

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

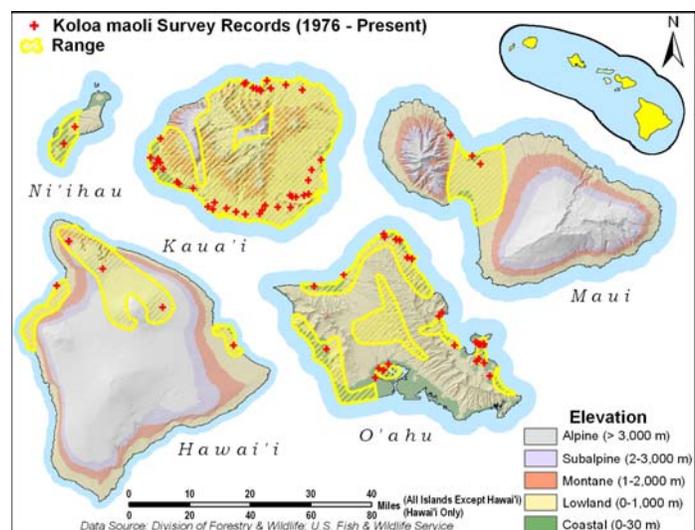
NatureServe Heritage Rank G1 - Critically imperiled

IUCN Red List Ranking - Endangered

Recovery Plan for Hawaiian Waterbirds – USFWS 1999

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 non-native 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 (Hawaiian ducks) 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 five inches deep). Like mallards, koloa maoli (Hawaiian ducks) are opportunistic and their diet includes snails, dragonfly larvae, earthworms, grass seeds, green algae, and seeds/leaf parts of wetland plants. Koloa maoli (Hawaiian duck) 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. The species' nesting biology is poorly known. Although some pairs nest in lowland habitats, on Kaua'i, koloa maoli (Hawaiian duck) 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: Koloa maoli (Hawaiian duck) are generally found in wetland habitats from sea level to 3,000 meters (9,900 feet) elevation on all the MHI except for Kaho'olawe; populations on all islands except for Kaua'i originated from re-introduced birds. On Kaua'i, populations are found in Hanalei National Wildlife Refuge and montane streams. On O'ahu, populations are



found in Kawainui, Hāmākua, and He'eia marshes, James Campbell National Wildlife Refuge, and in wetland habitats in or near Punaho'olapa, Hale'iwa, Pearl Harbor, and Lualualei Valley. On Maui, koloa maoli (Hawaiian duck) are found in Kahului, Kanahā and Keālia ponds. On the island of Hawai'i populations occur in the Kohala Mountains, in Pololū, Waimanu and Waipi'o valleys, and Mauna Kea. Historically, koloa maoli (Hawaiian duck) occurred on all the MHI except for Lāna'i and Kaho'olawe.

ABUNDANCE: The population is estimated at 2,500 individuals, with 80 percent of individuals occurring on Kaua'i. Because of the remoteness and inaccessibility of some habitats, this estimate is likely an underestimate. Historically, koloa maoli (Hawaiian duck) 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 (Hawaiian duck) occur 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 (see distribution) and receive management attention. However, other important habitats are not protected. These mostly include 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, Amorient prawn farms, Lā'ie wetlands, Uko, Punaho'olapa, and Waihe'e marshes, Waialua lotus fields, and 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: Currently the most important threat to koloa maoli (Hawaiian duck) populations is hybridization with non-native mallards. This is especially problematic on O'ahu where most individuals are hybrids. In addition, feral pigs (*Sus scrofa*) and goats (*Capra hircus*) significantly reduce the suitability of nesting habitat for koloa maoli (Hawaiian duck) along montane streams. Historically, hunting pressure likely reduced populations. Similar to the rest of Hawaiian native waterbirds, koloa maoli (Hawaiian duck) also are threatened by:

- **Habitat loss.** In the last 110 years, approximately 31 percent of coastal plain wetlands have been lost. A shift from wetland agriculture to other agriculture crops also has reduced the amount of wetland habitats.
- **Introduced predators.** Koloa maoli (Hawaiian duck) eggs and ducklings are especially vulnerable to predation by dogs (*Canis domesticus*), 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.** Modifications to wetland habitats for flood control or to provide municipal water sources are generally incompatible with koloa maoli (Hawaiian duck) populations.
- **Non-native invasive plants.** Several species of invasive plants, including pickleweed (*Batis maritime*), water hyacinth (*Eichornia crassipes*), and mangrove (*Rhizophora mangle*) reduce open water, mudflats, or shallows.
- **Avian diseases.** The most important disease affecting Hawaiian waterbirds is botulism (*Clostridium botulinum*).

- Environmental contaminants. Fuel and oil spills are the most important contaminant threat to Hawaiian waterbirds.

CONSERVATION ACTIONS: The goals of conservation actions are not only to protect current populations and key breeding habitats, but also to establish additional populations, thereby reducing the risk of extinction. The State of Hawai'i and the USFWS have protected 23 percent of the State's remaining coastal plain wetlands. In 1997, Ducks Unlimited developed a comprehensive, cooperative plan to protect and restore wetlands used by native waterbirds. Efforts directed at this species included prohibiting hunting, importation restrictions on mallards, population monitoring, basic life history research, and captive propagation and re-introduction. Between 1958 and 1982, 326 birds were released on O'ahu. In 1989, 12 birds were released on Maui. Between 1976 and 1982, 200 birds were released on the island of Hawai'i. In addition to common statewide and island conservation actions, specific actions directed at koloa maoli (Hawaiian duck) should include:

- Continue restoration of important habitats.
- Eliminate mallards and evaluate elimination of mallard/koloa maoli hybrids.
- Conduct education and awareness programs, particularly to address issues of predation by dogs and feral cats.

MONITORING: Continue statewide surveys of populations in known and likely habitats. This information is needed to assess the efficacy of habitat management efforts. Additional monitoring related to koloa maoli (Hawaiian duck) populations should include the following:

- Monitor the presence of hybrids in populations.
- Monitor population responses to invasive species and modifications to watersheds.

RESEARCH PRIORITIES:

- Conduct studies to determine the best methods to control and eliminate hybridization between mallards and koloa maoli (Hawaiian duck).
- Conduct research on potential limiting factors and the importance of montane stream habitats.
- Conduct long-term demographic studies to determine basic reproductive biology, population trends, survival rates, and limiting factors as well as feeding habits. Design studies to facilitate comparisons between populations using managed wetlands and those located in unmanaged wetlands.
- Conduct studies directed at determining the role of disease in limiting populations, particularly on Kaua'i.

References:

Engilis A Jr., Uyehara KJ, Giffin, JG. 2002. Hawaiian duck (*Anas wyvilliana*). In *The Birds of North America*, No. 694 (Poole A, Gill F, editors). Philadelphia, (PA): The Academy of Natural Sciences; and Washington DC: The American Ornithologists' Union.

IUCN Red List of Threatened Species. Available at: <http://www.redlist.org>.

U.S. Fish and Wildlife Service. 1999. Draft revised recovery plan for Hawaiian waterbirds, Second Revision. Portland, (OR): U.S. Fish and Wildlife Service. 107 pp.