

5-YEAR REVIEW

Short Form Summary

Species Reviewed: Crested honeycreeper, akohekohe (*Palmeria dolei*)

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(44):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 the crested honeycreeper, or akohekohe (*Palmeria dolei*) (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 crested honeycreeper published on August 2, 2011 (available at http://ecos.fws.gov/docs/five_year_review/doc3800.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 the crested honeycreeper.

This small forest bird, numbering approximately 3,800 individuals, is endangered and occurs only on the island of Maui in a small 22 square mile area of wet and mesic montane forest above 5,000 feet elevation on the northeastern slope of Haleakala Volcano on East Maui.

New status information:

Densities in the core of the species' range within the Hanawi Natural Area Reserve may be increasing (Gorresen *et al.* 2009) and the current population may be higher than previously estimated.

New threats:

- Disease impact – Like many Hawaiian forest birds, non-native disease likely limits distribution of the 'Ākohekohe (Attkinson and LaPointe 2009).
- Climate change degradation of habitat – Global climate change threatens the crested honeycreeper 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 (Table 1), and threats within known and potential suitable habitat are not being sufficiently managed (Table 2). Therefore, the crested honeycreeper meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

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

- Ungulate monitoring and control – Crested honeycreepers are currently restricted to the windward forests of East Maui from Waikamoi to Manawainui Valley. 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 crested honeycreeper. Habitat restoration and reestablishment of a population on the leeward or western exposures of East Maui is needed to promote natural demographic and evolutionary processes.
- Predator 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.
- Threats – predator control research – An important component of crested honeycreeper 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 the crested honeycreeper 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 crested

- honeycreeper 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 crested honeycreeper in these areas. Hawaiian honeycreepers are likely vulnerable to avian diseases such as West Nile virus, that have not been introduced to Hawaii but which have the potential to become established in the Hawaiian Islands (LaPointe *et al.* 2004). The U.S. Geological Survey, National Wildlife Health Center, Honolulu Field Station collaborates with the USFWS and 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 the State of Hawaii.
- Captive propagation protocol development a – Research on captive breeding for the crested honeycreeper was initiated in 1997, when eggs were removed to the Maui Forest Bird Conservation Center and the Keauhou Bird Conservation Center on Hawaii. Translocation of wild-caught adult birds, however, may be the preferred method of establishing a second crested honeycreeper population, because the aggressive nature of this species makes it difficult to propagate in captivity.

Table 1. Status and trends of *Palmeria dolei* 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)	3,753 ± 700 (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)	~3,800	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)	~3,800	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
2011 (5-year Review)	~3,800	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	Species' range-wide and core densities have both increased and the current population may be higher than previously estimated
2014 (5-year review)	~3,800	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	Species' range-wide and core densities have both increased and the current population may be higher than previously estimated

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

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Rodent predation or herbivory	A, C	Ongoing	Partially, Hanawi Natural Area Reserve, Haleakala National Park, Waikamoi Preserve
Avian malaria and avian pox	A, E	Ongoing	No – ongoing research, but no effective method to date
Ungulate degradation of habitat	A, E	Ongoing	Partially, Hanawi Natural Area Reserve partially fenced, Haleakala National Park fenced, Waikamoi Preserve partially fenced
Reduced viability due to low numbers	E	Ongoing	Partially, however captive propagation may not be the preferred method of establishing a second population
Climate change	A, E	Increasing	No

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.

Gorresen, P.M., R.J. Camp, M.H. Reynolds, B.L. Woodworth, and T.K. Pratt. 2009. Status and trends of native Hawaiian songbirds. Pages 108-136 in T.K. Pratt, C.T. Atkinson, P.C. Banko, J.D. Jacobi, and B.L. Woodworth editors). *Conservation biology of native Hawaiian forest birds: implications for island avifauna* (. Yale University Press, New Haven and London.

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.
- [USFWS] U.S. Fish and Wildlife Service. 1967. Office of the Secretary; native fish and wildlife; endangered species. *Federal Register* 32(48):4001.
- [USFWS] U.S. Fish and Wildlife Service. 1984. Maui-Molokai forest birds recovery plan. Region 1, Portland, OR. 110 pp.
- [USFWS] U.S. Fish and Wildlife Service. 2006. Revised recovery plan for Hawaiian forest birds. Region 1, Portland, Oregon. 622pages.
- [USFWS] U.S. Fish and Wildlife Service. 2011. ‘Ākohkohe (crested honeycreeper) (*Palmeria dolei*) 5-year review summary and evaluation. U.S. Fish and Wildlife Service, Honolulu, Hawaii. 19 pages.
- [USGS] U.S. Geological Survey. 2014. National Wildlife Health Center: West Nile virus research. Available at http://www.nwhc.usgs.gov/disease_information/west_nile_virus/research_project_s.jsp. Accessed on January 16, 2014.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of Crested Honeycreeper, or akohekohe
(*Palmeria dolei*)

Pre-1992 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

For **Programmatic Deputy Field Supervisor, Pacific Islands Fish and Wildlife Office**

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Date *2014-06-05*