5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Phyllostegia stachyoides* (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 *Phyllostegia stachyoides* (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/4922*).

Review Analysis:

Please refer to the previous 5-year review for *Phyllostegia stachyoides* published in the Federal Register on September 30, 2020 (available at *https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3185.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 *P. stachyoides*.

This short-lived perennial climbing vine or subshrub in the Lamiaceae (mint) family is endangered and found on the islands of Hawai‘i, Maui, and Moloka‘i. The status and trends for *Phyllostegia stachyoides* are provided in the tables below.

New Status Information:

- Currently, there are approximately 21 total wild individuals of *Phyllostegia stachyoides* at six populations: one at Kapāpala on the island of Hawai‘i; three populations on Maui at Honokōhau Lower, Honokōhau Upper, and Ukumehame; and two populations on Moloka‘i at Hanalilolilo-Pu‘u Ali‘i and Oloku‘i (Plant Extinction Prevention Program [PEPP] 2024). Additional wild populations on Moloka‘i at Ka‘amola-Wāwā‘ia and Kahanui have not been monitored since 2005 and the status of individual plants is unknown (PEPP 2024).
- Currently, there are over 40 founder lines represented in *ex situ* storage and propagation collections, including explants in micropropagation, seeds in seed banks, and plants in a nursery or living collection (Hawai‘i Volcanoes National Park [HVNP] 2024; Lyon Arboretum 2024; National Tropical Botanical Garden [NTBG] 2025; Olinda Rare Plant Facility [ORPF] 2024; Volcano Rare Plant Facility [VRPF] 2024).

New Threats:

- None

New Management Actions:

- Monitoring and surveys—PEPP and staff at HVNP survey historic locations and monitor the current populations of *Phyllostegia stachyoides* on the islands of Hawai‘i, Maui, and Moloka‘i, and have observed seedlings at two wild populations; Kapāpala on the island of Hawai‘i and Oloku‘i on Maui (PEPP 2024; HVNP 2024).
- Ungulate monitoring and control—PEPP and staff at HVNP monitor and repair fences and excludes ungulates from fences protecting wild and reintroduced populations on the islands of Hawai‘i, Maui, and Moloka‘i (PEPP 2024).
- Nonnative plant control—PEPP controls nonnative plants around wild and reintroduced populations on the islands of Hawai‘i, Maui, and Moloka‘i (PEPP 2024).
- Nonnative vertebrate control—PEPP reported controlling rats around one population on Maui (PEPP 2024).
- Collection and propagation for genetic storage and reintroduction—
    - HVNP reported 212 seeds collected from 44 nursery plants in 2024 and maintains 638 individual potted plants in cultivation (HAVO 2024).
    - Lyon Arboretum Micropropagation Laboratory reports 421 explants in micropropagation representing six founders from Moloka‘i, and Lyon Arboretum Seed Conservation Laboratory reports over 14,000 seeds in storage from 36 founders (Lyon Arboretum 2024).
    - NTBG reports 284 seeds in storage from two individual founders, one from an unknown location, and one from Maui, collected in 1991; viability is unknown (NTBG 2025).
    - ORPF reports 241 individuals in cultivation representing 23 founders from Maui and Moloka‘i (ORPF 2024).
- Translocations—In 2023, HAVO reintroduced 12 individuals at Keauhou Restoration site, and in 2024, reintroduced 28 individuals at Papapala (HAVO

2024). two individuals were reintroduced at one location within the Aku Unit (PEPP 2024). PEPP reported 21 individual plants, and some seedlings observed during monitoring of an existing site at Pohakea on Maui, and five individuals at existing sites at Pēpēʻōpae on Molokaʻi (PEPP 2024). At Kawela Gulch on Molokaʻi, 13 individuals were reintroduced in 2021, an in 2024, 43 individuals were reintroduced at two sites on Maui, Hanaʻula and Lihau (PEPP 2024). ORPF reported sending out 120 individuals to at least three sites (Honokōhau, Helu, and Luakoʻi) from 2023 to 2024 (ORPF 2024).

Table 1. Status and trends of *Phyllostegia stachyoides* from listing through current 5-year review. Table 1 shows progress according to Preventing Extinction Goals.

Date	No. wild individuals	No. Outplanted	Preventing Extinction Targets identified by HPPRCC	Preventing Extinction Targets Completed?
2013 (Listing)	<45	0	All threats managed in the 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 individuals each	No
2020 (5-year review)	29-57	ca 94 (>300 outplanted)	All threats managed in the 3 populations	Partially
			Complete genetic storage	Partially
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	Yes
			3 populations with 50 individuals each	No
2025 (5-year review)	21 (16 mature and 5 immature)	162 planted	All threats managed in the 3 populations	Partially
			Complete genetic storage	Yes
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	Yes, seedlings at 3 sites
			3 populations with 50 individuals each	No

Table 2. Threats to *Phyllostegia stachyoides* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulate destruction and degradation of habitat	A	Ongoing	Partial, ungulate control and exclosures
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Partial, nonnative plant control within exclosure
Fire	A	Ongoing	Fire management plan for HAVO
Stochastic Events, hurricanes, drought, erosion, flooding, landslides, rockfall, and storms	A	Ongoing	Partial, collection, propagation, and outplanting ongoing
Disease	C	Ongoing	None
Predation and herbivory by ungulates	C	Ongoing	Partial, ungulate control and exclosures
Predation and herbivory by non-native vertebrates, rats	C	Ongoing	Partial, rat control at one population
Predation and herbivory by non-native invertebrates, slugs	C	Ongoing	None
Inadequate regulatory mechanisms	D	Ongoing	None
Low numbers	E	Ongoing	Partial, collection, propagation, and outplanting ongoing
Lack of pollinators	E	Ongoing	None
Climate change degradation and loss of habitat	E	Ongoing	None

Synthesis:
Currently there are approximately 21 wild individuals (15 mature and 4 immature) of *Phyllostegia stachyoides* on the island of Hawai‘i. Individuals are provided protection from ungulates by fencing, and nonnative plant control. Plant cutting and seed collections, propagation, and reintroductions are ongoing.

Preventing Extinction and Interim Stabilization Targets, and Downlisting and Delisting Criteria are provided in The Recovery Plan for 50 Hawaiian Archipelago Species (USFWS 2022). 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.

Phyllostegia stachyoides is a short-lived perennial climbing vine or 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 the islands Hawai‘i, Maui, and Moloka‘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 (Table 1). There are only 21 total wild individuals, all threats are not being managed, and genetic storage is not complete (Table 2). Therefore, *Phyllostegia stachyoides* meets the definition of Endangered as it is still 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 *Phyllostegia stachyoides* to assess resiliency and make collections.
  - Continue surveys for populations of *Phyllostegia stachyoides* in areas of potentially suitable habitat.
  - Determine suitable locations for reintroductions.
- Ungulate monitoring and control—Monitor and maintain 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 *Phyllostegia stachyoides.*
- Species and habitat protection—Develop and implement effective control measures to reduce the impacts of destruction by hurricanes, storms, flooding, erosion, drought, and rockfall.
- Fire prevention and control—Continue to develop and implement fire prevention and management plans.
- Predator and herbivore monitoring and control—
  - Develop and implement effective control measures to reduce the impact of invasive invertebrate predation, specifically from slugs.

    - Develop and implement effective control measures to reduce the impact of invasive vertebrate predation, specifically from rats.
- 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 and to protect from catastrophic events such as hurricanes, flooding, and storms.
- 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—
    - Investigate plant diseases from related *Phyllostegia* species.
    - Conduct studies to determine effective pollinators.
- Alliance and partnership development—Continue to work with partners and other land managers to plan and implement ecosystem-level restoration and management to benefit this species.

References:

[HVNP] Hawai‘i Volcanoes National Park. 2024. Annual report to the U.S. Fish and Wildlife Service threatened and endangered plants Hawaii Volcanoes National Park ES019078. 39 pp.

[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.

[NTBG] National Tropical Botanical Garden. 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.

[ORPF] Olinda Rare Plant Facility. 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.

[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] U.S. Fish and Wildlife Service. 2020. *Phyllostegia stachyoides* 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/3186.pdf*.

[USFWS] 2022. Recovery plan for 50 Hawaiian Archipelago Species. Portland, OR. 166 pp. + appendices.

[USFWS] 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. 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.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Phyllostegia stachyoides* (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
X	No Change in listing status

For **Field Supervisor, Pacific Islands Fish and Wildlife Office**

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