



Photo: C. Hodges, NPS

## Seabirds

# 'Ua'u or Hawaiian Petrel

*Pterodroma sandwichensis*

### SPECIES STATUS:

Federally listed as Endangered

State listed as Endangered

State recognized as Indigenous

NatureServe Heritage Rank G2/T2 -

Species globally imperiled/Subspecies locally imperiled

North American Waterbird Conservation Plan - Moderate concern

IUCN Red List Ranking - Vulnerable

Regional Seabird Conservation Plan - USFWS 2005

**SPECIES INFORMATION:** The 'ua'u or Hawaiian petrel is a large, nocturnal gadfly petrel (Family: Procellariidae) endemic to Hawai'i. Adult males and females are uniformly dark grayish black above forming a partial collar which contrasts with white throat, forehead, and cheeks; entirely white below except for black tail and leading and trailing edges of underwings. Bill black, and legs and feet mostly pink. Even during the breeding season, 'ua'u (Hawaiian petrel) often feeds thousands of kilometers from colonies, usually foraging with mix-species feeding flocks, typically over schools of predatory fishes. 'Ua'u (Hawaiian petrel) feeds by seizing prey while sitting on the water or by dipping prey while flapping just above the ocean surface, often pattering water with feet. In Hawai'i, 'ua'u (Hawaiian petrel) feed primarily on squid, but also on fish, especially goatfish and lantern fish, and crustaceans. 'Ua'u (Hawaiian petrel) nest in colonies, form long-term pair bonds, and return to the same nest site year after year. Colonies are typically located in high elevation, xeric habitats or wet, dense forests. Nests in burrows, crevices, or cracks in lava tubes; nest chamber can be from one to nine meters (3 - 30 feet) deep. Most eggs are laid in May and June and most birds fledge by December. Both parents incubate single egg, and brood and feed chick. Birds likely first breed at five to six years of age.

**DISTRIBUTION:** 'Ua'u (Hawaiian petrel) breed on MHI of Maui, Hawai'i, and Kaua'i and possibly on Moloka'i, Lāna'i, the sea stacks off of Kaho'olawe and Lehua off of Ni'ihau. Subfossil evidence indicates that prior to the arrival of Polynesians, 'ua'u (Hawaiian petrel) was common throughout the MHI. Outside the breeding season, 'ua'u (Hawaiian petrel) are most common near nesting colonies but may range as far as 1,300 kilometers (800 miles) from land.

**ABUNDANCE:** Total number of individuals is estimated at 20,000 with a breeding population between 4,500 and 5,000 pairs, although inaccessible nesting locations make accurate counts difficult. As many as 1,000 pairs breed in Haleakalā National Park on Maui. Although undocumented and difficult to assess, most birds may breed on the island of Kaua'i.

**LOCATION AND CONDITION OF KEY HABITAT:** **Terrestrial:** 'Ua'u (Hawaiian petrels) breed in a variety of remote, inland habitats. On the islands of Hawai'i and Maui, colonies are located above 2,500 meters (8,200 feet) elevation in xeric habitats with very sparse vegetation, but with suitable substrates for burrowing or with existing crevices in lava. On Kaua'i, habitat includes lower elevation wet forests dominated by 'ōhi'a (*Metrosideros polymorpha*) with a dense understory of uluhe fern (*Dicranopteris linearis*). **Marine:** Pelagic.

**THREATS:**

- Historic human hunting. Nestlings were considered a delicacy by Polynesians, and were harvested from nest burrows. Adults were netted as they returned to colonies, and smoky fires were sometimes lit along flight corridors to disorient and ground birds.
- Introduced predators. Like all seabirds, adults and nests are susceptible to mammal predation. Polynesians brought dogs (*Canis domesticus*), pigs (*Sus scrofa*), and rats (*Rattus exulans*), Europeans added additional rat species, feral cats (*Felis silvestris*), and the small Indian mongoose (*Herpestes auropunctatus*).
- Feral ungulates. Feral goats (*Capra hircus*), mouflon sheep (*Ovis musimon*), and potentially axis deer (*Axis axis*) trample burrows.
- Artificial lighting. Street and resort lights, especially in coastal regions, disorient fledglings causing them to eventually fall to the ground exhausted or increasing their chance of colliding with artificial structures (i.e., fallout). Once on the ground, fledglings are unable to fly and are killed by cars, cats, and dogs or die because of starvation or dehydration.
- Colony locations. Remoteness of colonies, as well as the habitat they occur in (e.g., steep terrain or dense forest) complicates predator and ungulate eradication or control.

**CONSERVATION ACTIONS:** The following management goals are important to Pacific seabird conservation: maintain, protect, and enhance habitat; eradicate or control non-natives; minimize bycatch and other negative effects of fishing; improve the effectiveness of oil spill response efforts; identify contaminants and hazardous substances; and minimize the effects of powerlines, towers, wind turbines and lights (USFWS 2005). The goal of these management actions is not only to protect seabird populations and their breeding colonies, but also to re-establish former breeding colonies thereby reducing the risk of extinction. Past actions directed at 'a'o or Newell's shearwater (*Puffinus auricularis*) have benefited 'ua'u (Hawaiian petrel) populations and these include: the rescue and rehabilitation of downed fledglings by the conservation project Save Our Shearwaters, and efforts to shade resort lighting and streetlights. In addition to these efforts, future management specific to 'ua'u (Hawaiian petrel) populations should include the following:

- Continue predator and ungulate control efforts at colonies on the islands of Hawai'i and Maui.
- Locate additional colonies on the islands of Hawai'i and Maui.
- Locate colonies on Kaua'i and initiate predator and ungulate control.
- Survey Moloka'i, Lāna'i, and Kaho'olawe to determine if breeding colonies exist.
- Initiate predator control at accessible, potential colony sites such as Lehua.
- Continue to identify fallout areas and work to minimize effects of powerlines and artificial lights.
- Continue to support efforts of Save Our Shearwater Program, particularly its outreach initiatives concerning raising public awareness of light fallout and rescue and rehabilitation program, and determine the need and feasibility of establishing a similar program on other islands.

**MONITORING:** Continue surveys of population and distribution in known and likely habitats.

**RESEARCH PRIORITIES:** Most research priorities for seabirds are related to determining the most appropriate methods for achieving the above goals. Research priorities specific to 'ua'u (Hawaiian petrel) include the following:

- Development and implementation of standardized survey protocols to determine current population size and status.
- Expand radar studies to monitor population trends, locate colonies, investigate behavior, determine geographic variability in threats, and quantify efficacy of conservation measures.
- Initiate studies designed to increase understanding of how lights affect petrels with the goal being to minimize effects.
- Conduct long-term demographic studies to determine basic reproductive biology, population trends, and survival rates. Design studies to facilitate comparisons between colonies near urban areas and those located in remote locations.
- Develop powerline and windfarm mitigation measures.
- High elevation colonies provide the opportunity to study the physiological adaptations which allow eggs and nestlings to develop and survive at high-elevations.

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