

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Stenogyne angustifolia* var. *angustifolia* (no common name)

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 *Stenogyne angustifolia* var. *angustifolia* (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/1591>).

Review Analysis:

Please refer to the previous 5-year reviews for *Stenogyne angustifolia* var. *angustifolia* published in the Federal Register on August 28, 2012 (available at https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1961.pdf), and on September 28, 2020 (available at https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3122.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. angustifolia* var. *angustifolia*.

This short-lived perennial scandent vine in the Lamiaceae (mint) family is endangered and found on the island of Hawai‘i. The status and trends for *Stenogyne angustifolia* var. *angustifolia* are provided in the tables below.

New Status Information:

- Currently, there are approximately 2,727 wild individual plants spread almost continuously across 10 populations at Pōhakuloa Training Area (PTA) on the island of Hawai‘i. (U.S. Army Garrison–Hawai‘i [USAG-HI] 2024).
- Currently, there are 54 founder lines represented in *ex situ* storage and propagation collections, including seeds in seed banks and plants in a nursery or living collection (National Tropical Botanical Garden [NTBG] 2023; Volcano Rare Plant Propagation Facility [VRPPF] 2023; USAG 2024).
- The Leilani wildfire occurred at PTA in July and August of 2022, and burned 1,713 ha (4,233 ac), which is approximately 53% of the Kīpuka Kalawamauna Endangered Plant Habitat (USAG-HI 2024). Prior to the fire, a majority of *Stenogyne angustifolia* var. *angustifolia* found at PTA was located within the burned area. Post-fire, the abundance of *S. angustifolia* var. *angustifolia* was estimated to be 1,160 individuals, which was determined to be a statistically significant decline (USAG-HI 2023).

New Threats:

- None

New Management Actions:

- Monitoring and surveys—The Center for Environmental Management of Military Lands (CEMML) monitors fences, monitors plants, and collects cuttings of wild *Stenogyne angustifolia* var. *angustifolia* (USAG-HI 2024).
- CEMML conducted weed control across 1.4 ha (3.5 ac) around reintroduced plants and maintains fuel breaks across PTA to protect wild plants (USAG-HI 2024).
- Collection and propagation for genetic storage and reintroduction—
 - PTA Rare Plant Propagation Facility (PTA RPPF) reports 2,175 seeds in storage representing 54 wild founder plants, and 8,759 seeds in storage from propagated plants (USAG-HI 2024).
 - VRPPF maintains four potted plants in a living collection representing two founders (VRPPF 2023).
 - NTBG reports 123 seeds in storage representing one founder from a collection 1992. The viability of this collection is unknown (NTBG 2023).
 - Reintroduction/ Augmentation/ Introduction—A total of 229 plants have been reintroduced between 2004 and 2014, and currently 157 reintroduced individuals remain across three sites (USAG-HI 2024). In addition, 6 individuals were outplanted in 2024 at Pu‘uwa‘awa‘a (USAG-HI 2024).

Table 1. Status and trends of *Stenogyne angustifolia* var. *angustifolia* 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?
1979 (Listing)	<10	0	Existing habitat on Hawai‘i Island must be secured and managed	No
			Increase and stabilize population size and numbers	No
2012 (5-year review)	>5000	>200	Existing habitat on Hawai‘i Island must be secured and managed	Partially
			Increase and stabilize population size and numbers	Partially

Table 1b.

Date	No. wild individuals	No. outplanted	*Preventing Extinction Targets identified by HPPRCC	*Preventing Extinction Targets Completed?
2020 (5-year review)	ca 3,300	ca 479 planted, >200 remain	All threats managed in all 6 populations	Partially

			Reproduction (i.e., viable seeds, seedlings, saplings) at all 6 populations	Partially
			Complete genetic storage	Partially
			6 populations with 50 mature individuals each	Partially
2025 (5-year review)	2,727	ca 479 planted, 163 remain	All threats managed in all 6 populations	Partially
			Complete genetic storage	Partially
			Natural reproduction at all 6 populations	Partially
			6 populations with 50 mature individuals each	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 *Stenogyne angustifolia* var. *angustifolia* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulate destruction and degradation of habitat and herbivory	A, C	Ongoing	Partial, enclosures constructed at PTA
Established ecosystem altering invasive plant species degradation of habitat	A, E	Ongoing	Nonnative plant control at PTA
Fire destruction and degradation of habitat	A	Ongoing	Partial, non-native plant control and firebreaks at PTA
Agriculture and urban development	A	Ongoing	None
Military Actions	A	Ongoing	Partial, management plan for PTA
Stochastic events- drought	A	Ongoing	None

Inadequate existing regulatory mechanisms	D	Ongoing	Partial, management of PTA
Military training activities	E	Ongoing	Partial, management of PTA
Lack of pollinators	E	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	Partial, collection, propagation and reintroduction are ongoing
Hybridization	E	Ongoing	None
Human disturbance	E	Ongoing	Partial, management of PTA
Climate change degradation and destruction of habitat	E	Ongoing	None

Synthesis:

Currently there are 2,727 wild individuals of *Stenogyne angustifolia* var. *angustifolia* on the island of Hawai‘i. While a significant statistical decline in overall population size can be contributed to the 2022 Leilani Wildfire at PTA, factors other than fire, such as drought, rainfall, and natural mortality and recruitment, also likely contributed to the observed changes in abundance (USAG-HI 2023). Individuals are provided protection from ungulates by fencing, and nonnative plant control. Plant cutting collections, seed storage, and propagation are ongoing.

Stabilizing (interim) and preventing extinction targets, and downlisting, and delisting criteria are provided in the Recovery Plan for 50 Hawaiian Archipelago Species (USFWS 2022) and recovery objective guidelines developed by the Hawai‘i and Pacific Plants Recovery Coordinating Committee (HPPRCC 2011). The 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.

Stenogyne angustifolia var. *angustifolia* is a short-lived perennial scandent vine that relies on vegetative reproduction more than sexual reproduction. 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 six populations should be documented on the island of Hawai‘i, 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. Currently, only one population has more than 50 individuals and all threats are not being managed (Table 1, Table 2). Therefore, *Stenogyne angustifolia* var. *angustifolia* 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 *Stenogyne angustifolia* var. *angustifolia* to assess resiliency and make collections.
 - Continue surveys for populations of *Stenogyne angustifolia* var. *angustifolia* in areas of potentially suitable habitat.
 - Determine suitable locations for reintroductions.
- Ungulate monitoring and control—Construct fenced exclosures and construct new fences to protect individuals from the negative impacts of browsing by ungulates.
- Invasive nonnative plant monitoring and control—Control established ecosystem-altering nonnative invasive plant species, and those that compete with *Stenogyne angustifolia* var. *angustifolia*.
- Site and habitat protection—Develop and implement effective control measures to reduce the impact destruction by agriculture and urban development, human disturbance, military activities, drought, and fire.
- Fire prevention and control—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.
- Captive propagation for genetic storage and reintroduction—Continue to maintain 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 due to low numbers.
- Research—
 - Determine which species may act as pollinators and which may assist with fruit dispersal.
 - Conduct genetic studies to determine hybridization, and genetic variation within the population (and between populations) 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. 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.
- [USAG-HI] United States Army Garrison–Hawai‘i. 2023. Technical Report and Post-Disturbance Assessment. Leilani Fire in Training Area 22, July and August 2022, Pōhakuloa Training Area, Island of Hawai‘i. Prepared by Center for Environmental Management of Military Lands, Colorado State University for the U.S. Army Garrison, Pōhakuloa Training Area. May 2023. 31pp.
- [USAG-HI]. 2024. U.S. Army Garrison Pōhakuloa Training Area Natural Resources Program FY 2022 to FY 2023 Biennial Report. Prepared by Center for Environmental Management of Military Lands, Colorado State University for the U.S. Army Garrison, Pōhakuloa Training Area. June 2024. 558pp.
- [USFWS] U.S. Fish and Wildlife Service. 2012. *Stenogyne angustifolia* var. *angustifolia* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1961.pdf.
- [USFWS] 2020. *Stenogyne angustifolia* var. *angustifolia* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3122.pdf.
- [USFWS] 2022. Recovery Plan 50 Hawaiian Archipelago Species. Portland. 166 pp. + appendices.
- [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.
- [VRPPF] Volcano Rare Plant Propagation Facility. 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.

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SIGNATURE PAGE for 5-YEAR REVIEW of *Stenogyne angustifolia* var. *angustifolia*
(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 _____