

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Wikstroemia villosa* (‘ākia)

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 *Wikstroemia villosa* (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/854>).

Review Analysis:

Please refer to the previous 5-year review for *Wikstroemia villosa* published in the Federal Register on September 29, 2020 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/3147.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 *W. villosa*.

This long-lived perennial tree in the Thymelaceae (‘ākia) family is endangered and is known from the island of Maui. The status and trends for *Wikstroemia villosa* are provided in the tables below.

New Status Information:

- Currently, there three wild populations on west Maui, and at least five wild populations on east Maui, totaling approximately 105 individuals (Plant Extinction Prevention Program [PEPP] 2024). In addition, there are three reintroduced populations totaling 22 individuals (PEPP 2024).
- There are 13 founder lines represented in *ex situ* storage and propagation collections, including seeds in seed banks and plants in a nursery or living collection (Olinda Rare Plant Facility [ORPF] 2025; Lyon Arboretum 2024).

New Threats:

- None

New Management Actions:

- Monitoring and surveys—PEPP monitors wild occurrences and reintroduced individuals of *Wikstroemia villosa* on Maui (PEPP 2023, 2024).
- Control of predation and herbivory by rats—PEPP conducts rat control around some populations of *Wikstroemia villosa* on Maui (PEPP 2024).
- Control of non-native plants—PEPP conducts non-native plant control around wild and reintroduced populations (PEPP 2023, 2024).
- Collection and propagation for genetic storage and reintroduction—
 - The Lyon Seed Conservation Laboratory reported 32 seeds in storage representing two founders from Honomanū and ‘Īao Valley (Lyon Arboretum 2024).
 - ORPF reported approximately 45 potted plants in a living collection, representing 11 founders from Honomanū, Waikapū, and ‘Īao Valley (ORPF 2025).
- Reintroduction/ Augmentation/ Introduction—PEPP reintroduced eight individuals at Makamaka‘ole Seabird Enclosure in 2024 (PEPP 2024).

Table 1. Status and trends of *Wikstroemia villosa* 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?
2013 (Listing)	1	3	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No

Table 1b.

Date	No. wild individuals	No. Outplanted	Preventing Extinction Goals identified in Recovery Plan	Stability Goals Completed?
2020 5-year review	ca 100	13	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			Natural reproduction in all 3 populations	Partially
			3 populations with 25 mature individuals each	No
2025 (5-year review)	ca 105	22	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			Natural reproduction at all 3 populations	Partially
			3 populations with 25 mature individuals each	Partially

Table 2. Threats to *Wikstroemia villosa* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A, D	Ongoing	Partial, 2 wild populations within exclosures; 2 reintroduced populations in exclosures
Established ecosystem altering invasive plant species degradation of habitat	A, E	Ongoing	Partial, nonnative plant management at 2 wild and 2 reintroduced populations
Erosion degradation and degradation of habitat	A	Ongoing	Partial; 3 reintroduced populations to increase redundancy
Climate change degradation or loss of habitat, including hurricanes	A	Ongoing	None
Predation and herbivory by rats	C	Ongoing	Partial, control at one population
Predation and herbivory by invertebrates—Slugs, snails, black twig borer	C	Ongoing	None
Hybridization	E	Ongoing	None
Trampling by hikers	E	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	Partial, seed collections, propagation, and reintroduction efforts

Synthesis:

Currently there are approximately 105 wild individuals (approximately 103 mature and 2 immature) of *Wikstroemia villosa* on Maui. Individuals are provided protection by fencing, nonnative plant control and rat control. Seed collections, propagation, and outplanting are ongoing.

Stabilizing (interim) and preventing extinction targets, and downlisting, and delisting criteria are provided in the Recovery Plan for Maui Nui (islands of Maui, Moloka‘i, and Lāna‘i) (2023) and 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.

Wikstroemia villosa is a long-lived perennial tree. 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 Maui where they now occur or occurred historically and each of these populations must be naturally reproducing (i.e., viable seeds, seedlings, saplings) with a minimum of 25 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. Although genetic storage is partially complete (Table 1), there is only a single population totaling at least 25 individuals, mature plants are not reproducing, and all threats are not being managed (Table 1, Table 2). Therefore, *Wikstroemia villosa* 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 *Wikstroemia villosa* to assess resiliency and make collections.
 - Continue surveys for populations of *W. villosa* in areas of potentially suitable habitat.
 - Determine suitable locations for additional 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 *W. villosa*.
- Site and habitat protection—Develop and implement effective control measures to reduce the impact of trampling by hikers and erosion and destruction of habitat.
- 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 insect pests, 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 reduced viability and hybridization.

- Research—
 - Conduct genetic studies to determine genetic variation within the population (and between populations), determine hybridization, 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. 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.

[ORPF] Olinda Rare Plant Facility. 2025. 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] 2020. *Wikstroemia villosa* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/five_year_review/doc3147.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] 2023. Recovery plan for 44 species from Maui Nui (islands of Maui, Moloka‘i, and Lāna‘i). Portland, Oregon. xv + 90 pages + Appendices.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Wikstroemia villosa* ('ākia)

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 _____