5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Nesogenes rotensis* (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 133 Species in Oregon, Washington, Idaho, Montana, California, Nevada, Hawaii, Guam, and the Commonwealth of 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:

Anthony J.G. Tornito, 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 *Nesogenes rotensis* (USFWS 2020). The evaluation by Anthony J.G. Tornito, 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/7381*).

Review Analysis:

Please refer to the previous 5-year reviews for *Nesognes rotensis* published in the Federal Register on August 28, 2012 (available at *https://ecos.fws.gov/docs/tess/species_nonpublish/1976.pdf*); May 23, 2017 (available at *https://ecos.fws.gov/docs/tess/species_nonpublish/2367.pdf*); and September 29, 2020 (available at *https://ecos.fws.gov/docs/tess/species_nonpublish//3141.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 *N. rotensis.*

Nesogenes rotensis is a low-growing, perennial herbaceous plant known to occur on rough limestone karst substrates in coastal locations on the island of Rota in the

Commonwealth of the Northern Marianas Islands (CNMI). This species is endemic to the island of Rota.

New Status Information:

- Periodic checks of naturally-occurring *Nesogenes rotensis* are conducted to monitor populations, including observations for the presence of plants, flowers, and fruits. As of January 2025, there were about 100 *Nesogenes rotensis* individuals at Poña Point on Rota. The current status for *Nesogenes rotensis* is provided in Table 1 below.
- Other historic areas were surveyed for *Nesogenes rotensis* however, individuals were not observed.
- *Nesogenes rotensis* has been documented to annually dieback when the rainy season starts and returns later in the year where the cycle continues. (Demapan, in litt. 2025)
- The CNMI's Department of Land and Natural Resources Rota Forestry nursery is actively testing propagation methods in a nursery setting. Germination rates for *Nesogenes rotensis* are low and surviving plants rarely reach a size suitable for translocation.

New Threats:

- In 2024, the CNMI Office of Grants Management proposed to develop a visitor facility to include a pavilion boardwalk, restroom with water tank, and picnic area at Poña Point.

New Management Actions:

- In January of 2025, 40 *Nesogenes rotensis* seeds were collected and sowed from the wild population at Poña Point. Out of the 40 seeds, 12 successfully germinated and remain at the DLNR Rota Forestry nursery. It has been observed that *Nesogenes rotensis* does well in a nursery system as long as they are partner planted alongside plants found in their natural environment such as *Scaevola taccada, Bikkia tetrandra,* and *Cassytha filiformis*. One major challenge has been outplanting at Poña Point due to limited soil availability (Demapan, in litt. 2025)
- A minimum 10-foot buffer will be established during the construction of the visitor facility related activities to prevent unintended disturbances. A railing will be constructed along the entire boardwalk to discourage foot traffic through the *Nesogenes rotensis* population. A sign to highlight the natural resources with an emphasis on *Nesogenes rotensis* will be constructed to inform visitors of the uniqueness of Poña Point (USFWS, 2025).

Table 1. Status and trends of *Nesogenes rotensis* 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 the Recovery Plan	Stability Goals Completed?
2004 (Listing)	34	0	2 populations with 300 mature individuals each	No
			Sufficient habitat is protected and managed to achieve criterion	No
			Management and control of non-native species	No
2012 (5-Year Review)	30-40	0	2 populations with 300 mature individuals each	No
			Sufficient habitat is protected and managed to achieve criterion	Partially (see table)
			Management and controls of non-native species	No
2017 (5-Year Review	403 (152 mature)		2 populations with 300 mature individuals each	No
			Sufficient habitat is protected and managed to achieve criterion	Partially (see table)
			Management and controls of non-native species	No

Table 1b

Date	No. wild individuals	No. outplanted	*Preventing Extinction Targets identified by HPPRCC	*Preventing Extinction Targets Completed?
2020 (5-year review)	403 (152 mature)	0	All threats managed in all 3 populations	Partially
			Reproduction (i.e., viable seeds, seedlings, saplings) at all 3 populations	Partially, reproduction at 1 population
			Complete genetic storage	No
			3 populations with 50 mature individuals each	Partially, 1 population
2025 (5-year review)	100	0	All threats managed in all 3 populations	Partially
			Complete genetic storage	No
			Natural reproduction at all 3 populations	Partially, reproduction at
			3 populations with 50 mature individuals each	Partially, 1 population

* 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 *Nesogenes rotensis* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Established ecosystem altering invasive plant species degradation of habitat	A	Increasing	No
Agricultural and urban development	A	Ongoing	No
Inadequate regulatory mechanisms	D	Ongoing	No
Human disturbance	E	Increasing	Partially: Existing population monitoring and restoration at Poña Point
Typhoon	E	Ongoing	No
Climate change	A,E	Increasing	No

Synthesis:
Currently there are 100 wild individuals of *Nesogenes rotensis* in one population on the island of Rota. Other historic occurrence sites were surveyed; however, individuals could not be located. In January of 2025, 40 seeds were collected and sowed from the wild population. It was reported that 12 seeds successfully germinated. Outplanting remains a challenge due to limited soil availability at Poña Point. Some management and restoration continues to occur at Poña Point to minimize disturbance to the area.

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 two additional initial goals, the Preventing Extinction and Interim Stabilization Stages, in addition to the Downlisting and Delisting 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.

Nesogenes rotensis is a short-lived perennial 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 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) with a minimum of 50 mature, reproducing individuals per population.

The preventing extinction goals for this species have not been met. There is only one population with greater than 50 mature individuals, the genetic storage goals have not been met (Table 1), and all threats are not being managed (Table 2). Therefore, *Nesogenes rotensis* meets the definition of Endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:
In 2024, the CNMI Office of Grants Management proposed to develop a visitor facility to include a pavilion boardwalk, restroom with water tank, and picnic area. at Poña Point. Poña Point is the only currently known extant population of *Nesogenes rotensis*. With the construction of the new visitor facility, increased human traffic and presence is expected. 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 2024.

- Surveys and monitoring—
    - Survey protocol development: Given the recognized seasonal die-back exhibited by this species, and consequent variation in detectability through the calendar year, develop guidance defining season(s) when the species can be more reliably observed, and consistently counted.
    - Resurvey and reconfirm the population at Puntan Fina Atkos, including its current condition, numbers, and distribution.
    - Monitor annually the number of individuals in the Poña Point Fishing Cliff and Puntan Fina Atkos populations.
    - Survey for additional populations of *Nesogenes rotensis* in other areas of similar habitat, including the exposed limestone karst coastal cliffs that are common along the eastern shore of Rota. Revisit and reconfirm the two historical occurrences of *Nesogenes rotensis* at Puntan Haʻiña and Puntan As Fani.
- Habitat requirements research—Conduct research on *Nesogenes rotensis* habitat requirements, with emphases on identifying key suitability parameters in order to a) inform effective management of the existing populations at the two confirmed (and any additionally-found) sites, and b) recognize appropriate sites for successful re-/establishment of the species.

- Species' Ecological and Biological Research—
    - Conduct studies to clarify whether *Nesogenes rotensis* functions hemiparasitically, and if so, which host species may be essential for its survival.
    - Conduct studies to determine if parasitic or pioneering plant species such as *Cassytha filiformis* or *Casuarina equisetifolia* are negatively affecting populations of *Nesogenes rotensis*, either directly or via impacts to potential host plant species.
- Invasive nonnative plant monitoring and control—Continue to monitor impacts, develop control techniques, and control established ecosystem-altering nonnative invasive plant species and those that compete with *Nesogenes rotensis.*
- Disturbance ecology—Investigate the roles of typhoon events for this species' ecology and interaction with plant community and develop mitigation methods if needed.
- Captive propagation for genetic storage and reintroduction—
    - Collect cuttings or seed from tagged individuals, keeping close track of the maternal source for use in ex situ propagation.
    - Collect seeds from all existing populations and send to at least two or three different facilities for propagation and storage. Conduct studies to determine how to propagate the species and maintain the species in nurseries.
- Reintroduction / translocation protocol development—
    - Maximize the genetic variation among individuals at each reintroduction site, maintain detailed provenance information.
    - Survey for suitable translocation sites.
- Threats research—Assess the modeled effects of climate change on this species, and use to determine future landscape needed for the recovery of the species.

- Habitat Protection—Develop and implement effective measures to reduce the impact of urban development, typhoons, and human disturbance if and where these are found to be detrimental to the species.
- 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 this species.
- Regulatory protections—Work with CNMI authorities to ensure that federal and local regulations provide the necessary protections to support the recovery of *Nesogenes rotensis*, whether by adding the species to the CNMI Threatened and Endangered Species list, or by other means.
- Development—Closely monitor and manage the species during and post-construction of the Poña Point

References:

[USFWS] U.S. Fish and Wildlife Service. 2007. Recovery Plan for Two Plants from Rota (*Nesogenes rotensis* and *Osmoxylon mariannense*). Portland, Oregon. 86 pp.

[USFWS] 2020. *Nesognes rotensis.* 5-year review summary and evaluation. USFWS Pacific Islands Fish and Wildlife Office, Honolulu, HI. https://ecos.fws.gov/ecp/species/7381

[USFWS] 2025. Informal Consultation for the Poña Point Pavilion Construction Project in Poña Point, Rota, Commonwealth of the Northern Mariana Islands.

In Litteris

Demapan, Carey. 2025. Email correspondence from Carey Demapan, Commonwealth of the Northern Mariana Islands, Department of Lands and Natural Resources to Anthony J.G. Tornito, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, request for new or updated information on *Nesogenes rotensis*, March 18, 2025.

2024. Final Performance Report for Grant F21AP039671 Conservation of Three Endangered Plants on Rota, NMI for performance period October 1, 2021 to September 30, 2023. CNMI Department of Lands and Natural Resources. 6 pp.

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