

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Vicia menziesii* (Hawaiian vetch)

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, Hawaii, Guam, and 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:

Daniel Adamski, 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 *Vicia menziesii* (USFWS 2020). The evaluation by Daniel Adamski, 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 (<http://ecos.fws.gov/ecp/species/594>).

Review Analysis:

Please refer to the previous 5-year reviews for *Vicia menziesii* published in the Federal Register on August 28, 2012 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1958.pdf) and September 30, 2020 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/3181.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. menziesii*.

This short-lived perennial vine in the Fabaceae (pea) family is endangered and is known from the island of Hawai‘i. The status and trends for *Vicia menziesii* are provided in the tables below.

New Status Information:

- Currently, there is one population in two locations totaling 21 wild individuals on the island of Hawai‘i (Plant Extinction Prevention Program [PEPP] 2024). A previous known location with three additional wild plants was monitored in 2023, and no plants remained (PEPP 2024). At the time of the last review in 2020, there were 32 outplanted individuals, and the current status of those plants is unknown.
- Currently, there are eight founder lines represented in *ex situ* storage and propagation collections, including seeds in a seed bank and plants in a nursery living collection.

New Threats:

- None.

New Management Actions:

- Monitoring and surveys—PEPP monitors all wild populations and additionally conducts surveys at historical population sites (PEPP 2024).
- Ungulate monitoring and management—Fencing is monitored and maintained at several exclosures in the Hilo Forest Reserve and the Ka‘u Forest Reserve (PEPP 2024). In addition, construction of two fence exclosures was initiated in 2022 and 2024, and will be used for future reintroduction efforts for *Vicia menziesii* (PEPP 2024).
- Collection and propagation for genetic storage and reintroduction—
 - The Lyon Arboretum Micropropagation Laboratory reports one explant in micropropagation (Lyon Arboretum 2024).
 - PEPP reported collecting seeds and cuttings from 11 founders between 2023–2024 (PEPP 2023, 2024).
 - Volcano Rare Plant Propagation Facility [VRPPF] reports 21 potted plants in a living collection representing eight founder plants. VRPPF also reports successful cloning of plants through cuttings (VRPPF 2024).
- Reintroduction/ Augmentation/ Introduction—The current status of reintroduced individuals is unknown.

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

Table 1a.

Date	No. wild individuals	No. Outplanted	Stability Goals identified in Recovery Plan	Stability Goals Completed?
1978 (Listing)	1974: 150–300 1980: 85	0	All threats managed in all populations	No
			Complete genetic storage	No
			Prevent populations from declining further	No
1984 (recovery plan)	ca 1,500-2,000	0	All threats managed in all populations	No
			Complete genetic storage	No
			Prevent populations from declining further	No
2012 (5-year review)	37	96 (4 survived)	All threats managed in all populations	Partially
			Complete genetic storage	Partially
			Prevent populations from declining further	No

Table 1b.

Date	No. wild individuals	No. outplanted	*Preventing Extinction Targets identified by HPPRCC	*Preventing Extinction Targets Completed?
2020 (5-year review)	22	32	All threats managed in all 3 populations	Partially
			Reproduction (i.e., viable seeds, seedlings, saplings) at all X populations	Yes, seedlings at extant population
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2024 (5-year review)	21	0 planted, unknown number survive	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			Natural reproduction at all 3 populations	Partially
			3 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 *Vicia menziesii* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A, D	Ongoing	Partial, Fenced populations and building of new exclosures
Established ecosystem altering invasive plant species degradation of habitat	A, E	Ongoing	None
Climate change degradation or loss of habitat	A	Ongoing	None
Predation and herbivory by rats	C	Ongoing	None
Predation and herbivory by invertebrates—Slugs, snails, black twig borer	C	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	Partial, collection, propagation and reintroduction ongoing
Timber management—Logging	E	Ongoing	Partial, permit agreement

Synthesis:

Currently there are 21 wild individuals of *Vicia menziesii* on the island of Hawai‘i. Individuals are provided protection by fencing. Seed collections, propagation, and outplanting are ongoing.

Stabilizing (interim) and preventing extinction targets, and downlisting, and delisting criteria are provided in the *Vicia menziesii* Recovery Plan (USFWS 1984), the revised recovery objective guidelines developed by the Hawai‘i and Pacific Plants Recovery Coordinating Committee (HPPRCC 2011) as adopted in the *Vicia menziesii* Recovery Plan Amendment (USFWS 2019). 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.

Vicia menziesii is a short-lived perennial vine. 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 on the island of Hawai‘i where they now occur or 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. Although genetic storage is partially complete and plants within fenced exclosures (Table 1), there is only one population, and does not total at least 50 reproducing individuals, and all threats are not being managed (Table 1, Table 2). Therefore, *Vicia menziesii* 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—
 - Continue to monitor known populations of *Vicia menziesii* to assess resiliency and make collections.
 - Continue surveys for populations of *V. menziesii* in areas of potentially suitable habitat and historical occurrences.
 - Determine suitable locations for reintroductions.
- Ungulate monitoring and control—Continue to maintain fenced exclosures and construct new fences to protect individuals from the negative impacts of browsing by ungulates.
- Invasive nonnative plant monitoring and control—Control established ecosystem-altering nonnative invasive plant species, and those that compete with *V. menziesii*.
- Site and habitat protection—Develop and implement effective control measures to reduce the impact of predation by rats and slugs.
- Fire prevention and control—Develop and implement fire prevention management plans.
- Climate change adaptation strategy—Research suitability of habitat for viability of species, including where to conduct translocations in the future due to the impacts of climate change.
- Predator and herbivore monitoring and control—Determine and implement effective methods to control ungulates, rats, and slugs.
- Captive propagation for genetic storage and reintroduction—Continue to maintain collection and propagation efforts for maintenance of genetic stock and for reintroduction.
- Build resiliency, redundancy, and representation—Increase species' viability through habitat restoration, threat control, and continue reintroduction and translocation into suitable habitat that is being managed for known threats to this species to reduce impacts of reduced viability due to low numbers.
- Research—Conduct genetic studies to determine genetic variation within the population (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.

Lyon Arboretum. 2014. 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. 2023. Plant Extinction Prevention Program FY 2023 annual report Oct 1, 2022-Sep 30, 2023), USFWS CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F14AC00174, December 24, 2016, UH Mānoa, PCSU, PEPP. 74 pp.

[PEPP] 2024. Plant Extinction Prevention Program FY 2023 annual report Oct 1, 2023-Sep 30, 2024), USFWS CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F14AC00174, December 24, 2016, UH Mānoa, PCSU, PEPP. 56 pp.

[USFWS] U.S. Fish and Wildlife Service. 1984. *Vicia menziesii* recovery plan. Portland. 54 pp.

[USFWS] 2012. *Vicia menziesii* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/five_year_review/doc1958.pdf.

[USFWS] 2019. *Vicia menziesii* recovery plan amendment. 84 FR 790, January 31, 2019.

[USFWS] 2020. *Vicia menziesii* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/five_year_review/doc3181.pdf.

[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, Hawaii, Guam, and the Northern Mariana Islands . Federal Register 88(56): 17611–17614, March 23, 2023.

[VRPPF] Volcano Rare Plant Propagation 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.

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SIGNATURE PAGE for 5-YEAR REVIEW of *Vicia menziesii* (Hawaiian vetch)

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

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