



Photo: NRCS

Pueo or Hawaiian Short-eared Owl

Asio flammeus sandwichensis

SPECIES STATUS:

State listed as Endangered on O'ahu
State recognized as Endemic at the subspecies level
NatureServe Heritage Rank G5/T2 –
Species secure/Subspecies imperiled

SPECIES INFORMATION: The pueo, or Hawaiian short-eared owl, is an endemic subspecies of the nearly pandemic short-eared owl (*Asio flammeus*; Family: Strigidae). The species is thought to have colonized the Hawaiian Islands sometime after the arrival of Polynesians. Unlike most owls, pueo are active during the day (i.e., diurnal), and are commonly seen hovering or soaring over open areas. Like short-eared owls in continental environments, those in Hawai'i primarily consume small mammals. Their relatively recent establishment on Hawai'i may have been tied to the rats (*Rattus exulans*) that Polynesians brought to the islands. Little is known about the breeding biology of pueo, but nests have been found throughout the year. Males perform aerial displays known as a sky dancing display to prospective females. Nests are constructed by females and are comprised of simple scrapes in the ground lined with grasses and feather down. Females also perform all incubating and brooding. Males feed females and defend nests. Chicks hatch asynchronously and are fed by female with food delivered by male. Young may fledge from nest on foot before they are able to fly and depend on their parents for approximately two months.

DISTRIBUTION: Found on all the Main Hawaiian Islands from sea level to 2,450 meters (8,000 feet).

ABUNDANCE: Unknown. Because of relatively few detections, the Hawaiian Forest Bird Survey did not estimate the population size of the pueo. Pueo were widespread at the end of the 19th century, but are thought to be declining.

LOCATION AND CONDITION OF KEY HABITAT: Pueo occupy a variety of habitats, including wet and dry forests, but are most common in open habitats such as grasslands, shrublands, and montane parklands, including urban areas and those actively managed for conservation. Because of a lack of historical population data and the species' current, broad habitat use, key habitat variables are difficult to determine. Pueo occur in many areas that are managed by the State of Hawai'i or Federal agencies.

THREATS: Pueo are likely susceptible to the same factors that threaten other native Hawaiian birds, including: loss and degradation of habitat, predation by introduced mammals, and disease. However, their persistence in lowland, non-native and rangeland habitats suggests

that they may be less vulnerable to extinction than other native birds, especially because they may be resistant to avian malaria (*Plasmodium relictum*) and avian pox (*Poxvirus avium*). Despite this, for pueo populations, the following are of particular concern:

- "Sick owl syndrome". Mortality on Kaua'i has been attributed to this syndrome, which may be related to pesticide poisoning or food shortages.
- Predation. Because pueo nest on the ground, their eggs and young are vulnerable to predation by rats (*Rattus spp.*), cats (*Felis silvestris*), and the small Indian mongoose (*Herpestes auropunctatus*).
- Habitat loss. May be particularly important to O'ahu pueo populations.
- Contaminants or toxins. Because pueo are top predators, fat-soluble contaminants may accumulate in prey species; may be related to "sick owl syndrome" (see above).
- Human interaction. Hunting behavior and habitat use predispose pueo to vehicular collisions, which have been documented on Lāna'i and the island of Hawai'i.

CONSERVATION ACTIONS: Pueo likely have benefited from management activities designed to conserve other endangered birds. They also may benefit from game bird management; high densities of pueo occur on lands where game birds also are common. In addition to these efforts, future management specific to the pueo may include the following:

- Determine population trends, especially on islands where "sick owl syndrome" has been documented.
- Public outreach and education.
- Continue protection and management of wildlife sanctuaries and refuges.

MONITORING: Regular island-wide population surveys are necessary to determine population trends for this species. This information is needed to assess the efficacy of habitat management efforts.

RESEARCH PRIORITIES: Research priorities specific to pueo include the following:

- Analysis of population trends and changes in habitat occupancy, especially on O'ahu.
- Determine the cause of "sick owl syndrome" and its potential effect on populations.
- Quantify the number of vehicular collisions and determine the level of threat to populations.

References:

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