5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Clermontia drepanomorpha* (ōhā wai)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2023. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 133 Species in Oregon, Washington, Idaho, Montana, California, Nevada, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. Federal Register 88(56):17611–17614, March 23, 2023.

Lead Region/Field Office:

Region 1/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawai‘i

Name of Reviewer:

Cheryl Phillipson, Biologist, PIFWO
Lauren Weisenberger, Plant Recovery Coordinator, PIFWO
Megan Laut, Recovery Program Manager, PIFWO

Methodology used to complete this 5-year review:

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (Service) beginning in October 2023. The review was based on a review of current, available information since the last 5-year review for *Clermontia drepanomorpha* (USFWS 2020). The evaluation by Cheryl Phillipson, Biologist, was reviewed by Lauren Weisenberger, Plant Recovery Coordinator, and Megan Laut, Recovery Program Manager.

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 (*https://ecos.fws.gov/ecp/species/6682*).

Review Analysis:

Please refer to the previous 5-year reviews for *Clermontia drepanomorpha* published in the Federal Register on August 28, 2012 and September 25, 2020 (available at *https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1992.pdf* and *https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3104.pdf*) for a complete review of the species' status, threats, management efforts, and references cited. We are not aware of any significant new information regarding the species' biological status since listing to warrant a change in the Federal listing status of *C. drepanomorpha*.

This short-lived small perennial shrub in the Campanulaceae (bellflower) family is endangered and is known from the Kohala Mountains on the island of Hawai‘i. The status and trends for *Clermontia drepanomorpha* are provided in the tables below.

New Status Information:

- In 2012, we reported that there were fewer than 300 wild individuals of *Clermontia drepanomorpha* in the Kohala mountains. There have been limited surveys specifically for this species since that time, and only a few recent observations in historic range are noted: seven individuals in Kawaihae Mauka with two of the individuals within a fence, with another individual in Pu‘u o Umi Natural Area Reserve (NAR) outside of the fence. It is likely that more individuals could be found with concerted survey efforts. New individuals are observed often and many individuals are epiphytic which reduces exposure to direct impacts of ungulates from herbivory. Therefore, the estimate of fewer than 300 individuals remains appropriate (J. VanDeMark pers. comm. 2025).
- There are approximately 2 wild plants represented in *ex situ* storage.

New Threats:

- None reported.

New Management Actions:

- Monitoring and surveys—The State’s Native Ecosystems Protection and Management (NEPM) program indicates observation of eight individuals from 2020 to 2022 (Plant Extinction Prevention Program [PEPP] 2019–2024).
- Ungulate monitoring and management—
  - Currently, only two recently observed individuals are within a fenced area. Historic occurrences at Kawaihae Mauka and Laupāhoehoe Iki were within fenced areas (PEPP 2019–2024).
  - The Kohala Center, the Department of Land and Natural Resources, and the Kohala Watershed Partnership cooperate by protecting 614 acres (249 hectares) of the forested summit area of the Kohala mountains through the ‘Eke Project (The Kohala Center 2021). Individuals of *Clermontia drepanomorpha* occur in the Waipo‘o management unit of this project (DLNR 2021). A fence is planned for the area with complete removal of feral pigs (The Kohala Center 2021).
- Invasive nonnative plant management—Removal of nonnative invasive species such as *Hedychium gardnerianum* (Himalayan ginger) is part of the ‘Eke Project (The Kohala Center 2021).
- Captive propagation for genetic storage and reintroduction—
  - In 2024, the Lyon Arboretum Seed Conservation Laboratory reported storage of 125 seeds from 1,400 collected from one wild plant at Kawaihae Mauka in 1999 (Lyon Arboretum 2024).
  - In 2024, the Volcano Rare Plant Facility (VRPF) reported propagation of two individuals sourced from one founder at Kohala (VRPF 2024).
- Reintroduction and translocation—In 2023, the Department of Land and Natural Resources (DLNR) reported a total of 39 individuals of *Clermontia*

drepanomorpha were translocated as reported by VRPF in 2022 (DLNR–DOFAW 2023, p. 5; Statewide Plant Restoration and Enhancement—Rare Plant Facilities, p. 5).

Table 1. Status and trends of *Clermontia drepanomorpha* from listing through current 5-year review. Table 1a shows progress according to Interim Stabilization Goals; Table 1b show progress according to Preventing Extinction Goals.
Table 1a.

Date	No. wild individuals	No. Outplanted	Stabilization Criteria Identified in Recovery Plan	Stabilization Criteria Completed?
1996 (listing)	200	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2012 (5-year review)	~300	Unknown	All threats managed in all 3 populations	Partially, captive propagation, reintroduction
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	Unknown

Table 1b

Date	No. wild individuals	No. Outplanted	Preventing Extinction Criteria Identified by HPPRCC*	Preventing Extinction Criteria* Completed?
2020 (5-year review)	<300 (no updates since 2012)	161 planted; current survivorship unknown	All threats managed in all 3 populations	Partially, reintroduced populations fenced
			Complete genetic storage	Partially, 4 founders represented in propagation
			Reproduction (i.e., viable seeds, seedlings) at all 3 populations	Unknown
			3 populations with 50 mature individuals each	Status unknown
2025 (5-year review)	ca <300; 8 observed	39	All threats managed in all 3 populations	Partially, some individuals fenced
			Complete genetic storage	Partial; Limited
			Natural reproduction at all 3 populations	Unknown
			3 populations with 50 mature individuals each	Uncertain

*The Preventing Extinction Stage was established in 2011. Prior to 2011, the Interim Stabilization Stage was the first stage towards recovery (now it is the second stage after Preventing Extinction).

Table 2. Threats to *Clermontia drepanomorpha* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A	Ongoing	Partial, reintroduced individuals fenced
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Partial, some nonnative invasive plant control within fenced area
Climate change degradation or loss of habitat, including drought	A	Ongoing	None
Collecting	B	Ongoing	None
Predation and herbivory by rodents and invertebrates	C	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	Partially, some propagation and reintroduction

Synthesis:
Currently, there are possibly fewer than 300 wild individuals of *Clermontia drepanomorpha*. Fences within Kawaihae Mauka and Pu‘u o ‘Umi protect some extant individuals. Surveys are conducted opportunistically. There are seeds in storage that represent at least two wild plants, and approximately 39 individuals have been translocated that represent three wild plants.

Interim stabilization targets, and Downlisting and Delisting objectives are provided in the Big Island II: Addendum to the Recovery Plan for the Big Island Plant Cluster, and have been updated according to the draft revised recovery objective guidelines developed by the Hawai‘i and Pacific Plants Recovery Coordinating Committee (HPPRCC 2011, USFWS 1998). The HPPRCC identifies an additional initial objective, the Preventing Extinction Stage, in addition to the Interim Stabilization, Downlisting, and Delisting objectives. Furthermore, life history traits such as breeding system, population size fluctuation or decline, and reproduction type (sexual or vegetative), have been included in the calculation of goals for the number of populations and reproducing individuals for each stage. The goals for each stage remain grouped by life span defined as annual, short-lived perennial (fewer than 10 years), or long-lived perennial.

Clermontia drepanomorpha is a short-lived small perennial shrub. To prevent extinction, which is the first milestone in recovering the species, the taxon must be managed to control threats (e.g., fenced) and have 50 individuals (or the total number of individuals if fewer than 50 exist) from each of three populations represented in *ex situ* (secured off-site, such as a nursery or seed bank) collections that are well managed. In addition, a minimum of a total of three populations should be documented on the island of Hawai‘i

where the species occurred historically and each of these populations must be naturally reproducing (i.e., viable seeds, seedlings) with a minimum of 50 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. The status of *Clermontia drepanomorpha* populations is uncertain as only a few individuals are reported in observations over the last 5 years. There are approximately two founders represented in collections and translocations. Threats including climate change and drought, predation by rodents and invertebrates, and low numbers of individuals and populations are not being addressed (Tables 1a, 1b, Table 2). Therefore, *C. drepanomorpha* meets the definition of Endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:
No significant new information regarding the species' biological status has been reported since the last 5-year review in 2020. Thus, the following recommendations for future actions are updated or reiterated for the 5-year review for 2025.

- Surveys and monitoring—
  - The historical range of *Clermontia drepanomorpha* should be surveyed intensively, preferably in July during flowering.
  - Monitor known populations of *C. drepanomorpha*, including reintroductions.
- Ungulate monitoring and control—Construct and maintain exclosures and strategic fencing to protect individuals from the negative impacts of feral ungulates.
- Invasive nonnative plant monitoring and control—Control established ecosystem-altering nonnative invasive plants and those that compete with *C. drepanomorpha* at all populations.
- Site and habitat protection—Develop and implement effective control measures to reduce the impacts of collection and drought.
- Climate change adaptation strategy—Assess the modeled effects of climate change on this species and use to determine future landscape needed for its recovery.
- Predator and herbivore monitoring and control—
  - Implement effective controls against predation and herbivory by rodents and invertebrates.
  - Determine if control of disease and insect predation is necessary and if effective control methods are available.
- Captive propagation for genetic storage and reintroduction—Continue collection and propagation efforts and keep track of the maternal line.
- Reintroduction and translocation—
  - Continue to reintroduce individuals into suitable habitat within historic range that is being managed for known threats.
  - Maximize genetic variation among and between individuals and populations at reintroduction sites.

- Build resiliency, redundancy, and representation—Increase species' viability through habitat restoration, threat control, and translocations into suitable habitat that is being managed for known threats.
- Population biology research—
  - Determine pollinators and those species that may assist with fruit dispersal.
  - Conduct genetic studies to determine genetic variation within populations and set up an effective breeding program.
- Alliance and partnership development—Continue to work with partners in planning and implementation of ecosystem-level restoration and management to benefit this species.

References:

[DLNR] Department of Land and Natural Resources. 2021. Protecting forest for water supply sustainability in Kohala, Hawai‘i, Phase I. Water SMART Environmental Water Resources Project grant application. 33 pp. + map and appendices.

[DLNR–DOFAW] Department of Land and Natural Resources—Division of Forestry and Wildlife 2023. Statewide endangered plant program, grant number F19AF00785, Statewide Plant Restoration and Enhancement—Rare Plant Facilities, p. 5.

[HPPRCC] Hawai‘i and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.

Lyon Arboretum. 2024. Report on controlled propagation of listed species, as designated under the U.S. Endangered Species Act. Unpublished report submitted to the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawai‘i.

[PEPP] Plant Extinction Prevention Program. 2019–2024. Plant Extinction Prevention Program fiscal years 2019 to 2023 interim performance report (October 1, 2018-September 30, 2023). U.S. Fish and Wildlife Service CFDA Program $15.657 Endangered Species Conservation—Recovery Implementation Funds, Cooperative Agreement: F18AC00502 (Final performance report), University of Hawaii at Manoa, Pacific Cooperative Studies Unit. 105 pp.

[PEPP] 2024. U.S. Fish and Wildlife Service CFDA Program #15.657, Endangered Species Conservation—Recovery Implementation Funds, Plant Extinction Prevention Program Fiscal Year 2024 Interim Performance Report (October 1, 2023—September 30, 2024). Cooperative Agreements F10AC00532, F22AC02205, F23AC01766. 56 pp.

The Kohala Center. 2021. ‘Eke Project, Protecting and sustaining source waters of Kohala. Flier, 4 pp.

[USFWS] U.S. Fish and Wildlife Service. 1998. Big Island II: Addendum to the recovery plan for the Big Island plant cluster. Portland, OR. 69 pp. + appendices.

[USFWS] 2012. *Clermontia drepanomorpha* (ōhā wai) 5-year review summary and evaluation. Pacific Islands Fish and Wildlife Office, Honolulu. 13 pp. *https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1992.pdf.*

[USFWS] 2020. *Clermontia drepanomorpha* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. *https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3104.pdf.*

[USFWS] 2023. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 133 Species in Oregon, Washington, Idaho, Montana, California, Nevada, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. Federal Register 88(56):17611–17614, March 23, 2023.

[VRPF] Volcano Rare Plant Facility. 2024. Report on controlled propagation of listed species, as designated under the U.S. Endangered Species Act. Unpublished report submitted to the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawai‘i.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Clermontia drepanomorpha* (ōhā wai)

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
X No Change in listing status

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

MEGAN LAUT Digitally signed by MEGAN LAUT
Date: 2025.08.27 15:19:42 -10'00'

_____ Date_____