

## **Laysan Albatross**

*Phoebastria immutabilis*

Hawaiian: Moli

Family: Diomedidae

**IUCN Red List Ranking - Vulnerable**

### **Identification**

Laysan Albatross weigh approximately 3.2 kilograms, with males weighing about 10% more than females. They have a wingspan of approximately 2.1 m, and are approximately 0.8 meters in body length. Although they are large birds, they are small for an albatross. Laysan albatross have a white head, body, rump and undertail coverts while their back and upperwings are black. There is also a dark patch surrounding their eyes. Bill color varies from pink to yellow with a dark tip and feet are pinkish. Both sexes and juveniles are indistinguishable, giving this bird its species name, *immutabilis*.

Laysan Albatross is the only Pacific albatross with white underparts and a uniformly dark back and upperwing. Similar species include Black-footed Albatross (*P. nigripes*), which has a uniformly sooty plumage and the much rarer Short-tailed Albatross (*P. albatrus*), which has a larger, heavier bill, all white underwings, a yellow wash on the nape and a white back.

### **Survival and Lifespan**

In one study, 69% of females and 65% of males survived to 17 years of age. Five percent of fledglings banded in 1944 were recaptured alive at 29 years of age. In 1972 - 1973 there were >11 birds of 40 years of age or older and the oldest known bird was at least 51 years of age. Birds that start breeding early in life tend to die young. Annual mortality rates are highest during the third to sixth breeding years. In years 1, 2 and 7 - 9, mortality is half that during years 3 - 6.

### **Distribution**

#### ***Breeding (November-July)***

Laysan Albatross breed primarily in the Hawaiian Archipelago. A growing number of birds nest in the main Islands, at Lehua Rock and Kaula Rock (Niihau), Kilauea Point NWR and Princeville (Kauai) and Kaena Point (Oahu). Birds also attempt to breed at military bases (Barking Sands on Kauai, Kaneohe Marine Corp Base, Oahu), but are routinely discouraged. Most birds in Hawaii nest on all the Northwest Hawaiian Islands from Nihoa to Kure. Outside of Hawaii, small populations exist on Guadalupe Island, off central Baja California and a few on San Benedicto Island and Island Clarion in the Revillagigedos and at Alijos Rocks, off Mexico, and the Bonin Islands.

#### ***Marine***

During the non-breeding season (July to November) birds can be found at sea between the latitudes of 8° N and 59° N and longitudes 170° E and 105° W in the North Pacific Ocean. Birds are recorded annually in Alaska, the Bering Sea, the Aleutians and off California and have been recorded inland in California and Arizona.

### **Breeding Ecology**

Experienced birds arrive at colonies starting November 1 and begin to depart in mid-June with most gone by the last week in July (total of 290 days). Fledglings tend to leave between 5 and 25 of July. Laysan Albatross do not start breeding until they are 8-9 years old, with males starting a year earlier than females. Laysans are capable of breeding every year, but the rate was found to vary from 44% to 100%. Birds are monogamous and few birds change partners over the course of their life, as it reduces breeding success. The pair bond is developed over several years and courtship displays may be developed over three or four years before nesting occurs. Pairs take part in ritual courtship displays, especially during the first few weeks of return before the egg is laid. During this time both birds spend much time "dancing" and calling to each other.

After the adult male and female arrive, copulation may take place within 24 hours. Hours later both birds depart to sea and remain away for about 8 days before returning to lay a single white egg. Laysans typically select nest site closer to vegetation than Black-footed Albatross, and their nest varies from a scrape to a ring-like structure comprised of sand, vegetation, and debris. Most eggs are laid between mid-November and mid-December and eggs hatch from about the third week in January to the middle of February. If an egg is lost or broken the pair will not lay another egg that year. Adults return to their natal site for nesting and will return to the same site year after year.

### **Feeding and Prey**

- Feeding guild – ALBATROSS
  
- Food capture – Laysan Albatross feed by seizing prey at the surface or through shallow diving, though they do not usually submerge fully. They are known to follow and otherwise aggregate at ships and consume fisheries discards. Thus, these albatrosses often scavenge large squid and fish, as well as mammals and seabirds, but not as frequently as Black-footed Albatross. Laysans possess enhanced night vision (high levels of rhodopsin) and forage mostly at night. Some food items that the species feeds on possess light organs and migrate to the surface at night.
  
- Foraging Distribution – Individuals may forage as far as 1,770 km away from the nest, including foraging trips to Alaska and Japan, as well as the west coast of America. Incubating birds tend to be sighted northwest of the Hawaiian Islands while birds feeding nestlings are found closer to and northeast of these colonies. During incubation birds do not eat or drink and water loss is reduced by breathing moist air when the bill is tucked under its feathers.

Habitat may be related to food distribution. Laysans feed largely on squid, the distribution of which is tied to the abundance of shrimp-like euphausiids. Larger euphausiids occur near the surface in eutrophic, cold waters.

- Microhabitat for foraging – Laysans often feed in flocks with other albatross but rarely with other species.
  
- Diet – The species main food items are squid, flying fish eggs, sunfish (*Ranzania laevis*) and deep-water crustaceans. Stomach contents, by volume: 65% squid (especially Ommastrephidae), 9% fish, 9% crustaceans, 4% coelenterates, and 10% stomach oil. Squid were the highest ranked (according to number, volume, and frequency of occurrence in stomach samples) prey item, followed by flying fish (*Exocoetidae*), By-the-wind Sailors (*Verella verella*), and mysids (crustaceans). Also scavenge natural carrion or refuse from ships and pick up considerable quantities of floating pumice and plastic objects.

### **Threats and Status**

Historically the population of Laysan Albatross has been very large, with many millions of birds present. However, human activity has taken its toll with feather, egg and guano mining in the early 20<sup>th</sup> century (more than 300,000 birds were killed on Laysan alone in 1909) and later from war activity at sites like Midway. In 1964-1965 communications antennas on Eastern Island, Midway killed more than 3,000 adults. Also at Midway 54,000 birds were killed as a result of control measures to reduce risk of aircraft collision. The species has found it difficult to recover from these heavy losses.

This species is listed as threatened with a current population estimate of 2.5 million. This still makes it the most abundant albatross in the region and the second most abundant Hawaiian seabird. It is classified as Vulnerable on the basis of a > 30% decline over three generations (84 years). The reason for this decline has been attributed to the effects of longline fishing in the North Pacific. Preliminary data suggest that the rate of decline could be more rapid and that therefore this species could warrant a more serious threat status. This threat is ongoing and is

therefore projected into the future. In the Hawaiian Archipelago, the Laysan population is estimated at greater than 590,000 pairs with the largest colonies occurring on Midway Atoll (441,000 pairs) and Laysan (145,000 pairs). The total population of all colonies in the main Islands is about 100 pairs. The worldwide population is estimated at 630,000 breeding pairs.

Main threats to the species include:

- Fisheries – The greatest threats to this species have been from interactions with commercial fisheries in the North Pacific. At sea many birds are killed each year when they become entangled or hooked on long-line fishing nets. In 1990, 17,548 were caught in nets; this represents 0.7% of the total population. Although driftnet fisheries around the world and long-line fisheries for swordfish in Hawaii have been stopped because of their impacts on non-target species, other long-line fisheries continue. New devices, which conceal baited hooks from seabirds while the longlines are being set, seem to be an effective way of reducing seabird deaths in the industry (see: [http://www.audubon.org/news/release/seabird\\_deaths.html](http://www.audubon.org/news/release/seabird_deaths.html) ). Similar devices should be employed wherever longline fisheries are found to lead to seabird deaths.
- Predation – Predation by introduced predators is also a problem for Laysan Albatross, especially for chicks. In the main Hawaiian Islands, dogs appear to be the main threat and on Kauai, many birds have been lost when “escaped” dogs break through fenced colonies and kill birds. On Oahu, mongooses take some birds. Once the young birds fledge and are alighted on the sea, Tiger Sharks can pose a serious threat, and many Laysan and Black-footed Albatross are lost this way every year.
- Marine pollution – Similar to other albatross, Laysans regularly ingest plastic debris and regurgitate it for their chicks. Punctures caused by ingested plastics directly kill birds and compromise birds already suffering from heat stress and hunger.
- Contaminants – Organochlorine levels high enough to result in eggshell thinning and embryonic defects have been detected in Laysan Albatross. Other contaminants such as lead paint left from military occupation (French Frigate Shoals, Midway Atoll, Kure Atoll) cause fatal deformities in chicks.
- Invasive species – Non-native plants, specifically golden crown-beard (*Verbesina encelioides*), degrade nesting habitat and may limit nesting density, reduce productivity, and provide habitat for mosquitoes (*Culex* spp.) that carry avian pox. When albatross begin nesting *Verbesina* is low and sparse. As the season progresses, the annual can reach heights of over 6 ft. Adults land in the nearest opening and must wander through a dense maze of *Verbesina* to feed their chicks. Many die of heat stress during this process. Additionally, fledging chicks may become lost in the vegetation and die. Furthermore, introduced big-headed ants (*Pheidole megacephala*) at Kure and Midway may facilitate the destruction of native vegetation by a non-native scale insect.
- Disease – Avian pox virus, a widespread disease in birds that is transmitted by mosquitoes, is a problem at Kaena Point, Oahu and Midway Atoll in the Northwest Hawaiian Islands. The disease typically causes growths on the feet and face of albatross chicks. Although most birds recover and fledge successfully, the disease can be crippling or fatal. Furthermore, long-term effects on seabirds are unknown.
- Collisions – At Midway, albatross collide with buildings, lights, antenna wires, and other man-made structures. In 1964 alone, 3,000 albatross were killed by colliding with communication antennas on Midway.

### **Selected Readings**

- Division of Forestry and Wildlife (DOFAW). 2005. Hawaii's Comprehensive Wildlife Conservation Strategy. Div. Of Forestry and Wildlife, Dept. of Land and Natural Resources, Honolulu, HI. [www.state.hi.us/dlnr/dofaw/cwcs/process\\_strategy.htm](http://www.state.hi.us/dlnr/dofaw/cwcs/process_strategy.htm)
- Harrison, C.S. 1990. Seabirds of Hawaii. Cornell University Press, Ithaca, NY.
- IUCN. 2003. *2003 IUCN Red List of Threatened Species*. [www.iucnredlist.org](http://www.iucnredlist.org). Downloaded on 18 November 2003.
- Pratt, H.D., P. L. Bruner, and D. G. Berrett. 1987. The Birds of Hawaii and the Tropical Pacific. Princeton University Press, Princeton, NJ.
- Tickell, W.L.N. 2000. Albatrosses. New Haven: Yale University Press.
- Whittow, G.C. 1993. Laysan Albatross (*Diomedea immutabilis*). In The Birds of North America, No. 66 (A. Poole and F. Gill, Eds.) Philadelphia: the Academy of Natural Sciences, Washington, D.C.: The American Ornithologists' Union.
- VanderWerf, E.A., K.A. Swindle, and L.C. Young. 2005. Pox virus in Laysan Albatross chicks at Ka'ena Point, O'ahu: How can we help? *Elepaio*: 65(1). <http://www.hawaiiiaudubon.com/newsletter/el0205.pdf>