5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Melicope remyi* (no common name)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2023a. 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 *Platydesma remyi* (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/1614*).

Review Analysis:

Please refer to the previous 5-year review for *Platydesma remyi* published in the Federal Register on September 30, 2020 (available at *https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3188.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 *P. remyi.*

This long-lived perennial shrub or shrubby tree in the Rutaceae (rue) family is endangered and found on the island of Hawai‘i. The status and trends for *Melicope remyi* are provided in the tables below.

New Status Information:

- Currently, there are 42 total wild individuals of *Melicope remyi* at two populations on the island of Hawai‘i. Eight individuals occur at ‘O‘ōkala to Humu‘ula (6 mature, 2 immature) and 34 mature plants at Laupāhoehoe (Plant Extinction Prevention Program [PEPP] 2024).
- Currently, there are five 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; Volcano Rare Plant Facility [VRPF] 2024).
- When listed in 2013, this species was classified as *Platydesma remyi*. In 2017, Appelhans et al. placed *Platydesma* within the genus *Melicope*, as supported by molecular phylogenetic studies. The species name has been updated in the 50 CFR Part 17 to *Melicope remyi* (USFWS 2023b). This taxonomic change does not affect the range or endangered status of this species.

New Threats:

- None

New Management Actions:

- Monitoring and surveys—PEPP monitors and surveys wild *Melicope remyi* populations (HVNP 2024; Ka‘ūpūlehu 2024; PEPP 2024).
- PEPP and the Kohala Watershed Partnership [KWP] control invasive plants around populations and along fence lines (PEPP 2024; KWP 2025).
- Collection and propagation for genetic storage and reintroduction—
    - Lyon Arboretum reports 56 seeds in storage from three founder plants, one from Laupāhoehoe and two from ‘O‘ōkala to Humu‘ula (Lyon Arboretum 2024).
    - VRPF reports seven potted plants in a living collection, representing two founders from Laupāhoehoe (VRPF 2024).
- Translocations—The current status of two previously established reintroduction sites in Laupāhoehoe is unknown, and no new plantings have occurred over the last five years (PEPP 2024; VRPF 2024).

Table 1. Status and trends of *Melicope remyi* from listing through current 5-year review.

Date	No. wild individuals	No. Outplanted	Preventing Extinction Goals identified in Recovery Plan	Stability Goals Completed?
2013 (Listing)	<40	29	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			3 populations with 25 mature individuals each	No
2020 (5-year review)	ca 20	Unknown (86 planted)	All threats managed in all 3 populations	Partially
			Complete genetic storage	No
			3 populations with 25 mature individuals each	No
2025 (5-year review)	42	0 (unknown number persist)	All threats managed in all 3 populations	Partially
			Complete genetic storage	Partially
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	No
			3 populations with 25 mature individuals each	Partially

Table 2. Threats to *Melicope remyi* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulate destruction and degradation of habitat and herbivory	A	Ongoing	Partial, enclosures constructed at wild populations
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Nonnative plant control at wild populations and surrounding habitat
Hurricanes	A	Ongoing	None
Disease	C	Potential	None
Predation or herbivory by ungulates	C	Ongoing	Partial, enclosures constructed at wild populations
Predation and herbivory by nonnative invertebrates, ants	C	Potential	None
Inadequate regulatory mechanisms	D	Ongoing	None
Limited numbers	E	Ongoing	Partial, seed collection, propagation, and reintroductions ongoing
No regeneration	E	Ongoing	Partial, seed collection, propagation, and reintroductions ongoing
Climate change	E	Ongoing	None

Synthesis:
Currently there are 42 wild individuals (40 mature, 2 immature) of *Melicope remyi* on the island of Hawai‘i. Individuals are provided protection from ungulates by fencing, and nonnative plant control. Plant collections, seed storage, propagation, and outplanting are ongoing.

Preventing Extinction and Interim Stabilization Targets, and Downlisting and Delisting Criteria are provided in the Recovery Plan for 15 Species from the Island of Hawai‘i. 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.

Melicope remyi is a long-lived perennial shrub or shrubby tree. 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 islands of Hawai‘i and each of these populations must be naturally reproducing (i.e., viable seeds, seedlings) with a minimum of 25 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met (Table 1). There is only a single population with greater than 25 individuals, all individuals are not reproducing, all threats are not being managed, and genetic storage is limited (Table 2). Therefore, *Melicope remyi* 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 *Melicope remyi* to assess resiliency and make collections.
  - Determine suitable locations for reintroductions.
- Ungulate monitoring and control—Monitor fenced exclosures and construct new fences to protect individuals from the negative impacts of browsing by ungulates.
- Invasive nonnative plant monitoring and control—Continue to control established ecosystem-altering nonnative invasive plant species, and those that compete with *Melicope remyi.*
- Species and habitat protection—Develop and implement effective control measures to reduce the impacts of destruction by hurricanes.
- Predator and herbivore monitoring and control—Develop and implement effective control measures to reduce the impact of potential invasive invertebrate predation from ants.
- 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.
- Captive propagation for genetic storage and reintroduction—Continue to maintain 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 limited number of plants and lack of regeneration.
- Research—
  - Conduct genetic studies to determine genetic variation within the population (and between populations) and plan an effective breeding program.
  - Determine potential disease impacts to the species.

- 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:

Appelhans, M.S., K.R. Wood, W.L. Wagner. 2017. Reduction of the Hawaiian genus *Platydesma* into *Melicope* section Pelea (Rutaceae) and notes on the monophyly of the section. PhytoKeys 91: 125–137.

[HVNP] 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.

[KWP] Kohala Watershed Partnership. 2025. https://hawp.org/partnerships/kohala-watershed-partnership/. Accessed 29 JUL 2025.

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] 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.

[USFWS] U.S. Fish and Wildlife Service. 1998. Big Island II: Addendum to the recovery plan for the Big Island plant cluster, 1998. Portland. 176 pp. + appendices. 80 pp. + appendices.

[USFWS] 2012. *Pleomele hawaiiensis* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. *https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1966.pdf*.

[USFWS] 2020. *Pleomele hawaiiensis* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. *https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3144.pdf*.

[USFWS] 2023a. 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.

[USFWS] 2023b. Endangered and threatened wildlife and plants; technical corrections for 62 wildlife and plant species on the list of endangered and threatened wildlife and plants. 88 FR 7134–7177, February 2, 2023.

[VRPF] Volcano Rare Plant 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.

U.S. FISH AND WILDLIFE SERVICE

SIGNATURE PAGE for 5-YEAR REVIEW of *Melicope remyi* (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**

MEGAN LAUT Digitally signed by MEGAN LAUT
Date: 2025.08.19 15:03:47 -10'00'

_____ Date_____