



Photo: Jim Denny

Forest Birds

'Akikiki or Kaua'i creeper

Oreomystis bairdi

SPECIES STATUS:

Federally Listed as Endangered

State Listed as Endangered

State Recognized as Endemic

NatureServe Heritage Rank G1 – Critically Imperiled

IUCN Red List Ranking – Critically Endangered

Revised Recovery Plan for Hawaiian Forest Birds – USFWS 2006

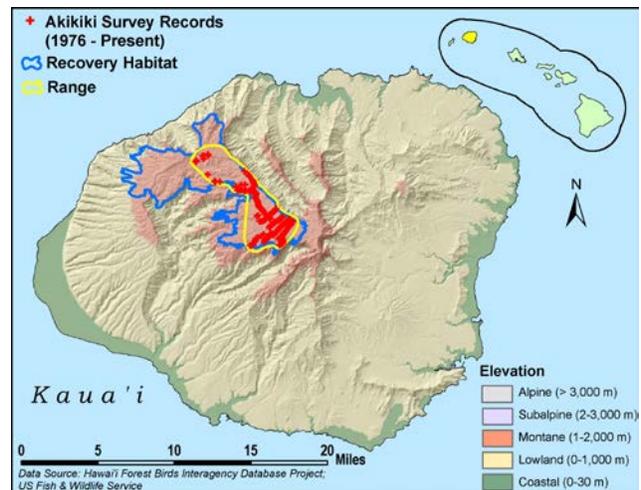
SPECIES INFORMATION: The 'akikiki, or Kaua'i creeper, is a small, drab Hawaiian honeycreeper (Family: Fringillidae) endemic to the island of Kaua'i. Both males and females are predominantly dark gray to olive above, whitish below. 'Akikiki have pinkish legs and feet, and their short, slightly decurved bill also is pink. Usually found in pairs, family groups, or small flocks (8 – 12 individuals); during the non-breeding season 'akikiki join mixed species foraging flocks. 'Akikiki gleans and probes the bark and lichens and moss on trunks, branches, and twigs of live and dead 'ōhi'a (*Metrosideros polymorpha*) and koa (*Acacia koa*) trees for insects and spiders. They usually nest high (9 meters) in the terminal branches of 'ōhi'a, but one female has been observed nesting in ōlapa on two occasions. Nest construction begins in early March, and continues into June; males occasionally help with nest building. Most nests contain two eggs, some contain only one egg. Both males and females feed chicks. Despite a long period of parental dependency, four cases of double brooding has been observed, with the male provisioning both the incubating female and the older chicks. Causes of nest failure include predation, likely by rats, poor female attendance, infertility, and hatch failure.

DISTRIBUTION: Restricted to a 36 square kilometer (13.8 square mile) area of the Alaka'i Wilderness Preserve, but very rare in the northwestern part of this range and appears to be undergoing a severe range contraction. Occupancy rates in 2012 increased from west to east along the plateau, from 0.02 ± 0.07 near Koke'e State Park to 0.55 ± 0.21 in the southeast part of the range, and were positively correlated with canopy height. Historically occupied high- and low-elevation forests, although by the 1960s was most common above 1,140 meters (3,750 feet). Subfossil remains suggest a prehistoric island-wide distribution.

ABUNDANCE: The Kaua'i Forest Bird Survey (KFBS 2000), estimated the population at $2,448 \pm 1,200$ (SE) birds. Density estimates were 26 birds per square kilometer; 15 percent lower than in 1981. In 2012, the KFBS estimated density at 8.8 birds per square kilometer, and the population at only 468 (95% confidence interval: 231-916) birds.

LOCATION AND CONDITION OF KEY

HABITAT: Mesic and wet forests between 600 and 1,600 meters (2,000 – 5,300 feet). Rainfall and topography varies across the species' range, resulting in enormous habitat variation. Thus key habitat variables are difficult to quantify, however, occupancy is correlated with large trees (i.e., canopy height) and canopy density. The montane forests of Kaua'i are dominated by 'ōhi'a with a subcanopy comprising 'ōlapa or lapalapa (*Cheirodendron* spp.) and 'ōhi'a hā (*Syzygium sandwicensis*). Common understory species include 'ōhelo (*Vaccinium calycinum*), kanawao (*Broussaisia arguta*), 'ōhā wai (*Clermontia* spp.), kāwa'u (*Ilex anomala*), kōlea (*Myrsine lessertiana*), na'ena'e (*Dubautia* spp.), and pūkiawe (*Styphelia tameiameia*). Occupancy is very low in areas invaded by non-native plants.



THREATS:

- **Disease.** Mosquitoes likely are ubiquitous on Kaua'i, and avian malaria and avian pox are likely the most important factors limiting the species' distribution. To date, two of 22 'akikiki have tested positive for malarial antibodies, and were later resighted, indicating that some individuals have resistance or tolerance. No pox lesions have been observed.
- **Habitat degradation.** Pigs (*Sus scrofa*) and goats (*Capra hircus*) have contributed to the spread of non-native plants, but effects to 'akikiki are unknown. Severe hurricanes in 1982 and 1992 heavily damaged native forests, possibly resulting in short-term reductions in arthropod food resources and long-term damage to forest structure preferred by 'akikiki.
- **Natural disasters.** Hurricanes in 1982 and 1992 likely caused the death of an unknown number of individuals.
- **Competition.** Although little evidence exists, it has been suggested that competition with introduced Japanese white-eyes (*Zosterops japonicus*) and Japanese bush warblers (*Horornis diphone*) may negatively affect 'akikiki. Non-native insects, especially yellow jackets and ants, may compete with or prey on the nati feed. The role of non-native insects in native Hawaiian
- **Predation.** Predation by rats (*Rattus* spp.), on nests has been documented in at least two instances, and suspected in others. Rats, cats (*Felis silvestris*), Hawaiian short-eared owls (*Asio flammeus sandwichensis*), and barn owls (*Tyto alba*) occur throughout the forests of Kaua'i, and may prey on young and adults.
- **Population size.** Small populations are plagued by a variety of potentially irreversible problems that fall into three categories: demographic, stochastic, and genetic; the former are usually most problematic. Demographic factors include skewed sex ratios and stochastic factors include natural disasters. Habitat fragmentation exacerbates demographic and genetic problems. Some of the observed infertility and failure to hatch may be due to these small population issues.

CONSERVATION ACTIONS: ‘Akikiki likely have benefited from actions to conserve other endangered forest birds including establishment of the Alaka‘i Wilderness Preserve, regular surveys of forest bird populations, monitoring habitat conditions, studies of disease and disease vectors, control of feral ungulates through public hunting and fencing, and public education efforts. In 2015, a grid of 100 self-resetting traps was installed in the core ‘akikiki range, and may reduce predation on nests and juveniles. Also in 2015, an effort to form a captive flock was initiated by collecting ‘akikiki eggs from the wild, resulting in a dozen chicks in captivity. This effort will continue in subsequent years. In addition to these efforts, future management specific to the recovery of ‘akikiki may include:

- Aggressively control ungulates to improve habitat quality and facilitate recovery of degraded, but potential, habitat. It could also reduce breeding habitat for mosquitoes. Control of non-native plants should be part of forest restoration efforts.
- Eradicate or manage mosquito breeding habitat on the Alaka‘i Plateau and release sterile mosquitoes.
- Eradicate rats and feral cats from the Alaka‘i Wilderness Preserve.
- Prevent the introduction of the small Indian mongoose and other potential predators.
- Conduct public outreach and education.
- Continue protection and management of wildlife sanctuaries and refuges.

MONITORING: Continue forest bird surveys and habitat monitoring.

RESEARCH PRIORITIES: Research priorities for most Hawaiian forest birds include improving methods for controlling rats and feral cats in native forests, determining the ecological requirements of *Culex* mosquitoes at mid- and high-elevation forests, and developing methods to control mosquito populations. Research priorities specific to the ‘akikiki include the following:

- Conduct life history studies to quantify population structure, dispersal patterns, survivorship, nesting phenology and success of this poorly known species.
- Continue to assess the susceptibility of this species to avian malaria and avian pox.
- Determine sources of mosquitoes and investigate methods of mosquito control.
- Determine if competition with Japanese white-eyes or other species occurs, and if so, its effect on ‘akikiki populations.
- Determine the effects of recently established non-native insects on native arthropods, especially those that are part of the species’ diet.
- Investigate the feasibility of food supplementation.

References:

- Atkinson, CT, RB Utzurrum, DA LaPointe, RJ Camp, LH Crampton, JT Foster, and TW Giambelluca. 2014. Changing Climate and the Altitudinal Range of Avian Malaria in the Hawaiian Islands - an Ongoing Conservation Crisis on the Island of Kaua‘i. *Global Change Biology* 20, 2426–2436, doi: 10.1111/gcb.12535.
- Behnke, L. 2014. Habitat use and conservation implications for Akikiki (*Oreomystis bairdi*) and Akekee (*Loxops caeruleirostris*), two endangered Hawaiian honeycreepers. M.S. Thesis. Colorado State University, Fort Collins, CO.
- Foster JT, Scott JM, Sykes PW. 2000. ‘Akikiki (*Oreomystis bairdi*). In *The Birds of North America*, No. 552 (Poole A, Gill F, editors.). Philadelphia, (PA): The Academy of Natural Sciences; and Washington DC: The American Ornithologists' Union.

Foster JT, Tweed EJ, Camp RJ, Woodworth BL, Adler CD, Telfer T. 2004. Long-term population changes of native and introduced birds in the Alaka'i swamp, Kaua'i. *Conservation Biology* 18:716-725.

Hammond, RL, Crampton, LH, and Foster, JT. 2015. Breeding biology of two endangered forest birds on the island of Kaua'i. *Condor* 117: 31-40.

IUCN Red List of Threatened Species. 2015. Version 2014.3. Available at: www.iucnredlist.org. (Accessed May 2015).

Scott JM, Mountainspring S, Ramsey FL, Kepler CB. 1986. Forest bird communities of the Hawaiian islands: their dynamics, ecology and conservation. Lawrence, (KS): Cooper Ornithological Society.

U.S. Fish and Wildlife Service. 2006. Revised Recovery plan for Hawaiian forest birds. Portland, (OR): U.S. Fish and Wildlife Service.