

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Phyllostegia haliakalae* (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 haliakalae* (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/9245>).

Review Analysis:

Please refer to the previous 5-year review for *Phyllostegia haliakalae* published in the Federal Register on August 19, 2020 (available at https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3039.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. haliakalae*.

This short-lived perennial suberect herb in the Lamiaceae (mint) family is endangered and known from Maui, with historical occurrences on Moloka‘i and Lāna‘i, last documented in 1928. The status and trends for *Phyllostegia haliakalae* are provided in the tables below.

New Status Information:

- Currently, there are 43 wild individuals (15 mature, and 28 immature) of *Phyllostegia haliakalae* in one population at ‘Ohe‘o on Maui (Plant Extinction Prevention Program [PEPP] 2024). Historical populations with one to two individual plants were recorded at Kīpahulu above Palikea Stream, Kahikinui, and Kaukau‘ai, but have not been observed since 2012 (PEPP 2024).
- Currently, there are 28 founder lines represented in *ex situ* storage and propagation collections, including explants in micropropagation, seeds in seed banks, and plants in a living collection (Haleakalā National Park [HNP] 2024; Lyon Arboretum 2024; 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 haliakalae* and has reported seedlings at the single wild population in 2021, and at reintroduced populations in 2022 (PEPP 2024).
- Ungulate control—
 - PEPP maintains fences protecting wild and reintroduced populations of *Phyllostegia haliakalae* (PEPP 2024).
 - 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).
 - HNP controls feral ungulates by removal and fencing, protecting habitat surrounding *Phyllostegia haliakalae* (HNP 2024).
- Nonnative plant control—PEPP conducts nonnative plant control around wild and reintroduced populations during monitoring activities (PEPP 2024).
- Collection and propagation for genetic storage and reintroduction—
 - HNP reports 6,492 seeds in storage representing five founders from ‘Ohe‘o (HNP 2024).
 - Lyon Arboretum Micropropagation Laboratory reports 248 explants in micropropagation, representing three founders from ‘Ohe‘o, and Lyon Seed Conservation Laboratory reports over 26,000 seeds in storage representing 28 founders from ‘Ohe‘o and Wai‘ōpai (Lyon Arboretum 2024).
 - ORPF reports over 100 potted plants in propagation and living collection, representing 10 founders from ‘Ohe‘o and Koolau Gap (ORPF 2025).
- Reintroduction and translocation—PEPP reintroduced over 240 plants between 2015 and 2019 at approximately 16 sites across East Maui (PEPP 2024). However, few individuals remained during monitoring conducted in 2020 and 2021, and the current status of the reintroduced individuals is unknown (PEPP 2024). From 2020 to 2024, HNP reintroduced approximately 940 plants across

seven sites within the park, while ORPF reported that 98 individuals were sent out to reintroduction sites at Manawainui Gulch and Kihikinui in 2024 (ORPF 2025).

Table 1. Status and trends of *Phyllostegia haliakalae* 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)	0	ca 100	All threats managed in the 3 populations	Partially
			Complete genetic storage	Yes
			3 populations with 50 individuals each	No
2020 (5-year review)	67–111	ca 300, ca 250 remain in total	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)	43 (15 mature, 28 immature)	1,038 planted	All threats managed in the 3 populations	Partially, ungulate and nonnative plant control ongoing

			Complete genetic storage	Partial
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	Partial, seedlings observed at wild population and some reintroduced populations
			3 populations with 50 individuals each	Partial, two reintroduction sites with over 50 individuals

Table 2. Threats to *Phyllostegia haliakalae* 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
Fire	A	Ongoing	Partial, HNP Fire Management Plan
Stochastic events — Flooding, Hurricanes, Landslides, and Treefalls	A	Ongoing	Partial, collection, propagation and reintroduction
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 nonnative invertebrates– slugs	C	Ongoing	None
Inadequate regulatory mechanisms	D	Ongoing	None
Low numbers	E	Ongoing	Partial, collection, propagation and reintroduction
Climate change degradation and loss of habitat	E	Ongoing	Partial, collection, propagation and reintroduction

Synthesis:

Currently there are 43 wild individuals (15 mature, and 28 immature) of *Phyllostegia haliakalae* on Maui. Individuals are provided protection from ungulates and nonnative plant control. Collection, 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, Moloka'i, and Lāna'i (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 haliakalae is a short-lived perennial suberect herb. 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) with a minimum of 50 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. There is only a single wild population, and all threats are not being managed, and genetic storage is not complete. Recruitment has been observed (Table 1, 2). Therefore, *Phyllostegia haliakalae* 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 haliakalae* 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 haliakalae*.
- Site and habitat protection—

- Develop and implement effective control measures to reduce the impacts of destruction from fire, hurricanes, flooding, treefalls, and landslides.
 - 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.
- [HNP] Haleakalā National Park. 2024. Annual Report for Threatened and Endangered Species Permit TE014497-16. 12pp.
- 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] 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 haliakalae* 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/3039.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 haliakalae* (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

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