

Waterbirds

Koloa maoli or Hawaiian duck

Anas wyvilliana



Photo: Richard Palmer

SPECIES STATUS:

Federally Listed as Endangered

State Listed as Endangered

State Recognized as Endemic

NatureServe Heritage Rank G1 - Critically Imperiled

IUCN Red List Ranking - Endangered

Recovery Plan for Hawaiian Waterbirds – USFWS 2011

SPECIES INFORMATION: The koloa maoli, or Hawaiian duck, is one of two extant native duck species (Family: Anatidae) found in Hawai‘i and is closely related to the well-known, but nonnative mallard (*A. platyrhynchos*). Adult males and females are mottled brown overall. Males have darker heads and necks, olive bills and bright orange feet. The bills of females are more orange, their feet are dull orange, and they are smaller than males. Koloa maoli forage in a wide variety of freshwater habitats, including artificial wetlands. Movements between feeding and breeding habitats and between Kaua‘i and Ni‘ihau occur. The species typically forages in shallow water (less than 13 centimeters, or 5 inches, deep). Like mallards, koloa maoli are opportunistic and their diet includes snails, dragonfly larvae, earthworms, grass seeds, green algae, and seeds/leaf parts of wetland plants. They are usually found alone or in pairs and are wary, especially when nesting or molting, although during the winter they may gather in larger numbers to exploit abundant food resources. Nesting biology is poorly known. Although some pairs nest in lowland habitats, on Kaua‘i, they nest in the upper Alaka‘i swamp. Nesting occurs year-round, but most activity occurs between January and May. Nests are usually on the ground near water, but few nests are found in areas frequented by humans or areas supporting populations of mammalian predators. Generally eight to ten eggs are laid, and the precocial chicks hatch after an unknown incubation period, but likely less than 30 days.

DISTRIBUTION: Wetland habitats from sea level to 3,000 meters (9,900 feet) elevation on all the Main Hawaiian Islands except for Kaho‘olawe; populations on all islands except for Kaua‘i originated from reintroduced birds. On Kaua‘i, koloa maoli are found in Hanalei National Wildlife Refuge and montane streams. On O‘ahu, they occur in Kawainui, Hāmākua, and He‘eia marshes; James Campbell National Wildlife Refuge; and wetland habitats in or near Punaho‘olapa, Hale‘iwa, Pearl Harbor, and Lualualei Valley. On Maui, koloa maoli occur in Kahului, Kanahā, and Keālia ponds. On the island of Hawai‘i, they occur in the Kohala Mountains; Pololū, Waimanu, and Waipi‘o valleys; and Mauna Kea. Historically, koloa maoli occurred on all the Main Hawaiian Islands except for Lāna‘i and Kaho‘olawe.

ABUNDANCE: The population is estimated at 2,200 individuals, with 90 percent of individuals occurring on Kaua‘i. Another 350 individuals occur on O‘ahu and Maui; some of these birds may be koloa maoli with the remainder being mallard-Hawaiian duck hybrids. The total

population appears to be increasing due primarily to population increases on Kaua'i, but numbers are declining on other islands due to hybridization. Historically, koloa maoli were fairly common in natural and agricultural wetland habitats. By 1949, only about 530 individuals remained, with 30 on O'ahu and the remainder on Kaua'i.

LOCATION AND CONDITION OF KEY HABITAT: Koloa maoli occurs in a wide variety of natural and artificial wetland habitats, including freshwater marshes, flooded grasslands, coastal ponds, streams, montane pools, forest swamplands, taro, lotus, shrimp, and fish ponds, irrigation ditches, reservoirs, and mouths of larger streams. Some important habitats are located in National Wildlife Refuges or on State lands and receive management attention, but others remain unprotected, such as wetlands facing development or those used for agriculture or aquaculture. Examples include playa lakes on Ni'ihau; Opaeka'a marsh; Lumaha'i wetlands on Kaua'i; Amoriant prawn farms; Lā'ie wetlands; Uko, Punaho'olapa, and Waihe'e marshes; Waiialua lotus fields; Waipi'o Peninsula ponds on O'ahu; Paialoa and 'Ō'ō'ia playa fishponds on Moloka'i; and Opa'e'ula and Waiākea-Loko Waka ponds on the island of Hawai'i.

THREATS: Historically, hunting pressure likely reduced populations. Like the rest of Hawaiian native waterbirds, koloa maoli are threatened by:

- Hybridization. Currently, the most important threat to koloa maoli is hybridization with nonnative mallards, especially on O'ahu, where most individuals are hybrids.
- Habitat loss and degradation. In the last 110 years, approximately 31 percent of coastal plain wetlands have been lost. A shift from wetland agriculture to other types of crops has also reduced the amount of wetland habitats. Feral pigs and goats are reducing nesting habitat suitability for koloa maoli along montane streams.
- Introduced and native predators. Eggs and ducklings are especially vulnerable to predation by dogs (*Canis familiaris*), rats (*Rattus* spp.), feral cats (*Felis silvestris*), the small Indian mongoose (*Herpestes auropunctatus*), 'auku'u or black-crowned night herons (*Nycticorax nycticorax hoactli*), cattle egrets (*Bulbulcus ibis*), barn owls (*Tyto alba*), and non-native fish.
- Altered hydrology. Altering wetland habitats for flood control or to serve as municipal water sources makes them generally unsuitable for koloa maoli.
- Nonnative invasive plants. Several species of invasive plants, including pickleweed (*Batis maritime*), water hyacinth (*Eichornia crassipes*), and mangrove (*Rhizophora mangle*), reduce open water, mudflats, and shallows.
- Avian diseases. Botulism outbreaks result in mortality. West Nile virus and avian flu may pose a risk to Hawaiian waterbirds if these diseases reach Hawai'i.
- Environmental contaminants. Fuel and oil spills in wetlands result in toxicity and habitat degradation.

CONSERVATION ACTIONS: In order to establish new populations, 445 koloa maoli were released on the island of Hawai'i from 1958 to 1979, 350 birds were released on O'ahu from 1968 to 1982, and 12 birds were released on Maui in 1989. The State of Hawai'i, the U.S. Fish and Wildlife Service (USFWS), and private organizations and landowners have protected 82 percent of the core wetlands for Hawaiian waterbirds and 17 percent of their supporting wetlands. Other actions specific to conservation of koloa maoli and other Hawaiian waterbirds should include the following:

- Continue to manage, restore, and protect core and supporting wetland habitats, including montane stream habitat.

- Eliminate feral mallards and mallard/koloa maoli hybrids.
- Eliminate or reduce populations of introduced predators.
- Conduct education and awareness programs regarding the mallard/koloa maoli interbreeding problem and the need for a feral and hybrid duck removal program.

MONITORING:

- Continue annual waterbird surveys of populations and habitat monitoring to detect changes in population trends.
- Monitor for the presence of hybrids in populations.
- Survey montane stream habitats to provide more accurate population estimates.

RESEARCH PRIORITIES:

- Determine the best methods to control and eliminate hybridization between mallards and koloa maoli.
- Analyze annual survey data for correlations, including use of specific wetlands, time of year, and state of wetlands, in order to improve management for koloa maoli.
- Conduct a population viability analysis to identify population numbers and time spans that can serve as predictors for the long-term recovery of koloa maoli.

References

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