LAYSAN ALBATROSS - PHOEBASTRIA IMMUTABILIS

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Procellariiformes Family: Diomedeidae Genus: Phoebastria Species: P. immutabilis

Habitat:

Biomes: Laysan Albatrosses range across the northern Pacific Ocean from about the latitude of Costa Rica to the Aleutian Islands and southern Bering Sea. They tend to forage in colder, food-rich waters, although they have been found in waters ranging from about 35°F to 79°F. The birds nest on open, grassy or sandy expanses of islands—particularly Midway Atoll and Laysan Island (which together account for about 94 percent of breeding pairs), other small Hawaiian Islands, the larger islands of Kauai and Oahu, and a few sites off Mexico and Japan.

Distribution:

In US/Hawaiian Archipelago: The Laysan albatross has a wide range across the North Pacific, with 16 nesting sites. All but 0.3% of the breeding population is found among the Northwestern Hawaiian Islands, particularly the islands of Midway and Laysan. Small populations are found on the Bonin Islands near Japan and the bird has begun to colonize islands off Mexico, such as Guadalupe Island and others in the Revillagigedo Archipelago. When away from the breeding areas, they range widely from Japan to the Bering Sea and south to 15°N.

Holistic Description: One of the most marvelous sights in the Pacific ocean is the graceful glide of a Laysan Albatross at play among the winds and waves. These expert soarers can travel hundreds of miles per day with barely a wingbeat. They nest on islands of the tropical Pacific, but they may head out to Japan, the Aleutian Islands, or California to feed. Laysan Albatrosses are numerous, though they face threats from longline fishing, plastic trash in the ocean, and predation by dogs, rats, and cats.

Species Richness: NO SUBSPECIES

Population Dynamic: NONE, CONSERVATION STATUS

Evolution and Systematics:

Evolution: In the North Pacific Neogene (Miocene and Pliocene epochs, approximately 2.0–22.5 million years before present [mybp]), 3 extinct species in Diomedea are known plus several more records exist for the genus.

Systematics: Within the order of tube-nosed seabirds, Procellariiformes, the albatrosses are the family Diomedeidae and might be most closely related to shearwaters and petrels, Procellariidae, and diving petrels within the family Pelecanidae. Alternatively, albatrosses might have a common ancestor with the rest of tube nosed birds. Apparent paraphyly within the storm-petrels, Hydrobatidae, challenges development of a definitive phylogeny.

Number of Species: NO SUBSPECIES

Number of Genera: NO SUBSPECIES

Physical Characteristics:

Size and Length: Length: 31.1-31.9 in (79-81 cm) Weight: 77.6-151.7 oz (2200-4300 g)

Wingspan: 76.8-79.9 in (195-203 cm)

Coloration: Laysan Albatrosses are white-headed birds with dark gray-brown upper-wings and mostly white underwings (with variable dark markings). The underparts are clean white. They have a dark patch around the eye. In flight, note the dark back, white rump, and dark tail.

General Body Features: Laysan Albatrosses are very large seabirds (though they are among the smaller albatrosses). They have very long, very narrow wings. The neck is thick and the head is large. They are very large seabirds withs narrow, pointed wings. Long, thick, hooked bill is pale. Head and rump is white, with dark tail and dark shading on the face.

Special Features of the Body: Yes. When asleep they will close their eyes. It‘s speculated that they can fly while sleeping. Avoid Predation.

Special Features of the Head and Sensory Organs: The bill is large, strong, and sharp-edged, with the upper mandible terminating in a large hook. This bill is composed of several horny plates, and along the sides are the two "tubes", long nostrils that give the order its former name. The tubes of all albatrosses are along the sides of the bill, unlike the rest of the Procellariiformes, where the tubes run along the top of the bill. These tubes allow the albatrosses to measure the exact airspeed in flight; the nostrils are analogous to the pitot tubes in modern aircraft. The albatross needs accurate airspeed measurement in order to perform dynamic soaring.

Dentition: Lamellae and Gizzard

Special Features of the Limbs and Digits: Like other Procellariiformes, they use their uniquely developed sense of smell to locate potential food sources, whereas most birds depend on eyesight. The feet have no hind toe and the three anterior toes are completely webbed. The legs are strong for Procellariiformes, making them and the giant petrels the only members of that order that can walk well on land.

Any Special Internal Anatomy: They have a special salt gland in their head that extracts excess salt from their blood and excretes it through a pair of bony tubes in the bill. This remarkable adaptation allows tubenoses to drink seawater without becoming dehydrated. The adult also gets water and energy from fat. When fat from the fish oil and solid food like squid is metabolized, or processed to release its energy, water is produced
Sexual Dimorphisms: Males, which weigh 2.4 to 4.1 kg (5.3–9.0 lb), are larger than females, which weigh 1.9 to 3.6 kg (4.2–7.9 lb).
Differences Between Juvenile Stage and Adult: Juveniles have a gray bill and a dark upper rump. This species does not have a breeding plumage.

Behavior:

Diurnal, Nocturnal, or Crepuscular: Diurnal
Activity: The classic behavior of albatrosses is dynamic soaring—a flight style marked by very infrequent wingbeats and masterful soaring. The bird takes advantage of wind speed and direction changes at different heights to fly great distances with very slight alterations of their wing position. On the ground these big birds walk ponderously and usually have to run along the ground, into the wind, to be able to take off. Pairs tend to form lasting bonds. They return to the colony beginning in November, where they perform elaborate courtship displays. These include coordinated movements in which the birds touch bills, spread one or both wings, bob their heads, place their bill under one wing, and pause with their bill pointed at the sky. After mating, both birds leave the island, with the female returning first to lay a single egg. It can take up to a decade for a young albatross to successfully reproduce: 1-year-olds usually don't return to the colony at all; 3- and 4-year-olds return to attempt breeding but usually are not successful until they are 9 or 10. They often breed in colonies alongside Black-footed Albatrosses. Introduced dogs, cats, rats, and mongoose threaten eggs, nestlings, and adult birds; on the water they are vulnerable to tiger sharks.
Locomotion: Characteristic plodding walk. After landing they walk to their nests. At the breeding grounds some birds, probably nonbreeders, walk around the colony. Entirely terrestrial; never land on trees or shrubs. Wind facilitates flight. Long narrow wings facilitate "dynamic soaring," taking advantage of the gradation of wind velocity at different heights above the surface of the water. Slope soaring makes use of the wind deflected upwards from the windward face of a wave (Warham 1990). The two processes are combined in a spectacular flight sequence, the bird skimming the surface at high speed across the wind, a wing tip often touching the water, then soaring upwards into the wind. At the top of its climb, the albatross banks to leeward and descends rapidly downwind. The sequence is repeated over and over, with only an occasional flap of the wings. A sheet of slow muscle fibers extends through the pectoralis muscle, forming the tendonous shoulder locking mechanism which facilitates the characteristic gliding flight of albatrosses. Birds settle on the water to feed, dipping head and bill into the water, and occasionally the entire body. Webbed feet are important propulsive devices during take off. Laysans spend less time afloat than do the Black-footed Albatross. SURFACE DIVER.
Communication and Perception: Laysan Albatrosses make a variety of whining, squeaking, grunting, and moaning calls on the breeding grounds, particularly during courtship. These birds snap their bills during courtship and to show aggression.
Home Range: Territory confined to area immediately surrounding nest; used for mating and nesting (Rice and Kenyon 1962a). Birds will defend nest by snapping at an intruder or with bill thrusts and may grab each other's bills (Fisher 1971b). Mean distance between neighboring nests (edge to edge) on Midway 66 cm
Degree of Sociality: Colonial breeder. Colony size ranges from a few pairs to over 800,000 pairs. Usually seen in small (< 10) conspecific groups at sea
Level of Aggression: In general, individuals tolerate neighbors. Even in densely populated areas, nests are far enough apart to permit a bird to walk between them without being pecked by sitting birds. Agonistic behavior, when it occurs, may be directed at nestlings in adjacent nests. When an intruder enters the colony, the nearest birds will sound a "mild alarm note" in which they clack their bills softly. Undisturbed birds make a soft click.
Migration: Laysan Albatrosses leave their breeding grounds from July to October to forage across the northern Pacific Ocean; they tend to go northwest toward Japan and Alaska—one reason they are seen off the West Coast less commonly than Black-footed Albatrosses.

Predators:

Predators: Tiger Sharks, Dogs, Cats, Rats, Mongoose, Fish, Feral Cats, Marine Mammals
Anti-Predator Defenses: Fledglings attempt to flee tiger sharks, but efforts to take off are often too slow to avoid capture.

Diet and Nutrition:

Adult Diet: Laysan Albatrosses eat mainly squid as well as fish eggs, crustaceans, floating carrion, and some discards from fishing boats. They feed by sitting on the water and plunging with their beaks to seize prey near the surface. Adults with chicks to feed take foraging trips that last up to 17 days and travel 1,600 miles away from their nest (straight-line distance).

Juvenile Diet: NONE
Special Adaptations for Getting Prey: CHECK SPECIAL FEATURES
Reproduction:
Mode of Reproduction: Monogamous
Mating System: Socially monogamous. Potential for extra-pair fertilization has not been investigated. Males generally start breeding at younger age than females do; at Midway, mean age 8.4 yr in males, 8.9 yr in females.
Mating Season: November to July
Courtship: Forms over several years. Birds may return to their breeding island when three years old but not breed successfully until 7 or 8. Pair bond is established by ritual dancing and almost always remains intact until broken by death or disappearance of partner (Rice and Kenyon 1962a). Ritual display is elaborateThe dance may involve a third bird. Dancing begins with the arrival of the birds at the breeding grounds. Nonbreeding birds continue to dance during the breeding season. Dance may be initiated with Black-footeds but is completed by birds of the same species. Display postures are similar in the two species. Laysan often fans only one wing while performing certain displays, unlike the Black-footed which fans both. The most obvious difference between the dance of the Black-footed Albatross and the Laysan is in the nature of the Scapular Action.
Territoriality: Territory confined to area immediately surrounding nest; used for mating and nesting. Birds will defend nest by snapping at an intruder or with bill thrusts and may grab each other's bills.
Mating: Female usually adopts posture with spread wings and bent head; male places its bill over the back or neck of the female. Copulation is subdued and lasts 2 to 3 min. Afterwards, the birds circle the site, bill-touch, mutual-preen, and utter Eh ehs. Within hours, the two birds depart for the sea where they remain for about 8 d (pre-laying exodus). Copulation occurs 8–10 d before the egg is laid. Male rarely copulates with female other than his mate; non-breeders may copulate occasionally but birds < 6 yr of age seldom do so.
Nesting: Females place their nests on sparsely vegetated ground, typically close to a small shrub if available. On sandy islands such as Midway and Laysan, the female lies in the sand and scrapes out a hollow with her feet. By rotating around, she forms a circular depression, then gives the nest a low rim by assembling twigs, leaves, and sand picked up from the immediate area around the nest. On larger islands such as Kauai, Hawaii, the birds nest more often on grass or under trees and build the nest rim from leaf litter, ironwood needles, and twigs. The nest (including rim) is about 3 feet in diameter and a couple of inches deep. Often the female continues nest construction while incubation is under way.
Egg-Laying: Clutch Size: 1 egg Number of Broods: 1 brood Egg Length: 4.3 in (10.8 cm) Egg Width: 2.7 in (6.9 cm) Incubation Period: 62-66 days Nestling Period: 165 days Egg Description: Creamy white with brown spotting.
Hatching and Incubation/Gestation: Covered in gray-white down giving a salt-and-pepper appearance; eyes are open; weighing about 7 ounces. SEMI-PRECOCIAL
Development: Hatchlings downy; eyes open. Hatchlings are covered with gray, white-tipped down giving the hatchling a peppercorn appearance.
Parental Care: Brooded by the parent for the first few days, after which the head protrudes from under the adult's wing, breast, or tail. When it is too large to be brooded, one of the parents sits beside the nest and guards it. Male and female share equally in guarding the nestling. Guard spans are much shorter than incubation spans; longest recorded span is 6 d. On average, nestlings are guarded continuously for 17.2 d after hatching, with a range of 12.0 to 24.5 d. After the nestlings are left unattended for the first time, they are guarded intermittently for another 10 d. Up to about 10 d after hatching, parents do not recognize their own nestlings. Adults shade young from solar radiation by standing over them. During the post-guard stage the parent bird visits the nestling only briefly to feed it. Nestling is fed by regurgitation stimulated by nibbling at the adult's bill. Nestling inserts its bill crosswise between the adult's mandibles allowing the ejected oil and partially digested stomach contents to pour into its throat. During a single visit lasting 15–25 min, nestling may be fed 3–4 times. Prior to feeding, the nestling makes the begging “peep-peep” call.
Lifespan: The chick fledges in about five months. The Laysan albatross has a life span of 12-40 years. REACHES SEXUAL MATURITY IN ***8-9 YEARS.***
Conservation:
Official Federal Status: Near Threatened
Special Statuses in Individual States: NONE
Threats: Laysan Albatrosses are numerous, but as with all albatross species there are serious threats to their population, and this species is on the 2016 State of North America's Birds' Watch List, which includes bird species that are most at risk of extinction without significant conservation actions to reverse declines and reduce threats. A 2009 estimate put the global breeding population at about 591,000 pairs, or just under 1.2 million breeding adults, with more than 90% of the total

breeding at just two sites: Midway Atoll and Laysan Island. Laysan Albatross rates a 15 out of 20 on the Continental Concern Score. The North American Waterbird Conservation Plan lists it as a Species of High Concern. In the early twentieth century hundreds of thousands of Laysan Albatrosses were hunted each year for their feathers. When feather hunting came to an end, in the early 1920s, the entire Laysan Albatross population was estimated at about 18,000 pairs. By the late 1950s it had rebounded to about 280,000 pairs and has doubled again since then, though it is still lower than pre-feather-hunting levels. Beginning in the mid-twentieth century, albatrosses colonized Kauai and Oahu, and in 1983 they began nesting in small colonies on Mexican islands including Guadalupe Island. Fully 99 percent of Laysan Albatrosses nest on small, low-lying tropical islands, and these breeding areas will likely be submerged by rising sea levels as a result of climate change in this century—this is the major long-term threat to the Laysan Albatross. More immediate threats include introduced predators such as dogs, cats, rats, and mongoose; lead poisoning from paint chips on Midway, the largest single colony; bycatch in fisheries; and ingestion of plastics. Large losses occurred from gill nets and drift nets set to catch fish (drift netting killed up to 17,500 albatrosses per year, but ended in 1992). Longline fishing, in which ships tow many miles of line with baited hooks, still catches and kills thousands of albatrosses. Since the early 2000s, U.S. (Hawaii and Alaska) longliners have adopted fairly successful solutions to bycatch, but other nations' longline fisheries have not. The oceans contain enormous amounts of floating plastic debris, which adults often pick up and feed to their chicks. This plastic can cause death by starvation or dehydration, puncture a bird's digestive system, or leach harmful chemicals into their systems. Albatrosses take a long time to reach maturity and raise at most only one young per year, so populations take a long time to recover from any increases in adult death rates.

Conservation Efforts: ^^^^^^

Extra Facts:

1. Laysan Albatrosses are masterful soarers, able to fly great distances and through the fiercest storms while barely even flapping their wings. To a large extent, the faster the wind blows the more maneuverable they are.
2. One Laysan Albatross found its way back to Midway Island from the Philippines—a journey of 4,120 miles. Another made its way back to Midway from Washington state traveling at an average of almost 350 miles per day.
3. Ever heard of a "tubenose" before? That's the term birders and biologists use to describe albatrosses and their relatives (petrels, shearwaters, fulmars, and storm-petrels). These birds have a pair of bony tubes above or inside the bill that excrete salt—allowing these ocean-going birds to drink seawater without becoming dehydrated.
4. When the wind is calm, albatrosses have trouble taking off. They typically need to face into the wind and run along the ground or water's surface, wings spread, to take off; or to launch themselves from a high point.
5. The Laysan Albatross gets its name from its Laysan breeding colony in the Northwestern Hawaiian Islands, where it is the second most common seabird.
6. Albatrosses' amazing size and graceful flight led sailors to regard them as good luck. In Samuel Taylor Coleridge's epic poem The Rime of the Ancient Mariner, a crewmember foolishly shoots an albatross, setting off a string of terrible misfortunes.
7. You can also help albatrosses by reducing your use of plastics and making sure plastic litter goes into garbage cans. Discarded plastic ends up in the oceans, where albatrosses pick it up and eat it or feed it to their chicks.
8. You can help albatrosses by avoiding unsustainably caught seafood. This includes fish caught by longline fisheries that do not use seabird-safe equipment. The Seafood Watch program offers convenient information and an app about sustainable seafood.
9. Laysan Albatrosses live very long lives. They usually don't start breeding successfully until they are 8 or 9. The oldest known individual was 65 years old, when she was identified in 2016 by the band on her leg while she was at her nest.

Notable Species: NONE