

Po`ouli
(Melamprosops phaeosoma)

**5-Year Review:
Summary and Evaluation**

**U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
Honolulu, Hawai`i**

5-YEAR REVIEW
Species reviewed: Po`ouli (*Melamprosops phaeosoma*)

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5-YEAR REVIEW

Po`ouli (*Melanprosops phaeosoma*)

1.0 GENERAL INFORMATION

1.1 Reviewers

Lead Regional Office:

Region 1, Endangered Species Program, Division of Recovery, Jesse D'Elia, (503) 231-2071

Lead Field Office:

Pacific Islands Fish and Wildlife Office, Loyal Mehrhoff, Field Supervisor, (808) 792-9400

Cooperating Field Office(s):

N/A

Cooperating Regional Office(s):

N/A

1.2 Methodology used to complete the review

Information used to conduct this review was obtained from the following sources: the Revised Recovery Plan for Hawaiian Forest Birds (USFWS 2006), The Birds of North America (BNA) species account, No. 272 (Pratt *et al.* 1997), The Hawaiian Forest Bird Survey (Scott *et al.* 1986), The Hawai`i Rare Bird Search 1994-1996 (Reynolds and Snetsinger 2001), survey results from the Maui Forest Bird Recovery Project (MFBRP 2007), and the most recent Hawaiian forest bird surveys on the island of Maui in 2006. Information from these sources was used to determine the species' historical distribution, recovery criteria, threats, and most recent documented sightings. The BNA species account (Pratt *et al.* 1997) and the peer-reviewed Revised Recovery Plan for Hawaiian Forest Birds (USFWS 2006) summarized all early scientific information gathered about the species, while the Hawaiian Forest Bird Survey (Scott *et al.* 1986), the Hawai`i Rare Bird Search 1994-1996, which was conducted specifically to search for extremely rare and potentially extinct Hawaiian forest birds, site specific search and management by the Maui Forest Bird Recovery Project (MFBRP), and periodic forest bird surveys performed on a five-year rotating cycle on each of the main Hawaiian islands, provided the most recent information about the continued presence of the species in areas where it was known historically. The above sources constitute the most recent, complete, and scientifically reliable information available for the evaluation of the taxon's current status.

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (USFWS) beginning in 2006. Information in this review was compiled by the lead biologist and Hawaiian Birds Recovery Coordinator. The

document was reviewed by the Assistant Field Supervisor for Endangered Species and Acting Deputy Field Supervisor before submittal to the Field Supervisor for approval.

1.3 Background:

1.3.1 Federal Register (FR) Notice citation announcing initiation of this review:

USFWS. 2006. Endangered and Threatened Wildlife and Plants; Initiation of 5-year Reviews of 70 Species in Idaho, Oregon, Washington, Hawaii, and Guam. Federal Register 71:18345-18348.

1.3.2 Listing history

Original Listing

FR notice: USFWS. 1975. Endangered and Threatened Wildlife; List of Endangered and Threatened Fauna. 40 FR 44151.

Date listed: September 25, 1975

Entity listed: Species

Classification: Endangered

Revised Listing, if applicable

FR notice: N/A

Date listed: N/A

Entity listed: N/A

Classification: N/A

1.3.3 Associated rulemakings:

N/A

1.3.4 Review History:

Species status review [FY 2010 Recovery Data Call (August 2010)]: Unknown

Recovery achieved:

1 (0-25%) (FY 2007 Recovery Data Call – most recent year reported)

1.3.5 Species' Recovery Priority Number at start of this 5-year review:

4

1.3.6 Current Recovery Plan or Outline

Name of plan or outline: Revised Recovery Plan for Hawaiian Forest Birds. Region 1, Portland, OR. 622 pp.

Date issued: September 22, 2006.

Dates of previous revisions, if applicable: May 1984 (Maui-Molokai Forest Birds Recovery Plan)

2.0 REVIEW ANALYSIS

2.1 Application of the 1996 Distinct Population Segment (DPS) policy

2.1.1 Is the species under review a vertebrate?

Yes
 No

2.1.2 Is the species under review listed as a DPS?

Yes
 No

2.1.3 Was the DPS listed prior to 1996?

Yes
 No

2.1.3.1 Prior to this 5-year review, was the DPS classification reviewed to ensure it meets the 1996 policy standards?

Yes
 No

2.1.3.2 Does the DPS listing meet the discreteness and significance elements of the 1996 DPS policy?

Yes
 No

2.1.4 Is there relevant new information for this species regarding the application of the DPS policy?

Yes
 No

2.2 Recovery Criteria

2.2.1 Does the species have a final, approved recovery plan containing objective, measurable criteria?

Yes
 No

2.2.2 Adequacy of recovery criteria.

2.2.2.1 Do the recovery criteria reflect the best available and most up-to-date information on the biology of the species and its habitat?

Yes
 No

2.2.2.2 Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria?

Yes
 No

2.2.3 List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information:

A taxon may be downlisted from endangered to threatened when all four of the following criteria have been met.

1. The species occurs in two or more viable populations or a viable metapopulation that represent the ecological, morphological, behavioral, and genetic diversity of the species.

This criterion has not been met; it is not known whether the species still exists.

2. Either a) quantitative surveys show that the number of individuals in each isolated population or in the metapopulation has been stable or increasing for 15 consecutive years, or b) demographic monitoring shows that each population or the metapopulation exhibits an average intrinsic growth rate (λ) not less than 1.0 over a period of at least 15 consecutive years; and total population size is not expected to decline by more than 20 percent within the next 15 consecutive years for any reason.

This criterion has not been met; survey effort has not been adequate to determine with confidence whether the species still exists.

3. Sufficient recovery habitat is protected and managed to achieve Criteria 1 and 2.

This criterion has not been fully met; however, important habitat areas including Hanawaī Natural Area Reserve (Hanawaī NAR), Waikamoi Preserve, and Kīpahulu Valley of Haleakalā National Park are protected and managed. Other areas of habitat where the species might occur are unfenced and vulnerable to damage by feral ungulates.

4. The mix of threats that were responsible for the decline of the species have been identified and controlled.

This criterion has not been fully met; most threats have been identified including disease, predation, and habitat damage by feral ungulates. However, each of these threats is only partly controlled. The threat from disease has been partly controlled by protecting forest habitat in some areas from feral pigs that create mosquito breeding sites, but mosquitoes are known to fly several kilometers in forested habitats and thus may still threaten forest birds even in pristine forest. Predator

control and ungulate removal has been implemented in some areas where the species may still occur, but not in the entire suitable habitat area for the species.

The taxon may be delisted when the downlisting criteria described above have been satisfied for at least 30 consecutive years.

2.3 Updated Information and Current Species Status

The po`ouli is a medium-sized, 26 gram (0.9 ounce), stocky Hawaiian honeycreeper (family Fringillidae, subfamily Drepanidinae) easily recognized by its brown plumage and characteristic black mask framed by a gray crown and white cheek patch. Males have whitish underparts, whereas females (and perhaps young males) have a grayish throat and breast. The po`ouli comprises a monotypic genus and species (USFWS 2006).

2.3.1 Biology and Habitat

2.3.1.1 New information on the species' biology and life history:

No new information.

2.3.1.2 Abundance, population trends (e.g. increasing, decreasing, stable), demographic features (e.g., age structure, sex ratio, family size, birth rate, age at mortality, mortality rate, etc.), or demographic trends:

No new information.

2.3.1.3 Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding, etc.):

No new information.

2.3.1.4 Taxonomic classification or changes in nomenclature:

No new information.

2.3.1.5 Spatial distribution, trends in spatial distribution (e.g. increasingly fragmented, increased numbers of corridors, etc.), or historic range (e.g. corrections to the historical range, change in distribution of the species' within its historic range, etc.):

No new information.

2.3.1.6 Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem):

Fossil evidence shows that the po`ouli once inhabited drier forests at lower elevation on the leeward slope of Haleakalā, indicating it once had a much broader geographic and habitat range (USFWS 2006). Po`ouli are associated with low levels of disturbance to soil and vegetation by feral pigs (Mountainspring *et al.* 1990).

2.3.1.7 Other:

Not applicable.

2.3.2 Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms)

2.3.2.1 Present or threatened destruction, modification or curtailment of its habitat or range:

Habitat loss and degradation by agriculture, urbanization, cattle grazing, browsing by feral ungulate species, timber harvesting, and invasion of nonnative plant species into native-dominated plant communities have been some of the primary threats to this species (USFWS 2006). Feral pigs, and goats to a lesser degree, have had a long-term damaging effect upon native forests in the remaining po`ouli range by consuming and damaging understory vegetation, creating openings on the forest floor for weeds, transporting weed seeds into the forest, and causing soil erosion and disruption of seedling regeneration of native plants.

2.3.2.2 Overutilization for commercial, recreational, scientific, or educational purposes:

Not known to be a limiting factor.

2.3.2.3 Disease or predation:

Predation by alien mammals such as black rats (*Rattus rattus*) and Polynesian rats (*Rattus exulans*) and diseases such as avian malaria (*Plasmodium relictum*) and avian pox (*Poxvirus avium*) carried by alien mosquitoes have also been primary threats to this species (USFWS 2006).

2.3.2.4 Inadequacy of existing regulatory mechanisms:

Current regulatory mechanisms are adequate: The po`ouli was federally listed as endangered September 25, 1975 (USFWS 1975), and thus receives regulatory protection under the Endangered Species Act. Species listed under the Endangered Species Act are automatically added to the State of Hawai`i list of endangered species, and are thus also protected by State regulations. The Service recently added 24 species that belong to families covered by the Canadian and/or Mexican Conventions, but occur naturally in the United States only in Hawai`i, to the List of Migratory Birds. Accordingly, these species, including the po`ouli, receive protection under the Migratory Bird Treaty Act (USFWS 2010).

2.3.2.5 Other natural or manmade factors affecting its continued existence:

This species now occurs in such low numbers and in such restricted ranges, if it exists at all, that it is threatened by natural processes, such as inbreeding depression and demographic stochasticity, and by natural and man-made factors such as hurricanes, wildfires, and periodic vegetation die-back

(USFWS 2006). Impacts of alien birds are not well understood, but include aggressive behavior towards native bird species, possible competition for food, nest sites, and roosting sites, and possibly supporting elevated predator population levels.

Climate change may also pose a threat to the po`ouli. However, current climate change models do not allow us to predict specifically what those effects, and their extent, would be for this species or its habitat.

2.4 Synthesis

As late as 2003, three po`ouli were known to still exist in three separate territories within the Hanawā NAR (USFWS 2006); at this time a decision was made by the U.S. Fish and Wildlife Service, the Hawai`i Department of Land and Natural Resources, and the Zoological Society of San Diego to bring the three remaining po`ouli into captivity for captive propagation (Groombridge *et al.* 2003, HDLNR 2003). One individual, a male, was brought successfully to the State's captive-rearing facility at Olinda, Maui, in September of 2004; this po`ouli later died in captivity on November 26, 2004 (MFBRP 2007). Searches for the other two po`ouli remaining in the wild continue today, however, no po`ouli have been seen since this time in any of the three home range areas the three individuals frequented prior to 2003 (MFBRP 2007, USFWS 2006). Although it seems highly likely the two po`ouli last seen in the wild in 2003 have disappeared, this species requires a very high search effort for even a single detection (Baker 2001).

The species was first discovered in 1973 (Casey and Jacobi 1974), and the po`ouli population was estimated at 140 ± 280 in the early 1980's (Scott *et al.* 1986, pp. 182-183). However, these estimates of population size and density are considered imprecise due to the species' low density and cryptic behavior (USFWS 2006). All historical sightings have been on the northeast (windward) slope of Haleakalā Volcano, east of the west branch of Hanawā Stream to the headwaters of Heleleike`ōhā Stream, in an area of about 600 hectares (Pratt *et al.* 1997). Fossils from Maui, however, show that po`ouli had a wider distribution in the past and that po`ouli were present on the southwest slope of Haleakalā Volcano at least until the time of prehistoric human settlement of the Hawaiian archipelago, about 1,600 years ago (Pratt *et al.* 1997).

Scott *et al.* (1986) used the probability of detecting one bird from a randomly distributed population of n individuals to estimate species' extinction probability using the variable circular-plot point count methodology. Based on this data, Scott *et al.* (1986, pp. 69-71) determined the probability of detecting at least one po`ouli for West Maui (po`ouli were unrecorded during the HFBS on West Maui) to be 0.345 and 0.081 for hypothesized populations of 50 and 10 po`ouli, respectively. For a population of 10 po`ouli, Scott *et al.* (1986) determined there was only an 8% chance the surveys on West Maui would have detected at least

one of these individuals. This low probability of detection points out the limited time spent and area covered and the much greater effort needed to effectively survey for extremely rare species such as the po`ouli using the variable circular-plot point count methodology (Scott *et al.* 1986). The Hawai`i Rare Bird Search surveys in 1995 recorded a total of five po`ouli within the area of the original historical sightings (Baker 2001, Reynolds and Snetsinger 2001). However, surveys of Kīpahulu Valley were limited to the upper valley shelf and were plagued with poor weather (Reynolds and Snetsinger 2001), and the authors concluded that po`ouli may also have occurred in this under sampled area (Baker 2001).

As Reynolds and Snetsinger (2001) describe, there are instances where rare Hawaiian birds have been rediscovered after they were presumed extinct or have been found in larger populations than expected. The large area on East Maui with suitable habitat (approximately 12,100 hectares; USFWS 1984, USFWS 2006) some of which has not been adequately surveyed, the cryptic nature of this species, and many sites that are remote and only rarely visited by qualified observers, increase the potential that a small population of po`ouli could still exist on Maui. In addition, the rough terrain on Maui and the wet weather make surveys difficult, and numerous steep valleys create small pockets of habitat where the species could potentially persist.

3.0 RESULTS

3.1 Recommended Classification:

Downlist to Threatened

Uplist to Endangered

Delist

Extinction

Recovery

Original data for classification in error

No change is needed

3.2 New Recovery Priority Number:

Brief Rationale:

3.3 Listing and Reclassification Priority Number:

Reclassification (from Threatened to Endangered) Priority Number: _____

Reclassification (from Endangered to Threatened) Priority Number: _____

Delisting (regardless of current classification) Priority Number: _____

Brief Rationale:

4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

Given the only recent disappearance of the po`ouli from Hanawā NAR, low survey effort for the species over the entirety of its potential range, and the difficulty of detecting forest birds in remote mountainous habitats in Hawai`i, we recommend the species' biological status be changed to "unknown." Po`ouli have not been detected since 2003 in the area where the last three known individuals had continued to exist. However, based on reexamination of data from the 1994-1996 Hawai`i Rare Bird Search (Reynolds and Snetsinger 2001) and analysis of earlier data from the Hawaiian Forest Bird Survey (Scott *et al.* 1986), search effort has not been inadequate to state with confidence the species does not persist in other areas.

As described in the Revised Recovery Plan for Hawaiian Forest Birds (USFWS 2006), one of the most important recovery actions for extremely rare species is to intensively and systematically search areas of forest habitat where the species occurred historically. Statewide surveys of Hawaiian forest bird populations are conducted along widely spaced transects (Scott *et al.* 2006, pp. 16, 30, and 37) that do not cover all areas where extremely rare Hawaiian forest birds are most likely to be. Additionally, these surveys do not spend the lengths of time needed to maximize the probability that extremely rare and/or likely extinct Hawaiian forest birds will be detected or rediscovered. Therefore, we recommend that an intensive search for po`ouli be conducted on Maui using similar methodologies as those employed during the 1994-1996 Hawai`i Rare Bird Search (Reynolds and Snetsinger 2001). In addition, we recommend that autonomous recording units, or ARUs (Fitzpatrick 2002), be deployed in suitable habitats for this species. These field recording units record vocalizations of forest birds. The tapes are then analyzed using computer programs to determine if the target species is present in the area. Use of this technology would greatly increase the amount of search time for this species.

5.0 REFERENCES

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Signature Page
U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Po`ouli
(*Melamprosops phaeosoma*)

Current Classification: E

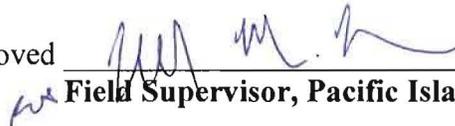
Recommendation resulting from the 5-Year Review:

- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change needed

Appropriate Listing/Reclassification Priority Number, if applicable:

Review Conducted By:

Jay T. Nelson, Fish and Wildlife Biologist
Marilet A. Zablan, Assistant Field Supervisor for Endangered Species
Jeff Newman, Acting Deputy Field Supervisor

Approved  Date **AUG 27 2010**
Field Supervisor, Pacific Islands Fish and Wildlife Office