the Tsubame-zaki and Hatsune-zaki colonies are subjected to the hazards of severe volcanic activity.
[d] Habitat alteration in the form of flood control structures (gabions), terracing, and revegetation activities at the Tsubame-zaki colony site are all undertaken for the conservation benefit of this species. Birds may become entangled in gabion cages as they corrode.
[e] Invasive plants on Torishima may reduce quality of nesting habitat at the Hatsune-zaki colony site in the future.
[f] Ecological information from Minami-kojima is largely lacking due to the inaccessibility of the island, which is a result of disputed claims to the island among Japan, China, and Taiwan.
[g] Black rats (*Rattus rattus*) are common on Torishima, but have not been observed to have a deleterious effect upon *P. albatrus*.

Table 7. *Summary of known marine-based threats to* P. albatrus*. Table based draft US Short-tailed Albatross Recovery Plan* [27].

EEZ	Longline fishing	Jig fishing	Trawling	Plastic pollution	Petroleum contamination	Predation
Alaska	Documented[1]	N/A[5]	Not documented	Unknown	Unknown	Unknown
Canada	Not documented[2]	N/A	Not documented	Unknown	Unknown	Unknown
China	Unknown[3]	Unknown	Unknown	Unknown	Unknown	Unknown
Continental US	Not documented	Not documented	Not documented	Unknown	Unknown	Unknown
Hawaii	Not documented	Not documented	Not documented	Unknown	Unknown	Unknown
Japan	Likely[4]	Likely	Unknown	Unknown	Unknown	Unknown
Russia	Documented	Unknown	Unknown	Unknown	Unknown	Unknown
Taiwan	Likely	Unknown	Unknown	Unknown	Unknown	Unknown

[1]Documented = take of at least one bird reported.
[2]Not documented = reporting mechanism in place (i.e., video monitoring), but no take has been reported.
[3]Unknown = No take reported, but no reporting mechanism in place, or information is not available.
[4]Likely = No reported take, no reporting mechanism is in place, but spatial overlap between species and fishery is so great that take is likely to have occurred. Birds with hooks in mouth from unknown fishery observed on breeding colony.
[5]N/A = this type of fishery is not conducted on a commercial scale in this area.

MARINE THREATS

Like most marine organisms, *P. albatrus* are exposed to the threats of marine debris, plastic ingestion and pollution (Table 7). Unlike many southern hemisphere albatrosses, *P. albatrus* are known to have been taken in U.S and Russian longline fisheries for Pacific cod and Pacific halibut [27]. In addition, birds on Torishima have been observed with hooks in their mouths of the style used in Japanese fisheries near the island [83]. However, the species long-term population growth rate of 6-8% suggests that there is no chronic mortality source that is threatening this species with extinction. A recent population viability analysis conducted for this species suggests that an increase in mortality across age classes of 6% could cause this increasing population to decline in numbers [82].

During their post-breeding migration, adult females may have a prolonged exposure to fisheries in Japanese and Russian waters compared to males, and juvenile birds have a greater exposure to fisheries on the Bering Sea shelf and off the west coasts of Canada and the US [33]. Within the EEZs of the US (off Alaska) and Canada (off British Columbia), mandatory seabird bycatch avoidance requirements are in place and are enforced [14, 84]. It is unknown to what extent seabird avoidance requirements are in place and enforced in Russia's and Japan's EEZ, suggesting that albatrosses outside the two aforementioned EEZs (e.g., possibly females and younger age classes) are subjected to greater fisheries-related risks.

Figure 6. Breeding adult P. albatrus *carrying a satellite transmitter taped to its back feathers. Photo by Noboru Nakamura.*

KEY GAPS IN SPECIES ASSESSMENT

The inaccessibility of Minami-kojima hampers scientists in determining population trends there and in understanding the genetic discreteness and at-sea distribution of that population. The dispersal patterns and survival rate of fledglings, regardless of location, remain unknown, but is being investigated as part of a *P. albatrus* chick translocation effort (5 translocated *P. albatrus* chicks were satellite-tagged on Mukojima [85] and an additional 5 fledglings were satellite tagged on Torishima just prior to fledging, both in May, 2008. Satellite tagging efforts through 2008 have not provided information on the movements of birds from their northern feeding grounds back to their breeding colonies.

Diet of the species during the non-breeding season is not known. Nor is it known why the birds congregate over the Bering Sea Canyons, especially Pervenets Canyon, during late September just prior to their migration back to Torishima.

Mortality of *P. albatrus* caused by non-US fisheries remains unassessed, as does mortality caused by the Pacific halibut fleet operating in both Canada and the US. Telemetry information suggests that the Pacific halibut fleet's distribution in the Aleutians, and timing of effort in this area, make this sector of the halibut fishery one of the highest risk US fisheries for *P. albatrus* mortality [71], while remaining one of the few commercial hook and line fisheries that do not require onboard observers. An independent monitoring mechanism would be needed to determine levels of bycatch in this fishery. However, the levels of coverage and associated costs needed to make reliable estimates of the rate of rare bycatch events would be quite high.

Mortality caused by trawl fisheries is difficult to assess due to the nature of the mortality (bird collisions with cables). While research by Dietrich and Melvin suggest that the mortality rate is almost certainly very low [86], albatross taken in trawl fisheries by cables are very unlikely to show up in any bycatch samples, and observers are not tasked with monitoring the cables to assess the rate of bird/cable collisions while the gear is being fished [86]. Cable-induced *P. immutabilis* mortalities have been documented in Alaskan trawl fisheries, but *P. albatrus* mortalities have not [86, 87]. A pilot study on Alaskan shoreside delivery and catcher processor vessels indicated that electronic monitoring systems could effectively monitor seabird interactions with trawl third wires [88].

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RECOMMENDED CITATION

Balogh, G.R. and K. Morgan. 2008. Species Information---Short-tailed Albatross (*Phoebastria albatrus*). Unpublished report.

GLOSSARY AND NOTES

Monitoring Method A: Counts of nesting adults. Errors here are detection errors (the probability of not detecting a bird pair because attending adult is not seen during survey or because both individuals are absent at the time of the survey).
Monitoring Method B: Counts of chicks. Errors here are detection errors (The probability of not seeing a bird that is present).

RELIABILITY

High	Repeated daily counts over at least four days with maximum counts used
Unknown	Single count made during single visit, possibly made from a boat or helicopter

(iv) Population Trend
Trend analyses were run in TRIM software using the linear trend model with stepwise selection of change points (missing values removed) with serial correlation taken into account but not overdispersion. The multiplicative overall slope estimate in TRIM is converted into one of the following categories. The category depends on the overall slope as well as its 95% confidence interval (= slope +/- 1.96 times the standard error of the slope).
Strong increase - increase significantly more than 5% per year (5% would mean a doubling in abundance within 15 years). Criterion: lower limit of confidence interval > 1.05.
Moderate increase – significant increase, but not significantly more than 5% per year. Criterion: 1.00 < lower limit of confidence interval < 1.05.
Stable - no significant increase or decline, and it is certain that trends are less than 5% per year. Criterion: confidence interval encloses 1.00 but lower limit > 0.95 and upper limit < 1.05.
Uncertain - no significant increase or decline, but not certain if trends are less than 5% per year. Criterion: confidence interval encloses 1.00 but lower limit < 0.95 or upper limit > 1.05.
Moderate decline - significant decline, but not significantly more than 5% per year. Criterion: 0.95 < upper limit of confidence interval < 1.00.
Steep decline - decline significantly more than 5% per year (5% would mean a halving in abundance within 15 years). Criterion: upper limit of confidence interval < 0.95.

(vii) Threats

High - a threat that is likely to be the main cause of a rapid or catastrophic decline, or reversal of recovery of a population, and lead to the local extinction of a species from the breeding area.
Medium - a threat that is causing a gradual decline, or slowing of recovery of a population, at a known breeding area.
Low - an existing threat that may cause decline or slow recovery of a population, or localised extinction in a breeding area.
Yes, No or Unknown- available information is insufficient to assign threat level

(viii) Maps
The distribution maps shown were created from platform terminal transmitters (PTT). Transmitter cycles were 6–8 h on and 18–24 h off. Satellite-derived position fixes are from the Argos system (Service Argos, Inc.). Locations were put through a filtering algorithm (D. Douglas, USGS, Alaska Science Center, Juneau, Alaska; http://alaska.usgs.gov/science/biology/spatial/) to cull erroneous locations.