

Forest Birds

'Apapane

Himatione sanguinea

SPECIES STATUS:

State recognized as endemic
Hawaii Natural Heritage Ranking G4—Apparently secure

SPECIES INFORMATION: 'Apapane are small, crimson, primarily nectarivorous Hawaiian honeycreepers. They are the most abundant and widely distributed honeycreeper species, and also the most commonly seen as they fly above the canopy in search of patches of flowering 'ohi'a (*Metrosideros polymorpha*) trees. 'Apapane also consume insects, which are gleaned from outer foliage and twigs in the upper- and mid-canopy. Socially monogamous pairs defend small nest territories. Sexual chasing and courtship feeding often precede nest building, a task shared by both parents. Females incubate and brood a clutch of three (1-4); males feed females off the nest. Both parents feed nestlings. Fledglings may remain with parents for up to 4 months, though they fly well and forage when they leave the nest. 'Apapane are seen in mixed-species foraging flocks during the non-breeding season. They also forage in conspecific flocks, possibly to allow access to trees otherwise defended by 'i'iwi and 'Akohekohe. The wide-ranging seasonal movements of 'apapane probably have important implications for disease transmission in native forest birds.

DISTRIBUTION: 'Apapane occur in native mesic and wet forests above 1250 meters (4100') on Hawai'i, Maui, and Kaua'i; on O'ahu, it occurs in Ko'olau range from 300 meters to summit. Less common in Wai'anae range. Rare or absent on Moloka'i and La-na'i. Historically found on all forested islands to sea level; the total habitat loss since human arrival is estimated to be ~40%.

ABUNDANCE: 'Apapane population estimates from the Hawai'i Forest Bird Survey (1976-1981) were as follows: 1,080,000 \pm 25,000 (95% CI) on Hawai'i island (86% of total population); 110,000 individuals on Maui (86% of these on Haleakala); 39,000 individuals Moloka'i; and 30,000 birds on Kaua'i; and a relict population of 540 \pm 213 birds on La-na'i, O'ahu was not included in the Hawai'i Forest Bird Survey.

LOCATION AND CONDITION OF KEY HABITAT: 'Apapane habitat consists of mesic and wet forest dominated by 'ohi'a (*Metrosideros polymorpha*) and koa (*Acacia koa*) on windward Hawai'i, Maui, Moloka'i, O'ahu and Kaua'i islands. They are primarily found above 1250 meters elevation, where populations of disease-carrying mosquitoes are restricted. The best habitat also 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 'apapane habitat varies. 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. Even so, habitat quality and the degree of management commitment to habitat protection and restoration varies considerably.

THREATS: Although the species is apparently secure, 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 'apapane are

- avian diseases: this species has the highest prevalence of the malaria parasite (*Plasmodium*) among all native forest birds. Malarial infection rates appear to be higher among individuals who also exhibit signs of avian pox. 'Apapane move altitudinally in response to 'ohi'a bloom: this may result in exposure to disease even among individuals who breed at higher elevations. Because there are populations breeding in mid-elevation forests, it is thought that some 'apapane may be developing disease resistance.

CONSERVATION ACTIONS: No actions specifically target 'apapane, but actions taken to conserve endangered forest bird species in national parks and wildlife refuges, state wilderness preserves Natural Area Reserves, and conservation partnerships almost certainly benefit 'apapane as well. These efforts include fencing and ungulate control, small mammal control, forest restoration, monitoring and disease research. Specific actions directed towards 'apapane in the future may include:

- Protection and restoration of native forests above 1500 meters (5000'). This must include elimination of both feral ungulates and introduced plant species in native habitats.
- Control of small mammalian predators in areas of high breeding densities.
- Mosquito control, or at least control of potential 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 and determination of the genetic or immunological basis for this resistance.
- Role of 'apapane 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. 1997. 'Apapane (*Himatione sanguinea*). In *The Birds of North America*, No. 296 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D. C.