

## 5-YEAR REVIEW

Short Form Summary

**Species Reviewed:** *Polyscias gymnocarpa* ('ohe'ohe)

**Current Classification:** Endangered

### **Federal Register Notice announcing initiation of this review:**

[USFWS] U.S. Fish and Wildlife Service. 2022. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 167 Species in Oregon, Washington, Idaho, Montana, California, Hawaii, Guam, and the Northern Mariana Islands . Federal Register 87(90): 28031–28034, May 10, 2022.

### **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 *Polyscias gymnocarpa* (USFWS 2019). 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/4551>).

### **Review Analysis:**

Please refer to the previous 5-year reviews for *Polyscias gymnocarpa* published in the Federal Register on September 20, 2011 (available at [https://ecos.fws.gov/docs/tess/species\\_nonpublish/1815.pdf](https://ecos.fws.gov/docs/tess/species_nonpublish/1815.pdf)), and on September 30, 2019 (available at [https://ecos.fws.gov/docs/tess/species\\_nonpublish/2890.pdf](https://ecos.fws.gov/docs/tess/species_nonpublish/2890.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. gymnocarpa*.

This long-lived perennial tree in the Araliaceae (ginseng) family is endangered and endemic to O'ahu. The current status and trends for *Polyscias gymnocarpa* are provided in the tables below.

New Status Information:

- There has been estimated to be 70 wild individuals of *Polyscias gymnocarpa* in the Ko‘olau mountains of O‘ahu, although only two individuals (at Pia Valley) been monitored since 2012 (Togikawa and Seranno 2022).
- One founders has been collected from, and seeds are in *ex situ* storage at Lyon Arboretum. However, the recommended storage temperature has yet to be determined (Togikawa and Seranno 2022; Lyon Arboretum 2023; Hawai‘i Seed Bank User’s Guide (<https://laukahi.org/hawai%ca%bbi-seed-bank-users-guide/>)).

New Threats:

- None

New Management Actions:

- Monitoring and surveys— Plant Extinction Prevention Program (PEPP) surveys for individuals of *Polyscias gymnocarpa* in the Ko‘olau mountains of O‘ahu (Togikawa and Seranno 2022).
- Collection and propagation for genetic storage and reintroduction—
  - In 2022, a total of 15 fruit were collected from two individual plants at Pia Valley (Togikawa and Seranno 2022).

**Table 1. Status and trends of *Polyscias gymnocarpa* 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?
<b>1994 (Listing)</b>	<40	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 25 mature individuals each	No
<b>2011 (5-year review)</b>	92	0	All threats managed in all 3 populations	Partial
			Complete genetic storage	No
			3 populations with 25 mature individuals each	Partial

**Table 1b.**

<b>Date</b>	<b>No. wild individuals</b>	<b>No. outplanted</b>	<b>*Preventing Extinction Criteria identified by HPPRCC</b>	<b>*Preventing Extinction Criteria Completed?</b>
<b>2019 (5-year review)</b>	68	3, none survived	All threats managed in all 3 populations	Partial
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	No
			Complete genetic storage	No
			3 populations with 25 mature individuals each	No
<b>2024 (5-year review)</b>	$\geq 2$	0	All threats managed in all 3 populations	Partial
			Complete genetic storage	Partial
			Natural reproduction at all 3 populations	Unknown
			3 populations with 25 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 *Polyscias gymnocarpa* and ongoing conservation efforts.**

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulate destruction and degradation of habitat	A	Ongoing	Partial, some individuals fenced
Degradation of habitat by established ecosystem altering invasive plant species	A	Ongoing	None
Climate change degradation or loss of habitat, including hurricanes	A	Ongoing	None
Ungulate predation and herbivory	C	Ongoing	None
Vertebrate predation or herbivory-rats	C	Ongoing	None
Invertebrate predation	C	Ongoing	None
Established invasive plant species competition	E	Ongoing	None
Low numbers	E	Ongoing	Partial, some seed collections

**Synthesis:**

Only two wild individuals of *Polyscias gymnocarpa* have been monitored on O‘ahu since 2012. There could be as many as 70 wild individuals but more monitoring is needed to confirm. A few individuals are provided protection by fencing. Seed collections are ongoing, as well as seed storage research.

Stabilizing (interim), downlisting, and delisting objectives are provided in the Recovery Plan for the O‘ahu Plants (USFWS 1998) and have been updated according to the draft revised 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.

*Polyscias gymnocarpa* is a long-lived perennial tree. 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 O‘ahu 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 25 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. Genetic storage is not complete (Table 1), all threats are not being managed (Table 1, Table 2), and there are no populations totaling at least 25 mature individuals. Therefore, *Polyscias gymnocarpa* 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 2019. Thus, the following recommendations for future actions are updated or reiterated for the 5-year review for 2024.

- Surveys and monitoring—
  - Continue monitoring known populations of *Polyscias gymnocarpa*
  - Determine suitable locations for reintroductions.
- Invasive nonnative plant monitoring and control—Control established ecosystem-altering nonnative invasive plant species, and those that compete with *Polyscias gymnocarpa*.
- Site and habitat protection—Develop and implement effective threat control and habitat protection measures to reduce the impacts of invasive plant species and ungulate destruction of habitat.
- Predation or herbivory by rats—Implement effective control methods for rats.
- Predation or herbivory by invertebrates—Implement effective control methods for invasive slugs and snails.
- 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, including increasing temperatures, periods between rain events, and increasing frequency and intensity of hurricanes. Additional management actions may be needed, such as locating key microsites that overlap with current and future climate envelopes for translocation efforts.
- Captive propagation for genetic storage and reintroduction—Continue 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 climate change degradation and nonnative plant competition.
- 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:

- [HBMP] Hawaii Biodiversity and Mapping Program. 2010. Plant species GIS data and Access database.
- [HPPRCC] Hawai'i and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.
- Lyon Arboretum. 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.
- [PEPP] 2023. Plant Extinction Prevention Program FY 2023 Annual Report (Oct 1, 2022-Sep 30, 2023), US FWS CFDA Program #15.657; Endangered Species 17 Conservation-Recovery Implementation Funds, Coop Agreement F22AC02205, December 28, 2023, UH Manoa, PCSU, PEPP. 74 pp.
- Togikawa, K., and J. Serrano. 2022. Hawai'i Rare Plant Restoration Group (HRPRG) Field Data Form *in* PEPP 2023: Plant Extinction Prevention Program, FY 2023 Annual Report (Oct 1, 2022-Sep 30, 2023), USFWS CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F22AC02205 (Interim Report), March 31, 2022, UH Mānoa, PCSU, PEPP. 123 pp.
- [U.S. Fish and Wildlife Service] U.S. Fish and Wildlife Service. 1998. Recovery plan for the Oahu plants. U.S. Fish and Wildlife Service, Portland, Oregon. 207 pages, plus appendices.
- [USFWS] 2011. *Polyscias gymnocarpa*. 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.  
[https://ecos.fws.gov/docs/five\\_year\\_review/doc1815.pdf](https://ecos.fws.gov/docs/five_year_review/doc1815.pdf).
- [USFWS] 2012. Endangered and threatened wildlife and plants; Endangered status for 23 species on Oahu and designation of critical habitat for 124 species; final rule. Department of the Interior, Federal Register 77 (181): 57648–57862, September 18, 2012.
- [USFWS] 2019. *Polyscias gymnocarpa*. 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.  
[https://ecos.fws.gov/docs/five\\_year\\_review/doc2890.pdf](https://ecos.fws.gov/docs/five_year_review/doc2890.pdf).
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**U.S. FISH AND WILDLIFE SERVICE**  
SIGNATURE PAGE for 5-YEAR REVIEW of *Polyscias gymnocarpa* ('ohe'ohe)

**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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