

## 5-YEAR REVIEW

Short Form Summary

**Species Reviewed:** *Silene perlmanii* (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 58 species in Washington, Oregon, California, and Hawaii. Federal Register 75(226):71726-71729.

### **Lead Region/Field Office:**

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

### **Name of Reviewer(s):**

Jiny Kim, Fish and Wildlife Biologist, PIFWO

Daniel Clark, Oahu, Kauai, Northwest Hawaiian and American Samoa Islands Team  
Manager, PIFWO

Marie Brueggemann, Plant Recovery Coordinator, PIFWO  
Recovery Program Lead, PIFWO

Kristi Young, Programmatic Deputy Field Supervisor, 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 January 31, 2012. The review was based on a review of current, available information since the last five-year review for *Silene perlmanii* (USFWS 2008). The National Tropical Botanical Garden provided an initial draft of portions of the five-year review and recommendations for conservation actions needed prior to the next five-year review. The document was reviewed by the Fish and Wildlife Biologist, Islands Team Manager, and Plant Recovery Coordinator, followed by the Recovery Program Lead. It was subsequently reviewed and approved by the Programmatic Deputy Field Supervisor.

### **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](http://ecos.fws.gov/tess_public)).

### **Review Analysis:**

Please refer to the previous 5-year review for *Silene perlmanii* published on January 18, 2008 (available at [http://ecos.fws.gov/docs/five\\_year\\_review/doc1808.pdf](http://ecos.fws.gov/docs/five_year_review/doc1808.pdf)) for a complete review of the species' status, threats, and management efforts. No new threats or 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. perlmanii*.

This short-lived shrub is endangered and occurs on the island of Oahu. The current status and trends for *Silene perlmanii* are provided in the tables below.

#### New threats:

- Climate change - 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) funded climate modeling that will help resolve these spatial limitations. High spatial resolution climate outputs are expected in 2013.

#### New management actions:

- Captive propagation for genetic storage and reintroduction
  - Several hundred individuals were propagated at the Pahole Rare Plant Facility but were not outplanted due to the presence of an invasive snail species discovered in the nursery, in order to protect *in situ* native species. These individuals currently remain in the nursery, but have overgrown the containers and need to be outplanted. The Plant Extinction Prevention Program plans to outplant them in 2013 (S. Ching, Plant Extinction Prevention Program, pers. comm. 2012).
  - The Harold L. Lyon Arboretum (2012) has 35,330 seeds of *Silene perlmanii* from 57 different collections in seed storage and 11 plants, some grown from cuttings and some from seed, in micropropagation.
- Reintroduction / translocation
  - Two reintroductions were planted in 2010 in the Palikea area of Honouliuli. The first of these reintroductions started with 20 individuals, but at the last observation in 2011 there were only seven surviving individuals (S. Ching, pers. comm. 2012).
  - A second reintroduction started with 21 individuals, but in 2012 there were only six individuals remaining. These individuals are mature and flowering, but do not appear healthy (S. Ching, pers. comm. 2012).

#### Synthesis:

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. *Silene perlmanii* 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 (Table 1), since no populations contain 50 or more mature individuals. Additionally, all threats are not being sufficiently managed throughout all populations (Table 2). Therefore, *Silene perlmanii* 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 - Collect cuttings or seed from tagged individuals, keeping close track of the maternal source for use in *ex situ* propagation.
- Reintroduction / translocation
  - While surveying for new populations or reintroduced populations, determine which sites are least invaded by invasive introduced plant species and which appear to have the highest likelihood of maintaining new reintroductions.
  - Continue to reintroduce the species back into its known historical range.
- Ungulate exclosures - Construct, maintain, and monitor ungulate-proof exclosures around each population.
- Ungulate control – Protect all populations against disturbances from feral ungulates.
- Ecosystem-altering invasive plant species control – Control invasive introduced plant species around all populations.
- Surveys / inventories – Survey geographical and historical range for a thorough current assessment of the species status.
- Alliance and partnership development - Enhance coordination and collaboration among other land managers to initiate planning and contribute to implementation of ecosystem-level restoration and management to benefit this species.
- Genetic research – Assess genetic variability within extant individuals.
- Population biology research – Study *Silene perlmanii* with regard to geographical distribution, flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, limiting factors, and threats.
- Threats research – Assess the modeled effects of climate change on this species, and use the results to determine future landscape needed for the recovery of the species.

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

<b>Date</b>	<b>No. wild individuals</b>	<b>No. outplanted</b>	<b>Stabilization Criteria identified in Recovery Plan</b>	<b>Stabilization Criteria Completed?</b>
1991 (listing)	few	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 (recovery plan)	0	0	All threats managed in all 3 populations	No
			Complete genetic storage	Yes
			3 populations with 50 mature individuals each	No
2003 (critical habitat)	0	12	All threats managed in all 3 populations	Partially
			Complete genetic storage	Yes
			3 populations with 50 mature individuals each	No
2008 (5-yr review)	0	3	All threats managed in all 3 populations	Partially
			Complete genetic storage	Yes
			3 populations with 50 mature individuals each	No
2013 (5-yr review)	0	13	All threats managed in all 3 populations	Partially (see Table 2)
			Complete genetic storage	Yes
			3 populations with 50 mature individuals each	No

**Table 2. Threats to *Silene perlmanii* and ongoing conservation efforts.**

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulates – Degradation of habitat by feral pigs	A, D	Ongoing	Partially
Established ecosystem-altering invasive plant species	A, E	Ongoing	Partially
Risk of extinction from stochastic events	E	Ongoing	No
Reduced reproductive vigor due to the small number of individuals	E	Ongoing	Partially
Climate change	A, E	Increasing	No

**References:**

See previous 5-year review for a full list of references (USFWS 2008). Only references for new information are provided below.

Harold L. Lyon Arboretum. 2012. Micropropagation database and seed storage databases. University of Hawaii at Manoa, Honolulu, Hawaii. Unpublished.

[USFWS] U.S. Fish and Wildlife Service. 1998. Recovery plan for the Oahu plants. Portland, Oregon. 207 pages + appendices.

[USFWS] U.S. Fish and Wildlife Service. 2008. *Silene perlmanii* (no common name) 5-year review summary and evaluation. U.S. Fish and Wildlife Service, Honolulu, Hawaii. 5 pages. Available online at [http://ecos.fws.gov/docs/five\\_year\\_review/doc1808.pdf](http://ecos.fws.gov/docs/five_year_review/doc1808.pdf).

**Personal Communications**

Ching, Susan. 2012. Oahu Coordinator, Plant Extinction Prevention Program. E-mail to Margaret Clark, National Tropical Botanical Garden, dated December 18, 2012. Subject: Five year review data needed.

**U.S. FISH AND WILDLIFE SERVICE**

SIGNATURE PAGE for 5-YEAR REVIEW of *Silene perlmanii* (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
- No Change in listing status

*acting deputy*

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Date 2013-08-15