

5-YEAR REVIEW

Short Form Summary

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

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2022. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 167 Species in Oregon, Washington, Idaho, Montana, California, Hawaii, Guam, and the Northern Mariana Islands . Federal Register 87(90): 28031–28034, May 10, 2022.

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 *Schiedea obovata* (USFWS 2019). 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/2735>).

Review Analysis:

Please refer to the previous 5-year reviews for *Schiedea obovata* published in the Federal Register on August 2, 2007, (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1087.pdf); August 28, 2012, (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1955.pdf), and on September 30, 2019, (available at https://ecos.fws.gov/docs/tess/species_nonpublish/2895.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. obovata*.

This short-lived perennial subshrub in the Caryophyllaceae (carnation) family is endangered and is known from the island of O‘ahu. The status and trends for *Schiedea obovata* are provided in the tables below.

New Status Information:

- Currently, there are two wild subpopulations in one population unit (Ke‘awapilau to Makaleha) totaling 17 mature and 6 immature individuals (Army Natural Resources Program on O‘ahu [ANRPO] 2023a, p. 114; Appendix 4-1). Additionally, there are 1,073 total reintroduced individuals across three population units (Kahanahāiki to Pahole, Ke‘awapilau to Makaleha, and Mākaha), of which 340 individuals are mature plants (ANRPO 2023b, Appendix 4-1).
- Currently, there are approximately 96 founder lines represented in *ex situ* storage and propagation collections, including seeds in seed banks, explants in tissue culture, vegetative material, and plants in a nursery or living collection (ANRPO 2023b, Appendix 4-3).

New Threats:

- None

New Management Actions:

- Monitoring and surveys—The ANRPO monitors individuals of *Schiedea obovata* in the Wai‘anae mountains of O‘ahu (ANRPO 2023b, Appendix 4-1).
- Ungulate monitoring and management—Fencing is monitored and maintained at in all three population units (Kahanahāiki to Pahole, Ke‘awapilau to Makaleha, and Mākaha) (ANRPO 2023a, p. 1–3).
- Invasive nonnative plant management— The ANRPO controls non-native plants across all three population units (Kahanahāiki to Pahole, Ke‘awapilau to Makaleha, and Mākaha) (ANRPO 2023b, Appendix 4-2).
- Control of predation and herbivory by rats— The ANRPO controls rats using Goodnature™ A24 rat traps. ANRPO reported control in all three population units (Kahanahāiki to Pahole, Ke‘awapilau to Makaleha, and Mākaha) with a total of 289 traps used to protect individuals of *S. obovata* (ANRPO 2023a, p.207–208).
- Control of predation by nonnative invertebrates— The ANRPO utilizes Ferroxx® to control slugs around individuals of *S. obovata* in all three population units (Kahanahāiki to Pahole, Ke‘awapilau to Makaleha, and Mākaha) (ANRPO 2023a, p.244).
- Collection and propagation for genetic storage and reintroduction—
 - ANRPO reports 100 total founder plants in seed storage with at least 10 viable seeds, and of these, 96 founders in storage have at least 50 viable seeds. These founders are from Kahanahāiki to Pahole, and Ke‘awapilau to Makaleha population units (ANRPO 2023b, Appendix 4-3).
 - Lyon Arboretum Micropropagation Laboratory reports 174 explants in storage representing one founder from Kahanahāiki to Pahole, and the Lyon Seed Conservation Laboratory reports 5 seeds in storage from one founder from Kahanahāiki to Pahole (Lyon Arboretum 2022, 2023).
- Reintroduction/ Augmentation/ Introduction—
 - ANRPO reports three new reintroductions of *S. obovata* between 2021 and 2023 with over 170 individuals planted across all population units (ANRPO 2023b; Lopez et. al., 2021; Russel 2021). A total of 1,073

reintroduced individuals survive across all reintroduction sites, of which 340 are mature individuals (ANRPO 2023b, Appendix 4-1).

Table 1. Status and trends of *Schiedea obovata* 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?
1991 (Listing)	ca 100	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2007 (5-year review)	41	58	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2012 (5-year review)	32	420 and 700 as part of breeding research	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No

Table 1b.

Date	No. wild individuals	No. outplanted	*Preventing Extinction Criteria identified by HPPRCC	*Preventing Extinction Criteria Completed?
2019 (5-year review)	12 mature, >400 immature	1,418 total planted; < 300 remain	All threats managed in all 3 populations	Partially
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	Yes
			Complete genetic storage	Complete
			3 populations with 50 mature individuals each	No, Only one population >50
2024 (5-year review)	17 mature, 6 immature	340 mature, 733 immature	All threats managed in all 3 populations	Partially
			Complete genetic storage	Yes
			Natural reproduction at all 3 populations	Partially
			3 populations with 50 mature individuals each	Partially, only two populations with >50

* 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 obovata* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A	Ongoing	Partial, five exclosures constructed
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Partial, nonnative plant control within five exclosures
Climate change degradation or loss of habitat, including hurricanes	A	Ongoing	None
Degradation and destruction by fire	A	Ongoing	Partial, fire management (fuel breaks) part of Army INRMP
Predation and herbivory by rats	C	Ongoing	Partial, control in three areas
Predation and herbivory by invertebrates—Slugs, snails, black twig borer	C	Ongoing	Partial, slug control in three areas
Competition with established invasive plant species	E	Ongoing	Partial, nonnative plant management in three areas
Reduced viability due to low numbers	E	Ongoing	Partial, propagation, seed storage, and reintroduction are ongoing

Synthesis:

Currently there are 23 wild individuals of *Schiedea obovata* on O‘ahu, of which 17 are mature individuals and 6 are immature. Individuals are provided protection by fencing, nonnative plant control, rat control, slug control, and ungulate control. Seed collections, propagation, and outplanting are ongoing.

Stabilizing (interim), downlisting, and delisting objectives are provided in the Recovery Plan for the O‘ahu Plants (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 obovata is a short-lived perennial 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 O‘ahu 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 complete (Table 1), there are only two populations totaling at least 50 reproducing individuals, and all threats are not being managed (Table 1, Table 2). Therefore, *Schiedea obovata* 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 2019. Thus, the following recommendations for future actions are reiterated for the 5-year review for 2024.

- Surveys and inventories—
 - Continue surveys for populations of *Schiedea obovata* in areas of potentially suitable habitat.
 - 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—Continue control of established ecosystem-altering nonnative invasive plant species, and those that compete with *S. obovata*.
- Site and habitat protection—Develop and implement effective threat control measures to reduce the impact of small population size.
- Fire prevention and control—Continue to 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, including increasing temperatures, periods between rain events, and increasing frequency and intensity of hurricanes. Additional management actions may be needed, such as locating key microsites that overlap with current and future climate envelopes for translocation efforts.
- Predator and herbivore monitoring and control—Determine and continue to implement effective methods to control rats and slugs.

- Captive propagation for genetic storage and reintroduction—Continue 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 reintroduction and translocation into suitable habitat that is being managed for known threats to this species to reduce impacts of climate change degradation and nonnative plant competition.
- 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:

- [ANRPO] Army Natural Resource Program on O‘ahu. 2023a. 2023 status report for the Makua and Oahu implementation plans. 255 pp.
- [ANRPO] 2023b. Appendices to the Status report for the Mākua and O‘ahu Implementation Plans, Army Natural Resources Program, O‘ahu, Office of the Vice President for Research and Innovation, University of Hawai‘i.
- [HBMP] Hawaii Biodiversity and Mapping Program. 2010. Plant species GIS data and Access database.
- [HPPRCC] Hawai‘i and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.
- Lopez, G., L. Young, M. Gray, T. Levinson, M. Zeigler, N. Preston, and W. Shinsato. 2021. Hawai‘i Rare Plant Restoration Group (HRPRG) Field Data Form *in* PEPP 2022: Plant Extinction Prevention Program, FY 2022 Annual Report (Oct 1, 2021-Sep 30, 2022), USFWS CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F19AC00532 (Interim Report), December 29, 2022, UH Mānoa, PCSU, PEPP. 749 pp. BioPacifica database record for *Schiedea obovata*, 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.
- Lyon Arboretum. 2023. 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.
- Russell III, T. 2021. Hawai‘i Rare Plant Restoration Group (HRPRG) Field Data Form *in* PEPP 2022: Plant Extinction Prevention Program, FY 2022 Annual Report (Oct 1, 2021-Sep 30, 2022), USFWS CFDA Program #15.657, Endangered Species

Conservation-Recovery Implementation Funds, Coop Agreement F19AC00532 (Interim Report), December 29, 2022, UH Mānoa, PCSU, PEPP. 749 pp. BioPacifica database record for *Schiedea obovata*, Pacific Islands Fish and Wildlife Office.

[U.S. Fish and Wildlife Service] U.S. Fish and Wildlife Service. 1998. Recovery plan for the Oahu plants. U.S. Fish and Wildlife Service, Portland, Oregon. 207 pages, plus appendices.

[USFWS] 1999. Recovery Plan for the Multi-Island Plants. 2006 pp. + appendices.

[USFWS] 2007. *Schiedea obovata* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/five_year_review/doc1087.pdf.

[USFWS] 2012. Endangered and threatened wildlife and plants; Endangered status for 23 species on Oahu and designation of critical habitat for 124 species; final rule. Department of the Interior, Federal Register 77 (181): 57648–57862, September 18, 2012.

[USFWS] 2012. *Schiedea obovata* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/five_year_review/doc1955.pdf.

[USFWS] 2019. *Schiedea obovata* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/five_year_review/doc2895.pdf.

[USFWS] 2022. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 167 Species in Oregon, Washington, Idaho, Montana, California, Hawaii, Guam, and the Northern Mariana Islands. Federal Register 87(90): 28031–28034, May 10, 2022.

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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

Date_____