5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Abutilon eremitopetalum* (no common name)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2008. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 70 species in Idaho, Montana, Oregon, Washington, and the Pacific Islands. Federal Register 73(83):23264-23266.

Lead Region/Field Office:

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

Name of Reviewer(s):

Marie Bruegmann, Pacific Islands Fish and Wildlife Office, Plant Recovery Coordinator
Marilet A. Zablan, Pacific Islands Fish and Wildlife Office, Assistant Field Supervisor for Endangered Species
Jeff Newman, Pacific Islands Fish and Wildlife Office, Acting Deputy Field Supervisor

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 April 29. 2008. The review was based on the revised proposed critical habitat designation for *Abutilon eremitopetalum* and other species from the island of Lanai and the final rule in which critical habitat was determined not to be prudent for this species (USFWS 2002, 2003), as well as a review of current, available information. The National Tropical Botanical Garden provided an initial draft of portions of the review and recommendations for conservation actions needed prior to the next five-year review. The evaluation of Tamara Sherrill, biological consultant, was reviewed by the Plant Recovery Coordinator. The document was then reviewed by the Assistant Field Supervisor for Endangered Species and Acting Deputy Field Supervisor before submission to the Field Supervisor for approval.

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).

Application of the 1996 Distinct Population Segment (DPS) Policy:

This Policy does not apply to plants.

Review Analysis:

Please refer to the revised proposed critical habitat designation for *Abutilon eremitopetalum* published in the Federal Register on March 4, 2002 and the final rule for three Lanai species published January 9, 2003 (USFWS 2002, 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 *A. eremitopetalum*.

At the time of listing in 1991, the single population of 60 to 70 *Abutilon eremitopetalum* individuals discovered in 1987 had been reduced to 30 individuals in the Kahea Gulch on the northeastern part of Lanai (USFWS 1991, 1995). By 1993, only seven individuals existed in this population (USFWS 1995). *Abutilon eremitopetalum* is still represented by just one population, on the island of Lanai on private land at Kahea Gulch, off the Kehewai Ridge, at Waeopae Road, just above a dry stream bed. In May 2008, this population had 25 plants, including one immature individual. While this represents a decline from the number of plants found there in the late 1980s to early 1990s, there has been an increase since the location was fenced in 2001 by Robert Hobdy of the Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife, on Maui. At the time of fencing only one plant remained. Some plants now grow inside the exclosure and some outside (Perlman 2008; H. Oppenheimer, Plant Extinction Prevention Program, pers. comm. 2008; Tangalin 2008). It is no longer found at its other historical locations. Surveys of the historical location in Maunalei Gulch located no new plants (H. Oppenheimer, pers. comm. 2008).

The major threats to *Abutilon eremitopetalum* are fire (Factor E); habitat degradation and browsing by deer (*Axis axis*) and mouflon sheep (*Ovis musimon*) (Factors A and C); and competition from invasive introduced plant species including *Leucaena leucocephala* (haole koa), *Panicum maximum* (Guinea grass), *Lantana camara* (lantana), and *Schinus terebinthifolius* (Christmas berry) (Factor E) (USFWS 1991; H. Oppenheimer, pers. comm. 2008). An unknown invertebrate eats seeds and/or capsules of this plant (H. Oppenheimer, pers. comm. 2008). Chinese rose beetle (*Adoretus cinicus*) was considered a threat at the time the recovery plan was published (USFWS 1995), but has not been reported recently. Climate change may also pose a threat to *A. eremitopetalum* (Factors A and E). However, current climate change models do not allow us to predict specifically what those effects, and their extent, would be for this species.

In addition to all of the other threats, species like *Abutilon eremitopetalum* 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). The effects of these processes on this single-island endemic are exacerbated by anthropogenic threats, such as habitat loss for human development or predation by introduced species (Factor E) (USFWS 1995).

Conservation measures include maintenance and repair of the fence exclosure on the site at Kahea Gulch by the Plant Extinction Prevention program, and seed banking (H. Oppenheimer, pers. comm. 2008). To safeguard existing genetic material, seed banking of representatives of a majority of the remaining wild plants is occurring at the University of Center for Conservation Research and Training (2008), and some of the remaining

wild plants are represented in the National Tropical Botanical Garden seed bank (National Tropical Botanical Garden 2008). Seeds from one wild plant are stored at the Waimea Valley Arboretum (2008). Oppenheimer estimates that 68 percent of the individuals are represented in *ex situ* (off-site) seed storage (H. Oppenheimer, pers. comm. 2008).

Stabilizing, downlisting, and delisting objectives are provided in the recovery plan for plants from the island of Lanai (USFWS 1995), based on whether the species is an annual, a short-lived perennial (fewer than 10 years), or a long-lived perennial. *Abutilon eremitopetalum* is a long-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* collection. In addition, a minimum of three populations should be documented on the island of Lanai. Each of these populations must be naturally reproducing and increasing in number, with a minimum of 25 mature individuals per population.

The interim stabilization goals for this species have not been met (see Table 1), as only one population of 25 mature individuals exists and all threats are not being managed. While fencing to exclude browsing ungulates has increased the survival for *Abutilon eremitopetalum*, the small genetic base represented within so few individuals makes it extremely vulnerable to extinction from unexpected events such as hurricanes or fire. Therefore, *Abutilon eremitopetalum* meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

- Maintain fencing to exclude browsing by deer and mouflon sheep.
- Continue control of invasive introduced plant species.
- Propagate to the existing population and establishing other populations at historical locations or other suitable habitat that is protected.
- Determine what is eating the seed, and what methods will effectively stop seed predation.
- Work with the private landowner to initiate planning and contribute to implementation of ecosystem-level restoration and management to benefit this species.

References:

Center for Conservation Research and Training Seed Storage Facility. 2008. Seed conservation lab database. University of Hawaii at Manoa, Honolulu, Hawaii. Unpublished.

National Tropical Botanical Garden. 2008. Report on controlled propagation of listed and candidate species, as designated under the U.S. Endangered Species Act. National Tropical Botanical Garden, Lawai, Hawaii. Unpublished.

Perlman, S. 2008. Field notes summary for *Abutilon eremitopetalum*. National Tropical Botanical Garden, Kalaheo, Hawaii. Unpublished. 3 pages.

Tangalin, N. 2008. Field notes summary for *Abutilon eremitopetalum*. National Tropical Botanical Garden, Kalaheo, Hawaii. Unpublished. 1 page.

[USFWS] U.S. Fish and Wildlife Service. 1991. Endangered and threatened wildlife and plants; determination of endangered status for six plants from the island of Lanai, Hawaii. Federal Register 56(183):47686-47695.

[USFWS] U.S. Fish and Wildlife Service. 1995. Lanai plant cluster recovery plan. U.S. Fish and Wildlife Service, Portland, Oregon. 138 pages.

[USFWS] U.S. Fish and Wildlife Service. 2002. Endangered and threatened wildlife and plants; prudency determinations for eight plant species from the Hawaiian Islands, and proposed critical habitat designations for eighteen plant species from the island of Lanai, Hawaii. Federal Register 65: 82085-82126

[USFWS] U.S. Fish and Wildlife Service. 2003. Endangered and threatened wildlife and plants; final designation of critical habitat for three plant species from the island of Lanai, Hawaii; final rule. Federal Register 68(6):1220-1274.

[USFWS] U.S. Fish and Wildlife Service. 2008. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 70 species in Idaho, Montana, Oregon, Washington, and the Pacific Islands. 73(83):23264-23266.

Waimea Valley Arboretum. 2008. Report on controlled propagation of listed and candidate species, as designated under the U.S. Endangered Species Act. Waimea Arboretum, Waimea, Hawaii. Unpublished.

Personal Communications:

Oppenheimer, Hank. 2008. Maui Nui Coordinator, Plant Extinction Prevention Program, Department of Land and Natural Resources, Division of Forestry and Wildlife. Electronic mail message regarding *Abutilon eremitopetalum*. Email to Margaret Clark, National Tropical Botanical Garden, July 29, 2008.

Table 1. Status of *Abutilon eremitopetalum* from listing through 5-year review.

Date	No. wild indivs.	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1991 (listing)	30-70	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 25 mature individuals each	No
1995 (recovery plan)	7	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 25 mature individuals each	No
2003 (critical habitat)	7	0	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 25 mature individuals each	No
2008 (5-year review)	25	0	All threats managed	Partially
			Complete genetic storage	Partially
			3 populations with 25 mature individuals each	No

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SIGNATURE PAGE for 5-YEAR REVIEW of *Abutilon eremitopetalum*
(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

for **Field Supervisor, Pacific Islands Fish and Wildlife Office**

Date AUG 2 7 2010