

## 5-YEAR REVIEW

Short Form Summary

**Species Reviewed:** *Phyllostegia warshaueri* (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 warshaueri* (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/3211>).

### **Review Analysis:**

Please refer to the previous 5-year reviews for *Phyllostegia warshaueri* published in the Federal Register on August 28, 2012 (available at [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/1968.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1968.pdf)), and on September 30, 2020 (available at [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/3172.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3172.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. warshaueri*.

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 *Phyllostegia warshaueri* are provided in the tables below.

#### New Status Information:

- Currently, there are three wild individuals of *Phyllostegia warshaueri* on the island of Hawai‘i, one each at Laupāhoehoe Natural Area Reserve (NAR), ‘O‘ōkala, and Pu‘uwa‘awa‘a (Plant Extinction Prevention Program [PEPP] 2024). Previously, there were two known wild individuals at Laupāhoehoe NAR, but only one was observed during surveys conducted in 2024 (PEPP 2024). Additional surveys were conducted at Waipahi and Kealakaha Stream between 2019 and 2020, however, no individual plants were observed (PEPP 2024).
- Currently, there are 11 founder lines represented in *ex situ* storage and propagation collections, including seeds in seed banks and plants in a nursery or living collection (Lyon Arboretum 2024; National Tropical Botanical Garden [NTBG] 2025; Volcano Rare Plant Facility [VRPF] 2024).

#### New Threats:

- None

#### New Management Actions:

- Monitoring and surveys—PEPP surveys historic locations and monitors the current populations of *Phyllostegia warshaueri* (PEPP 2024).
- Ungulate monitoring and control—PEPP monitors and repairs fences and excludes ungulates from fences protecting wild populations. In 2024, PEPP reported pig ingress and fence maintenance at the wild population at Laupāhoehoe NAR (PEPP 2024).
- Collection and propagation for genetic storage and reintroduction—
  - Lyon Arboretum reports 113 seeds in storage representing one founder collected in 2014 (Lyon Arboretum 2024).
  - NTBG reports an unknown number of seeds in storage from one individual founder collected in 1994; hence viability is uncertain (NTBG 2025).
  - Volcano Rare Plant Facility (VRPF) reports 16 individuals in cultivation representing 10 founders (one founder from Humu‘ula /‘O‘ōkala, three from Kohala, and six from Laupāhoehoe) (VRPF 2024).
- Reintroduction/ Augmentation/ Introduction—Between 2004 and 2016, there were over 630 individuals reintroduced at four locations, however, the current status of those plants is unknown (VRPF 2024). From 2016 through 2020, approximately 290 additional individuals were reintroduced at Kawaihae Mauka, Laupāhoehoe NAR, Pu‘uwa‘awa‘a, and Waimanu Bog. However, no monitoring has been reported since the initial plantings, and the status of all reintroduced individuals is unknown (VRPF 2024).

**Table 1. Status and trends of *Phyllostegia warshaueri* 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.**

<b>Date</b>	<b>No. wild individuals</b>	<b>No. Outplanted</b>	<b>Stability Goals identified in Recovery Plan</b>	<b>Stability Goals Completed?</b>
<b>1996 (Listing)</b>	5–10	> 122 in 1993 10 in 1996	All threats managed in the 3 populations	No
			Complete genetic storage	No
			3 populations with 50 individuals each	No
<b>2012 (5-year review)</b>	3+	197	All threats managed in the 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 individuals each	No

**Table 1b.**

<b>Date</b>	<b>No. wild individuals</b>	<b>No. outplanted</b>	<b>*Preventing Extinction Targets identified by HPPRCC</b>	<b>*Preventing Extinction Targets Completed?</b>
<b>2020 (5-year review)</b>	3	Unknown (313 planted)	All threats managed in all 3 populations	Partially
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	Unknown
			Complete genetic storage	Yes
			3 populations with 50 mature individuals each	No
<b>2025 (5-year review)</b>	3	0 planted (in last 5 years); unknown number persist	All threats managed in all 3 populations	Partially
			Complete genetic storage	Yes
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	No
			3 populations with 50 mature individuals each	No

\* 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 *Phyllostegia warshaueri* and ongoing conservation efforts.**

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulate destruction and degradation of habitat	A, D	Ongoing	Partial, exclosures at Laupāhoehoe, Kohala, and Pu‘uwa‘awa‘a
Established ecosystem altering invasive plant species degradation of habitat	A, E	Ongoing	Nonnative plant control at reintroduction site
Agriculture and urban development –road clearing	A	Ongoing	None
Climate change degradation and loss of habitat	A	Ongoing	Partial, collection, propagation, and reintroduction
Low numbers	E	Ongoing	Partial, collection, propagation, and reintroduction
Hiking and trail maintenance	E	Ongoing	None

**Synthesis:**

Currently there are three wild individuals of *Phyllostegia warshaueri* 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.

Stabilizing (interim) targets, and Downlisting, and Delisting criteria are provided in the Addendum to the Recovery Plan for the Big Island Plant Cluster (USFWS 1998), 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.

*Phyllostegia warshaueri* is a short-lived perennial scandent vine. 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 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 (Table 1). There are only three wild individuals, and all threats are not being managed, although genetic storage is complete (Table 2). Therefore, *Phyllostegia warshaueri* 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 to monitor known populations of *Phyllostegia warshaueri* to assess resiliency and make collections.
  - Continue surveys for populations of *Phyllostegia warshaueri* 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 warshaueri*.
- Site and habitat protection—Develop and implement effective control measures to reduce the impacts of destruction by agriculture and urban development, and hiking and trail maintenance.
- 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—Conduct genetic studies to determine 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.
- 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.
- [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. 1998. Addendum to Recovery plan for the Big Island plant cluster. Portland. 69 pp. + appendices.
- [USFWS] 2012. *Phyllostegia warshaueri* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.  
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- [USFWS] 2020. *Phyllostegia warshaueri* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.  
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- [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.

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SIGNATURE PAGE for 5-YEAR REVIEW of *Phyllostegia warshaueri* (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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Date \_\_\_\_\_