

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Dubautia waialealae* (na‘ena‘e)

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:

Cheryl Phillipson, 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 or USFWS) beginning in October 2021. The review was based on a review of current, available information since the last 5-year review for *Dubautia waialealae* (USFWS 2017). The evaluation by Cheryl Phillipson, 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/4546>).

Review Analysis:

Please refer to the previous 5-year review for *Dubautia waialealae* published in the Federal Register on September 13, 2017 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/2438.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 *D. waialealae*.

This short-lived perennial shrub in the Asteraceae (sunflower) family is listed as endangered and is known from the island of Kaua‘i. The status and trends for *Dubautia waialealae* are provided in the tables below.

New Status Information:

- In 2020, there were estimated to be 5,000 mature individuals of *Dubautia waialealae* in two subpopulations on Kaua‘i, with the largest population in the Wainiha Preserve and the second at the summit area of Kawaikini (Walsh et al. 2020).

New Threats:

- None reported.

New Management Actions:

- Surveys and inventories—Approximately 20 individuals were observed on a survey near the Kawaikini summit in 2020 (National Tropical Botanical Garden [NTBG] 2020).
- Collection and captive propagation—There was a collection of thousands of seeds from four founders in 2005 from Alaka‘i-Waialeale at Lyon Arboretum Seed Conservation Laboratory and NTBG (Lyon Arboretum 2022, NTBG 2021).

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

Date	No. wild individuals	No. outplanted	*Preventing Extinction Criteria identified by HPPRCC	*Preventing Extinction Criteria Completed?
2010 (listing and critical habitat)	3,000	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	Partially
2017 (5-year review)	4,000–5,000	0	All threats managed in all 3 populations	Partially, 1 population fenced
			Complete genetic storage	Partially
			Reproduction (i.e., viable seeds, seedlings) at all 3 populations	Unknown
			3 populations with 50 mature individuals each	Partially

2022 (5-year review)	ca 5,000	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially, 4 founders represented
			Natural reproduction at all 3 populations	Unknown
			3 populations with 100 mature individuals each	Partially, 1 population ca 100 mature individuals

* 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 *Dubautia waialealae* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A	Ongoing	Partial, 1 population in enclosure
Established ecosystem altering invasive plant species degradation of habitat and competition	A, E	Ongoing	Partial, 1 population in enclosure
Climate change degradation and destruction of habitat, including hurricanes	A	Ongoing	None
Predation and herbivory by rodents	C	Ongoing	None
Inadequacy of existing regulatory mechanisms—lack of adequate hunting and biosecurity legislation	D	Ongoing	None

Synthesis:

Currently, approximately 5,000 individuals of *Dubautia waialealae* occur in the summit area of Kaua‘i in one larger fenced population with a smaller population outside of the fence. These populations are occasionally monitored. Four founders at Alaka‘i-Waialeale are represented in seed storage.

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.

Dubautia waialealae is a short-lived perennial shrub and an obligate outcrosser. 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 this species now occurs or occurred historically and each of these populations must be naturally reproducing (i.e., viable seeds, seedlings) with a minimum of 100 mature, reproducing individuals per population.

The preventing extinction goals for *Dubautia waialealae* have not been met. Although there are estimated to be 5,000 wild individuals, these occur in one location with only one other smaller population (Table 1). The larger population is within an enclosure for protection from ungulates. Only four founders are represented in genetic storage (Table 1, Table 2). Not all threats are being addressed. Therefore, *D. waialealae* meets the definition of Endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

No new threats and no significant new information regarding the species' biological status have been reported since the last 5-year review in 2017. Thus, the following recommendations for future actions are reiterated or updated for the 5-year review for 2022.

- Surveys and inventories—Continue to survey suitable habitat in current and historical range for populations of *Dubautia waialealae* and monitor known occurrences.
- Ungulate monitoring and control—Continue to construct and maintain enclosures to protect all occurrences from habitat disturbance by feral ungulates.
- Nonnative invasive plant monitoring and control—Control established ecosystem-altering nonnative invasive plant species at all populations of *D. waialealae*.
- Rodent control—Implement effective control methods for rats.
- Climate change adaptation strategy—Research suitability of habitat for viability of species, including where to conduct translocations in the future due to impacts of climate change.
- Captive propagation for genetic storage and reintroduction—Collect seeds and propagative materials for storage and for maintenance of genetic stock.

- Reintroduction and augmentation—Augment wild populations and establish new populations within protected and managed suitable habitat.
- Build resiliency and redundancy—Increase numbers of populations throughout historical range to reduce impacts of hurricanes and climate change.
- Population viability monitoring and analysis—Continue to monitor vegetative cover, vigor, and phenology of *D. waialealae* at Waialae, North Bog, and Kawaikini.
- 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:

[HPPRCC] Hawai‘i and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.

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.

[NTBG] National Tropical Botanical Garden. 2020. NTBG database herbarium record detail for *Dubautia waialealae*, PTBG1000089500, 085562, ca 20 individuals at Kawaikini summit region, 2 OCT 2020.

[NTBG] 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.

[USFWS] 2017. *Dubautia waialealae* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/tess/species_nonpublish/2438.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.

Walsh, S., B. Nyberg, and K. Wood. 2020. *Dubautia waialealae*. The IUCN Red List of Threatened Species 2020: e.T80229216A80229222.
<https://dx.doi.org/10.2305/IUCN.UK.2020-2.RLTS.T80229216A80229222.en>.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Dubautia waialealae* (na'ena'e)

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

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