5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Phyllostegia pilosa* (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 pilosa* (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/9246*).

Review Analysis:

Please refer to the previous 5-year review for *Phyllostegia pilosa* published in the Federal Register on August 19, 2020 (available at *https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3040.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. pilosa*.

This short-lived perennial scandent vine or herb in the Lamiaceae (mint) family is endangered and known from Maui and Moloka‘i. The status and trends for *Phyllostegia pilosa* are provided in the tables below.

New Status Information:

- Currently, there are no known wild individuals of *Phyllostegia pilosa* on Maui and Moloka‘i (Plant Extinction Prevention Program [PEPP] 2024). Wild plants were last observed on Maui in 2014, and surveys conducted in 2015 and 2019 revealed no individual plants remained. It has not been observed on Moloka‘i since the early 1900s and is considered extirpated from that island. PEPP currently reports *P. pilosa* as Extinct in the Wild (PEPP 2024). There remains suitable habitat within the range to survey.
- Currently, there are seven founder lines represented in *ex situ* storage and propagation collections, including seeds in seed banks, explants in micropropagation, and plants in a living collection (Lyon Arboretum 2024; National Tropical Botanical Garden [NTBG] 2025; Olinda Rare Plant Facility [ORPF] 2025).

New Threats:

- None

New Management Actions:

- Monitoring and surveys—PEPP surveys for new populations and monitors reintroduced populations of *Phyllostegia pilosa* (PEPP 2024).
- Ungulate control—East Maui Watershed Partnership (EMWP) works in coordination with landowners to protect and monitor the native ecosystems of East Maui, including building fences and controlling ungulates (https://eastmauiwatershed.org/explore-the-watershed/management/, accessed 17 JUN 2025).
- Nonnative plant control—PEPP conducts nonnative plant control around reintroduced populations during monitoring activities (PEPP 2024).
- Collection and propagation for genetic storage and reintroduction—
    - Lyon Arboretum Micropropagation Laboratory reports 676 explants in micropropagation representing five founders from Makawao-Olinda, and Lyon Arboretum Seed Conservation Laboratory reports over 17,000 seeds in storage representing five founders from Makawao-Olinda, collected in 2013 (Lyon Arboretum 2024).
    - NTBG reports 142 seeds in storage from one individual founder from Waikamoi, collected in 2013 (NTBG 2025).
    - ORPF reports 68 total potted plants in propagation and living collection, representing seven founders from Makawao and Waikamoi (ORPF 2025).
- Reintroduction and translocation—PEPP reintroduced over 200 plants between 2013 and 2019 at approximately 10 sites, most of which are in the Makawao-Olinda area (PEPP 2024). However, reintroduced plants at many of these sites were observed dead during recent monitoring in 2020 and 2023, and for reintroduced sites that were not monitored, the status of individual plants is unknown but suspected to have similar survival rates (PEPP 2024).

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

Date	No. wild individuals	No. Outplanted	Preventing Extinction identified in Recovery Plan	Preventing Extinction Completed?
2013 (Listing)	7	32	All threats managed in the 3 populations	Partially
			Complete genetic storage	Yes
			3 populations with 50 individuals each	No
2020 (5-year review)	0	ca 36 remain	All threats managed in the 3 populations	Partially, ungulate and nonnative plant control ongoing
			Complete genetic storage	Yes
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	No
			3 populations with 50 individuals each	No
2025 (5-year review)	0	0 planted; unknown number persist	All threats managed in the 3 populations	Partially, ungulate and nonnative plant control ongoing
			Complete genetic storage	Yes
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	No
			3 populations with 50 individuals each	No

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

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulate destruction and degradation of habitat	A	Ongoing	Partial, exclosures and ungulate control around reintroduction sites
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Partial, nonnative plant control within exclosures
Stochastic events — Hurricanes	A	Ongoing	Partial, propagation
Disease	C	Ongoing	None
Predation and herbivory by ungulates	C	Ongoing	Partial, exclosures and ungulate control around reintroduction sites
Predation and herbivory by non-native vertebrates– rats	C	Ongoing	None
Predation and herbivory by non-native invertebrates– slugs	C	Ongoing	None
Inadequate regulatory mechanisms	D	Ongoing	None
Low numbers	E	Ongoing	Partial, propagation
Human disturbance	E	Ongoing	Partial, exclosures around reintroduction sites
Climate change degradation and loss of habitat	E	Ongoing	None

Synthesis:
Currently there are no known wild individuals of *Phyllostegia pilosa* on Maui and Molokaʻi. Reintroduced plants are provided protection from ungulates and nonnative plant control. Surveys, monitoring, and some threat control are ongoing. Micropropagation, seed storage, living collections, and reintroductions are ongoing.

Stabilizing (interim) and preventing extinction targets, and Downlisting, and Delisting criteria are provided in the Recovery Plan for 44 species from Maui Nui (islands of Maui, Molokaʻi, and Lānaʻi (USFWS 2023). 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 pilosa is a short-lived perennial scandent vine or shrub. 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 and Molokaʻi, 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 no known wild individuals, no recruitment at reintroductions, and all threats are not being managed, although genetic storage is complete (Table 2). Therefore, *Phyllostegia pilosa* meets the definition of Endangered as it is likely to become an endangered species within the foreseeable future throughout all or a significant portion of 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 surveys for populations of *Phyllostegia pilosa* in areas of potentially suitable habitat.
  - Determine suitable locations for reintroductions.
- Ungulate monitoring and control—Maintain fenced exclosures and construct new fences as needed 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 pilosa.*
- Site and habitat protection—
  - Develop and implement effective control measures to reduce the impacts of destruction hurricanes and human disturbance.
  - 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 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.
- 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.
- 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:

East Maui Watershed Partnership. https://eastmauiwatershed.org/explore-the-watershed/management/, accessed 17 JUN 2025.

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. 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] 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 pilosa* 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/3040.pdf*.

[USFWS] 2023. Recovery plan for 44 species from Maui Nui (islands of Maui, Moloka‘i, and Lāna‘i. Portland. 90 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.

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SIGNATURE PAGE for 5-YEAR REVIEW of *Phyllostegia pilosa* (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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