

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Neraudia ovata* (no common name)

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, Hawaii, Guam, and 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:

Daniel Adamski, 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 *Neraudia ovata* (USFWS 2020). The evaluation by Daniel Adamski, 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/3669>).

Review Analysis:

Please refer to the previous 5-year reviews for *Neraudia ovata* published in the Federal Register on January 18, 2008 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1192.pdf), August 3, 2015 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/2279.pdf), and September 28, 2020 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/3117.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 *N. ovata*.

This short-lived perennial sprawling shrub and obligate outcrosser in the Urticaceae (nettle) family endangered and found on the island of Hawai‘i. The current status and trends for *Neraudia ovata* are provided in the tables below.

New Status Information:

- Currently, there is there is one wild population within the Pōhakuloa Training Area (PTA), totaling 39 mature and 7 immature individuals, and one population at Pu‘uanahulu with one mature individual (U.S. Army Garrison-Hawai‘i [USAG-HI] 2024; PEPP 2024). In 2020, there were two additional populations at Kaloko Makai and Waikapū totaling eight wild individuals, however, no individuals were observed during monitoring in 2024 (PEPP 2024).
- There are 52 founder lines represented in *ex situ* storage and propagation collections, including seeds in seed banks and plants in a nursery or living collection (Lyon Arboretum 2024; USAG-HI 2024; Volcano Rare Plant Propagation Facility [VRPPF] 2024.)

New Threats:

- None

New Management Actions:

- Monitoring and surveys—The Center for Environmental Management of Military Lands (CEMML) monitors fences, monitors plants, and collects seeds *Neraudia ovata* at PTA (USAG-HI 2024). PEPP monitors wild occurrences and reintroduced individuals of *Neraudia ovata* on the island of Hawai‘i (PEPP 2024). Staff at Hawai‘i Volcanoes National Park [HVNP] monitor reintroduced individuals (HAVO 2024).
- Control of non-native plants—CEMML and HVNP staff conducts non-native plant control around wild and reintroduced populations on the island of Hawai‘i and CEMML maintains fuel breaks across PTA to protect plants from wildfires (USAG-HI 2024).
- Collection and propagation for genetic storage and reintroduction—
 - The plant nursery for Ka‘ūpūlehu Dryland Forest Preserve (DFP) reported a collecting 20 seeds in 2021 from an outplanted individual (Ka‘ūpūlehu 2024).
 - Lyon Seed Conservation Laboratory reported 210 seeds in storage representing four founders (Lyon Arboretum 2024).
 - USAG-HI reported approximately 145,000 seeds in storage from 48 founders and over 160,000 seeds in storage from cultivated plants, as well as 11 cultivated plants representing four founders (USAG-HI 2024). USAG-HI reported collections from eight founders totaling 223 seeds in 2024 (USAG-HI 2024).
 - VRPPF reports 27 plants in propagation representing founders from Kaloko, Pu‘uanahulu, Manukā, and Kohala (VRPPF 2024).
- Translocations—From 2004–2014, USAG-HI reintroduced 70 outplants within PTA and 114 outplants at Pu‘uanahulu. Monitoring in 2023 revealed that 59 outplants survived within PTA, and five outplants remained at Pu‘uanahulu (USAG 2024). Reintroductions at several locations at Pu‘uwa‘awa‘a totaled over 1,500 individuals in 2019, and the current status of those plants is unknown (Pu‘uwa‘awa‘a 2019). Between 2020 and 2023, a total of 124 individuals were reintroduced at three locations (Moana Loa Strip, Keauhou, and Kīpuka Māmane)

at HAVO, and monitoring at the Kīpuka Māmane site showed 30% survival after two years (HAVO 2024).

- Research—PTA reported germination trials for 2,677 seeds in storage representing 41 founders of *Neraudia ovata*. The average germination rate for these seeds, which were in storage for approximately 10 years, was just 1% (USAG-HI 2024).

Table 1. Status and trends of *Neraudia ovata* from listing through current 5-year review. Table 1a shows progress according to Interim Stabilization Goals; Table 1b shows progress according to Preventing Extinction Goals.

Table 1a.

Date	No. wild individuals	No. Outplanted	Stability Goals identified in Recovery Plan	Stability Goals Completed?
1996 (Listing)	11	0	All threats managed in all 3 populations	No
			Complete genetic storage	Yes
			3 populations with 50 mature individuals each	No
2008 (5-year review)	ca 90	ca 615	All threats managed in all 3 populations	Partial
			Complete genetic storage	Partial
			3 populations with 50 mature individuals each	No
2015 (5-year review)	ca 90	ca 615	All threats managed in all 3 populations	Partial
			Complete genetic storage	Partial
			3 populations with 50 mature individuals each	Partially

Table 1b.

Date	No. wild individuals	No. outplanted	*Preventing Extinction Targets identified by HPPRCC	*Preventing Extinction Targets Completed?
2020 (5-year review)	ca 104	ca 1,984	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			Natural reproduction at all 3 populations	Partially
			3 populations with 100 mature individuals each	No
2025 (5-year review)	47 (40 mature, 7 immature)	At least 171 survive	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			Natural reproduction at all 3 populations	Partially
			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 *Neraudia ovata* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Degradation and destruction of habitat by feral ungulates	A,C, E	Ongoing	Yes, all individuals within exclosures
Established ecosystem altering invasive plant species degradation of habitat	A, E	Ongoing	Partial, nonnative plant control at most populations
Fire and degradation of habitat	A	Ongoing	Partial; fuel breaks at PTA and fire management plan
Drought destruction and degradation of habitat	A	Ongoing	None
Climate change degradation or loss of habitat	A	Ongoing	Partial, reintroductions
Predation and herbivory by rats	C	Ongoing	None
Predation and herbivory by invertebrates— white fly, scale, spittlebugs	C	Ongoing	None
Lack of adequate hunting regulations	D	Ongoing	Partial, all individuals within exclosures, monitoring for ingress
Reduced viability due to low numbers	E	Ongoing	Partial, collection, storage, and reintroduction, with germination trials

Synthesis:

Currently there are 47 wild individuals (40 mature and 7 immature) of *Neraudia ovata* on the island of Hawai‘i. Individuals are provided protection by fencing and nonnative plant control. Seed collections, propagation, and outplanting are ongoing.

Stabilizing (interim) targets, and Downlisting and Delisting criteria are provided in the Big Island II: Addendum to the Recovery Plan for the Big Island Plant Cluster (1998) and 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.

Neraudia ovata 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 the island of Hawai‘i where they now occur or occurred historically and each of these populations must be naturally reproducing (i.e., viable seeds, seedlings, saplings) with a minimum of 100 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. Although genetic storage is almost complete (Table 1), there are no populations totaling at least 50 reproducing individuals, and all threats are not being managed (Table 1, Table 2). Therefore, *Neraudia ovata* 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 monitor known populations of *Neraudia ovata* to assess resiliency and make collections.
 - Continue surveys for populations of *N. ovata* in areas of potentially suitable habitat.
 - Determine suitable locations for additional reintroductions.
- Ungulate monitoring and control—Continue to maintain fenced exclosures and construct new fences as needed to protect individuals from the negative impacts of browsing by ungulates.
- Fire protection—Continue to improve and implement the fire management plan developed for PTA and develop and implement fire management plans for other sites with wild and reintroduced populations.
- Drought protection—Continue to monitor and control feral ungulates and nonnative plants to protect and increase vigor of *N. ovata* during times of drought.
- Invasive nonnative plant monitoring and control—Continue control of established ecosystem-altering nonnative invasive plant species, and those that compete with *N. ovata*.
- Site and habitat protection—Develop and implement effective control measures to reduce the impacts of fire and drought.
- Climate change adaptation strategy—Research suitability of habitat for viability of species, including where to conduct translocations in the future due to the impacts of climate change.
- Predation and herbivory by invertebrates—Determine effects of invertebrates and develop and implement effective control methods within the vicinity of all known *N. ovata* populations if necessary.

- Vertebrate monitoring and control—Determine and implement effective methods to control rats.
- Captive propagation for genetic storage and reintroduction—Continue collection and propagation efforts for maintenance of genetic stock and for reintroduction.
- Build resiliency, redundancy, and representation—Increase species' viability through habitat restoration, threat control, and reintroduction and translocation into suitable habitat that is being managed for known threats to this species to reduce impacts of non-native plants and drought.
- Research—
 - Conduct genetic studies to determine genetic variation within the population (and between populations) and plan an effective breeding program.
 - Continue to conduct germination trials to determine viability of seeds in storage.
- 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:

- [HAVO] Hawai‘i Volcanoes National Park. 2024. Annual report to the U.S. Fish and Wildlife Service threatened and endangered plants Hawaii Volcanoes National Park ES019078. 39 pp.
- [HPPRCC] Hawai‘i and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.
- Ka‘ūpūlehu Dryland Forest Preserve. 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.
- 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.
- [PEPP] Plant Extinction Prevention Program. 2023. Plant Extinction Prevention Program FY 2023 annual report Oct 1, 2022-Sep 30, 2023), USFWS CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F14AC00174, December 24, 2016, UH Mānoa, PCSU, PEPP. 74 pp.
- [PEPP] 2024. Plant Extinction Prevention Program FY 2023 annual report Oct 1, 2023-Sep 30, 2024), USFWS CFDA Program #15.657, Endangered Species Conservation-Recovery Implementation Funds, Coop Agreement F14AC00174, December 24, 2016, UH Mānoa, PCSU, PEPP. 56 pp.
- Pu‘uwa‘awa‘a Rare Plant Facility. 2019. 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.
- [USAG-HI] United States Army Garrison-Hawai‘i. 2024. U.S. Army Garrison Pōhakuloa Training Area Natural Resources Program FY 2022 to FY 2023 Biennial Report. Prepared by Center for Environmental Management of Military Lands, Colorado State University. June 2024. 558pp.
- [USFWS] 2008. *Neraudia ovata* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
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https://ecos.fws.gov/docs/five_year_review/doc3117.pdf.

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[VRPPF] Volcano Rare Plant Propagation Facility. 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.

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SIGNATURE PAGE for 5-YEAR REVIEW of *Neraudia ovata* (no common name)

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 _____