

Photo

## Forest Birds

# ‘Iiwi

## *Vestiaria coccinea*

### **SPECIES STATUS:**

State Listed as Endangered on O‘ahu, Moloka‘i, La-na‘i

State recognized as endemic

Hawaii Natural Heritage Ranking: G4—apparently secure; T1—  
subspecies critically imperiled globally on O‘a hu, Moloka‘i; TH—  
subspecies known only from historic records on La-na‘i.

**SPECIES INFORMATION:** ‘Iiwi are spectacular vermillion red, medium-sized, nectarivorous Hawaiian honeycreepers with a long, pink decurved bill. One of two species for which the same subspecies occurs across the main islands. ‘Iiwi forage primarily in the upper and mid-canopy of mesic and wet forests above 1250 meters (4100’). Their diet consists primarily of nectar taken from ‘ohi‘a (*Metrosideros polymorpha*) flowers, though historic accounts suggested that ‘iwi were especially suited to taking nectar from curved lobelia flowers. ‘Iiwi also consume small arthropods, and forage for them on many different plant substrates. Both sexes defend small nesting territories and may defend a tree with many flowers. ‘Iiwi are apparently monogamous through breeding season. Courtship chases and feeding may precede breeding. Nest sites are in terminal foliage clusters; both sexes build the open-cup nest. Females incubate and brood a clutch of 2 (1-3). Both parents feed nestlings and young fledglings; males feed the females off the nest only.

**DISTRIBUTION:** Native mesic and wet forests above 1250 meters (4100’) on Hawai‘i, Maui and Kaua‘i; occurs at reduced densities below 1000 meters (3300’). Three very small isolated populations occur on O‘ahu; single sighting on Moloka‘i in 1995; extinct on La-na‘i. Historically, ‘iwi were common to sea level on all forested islands. Low elevation populations may be sustained by recruitment from higher elevations.

**ABUNDANCE:** ‘Iiwi population estimates from the Hawai‘i Forest Bird Survey (1976-1981) were as follows: 340,000 ± 12,000 (95% CI) on Hawai‘i island, 88% of these in Hamakua; 19,000 ± 2000 individuals on east Maui; 180 ± 150 birds in a relict population on west Maui; 80 ± 65 individuals in a relict population on Moloka‘i; and 5400 ± 500 birds in the Alaka‘i Swamp on Kaua‘i; total population on O‘ahu estimated to be less than 50. Populations seem to be declining in some areas based on fewer individual detections per counting period and fewer counting stations with ‘iwi present.

**LOCATION AND CONDITION OF KEY HABITAT:** 'I'iwi habitat consists of mesic and wet forest dominated by 'ohia (*Metrosideros polymorpha*) and koa (*Acacia koa*) on windward Hawai'i, Maui, Moloka'i, O'ahu and Kaua'i islands. 'I'iwi are primarily found above 1250 meters (4100') elevation. This is thought to reflect both greater forest integrity at higher elevations as well as the presence of avian disease vectors at low elevations. Habitat with the highest bird densities contains kolea (*Myrsine lessertiana*), naio (*Myoporum sandwicense*), and hapu'u (*Cibotium* spp. tree ferns). Mamane (*Sophora chrysophylla*) is common in high elevation foraging habitat. The condition of 'i'iwi habitat varies tremendously. Some areas are protected and actively managed for forest bird conservation; others have no active management at all. The former include ungulate-free forests with relatively intact understory, while the latter include forests suffering from extensive habitat degradation as the result of feral pigs and invasive alien weeds. Much of the species' current range is under state or federal jurisdiction. Therefore, management can be considered stable even though habitat quality varies.

**THREATS:** Although the species is apparently secure on three islands, it is susceptible to the same threats as other native Hawaiian forest birds. These include loss and degradation of habitat, predation by introduced mammals, and avian disease. Of particular concern for 'i'iwi are

- avian diseases: challenge experiments have shown that the species is particularly susceptible to mortality from both malaria and pox infections. This susceptibility may explain the severe population declines noted on Moloka'i and O'ahu where there is no habitat above the range of the mosquitoes which carry disease. Also, 'i'iwi migrate altitudinally with varying 'ohi'a bloom: this may result in seasonal exposure to disease even though primary breeding habitat is above that of the disease vectors.

**CONSERVATION ACTIONS:** No actions specifically target 'i'iwi, but actions taken to conserve endangered forest bird species on northeastern Haleakala, Hakalau Forest National Wildlife Refuge, Alaka'i Wilderness Preserve and surrounding areas, Hawai'i Volcanoes National Park, and the 'Ola'a / Kilauea Partnership almost certainly benefit 'i'iwi as well. These efforts include fencing and ungulate control, small mammal control, forest restoration, monitoring and disease research. Specific actions directed towards 'i'iwi in the future may include:

- Research on the development of malaria resistance is ongoing although the high mortality 'i'iwi have exhibited when confronted with the disease does not offer much hope of finding markers for resistance in this species.
- Protection and restoration of native forests above 1500 meters (5000'). This must include elimination of feral ungulates and introduced plant species in native habitats.
- Mosquito control, at least in breeding sites in degraded habitats.
- Public education and outreach\*\*.

**MONITORING:**

- Continue population and habitat quality surveys of forest birds on all islands to assess efficacy of habitat management efforts.

**RESEARCH PRIORITIES:**

- Identification of disease resistant individuals.
- Role of 'i'iwi in carrying disease between high and low elevation habitats.
- Improved methods for rat and feral cat control in native forests.

- Demography and basic reproductive biology.
- Ecological requirements of *Culex* mosquitoes in high elevation habitats.
- Development of techniques to control disease vectors.

**References:**

Fancy, S. G. and C. J. Ralph. 1998. 'I'iwi (*Vestiaria coccinea*). *In* The Birds of North America, No. 327 (A. Poole and F. Gill, eds.). The Birds of North America, Inc. Philadelphia, PA.