

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Gouania vitifolia* (No common name)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2010. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 69 species in Idaho, Washington, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. Federal Register 75(67):17947-17950.

Lead Region/Field Office:

Region 1/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawaii

Name of Reviewer(s):

Chelsie Javar, Fish and Wildlife Biologist, (PIFWO)

Marie Bruegmann, Plant Recovery Coordinator, (PIFWO)

Jess Newton, Recovery Program Leader, (PIFWO)

Assistant Field Supervisor for Endangered Species, (PIFWO)

Methodology used to complete this 5-year review:

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office of the U.S. Fish and Wildlife Service (USFWS), beginning on April 8, 2010. The review was based on a review of current, available information since the last 5-year review for *Gouania vitifolia* (USFWS 2007). Bernice Pauahi Bishop Museum provided an initial draft of portions of the review and recommendations for conservation actions needed prior to the next five-year review. The evaluation of Chelsie Javar, Fish and Wildlife Biologist, was reviewed by the Plant Recovery Coordinator. The document was then reviewed by the Recovery Program Leader and the Assistant Field Supervisor for Endangered Species before submission to the Field Supervisor for approval.

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 review for *Gouania vitifolia* published on August 2, 2007 (available at http://ecos.fws.gov/docs/five_year_review/doc1134.pdf) and the recovery plan for Oahu plants (USFWS 1998), for a complete review of the species' status, threats, and management efforts. Critical habitat for this species is currently under review (USFWS 2012). No new threats or no new information regarding the species biological status have come to light since listing to warrant a change in the Federal listing status of *G. vitifolia*.

This short-lived perennial shrub is endangered and occurs on the islands of Oahu and Hawaii, and is extirpated from Maui (USFWS 1998). The current status and trends for *Gouania vitifolia* are provided in the tables below.

New taxonomic information:

None reported.

New threats:

Climate change may also pose a threat to this species. However, current climate change analyses in the Pacific Islands lack sufficient spatial resolution to make predictions on impacts to this species. The Pacific Islands Climate Change Cooperative (PICCC) has currently funded climate modeling that will help resolve these spatial limitations. We anticipate high spatial resolution climate outputs by 2013.

New management actions:

- Ungulate exclosure:
 - In 2008, a fence was completed around the Waianae Kai population unit to protect two reintroduced individuals of *Gouania vitifolia* (U.S. Army Garrison 2008a); however as of 2010, the population unit still contained ungulates (U.S. Army Garrison 2010).
 - Scoping for a proposed fence to exclude feral goats (*Capra hircus*) and pigs (*Sus scrofa*) in the Keaau population unit began in 2009 (U.S. Army Garrison 2009). In 2010, the proposed fence for the Keaau population unit is still awaiting regulation clearances (U.S. Army Garrison 2010).
- Ungulate control – In 2010, feral ungulates were controlled at the Waianae Kai population unit (U.S. Army Garrison 2010).
- Captive propagation protocol development – Seeds of *Gouania vitifolia* were classified as having a physical dormancy (water-impermeable seed coats), thus scarification is necessary for seeds to become water-permeable (U.S. Army Garrison 2010).
- Captive propagation for genetic storage and reintroduction:
 - In 2008, the U.S. Army had a single propagule at the Wahiawa Facility and 8,098 seeds in storage (U.S. Army Garrison 2008b).
 - In 2009, the Waimea Arboretum had a single propagule at their facility (Waimea Arboretum 2009). In 2010, there were no individuals at Waimea Arboretum (2010).
 - In 2010, the Pahole Rare Plant Facility (2010) had 80 propagules growing in their nursery.
 - In 2009 and 2010, there were three propagules collected from the source population at Manuka at the Volcano Rare Plant Facility (2009, 2010).
 - In 2010, the Center for Conservation Research and Training Seed Storage Laboratory (2010) had 7,116 seeds in storage all from populations found on Oahu.

- In 2010, there were 165 propagules in containers at the micropropagation laboratory (Harold L. Lyon Arboretum 2010)
- Reintroduction / translocation site selection – Reintroduction of *Gouania vitifolia* will begin once the fence is completed at the Makaha, Makaleha, and Manuwai population units (U.S. Army Garrison 2010).
- Reintroduction / translocation implementation – In 2010, a single individual of *Gouania vitifolia* was reintroduced at the Manuka Natural Area Reserve on the island of Hawaii (Volcano Rare Plant Facility 2010).
- Population viability monitoring:
 - In 2008, genetic collections of the two wild individuals of *Gouania vitifolia* located within the Keaau population unit were completed (U.S. Army Garrison 2010).
 - In 2010, staff of the Oahu Army Natural Resources Program collected propagules of *Gouania vitifolia* for genetic storage at the Keaau and Waianae Kai population units (U.S. Army Garrison 2010). During the same year, staff also monitored the individuals of *G. vitifolia* at both population units and observed no change in the status of the populations.
- Existing population management and restoration – In 2007, *Gouania vitifolia* was designated for expedited stabilization and a draft management plan was developed by the U.S. Army (U.S. Army Garrison 2007).
- Surveys / inventories – In 2009, an aerial survey for new individuals of *Gouania vitifolia* was conducted near the Keaau population unit, but no new individuals were observed (U.S. Army Garrison 2010).
- Population biology research – In 2009, a living collection of *Gouania vitifolia* was established at the U.S. Army nursery to study the breeding system of this species (U.S. Army Garrison 2009).

Synthesis:

In 2010, there were a total of 62 wild mature individuals of *Gouania vitifolia* (U.S. Army Garrison 2010). At the Keaau population unit there were 60 mature and a single immature individual and at Waianae Kai there were two mature reintroduced individuals (U.S. Army Garrison 2010).

Stabilizing, downlisting, and delisting objectives are provided in the recovery plan for plants from the island of Oahu (USFWS 1998), based on whether the species is an annual, a short-lived perennial (fewer than 10 years), or a long-lived perennial. *Gouania vitifolia* is a short-lived perennial, and to be considered stable, the taxon must be managed to control threats (*e.g.*, fenced) and be represented in an *ex situ* (at other than the plant's natural location, such as a nursery or arboretum) collection. In addition, a minimum of three populations should be documented on the island of Oahu. Each of these populations must be naturally reproducing and increasing in number, with a minimum of 50 mature individuals per population.

The interim stabilization goals for this species have only been partially met, as currently there is only a single population containing 50 or more mature individuals at Keaau population unit (Table 1); however, all threats are only being partially managed (Table 2). Therefore, *Gouania vitifolia* meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

- Captive propagation for genetic storage and reintroduction:
 - Continue to collect seeds from tagged individuals, keeping close track of the maternal source for use in *ex situ* propagation.
 - Continue to collect seeds from all existing populations and send to at least two or three different venues for propagation.
- Reintroduction / translocation implementation:
 - Continue to reintroduce the species back into its known historical range on Hawaii Island.
 - On Oahu, initiate reintroductions of this species back into its known historical range once areas are protected from threats.
- Ungulate exclosures:
 - Continue to construct fenced exclosures around existing and reintroduced populations to provide protection from feral ungulates.
 - Monitor fenced exclosures for evidence of breaching by feral ungulates.
- Ungulate control – Continue to protect all populations against disturbances from feral ungulates.
- Ecosystem-altering invasive plant species control – Control invasive introduced plant species around all populations.
- Surveys / inventories – Conduct thorough surveys of all suitable habitats where *Gouania vitifolia* was historically seen.
- Fire protection – Develop and implement a fire management plan for all populations of *Gouania vitifolia*.
- Alliance and partnership development – Work with the U.S. Army, Hawaii Division of Forestry and Wildlife, and other land managers to continue planning and contribute to implementation of ecosystem-level restoration and management to benefit this species.
- Threats research – Assess the modeled effects of climate change on this species, and use to determine future landscape needed for the recovery of the species.

Table 1. Status of *Gouania vitifolia* from listing through current 5-year review.

Date	No. wild indivs	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1994 (listing)	2-6 (Oahu)	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 (recovery plan)	8 (Oahu) 18 (Hawaii)	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2003 (critical habitat)	44 (Oahu) 3 (Hawaii)	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2007 (5-year review)	~64 (Oahu) ~20 (Hawaii)	0	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2012 (5-yr review)	62 (Oahu) 12 (Hawaii)	1 (Hawaii)	All threats managed in all 3 populations	Partially (see Table 2)
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	Partially

Table 2. Threats to *Gouania vitifolia* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulates – Degradation of habitat	A, D	Ongoing	Partially: The Waianae Kai population unit is fenced
Established ecosystem-altering invasive plant species	A	Ongoing	No
Fire	E	Ongoing	No
Established invasive plant species competition	E	Ongoing	No
Climate change	A, E	Increasing	No

References:

See previous 5-year review for a full list of references (USFWS 2007). Only references for new information are provided below.

Center for Conservation Research and Training Seed Storage Laboratory. 2010. Seed bank inventory. Honolulu, Hawaii. Microsoft Access database. Unpublished.

Harold L. Lyon Arboretum. 2010. Micropropagation database. Honolulu, Hawaii. Unpublished.

Pahole Rare Plant Nursery. 2010. Controlled propagation report to U.S. Fish and Wildlife Service. Pahole, Hawaii. Unpublished.

U.S. Army Garrison. 2007. 2007 status report for the Makua implementation plan and the draft Oahu implementation plan. U.S. Army Garrison, Hawaii and Pacific Cooperative Park Studies Unit. Schofield Barracks, Hawaii. 611 pages. Available online at <<http://manoa.hawaii.edu/hpicesu/dpw.htm>>.

U.S. Army Garrison. 2008a. 2008 status report for the Makua implementation plan. U.S. Army Garrison, Hawaii and Pacific Cooperative Park Studies Unit. Schofield Barracks, Hawaii. 210 pages. Available online at <<http://manoa.hawaii.edu/hpicesu/dpw.htm>>.

U.S. Army Garrison. 2008b. Nursery inventory summary. Schofield Barracks, Hawaii. Unpublished.

U.S. Army Garrison. 2009. 2009 status report for the Makua and Oahu implementation plans. U.S. Army Garrison, Hawaii and Pacific Cooperative Park Studies Unit. Schofield Barracks, Hawaii. 711 pages. Available online at <<http://www.botany.hawaii.edu/faculty/duffy/DPW.htm>>.

U.S. Army Garrison. 2010. 2010 status report for the Makua and Oahu implementation plans. U.S. Army Garrison, Hawaii and Pacific Cooperative Park Studies Unit. Schofield

- Barracks, Hawaii. 730 pages. Available online at <http://manoa.hawaii.edu/hpicesu/dpw.htm>.
- [USFWS] U.S. Fish and Wildlife Service. 1998. Recovery plan for Oahu plants. U.S. Fish and Wildlife Service, Portland, Oregon. 207 pages + appendices. Available online at <http://www.fws.gov/pacificislands/recoveryplans.html>.
- [USFWS] U.S. Fish and Wildlife Service. 2007. *Gouania vitifolia* (no common name) 5-year review summary and evaluation. U.S. Fish and Wildlife Service, Honolulu. 11 pages. Available at http://ecos.fws.gov/docs/five_year_review/doc1134.pdf.
- USFWS 2012. Endangered and threatened wildlife and plants; listing 38 species on Molokai, Lanai, and Maui as endangered and designating critical habitat on Molokai, Lanai, Maui and Kahoolawe for 135 species. Federal Register 77(112):34464-34775.
- Volcano Rare Plant Facility. 2009. Controlled propagation report to U.S. Fish and Wildlife Service. Volcano, Hawaii. Unpublished.
- Volcano Rare Plant Facility. 2010. Controlled propagation report to U.S. Fish and Wildlife Service. Volcano, Hawaii. Unpublished.
- Waimea Arboretum. 2009. Controlled propagation report to U.S. Fish and Wildlife Service. Waimea, Hawaii. Unpublished.
- Waimea Arboretum. 2010. Controlled propagation report to U.S. Fish and Wildlife Service. Waimea, Hawaii. Unpublished.

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U.S. FISH AND WILDLIFE SERVICE
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Pre-1996 DPS listing still considered a listable entity? N/A

Recommendation resulting from the 5-year review:

<u> </u>	Delisting
<u> </u>	Reclassify from Endangered to Threatened status
<u> </u>	Reclassify from Threatened to Endangered status
<u> X </u>	No Change in listing status

Appropriate Listing/Reclassification Priority Number, if applicable:

Review Conducted By:

Chelsie Javar, Fish and Wildlife Biologist
Marie Bruegmann, Plant Recovery Coordinator
Jess Newton, Endangered Species Recovery Program Leader
Assistant Field Supervisor for Endangered Species

Field Supervisor, Pacific Islands Fish and Wildlife Office

for

 Jess Newton

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