

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Dubautia latifolia* (koholāpehu)

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 latifolia* (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/1070>).

Review Analysis:

Please refer to the previous 5-year reviews for *Dubautia latifolia* published in the Federal Register on August 27, 2010, and September 13, 2017 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1621.pdf and https://ecos.fws.gov/docs/tess/species_nonpublish/2435.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. latifolia*.

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

New Status Information:

- There are estimated to be 225 mature individuals of *Dubautia latifolia* in 17 scattered subpopulations at Mākaha, Miloli‘i, Nu‘alolo, Honopū, Kōke‘e, Waiakoali stream, Po‘omau, Mōhihi, Koai‘e, and Kawai Iki on Kaua‘i (Walsh 2016).

New Threats:

- None reported.

New Management Actions:

- Surveys and inventories—Populations at Honopū, Mōhihi, Koai‘e (Kipalau), Kōke‘e, and Po‘omau were monitored for new individuals and for seed collections (National Tropical Botanical Garden [NTBG] 2018a, b, 2019a, b, 2020a; Plant Extinction Prevention Program [PEPP] 2020). Reported were one individual at Honopū, more than 10 individuals at Mōhihi-Wai‘alae Trail and Kohua Ridge, 11 individuals at Kipalau (Koai‘e), three individuals at Kōke‘e, and five individuals at Po‘omau (NTBG 2018a, b, 2019a, b; PEPP 2020).
- Captive propagation for genetic storage and reintroduction—
 - NTBG reported storage of 55 seeds representing one founder at Kohua (Mōhihi) and one plant in the nursery with 879 seeds in storage representing one founder from Awa‘awapuhi (NTBG 2020b).
 - In 2017, PEPP collected fruit from three founders at Mōhihi, four founders at Kumuwela (Po‘omau), and two founders at Mākaha (PEPP 2017).
 - In 2002, the Lyon Arboretum Seed Conservation Laboratory reported storage of 180 seeds representing one founder from Awa‘awapuhi. In 2014, there were 2,988 seeds in storage representing one founder from Mōhihi, and in 2020, there were 7,462 seeds in storage representing one founder from Kōke‘e (Lyon Arboretum 2022).

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

Date	No. wild individuals	No. outplanted	Stability Criteria identified by Recovery Plan	Stability Criteria Completed?
1992 (listing)	40	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
1995 (recovery)	>100	0	All threats managed in all 3 populations	No

			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2003 (critical habitat)	65–84	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
2010 (5-year review)	100–200	24+	All threats managed in all 3 populations	No
			Complete genetic storage	Partially
			3 populations with 50 mature individuals each	No
Date	No. wild individuals	No. outplanted	*Preventing Extinction Criteria identified by HPPRCC	*Preventing Extinction Criteria Completed?
2017 (5-year review)	225	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			Reproduction (i.e., viable seeds, seedlings) at all 3 populations	Unknown
			3 populations with 50 mature individuals each	No
2022 (5-year review)	ca 225	0	All threats managed in all 3 populations	No
			Complete genetic storage	Partially, 11 founders from 5 populations
			Natural reproduction at all 3 populations	Unknown

			3 populations with 100 mature individuals each	No
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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 *Dubautia latifolia* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat and herbivory by feral ungulates	A, C	Ongoing	Partial, 1 enclosure
Established ecosystem altering invasive plant species degradation of habitat and competition	A, E	Ongoing	Partial, 1 enclosure
Fire destruction and degradation of habitat	A	Ongoing	None
Climate change degradation and destruction of habitat, including hurricanes	A	Ongoing	None
Reduced viability due to low numbers and low germination rates	E	Ongoing	Partial, germination trials at Lyon Arboretum

Synthesis:

Currently there are approximately 225 wild individuals of *Dubautia latifolia* on Kaua‘i. PEPP and NTBG monitor populations and conduct seed collections. Currently, more than 11,000 seeds are in storage representing 11 founders. One wild population is within an enclosure for protection from feral ungulates and fencing is proposed for three other areas.

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 latifolia is a short-lived perennial woody vine 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 latifolia* have not been met. Although there are approximately 17 subpopulations, no populations total 100 mature individuals (Table 1). Eleven founders are currently represented in seed and propagule collections (Table 1, Table 2). One wild population is within an enclosure and three other enclosures are proposed for construction. However, not all threats are being managed. Therefore, *D. latifolia* 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 latifolia* and monitor known occurrences.
- Ungulate monitoring and control—Construct and maintain enclosures to protect all occurrences from habitat disturbance and herbivory by feral ungulates.
- Nonnative invasive plant monitoring and control—Control established ecosystem-altering nonnative invasive plant species and those that compete with *D. latifolia*.
- Fire monitoring and control—Develop and implement fire management plans for all wild and reintroduced populations.
- 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.
 - Conduct reproductive biology studies regarding self-incompatibility in this species in order to understand and address low germination rates.
- Reintroduction and augmentation—Augment wild populations and establish new populations within protected and managed suitable habitat to reduce impacts of climate change
- Build resiliency and redundancy—Increase numbers of individuals and populations through historic range to reduce impacts of low germination rates.

- 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. 2018a. NTBG database herbarium record detail for *Dubautia latifolia*, 079748, Kohua ridge, 19 JAN 2018.

[NTBG] 2018b. NTBG database herbarium record detail for *Dubautia latifolia*, 079798, upper south slopes west of Mōhihi-Wai‘alae Trail, Kipalau subgulch, 27 JUN 2018.

[NTBG] 2019a. NTBG database herbarium record detail for *Dubautia latifolia*, 082662, Honopū north slopes and drainage below Kainamanu, 29 MAY 2019.

[NTBG] 2019b. NTBG database herbarium record detail for *Dubautia latifolia*, 083546, along Mōhihi-Wai‘alae Trail, 29 OCT 2019.

[NTBG] 2020a. NTBG database herbarium record detail for *Dubautia latifolia*, 082408, Kumuwela, along road west of Po‘omau, 13 JUN 2019.

[NTBG] 2020b. 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. 2017. Plant Extinction Prevention Program FY 2017 Annual Report (Oct 1, 2016-Sep 30, 2017), Coop Agreement: F14A00174, U.S. Fish and Wildlife Service CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds. 235 pp.

[PEPP] 2020. Plant Extinction Prevention Program, fiscal year 2020 interim performance report (October 1, 2019-September 30, 2020) cooperative agreement F18AC00502 (interim report), F19AC00532 (interim report), 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. 70 pp.

- [USFWS] U.S. Fish and Wildlife Service. 2010. *Dubautia latifolia* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublish/1621.pdf.
- [USFWS] 2017. *Dubautia latifolia* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublish/doc2435.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. 2016. *Dubautia latifolia*. The IUCN Red List of Threatened Species 2016:e.T79866204A115498972, <http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T79866204A79866257.en>.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Dubautia latifolia* (koholāpehu)

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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