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Guam-21 Orchid SAP

Guam -21 Orchid Species Action Plan Y3

Prepared by Island Eco Services for

NAVFAC Marianas

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FINAL REPORT
N40192-12-P-5004
ESA-Listed Plant and Invertebrate Surveys at Naval Base Guam Naval Munitions Site and Rota

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ACRONYMS AND ABBREVIATIONS

COR	Contracting Officer Representative
DON	Department of Navy
ESA	Endangered Species Act
GPS	Global Positioning System
IES	Island Eco Services, LLC
INRMP	Integrated Natural Resources Management Plan
JRM	Joint Region Marianas
NAVFAC	Naval Facilities Engineering Systems Command
PWS	Performance Work Statement
T&E	Threatened and Endangered Technical
TPOC	Point of Contact
USFWS	United States Fish and Wildlife Service

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Figure 1. Map depicting all areas surveyed on Rota and locations of *T. guamense*. 6

1.0 Introduction

The Department of Defense Legacy Resource Management Program funded actions to support the *Tuberolabium guamense* Species Action Plan (SAP). The SAP includes objectives to survey for Tuberolabium throughout its known range on Guam and Rota and develop a monitoring plan for the species. Surveys in Guam have been in progress since late 2019. In 2023 Island Eco Services, LLC (IES) conducted field surveys for Endangered Species Act (ESA)-listed threatened and endangered plant and invertebrate species on approximately 123 acres of forested areas on Rota, Commonwealth of the Northern Mariana Islands (CNMI).

1.1 Background

In 2015 the United States Fish and Wildlife Service listed *Tuberolabium guamense* as threatened under the Endangered Species Act. At the time of listing only one individual was known from Guam and about 200 from Rota. The surveys in this report are the first records of *T. guamense* in Rota since the listing of the species.

2.0 Project Objectives

The objectives of this project as indicated in PWS N40192-21-P-5004:

1. Submit the locations for (Threatened and Endangered)T&E species to the NAVFAC Technical Point of Contact (TPOC) and Contracting Officer Representative (COR).
2. Conduct parallel fixed width (10m) transects for *T. guamense* on a minimum of 100 acres of forested area in Rota, CNMI.
3. Develop a *T. guamense* population, habitat, and threats monitoring plan in coordination with recommendations made by the *T. guamense* working group. This plan is prepared under a separate cover.

3.0 Methods

Field surveys for ESA-listed plants (including butterfly host plants) were conducted in parallel fixed transects from 5 to 10 meters apart so that all areas are in view of the surveyor. Although no ESA-listed invertebrates were recorded, the methodology in Fiedler (2019) would have been used. Listed species observed were given a distinct point using Trimble Global Positioning System (GPS) unit and marked physically using flagging tape. IES surveyed for the following ESA-listed species: S*erianthes nelsonii, Bulbophyllum guamense, Dendrobium guamense, Tuberolabium guamense, Cycas micronesica, Eugenia bryanii, Hedyotis megalantha, Heritiera longipetiolata, Maesa walkeri, Nervilia jacksoniae, Phyllanthus saffordii, Psychotria malaspinae, Solanum guamense, Tabernaemontana rotensis, Tinospora homosepala, Partula gibba* (humped tree snail), *Partula radiolata* (Guam tree snail), *Samoana fragilis* (fragile tree snail), *Hypolimnas octocula marianensis* (Mariana eight-spot butterfly) and *Vagrans egistina* (Mariana wandering butterfly). IES also surveyed for ESA-listed butterfly host plants *Procris pedunculata, Elatostema calcareum,* and *Maytenus thompsonii* and the presence of ESA-listed butterfly eggs and/or larvae. IES focused surveys on areas with suitable habitat for *T. guamense* on Rota.

4.0 Results and Discussion: *Tuberolabium guamense* Surveys on Rota

Approximately 123 acres were surveyed on Rota during June and July 2023. A total of 4,886 *T. guamense* (3,201 mature, 1,685 immature) were observed and recorded (see Figure 1). The survey was completed during two visits to Rota from June 13 to 19 and July 21 to 27, 2023. IES met with James Bamba with the Department of Lands and Natural Resources (DLNR) Rota Forestry to coordinate the survey locations and access.

Seven locations were surveyed. Five were located throughout the Mt. Sabana area, which all had *T. guamense*. One location near the Rota Resort and one near the Rota dump site at the base of Mt. Sabana were surveyed; however, no *T. guamense* were observed at these locations. Both of these areas are at a lower elevation than the Mt. Sabana sites, which may indicate that orchid habitat, similar to Guam, is at higher elevations. Elevations where *T. guamense* were found was between 250 and 540 feet above sea level.

The surveys were conducted within the two months following Typhoon Mawar, which passed over northern Guam on May 24-25, 2023. During the survey there was notable damage to the vegetation on Rota. Downed trees and broken branches were observed throughout the surveyed areas, particularly on the southwestern portion of Mt. Sabana. *T. guamense* were observed on broken branches and trees on the ground.

The majority of *T. guamense* were observed on native tree species, primarily *Aglaia mariannensis*, *Hibiscus tiliaceus*, and *Ficus prolixa*. They were also found on *Pandanus tectorius*, *Maesa walkerii*, *Premna obtusifolia*, *Macaranga thompsonii*, *Eugenia reinwardtiana*, *Morinda citrifolia*, *Elaeocarpus joga*, and *Guettarda speciosa*.

A new location with one *Tabernaemontana rotensis* was located at the western part of Mt. Sabana toward the dump site. A Rota forester was escorted to the location. This is also the area where most of the *T. guamense* were observed.

Other ESA-listed orchid species observed included *Bulbophyllum guamense*, *Dendrobium guamense*, and *Nervillia jacksonii*. These orchids were abundant throughout Mt. Sabana, therefore Geographic Information System (GIS) data was not collected due to time constraints. *Maesa walkerii* was also observed throughout the northeastern portion of Mt. Sabana. One rare *Disciplina_Lycopodium phlegmaria var. longifolium* was located in a pandanus forest on the top plateau of Mt. Sabana.

These surveys confirm and build on the findings of Zarones et al. (2015) that *T. guamense* is wide spread throughout Rota. The data collected provides more detailed information than previously available on the exact locations of the orchids as well as their host plants. The timing of these surveys has also provided evidence that this species can handle typhoon-force winds. The nearly 5,000 recorded individuals distributed in five locations represent a highly resilient population. A unique finding that all orchids were at least 250 feet above sea level could be compared to findings in Guam to determine if elevation plays a role in suitable habitat for *T. guamense*.

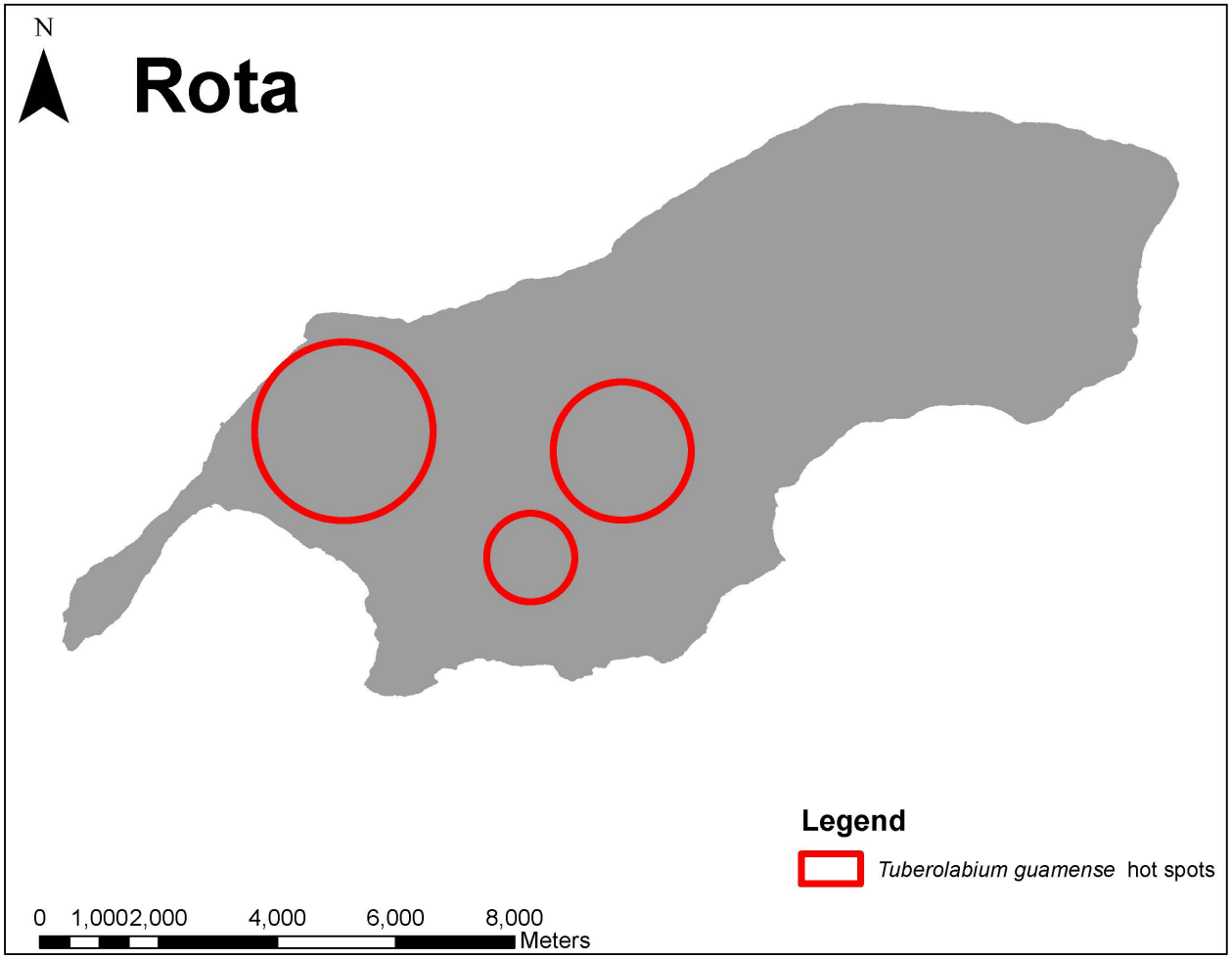

Figure 1. Map depicting generalized locations of *T. guamense* on Rota. Locations have been skewed and generalized to protect the integrity of the site.



Photos 1-3 (Island Eco Services). Photo 1: View from *T. guamense* location near Songsong Village; Photo 2: *T. guamense* habitat in limestone forest; Photo 3: Large *Artocarpus altilis* down from Typhoon Mawar with *T. guamense*.



Photos 4-6 (Island Eco Services). Healthy *Tuberolabium guamense* on *Aglaia mariannensis* (Photos 4 and 5) and *Elaeocarpus joga* (Photo 6).

Photos 7-10 (Island Eco Services). Tree with broken limbs and *Tuberolabium guamense* on branches on the ground.

Photos 11-13 (Island Eco Services). Photo 11: *Tabernaemontana rotensis*; Photo 12: *Nervillia jacksonii*; Photo 13: *Disciplina_Lycopodium phlegmaria var. longifolium*.

5.0 Military Mission Benefits

The results from this project provide additional data needed to support a change in the listing status of *T. guamense.* The military mission will immediately benefit from increased awareness of the species locations recorded during the surveys. The military mission will also benefit from the increased information on T. guamense especially during consultations. Currently consultations are done for many military mission activities including routine maintenance, Integrated Natural Resource Management Plan (INRMP) implementation, construction, and military readiness (training).

6.0 Conclusion

These surveys provide a key piece to the post-listing evaluation of *T. guamense.* Previously, estimates for the species on Rota were based on a few transects throughout the island and then numbers extrapolated based on available habitat (Zarones et al. 2015). Now there is data from over 100 acres of surveyed habitat with direct observations of the species. The findings support the estimates by Zarones et al. that resilient populations continue to occur on Rota.

7.0 Literature Cited

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