

*Labordia cyrtandrae*  
(Kamakahala)

**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: *Labordia cyrtandrae* (Kamakahala)

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**5-YEAR REVIEW**  
***Labordia cyrtandrae* (Kamakahala)**

**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 *Labordia cyrtandrae*. 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. 1991. Determination of endangered status for twenty-five plants 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 designation or nondesignation of critical habitat for 101 plant species from the island of Oahu, HI: final rule. Federal Register 68(116):35949-36406.

Critical habitat was designated for *Labordia cyrtandrae* in three units totaling 1,373 hectares (3,395 acres) on Oahu. This designation includes habitat on state and private lands (USFWS 2003).

### 1.3.4 Review History:

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

Stable

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

5

### Recovery achieved:

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

### 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. 270+ pages.

**Date issued:** August 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, 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 recovery plan for Oahu Plants (USFWS 1998), based on whether the species is an annual, a short-lived perennial (fewer than 10 years), or a long-lived perennial. *Labordia cyrtandrae* 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. 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 *Labordia cyrtandrae* should be documented on Oahu. 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 *Labordia cyrtandrae* should be documented on Oahu. 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 *Labordia cyrtandrae* from listing through 5-year review.**

<b>Date</b>	<b>No. wild inds</b>	<b>No. outplanted</b>	<b>Stability Criteria</b>	<b>Stability Criteria Completed?</b>
1996 – listing	10	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 – recovery plan	13	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2003 – critical habitat	8	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	47	0	All threats managed	Partially
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No

### **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**

*Labordia cyrtandrae* was historically known from both the Koolau Mountains and the Kaala area in Waianae Mountains. In the Koolau Mountains, this species extended almost the entire length of the mountain range. The species is currently known in the Koolau mountain range from only a single location containing one mature and one immature individual. The slopes of Kaala in the Waianae Mountains contain 44 mature individuals and one immature individual (USFWS 1998, U.S. Army 2006).

*Labordia cyrtandrae* typically grows in gulch bottoms, and on gulch slopes, sometimes in steep terrain. In the Koolau Mountains, the species has been found in wet vegetation. In the Waianae Mountains, it occurs mostly in wet vegetation, but extends into mesic forests as well. In both mountain ranges, habitats of *Labordia cyrtandrae* are often dominated by *Metrosideros* spp. (ohia lehua) and *Dicranopteris linearis* (uluhe) (U.S. Army 2005).

Habitat modification and predation on *Labordia cyrtandrae* by feral ungulates (pigs and goats) (Factors A and D) are not adequately controlled through public hunting to eliminate this threat (U.S. Army 2006). The U.S. Army staff plan to manage both of the known populations of *Labordia cyrtandrae* (U.S. Army 2005 and 2006). Much of



the *L. cyrtandrae* population in the Waianae Mountains will be protected from feral ungulates through the construction of strategically placed fences (U.S. Army 2006).

*Labordia cyrtandrae* is also threatened by predation by rats (Factor C), the black twig borer (Factor C), and unknown insects (Factor C), and habitat degradation and competition from invasive introduced plants (Factor E) (USFWS 1991 and 1998; U.S. Army 2006). Fire, a potential threat to *L. cyrtandrae* plants in the Waianae Mountains, has been assessed as being low for most of these plants (Factor E) (U.S. Army 2005).

Other threats that *Labordia cyrtandrae* on and near the Schofield Barracks Military Reservation potentially face are military training activities (Factor E). Threats from military training include trampling of plants during foot maneuvers, and the introduction of invasive non-native plants in the transport of personnel and equipment between training areas (USFWS 1998 and 2003; U.S. Army 2005).

Species like *Labordia cyrtandrae* that are endemic to a small portion of one island, and limited to a few populations and individuals, are inherently more vulnerable to extinction than widespread species because of the higher risks posed by genetic bottlenecks, random demographic fluctuations and localized catastrophes such as hurricanes, landslides, or drought (Factor E). The U.S. Army is addressing this threat by partnering with many organizations and agencies to propagate this species for both genetic storage and reintroduction (Makua Implementation Team 2003; U.S. Army 2005).

The stabilization and recovery goals for this species have not been met, as only 45 mature individuals are known. Therefore, *Labordia cyrtandrae* 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:

**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 genetic storage.
- Search for additional populations of *Labordia cyrtandrae* in known historical sites and suitable habitat, especially in the Koolau Mountains.
- Fence individual plants for short-term protection from ungulates.
- Study *Labordia cyrtandrae* 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.
- Reintroduce individuals into suitable habitat within historical range that is being managed for the known threats to this species.

**5.0 REFERENCES:**

Makua Implementation Team. 2003. Implementation plan for the Makua Military Reservation, island of Oahu.

[U.S. Army] U.S. Army Garrison, Hawaii. 2005. Draft implementation plan for O`ahu training areas: Schofield Barracks Military Reservation, Schofield Barracks East Range, Kawaihoa Training Area, and Kahuku Training Area.

[U.S. Army] U.S. Army Garrison, Hawaii. 2006. 2006 Status reports for the Makua implementation plan, island of Oahu.

[USFWS] U.S. Fish and Wildlife Service. 1991 Determination of endangered for 26 plants from the Waianae Mountains, island of Oahu, Hawaii, final rule. Federal Register 56(209):55770-55786.

[USFWS] U.S. Fish and Wildlife Service. 1998. Recovery plan for the Oahu plants, Portland, OR. 270+ pages.

[USFWS] U.S. Fish and Wildlife Service. 2003. Endangered and threatened wildlife and plants: final designation or nondesignation of critical habitat for 101 plant species from the island of Oahu, HI: final rule. Federal Register 68(116):35949-35998.

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**U.S. FISH AND WILDLIFE SERVICE**  
5-YEAR REVIEW of *Labordia cyrtandrae* (Kamakahala)

**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, May 8 and 24, and June 29, 2007

Joy Hiromasa, Fish and Wildlife Biologist, April 17, 2007

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