

Myrsine juddii
(Kolea)

**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: *Myrsine juddii* (Kolea)

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5-YEAR REVIEW
***Myrsine juddii* (Kolea)**

1.0 GENERAL INFORMATION

1.1 Reviewers

Lead Regional Office:

Region 1, Jesse D'Elia, Chief, Division of Recovery, (503) 231-2071

Lead Field Office:

Pacific Islands Fish and Wildlife Office, Gina Shultz, Assistant Field Supervisor for Endangered Species, (808) 792-9400

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) between June 2006 and June 2007. The Hawaii Biodiversity and Mapping Program provided most of the updated information on the current status of *Myrsine juddii*. They also provided recommendations for conservation actions that may be needed prior to the next five-year review. The evaluation of the lead PIFWO biologist was reviewed by the Plant Recovery Coordinator. These comments were incorporated into the draft five-year review. The document was then reviewed by the Recovery Program Leader and the Assistant Field Supervisor for Endangered Species before final approval.

1.3 Background:

1.3.1 FR Notice citation announcing initiation of this review:

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.

1.3.2 Listing history

Original Listing

FR notice: USFWS. 1996. Determination of endangered status for twenty-five plant species from the Island of Oahu, Hawaii; final rule. Federal Register 61(198):53089-53108.

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 designations or nondesignations of critical habitat for 101 plant species from the island of Oahu, HI; final rule. Federal Register 68(116):35950-36406.

Critical habitat was designated for *Myrsine juddii* in two units totaling 950 hectares (2,347 acres) on the island of Oahu. This designation includes habitat on federal, state and private lands (USFWS 2003).

1.3.4 Review History:

Species status review [FY 2006 Recovery Data Call (September 2006)]:

Declining

Recovery achieved:

1 (0-25%) (FY 2006 Recovery Data Call)

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

8

1.3.6 Current Recovery Plan or Outline

Name of plan or outline: Recovery plan for the Oahu plants.1998. U.S. Fish and Wildlife Service, Portland, Oregon. 207 pages + appendixes.

Date issued: October 10, 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?

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, D, and E) affecting this species is presented in section 2.4. Factors B (overutilization for commercial, recreational, scientific, or educational purposes) and C (disease and predation) are not known to be a threat to this species.

Stabilizing, downlisting, and delisting objectives are provided in the recovery plan for Oahu plants (USFWS 1998), based on whether the species is an annual, a short-lived perennial (fewer than ten years), or a long-lived perennial. *Myrsine juddii* 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* (off-site) collection. In addition, a minimum of three populations should be documented on Oahu, and if possible, at least one other where the species now occurs or occurred historically. 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 *Myrsine juddii* should be documented on Oahu and at least one other island where it now occurs or occurred historically. 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 *Myrsine juddii* should be documented on Oahu and at least one other island where it now occurs or occurred historically. 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 I.C.5 ("Associated Rulemakings") and in section II.D ("Synthesis") below, which also includes any new information about the status and threats of the species.

Status of *Myrsine juddii* from listing through 5-year review.

| Date | No. wild inds | No. outplanted | Stability Criteria | Stability Criteria Completed? |
|-------------------------|---------------|----------------|---|-------------------------------|
| 1996 – listing | 500-3,000 | 0 | All threats managed in all 3 populations | No |
| | | | Complete genetic storage | No |
| | | | 3 populations with 50 mature individuals each | Partially |
| 1998 – recovery plan | 500-3,000 | 0 | All threats managed in all 3 populations | No |
| | | | Complete genetic storage | Partially |
| | | | 3 populations with 50 mature individuals each | Partially |
| 2003 – critical habitat | ~ 5,000 | Unknown | All threats managed in all 3 populations | No |
| | | | Complete genetic storage | Partially |
| | | | 3 populations with 50 mature individuals each | Partially |
| 2007 – 5-yr review | ~ 3,000 | 0 | All threats managed | No |
| | | | Complete genetic storage | Partially |
| | | | 3 populations with 50 mature individuals each | Partially |

2.3.1 Biology and Habitat

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)

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:

2.3.2.5 Other natural or manmade factors affecting its continued existence:

2.4 Synthesis

Myrsine juddii is endemic to the northern Koolau Mountains in the island of Oahu. At the time of listing, *Myrsine juddii* was known to have approximately 3,000 individuals scattered throughout the northern Koolau Mountains (USFWS 1996). Currently, the numbers of individuals are still estimated to be about 3,000, in one single, widespread population (U.S. Army 2005). The single population is distributed almost continuously in the summit ridge area and on side ridges and gulches. The population extends from Kaukonahua Gulch in the south to the area of Puukainapuaa in the north. Recorded elevations for the species range from 579 to 866 meters (1,900

to 2,840 feet). The total number of plants of *M. juddii* is estimated to be approximately 3,000, with little change since the time of listing. Little is known about the status and distribution of this species, and thorough surveys are needed for accurate counts and threat assessments (USFWS 1996; U.S. Army 2005; M. Bruegmann, pers. com. 2007).

Myrsine juddii occurs on ridge tops, on gulch slopes, and in gulch bottoms in wet forests and shrublands often dominated by *Metrosideros* spp. (ohia lehua) and *Dicranopteris linearis* (uluhe) (U.S. Army 2005).

Habitat degradation by feral pigs is considered one of the major threats to *Myrsine juddii* (Factors A and D). Feral pigs not only degrade the habitat of *M. juddii*, but also cause harm to the plants by feeding on them, trampling them, or uprooting them in search of invertebrate food (Factor A) (USFWS 1998 and 2003; US Army 2005). Competition from invasive introduced plant species is a major threat to *Myrsine juddii* (Factor E). The most serious invasive introduced plant species impacting *M. juddii* include *Clidemia hirta* (Koster's curse) and *Psidium cattleianum* (strawberry guava) (U.S. Army 2005; USWFS 1998).

Potential threats to *Myrsine juddii* are posed by military training activities in the Kawaihoa Training Area and on Schofield Barracks Military Reservation (USFWS 1998 and 2003). These threats to the species include trampling of plants during foot maneuvers, and the introduction of invasive introduced plants in the transport of personnel and equipment between training areas (Factor E). The species is also threatened by possible fires caused by military maneuvers, but is considered fairly low (Factor E) (U.S. Army 2005).

Three subpopulations of *Myrsine juddii* are planned for management *in situ* by the U.S. Army staff within fenced areas (U.S. Army 2005). Propagation for genetic storage and reintroduction is occurring in the U.S. Army's baseyard, the University of Hawaii's Lyon Arboretum Micropropagation and Seed Storage Laboratories, National Tropical Botanical Garden, the state of Hawaii's Division of Forestry and Wildlife's Pahole Rare Plant Facility, and at Waimea Valley Park. These organizations and agencies are working together to store genetic material long-term against stochastic events and to supply the U.S. Army with plants for reintroduction (U.S. Army 2005; Makua Implementation Team 2003; National Tropical Botanical Garden 2006; Harold L. Lyon Arboretum Micropropagation Laboratory 2006).

The stabilization and recovery goals for this species have not been met, as only one large population is known and not all threats are being managed, and the species is threatened by military activities. Little is known about the status and distribution of this species, and thorough surveys are needed for accurate counts and threat assessments. Therefore, *Myrsine juddii* meets the definition of endangered as it remains in danger of extinction throughout all of 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:

Brief Rationale:

3.3 Listing and Reclassification Priority Number:

- 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 reintroduction.
- Control introduced invasive plant species around wild plants.
- Fence areas to control feral pigs.
- Survey of current distribution and threats.
- Study 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.

5.0 REFERENCES:

Harold L. Lyon Arboretum Micropropagation Laboratory. 2006. Report on controlled propagation of species, as designated under the U.S. Endangered Species Act. Unpublished.

Makua Implementation Team. 2003. Implementation Plan for the Makua Military Reservation, Island of Oahu. Prepared for U.S. Army Garrison, Hawaii. Unpublished.

National Tropical Botanical Garden. 2006. Report on controlled propagation of listed and candidate species, as designated under the U.S. Endangered Species Act. Unpublished.

[U.S. Army] U.S. Army Garrison, Hawaii. 2005. Draft Implementation Plan for Oahu Training Areas: Schofield Barracks Military Reservation, Schofield Barracks East Range, Kawaihoa Training Area, and Kahuku Training Area. Unpublished.

[USFWS] U.S. Fish and Wildlife Service. 2003. Endangered and threatened wildlife and plants; final designations or nondesignations of critical habitat for 101 plant species from the island of Oahu, HI; final rule. Federal Register 68(116):35950-35993.

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

[USFWS] U.S. Fish and Wildlife Service. 1996. Determination of endangered status for twenty-five plant species from the Island of Oahu, Hawaii; final rule. Federal Register 61(198):53089-53108.

Personal Communications

Bruegmann, Marie. 2007. Plant Recovery Coordinator, USFWS. Memo to the files, April 2, 2007.

Signature Page
U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of *Myrsine juddii* (Kolea)

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:

Marilet A. Zablan, Recovery Program Leader and Acting Assistant Field Supervisor for Endangered Species, June 24, 2007

Marie Bruegmann, Plant Recovery Coordinator, April 2 and 9, May 31, and June 29, 2007

Christian Torres-Santana, Fish and Wildlife Biologist, March 23, April 4, and June 29, 2007

Approve  Date 1/18/08
Lead Field Supervisor, Fish and Wildlife Service