

## 5-YEAR REVIEW

### Short Form Summary

**Species Reviewed:** *Schiedea spergulina* var. *leiopoda* (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 *Schiedea spergulina* var. *leiopoda* (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/1597>).

#### **Review Analysis:**

Please refer to the previous 5-year reviews for *Schiedea spergulina* var. *leiopoda* published in the Federal Register on August 27, 2010 (available at [https://ecos.fws.gov/docs/tess/species\\_nonpublish/1654.pdf](https://ecos.fws.gov/docs/tess/species_nonpublish/1654.pdf)) and September 18, 2017 (available at [https://ecos.fws.gov/docs/tess/species\\_nonpublish/2509.pdf](https://ecos.fws.gov/docs/tess/species_nonpublish/2509.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. *leiopoda*.

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

New Status Information:

- Currently, *Schiedea spergulina* var. *leiopoda* is known from one population at Lāwa‘i on Kaua‘i totaling 115 individual plants (Nyberg 2022, in litt.).

New Threats:

- None.

New Management Actions:

- Monitoring and surveys— The National Tropical Botanical Garden (NTBG) monitors *Schiedea spergulina* var. *leiopoda* using Unmanned Aerial Vehicles (UAV) and has documented flowering plants (Nyberg 2022, in litt.).
- Captive propagation for genetic storage and reintroduction— NTBG collects *Schiedea spergulina* var. *leiopoda* seeds and reports over 2,000 seeds representing at least 13 founders in storage, with an additional 2,800 seeds from augmented individuals. NTBG also reports 25 individuals representing 2 founders in propagation (NTBG 2021).

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

Date	No. wild individuals	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1994 (listing)	50-100	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1995 (recovery plan)	50-100	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2003 (critical habitat)	135-150	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially

			3 populations with 50 mature individuals each	No
2010 (5-year review)	120–325	281	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
<b>Date</b>	<b>No. wild individuals</b>	<b>No. outplanted</b>	<b>*Preventing Extinction Criteria identified by HPPRCC</b>	<b>*Preventing Extinction Criteria Completed?</b>
2017 (5-year review)	≥ 85	0	All threats managed in all 3 populations	Partially
			Reproduction (i.e., viable seeds, seedlings, saplings) at all three populations	Unknown
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2022 (5-year review)	115	0	All threats managed in all 3 populations	None
			Complete genetic storage	Partially
			Natural reproduction at all three populations	Unknown
			3 populations with 100 mature individuals each	Partial

\* 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. *leiopoda* 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	None
Predation and herbivory by ungulates	C	Ongoing	None
Predation and herbivory by slugs	C	Ongoing	None
Human disturbance— Environmental contaminants mortality and reduced viability— Pesticide use in sugarcane fields	E	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	Partial, seed collections

**Synthesis:**

Currently, there are 115 wild individuals of *Schiedea spergulina* var. *leiopoda* in a single population on Kaua‘i. Seed collections and propagation 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. *leiopoda* 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 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 100 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. There is only one population totaling at least 100 reproducing individuals, genetic storage goals have not been met (Table 1), and all threats are not being managed (Table 1, Table 2). Therefore, *Schiedea spergulina* var. *leiopoda* 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 or updated for the 5-year review for 2022.

- Surveys and inventories— Continue surveys for populations of *Schiedea membranacea* in areas of potentially suitable habitat and historical populations and monitor known populations.
- Invasive nonnative plant monitoring and control—Control of established ecosystem-altering nonnative invasive plant species, and those that compete with *S. spergulina* var. *leiopoda*.
- Site and habitat protection—Develop and implement effective control measures to reduce the impact of collection.
- 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, including hurricanes.
- Captive propagation for genetic storage and reintroduction—Continue collection and propagation efforts for maintenance of genetic stock and for reintroduction.
- Reintroduction and translocation—Reintroduce individuals into suitable habitat 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 the population 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.
- [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.
- Nyberg, B. 2022, in litt. Email regarding status of *Schiedea spergulina* var. *leiopoda* as surveyed by the National Tropical Botanical Garden (NTBG). 31 JANUARY 2022.
- [USFWS] U.S. Fish and Wildlife Service. 2010. *Schiedea spergulina* var. *leiopoda* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.  
[https://ecos.fws.gov/docs/tess/species\\_nonpublish/1654.pdf](https://ecos.fws.gov/docs/tess/species_nonpublish/1654.pdf).
- [USFWS] 2017. *Schiedea spergulina* var. *leiopoda* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.  
[https://ecos.fws.gov/docs/tess/species\\_nonpublish/2509.pdf](https://ecos.fws.gov/docs/tess/species_nonpublish/2509.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 *Schiedea spergulina* var. *leiopoda* (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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Date \_\_\_\_\_