

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Hibiscadelphus giffardianus* (hau kuahiwi)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2013. Endangered and threatened wildlife and plants; Initiation of 5-year status reviews of 44 species in Oregon, Hawaii, Guam, and the Northern Mariana Islands. Federal Register 78(24):8185-8187.

Lead Region/Field Office:

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

Name of Reviewer(s):

Chelsie Javar-Salas, Plant Biologist, PIFWO

Marie Bruegmann, Plant Recovery Coordinator, 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 4, 2013. The review was based on a review of current, available information since the last 5-year review for *Hibiscadelphus giffardianus* (USFWS 2008). The evaluation by Chelsie Javar-Salas, Plant Biologist, was reviewed by the Plant Recovery Coordinator. 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 at: http://ecos.fws.gov/tess_public.

Review Analysis:

Please refer to the previous 5-year review for *Hibiscadelphus giffardianus* published on January 18, 2008 (available at: http://ecos.fws.gov/docs/five_year_review/doc1838.pdf) for a complete review of the species' status, threats, and management efforts. No significant new information regarding the species' biological status has come to light since listing to warrant a change in the Federal listing status of *H. giffardianus*.

This long-lived perennial is endangered and only one tree of *Hibiscadelphus giffardianus* has ever been known in the wild from Kipuka Puaulu in Hawaii Volcanoes National Park (USFWS 1998). This tree died in 1930 and this species is now extinct in the wild. However, individuals were cultivated from this parent tree. At the time of listing, 11 reintroduced individuals were known from Kipuka Puaulu (USFWS 1996). The status and trends for *H. giffardianus* are provided in the tables below.

New status information:

- As of the fall of 2006, there were 304 reintroduced individuals in three sites at Hawaii Volcanoes National Park (2010). This number represents a 93 percent survival rate. Fifty-four plants were reintroduced in 2007 within two of the three sites in the National Park. In 2009, an additional 44 individuals were reintroduced at two sites in the National Park. The survival rate after one year was 86 percent. In 2011, an additional five individuals were outplanted at a single site in Hawaii Volcanoes National Park (2011). No monitoring of the existing reintroductions was conducted in 2011. In 2014, 26 individuals of *H. giffardianus* were reintroduced within Hawaii Volcanoes National Park (2014).
- Overall, the numbers of individuals have decreased from the 440 reintroduced individuals reported in the previous 5-year review, to approximately 433 reintroduced individuals in 2014. The separation between mature and immature individuals was not distinguished in monitoring reports.

New threats:

- Climate change destruction or degradation of habitat – Climate change may pose a threat to this species. Fortini *et al.* (2013) conducted a landscape-based assessment of climate change vulnerability for native plants of Hawaii using high resolution climate change projections. Climate change vulnerability is defined as the relative inability of a species to display the possible responses necessary for persistence under climate change. The assessment by Fortini *et al.* (2013) did not include *H. giffardianus*.

New management actions:

- Captive propagation for genetic storage and reintroduction –Hawaii Volcanoes National Park (2014) has 119 plants in their nursery.
- Reintroduction / translocation – In 2014, 26 individuals of *H. giffardianus* were reintroduced within Hawaii Volcanoes National Park (2014).

Synthesis:

Stabilizing, downlisting, and delisting objectives are provided in the Big Island II: addendum to the recovery plan for Big Island plant cluster (USFWS 1998), based on whether the species is an annual, a short-lived perennial (fewer than 10 years), or a long-lived perennial. *Hibiscadelphus giffardianus* is a long-lived perennial, and to be considered stable, the taxon must be managed to control threats (e.g., fenced) and be represented in an *ex situ* (at other than the plant's natural location, such as a nursery or arboretum) collection. In addition, a minimum of three populations should be documented on the island of Hawaii. Each of these populations must be naturally reproducing and increasing in number, with a minimum of 25 mature individuals per population.

The interim stabilization goals for this species have not been met, as only two populations of *Hibiscadelphus giffardianus* contain 25 or more individuals (Table 1). Likewise, all of the threats are not being sufficiently managed throughout all of the populations (Table 2). Therefore, *H. giffardianus* meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

- Surveys / inventories – Survey geographical and historical range for a current assessment of the species' status.
- Captive propagation for genetic storage and reintroduction
 - Continue collection of genetic resources for storage, propagation, and reintroduction into protected suitable habitat within historical range.
 - Collect genetic resources for storage at Harold L. Lyon Arboretum Seed Conservation Laboratory. This species currently has no seeds in genetic storage.
- Ungulate monitoring and control – Maintain existing fences to protect them from the impacts of feral ungulates.
- Invasive plant monitoring and control – Eradicate invasive introduced plants within ungulate exclosures and maintain exclosures free of invasive plants.
- Population viability monitoring and analysis – Continue monitoring outplanted individuals.
- Alliance and partnership development – Initiate planning and contribute to implementation of ecosystem-level restoration and management to benefit this taxon.

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

Date	No. wild indivs	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1996 (listing)	0	11	All threats managed in all 3 populations	No
			Complete genetic storage	Yes
			3 populations with 25 mature individuals each	No
1998 (recovery plan)	0	30	All threats managed in all 3 populations	Mostly
			Complete genetic storage	Yes
			3 populations with 25 mature individuals each	No
2003 (critical habitat)	0	117	All threats managed in all 3 populations	Mostly
			Complete genetic storage	Yes
			3 populations with 25 mature individuals each	No
2008 (5-yr review)	0	440	All threats managed in all 3 populations	Mostly
			Complete genetic storage	Yes
			3 populations with 25 mature individuals each	Partially
2015 (5-yr review)	0	ca 433	All threats managed in all 3 populations	Mostly
			Complete genetic storage	Partially, no seeds in storage
			3 populations with 25 mature individuals each	Partially

Table 2. Threats to *Hibiscadelphus giffardianus* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulates – degradation of habitat and herbivory	A, C, D, E	Ongoing	Yes, all populations are fenced
Invasive introduced plants	A, E	Ongoing	None
Rodent predation or herbivory – rats	C	Ongoing	None
Nonnative bird predation or herbivory	C	Ongoing	None
Fire	E	Ongoing	None
Low numbers	E	Ongoing	Partially, captive propagation for genetic storage and reintroduction
Climate change	A, E	Increasing	None

References:

See previous 5-year review for a full list of references (USFWS 2008). Only references for new information are provided below.

Fortini, L., J. Price, J. Jacobi, A. Vorsino, J. Burgett, K. Brinck, F. Amidon, S. Miller, S. Gon II, G. Koob, and E. Paxton. 2013. A landscape-based assessment of climate change vulnerability for all native Hawaiian plants. Technical report HCSU-044. Hawaii Cooperative Studies Unit, University of Hawaii at Hilo, Hawaii. 141 pages.

Hawaii Volcanoes National Park. 2010. Annual permit report on threatened and endangered plants. Unpublished report submitted to the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii.

Hawaii Volcanoes National Park. 2011. Annual permit report on threatened and endangered plants. Unpublished report submitted to the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii.

Hawaii Volcanoes National Park. 2014. Report on controlled propagation of listed and candidate species, as designated under the U.S. Endangered Species Act. Unpublished.

[USFWS] U.S. Fish and Wildlife Service. 1996. Endangered and threatened wildlife and plants; determination of endangered or threatened status for 13 plants from the island of Hawaii, state of Hawaii. Federal Register 61(198):53137-53153.

[USFWS] U.S. Fish and Wildlife Service. 1998. Big Island II: addendum to the recovery plan for the Big Island plant cluster. U.S. Fish and Wildlife Service, Portland, Oregon. 80 pages + appendices.

[USFWS] U.S. Fish and Wildlife Service. 2008. *Hibiscadelphus giffardianus* and *Melicope zahlbruckneri* 5-year review short form summary. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii. 7 pages.

U.S. FISH AND WILDLIFE SERVICE
**SIGNATURE PAGE for 5-YEAR REVIEW of *Hibiscadelphus giffardianus* (hau
kuahiwi)**

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

Appropriate Listing/Reclassification Priority Number, if applicable: _____

for

Programmatic Deputy Field Supervisor, Pacific Islands Fish and Wildlife Office

Maria M. Blummann

Date 2015-08-03