

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Eragrostis fosbergii* (Fosberg's lovegrass)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2022. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 167 Species in Oregon, Washington, Idaho, Montana, California, Hawaii, Guam, and the Northern Mariana Islands. Federal Register 87(90):28031–28034, May 10, 2022.

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 *Eragrostis fosbergii* (USFWS 2019). 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/7921>).

Review Analysis:

Please refer to the previous 5-year reviews for *Eragrostis fosbergii* published in the Federal Register on August 2, 2011, and September 20, 2019 (available at https://ecos.fws.gov/docs/tess/species_nonpublish/1758.pdf, and https://ecos.fws.gov/docs/tess/species_nonpublish/2860.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 *E. fosbergii*.

This short-lived perennial grass in the Poaceae (grass) family is endangered and is known from the island of O'ahu. The status and trends for *Eragrostis fosbergii* are provided in the tables below.

New Status Information:

- In 2019, there were estimated to be 30 individuals of *Eragrostis fosbergii* in the Wai‘anae mountains (USFWS 2019). In 2019–2020, plants were observed co-occurring with *Eragrostis grandis*, possibly totaling as many as 100 individuals (Plant Extinction Prevention Program [PEPP] 2019–2023). Based on recent observations, this previous estimate may have been too high, as the two species are difficult to distinguish and identify if glumes (flower clusters) are not present. Currently, there is estimated to be fewer than 50 individuals (Ching 2024, pers. comm.; Weisenberger 2024, pers. comm.).
- Fourteen founders from one population in the Wai‘anae mountains are represented in seed collections (Lyon Arboretum 2022).

New Threats:

- None reported.

New Management Actions:

- Surveys and monitoring—In 2024, the only known population of *Eragrostis fosbergii* was observed to persist and is mixed with *E. grandis* (Ching 2024, pers. comm.).
- Collection and propagation for genetic storage and reintroduction—
 - In 2020, the Plant Extinction Prevention Program [PEPP] took collections from the only known population for storage at Lyon Arboretum (PEPP 2020, p. 27).
 - In 2020, the Lyon Arboretum Seed Conservation Laboratory reported storage of more than 20,000 seeds representing 14 founders from one population (Lyon Arboretum 2022).

Table 1. Status and trends of *Eragrostis fosbergii* 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	Stabilization Criteria identified in Recovery Plan	Stabilization Criteria Completed?
1996 (listing)	6	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 50 mature individuals each	No
2011 (5-year review)	5	0	All threats managed in all 3 populations	No

			Complete genetic storage	No
			3 populations with 50 mature individuals each	No

Table 1b.

Date	No. wild individuals	No. outplanted	*Preventing Extinction Targets identified by HPPRCC	*Preventing Extinction Targets Completed?
2019 (5-year review)	ca 30 pending confirmation	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			Reproduction (i.e., viable seeds, seedlings) at all 3 populations	No
			3 populations with 50 mature individuals each	No
2024 (5-year review)	<50	0	All threats managed in all 3 populations	No
			Complete genetic storage	14 founders represented in seed collections
			Natural reproduction at all 3 populations	No
			3 populations with 50 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 *Eragrostis fosbergii* 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	None
Established ecosystem altering invasive plant species degradation of habitat and competition	A	Ongoing	None
Climate change degradation or loss of habitat	A	Ongoing	None
Predation and herbivory by rodents and invertebrates	C	Ongoing	None
Reduced viability due to low numbers	E	Ongoing	Partial, seeds in storage

Synthesis:

Currently, one population of *Eragrostis fosbergii* in the Wai‘anae mountains is estimated to total fewer than 50 individuals. Seed collections and storage are ongoing. No other conservation measures are currently conducted specifically for this species.

Stabilizing (interim), and downlisting and delisting criteria are provided in the Recovery Plan for the O‘ahu Plants (USFWS 1998) and preventing extinction targets have been added and criteria 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.

Eragrostis fosbergii is a short-lived perennial grass. 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 O‘ahu where they now occur 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 number of wild individuals is estimated to be fewer than 50. No recruitment is reported (Table 1). Seed collections are ongoing; however, the population has not met genetic representation goals (Table 1). Currently, there is no fencing or other management for this species (Table 2). Therefore, *Eragrostis fosbergii* 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 2019. Thus, the following recommendations for future actions are updated or reiterated for the 5-year review for 2024.

- Surveys and monitoring—
 - Continue to conduct surveys in suitable and historical habitat for additional populations.
 - Determine identity of individuals and the extent of existing population.
- Ungulate monitoring and control—Protect recently discovered individuals from the negative impacts of habitat degradation and browsing by feral ungulates.
- Nonnative invasive plant monitoring and control—Control established ecosystem-altering nonnative invasive plant species, and those that compete with *Eragrostis fosbergii*, at all populations.
- Climate change adaptation strategy—Assess the modeled effects of climate change on this species and use to determine future landscape needed for its recovery.
- Predator and herbivore monitoring and control—
 - Implement control methods for rodents at all populations.
 - Determine level of threat of predation by invertebrates and implement effective control methods if necessary.
- Captive propagation for genetic storage and reintroduction—Continue collection and propagation efforts for maintenance of genetic stock and for reintroduction.
- Reintroduction and augmentation—Establish new populations and augment existing populations of *E. fosbergii* in suitable habitat within historical range that is being managed for known threats to this species.
- Build resiliency, redundancy, and representation—Increase species' viability through habitat restoration, threat control, and reintroduction and translocation to reduce impacts of predation and herbivory, climate change, and small populations.
- Alliance and partnership development—Continue to work with PEPP, Native Ecosystems Protection & Management (NEPM), and other land managers and partners to initiate planning and contribute to implementation of ecosystem-level restoration and management to benefit this species.

References:

Ching, S 2024, pers. comm. Email regarding current status of *Eragrostis fosbergii*, 14 JUN 2024.

[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.

[PEPP] Plant Extinction Prevention Program. 2019–2023. Plant Extinction Prevention Program. 2019–2023. Plant Extinction Prevention Program fiscal years 2019 to 2023 interim performance report (October 1, 2018-September 30, 2023). U.S. Fish and Wildlife Service CFDA Program \$15.657 Endangered Species Conservation—Recovery Implementation Funds, Cooperative Agreement: F18AC00502 (Final performance report), University of Hawai‘i at Mānoa, Pacific Cooperative Studies Unit. 105 pp. + database.

[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), 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. 70 pp.

[USFWS] U.S. Fish and Wildlife Service. 1998. Recovery Plan for the O‘ahu Plants. Portland. 207 pp. + appendices.

[USFWS] 2011. *Eragrostis fosbergii* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/five_year_review/doc/1758.pdf.

[USFWS] 2019. *Eragrostis fosbergii* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.
https://ecos.fws.gov/docs/five_year_review/doc/2860.pdf.

[USFWS] 2022. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status reviews for 167 Species in Oregon, Washington, Idaho, Montana, California, Hawaii, Guam, and the Northern Mariana Islands. Federal Register 87(90): 28031–28034, May 10, 2022.

Weisenberger, L. 2024, pers. comm. Email regarding current status of *Eragrostis fosbergii*, 14 JUN 2024.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Eragrostis fosbergii* (Fosberg's
lovegrass)

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

Date _____