



Photo: Eric VanderWerf

Forest Birds

'I'iwi

Vestiaria coccinea

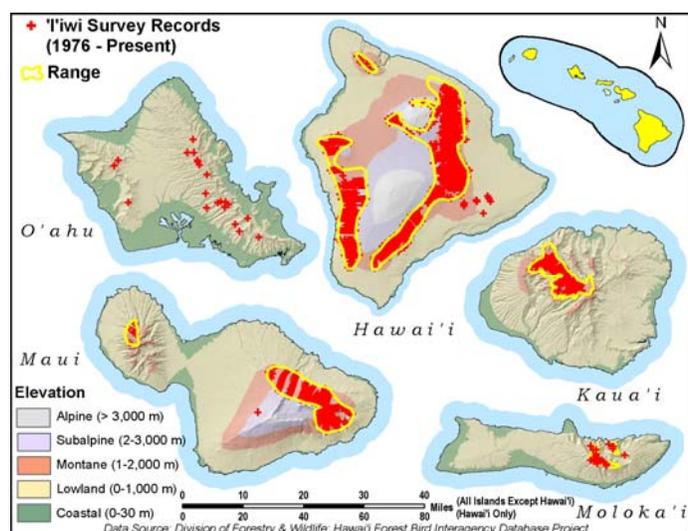
SPECIES STATUS:

State listed as Endangered on O'ahu, Moloka'i, Lāna'i
 State recognized as Endemic
 NatureServe Heritage Rank G4/T1 – Apparently secure/
 Critically imperiled globally on O'ahu and Moloka'i
 IUCN Red List Ranking – Near threatened

SPECIES INFORMATION: The 'i'iwi is one of the most beautiful of the extant Hawaiian honeycreepers (Family: Fringillidae). Both males and females are vermilion red, with a black tail and wings, and a long, decurved pink bill. Native Hawaiians created feather capes using hundreds of thousands of 'i'iwi feathers; such capes signified power and prestige. Like 'apapane (*Himatione sanguinea*), 'i'iwi often fly long distances in search of flowering 'ōhi'a (*Metrosideros polymorpha*) trees and are important 'ōhi'a pollinators. Their diet consists primarily of nectar taken from a variety of native and non-native flowers and the presence of non-native flowers may have contributed to increases in some populations. Some suggest that 'i'iwi were especially suited to take nectar from curved lobelia (Campanulaceae) flowers, but further study is needed. In addition to nectar, 'i'iwi also eat small arthropods. Both sexes defend small nesting territories and may defend important nectar resources. Courtship chases and feeding may precede breeding. Nest sites are in terminal branches of 'ōhi'a trees and both sexes build the open-cup nest. Only females incubate eggs (typically two) and brood young. Young are mostly provisioned by female; males feed females off the nest. Despite their widespread distribution, little is known about their life history.

DISTRIBUTION: 'I'iwi occur above 1,250 meters (4,100 feet) elevation on the islands of Hawai'i, Maui, and Kaua'i; occurs at reduced densities below 1,000 meters (3,300 feet). Three small, isolated populations occur on O'ahu, and a relict population occurs on Moloka'i. Historically, 'i'iwi were common at low elevations on all the Main Hawaiian Islands.

ABUNDANCE: The following island population estimates are based on Hawaiian Forest Bird Surveys (1976-1981): 340,000 ± 12,000 (95% CI) individuals on island of Hawai'i (88% in Hāmākua), 19,000 ± 2,000 individuals on east Maui, 180 ± 150 on west Maui, 80 ± 65 individuals



on Moloka'i, and $5,400 \pm 500$ in the Alaka'i Swamp on Kaua'i. Recent surveys (1996) suggests O'ahu supports less than 50 birds. In 1988, two birds were detected on Moloka'i. On Kaua'i, populations declined after the 1992 hurricane, but changed little between 1994 and 2000. The overall population may be declining, but the species' wide-ranging foraging complicates population estimates and the determination of long-term trends.

LOCATION AND CONDITION OF KEY HABITAT: 'I'iwi occupy mesic and wet forest dominated by 'ohi'a and koa (*Acacia koa*). Loss and degradation of habitat and high densities of cold-intolerant *Culex* mosquitoes, an important disease vector, in lowland areas restrict most birds to elevations above 1,250 meters (4,100 feet). Habitats with the highest 'i'iwi densities also support kōlea (*Myrsine lessertiana*), naio (*Myoporum sandwicense*), and hapu'u tree ferns (*Cibotium* spp.). Māmane (*Sophora chrysophylla*) is common in high-elevation foraging habitat. Although much of the species' current range is under State or Federal jurisdiction, habitat quality and management effort directed at habitat protection and restoration varies considerably.

THREATS: Although 'i'iwi populations appear stable on the islands of Hawai'i, Maui, and Kaua'i, they 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 'i'iwi populations, the following is of particular concern:

- Disease. 'I'iwi are very susceptible to avian malaria (*Plasmodium relictum*) and avian pox (*Poxvirus avium*). Nine of ten individuals died within 37 days after receiving a single bite from mosquitoes infected with *Plasmodium*. Individuals infected with pox also are more likely to be infected with malaria. Because the highest points on Moloka'i and O'ahu are below 1,250 meters (4,100 feet), this susceptibility likely explains the severe population declines noted on these islands. Foraging movements may increase their exposure to disease.

CONSERVATION ACTIONS: 'I'iwi likely have benefited from management efforts designed to conserve other endangered forest birds on northeastern Haleakalā, Hakalau Forest National Wildlife Refuge, Alaka'i Wilderness Preserve and surrounding areas, 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 actions specific to the protection of 'i'iwi populations may include the following:

- Mosquito control in degraded habitats.
- Public education and outreach.
- Continue protection and management of wildlife sanctuaries and refuges.

MONITORING: Continue forest bird surveys and habitat monitoring on all islands. This information is needed to assess the efficacy of habitat management efforts.

RESEARCH PRIORITIES: Research priorities for most Hawaiian forest birds include developing improved methods for controlling rats (*Rattus* spp.) and feral cats (*Felis silvestris*) 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 'i'iwi include the following:

- Determine if disease resistant individuals exist and if so determine if resistance is passed to offspring. Disease-resistant individuals could be used to establish new populations.
- Determine the role of 'i'iwi in transmitting disease between low- and high-elevation habitats.
- Conduct life history studies to quantify the population structure, dispersal patterns, survivorship, nesting phenology and success of this poorly known species.

References:

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