

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Labordia tinifolia* var. *wahiawaensis* (Kamakahala)

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):

Annie Marshall, Pacific Islands Fish and Wildlife Office, Fish and Wildlife Biologist
Marie Bruegmann, Pacific Islands Fish and Wildlife Office, Plant Recovery Coordinator
Marilet A. Zablan, Pacific Islands Fish and Wildlife Office, Recovery Program Leader and acting Assistant Field Supervisor for Endangered Species

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 March 8, 2007. The review was based on the final critical habitat designation for *Labordia tinifolia* var. *wahiawaensis* and other species from the island of Kauai and Niihau (USFWS 2003), as well as a review of current, available information. The Bernice P. Bishop Museum provided an initial draft of portions of the five-year review and they also provided recommendations for conservation actions needed prior to the next five-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 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 *Labordia tinifolia* var. *wahiawaensis* 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 *Labordia tinifolia* var. *wahiawaensis*.

More than 100 individuals of this long-lived perennial were known from the Wahiawa drainage in the Wahiawa Mountains before Hurricane Iniki ravaged Kauai in 1992. At the time that this taxon was federally listed as endangered (USFWS 1996), only 20 to 30 individuals still survived. Perlman (2006) confirmed that a single restricted population of 20 to 30 individuals continued to survive as of September 2005. Our database reflected no change in numbers (USFWS 2008). The taxon has not been discovered beyond its very restricted present habitat in the Wahiawa Drainage from about 630 to 740 meters (2,070 to 2,430 feet) elevation within a 0.8- by 1.2-kilometer (0.5- by 0.75-mile) area (USFWS 1996). The most current information indicates that populations occur on privately-owned lands and no management plans or active management activities for this taxon are known (USFWS (2003, 2008).

The following threats remain: competition with introduced invasive plant species, especially *Psidium cattleianum* (strawberry guava) (Factor E); habitat degradation by pigs (*Sus scrofa*) (Factors A and D); trampling by humans (Factor E); the threat of single catastrophic events, such as hurricanes or landslides; and reduced reproductive vigor due to small number of extant populations and individuals (Factor E). In addition, little is known about the life history of *Labordia tinifolia* var. *wahiawaensis*, including flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors (USFWS 2003).

National Tropical Botanical Garden (2008) reported 352 seeds in genetic storage. Plants were in cultivation at Waimea Arboretum on Oahu in 1997 (USFWS 1998), but no longer survive (Waimea Valley Arboretum 2008).

Stabilizing, downlisting, and delisting objectives are provided in our recovery plan for single-island plants (USFWS 1999), based on whether the species is an annual, a short-lived perennial (fewer than ten years), or a long-lived perennial. *Labordia tinifolia* var. *wahiawaensis* 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* (off-site) collection. In addition, a minimum of three populations should be documented on Kauai. Each of these populations must be naturally reproducing and increasing in number, with a minimum of 50 mature individuals per population.

The stabilization and recovery goals for this species have not been met, as only 20 to 30 individuals are known and no threats are being managed (Table 1). Therefore, *Labordia tinifolia* var. *wahiawaensis* meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

- Continue to collect material for genetic storage, future propagation and reintroduction.
- Construct large-scale fences around all naturally occurring and reintroduced individuals to control feral ungulates.
- Control introduced invasive plant species around wild individuals.

- Work with the Kauai Watershed Alliance to continue and expand ecosystem-level management of the Wahiawa Bog area.
- Reintroduce individuals into protected suitable habitat within historical range.
- Investigate techniques to improve natural recruitment.
- Assess genetic variability within extant population.
- Study *Labordia tinifolia* var. *wahiawaensis* 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:

National Tropical Botanical Garden. 2008. Report on controlled propagation of listed and candidate species, as designated under the U.S. Endangered Species Act. National Tropical Botanical Garden, Lawai, HI. 11 pages. Unpublished.

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. 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, ix, 84 pp + 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. 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.

[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 *Labordia tinifolia* var. *wahiawaensis* from listing through 5-year review.

Date	No. wild indivs	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1996 – listing	20-30	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 25 mature individuals each	No
1998 – recovery plan	20-30	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 25 mature individuals each	No
2003 – critical habitat	20-30	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 25 mature individuals each	No
2008 – 5-yr review	20-30	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 25 mature individuals each	No

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SIGNATURE PAGE for 5-YEAR REVIEW of *Labordia tinifolia* var. *wahiawaensis*

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

Patrick Sasser

Date 6/2/09