

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Gouania meyenii* (no common name)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2019. Endangered and threatened wildlife and plants; initiation of 5-year status reviews for 91 species in Oregon, Washington, Hawaii, and American Samoa. Federal Register 84(112): 27152–27154, June 11, 2019.

Lead Region/Field Office:

Interior Region 12/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawai‘i

Name of Reviewer:

Cheryl Phillipson Biologist, PIFWO

Lauren Weisenberger, Plant Recovery Coordinator, PIFWO

Megan Laut, Conservation & Restoration Team 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 2020. The review was based on a review of current, available information since the last 5-year review for *Gouania meyenii* (USFWS 2017). The evaluation by Cheryl Phillipson, Biologist, was reviewed by Lauren Weisenberger, Plant Recovery Coordinator, and Megan Laut, Conservation and Restoration Team 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/tess_public).

Review Analysis:

Please refer to the previous 5-year reviews for *Gouania meyenii* in the Federal Register on August 27, 2010 and September 13, 2017 (available at https://ecos.fws.gov/docs/five_year_review/doc3327.pdf and https://ecos.fws.gov/docs/tess/species_nonpublish/2446.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 *G. meyenii*.

This short-lived perennial shrub in the Rhamnaceae (buckthorn) family is endangered and endemic to the islands of O‘ahu and Kaua‘i. The status and trends for *Gouania meyenii* are provided in the tables below.

New Status Information:

- In 2012, critical habitat was designated on O‘ahu for *Gouania meyenii* in 17 units in the lowland dry, lowland mesic, and dry cliff ecosystems in the Wai‘anae mountains (3,152 hectares, 7,788 acres) (77 FR 57648, September 18, 2012). Critical habitat on Kaua‘i as designated in 2003 remains the same (68 FR 9116, February 27, 2003).
- In 2017, there were only one to two wild individuals of *Gouania meyenii* remaining in the Wai‘anae mountains of O‘ahu. Later that year, the O‘ahu Plant Extinction Prevention Program (PEPP) relocated a population of 12 individuals in Mākaha, and with two other plants previously relocated, brought the total to 14 known founders. This was a significant find in that founders of the former population had recently died. However, by 2019, only 6 plants remain in total at both locations (PEPP 2017; PEPP 2019). On Kaua‘i, *G. meyenii* occurs in one population at Kalalau totaling 12 wild individuals, and one individual at Kahuama‘a Flats (PEPP 2020). Two other Kaua‘i populations at Kalāhū (20 individuals) and Hipalau (1 individual) have not been observed since 2008, and 1996, respectively (HBMP 2010; PEPP 2020).

New Threats:

- None reported.

New Management Actions:

- Surveys and inventories—PEPP continues to survey and monitor all wild and reintroduced populations (PEPP 2017, 2018, 2019, 2020).
- Nonnative plant control—PEPP worked in collaboration with the State’s Native Ecosystems Protection & Management (NEPM) program to conduct nonnative plant control at two reintroduction sites on O‘ahu (Pahole and Mākaha) (PEPP 2018).
- Collection and propagation—
 - The Lyon Arboretum Seed Conservation Laboratory reported 184 seeds in storage representing at least nine founders from populations at Mākaha on O‘ahu (Lyon Arboretum 2020).
 - In 2018, PEPP took cuttings of an individual in Mākaha for propagation and reported collection and contribution of 13 seeds representing two founders from Mākaha to Lyon Arboretum in 2018 (PEPP 2018).
- Reintroduction—The last living individual of an outplanting of six plants at Mākaha died in 2019. Four of five plants at another reintroduction site at Mākaha survive as of 2019. Four plants (representing one founder) reintroduced at Pahole survive as of 2019 (PEPP 2017, 2019; Pahole Rare Plant Facility [PRPF] 2019).

Table 1. Status and trends of *Gouania meyenii* from listing through current 5-year review.

Date	No. wild individuals	No. outplanted	Stabilization Criteria identified in Recovery Plan	Stabilization Criteria Completed?
1991 (listing)	ca 75 (O‘ahu)	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 (recovery plan)	83 (O‘ahu) 9 (Kaua‘i)	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2003 (critical habitat)	63 (O‘ahu) 9 (Kaua‘i)	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2010 (5-year review)	20–40 (O‘ahu) 18–23 (Kaua‘i)	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2012 (critical habitat, O‘ahu)	<70 (O‘ahu)		All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals	No

2017 (5-year review)	15 (O'ahu) 0 (Kaua'i)	17, 6 remain (O'ahu)	All threats managed in all 3 populations	No
			Complete genetic storage	No
			Natural reproduction at all 3 populations	No
			3 populations with 50 mature individuals	No
Date	No. wild individuals	No. outplanted	*Preventing Extinction Criteria identified by HPPRCC	*Preventing Extinction Criteria Completed?
2021 (5-year review)	14 (O'ahu) 12 (Kaua'i)	16 planted, 10 survive	All threats managed in all 3 populations	Partially, fire management plan for military training areas on O'ahu; plants on O'ahu protected in areas fenced and managed for ungulates and nonnative plants
			Complete genetic storage	Partially, approximately half the known founders on O'ahu are represented in collections
			Natural reproduction at all 3 populations	None reported
			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 *Gouania meyenii* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A	Ongoing	Partial, 1 population on O‘ahu within an exclosure
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Partial, 1 population on O‘ahu within a managed exclosure
Landslides and flooding destruction and degradation of habitat	A	Ongoing	None
Drought destruction and degradation of habitat	A	Ongoing	None
Degradation and destruction by fire	A	Ongoing	Partial, implementation of fire management plan for military training area on O‘ahu
Predation and herbivory by rats	C	Ongoing	None
Predation and herbivory by feral ungulates	C	Ongoing	1 population on O‘ahu within an exclosure
Reduced viability due to low numbers	E	Ongoing	Partial, genetic storage, propagation, and reintroduction
Climate change degradation or loss of habitat, including hurricanes	E	Ongoing	None

Synthesis:

Currently there are approximately 14 wild individuals of *Gouania meyenii* on O‘ahu and 12 wild individuals on Kaua‘i. One population is within an exclosure on O‘ahu, with some nonnative plant control. Seeds and propagules are in storage representing approximately half the current founders on O‘ahu. Propagation is ongoing and since 2017, 16 individuals were outplanted on O‘ahu, with 10 surviving.

Stabilizing (interim), downlisting, and delisting objectives were 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.

Gouania meyenii is a short-lived perennial 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 O‘ahu and/or Kaua‘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. There are 12 wild individuals on Kaua‘i and 14 on O‘ahu, and total numbers continue to decline. Genetic storage goals have not been met. Outplanting to augment populations on O‘ahu is being conducted; however, no natural recruitment has been reported (Table 1). One population is within an enclosure with nonnative plant control, but not all threats are being addressed (Table 2). Therefore, *Gouania meyenii* meets the definition of Endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

We are not aware of any significant new information regarding the species’ biological status since the last 5-year review in 2017. Thus, the following recommendations for future actions are reiterated for the 5-year review for 2021.

- Surveys and inventories—Continue to survey geographical and historical range for a current assessment of the species’ status and that of possible additional populations.
- Ungulate monitoring and control—Continue to construct ungulate enclosures or strategic fencing where possible to protect all occurrences from the impacts of feral ungulates, including browsing.
- Invasive plant monitoring and control—Continue to control established ecosystem-altering nonnative invasive plant species at all wild and reintroduced populations.
- Fire monitoring and control—Continue to implement fire management plans for O‘ahu and develop and implement fire management plans for occurrences on Kaua‘i.
- Predator and herbivore monitoring and control—Implement effective rat control methods at populations to improve viable seed production.
- Captive propagation for genetic storage and reintroduction—
 - Continue collection of genetic resources for storage, propagation, and reintroduction.

- Evaluate genetic resources currently in storage to determine the need to place additional genetic resources into long-term storage due to the species' vulnerability to climate change.
- Reintroduction and translocation—
 - Continue reintroduction into suitable habitat within historical range in areas that are managed for known threats.
 - Increase numbers of populations and individuals to build resiliency within populations and species redundancy to reduce impacts from low numbers of individuals, as well as landslides, drought, fire, and hurricanes.
- Population viability monitoring and research—Study and determine factors that impede viable seed production.
- Climate change adaptation strategy—Research suitability of habitat for reintroduction of this species in the future due to impacts of climate change.
- 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 taxon.

References:

[HBMP] Hawai'i Biology and Mapping Program. 2010. Database and GIS for Hawaiian species, unpublished.

[HPPRCC] Hawaii and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.

Lyon Arboretum 2020. 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.

[PRPF] Pahole Rare Plant Facility. 2019. Pahole Rare Plant Facility 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] Plant Extinction Prevention Program. 2017. Plant Extinction Prevention Program FY 2017 annual report (Oct 1, 2016-Sep 30, 2017), US FWS CFDA program #15.657; Endangered species conservation-recovery implementation funds, Cooperative Agreement F14AC00174, December 12, 2017, UH Manoa, PCSU, PEPP. 235 pp.

[PEPP] 2018. Plant Extinction Prevention Program, annual recovery subpermit FWSPIFWO-26 report (January 1st, 2018–December 31st 2018), as designated under the U.S. Endangered Species Act. Unpublished report submitted to U.S.

- Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii. 49 pp.
- [PEPP] 2019. Plant Extinction Prevention Program, FY 2019 Annual Report (Oct 1, 2018-Sep 30, 2019), US FWS CFDA Program #15.657; Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F18AC00502, December 26, 2019, UH Manoa, PCSU, PEPP. 192 pp. + appendices.
- [PEPP] 2020. Interim PEPP reports for 2020. Excel table.
- [USFWS] U.S. Fish and Wildlife Service. 1998. Recovery plan for the O‘ahu Plants. USFWS Region 1, Portland, OR. 207 pp. + appendices.
- [USFWS] 2003. Endangered and threatened wildlife and plants; final designation or nondesignation of critical habitat for 95 plant species from the islands of Kauai and Niihau, HI; final rule. 68 FR 9116, February 27, 2003.
- [USFWS] 2010. *Gouania meyenii* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/five_year_review/doc3327.pdf.
- [USFWS] 2012. Endangered and threatened wildlife and plants; endangered status for 23 species on Oahu and designation of critical habitat for 124 species. 77 FR 57648, September 18, 2012.
- [USFWS] 2017. *Gouania meyenii* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/tess/species_nonpublish/2446.pdf.
- [USFWS] 2019. Endangered and threatened wildlife and plants; initiation of 5-year status reviews for 91 species in Oregon, Washington, Hawaii, and American Samoa. Federal Register 84(112): 27152–27154, June 11, 2019.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Gouania meyenii*
(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

_____ Date _____