

Photo: Eric VanderWerf

Forest Birds

Maui Parrotbill

Pseudonestor xanthophrys

SPECIES STATUS:

Federally listed as Endangered

State listed as Endangered

State recognized as Endemic

NatureServe Heritage Rank G1 – Critically imperiled

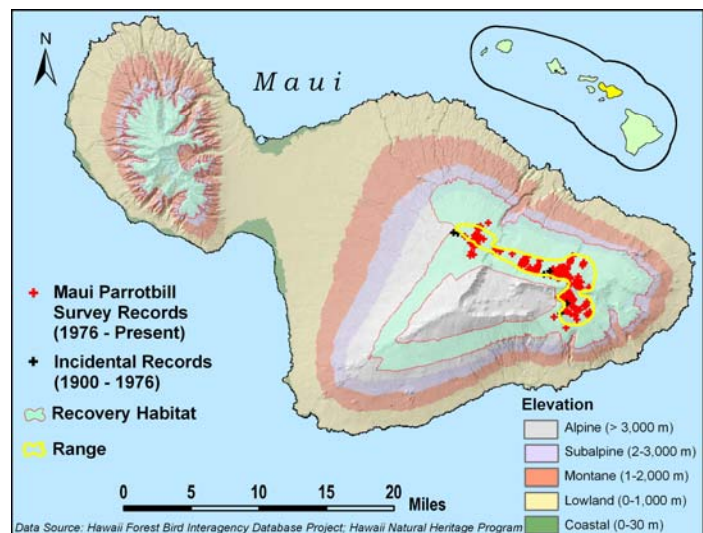
IUCN Red List Ranking – Vulnerable

Draft Revised Recovery Plan for Hawaiian Forest Birds – USFWS 2003

SPECIES INFORMATION: The Maui parrotbill is stocky, bull-headed Hawaiian honeycreeper (Family: Fringillidae) endemic to Maui, with a short tail and a relatively large, parrot-like bill. Adult males and females are mostly olive-green above with a yellow breast, belly and cheeks, and a bright yellow line above their eyes (i.e., supercilium). Males are typically brighter than females, although individuals are variable. Males are larger than females and have a larger bill. Maui parrotbills mainly feed on a variety of shrubs and small trees, especially 'akala (*Rubus hawaiiensis*), kanawao (*Broussaisia arguta*), and 'ōhi'a (*Metrosideros polymorpha*) where it gleans prey from moss covered branches or uses its bill to chisel, crack, crush, dig, and tear bark and softer wood in search of beetle and Lepidoptera larvae and pupae. Also opens fruit in search of insects, but does not eat the fruit. Pairs defend relatively large, year-around home ranges. Females build nests, incubate eggs, and brood young. Clutch size is usually one and females feed nestlings with food delivered by males. Males will feed fledglings. Maui parrotbills will renest after a nest failure, but will not attempt another nest if the first is successful. Development of bill and acquisition of foraging techniques is prolonged and young remain with parents for five to eight months. Because of this long period of dependency, Maui parrotbills are often seen in small groups.

DISTRIBUTION: Maui parrotbills are restricted to a 50 square kilometer (19 square mile) area on the northwestern slopes of Haleakalā between 1,230 and 2,370 meters (4,000 – 7,700 feet) elevation. Subfossils indicate the species historically occurred in low elevation forests and on the island of Moloka'i.

ABUNDANCE: The Hawaiian Forest Bird Survey (1980) estimated the population at 500 ± 230 (95% CI) individuals. More recent surveys have reported densities similar to those from the 1980 survey.



LOCATION AND CONDITION OF KEY HABITAT: The Maui parrotbill occurs in mid-to-upper-elevation montane wet forests dominated by 'ōhi'a and in a few mesic areas dominated by 'ōhi'a and koa (*Acacia koa*). These habitats support a dense, diverse native understory and subcanopy of ferns, sedges, epiphytes, shrubs, and small to medium trees. Most of the species' range is currently managed by the National Park Service, the State of Hawai'i, The Nature Conservancy, or through the East Maui Watershed Partnership.

THREATS: Maui parrotbills 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 Maui parrotbill populations, the following are of particular concern:

- Low reproductive potential. Unlike many Hawaiian honeycreepers, Maui parrotbills 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. Despite the availability of seemingly suitable habitat below 1,350 meters (4,500 feet), Maui parrotbill are not found in these areas, suggesting that disease may be restricting populations to higher elevations.
- Predation. Although predation on adult Maui parrotbills or their nests, has not been documented, predation by rats (*Rattus* spp.), cats (*Felis silvestris*), the small Indian mongoose (*Herpestes auropunctatus*), and owls (*Asio flammeus sandwichensis*, *Tyto alba*) may limit the species. Surveys have documented high densities of rats in the Hanawī area which supports a large portion of the Maui parrotbill population.
- Habitat loss. Historical accounts suggest that Maui parrotbills favored koa for foraging. Logging and ranching has resulted in the loss of large areas of mesic koa forest, and the current range of the Maui parrotbill is restricted to wet forests where koa density is relatively low. Therefore, like many endangered Hawaiian forest birds, Maui parrotbills may be restricted to suboptimal habitat.
- Habitat degradation. Maui parrotbills forage on a variety of shrubs and small trees and damage to understory vegetation by pigs (*Sus scrofa*) likely reduces its suitability and may contribute to reduced food availability and low reproduction. Habitat degradation also may increase the exposure of Maui parrotbill nests to inclement weather.
- 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, a number of conservation efforts have been undertaken to protect the Maui parrotbill. In 1997, a captive breeding program was initiated. As of 2003, ten Maui parrotbills have been produced from a captive population derived from three eggs and an injured adult male that were removed from the wild. In addition, the Maui parrotbill also benefits from management efforts designed to conserve other endangered forest birds on northeastern Haleakalā. These efforts include the establishment of the 3,000 hectares (7,500 acre) Hanawī Natural Area Reserve in 1986, the formation of the East Maui Watershed Partnership and the Maui Forest Bird Recovery Project, 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 recovery of the Maui parrotbill may include the following:

- Protection and restoration of habitat in high elevation disease-free areas.
- Fencing and ungulate control in low elevation habitat from the Hanawā Natural Area Reserve to Waikamoi. This would facilitate the recovery of the understory and subcanopy vegetation and eventually result in high-quality Maui parrotbill habitat.
- Establish a continuous corridor of suitable habitat around Haleakalā, by connecting established conservation lands on the southern and western parts of the mountain. Restoration of the koa forests to this area would be a key element to this effort, eventually providing Maui parrotbills with large tracts of their preferred habitat.
- Restore, fence, and eradicate pigs from the remnant mesic koa forests on the State Forest Reserve and Department of Hawaiian Home Lands in the Kahikinui region of southern Haleakalā. Restoration of this area would be a cost-effective starting point to providing the Maui parrotbill with high-quality habitat.
- Public outreach and education regarding the importance of rodent control.
- Continued 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.

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 Maui parrotbill include the following:

- Evaluate the effect of intensive rat control on the reproduction and survival of Maui parrotbills.
- Identification of disease resistant individuals. Determination of genetic markers or genotypes associated with resistance would allow targeted translocations of individuals possessing this genotype into populations currently lacking disease resistance and/or the establishment of new, disease resistant populations.
- Further refinements of captive breeding techniques and evaluation of experimental re-introduction sites. Evaluation should include surveys of mosquitoes and the determination of the disease prevalence in lower elevation sites.

References:

- 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.
- Simon JC, Baker PE, Baker H. 1997. Maui parrotbill (*Pseudonestor xanthophrys*). In *The Birds of North America*, No. 311 (Poole A, Gill F, editors.). Philadelphia, (PA): The Academy of Natural Sciences; and Washington DC: The American Ornithologists' Union.
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