5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Osmoxylon mariannense* (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 167 Species in Oregon, Washington, Idaho, Montana, California, Hawaii, Guam, and the Northern Mariana Islands. Federal Register 87(90): 28031–28034, May 10, 2023.

Lead Region/Field Office:

Region 1/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawai‘i

Name of Reviewer:

Laura Gombar, 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 *Osmoxylon mariannense* (USFWS 2020). The evaluation by Laura Gombar, 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/6738*).

Review Analysis:

Please refer to the previous 5-year review(s) for *Osmoxylon mariannense* published in the Federal Register on September 29, 2020 (available at *https://ecos.fws.gov/docs/tess/species_nonpublish/3142.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 *O. mariannense.*

This long-lived small tree in the Araliaceae (ginseng) family is endangered is known from the island of Rota. The status and trends for *Osmoxylon mariannense* are provided in the tables below.

New Status Information:

- Currently, there are nine populations in nine locations totaling 1 wild individual and 160 reintroduced individuals (Demapan 2025, in litt., entire; Bamba 2024, in litt., entire). The Sabana Conservation Area population holds majority of individuals, to include the one remaining, naturally occurring mature tree, but it is unclear how many individuals that have been outplanted have reached maturity. There are 35-40 older individuals that were outplanted in multiple locations (USFWS 2020). Of the nine populations, the Sinapalo population holds nine individuals across two different sites, and the Isang population consists of 16 individuals across three sites.
- Currently, there are approximately two nursery stock plants representing two different founder lines from wild trees found in Fanlagon (USFWS 2020).

New Threats:

- No new threats.

New Management Actions:

- Monitoring and surveys—
    - In November 2022, survey efforts for *O. mariannense* were conducted in Aplog, but no trees were found (DLNR 2025, in litt., entire).
    - As of 2024, survey efforts in As Okoddo', where *O. mariannense* were found historically, were performed but no trees were found (DLNR 2024, in litt., entire).
    - Germination of *O. mariannense* in the wild has not been observed (DLNR 2024, in litt., entire).
- Collection and propagation for genetic storage and reintroduction—
    - Propagation efforts for this species have been ongoing and there are currently 30 individuals in the Rota Forestry nursery, and 3,557 seed stock with a 60% germination rate (Demapan 2025, in litt., entire).
    - Increased monitoring and improved physical protection of fruiting heads have increased seed availability. In addition to monitoring and protection, the following propagation activities were performed:
        - Collection of 3,008 seeds
        - 4,645 seeds were sown in vermiculite beds
        - 148 seeds were germinated
        - 111 seedlings survived as of September 2023
        - 38 individuals were outplanted

Table 1. Status and trends of *Osmoxylon mariannense* from listing through current 5-year review. Table 1a shows progress according to Downlisting Criteria; Table 1b shows progress according to Preventing Extinction Goals.

Table 1a

Date	No. wild individuals	No. outplanted	Downlisting Criteria Identified in Recovery Plan	Downlisting Criteria Completed?
2004 (Listing)	8	0	2 populations with 100 mature individuals each	No
			Sufficient habitat is protected and managed to achieve criterion	No
			Management and control of nonnative	No
2007 (Recovery Plan)	8	35-40	2 populations with 100 mature individuals each	No
			Sufficient habitat is protected and managed to achieve criterion	No
			Management and control of nonnative	No
2012 (5-year review)	Unknown	35-40	2 populations with 100 mature individuals each	No
			Sufficient habitat is protected and managed to achieve criterion	Partially (see Table 2)
			Management and control of nonnative	No
2017 (5-year review)	2 or more (as of August 2016)	118	2 populations with 100 mature individuals each	No

			Sufficient habitat is protected and managed to achieve criterion	Partially (see Table 2)
			Management and control of nonnative species	No

Table 1b

Date	**No. wild individuals**	**No. outplanted**	***Preventing Extinction Targets identified by HPPRCC**	***Preventing Extinction Targets Completed?**
2020 (5-year review)	2 or more (as of August 2016)	133	All threats managed in all 3 populations	No
			Complete genetic storage	Yes
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	No
			3 populations with 25 mature individuals each	No
2025 (5-year review)	1	160	All threats managed in all 3 populations	No
			Complete genetic storage	Yes
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	No
			3 populations with 25 mature individuals each	No

Date	No. wild individuals	No. outplanted	*Preventing Extinction Targets identified by HPPRCC	*Preventing Extinction Targets Completed?
2020 (5-year review)	2 or more (as of August 2016)	133	All threats managed in all 3 populations	No
			Complete genetic storage	Yes
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	No
			3 populations with 25 mature individuals each	No
2025 (5-year review)	1	160	All threats managed in all 3 populations	No
			Complete genetic storage	Yes
			Reproduction (i.e., viable seeds, seedlings, saplings) 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 *Osmoxylon mariannense* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulates - Degradation and destruction of habitat by feral ungulates	A,C	Ongoing	Partially: Fenced enclosures protect outplantings from browsing
Agricultural and urban development	A	Ongoing	Partially: Fenced individuals for protection from road maintenance at Sabana
Invertebrate predation or herbivory	C	Ongoing	None
Rodent predation or herbivory – Rats	C	Ongoing	No; DLNR intended to test rat exclusion fencing however this was not conducted due to the lack of supplies on Rota
Slug herbivory	C	Ongoing	None
Inadequacy of existing regulatory mechanisms	D	Ongoing	None
Typhoons	E	Ongoing	None
Established invasive plant species competition	E	Ongoing	None
Reduced viability from low numbers	E	Ongoing	Partially: Captive propagation for translocation and reintroduction
Climate change	A,E	Increasing	None

Synthesis:
Currently there is only wild individual of *Osmoxylon mariannense* on Rota. There are nine populations consisting of 160 reintroduced individuals. It is unknown how many of the reintroduced individuals are mature. Seed collection, propagation, and translocations are ongoing. There is some protection from ungulate browsing and Sabana road maintenance through fencing efforts.

Downlisting, and delisting criteria are provided in the Final Recovery Plan for Two Plants on Rota (USFWS 2007) 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 additional initial stages, Preventing Extinction and Interim Stabilization, in addition to 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.

Osmoxylon mariannense is a long-lived small 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 island of Rota 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 25 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. Although genetic storage is complete (Table 1), there are no single populations totaling at least 25 reproducing individuals, and all threats are not being managed (Table 2). Therefore, *Osmoxylon mariannense* 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 reiterated for the 5-year review for 2024, with a few additions or modifications:

- Surveys and inventories—Resurvey the historical range of the species to determine if previously unknown or newly reestablished populations exist.
    - Conduct surveys for *Osmoxylon mariannense* in potentially suitable habitat on Rota that may have been overlooked previously.
    - Inventory all remaining individuals (wild and propagated) to assess survival, noting observable conditions or factors that appear to be accelerating the senescence or mortality of individual plants.
    - Inventory all remaining individuals (wild and propagated) to determine if considered as mature or immature plants.
- Controlled Propagation—Continue propagation and translocation programs to establish *Osmoxylon* in a range of locations, particularly within the known historic distribution around the Mount Sabana plateau on Rota.
    - Continue to collect cuttings or seeds from tagged individuals, keeping close track of the maternal source for use in *ex situ* propagation.
    - Continue to collect seeds from all existing populations and send to at least two or three different venues for propagation and storage.
    - Evaluate seed viability under storage conditions and develop protocols for effective storage parameters for propagation programs.
- Ungulate monitoring and control—Continue to maintain fenced exclosures and construct new fences to protect individuals from the negative impacts of browsing by ungulates.

- Herbivory—develop and implement control programs for slugs and rodents (rats), at least within localized areas around established wild or outplanted trees.
- Research—
    - Conduct research to determine the impact of invertebrates on *Osmoxylon mariannense* populations as well as control methods, if necessary.
    - Identify the pollination mechanisms for the species, including flowering periods, specific pollinators, and other factors.
- Established invasive plant species control—Continue control of established ecosystem-altering nonnative invasive plant species, and those that compete with *Osmoxylon mariannense*.
- 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 *Osmoxylon mariannense* to reduce impacts of typhoons, reduced viability from low numbers, impacts from climate change.
- Alliance and partnership development—
    - Work with the CNMI Department of Lands and Natural Resources, Division of Forestry, Division of Fish and Wildlife, and other land managers to coordinate planning and support implementation of ecosystem level restoration and management to benefit *Osmoxylon.*
    - Work with private landowners to help them conserve this species on their property.
    - Develop public outreach programs to inform residents of Rota of the importance of native species and their habitat.
- Regulatory protections—Work with CNMI authorities to ensure that federal and local regulations provide the necessary protections to support the recovery of *Osmoxylon mariannense*, whether by adding the species to the CNMI Threatened and Endangered Species list, or by other means.

LITERATURE CITED

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

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CNMI Department of Lands and Natural Resources. 2024. Final Performance Report for Grant F21AP039671 Conservation of Three Endangered Plants on Rota, NMI for performance period October 1, 202 to September 30, 2023. 6 pp.

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Demapan, Carey. 2025. Email correspondence from Carey Demapan, Commonwealth of the Northern Mariana Islands, Department of Landa and Natural Resources to Laura P. Gombar, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, *Osmoxylon mariannense* & *Nervilia jacksoniae*Five-Year Review, June 27, 2025.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of *Osmoxylon mariannense* (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**

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