

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Schiedea kauaiensis* (No common name)

Current Classification: Endangered

FR Notice announcing initiation of this review:

U.S. Fish and Wildlife Service (USFWS). 2006. Endangered and threatened wildlife and plants; initiation of 5-year reviews of 70 species in Idaho, Oregon, Washington, Hawaii, and Guam. Federal Register 71(69):18345-18348.

Lead Region/Field Office:

Region 1

Pacific Islands Fish and Wildlife Office, Gina Shultz, Assistant Field Supervisor
Endangered Species

Name of Reviewer(s):

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 based on the final critical habitat designation for *Schiedea kauaiensis* and other species from the island of Kauai, as well as a review of current, available information. The National Tropical Botanical Garden, subcontracted by the Hawaii Biodiversity and Mapping Program, provided an initial draft of portions of the 5-year review.

Background:

For information regarding the species listing history and other facts, please refer to the Threatened and Endangered Species System (TESS) which is part of the Fish and Wildlife Service's Environmental Conservation On-line System (ECOS) database.

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 *Schiedea kauaiensis* 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 *S. kauaiensis*.

Historically, *Schiedea kauaiensis* was known from the northwestern side of Kauai, from Papaa to Mahanaloa. At the time of listing, 15 individuals were known from two

populations (USFWS 1996). Ten plants were observed in Kuia Natural Area Reserve in 1991, at 671 meters (2,200 feet) elevation. Two plants were found in the same area in 1994, three in 1998, and one in 2003 (National Tropical Botanical Garden 2007a; Hawaii Biodiversity and Mapping Program 2005). In the Kalalau Valley, at 790 meters (2,592 feet) elevation, five plants were seen in 1992. In the Makaha Valley, one plant was observed in 1993. Both the Kalalau and Makaha populations are now likely gone, given the degradation of habitat at those sites (S. Perlman, National Tropical Botanical Garden, pers. comm. 2007). In Limahuli Valley, one subpopulation is on the west side of the valley ridge at 304 to 396 meters (1,000 to 1,300 feet) elevation. Ten plants were observed there in 2006. On the east side of valley one additional individual is known (National Tropical Botanical Garden 2007a). Currently, two populations are known, totaling 12 individuals.

Threats to *Schiedea kauaiensis* include habitat destruction by feral goats (*Capra hircus*), pigs (*Sus scrofa*), and cattle (*Bos taurus*) (Factors A and D); landslides and erosion resulting from the ungulate destruction of habitat (Factor E); competition from invasive introduced plant species (Factor E), including *Ageratina riparia* (Hamakua pamakani), *Clidemia hirta* (Koster's curse), *Clusia rosea* (autograph tree), *Erigeron karvinskianus* (daisy fleabane), *Kalanchoe* spp. (air plant), *Lantana camara* (lantana), *Psidium guajava* (common guava), *Schefflera actinophylla* (octopus tree), *Schinus terebinthifolius* (Christmasberry), *Rubus rosifolius* (thimbleberry), *Passiflora mollissima* (banana poka), *Rubus argutus* (prickly Florida blackberry), *Deparia petersenii* (no common name), *Drymaria cordata* (pipili), and *Paspalum conjugatum* (Hilo grass) (USFWS 1998; National Tropical Botanical Garden 2007a). *Schiedea kauaiensis* is also potentially threatened by fire, particularly in years of low rainfall (USFWS 2003).

In addition to all of the other threats, species like *Schiedea kauaiensis* that are endemic to small portions 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 and disease outbreaks (Factor E). When considered on their own, the natural processes associated with being a single island endemic do not affect *S. kauaiensis* 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 for human development or predation by alien species (Factor E) (USFWS 1998).

Seed is not often found, but propagation has been successful from cuttings. In 2005, National Tropical Botanical Garden outplanted ten plants in the Lawai Forest Restoration where ungulates are not a threat and in 2007, five plants at Limahuli, within a fenced area (National Tropical Botanical Garden 2007a and b).

Stabilizing, downlisting, and delisting objectives are provided in the addendum to 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 10 years), or a long-lived perennial. *Schiedea kauaiensis* 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 stabilization goals for this species have not been met (see Table 1). Therefore, *Schiedea kauaiensis* meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

- Collect material from every remaining individual for genetic storage and reintroduction.
- Control ungulates and weeds in the vicinity of the remaining wild individuals.
- Continue reintroducing individuals into protected suitable habitat within historical range.
- Study *Schiedea kauaiensis* populations with regard to population size and structure, flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors. There is a need to monitor current occurrences and search for more individuals, as well as to continue genetic storage, propagation and outplanting

References:

Hawaii Biodiversity and Mapping Program. 2005. Program Database. Unpublished.

National Tropical Botanical Garden. 2007a. Report on controlled propagation of species, as designated under the U.S. Endangered Species Act. Unpublished.

National Tropical Botanical Garden. 2007b. Living Collections Database. Available online at <http://ntbg.org/conservation/database.php>.

[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. 1998. Endangered and threatened wildlife and plants; addendum to the Recovery Plan for the Kauai plant cluster. U.S. Fish and Wildlife Service. Portland, Oregon. 84+ pages.

[USFWS] U.S. Fish and Wildlife Service. 1996. Determination of endangered status for 14 plant taxa from the Hawaiian Islands. Federal Register 61(198): 53108-53124.

Personal Communication:

Perlman, Steve. 2007. Field Botanist, National Tropical Botanical Garden. Personal communication. July 20, 2007.

Table 1. Status of *Lobelia monostachya* from listing through 5-year review.

Date	No. wild indivs	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1996 – listing	15	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 – recovery plan	15	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2003 – critical habitat	22	0	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2007 – 5-yr review	12	15	All threats managed	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No

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SIGNATURE PAGE for 5-YEAR REVIEW on *Schiedea kauaiensis*

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

Field Supervisor, Fish and Wildlife Service

Approve *Patricia*

Date 1/18/08