



Photo: NRCS

Waterbirds

'Alae 'ula or Hawaiian moorhen

Gallinula chloropus sandvicensis

SPECIES STATUS:

Federally Listed as Endangered

State Listed as Endangered

State Recognized as Indigenous

NatureServe Heritage Rank G5 - Secure

Recovery Plan for Hawaiian Waterbirds – USFWS 2011

SPECIES INFORMATION: The 'alae 'ula or Hawaiian moorhen is a small, striking waterbird (Family: Rallidae) and is one of 12 recognized subspecies. 'Alae 'ula is endemic to Hawai'i and is very similar to its North American relative in appearance; adults are black above and dark slate blue below, with a white stripe on their flanks and a prominent red shield over their red and yellow bill. Feet are lobed rather than webbed, and males are larger than females. In Hawaiian mythology, a moorhen brought fire to humans, which explains the red on its forehead, a symbol of the scorching from the fire. The species' life history and breeding biology are poorly known. It uses a variety of freshwater habitats and can be somewhat secretive, although it is often seen swimming across open water. 'Alae 'ula are opportunistic feeders, and their diet likely varies with habitat, but includes algae, grass seeds, plant material, insects, and snails. Nesting habitat is restricted to areas with standing freshwater less than 61 centimeters (24 inches) deep with dense emergent vegetation. Nesting occurs year-round, but mostly occurs between March and August. Nesting phenology is apparently tied to water levels and the presence of appropriately dense vegetation. Platform nests are constructed in dense vegetation over water. The particular species of emergent plant used for nest construction is not as important as stem density and vegetation height. Five to six eggs are laid and hatch after 22 days. Although chicks are precocial and can swim shortly after hatching, they are dependent on their parents for several weeks.

DISTRIBUTION:

'Alae 'ula generally occurs in wetland habitats below 125 meters (410 feet) elevation on the islands of Kaua'i and O'ahu, although there have been reports from Ke'anae Peninsula on Maui and from the island of Hawai'i. On Kaua'i, the largest populations occur in the Hanalei and Wailua river valleys, but they also occur in irrigation canals on the Mānā Plains of western Kaua'i and in taro fields. On O'ahu, the species is widely distributed with most birds found between Hale'iwa and Waimanalo; small numbers occur at Pearl Harbor and the leeward coast at Lualualei Valley. Historically, 'alae 'ula occurred on all the Main Hawaiian Islands except for Lāna'i and Kaho'olawe.

ABUNDANCE: 'Alae 'ula are quite secretive, and current survey methods are inadequate to accurately estimate population size. Based on biannual (summer and winter) waterbird counts

conducted by the Division of Forestry and Wildlife in the years 2000 to 2008, counts of 'alae 'ula varied from 200 to just under 450 individuals, with a slightly increasing trend. The species was common at the turn of the twentieth century, but by the 1940s, its status was considered precarious.

LOCATION AND CONDITION OF KEY HABITAT: 'Alae 'ula are found in freshwater marshes, wetland agricultural areas (e.g., taro patches), reedy margins of water courses (e.g., streams, irrigation ditches), reservoirs, wet pastures, and, infrequently, brackish water habitats. Important breeding areas are found on the Hanalei National Wildlife Refuge on Kaua'i and the Kahuku and 'Uko'a wetlands and Waialua lotus fields on O'ahu. Key habitat features include dense stands of robust emergent vegetation near open water, floating or barely emergent mats of vegetation, and water depths less than 1 meter (3.3 feet). 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 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.

THREATS: Like the rest of Hawaiian native waterbirds, 'alae 'ula are threatened by:

- **Habitat loss.** In the last 110 years, approximately 31 percent of coastal plain wetlands have been lost. A shift in wetland agriculture to other agriculture crops also has reduced the amount of wetland habitats.
- **Introduced and native predators.** Dogs (*Canis familiaris*), rats (*Rattus spp.*), feral cats (*Felis silvestris*), the small Indian mongoose (*Herpestes auropunctatus*), cattle egrets (*Bulbulcus ibis*), barn owls (*Tyto alba*), and bullfrogs (*Rana catesbeiana*) all potentially prey on adult or young 'alae 'ula.
- **Altered hydrology.** Altering wetland habitats for flood control or to serve as municipal water sources makes them generally unsuitable for 'alae 'ula.
- **Nonnative invasive plants.** Several species of invasive plants, including pickleweed (*Batis maritima*), water hyacinth (*Eichornia crassipes*), and mangrove (*Rhizophora mangle*) reduce open water, mudflats, or 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 result in toxicity and habitat degradation.
- **Climate change.** Sea level rise due to climate change may result in a loss of coastal wetland habitats used by Hawaiian waterbirds.

CONSERVATION ACTIONS: In order to establish a new population, the U.S. Fish and Wildlife Service (USFWS) translocated six 'alae 'ula to Moloka'i in 1983; however this reintroduction apparently failed because no birds have been sighted since 1985. The State of Hawai'i, 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 'alae 'ula and other Hawaiian waterbirds should include the following:

- Continue to manage, restore, and protect core and supporting wetland habitats.
- Eliminate or reduce populations of introduced predators.

- Reintroduce 'alae 'ula to at least two additional islands (Maui, Moloka'i, Lāna'i, and/or Hawai'i), and monitor survival, dispersal, and reproduction.

MONITORING: Continue annual statewide surveys of populations and habitat monitoring to detect changes in population trends.

RESEARCH PRIORITIES:

- Refine survey techniques, potentially using playback calls of 'alae 'ula to increase detections.
- Analyze annual survey data for correlations, including use of specific wetlands, time of year, and state of wetlands, in order to improve management for 'alae 'ula.
- Conduct a population viability analysis to identify population numbers and time spans that can serve as predictors for the long-term recovery of the 'alae 'ula.
- Use climate change models to predict sea-level rise, and assess key wetlands to protect/create in light of the analysis.

References

Bannon BK, Kiviat E. 2002. Common moorhen (*Gallinula chloropus*). In *The Birds of North America*, No. 685 (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. 2015. Available at: <http://www.redlist.org>. (Accessed May 2015).

U.S. Fish and Wildlife Service. 2010. Hawaiian moorhen or 'alae 'ula (*Gallinula chloropus sandvicensis*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Honolulu, Hawai'i.

U.S. Fish and Wildlife Service. 2011. Recovery plan for Hawaiian waterbirds, Second Revision. U.S. Fish and Wildlife Service, Portland, Oregon.