

## MAUI PARROTBILL FIVE-YEAR RECOVERY WORK PLAN

Prepared by Maui Parrotbill Working Group and Hawaiian Forest Bird Recovery Team

**Purpose.** The long-term recovery goals, delisting criteria, recovery strategy, and a comprehensive list of recovery tasks for the Maui Parrotbill are provided in the Hawaiian Forest Bird Recovery Plan, which covers 21 species. The purpose of this five-year work plan is to identify interim recovery objectives for the Maui Parrotbill, and to succinctly describe the actions needed in the next five years to reach those interim objectives. Identification of interim recovery objectives and actions will help ensure that initial conservation efforts by different agencies or groups are focused on the same ultimate goals, that limited recovery resources are used efficiently, and provide milestones that can be used to track and evaluate progress toward recovery. Realization of these milestones will measure progress being made toward eventual recovery. Failure in realizing these milestones may indicate that additional resources are needed, or that the current recovery strategy is not effective.



Male Maui Parrotbill. Photo Eric VanderWerf

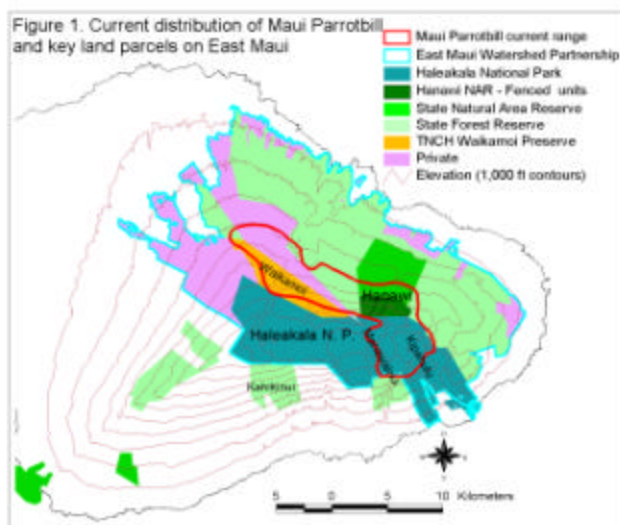
**Species Summary.** The Maui Parrotbill is an insectivorous Hawaiian honeycreeper that uses its massive hooked bill to dig, tear, crack, crush, and chisel the bark and wood on a variety of native shrubs and small to medium-sized trees, especially `akala (*Rubus hawaiensis*), kanawao (*Broussaisia arguta*), and `ohi`a (*Metrosideros polymorpha*). Parrotbills also pluck and bite open fruit in search of insects, particularly kanawao. Especially preferred are larvae and pupae of various beetles and moths (Perkins 1903, Mountainspring 1987, Simon *et al.* 1997). Maui Parrotbills are socially monogamous, non-migratory, and defend year-round territories averaging 2.3 hectares (5.7 acres) in size (Pratt *et al.* 2001). Parrotbills frequently occur in family groups, due to the prolonged dependency of fledglings on their parents (Simon *et al.* 1997).

The ecology of the Maui Parrotbill has been little studied, but recently Lockwood *et al.* (1994) and Simon *et al.* (1997) investigated aspects of reproductive biology. The open cup nest is built by the female an average of 12 meters (40 feet) above the ground in a forked branch just inside the outer canopy foliage. Simon *et al.* (1997) reported only single egg clutches, but there are reports of two-chick broods. Re-nesting occurs only after nest failures, and pairs will not raise more than one brood in a season. Development of the large bill and specialized feeding techniques proceed slowly, and fledgling dependency on parental care lasts 5 to 8 months.

Currently the Maui Parrotbill is found only on Haleakala Volcano in East Maui, in 50 square kilometers (19 square miles) of wet montane forests from 1,200 to 2,350 meters elevation (4,000 to 7,700 feet; Scott *et al.* 1986, Mountainspring 1987, Simon *et al.* 1997). The current range forms an arc from the Waikamoi Drainage west of Ko`olau gap to Haleakala National Park lands in Kipahulu Valley and the Manawainui Drainage (Figure 1). The current geographic range is much restricted compared to the known prehistoric range, which included dry leeward forests and low elevations (200 to 300 meters, 660 to 1,000 feet) on East Maui as well as Moloka`i, based on

collections of subfossil bones (James and Olson 1991). Distribution and densities in the Waikamoi and Manawainui range edges are not well documented.

The number of Maui Parrotbills was estimated to be  $500 \pm 230$  (95 percent CI) birds at an average density of 10 birds per square kilometer (0.39 square miles) in 1980 by the Hawai`i Forest Bird Survey (Scott *et al.* 1986). Repeat surveys of the same transects conducted in 1992 (Hawai`i Department of Land and Natural Resources 1995) and limited surveys conducted from 1995 to 1997 by U.S. Geological Survey biologists indicated approximately the same densities of birds, but with perhaps some range constriction at lower elevations.



A captive propagation program has successfully bred, hatched and reared Maui Parrotbill, both from wild collected eggs and from pairs established in captivity, and anticipates producing enough offspring to provide the cohorts necessary for pilot releases (Kuehler, et al. 2001; ZSSD, 2000, 2001).

**Primary Threats.** Maui Parrotbill are restricted to higher elevation forests due to the presence of mosquito-borne diseases at lower elevations, and are restricted at upper elevations due to destruction of forest habitat. Within their present range, the factors that limit densities are not well known. Feral cats and Barn Owls are known to prey on birds at Hanawi (Kowalsky et al. 2002), and black and Polynesian rats, both of which are serious predators on adults and nests of other Hawaiian forest birds, are abundant in Parrotbill habitat (Malcolm et al. 2002), but direct evidence of predation on Parrotbills is lacking and recent work suggests that predation rates may be low and that the population may be limited by food availability (Simon et al. 2000). Maui Parrotbills were reported to strongly favor koa for foraging (Perkins 1903). Widespread habitat destruction from logging and ranching has greatly reduced Parrotbill range, and has been particularly severe in more mesic areas that formerly supported high densities of koa. The current range is restricted to wet forest areas in which koa densities are relatively low. Habitat within the current range thus may be suboptimal compared to portions of the former range. Within its current range, habitat damage by feral pigs to the understory vegetation may be a significant factor contributing to reduced food availability, large territories, and low reproduction. Similar impacts in unoccupied potential habitat may make those areas unsuitable for reestablishment of Parrotbill. Habitat degradation and marginal suitability may exacerbate the negative effects of severe weather events such as rainstorms, which are common in East Maui and have been linked to failure of Parrotbill nests (Mountainspring 1987, Simon *et al.* 2000).

**Interim Recovery Objectives.** In order to meet the long-range recovery goals for the Maui Parrotbill the following short-term goals should be accomplished first.

- Maintain Existing Stable Population
- Increase Distribution and Abundance of Existing Population
- Create a Second Disjunct Population

If these objectives are met within five years, then new interim recovery objectives will be identified to continue to guide progress toward full recovery. If these objectives are not met within five years, then the causes for failure should be identified and rectified if possible. If it is not possible to correct the causes for failure and the current strategy is deemed ineffective, then a new strategy will be developed and new actions identified.

**Five-year Recovery Actions (2003-2007).** In order to realize the interim recovery objectives described above, the following actions are needed.

- Protect Existing Habitat
  - Maintain existing fences in Hanawi NAR, Waikamoi, and Haleakala National Park (currently funded by NPS, FWS, TNC, and DOFAW).
  - Complete fencing of lower Hanawi NAR (in progress by EMWP).
  - Begin public outreach about importance and benefits of controlling rodents and safety of diphacinone.
  - Conduct large-scale rodent control by aerial broadcast of diphacinone in at least one site and monitor population and individual-level responses. Possible sites include Hanawi and Kipahulu.
- Continue research to document distribution, threats, and habitat needs.
  - Complete long-term population trend analysis and habitat suitability modeling (Interagency Database Project, currently funded by FWS, NPS, DOFAW, and BRD)
  - Document and publish response of Maui Parrotbill distribution to habitat protection in Kipahulu. Obtain data summaries from Interagency Database Project and NPS.
  - Complete surveys in the Waikamoi and Manawainui areas. MFBRP is currently funded to carry out surveys in Waikamoi. NPS currently has a grant pending for surveys in Manawainui.
  - Carry out habitat use research in the Manawainui area. NPS currently has a grant pending for a habitat use study in Manawainui.
  - Complete pilot nest predation study in Hanawi NAR. MFBRP is carrying out an artificial nest predation study to document predation rates.

- Restore New Habitat
  - Complete fencing and ungulate eradication of DOFAW Kahikinui parcel TMK# 218001009 and portions of DHHL parcels TMKs 219001011, 219001007, and 219001003 west of Kahikinui (see Fig. 1). Begin outplanting of koa and understory species in select areas. The community group LIFE holds a 20-year lease on the DHHL parcel and is currently fencing portions of the parcel for the purpose of restoration. Once restored, these parcels will together provide approximately 1200 acres of protected koa forest habitat. DOFAW and FWS are currently funding this work.
  - Support the formation of a Leeward Maui Watershed Partnership.
- Develop a Captive Propagation and Reintroduction Program.
  - Continue captive propagation and optimization of methods.
  - Assess suitability of potential release sites in Waikamoi and Manawainui.
  - Conduct two years of experimental releases into suitable habitat to develop and optimize reintroduction methods.

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