

## 5-YEAR REVIEW

Short Form Summary

**Species Reviewed:** *Keysseria erici* (no common name)

**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 *Keysseria erici* (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/2301>).

### **Review Analysis:**

Please refer to the previous 5-year review for *Keysseria erici* published in the Federal Register on September 13, 2017 (available at [https://ecos.fws.gov/docs/tess/species\\_nonpublish/2455.pdf](https://ecos.fws.gov/docs/tess/species_nonpublish/2455.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 *K. erici*.

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

New Status Information:

- Surveys conducted between 2017 and 2020 indicated there were hundreds to thousands of individuals of *Keysseria erici* in the bogs of the Alaka‘i and Kawaikini summits on Kaua‘i (NTBG 2017, 2018, 2020). One estimate is as high as 16,100 individuals in three subpopulations (Rønsted et al. 2020).

New Threats:

- None reported.

New Management Actions:

- Surveys and inventories—The National Tropical Botanical Garden (NTBG) and the State’s Division of Forestry and Wildlife (DOFAW) survey for and monitor populations of *Keysseria erici* (NTBG 2017, 2018, 2020; Rønsted et al. 2020).
- Collection and captive propagation—In 2015, the Lyon Arboretum Seed Conservation Laboratory had 77 seeds in storage from one founder at the Wai‘ale‘ale summit (Lyon Arboretum 2022).

**Table 1. Status and trends of *Keysseria erici* 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)	several 1,000	0	All threats managed in all 3 populations	No
			Complete genetic storage	No
			3 populations with 600 mature individuals each	No
2017 (5-year review)	ca 1,500	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	Partially

2022 (5-year review)	Several hundred to 16,100	0	All threats managed in all 3 populations	Partially, summit bog area is fenced
			Complete genetic storage	Partially, 1 founder
			Replacement and regeneration (seedlings become mature plants) at all 3 populations	Unknown
			3 populations with 600 mature individuals each	Partially, highly fragmented

**Table 2. Threats to *Keysseria erici* and ongoing conservation efforts.**

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Destruction and degradation of habitat and herbivory by feral ungulates	A, C	Ongoing	Partially, summit bog area is fenced
Established ecosystem altering invasive plant species degradation of habitat and competition	A, E	Ongoing	Partially, nonnative plant control for some areas
Climate change degradation and destruction of habitat, including hurricanes	A	Ongoing	None
Predation and herbivory by rodents	C	Ongoing	None
Inadequacy of existing regulatory mechanisms—lack of adequate hunting and biosecurity legislation	D	Ongoing	None
Loss of reproductive vigor	E	Ongoing	None

**Synthesis:**

Currently there are estimates of hundreds to thousands of individuals, with as many as 16,100 wild individuals of *Keysseria erici* on Kaua‘i. NTBG and DOFAW monitor the areas where *K. erici* occurs. This species is protected from feral ungulates by exclosures but these must be monitored for ingress. Currently, there are seeds in storage representing one founder at the Wai‘ale‘ale summit.

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.

*Keysseria erici* is a short-lived perennial herb and an obligate outcrosser. To reach interim stabilization goals, 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 this 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 stabilization goals for *Keysseria erici* have not been met. Although there may be as many as 16,100 individuals, more than half are in isolated subpopulations with little genetic exchange. The two largest subpopulations are approximately 12 kilometers (7.5 miles) apart (Table 1). There are seeds in storage representing only one founder at the Wai'ale'ale summit (Table 1). This species' continued viability is in question (Table 1, Table 2). Threats including habitat degradation and competition by nonnative plants, predation and herbivory by rodents, and hurricanes are not being addressed (Table 2). Therefore, *K. erici* 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 of *Keysseria erici* for a thorough assessment of the species.
- Ungulate monitoring and control—Maintain landscape-scale fencing where *K. erici* occurs to provide protection from the negative impacts of feral ungulates.
- Nonnative invasive plant monitoring and control—Control established ecosystem-altering nonnative invasive plant species and those that compete with *K. erici*.
- Predator and herbivore monitoring and control—Implement effective control methods for rodents at all populations of *K. erici*.

- 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 collection of seeds and propagative materials from representatives of all populations for storage and for maintenance of genetic stock.
- Reintroduction and augmentation—Augment wild populations and establish new populations within protected and managed suitable habitat as needed to build resiliency and redundancy.
- Population biology research—Study *K. erici* 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.
- Genetic research—Conduct research on the distribution and genetic relationship between *K. erici* and *K. helenae*. Focus on causes of the loss of viability of seeds and possible hybridization and taxonomic issues.
- Build resiliency and redundancy—Increase numbers of individuals and populations through historic range to reduce impacts of predation, hurricanes, and lack of genetic exchange.
- 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. 2017. NTBG database herbarium record detail for *Keysseria erici*, PTBG1000078169, near Mount Waialeale summit, 7 JUL 2017.

[NTBG] 2018. NTBG database herbarium record detail for *Keysseria erici*, PTBG1000067739, NE Alaka‘i, 14 AUG 2018.

[NTBG] 2020. NTBG database herbarium record detail for *Keysseria erici*, PTBG1000089497, Kawaikini summit area, 2 OCT 2020.

Rønsted, N., B. Nyberg, and K. Wood. 2020. *Keysseria erici*. The IUCN Red List of Threatened Species 2020: e.T173138286A173138365.  
<https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T173138286A173138365.en>.

[USFWS] U.S. Fish and Wildlife Service. 2017. *Keysseria erici* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. [https://ecos.fws.gov/docs/tess/species\\_nonpublish/2455.pdf](https://ecos.fws.gov/docs/tess/species_nonpublish/2455.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.

**U.S. FISH AND WILDLIFE SERVICE**  
SIGNATURE PAGE for 5-YEAR REVIEW of *Keysseria erici*  
(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
- X   No Change in listing status

**For Field Supervisor, Pacific Islands Fish and Wildlife Office**

\_\_\_\_\_ Date \_\_\_\_\_