

Alsinidendron viscosum
(No common name)

**5-Year Review
Summary and Evaluation**

**U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
Honolulu, Hawaii**

5-YEAR REVIEW

Species reviewed: *Alsinidendron viscosum* (No common name)

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5-YEAR REVIEW
***Alsinidendron viscosum*/ No common name**

1.0 GENERAL INFORMATION

1.1 Reviewers

Lead Regional Office:

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Lead Field Office:

Pacific Islands Fish and Wildlife Office, Gina Shultz, Deputy Field Supervisor,
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Cooperating Field Office(s):

N/A

Cooperating Regional Office(s):

N/A

1.2 Methodology used to complete the 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 Bernice P. Bishop Museum provided most of the updated information on the current status of *Alsinidendron viscosum*. The evaluation of the status of the species was prepared by the 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.

1.3 Background:

1.3.1 Federal Register (FR) Notice citation announcing initiation of this review:

USFWS. 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.

1.3.2 Listing history

Original Listing

FR notice: USFWS. 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.

Date listed: October 10, 1996

Entity listed: Species

Classification: Endangered

Revised Listing, if applicable

FR notice: N/A

Date listed: N/A

Entity listed: N/A

Classification: N/A

1.3.3 Associated rulemakings:

USFWS. 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.

Critical habitat was designated for *Alsinidendron viscosum* in four units totaling 836 hectares (2,067 acres) on Kauai. This designation includes habitat on State lands (USFWS 2003).

1.3.4 Review History:

Species status review [FY 2008 Recovery Data Call (September 2008)]:

Declining

Recovery achieved:

1 (0-25%) (FY 2008 Recovery Data Call)

1.3.5 Species' Recovery Priority Number at start of this 5-year review:

5

1.3.6 Current Recovery Plan or Outline

Name of plan or outline: USFWS. 1998. Kauai II addendum to the recovery plan for the Kauai plant cluster. U.S. Fish and Wildlife Service, Portland, OR. 84 pages + appendices.

Date issued: August 23, 1998

Dates of previous revisions, if applicable: N/A

2.0 REVIEW ANALYSIS

2.1 Application of the 1996 Distinct Population Segment (DPS) policy

2.1.1 Is the species under review a vertebrate?

Yes
 No

2.1.2 Is the species under review listed as a DPS?

Yes
 No

2.1.3 Was the DPS listed prior to 1996?

Yes
 No

2.1.3.1 Prior to this 5-year review, was the DPS classification reviewed to ensure it meets the 1996 policy standards?

Yes
 No

2.1.3.2 Does the DPS listing meet the discreteness and significance elements of the 1996 DPS policy?

Yes
 No

2.1.4 Is there relevant new information for this species regarding the application of the DPS policy?

Yes
 No

2.2 Recovery Criteria

2.2.1 Does the species have a final, approved recovery plan containing objective, measurable criteria?

Yes
 No

2.2.2 Adequacy of recovery criteria.

2.2.2.1 Do the recovery criteria reflect the best available and most up-to date information on the biology of the species and its habitat?

Yes
 No

2.2.2.2 Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria?

 X *Yes*
 No

2.2.3 List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information:

A synthesis of the threats (Factors A, C, D, and E) affecting this species is presented in section 2.4. Factor B (overutilization for commercial, recreational, scientific, or educational purposes) is not known to be a threat to this species.

Stabilizing, downlisting, and delisting objectives are provided in the addendum to the recovery plan for the Kauai plant cluster (USFWS 1998), based on whether the species is an annual, a short-lived perennial (fewer than 10 years), or a long-lived perennial. *Alsinidendron viscosum* is a short-lived perennial, and to be considered stable, which is the first step in recovering the species, the taxon must be managed to control threats (*e.g.*, fenced, weeding, etc.) 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.

This recovery objective has not been met.

For downlisting, a total of five to seven populations of *Alsinidendron viscosum* should be documented on Kauai. Each of these populations must be naturally reproducing, stable or increasing in number, and secure from threats, with a minimum of 300 mature individuals per population. Each population should persist at this level for a minimum of five consecutive years before downlisting is considered.

This recovery objective has not been met.

For delisting, a total of eight to ten populations of *Alsinidendron viscosum* should be documented on Kauai. Each of these populations must be naturally reproducing, stable or increasing in number, and secure from threats, with 300 mature individuals per population for short-lived perennials. Each population should persist at this level for a minimum of five consecutive years before delisting is considered.

This recovery objective has not been met.

2.3 Updated Information and Current Species Status

In addition to the status summary table below, information on the species' status and threats was included in the final critical habitat rule referenced above in section 1.3.3 ("Associated Rulemakings") and in section 2.4 ("Synthesis") below,

which also includes any new information about the status and threats of the species.

Table 1. Status of *Alsinidendron viscosum* from listing through 5-year review.

Date	No. wild individuals	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1996 (listing)	40 - 60	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 (recovery plan)	100	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2003 (critical habitat)	319		All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2008 (5-year review)	30+	0	All threats managed	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No

2.3.1 Biology and Habitat [see note in section 2.3]

2.3.1.1 New information on the species' biology and life history:

2.3.1.2 Abundance, population trends (e.g. increasing, decreasing, stable), demographic features (e.g., age structure, sex ratio, family

size, birth rate, age at mortality, mortality rate, etc.), or demographic trends:

2.3.1.3 Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding, etc.):

2.3.1.4 Taxonomic classification or changes in nomenclature:

2.3.1.5 Spatial distribution, trends in spatial distribution (e.g. increasingly fragmented, increased numbers of corridors, etc.), or historic range (e.g. corrections to the historical range, change in distribution of the species' within its historic range, etc.):

2.3.1.6 Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem):

2.3.1.7 Other:

2.3.2 Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms) [see note in section 2.3]

2.3.2.1 Present or threatened destruction, modification or curtailment of its habitat or range:

2.3.2.2 Overutilization for commercial, recreational, scientific, or educational purposes:

2.3.2.3 Disease or predation:

2.3.2.4 Inadequacy of existing regulatory mechanisms:

2.3.2.4 Other natural or manmade factors affecting its continued existence:

2.4 Synthesis

This short-lived perennial was described by Horace Mann in 1866 and was known from the Kaholuamano, Kokee, Halemanu, Nawaimaka, and Waialae areas of northwestern Kauai. *Alsinidendron viscosum* was not seen since 1917 and considered extinct until a population of 11 mature plants was discovered on a ridge between Waialae and Nawaimaka Valleys in 1991. Two years later, another 20 to 30 individuals were found nearby on a ridge in Nawaimaka Valley, and ten individuals were located along the Mohihi-Waialae Trail (USFWS 1996). Thus, at that time the wild population was estimated at 40 to 60 plants. The critical habitat designation for Kauai and Niihau (USFWS 2003) reports seven populations with about 319 individuals, all on State-owned land at the Halemanu-Kokee Trail, Mohihi-Waialae

Trail, Kawaiiki Valley, Waialae Falls, and Nawaimaka Valley in the Alakai Wilderness Preserve, Kokee State Park, and the Na Pali-Kona Forest Reserve. Perlman (2006) listed four populations with 30 individuals as of mid-2005, and Katie Cassell of the Kokee Resource Conservation Program reported a few more individuals in Kokee in 2007, although exact numbers are unknown (USFWS 2008).

Described by H. Mann in 1866 as *Schiedea viscosa* from collections he made between 1864 and 1865 with W. Brigham, E.E. Sherff later transferred the species to *Alsinidendron*, which was considered distinct from *Schiedea* based on a suite of characters (Wagner *et al.* 1999). More recently, based on molecular and morphological data, Wagner *et al.* (2005) concluded that *Alsinidendron* formed a monophyletic group within *Schiedea*, and should therefore be subsumed into the latter genus. As such, the synonym *Schiedea viscosa* H. Mann was reestablished as the recognized species name. Therefore, we will refer to the taxon as *S. viscosa* throughout the remainder of this review.

Little is known about the biology and life history information of this species (USFWS 1998, 2003). *Schiedea* species are best germinated and grown at a mid-elevation site where the weather is cooler, or in a cool room (Lilleeng-Rosenberger 2005). Herbarium vouchers at Bernice P. Bishop Museum (C. Imada, Bernice P. Bishop Museum, pers. comm. 2008) and National Tropical Botanical Garden (2008a) were flowering in January, February, March, April, May, June, and December; fruiting specimens were found from January, February, March, April, July or August, and December. Seeds are self-fertilized in cultivation (Wagner *et al.* 2005).

Habitat degradation and predation by feral pigs (*Sus scrofa*), goats (*Capra hircus*), and mule deer (*Odocoileus hemionus*) (Factors A, C, and D), and competition from introduced invasive plant species (Factor E) continue to be the primary threats to the remaining individuals of *Schiedea viscosa*. Introduced invasive plant species threatening *S. viscosa* include *Lantana camara* (lantana), *Psidium guajava* (guava), *P. cattleianum* (strawberry guava), *Gravillea robusta* (silk-oak), *Erigeron karvinskianus* (daisy fleabane), *Hedychium gardnerianum* (kahili ginger), *Rubus argutus* (prickly Florida blackberry), and *Melinis minutiflora* (molasses grass) (USFWS 1996, 1998, 2003; K. Wood, Research Biologist, National Tropical Botanical Garden, pers. comm. 2008).

In addition to all of the other threats, species like *Schiedea viscosa* 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, landslides, flooding and disease outbreaks (Factor E). When considered on their own, the natural processes associated with being a single island endemic do not affect *S. viscosa* 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 (USFWS 1998).

To safeguard existing genetic material, propagation for genetic storage and reintroduction is occurring at the University of Hawaii's Harold L. Lyon Arboretum Micropropagation Laboratory and the National Tropical Botanical Garden. Harold L. Lyon Arboretum (2008) records list three individuals surviving in micropropagation from material received in 1996 and the National Tropical Botanical Garden (2008b) has 7,675 seeds in storage, all from a single wild individual from Koaie. Weller and Sakai's laboratory at University of California-Irvine has five plants in storage for research purposes (University of California at Irvine 2008).

The Division of Forestry and Wildlife on Kauai has a small fence around one of the populations and controls introduced invasive plants within the enclosure (M. Brueggemann, Plant Recovery Coordinator, USFWS, pers. comm. 2008).

The stabilization and recovery goals for this species have not been met, as only approximately 30 individuals are known and not all threats are being managed (see Table 1). Therefore, *Schiedea viscosa* meets the definition of endangered as it remains in danger of extinction throughout its range.

3.0 RESULTS

3.1 Recommended Classification:

Downlist to Threatened

Uplist to Endangered

Delist

Extinction

Recovery

Original data for classification in error

No change is needed

3.2 New Recovery Priority Number: N/A

Brief Rationale:

3.3 Listing and Reclassification Priority Number: N/A

Reclassification (from Threatened to Endangered) Priority Number: _____

Reclassification (from Endangered to Threatened) Priority Number: _____

Delisting (regardless of current classification) Priority Number: _____

Brief Rationale:

4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

- Continue seed collection for *ex situ* genetic storage and future reintroductions.
- Manage feral ungulates and invasive introduced plant species around remaining individuals.
- Augment populations as plants become available in nurseries and habitat is protected.
- Reintroduce individuals into suitable habitat within historical range that is being managed for known threats to this species.
- Assess of genetic variability within extant and *ex situ* populations.
- Continue surveys for additional populations and individuals in known historical sites and other areas of suitable habitat.
- Study *Schiedea viscosa* 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.
- Update the name of the listed entity in 50 CFR 17 to match the currently recognized taxonomy.

5.0 REFERENCES:

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Personal communications:

Imada, Clyde. Research Specialist, Bernice P. Bishop Museum, email communication to Christian Torres-Santana (USFWS) on June 30, 2008.

Wood, Ken. Research Biologist, National Tropical Botanical Garden. Email communication to Bernice P. Bishop Museum on June, 2008.

Signature Page
U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of *Alsinidendron viscosum* (No common name)

Current Classification: _____ E _____

Recommendation resulting from the 5-Year Review:

- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change needed

Appropriate Listing/Reclassification Priority Number, if applicable: _____

Review Conducted By:

Christian Torres-Santana, Student Trainee Biologist
Marie Brueggemann, Plant Recovery Coordinator
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Approved  Date 21 July 2009
Acting Field Supervisor, Pacific Islands Fish and Wildlife Office