

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Phyllostegia wawrana* (No common name)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2007. Endangered and threatened wildlife and plants; initiation of 5-year reviews of 71 species in Oregon, Hawaii, Commonwealth of the Northern Mariana Islands, and Territory of Guam. Federal Register 72(45):10547-10550.

Lead Region/Field Office:

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

Name of Reviewer(s):

Christian Torres-Santana, Student Trainee Biologist

Marie Bruegmann, Plant Recovery Coordinator

Marilet A. Zablan, Recovery Program Leader and acting Assistant Field Supervisor for Endangered Species

Gina Shultz, Deputy Field Supervisor

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 (USFWS) beginning on March 8, 2007. The review was based on the final critical habitat designation for *Phyllostegia wawrana* and other species from the island of Kauai, as well as a review of current, available information (USFWS 2003). The Bernice P. Bishop Museum provided an initial draft of portions of the 5-year review. The evaluation of the status of the species was prepared by our lead PIFWO biologist and reviewed by the Plant Recovery Coordinator. The document was then reviewed by the Recovery Program Leader and acting Assistant Field Supervisor for Endangered Species, and Deputy Field Supervisor, 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).

Application of the 1996 Distinct Population Segment (DPS) Policy:

This Policy does not apply to plants.

Review Analysis:

Please refer to the final critical habitat designation for *Phyllostegia wawrana* published in the Federal Register on February 27, 2003 (USFWS 2003) for a complete review of the species' status (including biology and habitat), threats, and management efforts. No new

threats and no significant new information regarding the species biological status have come to light since listing to warrant a change in the Federal listing status of *P. wawrana*.

At the time of Federal listing there were reported to be 20 to 30 individuals of *Phyllostegia wawrana* in the Makaleha Mountains and another five or six plants in Honopu Valley, on Kauai (USFWS 1996). In 2003, the estimated population numbers had been reduced to 15 to 20 plants (USFWS 2008). In 2004, new surveys increased the numbers to approximately 45 to 55 individuals in three populations (Perlman 2006). The largest population (25 to 35 plants) occurs in Makaleha, which is privately owned (USFWS 2003).

The major threats to *Phyllostegia wawrana* remain habitat degradation by feral pigs (*Sus scrofa*) and goats (*Capra hircus*) (Factors A and D); and competition with introduced invasive plant species such as *Rubus rosifolius* (thimbleberry), *R. argutus* (prickly Florida blackberry), *Erigeron karvinskianus* (daisy fleabane), *Passiflora tarminiana* (banana poka), *Paspalum conjugatum* (Hilo grass), *Erechtites valerianifolia* (fireweed), and *Melastoma candidum* (Indian rhododendron) (Factor E) (USFWS 1996, 1998, 2003, 2008).

In addition to all of the other threats, species like *Phyllostegia wawrana* that are endemic to a small portion of a single island are inherently more vulnerable to extinction than widespread species because of the higher risks posed to a few populations and individuals by random demographic fluctuations and localized catastrophes such as hurricanes, landslides and disease outbreaks (Factor E). When considered on their own, the natural processes associated with being a single island endemic do not affect *P. wawrana* to such a degree that it is threatened or endangered with extinction in the foreseeable future, but these natural processes can exacerbate the threat from anthropogenic factors, such as habitat loss from or predation by introduced species (Factor E) (USFWS 1998).

Currently there is no known material from this species in genetic storage.

Stabilizing, downlisting, and delisting objectives are provided in the recovery plan for plants from the island of Kauai (USFWS 1998), based on whether the species is an annual, a short-lived perennial (fewer than ten years), or a long-lived perennial. *Phyllostegia wawrana* is a short-lived perennial, and to be considered stabilized, which is the first step in recovering the species, 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 Kauai. Each of these populations must be naturally reproducing and increasing in number, with a minimum of 50 mature individuals per population.

The stabilization goals for this species have not been met (see Table 1), as only 45 to 55 individuals are known and none of the threats are being managed. Therefore, *Phyllostegia wawrana* meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

- Develop methods for propagation and establish *ex situ* genetic collection.
- Construct enclosure fences to protect individuals from the negative impacts of feral ungulates, and eradicate introduced invasive plant species within the enclosures.
- Enhance current natural populations to increase the number of individuals.
- Survey geographical and historical range for a thorough current assessment of species.
- Assess genetic variability within extant populations.
- Study *Phyllostegia wawrana* populations with regard to population size and structure, geographical distribution, flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, limiting factors, and threats.

References:

Perlman, S. 2006. Plant Extinction Prevention status of Kauai species. August 28, 2006. Unpublished.

[USFWS] U.S. Fish and Wildlife Service. 1996. Endangered and threatened wildlife and plants; determination of endangered or threatened status for nineteen plant species from the Island of Kauai, Hawaii; final rule. Federal Register 61(198):53070-53089.

[USFWS] U.S. Fish and Wildlife Service. 1998. Kauai II addendum to the recovery plan for the Kauai plant cluster. U.S. Fish and Wildlife Service, Portland, OR. 84 pages + appendices.

[USFWS] U.S. Fish and Wildlife Service. 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. Federal Register 68(39):9116-9479.

[USFWS] U.S. Fish and Wildlife Service. 2008. Rare plant tracking database. Pacific Islands Fish and Wildlife Office, Honolulu, HI. Accessed on April 28, 2008. Unpublished.

Table 1. Status of *Phyllostegia wawrana* from listing through 5-year review.

Date	No. wild individuals	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1996 (listing)	25-36	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 (recovery plan)	45-55	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2003 (critical habitat)	15-20	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2008 (5-year review)	45-55	0	All threats managed	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No

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SIGNATURE PAGE for 5-YEAR REVIEW on *Phyllostegia wawrana*
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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

Acting Field Supervisor, Pacific Islands Fish and Wildlife Office

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Date 21 July 2009