

## **DRAFT AKIAPOLAAU FIVE-YEAR RECOVERY WORK PLAN**

**Prepared by Akiapola`au 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 Akiapola`au 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 Akiapola`au, 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 concerted toward the same ultimate goals, that limited recovery funding and effort are used efficiently, and provide milestones that can be used to track and evaluate progress toward recovery. Realization of these milestones will provide evidence that progress is being made toward eventual recovery. Failure in realizing these milestones may indicate that additional effort and funding are needed, or that the current recovery strategy is not effective.



Male `Akiapola`au. Photo Eric VanderWerf

**Species Summary.** The Akiapola`au is a specialized insectivorous Hawaiian honeycreeper that uses its unusual dimorphic bill as two tools deployed separately or together to extract insect larvae and spiders from crevices or insect borings. Moth larvae are the most common food item in `Akiapola`au fecal samples, followed by spiders and long-horned beetle larvae (Ralph and Fancy 1996). Lichen-covered and dead branches are preferred as foraging substrates. Tree species preferred for foraging include koa, kolea, mamane, and naio, while `ohi`a is not favored. This species also takes sap from small wells it drills in the bark of `ohi`a trees. It is not clear how these sap trees are selected, and the prevalence of this behavior and the importance of this nutritional source are not known. `Akiapola`au often join mixed species foraging flocks. The importance of these flocks to `Akiapola`au has only recently been studied, and may prove relevant to the conservation of this species (Hart 2000).

Home range size varies from approximately 5 to 40 hectares (12 to 100 acres). The factors that influence the range in territory size, and therefore population size, are unknown. Recently, `Akiapola`au have been observed in young koa plantations, suggesting that this species may not be restricted to old growth. `Akiapola`au also inhabited wet montane forest dominated by `ohi`a, with no koa. Some birds are still found in that habitat at middle elevations in Hamakua.

`Akiapola`au are found in four disjunct populations inhabiting koa-dominated montane forests (Hamakua south across the upper Waiakea kipuka to Kulani and Keauhou, in Ka`u and Kapapala, in southern Kona, and in central Kona). Until recently, a fifth population occupied subalpine dry forest on Mauna Kea. Originally these populations were all connected, but they have been isolated mainly due to grazing. The current population estimate, based on surveys in 1990 to 1995, is 1,163 birds, with a 90 percent confidence interval of 1,109 to 1,217 birds (Fancy *et al.* 1995).

**Primary Threats.** `Akiapola`au are apparently restricted to higher elevation forests due to the presence of mosquito-borne diseases at lower elevations (van Riper *et al.* 1986, Atkinson *et al.* 1995), and are restricted at upper elevations due to destruction and degradation of forest habitat (Scott *et al.* 1986). Habitat fragmentation may isolate the remaining populations, decrease the effective population size, and hinder recolonization of areas that were formerly inhabited. Within their present range, the factors that limit densities are not well known. Predation by introduced mammals and owls may play a role, but direct evidence for this is scarce. Recent surveys indicate rat densities are high at Hakalau Forest National Wildlife Refuge, which contains a significant portion of the largest remaining `Akiapola`au population (U.S. Geological Survey, unpubl. data). Juvenile `Akiapola`au may be especially vulnerable to predators during the post-fledging period because their loud, persistent begging call makes them easy to locate. Predation may impact `Akiapola`au more than other native birds because their low reproductive rate (Ralph and Fancy 1996). Habitat structure, degradation, and food availability also may limit populations within their current range. Habitat within most of the current range of Akiapolaau has experienced significant degradation of canopy and understory structure.

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

- Maintain Stable Existing Populations
- Increase Distribution and Abundance of Existing Populations
- Establish New Population(s)

**Five-year Recovery Actions (2003-2007).** In order to realize the interim recovery objectives described above, the following actions are needed. If these actions are accomplished in the next five years, then new interim recovery objectives and/or actions should be identified that will continue to guide progress toward full recovery. If these actions are not met within five years, then the causes for failure should be examined and rectified if possible. If it is not possible to correct the causes for failure and the current strategy is not considered effective, then a new strategy should be developed.

- Protect Existing Habitat
  - Maintain existing fences and ungulate control in Hakalau Forest National Wildlife Refuge and [Keauhou or other sites]
  - 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 Hakalau, Keauhou, and Kapapala.
  - Repair fences and maintain ungulate control at Pu`u Wa`a Wa`a (currently funded by FWS and DOFAW).
  - Maintain fences at Kapapala.
- Continue research to document distribution, threats, and habitat needs.
  - Complete habitat use research at Hakalau, Keauhou, and Kapapala (currently funded by DOFAW and UC Santa Cruz) in old and new growth forests.
  - Begin comparative demography study in forests of different age and structure.
  - Begin food availability study in forests of different age and structure, drawing from results from comparative habitat use study.
  - Complete intensive surveys in the Kapapala area (currently funded by DOFAW, FWS, and BRD).
  - Carry out surveys in Pu`u Wa`a Wa`a and south and central Kona.
  - Complete long-term population trend analysis and habitat suitability modeling (currently funded by FWS, NPS, DOFAW, and BRD)
- Restore New Habitat
  - Continue restoration and reforestation of upper Hakalau and adjacent DHHL lands.
  - Continue reforestation of KS lands in Keauhou.
  - Begin restoration at Puu Mali and Kaohe (currently funded by DOFAW and FWS).
- Develop a Captive Propagation and Reintroduction Program (Kuehler, et al. 2001).
  - Begin captive propagation and optimization of methods.
  - Assess suitability and select release sites.
  - Conduct two years of experimental releases into suitable habitat to develop and optimize reintroduction methods.

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