

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Bidens campylothea* subsp. *waihoiensis* (ko‘oko‘olau)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2023. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 133 Species in Oregon, Washington, Idaho, Montana, California, Nevada, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. Federal Register 88(56):17611–17614, March 23, 2023.

Lead Region/Field Office:

Region 1/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, Recovery Program 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) beginning in October 2023. The review was based on a review of current, available information since the last 5-year review for *Bidens campylothea* subsp. *waihoiensis* (USFWS 2020). The evaluation by Cheryl Phillipson, Biologist, was reviewed by Lauren Weisenberger, Plant Recovery Coordinator, and Megan Laut, Recovery Program 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 (<http://ecos.fws.gov/ecp/species/6450>).

Review Analysis:

Please refer to the previous 5-year reviews for *Bidens campylothea* subsp. *waihoiensis* published in the Federal Register on September 25, 2020 (available at https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3103.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 *B. campylothea* subsp. *waihoiensis*.

This short-lived perennial herb in the Asteraceae (sunflower) family is endangered and occurs on Haleakalā. The status and trends for *Bidens campylothea* subsp. *waihoiensis* are provided in the tables below.

New Status Information:

- While populations have been observed since the last five-year review, there is no updated census data. There is no data to indicate a change in total population size. There is an additional complication of possible hybridization of plants that co-occur with the subspecies *pentamera* at ‘Ohe‘o (Oppenheimer 2019, pers. comm.; PEPP 2024).
- There are approximately 10 founders from 3 populations represented in *ex situ* storage.

New Threats:

- None reported.

New Management Actions:

- Monitoring and surveys—In 2024, the National Park Service (NPS) reported that natural regeneration is observed in the population at Kīpahulu Valley (NPS 2024a, p. 23).
- Captive propagation for genetic storage and reintroduction—
 - The NPS reported collection and storage of seeds representing founder plants in Kīpahulu Valley and ‘Ohe‘o (National Park Service 2024a, p. 23). A collection was also made from one founder at Delta Camp-Palikea (Kīpahulu-‘Ohe‘o) (NPS 2024b Appendix C, p. 5).
 - The Lyon Arboretum Seed Conservation Laboratory reported 21 seeds stored in a collection from one cultivated plant in 2014 (Lyon Arboretum 2024).
 - In 2025, the Olinda Rare Plant Facility on Maui reported propagation of three plants representing one founder at north Waiho‘i (Olinda 2025).
 - The National Tropical Botanical Garden (NTBG) reported collection and storage of 300 seeds from one founder in 1994; however, due to its age the viability of this collection is uncertain (NTBG 2025).
- In 2018 and 2023, about 150 individuals were translocated to Kīpahulu Valley and ‘Ohe‘o by the NPS (NPS 2024a, p. 23).

Table 1. Status and trends of *Bidens campylotheca* subsp. *pentamera* from listing through current 5-year review.

Date	No. wild individuals	No. Outplanted	Preventing Extinction Criteria Identified by HPPRCC*	Preventing Extinction Criteria* Completed?
2013 (listing)	ca 200	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2020 (5-year review)	ca 100	123 immature in 2018	All threats managed in all 3 populations	Partially, some protection from ungulates
			Complete genetic storage	Limited
			3 populations with 50 mature individuals each	Partially, 2 populations ca 50 each, population structure unknown and numbers approximate
2025 (5-year review)	ca 100	150	All threats managed in all 3 populations	Partially, 3 populations fenced
			Complete genetic storage	Partially
			Reproduction (i.e., viable seeds, seedlings) at all 3 populations	Recruitment observed at Kīpahulu
			3 populations with 50 mature individuals each	Partially, 2 populations ca 50 each

Table 2. Threats to *Bidens campylothea* subsp. *waihoiensis* 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, fencing at 3 populations
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Partial, fenced populations are less at risk of spread of invasive nonnative plants by feral ungulates
Climate change degradation or loss of habitat, including landslides and flooding	A	Ongoing	None
Predation and herbivory by rodents and invertebrates	C	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	Partial, seed collection, translocation, and small number of plants in <i>ex situ</i> cultivation
Loss of pollinators and dispersal agents	E	Ongoing	None
Hybridization	E	Potential	None

Synthesis:

Currently there may be approximately 100 wild individuals of *Bidens campylothea* subsp. *waihoiensis* in three wild populations on Haleakalā. All populations are protected from feral ungulates by exclosures and/or strategic fencing except for one individual at Kawaipapa. Surveys are conducted by the National Park Service at Haleakalā and the Plant Extinction Prevention Program. Fewer than 10 founders from three populations are represented in collections and propagation. Recently 150 individuals were translocated to Kīpahulu and ‘Ohe‘o.

Preventing extinction, interim stabilization, downlisting, and delisting objectives are provided in the Recovery Plan for 44 Species from Maui Nui (Islands of Maui, Moloka‘i and Lāna‘i) (USFWS 2023c). 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.

Bidens campylothea subsp. *waihoiensis* is a short-lived perennial herb. 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 Maui where the species occurs or occurred historically and each of these populations must be naturally reproducing (i.e., viable seeds, seedlings) with a minimum of 50 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. The current status of the remaining populations is uncertain but is estimated to be the same as reported in 2020. The Kīpahulu Valley population is completely fenced; however, some feral pigs have re-invaded this area. In Waiho‘i, the upper portion of the valley is fenced and ungulate-free, but individuals of this subspecies remain below this fenced unit and are subject to disturbance. Similarly, of the two known individuals in Hana Forest Reserve, one is fenced and one remains outside. Approximately fewer than 10 founders from three populations are represented in storage or propagation, with 150 outplanted individuals. No other conservation actions have been implemented for this subspecies to address additional threats, so all populations are at the risk of competition with nonnative invasive plants, the effects of climate change including landslides and flooding, seed predation and herbivory by rats and slugs, loss of pollinators and dispersal agents, and potential hybridization (Tables 1a, 1b, Table 2). Therefore, *B. campylotheca* subsp. *waihoiensis* meets the definition of Endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

No significant new information regarding the species' biological status has been reported since the last 5-year review in 2020. Thus, the following recommendations for future actions are updated or reiterated for the 5-year review for 2025.

- Surveys and monitoring—Continue to conduct surveys for *Bidens campylotheca* subsp. *waihoiensis* in historical locations and areas of potentially suitable habitat
- Ungulate monitoring and control—Continue to construct and maintain exclosures and strategic fencing to protect individuals from the negative impacts of feral ungulates.
- Invasive nonnative plant monitoring and control—Continue to control established ecosystem-altering nonnative invasive plant species and those that compete with *B. campylotheca* subsp. *waihoiensis*.
- Climate change adaptation strategy—Research suitability of habitat in the future due to the impacts of climate change.
- Predator and herbivore monitoring and control—Implement effective controls against predation and herbivory by feral ungulates, rodents, and invertebrates.
- Captive propagation for genetic storage and reintroduction—Continue to collect genetic material (seeds and cuttings) for storage and propagation efforts and for maintenance of genetic stock.
- Reintroduction and translocation—Continue to propagate and reintroduce individuals into suitable habitat within historic range that is being managed for

known threats to reduce the impacts of climate change, landslides, flooding, and low numbers.

- Loss of dispersal agents—Determine if pollinators and dispersers are lacking or if other factors are limiting this subspecies' survival and reproduction.
- Hybridization—Monitor populations in Kīpahulu Valley where *B. campylothecha* subsp. *pentamera* co-occurs to determine if hybridization is a threat.
- Build resiliency, redundancy, and representation—Increase species' viability through habitat restoration, threat control, and reintroductions into suitable habitat that is being managed for known threats.
- Alliance and partnership development—Continue to work with partners in planning and implementation of ecosystem-level restoration and management to benefit this species.

References:

Haleakalā National Park. 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.

Lyon Arboretum. 2024. 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.

National Park Service. 2024a. Draft Biological Assessment Haleakalā National Park—operation and management, Maui, Hawai'i. U.S. Department of the Interior. Dec 2024. 98 pp.

National Park Service. 2024b. 2024 annual report, Haleakalā National Park, Maui, Hawai'i. USFWS biological opinion 1-2-2013-F-0049 & Recovery Permit #ES014497-17. 6 pp.

Olinda 2025. 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. 2022. Plant Extinction Prevention Program fiscal year 2022 interim performance report (October 1, 2021-September 30, 2022), Cooperative Agreement F19AC00532 (Interim report), U.S. Fish and Wildlife Service CFDA Program #15.657 Endangered Species Conservation—Recovery Implementation Funds, University of Hawai'i at Mānoa, Pacific Cooperative Studies Unit, Plant Extinction Prevention Program. 50 pp.

- [PEPP] 2024. U.S. Fish and Wildlife Service CFDA Program #15.657, Endangered Species Conservation—Recovery Implementation Funds, Plant Extinction Prevention Program Fiscal Year 2024 Interim Performance Report (October 1, 2023—September 30, 2024). Cooperative Agreements F10AC00532, F22AC02205, F23AC01766. 56 pp.
- [USFWS] U.S. Fish and Wildlife Service. 2020. *Bidens campylothea* subsp. *waihoiensis* (ko‘oko‘olau) 5-year review summary and evaluation. Pacific Islands Fish and Wildlife Office, Honolulu. 24 pp. https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3103.pdf.
- [USFWS] 2023a. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 133 Species in Oregon, Washington, Idaho, Montana, California, Nevada, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. Federal Register 88(56):17611–17614, March 23, 2023.
- [USFWS] 2023b. Species report for *Bidens campylothea* subsp. *waihoiensis* version 1.0. USFWS Pacific Region, Honolulu, HI. 17 pp.
- [USFWS] 2023c. Recovery plan for 44 species from Maui Nui (islands of Maui, Molokai, and Lanai). July 18, U.S. Fish and Wildlife Service, Portland, OR. 90 pp. + appendices.

U.S. FISH AND WILDLIFE SERVICE

SIGNATURE PAGE for 5-YEAR REVIEW of *Bidens campylotheca* subsp. *waihoiensis*
(ko'oko'olau)

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 _____