

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Dubautia kalalauensis* (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 kalalauensis* (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/8952>).

Review Analysis:

Please refer to the previous 5-year review for *Dubautia kalalauensis* published in the Federal Register on September 13, 2017 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/2433.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. kalalauensis*.

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 kalalauensis* are provided in the tables below.

New Status Information:

- In 2017, there were three occurrences totaling eight mature and fewer than 20 immature individuals (USFWS 2017). As of 2021, there were five mature and seven immature individuals in three locations, and approximately 70 fenced, reintroduced individuals (Perlman and Agurauja 2019; Perlman 2019; Kishida et al. 2017; Kishida and Perlman 2015; Plant Extinction Prevention Program [PEPP] 2021).

New Threats:

- None reported.

New Management Actions:

- Collection and captive propagation—
 - The National Tropical Botanical Garden (NTBG) reported collection and storage of more than 1,500 seeds representing two founders from Kalalau Rim and Polihale (NTBG 2020).
 - Plants at Kahuama‘a Flat are being cross-pollinated (Perlman and Kishida 2014).
 - From 2010 to 2014, the Lyon Arboretum Seed Conservation Laboratory reported collection and storage of more than 97,000 seeds representing 12 founders from one population at Kahuama‘a Flat, more than 2,600 seeds representing three founders from a second population at Kahuama‘a Flat, and more than 3,000 seeds representing one founder from Kalalau (Lyon Arboretum 2022).
- Control of predation and herbivory by nonnative insects—There is invertebrate control for one population of *D. kalalauensis* at Kahuama‘a Flats (Perlman and Kishida 2014).

Table 1. Status and trends of *Dubautia kalalauensis* 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)	26	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 100 mature individuals each	No

2017 (5-year review)	8 mature <20 immature	92	All threats managed in all 3 populations	Partially, reintroduction within enclosure
			Complete genetic storage	Yes, 27 founders represented
			Reproduction (i.e., viable seeds, seedlings) at all 3 populations	Partially
			3 populations with 100 mature individuals each	No
2022 (5-year review)	12	70 total remain	All threats managed in all 3 populations	Partially, nonnative plant control in fenced enclosure for reintroduction and 1 wild individual
			Complete genetic storage	Partially, more collections needed as immature plants mature
			Natural reproduction at all 3 populations	Seedlings observed
			3 populations with 100 mature individuals each	No

Table 2. Threats to *Dubautia kalalauensis* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A	Ongoing	Partial, reintroduction into 1 enclosure
Established ecosystem altering invasive plant species degradation of habitat and competition	A, E	Ongoing	Partial, nonnative plant control within enclosure
Landslides and flooding destruction and degradation of habitat	A	Ongoing	None

Climate change degradation and destruction of habitat, including hurricanes	A	Ongoing	None
Predation and herbivory by rodents	C	Ongoing	None
Predation and herbivory by invertebrates	C	Ongoing	Partial, insecticide application
Inadequacy of existing regulatory mechanisms—lack of adequate hunting and biosecurity regulations	D	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	Partial, reintroduction ongoing

Synthesis:

Currently there are five mature and seven immature wild individuals of *Dubautia kalalauensis* on Kaua‘i. Approximately 70 reintroduced individuals are protected from feral ungulates by fencing and nonnative plant control. More than 100,000 seeds are in storage representing 16 founders from three subpopulations.

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 kalalauensis 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 kalalauensis* have not been met. Currently, there are 12 wild individuals (Table 1). There are more than 100,000 seeds in storage representing 16 founders from three subpopulations. One reintroduction area with 70 individuals remaining is protected by fencing and nonnative plant control (Table 1, Table

2). However, no other threats are being managed. Therefore, *D. kalalauensis* 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 to determine the current status of *Dubautia kalalauensis* within current and historical range.
- Ungulate monitoring and control—Construct and maintain exclosures around all populations to protect remaining wild individuals against habitat disturbance by feral ungulates.
- Nonnative invasive plant monitoring and control—Continue to control established ecosystem-altering nonnative invasive plant species and those that compete with *D. kalalauensis* at all populations.
- Predator and herbivore monitoring and control—Implement effective control measures for invertebrates and rodents.
- 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—Continue to collect material for genetic storage and for propagation for reintroduction.
- Reintroduction and augmentation—Augment wild populations and establish new populations within protected suitable habitat.
- Build resiliency and redundancy—Increase numbers of individuals and populations through historic range to reduce impacts of low numbers and hurricanes.
- 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.

Kishida, W. and S. Perlman 2015. Hawai'i Rare Plant Restoration Group (HRPRG) Field Data Form *in* PEPP 2019: Plant Extinction Prevention Program, FY 2019 Annual Report (Oct 1, 2018-Sep 30, 2019), USFWS CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F18AC00502, December 26, 2019, UH Mānoa, PCSU, PEPP. 192 pp. + appendices. BioPacifica database record for *Dubautia kalalauensis*, Pacific Islands Fish and Wildlife Office.

- Kishida, W., L. Waiamau, and A. Williams. 2017. Hawai'i Rare Plant Restoration Group (HRPRG) Field Data Form *in* PEPP 2019: Plant Extinction Prevention Program, FY 2019 Annual Report (Oct 1, 2018-Sep 30, 2019), USFWS CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F18AC00502, December 26, 2019, UH Mānoa, PCSU, PEPP. 192 pp. + appendices. BioPacifica database record for *Dubautia kalalauensis*, Pacific Islands Fish and Wildlife Office.
- 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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- [PEPP] Plant Extinction Prevention Program. 2021. Fiscal year 2021 interim performance report (October 1, 2020-September 30, 2021) cooperative agreements F18AC00502 and F19AC00532, US Fish and Wildlife Service CFDA Program #15.657, Endangered species conservation—recovery implementation funds,

University of Hawaii at Manoa, Pacific Cooperative Studies Unit, Plant
Extinction Prevention Program.

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[USFWS] 2021. Kaua'i Islandwide Recovery Plan. U.S. Fish and Wildlife Service,
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U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Dubautia kalalauensis* (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

_____ Date _____