

Red-footed Booby

Sula sula rubripes

Hawaiian: A

Family: Sulidae

Identification

The Red-footed Booby is the smallest of six booby species found worldwide. All adult Red-footed Boobies have pale blue-gray bills with a pink and blue base and of course, red feet. They have long pointed wings and a relatively long, wedge-shaped tail. Several color morphs of the species can be found, which is rare for seabirds. Almost all birds in Hawaii are white with black secondaries and primaries, although several color morphs are regularly seen. Birds may have brown bodies with white heads, brown bodies with white tails, brown bodies with white head and tail or all brown, although the brown is quite pale and never reaches the dark brown of the Brown Booby. Juveniles are various shades of brown-gray all over, but the plumage is more mottled, less warm-toned and uneven in color than in brown morph adults. Their legs are pale pink or grayish and their bill is gray. Females are larger than males.

Survival and Lifespan

The average life span is 22 years. Yearly survival within Sulidae is estimate at 91%.

Distribution

Breeding (Jan-Sept, year-round possible)

In Hawaii the species nests on all the Northwest Hawaiian Islands except Gardner Pinnacles and on the main Islands, Red-footed Boobies nest at Kilauea Point NWR and Mokuaee (Kauai), Lehua and Kaula (Niihau), and Moku Manu and cliffs of Ulupau Head at the Kaneohe Marine Corp Base (Oahu). Outside of Hawaii, Red-footed Boobies breed on islands in the tropical waters of the Pacific, Indian, and Atlantic oceans, Caribbean Sea, and seas north of Australia.

Marine

Little is known about the movements of the Red-footed Booby outside the nesting season, but birds in Hawaii appear to disperse eastward and move between islands. Some birds remain near their nesting sites to roost.

Breeding Ecology

Unlike other boobies, Red-foots build nests of twigs and sticks on the tops of shrubs or trees. The native shrubs *naupaka* (*Scaevola sericea*) and *aweoweo* (*Chenopodium oahuense*) as well as the non-native shrubs Tree Heliotrope (*Tournefortia argentea*) and Indian Fleabane (*Pluchea indica*) are commonly used for nesting. In Hawaii, there is a peak in egg-laying in February and April with most young fledging by September. However, nesting may occur throughout the year. Both parents incubate the egg, and brood and feed the chick. Incubation period ranges between 42-45 days and fledging occurs 95-101 days after hatching. Adults continue to feed their young for up to four months after fledging. Birds first breed at three to four years of age

Feeding and Prey

- Feeding guild – PELECANIFORMES
- Food capture – Red-footed Boobies feed by making spectacular dives from heights of up to 40 m, although most diving is done from a height of 4 - 8 meters. They may catch flyingfish in the air and sometimes make oblique, shallow surface dives, or sit on the water to grab prey at the surface. Prey is never carried in the beak while flying. Birds returning to the colony in the evening are particularly liable to attack by Great Frigatebirds (*Fregata minor*), which chase the Boobies until they disgorge part of their meal or reach the safety of their nest.
- Foraging Distribution – Red-foots feed singly or in flocks, numbering a few to several hundred birds. Often found in mixed species flocks with shearwaters (*Puffinus* spp.), petrels (*Pterodroma* spp.), Brown Boobies (*Sula leucogaster*), Sooty Terns (*Sterna fuscata*) and

Brown Noddies (*Anous stolidus*). Red-foots probably feed at oceanographic features that enrich local waters such as upwellings and convergences and generally feed in deep water.

- Microhabitat for foraging – Feeds singly or in mixed species flocks; generally feeding further (100 – 150 km offshore) from land than congeners. They are often found feeding over tuna or other predatory fish that chase smaller fish to the surface.
- Diet – In Hawaii, Red-foot diet is mainly comprised of flyingfish and squid, but also includes Mackerel Scads, Pacific Saury, and anchovies. Diet analysis of birds on Oahu contained 64% fish (mainly flying fish and Gempylidae) and 36% squid.

Threats and Status

In Hawaii, the population is estimated at 7,000 - 10,500 breeding pairs. The worldwide population is estimated at less than 300,000 breeding pairs, with the majority residing in the eastern Pacific.

Main threats to the species include:

- Predation – Like all seabirds, adults and nests are susceptible to predation by introduced mammals. All sites in Northwest Hawaiian Islands are free of mammalian predators, but in the Main Islands, birds may be preyed upon by cats (*Felis sylvestris*), dogs (*Canis familiaris*), rats (*Rattus* spp.) and mongoose (*Herpestes auropunctatus*).
- Invasive species – Invasive plants (such as Golden-crown Beard, *Verbesina encelioides*) outcompete native shrubs and trees that Red-foots require for nesting. Also, introduced Big-headed Ants (*Pheidole megacephala*) at Kure and Midway may facilitate the destruction of native vegetation by a non-native scale insect, thus reducing nesting habitat.
- Human disturbance – Although Red-footed Boobies generally tolerate disturbance by researchers, a new pair may desert eggs or a young chick if disturbed. Also, birds nesting at Kaneohe Marine Corp Base are occasionally shot as they nest above a shooting range. In hot, dry weather, artillery-caused fires are common and entire trees go up in flames; sometimes with adults and chicks. On Kaula Rock, bombing by the military may kill nesting birds.

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

Harrison, C.S. 1990. Seabirds of Hawaii. Cornell University Press, Ithaca, NY.

Schreiber, E.A, Schreiber, R.W. and Schenk, G.A. 1996. Red-footed Booby (*Sula sula*). In: The Birds of North America, No. 241 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.