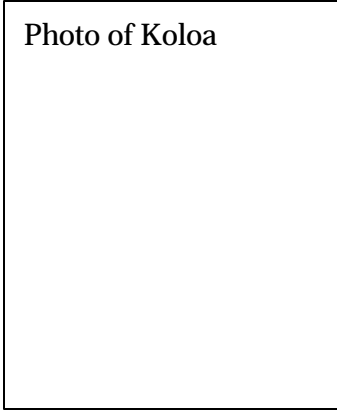


## Water Birds

Photo of Koloa



# Koloa Maoli or Hawaiian Duck

*Anas wyvilliana*

### **SPECIES STATUS:**

Federally Listed as Endangered

State Listed as Endangered

State recognized as indigenous

Hawai'i Natural Heritage Ranking G1-Critically Imperiled

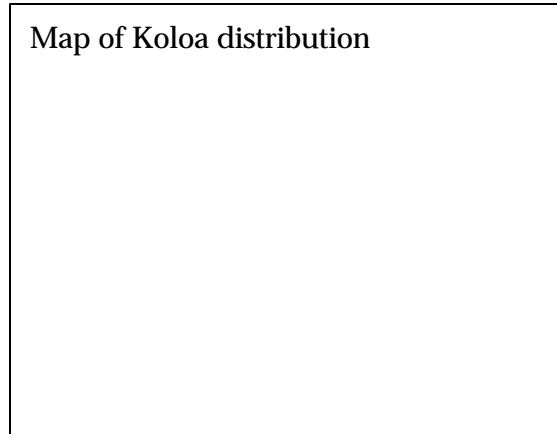
IUCN Red List Ranking-Endangered

**SPECIES INFORMATION:** Koloa breed year round, with peak breeding season between January and May. On Kaua'i, pair bonds are formed between November and May, with pairs usually nesting in montane areas (though some have been found in lowland wetlands as well). Nests are usually on the ground near water. Few nests are found in areas disturbed by human populations as well as those of cats, dogs, or mongoose. Clutch sizes range from 2-10 eggs. Koloa are usually found alone or in pairs, though they may gather in larger numbers where rich food sources are available. They are opportunistic feeders and food can include snails, dragonfly larvae, earthworms, grass seeds, rice, green algae, and seeds/leaf parts of wetland plants. Feeding usually occurs in wetlands and streams 1-5 inches deep.

### **DISTRIBUTION:**

Historically found in all the main Hawaiian Islands (except La-na'i and Ka-ho'olawe), Koloa were fairly common in natural and farmed wetland habitats. Currently, wild populations are found on Kaua'i (Hanalei National Wildlife Refuge, montane streams), Ni'ihau, with restored populations on O'ahu (Kawainui, Hamakua, Heeia Marshes, James Campbell National Wildlife Refuge, Punahoolapa, Haleiwa, Pearl Harbor, and Lualualei Valley), Maui (Kahului, Kanaha and Kealia Ponds), and the island of Hawai'i (Kohala Mountains, Pololu, Waimanu and Waipio Valleys, and Mauna Kea).

Map of Koloa distribution



**ABUNDANCE:** Estimated population is 2,500.

**LOCATION AND CONDITION OF KEY HABITAT:** Historically, koloa used a wide variety of natural wetland habitats for nesting and feeding (e.g. freshwater marshes, flooded grasslands, coastal ponds, streams, montane pools, and forest swamplands from elevations ranging from sea level up to 9,900 feet). Montane systems are critical with artificial wetlands (such as taro, lotus, shrimp, and fish ponds) and man-made ponds supplementing existing habitat and provide important feeding habitat. Additionally, stream systems are also utilized as

well as irrigation ditches, flooded ephemeral fields, reservoirs, and mouths of larger streams. Inter-island movement also occurs between the Kaua'i and Ni'ihau populations during winter. Koloa may also move seasonally from lowland wetlands to more secluded habitats in the summer. Some koloa habitats are located in National Wildlife Refuges as well as State sanctuaries (see distribution) and can be considered stable. Those areas outside of such protection and management, particularly those facing urban development or industry decline (such as plantations and aquaculture industries), can be considered critical. Examples include: Playa Lakes on Ni'ihau, Opaekaa Marsh, Mana and Lumahai Wetlands on Kaua'i, Amorient prawn farms, Laie Wetlands, Uko, Punahoolapa, and Waihee Marshes, Waialua lotus fields, and Waipio Peninsula Ponds on O'ahu, Paialoa and Ooia Playa fishponds on Moloka'i, and Opaepala, Montane Stock, and Waiakea -Loko Waka Ponds on the island of Hawai'i.

**THREATS:** Historically, predation of eggs and chicks by rats, mongoose, cats, introduced fish and birds, hunting, and habitat destruction through development and introduced ungulates led to steep declines in the early 1900s. In addition to facing shared threats from loss of wetland habitat, introduced predators, altered hydrology, invasion of habitats from alien plants, avian diseases, and environmental contaminants, currently the primary threat to koloa is hybridization with feral domestic-type mallards. Damage of watershed stream systems by pigs, goats, and other feral ungulates also pose direct threats. Additionally, predation by dogs poses a particular threat to Koloa on O'ahu.

**CONSERVATION ACTIONS:** The goals of conservation actions are to not only protect current populations, but to also establish further populations to reduce the risk of extinction. Past actions have included efforts to restore wetland habitats, establishment of refuges and sanctuaries, captive propagation and release of populations, institution of a hunting ban, restrictions on the importation of mallards, population monitoring, and research projects. In addition to common state-wide and island conservation actions, specific actions include:

- Continue restoration of vital habitat for populations;
- Eliminate hybridization of domestic-type mallard with koloa populations;
- Conduct education and awareness programs, particularly to address issues of predation by dogs and cats;
- Increase adaptive management of seasonal and permanent wetlands.

**MONITORING:**

- Continue surveys of population and distribution in known and likely habitats;
- Continue to track hybridized populations with the goal of removing hybrids and possibilities for future hybridization;
- Monitor duck response to issues of modified watershed, alien plants, and other invasives.

**RESEARCH PRIORITIES:**

- Conduct research on how to control and eliminate hybridization of mallards and koloa;
- Conduct research to better define limiting factors, determine recovery objectives, and improve management techniques;
- Better understand ecology of life history, particularly breeding, dispersal, seasonal movements, foraging ecology and role of montane-stream habitats;
- Better understand the role of disease in limiting populations, particularly on Kaua'i.

**References:**

**DRAFT: Hawaiian Duck, January 26, 2005**

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