

5-YEAR REVIEW

Short Form Summary

Species Reviewed: Maui parrotbill, kiwikiu (*Pseudonestor xanthophrys*)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2012. Endangered and threatened wildlife and plants; 5-year status reviews of 46 Species in Idaho, Oregon, Washington, Nevada, Montana, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. Federal Register 77:13248-13251.

Lead Region/Field Office:

Region 1/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawaii

Name of Reviewer(s):

Jay Nelson, Vertebrate Recovery Biologist, PIFWO

Maui nui and Hawaii Island Team Manager, PIFWO

Megan Laut, Vertebrate Recovery Coordinator PIFWO

Marie Bruegmann, Acting Recovery Program Lead, PIFWO

Kristi Young, Programmatic Deputy Field Supervisor, PIFWO

Methodology used to complete this 5-year review:

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office of the U.S. Fish and Wildlife Service (USFWS), beginning on March 6, 2012. The review was based on a review of current, available information since the last 5-year review for Maui parrotbill or kiwikiu (*Pseudonestor xanthophrys*) (USFWS 2011). The evaluation of Jay Nelson, Vertebrate Recovery Biologist, was reviewed by the Island Team Manager, Vertebrate Recovery Coordinator, and Acting Recovery Program Lead. It was subsequently reviewed and approved by the Programmatic Deputy Field Supervisor.

Background:

For information regarding the species listing history and other facts, please refer to the Fish and Wildlife Service's Environmental Conservation On-line System (ECOS) database for threatened and endangered species (http://ecos.fws.gov/tess_public).

Review Analysis:

Please refer to the previous 5-year review for Maui parrotbill published on August 2, 2011 (available at http://ecos.fws.gov/docs/five_year_review/doc3788.pdf), for a complete review of the species' status, threats, and management efforts. No significant information regarding the species biological status has come to light since listing to warrant a change in the Federal listing status of Maui parrotbill.

This small forest bird, numbering approximately 500 individuals, is endangered and occurs only on the island of Maui in a small 49 square kilometer (19 square mile) area of wet and mesic montane forest above 1,219 meters (4,000 feet) elevation on the

northeastern slope of Haleakala Volcano on East Maui. No additional threats have been found since the previous 5-year review.

New threats:

- Climate change degradation of habitat – Global climate change in addition threatens *P. xanthophrys* by increasing the elevation at which regular transmission of avian malaria (a protozoan parasite, *Plasmodium relictum*) and avian pox virus (*Avipoxvirus* spp.) occurs (Benning *et al.* 2002).

Synthesis:

The downlisting goals for this species (to establish a second population on either West Maui or Molokai) have not been met, and threats within known and potential suitable habitat are not being sufficiently managed (Table 2). Therefore, *Pseudonestor xanthophrys* meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

The recovery strategy for the Maui parrotbill centers on protection, restoration, and management of native high elevation forests on East Maui (Haleakala), West Maui, and East Molokai.

- Ungulate monitoring and control – Extensive work is still needed to fence and protect the lower elevation areas from Hanawi Natural Area Reserve to Waikamoi Preserve, which provide habitat within the current range of the Maui parrotbill. Most of the remaining leeward montane forests on East Maui, while believed to be largely mosquito-free, currently are more highly degraded by ungulates. These areas, in addition to fencing and ungulate control, will require more intensive, long-term restoration to become suitable for Kiwikiu and other endangered forest birds.
- Habitat and natural process management and restoration – Habitat restoration and reestablishment of a population at Kahikinui on the leeward or western exposures of east Maui is needed to promote natural demographic and evolutionary processes. This work should proceed to the east and west from Kahikinui, eventually relinking the remnant Kahikinui forest to other forests on East Maui, possibly including Manawainui, Kaupo, and remnant koa forests near Kula.
- Predator /herbivore monitoring and control – Control of small mammalian predators is needed throughout the species' range. Currently, intensive control of rats (*Rattus* spp.) is underway in a portion of Hanawi Natural Area Reserve. An important component of Maui parrotbill recovery is evaluation of the effect of rodent control on the species' reproduction and survival, and an expansion of the scale of rodent control if warranted. Broad scale aerial application of rodenticides is likely needed to protect Maui parrotbill from rodent predation and reduce habitat damage caused by rats.
- Disease monitoring and control – Identification of resistance or tolerance to avian diseases within the population is an important recovery strategy. Control of

mosquitoes and their breeding sites is also needed. Much of the potential Maui parrotbill habitat on West Maui and East Molokai is managed as native ecosystems mostly free of ungulates. However, much of this lies at elevations below 1,350 meters (4,500 feet), where mosquitoes may be common. Ongoing habitat management and removal of ungulates may reduce mosquito densities, but surveys of mosquitoes and disease prevalence are needed prior to the reintroduction of Maui parrotbill in these areas. The U.S. Geological Survey, National Wildlife Health Center, Honolulu Field Station collaborates with USFWS and the State of Hawaii in surveillance and interdiction efforts to detect and prevent the establishment of new avian diseases into the state, including surveillance for West Nile virus (USGS 2014). Continued support for this program is critical to prevent West Nile virus and other avian diseases from entering Hawaii.

- Captive propagation for genetic storage and reintroduction – Research on captive breeding for the Maui parrotbill was initiated in 1997, when eggs were removed to the Maui Forest Bird Conservation Center (MBCC) and the Keauhou Bird Conservation Center on Hawaii. Captive propagation may play a significant role in recovery of the Maui parrotbill once recovery areas are managed, allowing for the release and reestablishment of additional populations of this species.
- Reintroduction / translocation – To establish a second population, current efforts should continue to build a captive-breeding population for eventual reintroduction of the Maui parrotbill to southern Haleakala, and to West Maui or East Molokai. Initial efforts at captive propagation of the Maui parrotbill have met with limited success, and efforts are underway to address these deficiencies. If it is not possible to breed sufficient numbers of Kiwikiu in captivity for release, translocation of the Maui parrotbill may need to be considered in addition to captive propagation to reestablish the species in areas of its former range.

Table 1. Status and trends of *Pseudonestor xanthophrys* from listing through current 5-year review.

| Date | Estimated Number | Downlisting Criteria identified in Recovery Plan | Downlisting Criteria Completed? |
|--|-------------------------|--|--|
| 1967 (listing) | Unknown | Identification of recovery areas | No |
| | | Protection of recovery areas and remaining forest | No |
| | | Control of alien nest predators, especially rats | No |
| | | Research on disease resistance and transmission | No |
| | | Captive propagation | No |
| | | Stable or increasing populations over a period of 15 years | Unknown |
| 1980 (forest bird surveys) | 502 ± 116 (95% CI) | Identification of recovery areas | Partially |
| | | Protection of recovery areas and remaining forest | Partially |
| | | Control of alien nest predators, especially rats | No |
| | | Research on disease resistance and transmission | No |
| | | Captive propagation | No |
| | | Stable or increasing populations over a period of 15 years | Unknown |
| 1984 (Maui-Molokai Forest Birds Recovery Plan) | ~500 | Identification of recovery areas | Yes |
| | | Protection of recovery areas and remaining forest | Partially |
| | | Control of alien nest predators, especially rats | No |
| | | Research on disease resistance and transmission | No |
| | | Captive propagation | No |
| | | Stable or increasing populations over a period of 15 years | Unknown |
| 2006 (revised recovery plan) | ~500 | Identification of recovery areas | Yes |
| | | Protection of recovery areas and remaining forest | Partially |
| | | Control of alien nest predators, especially rats | Partially |
| | | Research on disease resistance and | Partially |

| Date | Estimated Number | Downlisting Criteria identified in Recovery Plan | Downlisting Criteria Completed? |
|----------------------|------------------|--|---------------------------------|
| | | transmission | |
| | | Captive propagation | Partially |
| | | Stable or increasing populations over a period of 15 years | Stable |
| 2012 (5-year Review) | ~500 | Identification of recovery areas | Yes |
| | | Protection of recovery areas and remaining forest | Partially |
| | | Control of alien nest predators, especially rats | Partially |
| | | Research on disease resistance and transmission | Partially |
| | | Captive propagation | Partially |
| | | Stable or increasing populations over a period of 15 years | Stable |
| 2014 (5-year review) | ~500 | Identification of recovery areas | Yes |
| | | Protection of recovery areas and remaining forest | Partially |
| | | Control of alien nest predators, especially rats | Partially |
| | | Research on disease resistance and transmission | Partially |
| | | Captive propagation | Partially |
| | | Stable or increasing populations over a period of 15 years | Stable |

Table 2. Status of threats to *Pseudonestor xanthophrys* from listing through current 5-year review.

| Threat | Listing factor | Current Status | Conservation/ Management Efforts |
|---|----------------|----------------|--|
| Rodents – predation | A, C | Ongoing | Partially – Hanawi Natural Area Reserve, Haleakala National Park, Waikamoi Preserve, Kahikinui |
| Avian malaria – disease | A, E | Ongoing | Research |
| Habitat protection | A, E | Ongoing | Partially – Hanawi Natural Area Reserve, Haleakala National Park, Waikamoi Preserve, Kahikinui |
| Low numbers and restricted distribution | E | Ongoing | Partially – propagation at MBCC for eventual reintroduction |
| Climate change | A, E | Increasing | Research |

References:

See previous 5-year review for a full list of references.

Atkinson, C.T., and D.A. LaPointe. 2009. Introduced avian diseases, climate change, and the future of Hawaiian honeycreepers. *Journal of Avian Medicine and Surgery* 23:53-63.

Benning, T.L., D. LaPointe, C.T. Atkinson, and P.M. Vitousek. 2002. Interactions of climate change with biological invasions and land use in the Hawaiian Islands: modeling the fate of endemic birds using a geographic information system. *Proceedings of the National Academy of Sciences* 99:14246-14249.

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LaPointe, D.A., E.K. Hofmeister, C.T. Atkinson, R.E. Porter, R.J. Dusek. 2009. Experimental infection of Hawaii amakihi (*Hemignathus virens*) with West Nile virus and competence of a co-occurring vector, *Culex quinquefasciatus*: Potential impacts on endemic Hawaiian avifauna. *Journal of Wildlife Diseases* 45:257-271.

Scott, J. M., S. Mountainspring, F. L. Ramsey, and C. B. Kepler. 1986. Forest bird communities of the Hawaiian Islands: their dynamics, ecology, and conservation. *Studies in Avian Biology* 9:1-431.

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U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of Maui Parrotbill, or kiwikiu
(*Pseudeonster xanthophrys*)

Pre-1996 DPS listing still considered a listable entity? N/A

Recommendation resulting from the 5-year review:

- Delisting
- Reclassify from Endangered to Threatened status
- Reclassify from Threatened to Endangered status
- No Change in listing status

fo Field Supervisor, Pacific Islands Fish and Wildlife Office

Maui M. Bugman

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