

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Schiedea spergulina* var. *spergulina* (no common name)

Current Classification: Threatened

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 *Schiedea spergulina* var. *spergulina* (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/282>).

Review Analysis:

Please refer to the previous 5-year reviews for *Schiedea spergulina* var. *spergulina* published in the Federal Register on August 27, 2010 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1655.pdf) and September 18, 2017 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/2510.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. spergulina* var. *spergulina*.

This short-lived perennial herb in the Caryophyllaceae family (Pink) family is threatened and is known from the island of Kaua‘i. The status and trends for *Schiedea spergulina* var. *spergulina* are provided in the tables below.

New Status Information:

- At the time of the last 5-year review in 2017, *Schiedea spergulina* var. *spergulina* was known from four populations totaling approximately 500-1,000 individuals. Few surveys have been completed since, and estimates remain unchanged (National Tropical Botanical Garden [NTBG] 2017; 2018; 2021a; and 2021b). There are no reintroduced individuals.

New Threats:

- None.

New Management Actions:

- Monitoring and surveys— The Plant Extinction Prevention Program (PEPP) and State of Hawai‘i DLNR Division of Forestry and Wildlife observe *Schiedea spergulina* var. *spergulina* while conducting surveys for endangered plants throughout the mountains of Kaua‘i (Williams 2021, in litt.).
- Collection and propagation for genetic storage and reintroduction—
 - NTBG reported approximately 300 seeds collected from five individuals at one population in Waimea and approximately 500 seeds from one founder from Mākaha (NTBG 2018).
- Population biology research— Leaf material and seeds were collected from three populations for use in research and herbarium collections (NTBG 2017; 2018; 2021a; and 2021b).

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

Date	No. wild individuals	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1994 (listing)	< 5,000	0	All threats managed in all 5-7 populations	No
			Complete genetic storage	No
			5-7 populations with 300 mature individuals each	Partially
1995 (recovery plan)	> 5,000	0	All threats managed in all 5-7 populations	No
			Complete genetic storage	Partially
			5-7 populations with 300 mature individuals each	Partially

2003 (critical habitat)	208–1,000s	0	All threats managed in all 5-7 populations	No
			Complete genetic storage	Partially
			5-7 populations with 300 mature individuals each	Partially
2010 (5-year review)	440–585	0	All threats managed in all 5-7 populations	No
			Complete genetic storage	Partially
			5-7 populations with 300 mature individuals each	No
Date	No. wild individuals	No. outplanted	*Preventing Extinction Criteria identified by HPPRCC	*Preventing Extinction Criteria Completed?
2017 (5-year review)	500–1,000	0	All threats managed in all three populations	No
			Reproduction (i.e., viable seeds, seedlings, saplings) at all three populations	No
			Complete genetic storage	Partially
			Three populations with 100 mature individuals each	No
2022 (5-year review)	500–1,000	0	All threats managed in all three populations	No
			Complete genetic storage	Partially
			Natural reproduction at all three populations	No
			Three populations with 50 mature individuals each	Unknown

* 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 spergulina* var. *spergulina* 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	None
Climate change degradation or loss of habitat, including hurricanes	A	Ongoing	None
Degradation and destruction by landslides	A	Ongoing	None
Degradation and destruction by fire	A	Ongoing	
Predation and herbivory by feral ungulates	C	Ongoing	None
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 approximately 500-1,000 wild individuals of *Schiedea spergulina* var. *spergulina* on Kaua‘i. Seed collections 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.

Schiedea spergulina var. *spergulina* is a dioecious, short-lived perennial herb. 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 100 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 100 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met (Table 1). It is uncertain how many individuals matured, all threats are not being managed, and genetic storage goals have not been met (Table 2). Therefore, *Schiedea spergulina* var. *spergulina* meets the definition of Threatened as it is likely to become an endangered species within the foreseeable future throughout all or a significant portion of 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 or updated for the 5-year review for 2022.

- Surveys and inventories—Conduct surveys throughout the historic range and suitable habitat and monitor known populations.
- Ungulate monitoring and control—Construct fenced exclosures to provide protection against feral ungulates. Protect all populations against browsing and disturbances from feral ungulates.
- Invasive plant monitoring and control—Control invasive nonnative plant species at all known populations.
- Fire monitoring and control—Develop and implement fire management plans for all wild and reintroduced populations.
- 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 to collect for adequate genetic storage and reintroduction.
- Reintroduction and translocation—Reintroduce individuals into suitable habitat that is being managed for known threats to this species to build resilience and redundancy to reduce impacts from climate change, landslides, hurricanes, and other threats.
- Population biology research—Study *Schiedea spergulina* var. *spergulina* populations to determine viable population size and structure, geographical distribution, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, limiting factors, and threats.
- 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.

- [NTBG] National Tropical Botanical Garden. 2017. NTBG database herbarium specimen detail for *Schiedea spergulina* var. *spergulina*. Voucher number 16464, 8 MAY 2017.
- [NTBG] 2018. NTBG database herbarium specimen detail for *Schiedea spergulina* var. *spergulina*. Voucher number 18029, 20 DEC 2018.
- [NTBG] 2021a. NTBG database herbarium specimen detail for *Schiedea spergulina* var. *spergulina*. Voucher number 188391, 15 JAN 2021.
- [NTBG] 2021b. NTBG database herbarium specimen detail for *Schiedea spergulina* var. *spergulina*. Voucher number 190171, 11 MAY 2021.
- [USFWS] U.S. Fish and Wildlife Service. 2010. *Schiedea spergulina* var. *spergulina* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublish/1655.pdf.
- [USFWS] 2017. *Schiedea spergulina* var. *spergulina* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublish/2510.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.
- Williams, A. 2021, in litt. Email regarding status of *Schiedea spergulina* var. *spergulina* as surveyed by the Kaua‘i Plant Extinction Prevention Program (KPEPP). 19 NOVEMBER 2021.

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SIGNATURE PAGE for 5-YEAR REVIEW of *Schiedea spergulina* var. *spergulina* (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**

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