

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Cyrtandra polyantha* (haiwale)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2010. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 58 species in Washington, Oregon, California, and Hawaii. Federal Register 75(226):71726-71729.

Lead Region/Field Office:

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

Name of Reviewer(s):

Vickie Caraway, Plant Biologist, PIFWO

Chelsie Javar, Plant Biologist, PIFWO

Daniel Clark, Oahu, Kauai, Northwest Hawaiian and American Samoa Islands Team Manager, PIFWO

Marie Bruegmann, Plant Recovery Coordinator, PIFWO

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 January 31, 2012. The review was based on a review of current, available information since the last 5-year review for *Cyrtandra polyantha* (USFWS 2009). The National Tropical Botanical Garden provided an initial draft of portions of the five-year review and recommendations for conservation actions needed prior to the next five-year review. The document was reviewed by the Plant Biologist, Islands Team Manager, and Plant Recovery Coordinator, followed by the 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 *Cyrtandra polyantha* published on April 8, 2009 (available at http://ecos.fws.gov/docs/five_year_review/doc2464.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 *Cyrtandra polyantha*.

This short-lived shrub is endangered and occurs on the island of Oahu. The current status and trends for *Cyrtandra polyantha* are provided in the tables below.

New status information:

- The Kupaua or Kulepiauoa Ridge site contained just one individual when last observed in 2006 (Perlman 2011).
- Oahu Plant Extinction Prevention Program (PEPP) coordinator Susan Ching, and Steve Perlman of the National Tropical Botanical Garden (NTBG) observed the eastern subpopulation on the Kuliouou windward summit area in 2011. It had just eight individuals on cliffs at about 610 meters (2,000 feet) elevation (Perlman 2011). The group of plants on the western end of Kuliouou was last observed in 2005, and contained 38 plants at that time (S. Ching, PEPP, pers. comm. 2011)..

It is estimated that there are more than 50 individuals remaining, similar to the last five-year review, although confirmation of the numbers would require further surveys.

New threats:

- Climate change - Climate change may pose a threat to this species. However, current climate change analyses in the Pacific Islands lack sufficient spatial resolution to make predictions on impacts to this species. The Pacific Islands Climate Change Cooperative (PICCC) funded climate modeling that will help resolve these spatial limitations. High spatial resolution climate outputs are expected to be available sometime in 2013.

New management actions:

- Captive propagation for genetic storage and reintroduction
 - Harold L. Lyon Arboretum (2012) has approximately 55,537 seeds in storage and 568 individuals in micropropagation storage.
 - Pahole Rare Plant Facility (2011) on Oahu had seven plants representing two founder individuals in their nursery.
 - Cuttings of the Kuliouou population were collected, but did not survive (S. Ching, pers. comm. 2011).
- Reintroduction / translocation – The Oahu PEPP has reintroduced one population of this species in Kupaua Valley with three plants in an enclosure. These were last observed in 2011 (S. Ching, pers. comm. 2011).

Synthesis:

Stabilizing, downlisting, and delisting objectives are provided in the recovery plan for plants from the island of Oahu (USFWS 1998), based on whether the species is an annual, a short-lived perennial (fewer than 10 years), or a long-lived perennial. *Cyrtandra polyantha* is a short-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 Oahu. For the species to be considered stable, each of these populations must be naturally reproducing and increasing in number, with a minimum of 50 mature individuals per population.

The stabilization goals for this short-lived perennial species have not been met, as no population of 50 or more mature individuals is known to exist (Table 1) and all threats are not being sufficiently managed throughout all of the populations (Table 2).

Therefore, *Cyrtandra polyantha* meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

- • Captive propagation for genetic storage and reintroduction - Collect genetic material from extant mature individuals for establishment of new populations or enhancement of existing populations.
- Ungulate exclosures - Construct fences and remove ungulates from wild populations.
- Ecosystem-altering invasive plant species control - Control invasive introduced plant species.
- Surveys / inventories - Survey the geographical and historical range of *Cyrtandra polyantha* for additional populations.
- Reintroduction / translocation - Identify suitable habitat for manageable reintroductions and augmentations of existing populations.
- Population biology research - Conduct life history studies, including pollination and seed dispersal research.
- Alliance and partnership development - Initiate planning and contribute to implementation of ecosystem-level management and restoration to benefit this species.

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

Date	No. wild individuals	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1996 (listing)	Unknown	0	All threats managed in 3 populations	No
			Complete genetic storage	No
		3	3 populations with 50 mature individuals each	No
1998 (recovery plan)	5	0	All threats managed in 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2003 (critical habitat)	3	0	All threats managed in 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2009 (5-yr review)	46	18	All threats managed in 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2013 (5-yr review)	~50	3	All threats managed in 3 populations	Partially (Table 2)
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No

Table 2. Status of threats to *Cyrtandra polyantha* and ongoing conservation actions.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulates – pigs cause habitat degradation	A, E	Ongoing	One reintroduced population in Kupaua Valley is fenced
Possible over-collection, loss of reproductive vigor and small numbers of individuals	B, E	Ongoing	Unknown
Invasive introduced plants	A, E	Ongoing	Unknown
Rats, slugs and snail herbivory	C	Ongoing	Unknown
Stochastic event (localized catastrophe like hurricane) or demographic fluctuations could wipe-out small localized population	E	Ongoing	None
Climate change	A, E	Increasing	None

References:

See previous 5-year review for a full list of references (USFWS 2009). Only references for new information are provided below.

Harold L. Lyon Arboretum. 2012. Micropropagation database and seed storage databases. University of Hawaii at Manoa, Honolulu, Hawaii. Unpublished.

Pahole Rare Plant Facility. 2011. Report on controlled propagation of listed and candidate species, as designated under the U.S. Endangered Species Act. 15 pages. Unpublished.

Perlman, Steve. 2011. *Cyrtandra polyantha* data. National Tropical Botanical Garden, Kalaheo, Hawaii. 1 page. Unpublished.

[USFWS] U.S. Fish and Wildlife Service. 1998. Recovery plan for the Oahu plants. U.S. Fish and Wildlife Service, Portland, Oregon. 207 pages; plus appendices.

[USFWS] U.S. Fish and Wildlife Service. 2009. *Cyrtandra polyantha* (no common name) 5-year review summary and evaluation. U.S. Fish and Wildlife Service, Honolulu, Hawaii. 6 pages. Available online at http://ecos.fws.gov/docs/five_year_review/doc2464.pdf.

Personal Communications:

Ching, Susan. 2011. Oahu Coordinator, Plant Extinction Prevention Program. E-mail to Margaret Clark, National Tropical Botanical Garden, dated December 2, 2011. Subject: Re: right e-mail for Susan?

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SIGNATURE PAGE for 5-YEAR REVIEW of *Cyrtandra polyantha* (haiwale)

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

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Date *2013-08-01*