

# BLACK-FOOTED ALBATROSS - PHOEBASTRIA NIGRIPES

**Taxonomy:** Kingdom: Animalia Phylum: Chordata Class: Aves Order: Procellariiformes Family: Diomedidae Genus: Phoebastria Species: P. nigripes

## **Habitat:**

**Biomes:** Nests in sandy areas on islands. Spends nonbreeding season on open ocean. Open ocean. In foraging at sea, most common over upwellings or over continental shelf, but rarely close to shore. Nests on sandy beaches and other open flat areas on islands in Pacific.

## **Distribution:**

**In US:** There are at least 12 known breeding locations, but 97.5% of the total population is found colonially on the isolated Northwestern Hawaiian Islands, from Kure Atoll to Kaula Island, (such as Laysan, Midway, and the French Frigate Shoals). Small populations can be found on the Japanese islands of Tori Shima, Bonin, and Senkaku, and off the Mexican coast, primarily on Isla Guadalupe. They are extirpated from the Iwo Jima, Agrihan, Taongi Atoll, Marcus Island, Wake Island, and Johnston Island. Their range at sea varies during the seasons (straying farther from the breeding islands when the chicks are older or they don't have chicks) but they make use of great areas of the North Pacific, feeding from Alaska to California and Japan; however they do prefer the northeastern Pacific Ocean.

**In Other Countries:** ^^^^

**Holistic Description:** The only dark albatross of the northern Pacific Ocean, the Black-footed Albatross nests primarily on the Hawaiian Islands. It wanders widely across the northern Pacific for most of the year, and is regularly seen off the west coast of North America.

**Species Richness:** NO SUBSPECIES

**Population Dynamic:** Populations have recovered from depredations of feather hunters at the turn of the century (1900) and, on Laysan I., from the introduction of rabbits, which destroyed habitat.

## **Evolution and Systematics:**

**Evolution:** Species has a prehistoric fossil record from Kodiak Is., AK and tentatively from the late Pleistocene of San Pedro, CA. Fossil albatross from middle Miocene deposits in California and Oregon testify to the ancient presence of albatrosses in the North Pacific area.

**Systematics:** The vast bulk of the world population breeds in Hawaii, and most of the remainder breed off Japan, although the species has bred off Baja California and in the Marshall Islands. Morphological variation between the two main populations (Hawaii and Japan) is slight, but Japanese birds are smaller in some traits. Mensural variation in North Pacific albatrosses can evolve relatively rapidly, perhaps owing to the isolated breeding sites and high philopatry of these species. Regardless, the two populations have been isolated long enough to have evolved genetic differences.

**Number of Species:** NO SUBSPECIES

**Number of Genera:** NO SUBSPECIES

## **Physical Characteristics:**

**Size and Length:** Length: 25.2-29.1 in (64-74 cm) Weight: 77.6-151.7 oz (2200-4300 g)

**Wingspan:** 76.0-85.0 in (193-216 cm)

**Coloration:** Entirely dusky brown except for narrow whitish ring around base of bill and another under the eye. Sexes and age classes similar, although younger adults tend to have less white on rump and undertail coverts and around the base of the bill. Males slightly larger than females, with larger bill.

**General Body Features:** NONE

**Special Features of the Body:** Like all other albatross species, these birds are efficient fliers and can spend several months flying at a stretch in the ocean. This helps them to evade any predators that might have attacked them on land.

**Special Features of the Head and Sensory Organs:** The heads of black-footed albatrosses are equipped with an elaborate matrix of blood vessels which allow them to keep their bodies cool while nesting at hot, exposed sites. These birds have a strong sense of smell which enables them to locate food while flying across vast stretches of ocean.

**Dentition:** Lamellae and Gizzard

**Special Features of the Limbs and Digits:** CHECK LOCOMOTION

**Any Special Internal Anatomy:** They have special glands above their eyes which allow them to excrete excess salt in their bodies. This special adaptation comes in handy while they are spending long stretches of time in open sea waters. They drink the seawater and then these glands help them to get rid of the salt that is present in the water

**Sexual Dimorphisms:** Males slightly larger than females, with larger bill.

**Differences Between Juvenile Stage and Adult:** Similar to adult, but usually with less white at bill base.

**Behavior:**

Diurnal, Nocturnal, or Crepuscular: Diurnal

Activity: Pair bond is formed and maintained through various displays, including bill-touching and head-shaking. Feeds while swimming on the surface. Does not sunbathe but displays thermoregulatory behavior in response to heat stress in subtropical breeding colonies. Does not roost. Sleeps with bill tucked under scapulars.

Locomotion: Walks with head lowered, unlike other albatrosses. Large webbed feet aid swimming and take-off from the surface of the ocean. Does not climb into or roost in vegetation. Uses energy-efficient dynamic and slope-soaring during flight. Dynamic soaring takes advantage of the vertical gradation of wind velocity: near the sea surface the wind velocity may be only half that 15 m above the surface. Slope soaring makes use of the wind deflected upwards from the windward face of a wave. The tendinous shoulder locking mechanism is a sheet of slow muscle fibers extending through the pectoralis muscle, which facilitates the characteristic gliding flight of albatrosses. Spends more time on the water during the day (7-22%) than at night (2-12%). As a surface feeder, dive depths are minimal.

Communication and Perception: Most common call is a nasal double-bray. Also gives long single notes and growls. Calls are generally lower, louder, and more nasal than those of Laysan Albatross.

Home Range: Territory confined to the immediate vicinity of the nest; used only for mating and nesting.

Degree of Sociality: Usually seen individually or in small groups at sea; <1% of sightings were groups >10 birds. Nonetheless, congregates around fishing vessels. Colonial nester.

Level of Aggression: Defense of the nest consists of snapping and pecking; expulsion of an intruder is often followed by a Head-up Posture and Whine Vocalization. Black-footed Albatross generally more aggressive than the Laysan; Black-footed, more often than Laysan, might leave its egg to attack a human intruder. When guarding food at sea, raises and spreads wings, opens bill wide, and screams to threaten other birds. Screaming and head-shaking behavior is also observed on land.

Migration: Breeding individuals are “central place” foragers, commuting to foraging areas from breeding grounds. At the end of the breeding season, adults migrate into the northeastern Pacific Ocean, temporarily vacating breeding colonies and following a pelagic lifestyle.

**Predators:**

Predators: Pribilof furseals, tiger sharks, and Pacific rats.

Anti-Predator Defenses: Fledglings attempt to flee tiger sharks, but efforts to take off are often too slow to avoid capture. Few data available for furseal and rat predation.

**Diet and Nutrition:**

Adult Diet: Mostly flying fish eggs; also squid, adult flying fish, and crustaceans, as well as scraps thrown from ships. Fish, squid, crustaceans. Around Hawaii, feeds heavily on the eggs of flying fish. Also eats many squid, adult fish including flying fish, and crustaceans. Will scavenge carrion or refuse at sea.

Juvenile Diet: From drift-net bycatch data: neon flying squid and Pacific pomfret; other squid species in diet from families Gonatidae and Cranchiidae; flying fish eggs. Black-footed Albatross stomach contents include approximately 10% oil—of considerable nutritional value—and 12% indigestible materials including pumice, plastics, and squid beaks.

Special Adaptations for Getting Prey: These birds have a strong sense of smell which enables them to locate food while flying across vast stretches of ocean

**Reproduction:**

Mode of Reproduction: Monogamous

Mating System: Socially monogamous. Potential for extra-pair fertilization not studied.

Mating Season: November through February

Courtship: The dance is an important part of the formation of the pair bond; it consists of a number of ritualized display postures performed in various sequences. Postures have not been described in such detail as have those of the Laysan Albatross, but display postures are almost identical in the two species. Black-footed, unlike the Laysan, often keeps both wings slightly fanned while performing the various displays.

1. **Bowing. The head, neck, and foreparts are bobbed up and down.**
2. **Gawky Look. Assumed while watching partner performing. The head is held forward.**
3. **Billing. Follows the Gawky Look. The bird gently touches the partner's bill with its bill.**
4. **Mouthing. Mutual preening performed while sitting.**
5. **Yapping. The bill is pointed down and the Double Call is given repeatedly.**
6. **Head Shake and Whine. The head rapidly swings from side to side with beak open and the Whine is uttered.**
7. **Sky Call. While performing the Sky Call the bird rises on the tips of its toes, stretching the neck and pointing the bill upward.**

8. **Head Up and Whine.** Similar to the Sky Call posture but the bird gives a whine.
9. **Scapular Action.** The tip of the bill is placed near the bend of the wing and the bill lightly clattered.  
**Black-footed Albatross fan both wings forward, the Laysan fans only on the side on which the action is performed.**

**Territoriality:** Territory confined to the immediate vicinity of the nest; used only for mating and nesting.

**Mating:** NONE

**Nesting:** Usually nests on the upper levels of exposed sandy beaches; nests in vegetated areas on disturbed islands such as Midway. Nests similar to those of Laysan Albatross but less built up; in areas of loose sand, nests are little more than scooped-out hollows. Mates share in nest construction. NEST IS A SCRAPE IN THE SAND.

**Egg-Laying:** Clutch Size: 1 egg Egg Shape: Sub-elliptical Egg Length: 108 mm Egg Width: 70.0 mm Egg Mass: 304 grams Eggshell Thickness: 0.532mm Egg Color: White, with brown speckling at the larger end. Incubation Period: 66 days

**Hatching and Incubation/Gestation:** Nidicolous, ptilopaedic, and semi-precocial (confined to the nest; fed by parent; limited thermoregulatory capacity). Eyes are open. Gray white-tipped down is slightly lighter than that of the Laysan Albatross hatchling; both have a peppercorn appearance. Bill is black. Downy and helpless, eyes open.

**Development:** NONE

**Parental Care:** Parents more aggressive after egg hatches. For the first few days after hatching the nestling is brooded; when too large to brood, the parent sits beside the nest to guard it. Adult male and female share equally in guarding (brooding/attending) the nestling. Guard stints are much shorter than incubation stints, lasting only a few days. Nestlings are guarded. Chick fed by regurgitation stimulated by nibbling at the parent's bill. Nestling inserts its bill cross-wise into the parent's bill, allowing adult's stomach contents to spurt into the chick's throat. Nestling always fed at or near the nest site. Parents may attack other nestlings that solicit feedings; nestling faces away, exposing the back of its neck.

**Lifespan:** Up to 42 years old.

**Conservation:**

**Official Federal Status:** Near Threatened

**Special Statuses in Individual States:** Black-foots are considered "Endangered" in Japan, a species of concern in Canada, "Threatened" in Mexico and by the state of Hawai'i and are covered under migratory bird agreements in many countries.

**Threats:** The North American Waterbird Conservation Plan estimates a population of 148,000 breeding Black-footed Albatross in North America, rates the species a 16 out of 20 on the Continental Concern Score, and lists it as a Species of Highest Concern. Though populations appear stable, these birds are at risk due to fishing practices, sea-level rise, storm surges, and oil pollution of marine waters. Drift nets kill large numbers of Black-footed Albatrosses (4,426 deaths documented in 1990). Black-footed Albatross is on the 2014 State of the Birds Watch List, which lists bird species that are at risk of becoming threatened or endangered without conservation action.

**Conservation Efforts:** ^^^^

**Extra Facts:**

1. The Black-footed Albatross has a keen sense of smell, which it uses to locate food across vast expanses of ocean.
2. The Black-footed Albatross drinks seawater and excretes excess salt through glands above the eyes.
3. The Black-footed Albatross has a number of apparent adaptations to stay cool at hot, exposed nest sites. These include an extensive network of blood vessels in the head, as well as a habit of raising the feet off the ground.
4. The oldest recorded Black-footed Albatross was a male, and at least 42 years, 1 month old, when it was recaptured and rereleased during banding operations.

**Notable Species:** NONE