

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Viola helenae* (no common name)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2020. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 129 Species in Oregon, Washington, Idaho, Hawaii, Montana, California, and Nevada. Federal Register 85(48): 14240–14243, March 11, 2020.

Lead Region/Field Office:

Interior Region 12/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawai‘i

Name of Reviewer:

Daniel Adamski, Biologist, PIFWO

Lauren Weisenberger, Plant Recovery Coordinator, PIFWO

Megan Laut, Conservation & Restoration Team 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 2021. The review was based on a review of current, available information since the last 5-year review for *Viola helenae* (USFWS 2017). The evaluation by Daniel Adamski, Biologist, was reviewed by Lauren Weisenberger, Plant Recovery Coordinator, and Megan Laut, Conservation and Restoration Team 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/2648>).

Review Analysis:

Please refer to the previous 5-year reviews for *Viola helenae* published in the Federal Register on January 18, 2008 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1159.pdf) and September 18, 2017 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/2517.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 *V. helenae*.

This short-lived perennial unbranched subshrub in the Violaceae (Violet) family is endangered and is known from the island of Kaua‘i. The status and trends for *Viola helenae* are provided in the tables below.

New Status Information:

- Currently, *Viola helenae* is known from two populations in the Wahiawa drainage on Kaua‘i totaling 25 mature and 26 immature individuals (Kishida and Perlman 2017a; 2017b).

New Threats:

- None.

New Management Actions:

- Invasive nonnative plant management—Plant Extinction Prevention Program (PEPP) conducted weed control at two populations during plant monitoring (Kishida and Perlman 2017a; 2017b).
- Collection and propagation for genetic storage and reintroduction—
 - National Tropical Botanical Garden (NTBG) and the Kōke‘e Mid-elevation Nursery (KMEN) reported no plants in propagation or seeds in storage for this species (NTBG 2021; KMEN 2021).
 - Lyon Arboretum reports 641 seeds in storage representing 12 founder plants, and Lyon Arboretum Micropropagation Laboratory reports 72 explants in micropropagation representing one founder (Lyon Arboretum 2022).

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

Date	No. wild individuals	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1991 (listing)	13	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			Three populations with 250 mature individuals each	No
1994 (recovery plan)	137	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 250 mature individuals each	No
2003 (critical habitat)	147	0	All threats managed in all 3 populations	No
			Complete genetic storage	No

			Three populations with 250 mature individuals each	No
2008 (5-year review)	< 20	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			Three populations with 250 mature individuals each	No
Date	No. wild individuals	No. outplanted	*Preventing Extinction Criteria identified by HPPRCC	*Preventing Extinction Criteria Completed?
2017 (5-year review)	30	4 (0 alive)	All threats managed in all 3 populations	No
			Reproduction (i.e., viable seeds, seedlings, saplings) at all three populations	Some reproduction at wild populations
			Complete genetic storage	Partial
			3 populations with 50 mature individuals each	No
2022 (5-year review)	51	0	All threats managed in all three populations	No
			Complete genetic storage	Partial
			Natural reproduction at all three populations	Some reproduction at wild populations
			Three populations with 50 mature individuals each	No

* 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 *Viola helenae* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A	Ongoing	None
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Partial, nonnative plant control
Climate change degradation or loss of habitat, including hurricanes	A	Ongoing	None
Degradation and destruction by landslides	A	Ongoing	None
Predation and herbivory by ungulates	C	Ongoing	None
Hurricane mortality and reduced viability	E	Potential	None
Reduced viability due to low numbers	E	Ongoing	Partial, micropropagation

Synthesis:

Currently, there are 25 mature and 26 immature wild individuals of *Viola helenae* on Kaua‘i. Some individuals are provided protection from nonnative plant control. Collections, seed storage, and micropropagation are ongoing.

Stabilizing (interim), downlisting, and delisting objectives are provided in the Kaua‘i Islandwide Recovery Plan (USFWS 2021) 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). The HPPRCC identifies an additional initial objective, the Preventing Extinction Stage, in addition to the Interim Stabilization, Delisting, and Downlisting 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.

Viola helenae is a short-lived perennial unbranched subshrub. 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 Kaua‘i where they now occur or occurred historically and each of these populations must be naturally

reproducing (i.e., viable seeds and seedlings) with a minimum of 50 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. Genetic storage goals have not been met but are nearly complete (Table 1), there is only one population with 25 mature individuals, and all threats are not being managed (Table 1, Table 2). Therefore, *Viola helenae* 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 2017. Thus, the following recommendations for future actions are reiterated and updated for the 5-year review for 2022.

- Surveys and inventories—Continue to survey for populations throughout the historic range and suitable habitat and monitor known populations of *Viola helenae*.
- Ungulate monitoring and control—Continue to maintain fenced exclosures to protect individuals from the negative impacts of browsing by ungulates and continue to protect all occurrences against disturbances from feral ungulates.
- Invasive nonnative plant monitoring and control—Continue control of established ecosystem-altering nonnative invasive plant species, and those that compete with *V. helenae*.
- Site and habitat protection—Develop and implement effective control measures to reduce the impact of ungulates.
- Fire prevention and control—Continue to develop and implement fire prevention management plans.
- Climate change adaptation strategy—Research suitability of habitat for reintroduction of this species in the future due to the impacts of climate change.
- Captive propagation for genetic storage and reintroduction—Continue collection and propagation efforts for maintenance of genetic stock and for reintroduction.
- Reintroduction and translocation—Continue to reintroduce individuals into suitable habitat within historic range that is being managed for known threats to this species to build resiliency and redundancy to reduce impacts of climate change, stochastic events, reduced viability due to small population size, and other threats.
- Population biology research—
 - Determine which species may act as pollinators and which may assist with fruit dispersal.
 - Conduct genetic studies to determine genetic variation within and between populations and plan an effective breeding program.
- Alliance and partnership development—Continue to work with partners and other land managers in planning and implementation of ecosystem-level restoration and management to benefit this species.

References:

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

[KMEN] Kōke‘e Mid-Elevation Nursery. 2021. 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.

Kishida, W. and S. Perlman. 2017a. Hawai‘i Rare Plant Restoration Group (HRPRG) Field Data Form *in* PEPP 2019: Plant Extinction Prevention Program, FY 2019 Annual Report (Oct 1, 2018-Sep 30, 2019), USFWS CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F18AC00502, December 26, 2019, UH Mānoa, PCSU, PEPP. 192 pp. + appendices. BioPacifica database record for *Viola helenae*, Pacific Islands Fish and Wildlife Office.

Kishida, W. and S. Perlman. 2017a. Hawai‘i Rare Plant Restoration Group (HRPRG) Field Data Form *in* PEPP 2019: Plant Extinction Prevention Program, FY 2019 Annual Report (Oct 1, 2018-Sep 30, 2019), USFWS CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F18AC00502, December 26, 2019, UH Mānoa, PCSU, PEPP. 192 pp. + appendices. BioPacifica database record for *Viola helenae*, Pacific Islands Fish and Wildlife Office.

Lyon Arboretum. 2022. 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.

[NTBG] National Tropical Botanical Garden. 2021. 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.

[USFWS] U.S. Fish and Wildlife Service. 2008. *Viola helenae* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublish/1159.pdf.

[USFWS] 2017. *Viola helenae* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublish/2517.pdf.

[USFWS] 2020. Endangered and threatened wildlife and plants; initiation of 5-year status reviews for 129 Species in Oregon, Washington, Idaho, Hawaii, Montana, California, and Nevada. Federal Register 85(48): 14240–14243, March 11, 2020.

[USFWS] 2021. Kaua'i Islandwide Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR. 65 pp. + appendices.

U.S. FISH AND WILDLIFE SERVICE

SIGNATURE PAGE for 5-YEAR REVIEW of *Viola helenae* (no common name)

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

For Field Supervisor, Pacific Islands Fish and Wildlife Office

_____ Date _____