5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Alsinidendron trinerve* (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):

Vickie Caraway, Plant Biologist, PIFWO

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

Marie Bruegmann, 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 *Alsinidendron trinerve* (USFWS 2009). 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 Plant Biologist, Islands Team Manager, and Plant Recovery Coordinator, followed by the Recovery Program Lead. It was subsequently reviewed and approved by the 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).

Review Analysis:

Please refer to the previous 5-year review for *Alsinidendron trinerve* published on July 21, 2009 (available at http://ecos.fws.gov/docs/five_year_review/doc2425.pdf) for a complete review of the species' status, threats, and management efforts. 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 *A. trinerve.*

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

New taxonomic information:
No new taxonomic information has been received since the last 5-year review (USFWS 2009). However, the 2012 supplement to the *Manual of the Flowering Plants of Hawaii* (Wagner *et al*. 2012) reiterates the change from the genus *Alsinidendron* to the currently accepted *Schiedea*. In 2012, USFWS revised the taxonomic status for this species when it revised critical habitat on Oahu, with no change in range or distribution (USFWS 2012). This species is now listed as *Schiedea trinervis*, and addressed as such for the remainder of this review.

New status information:

- In 2010, a few individuals of *Schiedea trinervis* were rediscovered in East Makalela, an area to be fenced after the signing of an U. S. Army Garrison and State of Hawaii real estate agreement (U.S. Army Garrison 2010).
- In 2011, there were a total of 666 individuals in all populations of which 200 were mature and 185 were immature individuals, and 281 were seedlings (U.S. Army Garrison 2011).

New threats:

- Climate change - Climate change may 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:

- Ungulate exclosures
    - Construction on the Kaala management unit fence has commenced, and when completed, pigs will be removed (U.S. Army Garrison 2010, 2011.
    - The fence line to extend the Waianae Kai management unit has been surveyed and construction awaits approval of a real estate agreement with the State of Hawaii (U.S. Army Garrison 2010, 2011).
    - Limited goat control to protect the single population at East Makaleha has been accomplished (U.S. Army Garrison 2010, 2011).
- Captive propagation for genetic storage and reintroduction
    - Seeds collections stored for 10 years showed no decline in viability when held at the preferred storage conditions (U.S. Army Garrison 2010, 2011).

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, or a long-lived perennial. *Schiedea trinervis* is a short-lived perennial and to be considered stabilized, the first step in recovering the species, the taxon must be managed to control threats and must be represented at an *ex situ* (off site; 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 are partially met, as only one population exists of 50 or more mature individuals (Table 1), and all threats are not being sufficiently managed throughout the populations (Table 2). Therefore, *Schiedea trinervis* meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

- Surveys/inventories
  - Search for additional individuals of *Schiedea trinervis* in its historical range.
  - Continue mapping the entire range of populations.
- Population biology research
  - Study *Schiedea trinervis* 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.
  - Determine if additional populations should be reintroduced or if this species can be recovered with one large population.
- Genetic research - Assess genetic variability within the one extant population.
- Existing population management and restoration
  - Protect, manage within current wild populations
  - Manage all individuals of *Schiedea trinervis*.
- Alliance and partnership development - Alliance and partnership development - Continue planning and contribute to implementation of ecosystem-level management and restoration to benefit this species with the U.S. Army Garrison, Hawaii Division of Forestry and Wildlife, and other landowners.
- Captive propagation for genetic storage and reintroduction: Complete collection of fruit from wild individuals; augment these collections with seed from reintroduced individuals to add genetic diversity of *ex situ* seed storage.
- Ecosystem-altering invasive plant species control: Control introduced invasive plant species around wild and reintroduced plants.
- Ungulate exclosures - Construct large-scale fences to control feral ungulates around entire population and reintroduced individuals.
- Reintroduction / translocation - Continue reintroducing individuals into protected suitable habitat within historical range.
- Threats research - Investigate techniques to improve natural recruitment, including the development of an effective slug control method.

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

Date	No. wild individuals	No. outplanted	Stabilization Criteria identified in Recovery Plan	Stabilization Criteria Completed?
1991 (listing)	8	0	All threats managed in 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998(recovery plan)	108	40-45	All threats managed in 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	Partially
2003 (critical habitat)	18-34	0	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2008 (5-yr review)	697	0	All threats managed in 3 populations	Partially
			Complete genetic storage	Partially
			3 population with 50 mature individuals each	Partially
2011 (5-yr review)	200 mature, 466 immature – total 666	0	All threats managed in 3 populations	Partially (Table 2)
			Complete genetic storage	Yes
			3 populations with 50 mature individuals each	Partially, one population

Table 2. Threats to *Schiedea trinervis* and ongoing conservation efforts

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulates – habitat loss and modification	A, D	Ongoing	Partially: East Makaleha exclosure not completed
Military training activities	E	Ongoing	Partially
Ecosystem altering introduced plants	A, E	Ongoing	Partially: Ongoing in Kalena to East Makaleha
Trampling by humans along trails	E		Unknown
Collection by humans	B		Unknown
Slugs – predation or herbivory	C		Partial
Climate change	A, E	Increasing	No

References:

See previous 5-year review for a full list of references (USFWS 2009). Only references for new information are provided below.

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 on line at http://manoa.hawaii.edu/hpicesu/DPW/2010_YER/default.htm. Accessed 30 August 2012.

U.S. Army Garrison. 2011. 2011 Status report for the Makua and Oahu implementation plans. U.S. Army Garrison, Hawaii and Pacific Cooperative Park Studies Unit. Schofield Barracks, Hawaii. 269 pages. Available on line at http://manoa.hawaii.edu/hpicesu/DPW/2011_YER/default.htm. Accessed 30 August 2012.

[USFWS] U.S. Fish and Wildlife Service. 1998. Recovery plan for the Oahu plants. U.S. Fish and Wildlife Service, Portland, OR. 270+ pages.

[USFWS] U.S. Fish and Wildlife Service. 2009. *Alsinidendron trinerve* (no common name) 5-year review summary and evaluation. U.S. Fish and Wildlife Service, Honolulu, Hawaii. 10 pages. Available online at <http://ecos.fws.gov/docs/five_year_review/doc1123.pdf>.

[USFWS] U.S. Fish and Wildlife Service. 2012. Endangered and threatened wildlife and plants; endangered status for 23 species on Oahu and designation of critical habitat for 124 species; final rule. Federal Register 77:57648-57862.

Wagner, W.L., D.H. Herbst, N. Khan, and T. Flynn. 2012. Hawaiian vascular plant updates: a supplement to the manual of theflowering plants of Hawaii and

Hawaii's ferns and fern allies, version 1.3. Available online at <http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/Hawaiian_vascular_plant_updates_1.3.pdf>. Accessed August 21, 2012.

U.S. FISH AND WILDLIFE SERVICE

SIGNATURE PAGE for 5-YEAR REVIEW of *Schiedea trinervis* (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
__X__ No Change in listing status

acting deputy
Field Supervisor, Pacific Islands Fish and Wildlife Office

Maine M Bluegman Date 2013-08-13