

Lobelia oahuensis
(no common name)

**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: *Lobelia oahuensis* / no common name

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5-YEAR REVIEW
***Lobelia oahuensis* (no common name)**

1.0 GENERAL INFORMATION

1.1 Reviewers

Lead Regional Office:

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

Lead Field Office:

Pacific Islands Fish and Wildlife Office, Loyal Mehrhoff, 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 of the U.S. Fish and Wildlife Service (USFWS), beginning on March 16, 2009. The review was based on final critical habitat designations for *Lobelia oahuensis* and other species from the island of Oahu (USFWS 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 Recovery Program Lead and the Assistant Field Supervisor for Endangered Species before submission to the Field Supervisor for approval.

1.3 Background:

1.3.1 Federal Register (FR) Notice citation announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2009. Endangered and threatened wildlife and plants; initiation of 5-year reviews of 103 species in Hawaii. Federal Register 74(49):11130-11133.

1.3.2 Listing history

Original Listing

FR notice: USFWS. 1994. Endangered and threatened wildlife and plants; endangered status for 11 plant species from the Koolau Mountain Range, island of Oahu, Hawaii; final rule. Federal Register 59(59):14482-14493.

Date listed: August 10, 1998

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, Hawaii; final rule. Federal Register 68(116):35949-36406.

Critical habitat was designated for *Lobelia oahuensis* in two units totaling 642 hectares (1,585 acres) on Oahu. This designation includes habitat on State, Federal, and private lands (USFWS 2003).

1.3.4 Review History:

Species status review [FY 2010 Recovery Data Call (September 2010)]:
Declining

Recovery achieved:

1 (0-25%) (FY 2007 Recovery Data Call – most recent year reported)

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

5

1.3.6 Current Recovery Plan or Outline

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

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 criteria?

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 (Listing Factors A, C, D, and E) affecting this species is presented in section 2.3.2 and Table 2. Listing 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. *Lobelia oahuensis* is a short-lived perennial, and to be considered stabilized, which is the first step in recovering the species, the taxon must be managed to control threats (*e.g.*, fenced, weeding, etc.) 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 island where they now occur 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 *Lobelia oahuensis* should be documented on islands where they now occur 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 *Lobelia oahuensis* should be documented on islands where they now occur 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

No new information.

2.3.1 Biology and Habitat

2.3.1.1 New information on the species' biology and life history:

No new information.

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:

A single island endemic, *Lobelia oahuensis* has been known from a number of locations along the summits of the Koolau Mountains of Oahu. On Mount Olympus in 1986, 15 mature but aging individuals, 13 juveniles, and five seedlings were seen at 732 meters (2,400 feet) elevation (Hawaii Biodiversity and Mapping Program 2009). At the summit of Kuliouou Valley and Puu o Kona, at about 671 meters (2,200 feet) elevation, on cliffs over Waimanalo, three individuals were seen in 1984 and six in 1987 (Hawaii Biodiversity and Mapping Program 2009; Perlman 2009). Ten individuals were seen on the Aiea Trail to the Halawa Trail summit, at 838 meters (2,750 feet) elevation, in 1985 and 1987 (Hawaii Biodiversity and Mapping Program 2009; Perlman 2009). In 1987, Steve Perlman of the National Tropical Botanical Garden saw scattered individuals of *Lobelia oahuensis* at Lanipo (Waialae Nui) Summit on the Kapakahi-Waimanalo-Wilhelmina Rise portions of the summit trail, at 732 to 853 meters (2,400 to 2,800 feet) elevation (Hawaii Biodiversity and Mapping Program 2009; Perlman 2009). On the summit between Aiea and Waimano, half way across the

summit trail at 786 meters (2,580 feet) elevation, three individuals were seen, also in 1987 (Perlman 2009). About 15 individuals were observed in 1990 at 750 meters (2,460 feet) elevation across the Koolau Summit from the Manana Trail to the Kipapa Trail (Perlman 2009). At Puu Kalena Summit, *Lobelia oahuensis* was observed in 1992 at 1,040 meters (3,412 feet) elevation (Wood 2009). In 1994, a total of nine individuals were seen in the Waiahole Forest Reserve at Elaeao at 792 to 805 meters (2,600 to 2,640 feet) elevation (Hawaii Biodiversity and Mapping Program 2009). Eight individuals were seen in 1995 between Elaeao and Waimano Trail at 732 meters (2,400 feet) elevation, and one individual at 725 meters (2,380 feet) elevation, 24 meters (80 feet) below the crest (Perlman 2009). Also in 1995, about 30 individuals were seen on the windward slope just 50 meters (164 feet) south of Manana Summit, at 762 to 792 meters (2,500 to 2,600 feet) elevation (Perlman 2009; Wood 2009). At Puu Keahiakahoe, between 780 and 853 meters (2,560 and 2,800 feet) elevation, Winona Char reported seeing eight individuals in 1999, and this was corroborated by Joel Lau of the Hawaii Biodiversity and Mapping Program (Hawaii Biodiversity and Mapping Program 2009). Also in 1999, one individual was seen on Waikakalaua–Waikane Ridge south of Puu Kaaumakua, at 792 meters (2,600 feet) elevation (Hawaii Biodiversity and Mapping Program 2009).

In 2000, two individuals were seen at Manana Stream on a southeast face at 701 meters (2,300 feet) elevation, and two additional individuals were seen nearby (Perlman 2009; Wood 2009). In 2004, about 30 individuals were found in the same area by Ken Wood of the National Tropical Botanical Garden (Wood 2009). In 2009 Joel Lau (at that time of the Hawaii Biodiversity Mapping Program) reported that the Manana area had about 10 individuals seen within the last 5 years (S. Ching-Harbin, Plant Extinction Prevention Program, pers. comm. 2009).

In 1987, between the peaks of Konahuanui, 15 to 20 individuals of *Lobelia oahuensis* were seen scattered at 914 meters (3,000 feet) elevation (Perlman 2009) and 5 individuals were found on a ridge on the east side of the second peak of the summit (Perlman 2009). In 1991, 10 individuals were reported at 884 meters (2,900 feet) elevation at Konahuanui (Hawaii Biodiversity and Mapping Program 2009; Perlman 2009). In 2009, a single individual was seen at Konahuanui (Oahu Plant

Extinction Prevention Program 2009). The U.S. Army reports *L. oahuensis* occurring at Waiawa (U.S. Army Garrison 2008) with fifteen individuals and three juveniles seen in 2003 (Oahu Plant Extinction Prevention Program 2009). The total census of *L. oahuensis* acquired from 2000 to 2010 totals 39 to 59 individuals with three or four locations in the Koolau Mountains (USFWS 2010). Actual numbers may be greater, and the Plant Extinction Prevention Coordinator on Oahu plans to survey additional historical locations of *L. oahuensis* within the next year (S. Ching-Harbin, pers. comm. 2009).

On the leeward side of Oahu in the Waianae Mountains, near Puu Kalena at 1,006 meters (3,300 feet) elevation, two individuals were known in 1997 (Oahu Plant Extinction Prevention Program 2009). At Ohikilolo one individual was seen dead in 2000 (Oahu Plant Extinction Prevention Program 2009). In Kamaohanui, northwest of Schofield Barracks, in 2000, Ken Wood saw five individuals of *Lobelia oahuensis* at 991 to 1,024 meters (3,250 to 3,360 feet) elevation (Wood 2009). The U.S. Army staff observed one individual of *L. oahuensis* west of Puu Kalena at 1,006 to 1,128 meters (3,300 to 3,700 feet) elevation (Hawaii Biodiversity and Mapping Program 2009). The U.S. Army also reports populations of *L. oahuensis* occurring at South Haleauau and Mohiakea (U.S. Army Garrison 2008). There are a total of nine individuals reported from four locations in the Waianae Mountains since the year 2000.

Currently, there are approximately 48 to 68 individuals of *Lobelia oahuensis* known from seven or eight locations on the island of Oahu, on both the Koolau and Waianae Mountain ranges.

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

No new information.

2.3.1.4 Taxonomic classification or changes in nomenclature:

No new information.

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.):

See above Section 2.3.1.2.

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

In the Koolau Mountains, on the Aiea Trail to Halawa Trail summit, at Lanipo Summit, Waimano to Aiea Summit Trail, Puu o Kona Summit, Manana to Kipapa Trail, Manana to Waimano Summit, at Manana Stream, and on the Elaeao to Waimano Trail, the habitat is *Metrosideros polymorpha* (ohia) wet forest with associated native species including *Cheirodendron trigynum* (olapa), *Clermontia oblongifolia* (oha wai), *C. persicifolia* (oha wai), *Coprosma longifolia* (pilo), *Cyrtandra cordifolia* (haiwale), *Diplazium sandwichianum* (hoio), *Dubautia laxa* (naenae pua melemele), *Gardenia mannii* (nanu), *Myrsine lessertiana* (kolea lau nui), *Phyllostegia grandiflora* (kapana), *Pittosporum confertiflora* (hoawa), *Pouteria sandwicensis* (alaa), *Pritchardia martii* (loulu), *Tetraplasandra oahuensis* (ohe mauka), *Wikstroemia oahuensis* (akia), and *Zanthoxylum oahuense* (heae). On the Waimano to Aiea summit trail *Viola oahuensis* (no common name [NCN]) and *Cyanea st.-johnii* (haha) also grow in association with *Lobelia oahuensis* (Perlman 2009). Manana Summit Trail also has *Antidesma platyphyllum* (hame), *Cibotium* spp. (hapuu), *Cyanea acuminata* (haha), *Cyrtandra paludosa* (moa), *C. garnotiana* (hahala), *Labordia hedyosmifolia* and *L. hosakana* (both kamakahala), *Melicope clusiifolia* (kolokolo mokihana), *Pipturus albidus* (mamake), *Plantago princeps* (laukahi kuahiwi), *Platydesma spathulata* (pilo kea), *Psychotria hathewayi* (kopiko), *Sadleria* spp. (amau or apuu), *Scaevola mollis* (naupaka kuahiwi), *Syzygium sandwicense* (ohia ha), and *Trematolobelia macrostachys* (kolii) (Wood 2009).

In the Waianae Mountains associated native species include *Artemisia australis* (ahinahina), *Bidens macrocarpa* (kookoolau), *Bidens torta* (kookoolau), *Boehmeria grandis* (akolea), *Broussaisia arguta* (kanawao), *Carex meyenii* (NCN),

Cheirodendron trigynum, *Cocculus orbiculatus* (huehue), *Coprosma foliosa* (pilo), *Dianella sandwicensis* (uki uki), *Dicranopteris linearis* (uluhe), *Dubautia herbstobatae* (naenae kupaoa), *D. laxa*, *D. plantaginea* (naenae), *Eragrostis grandis* (lovegrass), *Freycinetia arborea* (ie ie), *Kadua centranthoides* (NCN), *K. cordata* (kopa), *Leptecophylla tameiameia* (pukiawe), *Lysimachia hillebrandii* (kolokolo lehua), *Lythrum maritimum* (pukamole), *Machaerina angustifolia* (uki), *Metrosideros polymorpha* (ohia), *M. rugosa* (lehua papa), *M. tremuloides* (ahihi), *Melicope clusiifolia*, *M. peduncularis* (alani), *Perrottetia sandwicensis* (olomea), *Phyllostegia glabra* (ulihii), *Pipturus albidus* (mamake), *Pittosporum* spp. (hoawa), *Polypodium pellucidum* var. *pellucidum* (ae lau nui), *Psydrax odorata* (alahee), *Rumex albescens* (huahuako), *Sadleria pallida* (amau ii), *Vaccinium reticulatum* (ohelo), and *Wikstroemia oahuensis* var. *oahuensis* (Oahu Plant Extinction Prevention Program 2009).

Konahuanui habitat is *Metrosideros polymorpha* – *Dicranopteris linearis* (uluhe) wet forest with associated native species including *Cheirodendron trigynum*, *Clermontia kakeana* (haha), *Coprosma longifolia*, *Cyrtandra* sp., *Diplazium sandwichianum*, *Myrsine lessertiana*, *Sadleria cyatheoides* (amau), *Trematolobelia singularis* (NCN), and *Wikstroemia oahuensis* (Perlman 2009). At Puu Kalena Summit *Lobelia oahuensis* occurs with associated native species including *Metrosideros* spp., *Cheirodendron trigynum* (olapa), *Sadleria squarrosa* (apuu), *Cyanea humboldtiana* (haha), *Scaevola mollis* (naupaka kuahiwi), *Melicope christophersenii* (alani), *Dicranopteris linearis*, and *Vaccinium dentatum* (ohelo) (Wood 2009).

2.3.1.7 Other:

No new information.

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:

In the Koolau Mountains, threats include habitat modification by invasive introduced species including *Clidemia hirta* (Koster's

curse), *Paspalum conjugatum* (Hilo grass), and *Erigeron karvinskianus* (daisy fleabane). Feral pigs (*Sus scrofa*) disturb the ground and uproot native seedlings, creating erosion (Perlman 2009; Wood 2009). In the Waianae Mountains, feral pigs and feral goats (*Capra hircus*) degrade habitat (Wood 2009). Invasive introduced species in the Waianae Mountains are *Ageratum conyzoides* (billygoat weed), *Ageratina riparia* (spreading mist flower), *Axonopus fissifolius* (narrow-leaved carpetgrass), *Blechnum appendiculatum* (hammock fern), *Bryophyllum pinnatum* (airplant), *Clidemia hirta* (Koster's curse), *Conyza bonariensis* (hairy horseweed), *Cuphea carthagenensis* (tarweed), *Erigeron karvinskianus* (daisy fleabane), *Grevillea robusta* (silk oak), *Psidium cattleianum* (strawberry guava), *Rubus argutus* (blackberry), *Sacciolepis indica* (Glenwood grass), *Schinus terebinthifolius* (Christmas berry), and *Verbena litoralis* (vervain) (Hawaii Biodiversity and Mapping Program 2009; Oahu Plant Extinction Prevention Program 2009; Perlman 2009; Wood 2009).

2.3.2.2 Overutilization for commercial, recreational, scientific, or educational purposes:

Not a threat.

2.3.2.3 Disease or predation:

Rats (*Rattus* spp.) and slugs (unidentified species) are fruit predators or herbivores of *Lobelia* and other Campanulaceae species in Hawaii (Perlman 2009; Wood 2009).

2.3.2.4 Inadequacy of existing regulatory mechanisms:

Not a threat.

2.3.2.5 Other natural or manmade factors affecting its continued existence:

Threats from invasive introduced plant species previously described in Section 2.3.2.1, in addition to degrading habitat, directly compete with *Lobelia oahuensis* for light, nutrients, and water.

Loss of pollinators and seed dispersers are believed to be limiting the regeneration of this species (Wood 2009). The

National Tropical Botanical Garden has one accession of 4,000 seeds collected in 1991 (National Tropical Botanical Garden 2009).

Climate change may also pose a threat to this species. However, current climate change analyses in the Pacific Islands lack sufficient spatial resolution to make predictions on impacts to this species. The Pacific Islands Climate Change Cooperative (PICCC) has currently funded climate modeling that will help resolve these spatial limitations. We anticipate high spatial resolution climate outputs by 2013.

2.4 Synthesis

Stabilizing, downlisting, and delisting objectives are provided in the recovery plan for the 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. *Lobelia oahuensis* is a short-lived perennial, and to be considered stabilized, which is the first step in recovering the species, 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 island where they now occur or occurred historically. For the species to be considered stable, each of these populations must be naturally reproducing and increasing in number, with a minimum of 50 mature individuals per population.

The interim stabilization goals for this species have not been met. There are seven or eight populations known but none of the populations contain more than 50 mature individuals (Table 1), and all threats are not being managed (Table 2). Therefore, *Lobelia oahuensis* meets the definition of endangered as it remains in danger of extinction throughout its range.

Table 1. Status of *Lobelia oahuensis* from listing through 5-year review.

Date	No. wild indivs	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1994 (listing)	100-200	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1998 (recovery plan)	110		All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2003 (critical habitat)	42		All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2010 (5-year review)	48-68	0	All threats managed in all 3 populations	No (Table 2)
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No: none of the 7-8 populations have 50 mature individuals

Table 2. Threats to *Lobelia oahuensis*.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulates – habitat modification and herbivory	A, C, D	Ongoing	No
Rats – herbivory	C	Ongoing	No
Slugs – herbivory	C	Ongoing	No
Invasive introduced plants	A, E	Ongoing	No
Loss of pollinators and seed dispersers	E	Ongoing	No
Climate change	A, E	Increasing	No

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

- Collect propagules from all known populations for genetic storage and reintroduction.
- Survey known populations and historical range to determine current status of the species.
- Fence all known populations to provide protection from the negative impacts of feral ungulates.
- Remove competing invasive introduced plant species.
- Control rats in the vicinity of these populations.
- Develop and implement methods to control slugs.
- Propagate for reintroduction, and reintroduce individuals into protected suitable habitat within historic range.
- Research pollinators and seed distributors to determine limiting factors; investigate techniques to improve natural recruitment.
- Work with Hawaii Division of Forestry and Wildlife, U.S. Army Garrison, and other land managers to initiate planning and contribute to implementation of ecosystem-level restoration and management to benefit this species.
- Assess the modeled effects of climate change on this species, and use to determine future landscape needed for the recovery of the species.

5.0 REFERENCES

- Hawaii Biodiversity and Mapping Program. 2009. Records for *Lobelia oahuensis* from program database. University of Hawaii at Manoa, Honolulu, Hawaii. Unpublished.
- National Tropical Botanical Garden. 2009. Controlled propagation report to U.S. Fish and Wildlife Service. National Tropical Botanical Garden, Kalaheo, Hawaii. 15 pages. Unpublished.
- Oahu Plant Extinction Prevention Program. 2009. Population reference site summary report, *Lobelia oahuensis*. Plant Extinction Prevention Program, Honolulu, Hawaii. one page. Unpublished.
- Perlman, S. 2009. *Lobelia oahuensis*. National Tropical Botanical Garden, Kalaheo, Hawaii. 5 pages. Unpublished.

U.S. Army Garrison. 2008. Final implementation plan for Oahu training areas: Schofield Barracks Military Reservation, Schofield Barracks East Range, Kawaihoa Training Area, Kahuku Training Area, and Dillingham Military Reservation. Directorate of Public Works Environmental Division, Schofield Barracks, Hawaii. 624 pages. Available online at http://www.botany.hawaii.edu/faculty/duffy/DPW/2008_OIP/2008_OIP2.pdf.

[USFWS] U.S. Fish and Wildlife Service. 1994. Endangered and threatened wildlife and plants; endangered status for 11 plant species from the Koolau Mountain Range, island of Oahu, Hawaii; final rule. Federal Register 59(59):14482-14493.

[USFWS] U.S. Fish and Wildlife Service. 1998. Recovery plan for Oahu plants. U.S. Fish and Wildlife Service, Portland, Oregon. 207 pages plus appendices. Available online at <http://www.fws.gov/pacificislands/recoveryplans.html>.

[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, Hawaii; final rule. Federal Register 68(116):35949-36406.

[USFWS] U.S. Fish and Wildlife Service. 2010. Recovery program, rare plant tracking database, species list report. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii. Unpublished.

Wood, K.R. 2009. Notes on *Lobelia oahuensis*. National Tropical Botanical Garden, Kalaheo, Hawaii. 3 pages. Unpublished.

Personal Communications:

Ching-Harbin, Susan. 2009. Oahu Island Coordinator, Plant Extinction Prevention Program, Honolulu, Hawaii. E-mail message to Margaret A. Clark, National Tropical Botanical Garden, dated November 30, 2009. Subject: *Lobelia oahuensis* and *Chamaesyce kuwaleana*.

Signature Page
U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of *Lobelia oahuensis* (no common name)

Pre-1996 DPS listing still considered a listable entity? N/A

Recommendation resulting from the 5-year review:

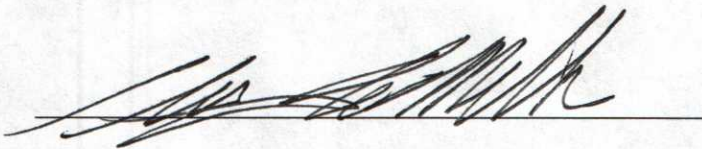
- Delisting
- Reclassify from Endangered to Threatened status
- Reclassify from Threatened to Endangered status
- No Change in listing status

Appropriate Listing/Reclassification Priority Number, if applicable: _____

Review Conducted By:

Chelsie Javar, Fish and Wildlife Biologist
Marie Bruegmann, Plant Recovery Coordinator
Jess Newton, Recovery Program Lead
Assistant Field Supervisor for Endangered Species

Field Supervisor, Pacific Islands Fish and Wildlife Office



Date 