

## 5-YEAR REVIEW

Short Form Summary

**Species Reviewed:** *Melicope saint-johnii* (alani)

**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:**

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 *Melicope saint-johnii* (USFWS 2019). 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/6153>).

### **Review Analysis:**

Please refer to the previous 5-year reviews for *Melicope saint-johnii* published in the Federal Register on August 29, 2011, (available at [https://ecos.fws.gov/docs/tess/species\\_nonpublish/1784.pdf](https://ecos.fws.gov/docs/tess/species_nonpublish/1784.pdf)); and on September 30, 2019, (available at [https://ecos.fws.gov/docs/tess/species\\_nonpublish/2884.pdf](https://ecos.fws.gov/docs/tess/species_nonpublish/2884.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 *M. saint-johnii*.

This long-lived perennial slender tree in the Rutaceae (rue) family is endangered and is known from the island of O‘ahu. The status and trends for *Melicope saint-johnii* are provided in the tables below.

New Status Information:

- Currently, there are no known wild populations of *Melicope saint-johnii*. No individuals were observed during recent surveys in 2022 (Ching-Harbin et. al. 2022).

New Threats:

- None

New Management Actions:

- Surveys of known historic populations were conducted in 2022, and no individuals were observed (Ching-Harbin et. al. 2022).
- Ungulate monitoring and management—Ungulates are controlled and fencing is maintained by ANRPO (Army Natural Resources Program on O‘ahu) around historic populations at ‘Ēkahanui (ANRPO 2023, Appendix 4-2).
- Invasive nonnative plant management— The ANRPO controls non-native plants around historic populations at ‘Ēkahanui (ANRPO 2023, Appendix 4-2).

**Table 1. Status and trends of *Melicope saint-johnii* 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.**

<b>Date</b>	<b>No. wild individuals</b>	<b>No. Outplanted</b>	<b>Stability Goals identified in Recovery Plan</b>	<b>Stability Goals Completed?</b>
<b>1996 (Listing)</b>	<150	0	All threats managed in all 3 populations	No
			Complete genetic storage	Unknown
			3 populations with 25 mature individuals each	Unknown
<b>2011 (5-year review)</b>	<200	0	All threats managed in all 3 populations	Partially
			Complete genetic storage	No
			3 populations with 25 mature individuals each	Partially, one population with >25 individuals

**Table 1b.**

<b>Date</b>	<b>No. wild individuals</b>	<b>No. outplanted</b>	<b>*Preventing Extinction Criteria identified by HPPRCC</b>	<b>*Preventing Extinction Criteria Completed?</b>
<b>2019 (5-year review)</b>	0	0	All threats managed in all 3 populations	Partial
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	No
			Complete genetic storage	No
			3 populations with 25 mature individuals each	No
<b>2024 (5-year review)</b>	0	0	All threats managed in all 3 populations	Partial
			Complete genetic storage	No
			Natural reproduction at all 3 populations	No
			3 populations with 25 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 *Melicope saint-johnii* and ongoing conservation efforts.**

<b>Threat</b>	<b>Listing factor</b>	<b>Current Status</b>	<b>Conservation/ Management Efforts</b>
Degradation and destruction of habitat by feral ungulates	A	Ongoing	Partial, ungulate control at 'Ēkahanui
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	Partial, nonnative plant control at 'Ēkahanui
Fire Management	A	Ongoing	None
Climate change degradation or loss of habitat, including hurricanes	A	Ongoing	None

Ungulate predations and herbivory	C	Ongoing	Partial, ungulate control at 'Ēkahanui
Invertebrate predation and herbivory	C	Ongoing	None
Competition with established invasive plant species	E	Ongoing	Partial, nonnative plant control at 'Ēkahanui
Low numbers	E	Ongoing	None

**Synthesis:**

Currently there are no known wild individuals of *Melicope saint-johnii* on O‘ahu. Management units encompassing historic populations are protected by fencing, nonnative plant control, and ungulate control. Surveys in suitable habitat are ongoing.

Stabilizing (interim), downlisting, and delisting objectives are provided in the Recovery Plan for the O‘ahu Plants (USFWS 1998) 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.

*Melicope saint-johnii* is a short-lived perennial erect to decumbent 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 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 25 mature, reproducing individuals per population).

The preventing extinction goals for this species have not been met. There are no known wild individuals, and all threats are not being managed (Table 1, Table 2). Therefore, *Melicope saint-johnii* 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 inventories—
  - Continue surveys for populations of *Melicope saint-johnii* in areas of potentially suitable habitat.
- Ungulate monitoring and control—Continue to maintain fenced exclosures and construct new fences to protect suitable habitat from the negative impacts of browsing by ungulates for if new individuals are found or translocated.
- Invasive nonnative plant monitoring and control—Continue control of established ecosystem-altering nonnative invasive plant species, and those that could compete with *M. saint-johnii*.
- Site and habitat protection—Develop and implement effective threat control measures to reduce the impact of small population size.
- Fire prevention and control—Continue to develop and implement fire prevention management plans.
- 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, including increasing temperatures, periods between rain events, and increasing frequency and intensity of hurricanes. Additional management actions may be needed, such as locating key microsites that overlap with current and future climate envelopes for translocation efforts.
- Predator and herbivore monitoring and control—Determine and continue to implement effective methods to control rats and slugs for if new individuals are discovered.
- Captive propagation for genetic storage and reintroduction—Continue surveys to identify wild individuals for collection and propagation efforts and 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 climate change degradation and nonnative plant competition.
- 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:**

[ANRPO] 2023. Appendices to the Status report for the Mākua and O'ahu Implementation Plans, Army Natural Resources Program, O'ahu, Office of the Vice President for Research and Innovation, University of Hawai'i.

Ching-Harbin, K. Togikawa, and M. Keir. 2022a. Hawai‘i Rare Plant Restoration Group (HRPRG) Field Data Form *in* PEPP 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 F19AC00532 (Interim Report), September 22, 2022, UH Mānoa, PCSU, PEPP. 17 pp. BioPacifica database record for *Melicope saint-johnii*, Pacific Islands Fish and Wildlife Office.

[HBMP] Hawaii Biodiversity and Mapping Program. 2010. Plant species GIS data and Access database.

[HPPRCC] Hawai‘i and Pacific Plants Recovery Coordinating Committee. 2011. Revised recovery objective guidelines. 8 pp.

[U.S. Fish and Wildlife Service] U.S. Fish and Wildlife Service. 1998. Recovery plan for the Oahu plants. U.S. Fish and Wildlife Service, Portland, Oregon. 207 pages, plus appendices.

[USFWS] 1999. Recovery Plan for the Multi-Island Plants. 2006 pp. + appendices.

[USFWS] 2011. *Melicope saint-johnii* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.  
[https://ecos.fws.gov/docs/five\\_year\\_review/doc1784.pdf](https://ecos.fws.gov/docs/five_year_review/doc1784.pdf).

[USFWS] 2012. Endangered and threatened wildlife and plants; Endangered status for 23 species on Oahu and designation of critical habitat for 124 species; final rule. Department of the Interior, Federal Register 77 (181): 57648–57862, September 18, 2012.

[USFWS] 2019. *Melicope saint-johnii* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI.  
[https://ecos.fws.gov/docs/five\\_year\\_review/doc2884.pdf](https://ecos.fws.gov/docs/five_year_review/doc2884.pdf).

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SIGNATURE PAGE for 5-YEAR REVIEW of *Melicope saint-johnii* (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**

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Date \_\_\_\_\_