

## Seabirds

# 'A'o or Newell's Shearwater

*Puffinus auricularis newelli*



Photo: Brenda Zaun, USFWS

### SPECIES STATUS:

Federally listed as Threatened

State listed as Threatened

State recognized as Indigenous

NaturServe Heritage Rank G2/T2 -

Imperiled species/Imperiled subspecies

North American Waterbird Conservation Plan - Highly imperiled

IUCN Red List Ranking - Endangered

Regional Seabird Conservation Plan - USFWS 2005

**SPECIES INFORMATION:** The 'a'o or Newell's shearwater (Family: Procellariidae) is highly pelagic year-round, and is endemic to the Hawaiian Islands at the subspecific level. 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 species to the surface. 'A'o (Newell's shearwater) 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'o (Newell's shearwater) are colonial and nest on steep mountain slopes, with variable amounts of vegetation, where they lay a single egg in burrows, which are often placed at the base of a tree. Breeding is highly synchronous, and eggs are laid in early June, and most young fledged by November. Both parents incubate egg, and brood and feed 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 likely between six and seven years.

**DISTRIBUTION:** 'A'o (Newell's shearwater) breed on Kaua'i, the island of Hawai'i, Moloka'i, and Lehua, also may breed on O'ahu, Maui, and Lāna'i, but not confirmed. Subspecies does not breed outside of Hawai'i. Non-breeding season distribution includes the eastern tropical Pacific.

**ABUNDANCE:** Population numbers are difficult to estimate because of the remoteness and terrain of nesting colonies. In the early 1990s, population estimate based on at sea densities was 84,000 individuals (included adults and non-breeding birds). Estimates based on demographic data suggest a population of 14,600 breeding pairs, 75 percent of which nest on Kaua'i; estimates based on radar detections suggest this number is valid. Since these estimates were made, demographic modeling and the recovery of injured or dead fledglings indicates that the population on Kaua'i is in decline. Hurricane Iniki, which struck Kaua'i in the fall of 1992 when chicks were near fledgling, likely resulted in the mortality of young. Between 1993 and 2001,

radar detections of 'a'o (Newell's shearwater) have declined by 62 percent. Apparently abundant prior to the arrival of Polynesians, hunting and predation by introduced predators resulted in declines and the species was thought extinct by 1908. Species was rediscovered at sea in 1947 and breeding individuals were located on Kaua'i in 1967.

**LOCATION AND CONDITION OF KEY HABITAT:** On Kaua'i, most breeding 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 Hawai'i, 'a'o (Newell's shearwater) nest on forested cinder cones. Colonies are usually located in areas of open native forest dominated by 'ōhi'a (*Metrosideros polymorpha*) with a dense understory of 'uluhe fern (*Dicranopteris linearis*).

#### **THREATS:**

- **Historic human hunting.** Subsistence hunting by Polynesians likely reduced populations, and the species was likely captured using methods described for 'ua'u or Hawaiian petrel (e.g., nets and smoke from fires).
- **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 barn owls (*Tyto alba*), additional rat species, feral cats (*Felis silvestris*), and the small Indian mongoose (*Herpestes auropunctatus*). Despite the remoteness of colonies, predation by feral cats has been documented. The largest breeding colonies occur on Kaua'i, the only Main Hawaiian Island where the small Indian mongoose is not established.
- **Habitat loss and degradation.** Kaua'i has lost approximately 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. On the island of Hawai'i, cinder mining has resulted in habitat loss in several colonies.
- **Artificial lighting.** Street and resort lights, especially in coastal regions, disorient fledglings causing them to eventually fall to the ground exhausted or increase their chance of colliding with an artificial structure (i.e., fallout). Once on the ground, fledglings are unable to fly and thousands are killed annually by cars, cats, and dogs or die because of starvation or dehydration. On Kaua'i approximately 1,500 fledglings are recovered annually from fallouts; an unknown number are never found. 'A'o (Newell's shearwater) use traditional flight corridors, and power lines that cross these corridors kill both adults and fledglings.
- **Overfishing.** Because 'a'o (Newell's shearwater) rely on predatory fish to drive prey to the surface, overfishing may eventually affect Hawaiian populations. The effect on the breeding populations is unknown, but may result in adults expending more energy to provision chicks.
- **Disease.** 'A'o (Newell's shearwater) fledglings have been found with pox lesions, suggesting that disease also may be affecting breeding populations.
- **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 Kaua'i, catastrophic events, like hurricanes, threaten this species.

**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 have included the rescue and rehabilitation of downed fledglings by the conservation project Save Our Shearwaters (SOS). Since 1978, SOS has recovered and released almost 30,000 shearwaters. Efforts to shade resort lighting appear to have been successful and beginning in the early 1980s Kaua'i Electric Company began installing hoods on streetlights in areas of heavy fallout; recently all lights on the island have been hooded. In addition to these efforts, future management specific to 'a'o (Newell's shearwater) should include the following:

- Continue predator and ungulate control efforts at key colonies on Kaua'i and the island of Hawai'i, and initiate predator control at other colony sites as well as at potential colony sites.
- 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.
- Eradicate and/or control invasive plants from current colony sites and from potential sites.
- Prioritize restoration projects using location data (e.g., based on location of existing or potential colonies in relationship to flyways) and estimated benefits to productivity and survival.
- Continue to identify fallout areas and work to minimize effects of powerlines and artificial lights.
- Develop partnerships with private landowners to assist conservation measures.

**MONITORING:** Continue surveys of population and distribution in known and likely habitats. Assess the efficacy of predator control efforts.

**RESEARCH PRIORITIES:** Most research priorities for seabirds are related to determining the most appropriate methods for achieving the above goals. Research priorities specific to 'a'o (Newell's shearwater) include the following:

- Develop and implement 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 the efficacy of conservation measures.
- Initiate studies to determine how lights affect shearwaters with the goal being to minimize effects.
- Model interactions and importance of predatory fish, seabirds, and their prey to determine the long-term effects of overfishing on 'a'o (Newell's shearwater) populations.
- Conduct long-term demographic studies to determine basic reproductive biology, population trends, survival rates, and reproductive success. Design studies to facilitate comparisons between colonies near urban areas and those located in remote locations.

**References:**

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