

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Dubautia pauciflorula* (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 pauciflorula* (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/8338>).

Review Analysis:

Please refer to the previous 5-year reviews for *Dubautia pauciflorula* published in the Federal Register on August 27, 2010, and September 13, 2017 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1402.pdf and https://ecos.fws.gov/docs/tess/species_nonpublish/2436.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. pauciflorula*.

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 pauciflorula* are provided in the tables below.

New Status Information:

- Currently, there are estimated to be three to five mature individuals of *Dubautia pauciflorula* at Makaleha and one individual last observed at Wahiawa in 2017 (Kishida and Perlman 2017; Kaua‘i Plant Extinction Prevention Program [PEPP] 2021).

New Threats:

- None reported.

New Management Actions:

- Collection and captive propagation—The Lyon Arboretum Seed Conservation Laboratory reported collection and storage of 2,530 seeds representing two founders at Wahiawa, and 13,093 seeds representing three founders from Makaleha (Kapa‘a) (Lyon Arboretum 2022).

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

Date	No. wild individuals	No. outplanted	Stability Criteria identified by Recovery Plan	Stability Criteria Completed?
1991 (listing)	<50	0	Free of introduced invasive plant species	No
			Protected from feral pigs	No
			Protected from seed predators	No
			Complete life cycles within its range	No
			Complete genetic storage	No
1994 (recovery plan)	47	0	Free of introduced invasive plant species	No
			Protected from feral pigs	No
			Protected from seed predators	No
			Complete life cycles within its range	No
			Complete genetic storage	No

2003 (critical habitat)	42	0	Free of introduced invasive plant species	No
			Protected from feral pigs	No
			Protected from seed predators	No
			Complete life cycles within its range	Unknown
			Complete genetic storage	Partially
2009 (5-year review)	ca 100	0	Free of introduced invasive plant species	No
			Protected from feral pigs	No
			Protected from seed predators	No
			Complete life cycles within its range	Partially
			Complete genetic storage	Partially
Date	No. wild individuals	No. outplanted	*Preventing Extinction Criteria identified by HPPRCC	*Preventing Extinction Criteria Completed?
2017 (5-year review)	57	2	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			Reproduction (i.e., viable seeds, seedlings) at all 3 populations	Unknown
			3 populations with 50 mature individuals each	No
2022 (5-year review)	6	1	All threats managed in all 3 populations	No
			Complete genetic storage	Partially, 5 founders from 2 populations represented

			Natural reproduction at all 3 populations	Unknown
			3 populations with 100 mature individuals each	No

* 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 pauciflora* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A	Ongoing	Partial, 1 plant in enclosure
Established ecosystem altering invasive plant species degradation of habitat and competition	A, E	Ongoing	Partial, some protection in 1 enclosure
Landslides and flooding destruction and degradation of habitat	A	Ongoing	None
Climate change degradation and destruction of habitat	A	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	Partial, some outplanting

Synthesis:

Currently there are approximately six wild individuals of *Dubautia pauciflora* on Kaua‘i. PEPP and NTBG monitor populations and conduct seed collections. Lyon Arboretum Seed Conservation Laboratory reports storage of more than 15,600 seeds representing five founders from two populations. One reintroduced plant is within a managed enclosure.

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 pauciflora 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 pauciflora* have not been met. There are currently six wild individuals (Table 1). More than 15,600 seeds are in storage representing five founders from two populations (Table 1, Table 2). One reintroduced plant is within an enclosure; however, not all threats are being managed. Therefore, *D. pauciflora* 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 current and historical range for individuals of *Dubautia pauciflora* and monitor known occurrences.
- Ungulate monitoring and control—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 and those that compete with *D. pauciflora*.
- 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 seeds and propagative materials for storage and for maintenance of genetic stock.
 - Assess genetic variability within the extant populations.
- Reintroduction and augmentation—Augment wild populations and establish new populations within protected and managed suitable habitat
- Build resiliency and redundancy—Increase numbers of individuals and populations through historic range to reduce impacts of low numbers and climate change.
- 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 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 pauciflora*, Pacific Islands Fish and Wildlife Office.
- [KPEPP] Kaua‘i 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.
- 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.
- [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.
- [USFWS] U.S. Fish and Wildlife Service. 2009. *Dubautia pauciflora* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublish/1402.pdf.
- [USFWS] 2017. *Dubautia pauciflora* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublish/doc2436.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 *Dubautia pauciflorula* (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 _____