

Hibiscadelphus distans
(Kauai Hau kuahiwi)

**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: *Hibiscadelphus distans* (Kauai hau kuahiwi)

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5-YEAR REVIEW
***Hibiscadelphus distans*/ Kauai hau kuahiwi**

1.0 GENERAL INFORMATION

1.1 Reviewers

Lead Regional Office:

Region 1, Endangered Species Program, Division of Recovery, Jesse Delia, (503) 231-2071

Lead Field Office:

Pacific Islands Fish and Wildlife Office, Gina Shultz, Deputy Field Supervisor, (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) beginning on April 8, 2007 . The Bernice P. Bishop Museum provided most of the updated information on the current status of *Hibiscadelphus distans* and also provided recommendations for conservation actions needed prior to the next five-year review. 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 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. 1986. Endangered and threatened wildlife and plants; determination of endangered status for *Hibiscadelphus distans* (Kauai hau kuahiwi). Federal Register 51:15903-15906.

Date listed: April 29, 1986

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. While the rulemaking contains some pertinent information, *Hibiscadelphus distans* was not part of the critical habitat lawsuit and subsequent stipulations USFWS (2003); therefore, this species was not included in the designation.

1.3.4 Review History:

Species status review [FY 2007 Recovery Data Call (September 2007)]:
Improving

Recovery achieved:

1 (0-25%) (FY 2007 Recovery Data Call)

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

2

1.3.6 Current Recovery Plan or Outline

Name of plan or outline: Recovery plan for *Hibiscadelphus distans*. U.S. Fish and Wildlife Service, Portland, OR, 42 pp.

Date issued: June 5, 1996.

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, 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.

Downlisting and delisting objectives are provided in the Recovery Plan for *Hibiscadelphus distans* (USFWS 1996).

For downlisting, the currently occupied habitat on Kauai must remain protected (under the jurisdiction of the Hawaii Division of Forestry and Wildlife) and managed to perpetuate the species (including maintenance of fencing to prevent feral ungulate damage); at least two additional populations must be located or established; each population must contain at least 50 reproductive individuals; newly established populations must be geographically isolated from the extant populations to ensure that all populations are not eliminated by a single small-scale catastrophic event; and a total of six populations must be maintained at the level of at least 50 reproductive individuals each for a minimum of nine years.

This recovery objective has not been met.

For delisting, threats, especially feral goats, must be sufficiently reduced or eliminated to allow the six populations to reproduce unassisted; the populations must be stable or increasing and contain an adequate number of reproductive, self-regenerating adults to produce a mixture of reproductive stages (e.g. seedlings, juveniles, and adults sufficient to ensure self-perpetuation); and there must be a 10-year average of at least 250 reproductive plants in each of the six populations.

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 *Hibiscadelphus distans* (Kauai Hau kuahiwi) from listing through 5-year review.

Date	No. wild individuals	No. outplanted	Downlisting Criteria identified in Recovery Plan	Downlisting Criteria Completed?
1986 (listing)	10	0	occupied habitat on Kauai must remain protected	Yes
			6 populations are maintained at the level of at least 50 reproductive individuals each for a minimum of 9 years	No
1996 (recovery plan)	190-210	1	occupied habitat on Kauai must remain protected	Yes
			6 populations are maintained at the level of at least 50 reproductive individuals each for a minimum of 9 years	Partially
2003 (critical habitat)	n/a	n/a	occupied habitat on Kauai must remain protected	Yes
			6 populations are maintained at the level of at least 50 reproductive individuals each for a minimum of 9 years	Partially
2008 (5-year review)	165-178	0	occupied habitat on Kauai must remain protected	Yes
			6 populations are maintained at the level of at least 50 reproductive individuals each for a minimum of 9 years	Partially

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:

2.3.2.5 Other natural or manmade factors affecting its continued existence:

2.4 Synthesis

Hibiscadelphus distans is critically endangered, with perhaps 20 known wild individuals. When federally listed in 1986 (USFWS 1986) only ten individuals were known to exist on State land in Koaie Canyon within the Na Pali Kona Forest Reserve. The discovery in 1991 of a large population of over 100 plants in

all size classes on a steep cliff above the known colony increased the known wild population dramatically. Hurricane Iniki in 1992, however, dealt a devastating blow to Kauai's native forests, and recent estimates (USFWS 2008) record only 20 wild individuals of *H. distans* in two populations. Numbers have been supplemented by propagation and outplantings, with at least 166 reintroductions from three or four population sources in 2006, and a report of over 200 outplants in four subpopulations in Piwa Valley exclosures, with signs of natural reproduction (USFWS 2008). National Tropical Botanical Garden (2007) reports controlled propagation of 609 seeds in storage, 80 plants in the nursery, and 20 seeds sown; they have outplanted 52 plants (all progeny of a single wild individual) in garden settings. Herbarium vouchers at Bishop Museum (C. Imada, Bishop Museum, pers. comm. 2008) and National Tropical Botanical Garden (2008) were noted to be flowering in January, February, April, November, and December; fruiting specimens were noted from January, April, June, November, and December.

The major threats to *Hibiscadelphus distans* include feral goat (*Capra hircus*) browsing within the canyon (Factor A), and associated erosional hazards created by goat traffic in cliff habitat (Factor A); naturally occurring events such as fires, landslides, and hurricanes (Factor E); competition with invasive introduced plant species such as *Lantana camara* (lantana) and *Melia azedarach* (pride of India); pink bollworm (*Pectinophora gossypiella*) infestation of seed capsules; and reduced reproductive vigor due to the small number of founder individuals (USFWS 1996; Hawaii Biodiversity and Mapping Program 2007). The Piwa Valley exclosures are being monitored for fence maintenance and weed control (M. Wysong, Hawaii Division of Forestry and Wildlife, pers. comm. 2008).

The stabilization and recovery goals for this species have not been met, as there are only two populations. Therefore, *Hibiscadelphus distans* 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 collecting for complete genetic storage.
- Construct larger-scale fencing to allow the existing populations to expand.
- Work with Hawaii Division of Forestry and Wildlife to initiate planning and contribute to implementation of ecosystem-level restoration and management to benefit this species in Koaie Canyon.
- Determine sites for establishing additional populations.
- Conduct searches to better determine whether plants from Hipalau thought to have been extirpated by Hurricane Iniki have actually disappeared and to search for any new populations within suitable habitat.
- Determine whether pink bollworm continues to infest seed capsules of *Hibiscadelphus distans*.
- Summarize available biological information to determine if anything has been learned in recent years about *Hibiscadelphus distans* flowering cycle, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, or limiting factors.

5.0 REFERENCES

National Tropical Botanical Garden. 2007. Report on controlled propagation of listed and candidate species, as designated under the U.S. Endangered Species Act. Unpublished.

National Tropical Botanical Garden. 2008. Herbarium database; <http://ntbg.org/herbarium/>. Accessed 10 March 2008.

[USFWS] U.S. Fish and Wildlife Service. 1986. Endangered and threatened wildlife and plants; determination of endangered status for *Hibiscadelphus distans* (Kauai Hau Kuahiwi). Federal Register 51(82):15903-15906.

[USFWS] U.S. Fish and Wildlife Service. 1996. Recovery plan for *Hibiscadelphus distans*. U.S. Fish and Wildlife Service, Portland, OR, 42 pp.

[USFWS] U.S. Fish and Wildlife Service. 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.

Personal Communications:

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

Wysong, M. 2008. Botanist. Hawaii Division of Forestry and Wildlife, Kauai District. Personal communication with M. Bruegmann (USFWS) on January 3, 2008.

