

Panicum niihauense
(Lau`ehu)

**5-Year Review:
Summary and Evaluation**

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

5-YEAR REVIEW
***Panicum niihauense* (Lau `ehu)**

I. GENERAL INFORMATION

A. 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 National Tropical Botanical Garden provided most of the updated information on the current status of *Panicum niihauense*. 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.

B. Reviewers

Lead Region -- Contact name(s) and phone numbers:

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

Lead Field Office -- Contact name(s) and phone numbers:

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

Cooperating Field Office(s) -- Contact name(s) and phone numbers:

N/A

Cooperating Region(s) -- Contact name(s) and phone numbers:

N/A

C. Background

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.

2. Species status:

Declining (FY 2006 Recovery Data Call)

3. Recovery achieved:

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

4. Listing history

Original Listing

FR notice: USFWS. 1996. Endangered of threatened wildlife and plants; determination of endangered or threatened status for fourteen plant taxa from the Hawaiian Islands; final rule. Federal Register 61(198):53108-53124.

Date listed: October 10, 1996

Entity listed (*species, subspecies, DPS*): Species

Classification (*threatened or endangered*): Endangered

Revised Listing, if applicable

FR notice: N/A

Date listed: N/A

Entity listed: N/A

Classification: N/A

5. Associated actions:

USFWS. 2003. Endangered and threatened wildlife and plants; final designation of critical habitat for 95 plants species from the islands of Kauai and Niihau, HI; final rule. Federal Register 68(39):9116-9479.

Critical habitat was designated for *Panicum niihauense* in four units totaling of 175 hectares (432 acres) on the island of Kauai. This designation includes habitat on state lands (USFWS 2003).

6. Review History:

Species status review (FY 2006 Recovery Data Call (September 2006))

Improving

7. Species' Recovery Priority Number at start of review:

2

8. Recovery Plan or Outline

Name of plan: Recovery plan for the Multi-Island plants.1999. U.S. Fish and Wildlife Service, Portland, Oregon. 206 pages + appendices.

Date issued: July 10, 1999

Dates of previous revisions: N/A

Indicate if plan is being used: Yes. Some of the actions outlined in the recovery plan have been initiated but not completed (*e.g.*, collection for genetic storage, reintroduction) within the historical range of this species. Some recovery actions will require long-term commitments (*e.g.*, maintenance of enclosure fences;

introduced invasive plant control) or may only be necessary intermittently (e.g., collect for genetic storage).

II. REVIEW ANALYSIS

A. Application of the 1996 Distinct Population Segment (DPS) policy

1. Is the species under review listed as a DPS?

Yes
 No

2. Was the DPS listed prior to 1996?

Yes
 No

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

Yes
 No

b. Does the original listed entity meet the discreteness and significance elements of the 1996 DPS policy?

Yes
 No

3. Is there relevant new information that would lead you to re-consider the classification of this species with regard to designation of DPSs (i.e., indicates that there was a problem with the original (post-1996) DPS listing, that there is a need for splitting out or combining DPSs, or that there is some other reason to consider a change in listing that involves DPSs)?

Yes
 No

B. Recovery Criteria

1. **Does the species have a final, approved recovery plan?**

Yes
 No

2. **Does the recovery plan contain recovery (i.e., downlisting or delisting) criteria**

Yes
 No

3. **Adequacy of recovery criteria.**

- a. **Do the recovery criteria reflect the best available (i.e., most up-to-date) information on the biology of the species and its habitat?**

Yes
 No

- b. **Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and there is no new information to consider regarding existing or new threats)?**

Yes
 No

- c. **If you answered *yes* to both II.B.3.a. and II.B.3.b., go to section II.D.**

If you answered *no* to either II.B.3.a. or II.B.3.b, go to section II.C.

4. **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, B, and E) affecting this species are discussed in detail in section II.D. Factors C (disease and predation) and D (inadequacy of existing regulatory mechanisms) are not known to be a threat to this species.

Stabilizing, downlisting, and delisting objectives are provided in the recovery plan for the multi-island plants (USFWS 1999), based on whether the species is an annual, a short-lived perennial (fewer than 10 years), or a long-lived perennial. *Panicum niihauense* is a short-lived perennial, and to be considered stable, this species must be managed to control threats (e.g., fenced and introduced invasive plants controlled) and be represented in an *ex situ* (off-site) collection. In addition, a minimum of three populations should be documented on the island of Kauai and at least one on Niihau

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. While this species is known historically from only one population each on the islands of Niihau and Kauai, the historical information is likely incomplete.

This recovery objective has not been met.

For downlisting, a total of five to seven populations of *Panicum niihauense* should be documented on Kauai and at least one on Niihau 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 *Panicum niihauense* should be documented on the island of Kauai and at least one on Niihau 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.

C. 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 *Panicum niihauense* from listing through 5-year review.

Date	No. wild inds	No. outplanted	Stability Criteria	Stability Criteria Completed?
1996 – listing	23	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 – recovery plan	23	0	All threats managed in all 3 populations	No

Date	No. wild inds	No. outplanted	Stability Criteria	Stability Criteria Completed?
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2003 – critical habitat	23	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2007 – 5-yr review	32-37	6	All threats managed	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No

1. Improved Analyses:

Yes
 No

2. Biology and Habitat:

a. 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:

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

c. Taxonomic classification or changes in nomenclature:

d. 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.):

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

f. Other:

3. Five Factor Analysis (threats, conservation measures and regulatory mechanisms):

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

b. Overutilization for commercial, recreational, scientific, or educational purposes:

c. Disease or predation:

d. Inadequacy of existing regulatory mechanisms:

e. Other natural or manmade factors affecting its continued existence:

D. Synthesis:

Panicum niihauense was known historically from one population each on the islands of Niihau and Kauai, but currently only one population is known and it is located on the northwest corner of Kauai at Polihale State Park. *P. niihauense* has not been seen in Niihau since its last collection in 1949 (Hawaii Mapping and Biodiversity Program 2005; USFWS 1999). Only a few plants remain, persisting despite the increased activity of off-road vehicles in the area and competition from invasive introduced plant species (Perlman 2006). *P. niihauense* is a grass whose numbers fluctuate from year to year (Wood *et al.* 2002). Some plants appear to be annual, while others are perennial, as they persist for several years (N. Tangalin, National Tropical Botanical Garden, pers. comm. 2006). The most recent count of the population was done in March 2005; at that time there were 19 mature and three immature individuals at Queen's Pond, and 10 to 15 small adults in the other group. In addition, 27 plants have been outplanted at National Tropical Botanical Garden's Lawai Kai restoration site, and six have survived (National Tropical Botanical Garden 2006). An outplanting at the Kekaha National Guard Firing Range of about 600 was done in 2001 and 2002, but the number of plants surviving is currently unknown (R. Nishek and M. Wysong, National Tropical Botanical Garden, pers. comm. 2006).

The species is impacted by off-road vehicles that modify habitat and most likely destroy individual plants (Factor A) and invasive introduced plant species that modify the dune habitat of and compete with *Panicum niihauense* (Factor E). These invasive plant species include *Chloris barbata* (swollen fingergrass), *Leucaena leucocephala* (haole koa), *Prosopis pallida* (kiawe), *Atriplex semicoccata* (Australian saltbush), and *Verbesina encelioides* (golden crown-beard) (Tangalin 2006; Perlman 2006; USFWS

1999). The species is also more vulnerable to extinction due to stochastic factors, as it is currently restricted to single population (Factor E).

National Tropical Botanical Garden has collected and propagated seed for genetic storage and restoration purposes (National Tropical Botanical Garden 2006). A total of six plants survive of 37 individuals outplanted at National Tropical Botanical Garden National's Lawai Kai restoration site. Another planting was done at Kekaha National Guard Firing Range in 2003, but no plants survived (R. Nishek and M. Wysong, pers. comm. 2006).

The stabilization and recovery goals for this species have not been met, since there are approximately 35 mature individuals in the wild and six outplanted, and the threats have not been managed. Therefore, *Panicum niihauense* meets the definition of endangered as it remains in danger of extinction throughout its range.

III. RESULTS

A. Recommended Classification:

- Yes, downlist to Threatened
- Yes, uplist to Endangered
- Yes, delist
- No, no change is needed

B. New Recovery Priority Number N/A

C. If applicable, indicate the Listing and Reclassification Priority Number (FWS only): N/A

Reclassification (from Threatened to Endangered) Priority Number: _____

Reclassification (from Endangered to Threatened) Priority Number: _____

Delisting (Removal from list regardless of current classification) Priority Number: _____

IV. RECOMMENDATIONS FOR FUTURE ACTIONS:

- Protect the species from vehicular traffic.
- Control introduced invasive plant species.
- Reintroduce the species to additional protected sites within historical range.

V. REFERENCES:

Hawaii Mapping and Biodiversity Program. 2005. Program Database, Unpublished.

National Tropical Botanical Garden. 2006. Database query for *Panicum niihauense* localities, 2006. Unpublished.

Perlman, S. 2006. Summary of field notes for *Panicum niihauense*, 1992 through 2005. Unpublished.

Tangalin, N. 2006. National Tropical Botanical Garden, Field notes for *Panicum niihauense*, 2004 - 2006. Unpublished.

[USFWS] U.S. Fish and Wildlife Service. 2003. Endangered and threatened wildlife and plants; final designation of critical habitat for 95 plants species from the islands of Kauai and Niihau, HI; final rule. Federal Register 68(39):9116-9479.

[USFWS] U.S. Fish and Wildlife Service. 1999. Recovery plan for multi-island plants. U.S. Fish and Wildlife Service, Portland, OR. 206 pages + appendices.

[USFWS] U.S. Fish and Wildlife Service. 1996. Endangered of threatened wildlife and plants; determination of endangered or threatened status for fourteen plant tax from the Hawaiian Islands; final rule. Federal Register 61(198): 53108-53124.

Wood, K.R., M.H. Chapin, S. Perlman, and M. Maunder. 2002. Final report of field research conducted under USFWS Grant No. 122000G001; Critically endangered Hawaiian plant taxa and conservation collections within the Genetic Safety Net (GSN). Unpublished.

Personal communications:

Nishek, Robert. Propagator, and Michael Wysong, Grounds Crew, National Tropical Botanical Garden, September 15, 2006.

Perlman, Steve . Field Botanist, National Tropical Botanical Garden, e-mail October 8, 2006.

Tangalin, Natalia. Field Botanist, National Tropical Botanical Garden, September 2006.

U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of *Panicum niuhauense* (Lau `ehu)

Current Classification E

Recommendation resulting from the 5-Year Review

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

Appropriate Listing/Reclassification Priority Number _____

Review Conducted By

Marilet A. Zablan, Recovery Program Leader and Assistant Field Supervisor for Endangered Species, January 22, 2007
Marie Bruegmann, Plant Recovery Coordinator, December 13, 2006, May 4 and June 29, 2007
Christian Torres-Santana, Fish and Wildlife Biologist, December 5, 2006

APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

Approve Kath E d Date 1/18/08