

Dark-rumped Petrel (Endemic)

Pterodroma phaeopygia sandwichensis

Hawaiian: Uau

Other: Hawaiian Petrel

Family: Procellariidae

Federally and State listed as Endangered

IUCN Red List Ranking - Vulnerable

Identification

The endemic Uau or Dark-rumped Petrel is one of two subspecies; the other *Pterodroma phaeopygia phaeopygia*, breeds exclusively in the Galapagos Islands. The Hawaiian subspecies is a stout, medium-sized petrel with light underparts and, except for a white forehead, dark upperparts. It is one of the larger species in the *Pterodroma* group, with longer, more pointed wings and tail, and a dark rump. The legs are flesh-colored, as are the upper portions of its feet. Their grayish-black bill is relatively short and stout, with a sharp, decurved tip.

To distinguish it from other species, note the distinctive black hood that forms a partial collar on the sides of the neck. The strikingly white forehead, less contrasting upperparts, and relatively larger size distinguish it from the Bonin Petrel, which is found in the same waters. Newell's Shearwater has a dark forehead, and flies closer to the surface, without the high-wheeling glides of the *Pterodroma*.

Survival and Lifespan

Adult Hawaiian Dark-rumped Petrels may live for 30 years or longer. An analysis of life history estimated that a stable population would show the following distribution: 52.2% <6 yr old, 19.0% 6-11 yr old, 12.3% 12-17 yr old, 7.9% 18-23 yr old, 5.2% 24-29 yr old, and 3.4% 30-35 yr old.

Distribution

Breeding (February-November)

Haleakala National Park on Maui houses the largest known breeding population of 450 - 650 pairs and Kauai is suspected of having as many as 1,600 pairs of breeding birds, perhaps including a colony near the Hono O Na Pali Natural Area Reserve where birds have been heard calling. Small numbers breed on Hawaii at high elevations on both Mauna Loa and Mauna Kea. On Molokai, birds nest on the steep cliffs of Waialea and Waikolu Valleys and a colony has recently been confirmed on Lanai at Lanaihale. During the breeding season, Dark-rumps range up to 1,500 km from the Hawaiian Islands, with only rare sightings in these waters from January through March.

Marine

During the nonbreeding season, the Dark-rumped Petrel occurs well away from land, primarily in equatorial waters of eastern tropical Pacific generally between 20°N and 10°S. In spring they are found to 25°N; in July and August to 50°N in s. Gulf of Alaska. A hiatus in distribution appears to exist between 120°W to 130°W and south of 10°N, suggesting little overlap in at sea ranges of Galapagos and Hawaiian populations. Densities of Hawaiian birds showed a negative relationship to sea surface temperatures that ranged from 25 to 28°C, a positive relationship to wind speeds above 20-40km/h, and a general preference for waters of the North Equatorial Current. Observations of birds at sea indicate that birds forage widely across central Pacific, and even during breeding season may range thousands of kilometers from their nesting colonies.

Breeding Ecology

Hawaiian Petrels return to their colonies between March and April. They are believed to be monogamous and the pair returns to the same nesting burrow year after year, entering and exiting their burrows only under the cover of night. They do not breed until age 5-6 and 89% of adults breed every year. Only a single egg is laid each breeding season and that egg is not replaced if it is lost. Chicks hatch in July or August and are ready to leave the nest in about 4 months.

Currently threatened nesting habitat has forced Dark-rumps to adopt marginal, high-elevation sites, but historically they occupied low-elevation sites easily accessible to the ocean. The colonies on Maui along the rim of Haleakala Crater are 2,000 – 3,000 m above sea level and are possibly the highest seabird colonies in the World. The effect of being forced to nest in these high altitudes is that the species initiates breeding a month earlier than they did just 40 years ago, when they nested at lower elevations. On the nesting grounds the species dig substantial burrows wherever the soil allows, although they will also commonly nest under rock crevices.

Feeding and Prey

- Feeding guild – NOCTURNAL PETREL

- Food capture – Dark-rumped Petrels feed almost exclusively at night where they search for fish near the surface of the water. Feeding probably takes place with the bird sitting on the water and dipping its head into the sea. Occasionally a bird will be observed feeding during the day, but they are probably only picking up easily obtainable scraps floating on the surface.

- Foraging Distribution – Most petrels are estimated to feed within eighty kilometers of the Islands, but they may range far to find widely dispersed food sources.

- Microhabitat for foraging – Dark-rumped Petrels often feed in mixed-species flocks on prey driven to surface by subsurface predators.

- Diet – They feed primarily on squid, but also fish, crustaceans and plankton found at the surface, and they are also known to scavenge. Apparently Hawaiian Petrels eat a higher proportion of fish than other petrel species elsewhere. Ten different prey types were obtained from 3 classes of marine organisms from samples collected at Haleakala nesting colony on Maui. Squid were estimated to constitute 50-75% of total volume of samples collected. The total list includes 1. Fish: Flying fish (Exocoetidae), Squirrelfish (Holocentridae), Goatfish (Mullidae), Lantern fish (Mycotophidae), Skipjack tuna (Scombridae *Katcuwonus pelamis*), Hatchet fish (Sternoptychidae) 2. Mollusks-Squid (Cephalopoda): Mollusks (Loliginadae), Common squid (Ommastrephidae) 3. Crustaceans-Isopoda: *Anuropus* spp., unidentified isopod, Mantis shrimp (Stomatopoda), Unidentified crustacean larvae.

Threats and Status

This petrel formerly nested in very large numbers at multiple sites on all of the main islands in the Hawaiian chain except Niihau. Although Hawaiian Petrels are not currently known to be established on Oahu, excavations have shown that it was once the most abundant seabird on the island. Hawaiian Petrels were reserved for Hawaiian royalty and both young and adult birds were eaten. On Hawaii, birds were abundant nesters on the lava fields between Mauna Kea and Mauna Loa, and birds were caught by distracting them with large fires, which had the same effect as today's streetlights.

Population estimates for the species are mainly based on at-sea numbers because it is extremely hard to estimate numbers in the remote breeding colonies. The total population of Hawaiian Petrels is estimated to be 19,000, with at least 5,000 pairs nesting on Kauai and 1,600 pairs on Maui. In 1992 the Hawaii population was estimated at only 400 - 600 breeding pairs, with a total population of 2,000 individuals - this means that the number present around the Islands has been repeatedly underestimated. However, according to population models, this species could be driven to extinction in a few decades if predation by feral predators is not controlled.

Main threats to the species include:

- Predation – By far the most serious threat to the species is depredation of eggs and young by feral predators, notably cats and mongooses. Even incidental occurrences of single individual

predators can decimate a nesting colony. No terrestrial mammalian predators are native to the Hawaiian Islands, so this species is incapable of defending itself or its nest from mammals such as rats, cats, dogs, pigs, and mongooses. Predation therefore is a serious threat to adult seabirds and their eggs and chicks.

- Light attraction and collision – Urbanization on Kauai has been positively correlated with increased groundings or “fallout” of fledgling shearwaters and petrels on their first nocturnal flight from the burrow to the sea. The young birds are attracted to and blinded by light sources, and they frequently collide with power lines, buildings, cars, and other obstacles, or simply fall to the ground exhausted after fluttering around lights for long periods. Adults apparently are not attracted to lights to the same degree as fledglings, but adults do collide with power lines. In 2003, KIUC completed shielding all streetlights they operate on Kauai, but there remain many lights to attract fledgling birds, for example, harbor, airport, hotel, and stadium lights around the island. Every year since 1978, the organization Save Our Shearwaters has banded and released about 20 petrels along with hundreds to thousands of shearwaters picked up by Kauai residents and brought to stations set up around the island. Although undoubtedly important, the specific effects of this rescue effort on the shearwater population are unknown – few bands from SOS-released birds have been recovered.
- Fisheries In Hawaii, development of new fisheries may directly or indirectly harm seabird populations; harvest of skipjack and yellowfin tuna (*Thunnus albacares*) could eliminate predatory fish needed to drive prey species to surface. Also, live bait needed for the fishery could potentially decrease prey items. Development of a squid fishery, their primary food source could also impact Dark-rumped Petrels.
- Disease – Avian malaria was found in blood samples of Hawaiian Petrels in the 1960's and this disease may have killed off low elevation breeders.

Selected Readings

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