

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Clermontia peleana* ('Oha wai)

Current Classification: Endangered

FR Notice announcing initiation of this review:

U.S. Fish and Wildlife Service (USFWS). 2006. Endangered and threatened wildlife and plants; initiation of 5-year reviews of 70 species in Idaho, Oregon, Washington, Hawaii, and Guam. Federal Register 71(69):18345-18348.

Lead Region/Field Office:

Region 1

Pacific Islands Fish and Wildlife Office, Gina Shultz, Assistant Field Supervisor
Endangered Species

Name of Reviewer(s):

Marie Bruegmann, 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 based on the final critical habitat designation for *Clermontia peleana* and other species from the island of Hawaii, as well as a review of current, available information. The National Tropical Botanical Garden, subcontracted by the Hawaii Biodiversity and Mapping Program, provided an initial draft of portions of the 5-year review.

Background:

For information regarding the species listing history and other facts, please refer to the Threatened and Endangered Species System (TESS) which is part of the Fish and Wildlife Service's Environmental Conservation On-line System (ECOS) database.

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 *Clermontia peleana* published in the Federal Register on July 2, 2003 (USFWS 2003) 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. peleana*.

At the time of listing, six populations with a total of eight *Clermontia peleana* ssp. *peleana* individuals were known, all within a small area on the island of Hawaii. At that time *C. peleana* ssp. *singuliflora* was already considered extinct (USFWS 1994). The

last known wild *C. peleana* ssp. *peleana* individual died in 2000, and the species was only known from one plant in cultivation for many years (USFWS 2007). To safeguard existing genetic material, propagation for genetic storage and reintroduction is occurring at the University of Hawaii's Lyon Arboretum Micropropagation Laboratory and the Volcano Rare Plant Facility (Harold L. Lyon Arboretum Micropropagation Laboratory Database 2007; Volcano Rare Plant Facility 2007). Additional surveys in August 2007 resulted in the discovery of one mature individual from the Wailuku River Forest Reserve, the last known site of the species. Additional surveys within historical range may result in a few additional plants being located (USFWS 2007).

The major threats to *Clermontia peleana* are habitat degradation and predation by feral pigs (*Sus scrofa*) (Factors A, C, and D); competition from invasive introduced plant species, including *Setaria palmifolia* (palmgrass), *Tibouchina herbacea* (glorybush), *Psidium guajava* (common guava, kuawa), *Passiflora* spp., *Psidium cattleianum* (strawberry guava), and *Rubus ellipticus* (yellow Himalayan raspberry); predation by slugs and rats (Factor C); (Wood *et al.* 2002; Big Island Plant Extinction Prevention Program 2006; Hawaii Biodiversity and Mapping Program 2005; Lau 2007).

In addition to all of the other threats, species like *Clermontia peleana* 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 and disease outbreaks (Factor E). When considered on their own, the natural processes associated with being a single island endemic do not affect *C. peleana* 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 for human development or predation by alien species (Factor E) (USFWS 1996).

The Volcanoes Rare Plant Facility has two mature plants, both from one, now dead, wild individual from the Upper Waiakea Forest Preserve, collected in 1992, which are used to produce seeds for reintroduction. The two plants flowered profusely in June 2007. Hand-pollinating was done within and between the two individuals in hopes of getting good seed set. In the past, most fruit aborted prior to ripening. As of August 24, 2007, fruit were beginning to ripen. One crop of several dozen seedlings from last year's fruit, about one to two inches tall, will be transplanted shortly (M. Bruegmann, USFWS, pers. comms. 2007).

In 2001 to 2002, 48 individuals were reintroduced, 60 individuals from 2002 to 2003, 12 individuals from 2003 to 2004, and 24 individuals from 2005 to 2006, for a total of 144 reintroduced individuals (P. Moriyasu, Volcano Rare Plant Facility, pers. comm. 2007; Big Island Plant Extinction Prevention Program Database 2006). In 2007, one of the Olaa Tract outplanted individuals flowered and will be checked for viable seeds, but the remaining reintroduced individuals are not yet reproductive (USFWS 2007).

Stabilizing, downlisting, and delisting objectives are provided in the recovery plan for plants from the island of Hawaii (USFWS 1996), based on whether the species is an

annual, a short-lived perennial (fewer than 10 years), or a long-lived perennial. *Clermontia peleana* 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 Hawaii. 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 (see Table 1). Therefore, *Clermontia peleana* meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

- Develop a plan for conserving the species' genetic diversity in *ex situ* collections and in reintroduced populations.
- Continue reintroducing individuals into protected suitable habitat.
- Collect fruit from any reintroduced individuals that set seed to add to the genetic diversity of the *ex situ* material.
- Search for new populations of *Clermontia peleana* ssp. *peleana*, and regularly visit the sites where the species formerly grew to search for any seedlings that might germinate at the sites from a seedbank.
- Study new or reintroduced *Clermontia peleana* ssp. *peleana* populations with regard to population size and structure, geographical distribution, flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, limiting factors, and threats.

References:

Big Island Plant Extinction Prevention Program. 2006. Database. Unpublished.

Harold L. Lyon Arboretum Micropropagation Laboratory. 2007. Database. Unpublished.

Hawaii Biodiversity and Mapping Program. 2005. Program Database. Unpublished.

[USFWS] U.S. Fish and Wildlife Service. 2007. Rare plant tracking database. August 28, 2007. Unpublished.

[USFWS] U.S. Fish and Wildlife Service. 2003. Endangered and threatened wildlife and plants: final designation or nondesignation of critical habitat for 101 plant species

from the island of Hawaii, Hawaii: final rule. Federal Register 68(116):35949-36406.

[USFWS] U.S. Fish and Wildlife Service. 1996. Recovery plan for the Big Island plant cluster. Portland, Oregon. 176 pages, plus appendices.

[USFWS] U.S. Fish and Wildlife Service. 1994. Endangered and threatened wildlife and plants; determination of endangered or threatened status for 21 plants from the island of Hawaii, state of Hawaii. Federal Register 59(43):10305-10325.

Volcano Rare Plant Facility. 2007. Report on controlled propagation of species, as designated under the U.S. Endangered Species Act. Unpublished.

Wood, K.R., Perlman, S., Chapin, M., and Maunder, M. 2002. National Tropical Botanical Garden. interim report on field research under USFWS grant number 122000G001. Critically endangered hawaiian plant taxa and conservation collections within the genetic safety net (GSN). Unpublished.

Personal Communication:

Bruegmann, Marie. 2007. Plant Recovery Coordinator, USFWS, personal communications, July 16 and August 28, 2007.

Moriyasu, Patty. 2007. Propagator, Volcano Rare Plant Facility. Email to M. Bruegmann, U.S. Fish and Wildlife Service, July 24, 2007.

Table 1. Status of *Clermontia peleana* from listing through 5-year review.

Date	No. wild indivs	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1994 – listing	8	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 – recovery plan	8	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partial
			3 populations with 50 mature individuals each	No
2003 – critical habitat	0	12	All threats managed in all 3 populations	No
			Complete genetic storage	Yes
			3 populations with 50 mature individuals each	No
2007 – 5-yr review	0	144	All threats managed	Partially
			Complete genetic storage	Yes
			3 populations with 50 mature individuals each	No

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SIGNATURE PAGE for 5-YEAR REVIEW on *Clermontia peleana*

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, Fish and Wildlife Service

Approve *Patricia*

Date 1/18/08