

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Wilkesia hobbdi* (iliau)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2020. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 129 Species in Oregon, Washington, Idaho, Hawaii, Montana, California, and Nevada. Federal Register 85(48): 14240–14243, March 11, 2020.

Lead Region/Field Office:

Interior Region 12/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawai‘i

Name of Reviewer:

Daniel Adamski, Biologist, PIFWO

Lauren Weisenberger, Plant Recovery Coordinator, PIFWO

Megan Laut, Conservation & Restoration Team Manager, PIFWO

Methodology used to complete this 5-year review:

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (Service) beginning in October 2021. The review was based on a review of current, available information since the last 5-year review for *Wilkesia hobbdi* (USFWS 2017). The evaluation by Daniel Adamski, Biologist, was reviewed by Lauren Weisenberger, Plant Recovery Coordinator, and Megan Laut, Conservation and Restoration Team Manager.

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 (<https://ecos.fws.gov/ecp/species/5565>).

Review Analysis:

Please refer to the previous 5-year reviews for *Wilkesia hobbdi* published in the Federal Register on August 27, 2010 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1618.pdf) and September 18, 2017 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/2519.pdf) for a complete review of the species’ status, threats, management efforts, and references cited. We are not aware of any significant new information regarding the species’ biological status since listing to warrant a change in the Federal listing status of *W. hobbdi*.

This long-lived perennial herb in the Asteraceae (sunflower) family is endangered and is known from the island of Kaua‘i. The status and trends for *Wilkesia hobbdi* are provided in the tables below.

New Status Information:

- Currently, *Wilkesia hobdyi* is known from the Na Pali coast of Kaua‘i. Surveys conducted using an Unmanned Aerial Vehicle (UAV) confirmed individuals at Ha‘ele‘ele, Makaha, Polihale, Miloli‘i, and Kaohao; as well as previously unknown populations at Kā‘aweiki and Kopakaka Ridges (Nyberg 2019; 2020). A total of 3,635 individual plants were identified using the UAV survey method over 11 separate flights, which is an increase from previous estimates of 759-809 plants (USFWS 2017; Nyberg 2019; 2020).

New Threats:

- None.

New Management Actions:

- Monitoring and surveys—National Tropical Botanical Garden (NTBG) monitors and surveys *Wilkesia hobdyi* using UAV (Nyberg 2019; 2020).
- Collection and propagation for genetic storage and reintroduction—
 - Kaua‘i Nursery reports one plant in propagation (Kaua‘i Nursery 2021).
 - Lyon Arboretum reports 55,857 seeds in storage representing 12 founders (Lyon Arboretum 2022).
 - NTBG reports 25 individuals in propagation representing four founder plants and 36,110 seeds in storage representing 21 founder plants (NTBG 2020).

Table 1. Status and trends of *Wilkesia hobdyi* from listing through current 5-year review.

Date	No. wild individuals	No. outplanted	Stability Criteria identified in Recovery Plan	Stability Criteria Completed?
1992 (listing)	360-450	0	All threats managed in all 5–7 populations	No
			Complete genetic storage	No
			5–7 populations with 300 mature individuals each	No
1995 (recovery plan)	420-510	0	All threats managed in all 5–7 populations	No
			Complete genetic storage	Partially
			5–7 populations with 300 mature individuals each	No

2003 (critical habitat)	406-471	0	All threats managed in all 5–7 populations	No
			Complete genetic storage	Partially
			5–7 populations with 300 mature individuals each	No
2010 (5-year review)	759-809	89	All threats managed in all 5–7 populations	No
			Complete genetic storage	Partially
			5–7 populations with 300 mature individuals each	No
Date	No. wild individuals	No. outplanted	*Preventing Extinction Criteria identified by HPPRCC	*Preventing Extinction Criteria Completed?
2017 (5-year review)	759-809	0	All threats managed in all 3 populations	No
			Reproduction (i.e., viable seeds, seedlings, saplings) at all three populations	Unknown
			Complete genetic storage	Partial
			3 populations with 50 mature individuals each	No
2022 (5-year review)	3,635	0	All threats managed in all three populations	No
			Complete genetic storage	Partial; 50%
			Natural reproduction at all three populations	Unknown

			Three populations with 100 mature individuals each	Yes
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* The Preventing Extinction Stage was established in 2011. Prior to 2011, the Interim Stabilization Stage was the first stage towards recovery (now it is the second stage after Preventing Extinction).

Table 2. Threats to *Wilkesia hobdyi* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A	Ongoing	None
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Partial, some individuals protected through non-native plant control
Climate change degradation or loss of habitat, including hurricanes	A	Ongoing	None
Degradation and destruction by landslides	A	Ongoing	None
Predation and herbivory by ungulates	C	Ongoing	None
Invasive species— Hybridization impacts	E	Ongoing	None

Synthesis:

Currently, there are 3,635 wild individuals of *Wilkesia hobdyi* on Kaua‘i. Some individuals are provided protection from nonnative plant control. Seed collections and propagation are ongoing.

Stabilizing (interim), downlisting, and delisting objectives are provided in the Kaua‘i Islandwide Recovery Plan (USFWS 2021) and have been updated according to the draft revised recovery objective guidelines developed by the Hawai‘i and Pacific Plants Recovery Coordinating Committee (HPPRCC 2011). The HPPRCC identifies an additional initial objective, the Preventing Extinction Stage, in addition to the Interim Stabilization, Delisting, and Downlisting objectives. Furthermore, life history traits such as breeding system, population size fluctuation or decline, and reproduction type (sexual or vegetative), have been included in the calculation of goals for the number of populations and reproducing individuals for each stage. The goals for each stage remain grouped by life span defined as annual, short-lived perennial (fewer than 10 years), or long-lived perennial.

Wilkesia hobdyi is a long-lived perennial shrub suspected of self-incompatibility (as congener *W. gymnoxiphium*; see Carr et al. 1986). To prevent extinction, which is the

first milestone in recovering the species, the taxon must be managed to control threats (e.g., fenced) and have 50 individuals (or the total number of individuals if fewer than 50 exist) from each of three populations represented in *ex situ* (secured off-site, such as a nursery or seed bank) collections that are well managed. In addition, a minimum of a total of three populations should be documented on Kaua‘i where they now occur or occurred historically and each of these populations must be naturally reproducing (i.e., viable seeds and seedlings) with a minimum of 100 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. Genetic storage is not complete (Table 1) and all threats are not being managed (Table 2). While there are populations totaling at least 50 individuals, it is unknown if these populations are reproductive. Therefore, *Wilkesia hobyi* meets the definition of Endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

New information regarding the species’ biological status has been reported since the last 5-year review in 2017. The following recommendations for future actions are updated for the 5-year review for 2022.

- Surveys and inventories—
 - Continue to survey the historical range of the species as well as suitable habitat surrounding historical populations.
 - Determine if historical populations are extirpated.
 - Determine sites that have the highest likelihood of maintaining reintroductions.
- Ungulate monitoring and control—Continue to maintain fenced exclosures to protect individuals from the negative impacts of browsing by ungulates.
- Invasive nonnative plant monitoring and control—Continue control of established ecosystem-altering nonnative invasive plant species, and those that compete with *Wilkesia hobyi*.
- Site and habitat protection—Develop and implement effective control measures to reduce the impact of collection.
- Fire prevention and control—Continue to develop and implement fire prevention management plans.
- Climate change adaptation strategy—Research suitability of habitat for reintroduction of this species in the future due to the impacts of climate change, including landslides.
- Captive propagation for genetic storage and reintroduction—Continue collection and propagation efforts for maintenance of genetic stock and for reintroduction.
- Reintroduction and translocation—Reintroduce individuals into suitable habitat within historic range that is being managed for known threats to this species to build resiliency and redundancy.
- Population biology research—
 - Determine which species may act as pollinators and which may assist with fruit dispersal.

- Conduct genetic studies to determine genetic variation within and between populations and plan an effective breeding program.
- Alliance and partnership development—Continue to work with partners and other land managers in planning and implementation of ecosystem-level restoration and management to benefit this species.

References:

- Carr, G.D., E.A. Powell, and D.W. Kyhos. 1986. Self-incompatibility in the Hawaiian Madiinae (Compositae): An Exception to Baker’s Rule. *Evolution* 40(2): pp. 430-434.
- [HPPRCC] Hawai‘i and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.
- Kaua‘i Nursery. 2021. Report on controlled propagation of listed species, as designated under the U.S. Endangered Species Act. Unpublished report submitted to the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawai‘i.
- Lyon Arboretum. 2022. Report on controlled propagation of listed species, as designated under the U.S. Endangered Species Act. Unpublished report submitted to the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawai‘i.
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- Nyberg, B. 2019. Endangered surveys using unmanned aerial vehicle Makaha Ridge Facility. National Tropical Botanical Garden, Kalaheo. Unpublished report submitted to the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawai‘i. 21 pp.
- Nyberg, B. 2020. Endangered surveys using unmanned aerial vehicle. National Tropical Botanical Garden, Kalaheo. Unpublished report submitted to the U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawai‘i. 10 pp.
- [USFWS] U.S. Fish and Wildlife Service. 2010. *Wilkesia hobdyi* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/five_year_review/doc1618.pdf.

[USFWS] 2017. *Wilkesia hobyi* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/five_year_review/doc2519.pdf.

[USFWS] 2020. Endangered and threatened wildlife and plants; initiation of 5-year status reviews for 129 Species in Oregon, Washington, Idaho, Hawaii, Montana, California, and Nevada. Federal Register 85(48): 14240–14243, March 11, 2020.

[USFWS] 2021. Kaua'i Islandwide Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR. 65 pp. + appendices.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Wilkesia hobdyi (iliau)*

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

For Field Supervisor, Pacific Islands Fish and Wildlife Office

_____ Date _____