

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Schiedea sarmentosa* (no common name)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2021. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 77 Species in Oregon, Washington, Idaho, and Hawaii. Federal Register 86(120): 33726–33728, June 25, 2021.

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, Acting Recovery Team Coordinator, 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 2022. The review was based on a review of current, available information since the last 5-year review for *Schiedea sarmentosa* (USFWS 2018). The evaluation by Daniel Adamski, Biologist, was reviewed by Lauren Weisenberger, Plant Recovery Coordinator, and Acting Recovery 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 (<http://ecos.fws.gov/ecp/species/1265>).

Review Analysis:

Please refer to the previous 5-year reviews for *Schiedea sarmentosa* published in the Federal Register on September 20, 2011 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1811.pdf) and October 23, 2018, (available at https://ecos.fws.gov/docs/tess/species_nonpublish/2662.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 *S. sarmentosa*.

This short-lived perennial herb in the Caryophyllaceae (pink) family is endangered and is known from the island of Moloka‘i. The status and trends for *Schiedea sarmentosa* are provided in the tables below.

New Status Information:

- Currently, there is one population on Moloka‘i at Kawela gulch, estimated to total more than 1,000 individuals (Bakutis, pers. comm. 2023).
- Currently, there are approximately ten founder lines represented in *ex situ* storage and propagation collections, including seeds in seed banks and plants in cultivation (National Tropical Botanical Garden (NTBG) 2022; University of California-Irvine, 2017).

New Threats:

- None

New Management Actions:

- Monitoring and surveys— The Plant Extinction Prevention Program (PEPP) continues to monitor individuals of *Schiedea sarmentosa* on Moloka‘i (Bakutis, pers. comm. 2023).
- Collection and propagation for genetic storage and reintroduction—
 - NTBG reports 2 founders represented in seed storage, with an unknown number of seeds (NTBG 2022).
 - University of California-Irvine reports 12 total plants in cultivation representing 10 founders (University of California-Irvine, 2017).

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

Date	No. wild individuals	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1996 (listing)	<1,000	0	All threats managed in all 5-7 populations	No
			Complete genetic storage	No
			5-7 populations with 300 mature individuals each	No
2011 (5-year review)	Several 1,000	0	All threats managed in all 5-7 populations	Partially
			Complete genetic storage	Partially
			5-7 populations with 300 mature individuals each	Partially

Date	No. wild individuals	No. outplanted	*Preventing Extinction Criteria identified by HPPRCC	*Preventing Extinction Criteria Completed?
2018 (5-year review)	1,000+	0	All threats managed in all 3 populations	No
			Reproduction (i.e., viable seeds, seedlings, saplings) at all X populations	Partially
			Complete genetic storage	Partially
			3 populations with 100 mature individuals	Partially
2023 (5-year review)	1,000	0	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			Natural reproduction at all 3 populations	No
			3 populations with 100 mature individuals	Partially

* 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 *Schiedea sarmentosa* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A	Ongoing	Partial, partial fencing
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Partial, partial fencing
Climate change degradation or loss of habitat, including hurricanes	A	Ongoing	None
Degradation and destruction by fire	A	Ongoing	None

Predation and herbivory by feral ungulates	C	Ongoing	Partial, partial fencing
Predation and herbivory by rats	C	Ongoing	None
Predation and herbivory by invertebrates—Slugs, snails, black twig borer	C	Ongoing	None

Synthesis:

Currently there are 1,000 wild individuals of *Schiedea sarmentosa* on Moloka‘i. Some individuals are provided protection by fencing. Seed collections and propagation are ongoing.

Stabilizing (interim), downlisting, and delisting objectives are provided in the Moloka‘i II: Addendum to the Recovery Plan for the Moloka‘i Plant Cluster (USFWS 1998) 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.

Schiedea sarmentosa is a short-lived perennial herb with a gynodioecious breeding system (female and hermaphroditic individuals). 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 Moloka‘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 100 mature, reproducing individuals per population).

The preventing extinction goals for this species have not been met. Genetic storage is not complete (Table 1), there is only a single populations totaling 1,000 individuals that is likely in decline, and reproduction status is unknown, and all threats are not being managed (Table 1, Table 2). Therefore, *Schiedea sarmentosa* 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 2018. Thus, the following recommendations for future actions are reiterated for the 5-year review for 2023.

- Surveys and monitoring—Survey for additional populations of *Schiedea sarmentosa* at historical populations and areas of potentially suitable habitat.
- Ungulate monitoring and control—Continue to maintain fenced exclosures to protect individuals from the negative impacts of browsing by ungulates.
- Invasive nonnative plant monitoring and control—Continue control of established ecosystem-altering nonnative invasive plant species, and those that compete with *Schiedea sarmentosa* within and around all wild populations.
- 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, including increasing temperatures, periods between rain events, and frequency and intensity of hurricanes. Additional management actions may be needed, such as locating microsites that overlap with current and future climate envelopes for translocation efforts.
- Predator and herbivore monitoring and control—Determine and implement effective methods for rodents and slugs around wild populations.
- Captive propagation for genetic storage and reintroduction—Continue collection and propagation efforts for maintenance of genetic stock and for future reintroduction.
- Build resiliency, redundancy, and representation — Increase species' viability through habitat restoration, threat control, and reintroduction and translocation. Continue attempts at reintroduction into suitable habitat that is being managed for known threats to this species to reduce impacts of erosion, treefall, flooding, and hurricanes.
- 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. 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. 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.
- University of California–Irvine. 2017. 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. 1998. Molokai II: Addendum to the recovery plan for the Molokai plant cluster. U.S. Fish and Wildlife Service, Portland, Oregon. 52 pages. Available online at <http://www.fws.gov/pacificislands/recoveryplans.html>.

[USFWS] 2011. *Schiedea sarmentosa* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublish/1811.pdf.

[USFWS] 2018. *Schiedea sarmentosa* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublish/2662.pdf.

[USFWS] 2021. Endangered and Threatened wildlife and plants; initiation of 5-year status reviews for 77 Species in Oregon, Washington, Idaho, and Hawaii. Federal Register 86(120): 33726–33728, June 25, 2021.

Personal Communication:

Bakutis, A. 2023. Moloka‘i Coordinator, Plant Extinction Prevention Program, Moloka‘i, Hawai‘i. E-mail to Lauren Weisenberger, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, dated May 30, 2023. Subject: 5-year review questions for *Schiedea sarmentosa*.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Schiedea sarmentosa* (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_____