



Photo: UH EECB

Forest Birds

'Akiapōlā'au

Hemignathus munroi

SPECIES STATUS:

Federally listed as Endangered

State listed as Endangered

State recognized as Endemic

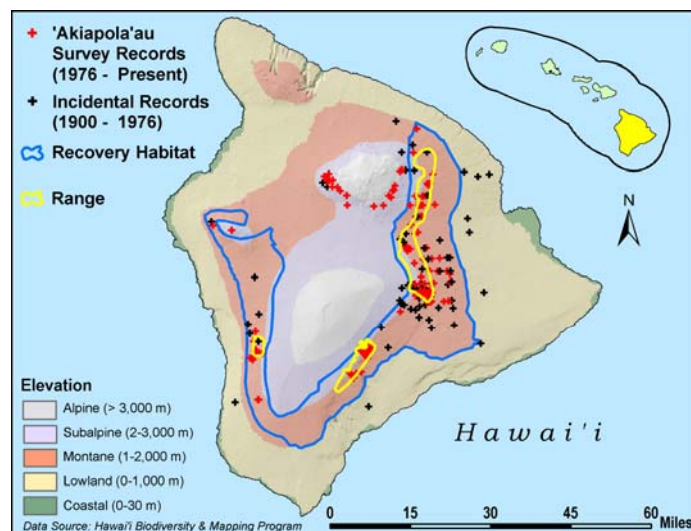
NatureServe Heritage Rank G1 – Critically imperiled

IUCN Red List Ranking – Endangered

Draft Revised Recovery Plan for Hawaiian Forest Birds – USFWS 2003

SPECIES INFORMATION: The 'akiapōlā'au is a stocky Hawaiian honeycreeper (Family: Fringillidae) endemic to the island of Hawai'i and most famous for their specialized bills, which have a long, decurved upper mandible and a short woodpecker-like lower mandible. Adult males have a bright yellow head and underparts, yellow-green back and wings, and a small, black mask. Adult females are olive above with grayish-yellow to yellow underparts. Males are larger than females and have longer bills. The species often joins mixed species foraging flocks; the constituent species vary depending on habitat. 'Akiapōlā'au are mainly insectivorous, with Lepidoptera larva, spiders, and beetle larva being the most important prey items; rarely takes nectar but takes sap from holes it excavates in 'ōhi'a (*Metrosideros polymorpha*) trees. Most frequently, creeps along lichen covered and dead branches of koa (*Acacia koa*), kōlea (*Myrsine lessertiana*), māmane (*Sophora chrysophylla*), and naio (*Myoporum sandwicense*) trees tapping branches with their lower mandible to locate prey. Once a food item is located, lower mandible is used similar to that of a woodpecker bill to chisel open a hole. The upper mandible is then used to fish out the prey item. Upper mandible also used to probe natural cracks and crevices. Breeding has been documented year-round, although most activity occurs from February to July. The species' open cup nest is most often placed in 'ōhi'a trees. Clutch size is usually one, rarely two, and females perform all incubation and brooding. Males provide females and nestlings with the majority of food. Only one fledgling is produced per year, and a long period of parental dependency, usually four to five months, is typical. Family groups consisting of hatch-year and second-year young have been observed. This species is characterized by low annual productivity.

DISTRIBUTION: 'Akiapōlā'au occur in four disjunct populations between 1,340 and 2,700 meters (4,355–8,775 feet) elevation on the



island of Hawai'i, most occur between 1,500 and 2,000 meters (4,875–6,500 feet) elevation. Original range likely included all forested regions of the island.

ABUNDANCE: The Hawaiian Forest Bird Survey (1976-79, 1983), estimated the population at $1,500 \pm 400$ (95% CI). Surveys conducted between 1990 and 1995, estimated the population at between 1,109 and 1,217 individuals. Significant declines occurred in two of the four populations. The Ka'ū /Kapāpala population decreased from approximately 530 individuals to 44, and the Mauna Kea population dropped from approximately 50 birds to less than ten; in 2000 only three birds remained on Mauna Kea.

LOCATION AND CONDITION OF KEY HABITAT: 'Akiapōlā'au occur in mesic and wet montane forests dominated by koa and 'ōhi'a. The small and declining population on Mauna Kea occurs in subalpine dry forest dominated by māmane and naio. A recent study documented 'akiapōlā'au occurring entirely in areas reforested with koa (i.e., second-growth, young forests). Habitat quality varies across the species' occupied range. All remaining populations predominately occur on lands that are managed by the State of Hawai'i and the U.S. Fish and Wildlife Service.

THREATS: 'Akiapōlā'au are likely susceptible to the same factors that threaten other native Hawaiian forest birds, including: loss and degradation of habitat, predation by introduced mammals, and disease. For 'akiapōlā'au populations, the following are of particular concern:

- Low reproductive potential. Unlike many Hawaiian honeycreepers, 'akiapōlā'au have low annual fledgling production. This life history characteristic may be related to their very specialized foraging strategy. Regardless, the species is very susceptible to factors that reduce population size.
- Disease. Unlike several other honeycreepers found on the island of Hawai'i (e.g., Hawai'i amakihi [*H. virens*]), the 'akiapōlā'au is absent from most areas below 1,350 meters (4,500 feet). This suggests that the species is particularly susceptible to mosquito-borne avian disease.
- Predation. Although little evidence exists, predation by rats (*Rattus* spp.), cats (*Felis silvestris*), small Indian mongoose (*Herpestes auro punctatus*), and owls (*Asio flammeus sandwichensis*, *Tyto alba*) may limit 'akiapōlā'au populations. Recent surveys have determined that rat density in the Hakalau Forest National Wildlife Refuge, which supports a significant portion of the 'akiapōlā'au population, is high. In addition, the loud, persistent begging of juveniles may make them especially vulnerable to predators.
- Habitat degradation. The dispersal behavior of the 'akiapōlā'au is poorly known. Habitat loss and degradation from development, logging, and grazing has greatly fragmented the species' habitat.
- 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.

CONSERVATION ACTIONS: To date, conservation actions specific to 'akiapōlā'au have been restricted to annual population surveys of the Hakalau, 'Ōla'a/Kilauea, Kona, and Mauna Kea populations. However, 'akiapōlā'au likely have benefited from management activities designed to conserve other endangered forest birds in the Kapāpala Forest Reserve, Hakalau Forest

National Wildlife Refuge, Pu'u Lā'au, Hawai'i Volcanoes National Park, and the 'Ōla'a/Kilauea Watershed Partnership. These efforts include fencing, ungulate and small mammal control, forest restoration, habitat monitoring, and studies of disease and disease vectors. In addition to these efforts, future management specific to the 'akiapōlā'au may include the following:

- Add Hāmākua, the upper Waiākea kīpuka, Ka'ū /Kapāpala and south Kona to annual surveys.
- Continue koa forest restoration and fencing in the Hakalau Forest National Wildlife Refuge.
- Continue restoration of māmane forests on Mauna Kea.
- Public outreach and education.
- Continue protection and management of wildlife sanctuaries and refuges.

MONITORING: Continue forest bird surveys and habitat monitoring. This information is needed to assess the efficacy of habitat management efforts. Additional monitoring for the akiapōlā'au should include the following:

- Test survey methods for 'akiapōlā'au, and continue regular population surveys with improved methods.
- Monitor small mammal populations to assess effectiveness of control efforts, especially in dry forest sites.

RESEARCH PRIORITIES: Research priorities for most Hawaiian forest birds include developing improved 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 'akiapōlā'au include the following:

- Conduct life history studies to quantify the population structure, dispersal patterns, survivorship, nesting phenology and success.
- Conduct studies to document habitat selection, preference, and foraging ecology, particularly in young forests.
- Conduct studies to document the response of 'akiapōlā'au populations to the control of mammalian predators.
- Development of captive propagation techniques.
- Determine the feasibility of 'akiapōlā'au re-introductions to suitable locations (e.g., Pu'u Wa'awa'a, Hawai'i Volcanoes National Park).

References:

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Pratt TK, Fancy SG, Ralph CJ. 2001 'Akiapola'au (*Hemignathus munroi*) and nukupu'u (*Hemignathus lucidus*). In *The Birds of North America*, No. 600 (Poole A, Gill F, editors.). Philadelphia, (PA): The Academy of Natural Sciences; and Washington DC: The American Ornithologists' Union.

Strommer L. University of Hawai'i graduate student. Unpublished data.

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