

Seabirds



Photo: Brenda Zaun, USFWS

'A'ō or Newell's shearwater

Puffinus auricularis newelli

SPECIES STATUS:

Federally Listed as Threatened

State Listed as Threatened

State Recognized as Indigenous

NaturServe Heritage Rank G2/T2 -

Imperiled Species/Imperiled Subspecies

IUCN Red List Ranking - Endangered

Regional Seabird Conservation Plan - USFWS 2005

SPECIES INFORMATION: The 'a'ō or Newell's shearwater (Family: Procellariidae) is highly pelagic year-round, and is endemic to the Hawaiian Islands. Adult males and females are dark, sooty brown above, with white throat and underparts, and have a dark bill with a hooked tip. Flight is direct, fast and usually low over water, powered by rapid wing beats interspersed with glides; wing loading is higher than in more aerial shearwaters due to the species' foraging method (see below). Often forages in large, mixed species flocks associated with schools of large, predatory fishes, which drive prey to the surface. 'A'ō feed mainly by pursuit-plunging; individuals dive into water and swim using their partly folded wings for propulsion. Diet is not well known, but likely consists of fish and squid. 'A'ō are colonial and nest on steep mountain slopes, with variable amounts of vegetation, where they lay a single egg in cavities and burrows, often located at the base of a tree. Breeding is highly synchronous, and eggs are laid in early June, and most young fledge by November. Both parents incubate the egg, and brood and feed the nestling. Parents forage hundreds of kilometers offshore and return to colony at night to feed chick. No post-fledging care is provided. Age at first breeding is six to seven years.

DISTRIBUTION: 'A'ō nest on Kaua'i, Hawai'i, Moloka'i, and Lehua, and may also nest on O'ahu, Maui, and Lāna'i, but not confirmed. Nesting colonies do not occur outside of Hawai'i. At-sea distribution includes the eastern and central subtropical Pacific Ocean.

ABUNDANCE: Apparently abundant prior to the arrival of Polynesians, hunting and predation by introduced species resulted in declines of 'a'ō, and the species was thought to be extinct by 1908. The species was rediscovered at sea in 1947 and breeding birds were found on Kaua'i in 1967. Abundance is difficult to estimate because of the remoteness and terrain of colonies. In the early 1990s, the population was estimated at 84,000 birds based on at-sea surveys (included adults and non-breeding birds); the population in the subsequent decade (1998-2011) was estimated at roughly 27,000 birds based on revised population estimates using at-sea survey data and are broadly validated by radar detections. Due to differences in sampling methods it is unknown whether these lower estimates reflect a population decline or a difference in the proportion of the total population sampled. The breeding population was estimated at 14,600 pairs, 75-90 percent of which nest on Kaua'i, based on demographic data.

The population is in serious decline; radar detections on Kauaʻi declined by approximately 75 percent from 1993 to 2008, and three colonies reported as active between 1980 and 1994 were abandoned.

LOCATION AND CONDITION OF KEY HABITAT: On Kauaʻi, most colonies occur between 160 and 1,200 meters (525 - 3,936 feet) elevation on steep, densely vegetated mountains, however, birds also nest on the dry, sparsely vegetated cliffs of the Nā Pali coast and on Lehua. On the island of Hawaiʻi, they nest within forested cinder cones. Colonies are usually located in areas of open native forest dominated by ʻōhiʻa (*Metrosideros polymorpha*) with a dense understory of ʻuluhe fern (*Dicranopteris linearis*).

THREATS:

- **Historical hunting.** Subsistence hunting by Polynesians likely reduced populations, and the species was likely captured using methods described for ʻuaʻu or Hawaiian petrel (e.g., artificial nests, nets, and smoke from fires).
- **Introduced predators.** Adults, eggs, and chicks are taken by introduced predators, including dogs (*Canis familiaris*), pigs (*Sus scrofa*), and rats (*Rattus exulans*). Europeans added barn owls (*Tyto alba*), additional rat species, feral cats (*Felis silvestris*), and the small Indian mongoose (*Herpestes auropunctatus*), which is the main factor behind population decline. The largest colonies are on Kauaʻi, the only Main Hawaiian Island besides Lānaʻi where the small Indian mongoose is not established.
- **Habitat loss and degradation.** Kauaʻi has lost about 75 percent of its forest in the last 150 years, and much of the remaining forest is being degraded by non-native plant species and feral ungulates
- **Artificial lighting.** Street and resort lights, especially in coastal areas, disorient fledglings, causing them to eventually fall to the ground exhausted or increasing their chance of colliding with artificial structures (i.e., fallout) such as powerlines. Once on the ground, thousands are killed annually by cars, cats, and dogs or die of starvation or dehydration. On Kauaʻi, approximately 350 fledglings were recovered annually from fallout in 1999 to 2010, far fewer than the thousands found per year in the late 1970s when the Save Our Shearwaters (SOS) program began; an unknown number are never found.
- **Collisions.** Adults and fledglings are susceptible to mortality from collisions with obstacles such as communication towers, overhead utility lines, and wind farm structures while commuting between inland nest sites and the ocean at night.
- **Overfishing.** Because ʻaʻo rely on predatory fish to drive prey to the surface, overfishing may be affecting the population.
- **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.
- **Catastrophes.** Given that a large proportion of the population breeds on Kauaʻi, catastrophic events like hurricanes could lead to extirpation.

CONSERVATION ACTIONS: Past and current actions include the SOS program which has recovered and released more than 31,000 downed fledgling shearwaters on Kauaʻi since 1978; presently all streetlights and some other types of lighting have been shielded on Kauaʻi; however, fallout still occurs and it is unknown whether these actions have improved survival. Fallout also occurs on Mauʻi. Current and future conservation efforts on Kauaʻi to benefit the ʻaʻo, ʻuaʻu (Hawaiian petrel), and ʻakéʻaké (band-rumped storm-petrel) include efforts to reduce

and shield lighting, control predators and invasive species, and conduct surveys to locate additional colonies. In addition to these efforts, future actions specific to 'a'o should include the following:

- Continue predator and ungulate control at key colonies on Kaua'i and the island of Hawai'i, and initiate predator control at other known and potential colony sites.
- Continue to support the initiatives of the SOS program, particularly its public outreach about light fallout and rescue and rehabilitation program, and maintain and strengthen similar programs on other islands where needed.
- Continue to identify areas where high fallout occurs, accurately estimate flight collision risk, and develop improved methods to minimize and mitigate the effects of powerlines and artificial lights.
- Eradicate or control invasive plants from current and potential colony sites.
- Prioritize restoration projects at occupied and unoccupied nesting areas based on likelihood of success and existing threats at each site.
- Develop methods, test, and implement social attraction and translocation in order to create safe, managed colonies.
- Develop partnerships with private landowners to assist conservation measures.

MONITORING: Conduct at-sea and terrestrial surveys in known and likely habitats to evaluate the population size and status. Monitor breeding incidence, breeding density, reproductive success, causes of mortality, population trends, return rates and effectiveness of management at breeding colonies. Assess the efficacy of predator control efforts.

RESEARCH PRIORITIES:

- Develop and implement standard survey and monitoring protocols that allow changes in population size and structure to be evident.
- Expand and refine radar studies to monitor population trends, locate colonies, and evaluate the effectiveness of conservation measures.
- Evaluate diet and at-sea distribution to determine the potential effects of fishing and food web changes related to climate and oceanographic factors, and provide input on spatial planning for marine protected areas.
- Expand long-term demographic studies to determine reproductive success, survival rates, and factors affecting the population.

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