

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Dubautia imbricata* ssp. *imbricata* (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 imbricata* ssp. *imbricata* (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/2947>).

Review Analysis:

Please refer to the previous 5-year review for *Dubautia imbricata* ssp. *imbricata* published in the Federal Register on September 13, 2017 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/2432.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. imbricata* ssp. *imbricata*.

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 imbricata* ssp. *imbricata* are provided in the tables below.

New Status Information:

- In 2017, there were an estimated 5,000 individuals of *Dubautia imbricata* ssp. *imbricata* from Wai‘ale‘ale to Pu‘uauuka (USFWS 2017). Currently, two subpopulations in the same areas are estimated to total 3,000 individuals (Rønsted et al. 2020). The subpopulations are severely fragmented and may not be viable in the long term as individuals have little to no genetic exchange (Rønsted et al. 2020).

New Threats:

- None reported.

New Management Actions:

- NTBG reports seeds of at least one founder secured in seed storage from a collection from Wahiawa in 2012 (NTBG 2021).

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

Date	No. wild individuals	No. outplanted	Interim Criteria identified by HPPRCC	Interim Criteria Completed?
2010 (listing and critical habitat)	1,400	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 300 mature individuals each	No
2017 (5-year review)	5,000	0	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			Reproduction (i.e., viable seeds, seedlings) at all 3 populations	Partially
			3 populations with 300 mature individuals each	Partially
2022 (5-year review)	3,000	0	All threats managed in all 3 populations	No

			Complete genetic storage	Partially
			Replacement and regeneration (seedlings become mature plants) at all 3 populations	Unknown
			3 populations with 600 mature individuals each	No

Table 2. Threats to *Dubautia imbricata* ssp. *imbricata* 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 and competition	A, E	Ongoing	None
Climate change degradation and destruction of habitat, including hurricanes	A	Ongoing	None
Inadequacy of existing regulatory mechanisms—lack of adequate biosecurity regulations	D	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	None

Synthesis:

Currently there are approximately 3,000 wild individuals of *Dubautia imbricata* ssp. *imbricata* on Kaua‘i. This estimate is 2,000 individuals fewer than estimated five years prior. None of the population is protected from feral ungulates. Collection and propagation have not been reported since 2012.

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 imbricata ssp. *imbricata* is a short-lived perennial shrub and an obligate outcrosser. The interim criteria has changed from three populations of 300 individuals each to three populations of 600 individuals each to reflect the change regarding the species' reproductive status as an obligate outcrosser. For interim stabilization, which is the second step 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 *adequately* 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 of 600 mature individuals each should be documented on Kaua'i where the species now occurs or occurred historically and each of these populations must demonstrate regeneration of seedlings and growth to at least sapling stage for woody species and documented regeneration within each of the target populations.

The interim goals for *Dubautia imbricata* ssp. *imbricata* have not been met. Currently, there are approximately 3,000 wild individuals; however, populations are severely fragmented and numbers are declining (Table 1). There are few propagative materials in storage. No threats are being managed for this species. Therefore, *D. imbricata* ssp. *imbricata* 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 imbricata* ssp. *imbricata* 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—Control established ecosystem-altering nonnative invasive plant species and those that compete with *D. imbricata* ssp. *imbricata* at all 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 material for genetic storage, propagation, and 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.
- Population biology research—Study *D. imbricata* ssp. *imbricata* populations to determine viable population size and structure, geographical distribution, flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, limiting factors, and threats.
- 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.

Rønsted, N., B. Nyberg, and K. Wood. 2020. *Dubautia imbricata* subsp. *imbricata*. The IUCN Red List of Threatened Species 2020: e.T173119731A173119738. <https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T173119738.en>.

[NTBG] National Tropical Botanical Garden. 2020. 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] U.S. Fish and Wildlife Service. 2017. *Dubautia imbricata* ssp. *imbricata* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/docs/tess/species_nonpublsh/2432.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.

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SIGNATURE PAGE for 5-YEAR REVIEW of *Dubautia imbricata* ssp. *imbricata*
(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
- X No Change in listing status

For Field Supervisor, Pacific Islands Fish and Wildlife Office

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