

## **5-YEAR REVIEW**

Short Form Summary

**Species Reviewed:** *Cyrtandra viridiflora* (Hawaii)

**Current Classification:** Endangered

### **Federal Register Notice announcing initiation of this review:**

[USFWS] U.S. Fish and Wildlife Service. 2007. Endangered and threatened wildlife and plants; initiation of 5-year reviews of 71 species in Oregon, Hawaii, Commonwealth of the Northern Mariana Islands, and territory of Guam. Federal Register 72(45):10547-10550.

### **Lead Region/Field Office:**

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

### **Name of Reviewer(s):**

Fred Amidon, Pacific Islands Fish and Wildlife Office, Fish and Wildlife Biologist  
Marie Brueggemann, Pacific Islands Fish and Wildlife Office, Plant Recovery Coordinator  
Marilet A. Zablan, Pacific Islands Fish and Wildlife Office, Recovery Program Leader and acting Assistant Field Supervisor for Endangered Species

### **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 8, 2007. The review was based on the final critical habitat designation for *Cyrtandra viridiflora* and other species from the island of Oahu (USFWS 2002 2003a), as well as a review of current, available information. The Bernice P. Bishop Museum provided an initial draft of portions of the 5-year review and they also provided recommendations for conservation actions needed prior to the next five-year review. The evaluation of the status of the species was prepared by our lead PIFWO biologist and reviewed by the Plant Recovery Coordinator. The document was then reviewed by the Recovery Program Leader and acting Assistant Field Supervisor for Endangered Species before submission to the Field Supervisor for approval.

### **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](http://ecos.fws.gov/tess_public)).

### **Application of the 1996 Distinct Population Segment (DPS) Policy:**

This Policy does not apply to plants.

### **Review Analysis:**

Please refer to the final critical habitat designation for *Cyrtandra viridiflora* published in the Federal Register on June 17, 2003 (USFWS 2003a) for a complete review of the species' status (including biology and habitat), threats, and management efforts. No new threats and no significant new information regarding the species biological status have come to light since listing to warrant a change in the Federal listing status of *C. viridiflora*.

Historically, *Cyrtandra viridiflora* was known from seven scattered populations in the Koolau Mountains on the island of Oahu, and at the time of federal listing as endangered, this number had been reduced to four populations of less than 10 individuals total (USFWS 1996). In 2003, the species was known to occur in nine populations, consisting of a total of 69 mature individuals (USFWS 2008). The occurrences are restricted to the northern Koolau Mountains and range from Kawainui and Koloa to Kaalalea: Kahuku Cabin (five individuals), Kawainui and Koloa (eight), Opaepala and Helemano (45), Helemano (one), Kaukonahua-Waikakaloa (one), Kaalalea (six), Kaluanui-Maakua Ridge (one), Maakua-Kaipapau Ridge (one), and Puu Kaaumakua (one) (USFWS 2003b). *Cyrtandra viridiflora* populations are declining, and those that remain are small and widely dispersed.

*Cyrtandra viridiflora* is usually found on wind-blown ridge tops in cloud-covered wet forest or shrubland at elevations between 443 and 867 meters (1,453 and 2,844 feet). *Cyrtandra viridiflora* has also been observed in flower and fruit from May through November (USFWS 2003a). However, little else is known about the life history of the species.

A major threat to *Cyrtandra viridiflora* is degradation and loss of habitat by feral pigs (*Sus scrofa*) (Factor A). Competition from invasive introduced plant species (Factor E) is another major threat competing for light, space and water resources. The most serious plant species impacting *C. viridiflora* include *Psidium cattleianum* (strawberry guava) and *Clidemia hirta* (Koster's curse). Of the 69 individuals of *Cyrtandra viridiflora*, 58 occur in Kawailoa Training Area and two within the Schofield Barracks Military Reservation and may be impacted from training along trails (Factor B) (USFWS 2003b). A significant number of individuals also occur directly alongside the Koolau summit trail. Slugs and rats have been observed consume the fleshy foliage and fruits of species within the genus (Factor C) (Lilleeng-Rosenberger 2005; USFWS 2008a).

In addition to all of the other threats, species like *Cyrtandra viridiflora* that are endemic to small portions of a single island are inherently more vulnerable to extinction than widespread species because of the higher risks posed to a few populations and individuals by random demographic fluctuations and localized catastrophes such as hurricanes, landslides, flooding and disease outbreaks (Factor E). When considered on their own, the natural processes associated with being a single island endemic do not affect *C. viridiflora* to such a degree that it is threatened or endangered with extinction in the foreseeable future, but these natural processes can exacerbate the threat from

anthropogenic factors, such as habitat loss from human activity or predation by introduced species (Factor E) (USFWS 1998).

To safeguard existing genetic material more than 4,000 seeds are in genetic storage with the U.S. Army (U.S. Army 2008). In addition, the Opaepala Watershed Protection Project fence surrounds nearly all the known individuals of this species in the Kawaihoa Training Area (USFWS 2003b).

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 viridiflora* is a short-lived perennial, and to be considered stabilized, which is the first step in recovering the species, 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 species have not been met, as none of the populations contains 50 mature individuals and not all of the threats are being managed (see Table 1). Therefore, *Cyrtandra viridiflora* meets the definition of endangered as it remains in danger of extinction throughout its range.

#### **Recommendations for Future Actions:**

- Control or eradication of pigs, invasive introduced plant species, slugs and rodents within the vicinity of all known occurrences of *C. viridiflora*.
- Establish new populations and enhance existing populations.
- Survey the geographical and historical range of *C. viridiflora* for additional populations.
- Conduct genetic mapping of the extant populations.
- Conduct studies pertaining to the life history of the taxon.

#### **References:**

- Lilleeng-Rosenberger, K.E. 2005. Growing Hawaii's native plants. Mutual Publishing, Honolulu, HI. 416 pages.
- U.S. Army. 2008. 2008 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 status for Twenty-five Plant Species from the Island of Oahu, Hawaii. Federal Register 62:53089-53108.
- [USFWS] U.S. Fish and Wildlife Service. 1998. Recovery plan for the Oahu plants. U.S. Fish and Wildlife Service, Portland, OR.
- [USFWS] U.S. Fish and Wildlife Service. 2002. Endangered and threatened wildlife and plants; designations of critical habitat for plant species from the island of Oahu, HI; proposed rule concerning designation of critical habitat. Federal Register 67(102): 37108-37156.
- [USFWS] U.S. Fish and Wildlife Service. 2003a. Endangered and threatened wildlife and plants; final designations or nondesignations of critical habitat for 101 plant species from the island of Oahu, HI; final rule. Federal Register 68:35950–36406.
- [USFWS] U.S. Fish and Wildlife Service. 2003b. Biological Opinion of the U.S. Fish and Wildlife Service for routine military training and transformation of the 2nd Brigade 25th Infantry Division (Light), U.S. Army installations, island of Oahu. Honolulu, Hawaii. Unpublished.
- [USFWS] U.S. Fish and Wildlife Service. 2008. Rare plant tracking database. Pacific Islands Fish and Wildlife Office, Honolulu, HI. Accessed on April 28, 2008. Unpublished.

**Table 1. Status of *Cyrtdandra viridiflora* from listing through 5-year review.**

<b>Date</b>	<b>No. wild indivs</b>	<b>No. outplanted</b>	<b>Stability Criteria identified in Recovery Plan</b>	<b>Stability Criteria Completed?</b>
1996 (listing)	10	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 (recovery plan)	21	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2003 (critical habitat)	52	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2008 (5-year review)	69	0	All threats managed	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No

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SIGNATURE PAGE for 5-YEAR REVIEW of *Cyrtandra viridiflora*

**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

**Field Supervisor, Pacific Islands Fish and Wildlife Office**

  
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Patrick Leonard

Date   4/8/09