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YSCMR 2025
YOUNG SCIENTISTS' CONFERENCE ON MULTIDISCIPLINARY RESEARCH- NIFS

Proceedings of the

YOUNG SCIENTISTS' CONFERENCE ON MULTIDISCIPLINARY RESEARCH

VIRTUAL INTERNATIONAL CONFERENCE

2025

Organized by
The Young Scientists' Association
National Institute of Fundamental Studies, Sri Lanka.

ISSN 2815-0260
Proceedings of the Young Scientists' Conference on Multidisciplinary Research-2025
Young Scientists' Association, National Institute of Fundamental Studies, Sri Lanka
27th November 2025

Paper ID: CMT_78

Developing a species recovery plan for *Eugenia haeckeliana* Trimen: a critically endangered, point endemic plant species in Sri Lanka

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Eugenia haeckeliana Trimen, a critically endangered species endemic to Sri Lanka, was recently rediscovered after 142 years, confined to a single, small population on private land in Weligama. Given its highly vulnerable habitat and limited number of individuals, urgent conservation action is needed. However, the absence of baseline data poses a major challenge to recovery planning. This study aimed to generate essential information to support the development of a species recovery plan. Sixteen 10 × 10 m plots were established to assess vegetation, ecological characteristics, and population structure. A total of 60 individuals were recorded, with diameters ranging from 1 to 6 cm, forming four distinct clusters. A detailed morphological description was compiled to aid future taxonomic studies. *Mimusops elengi* was frequently associated with *E. haeckeliana*, indicating possible ecological interactions valuable for conservation planning. Soil analysis revealed no significant difference in nitrogen, phosphorus, organic carbon, pH, and EC levels ($p > 0.05$) in the species' habitat compared to other sites. Propagation trials using stem cuttings and air layering, though not resulting in root formation, showed signs of callus development and sprouting, indicating potential for vegetative propagation. Ecological niche modelling identified 19 additional potential sites for future surveys or reintroduction efforts. Furthermore, a DNA extraction and PCR protocol was developed, yielding consistent monomorphic bands, laying the groundwork for future genetic studies. All observed individuals of *E. haeckeliana* exhibited symptoms of foliar disease, indicating a high prevalence of infection within the population. This study provides the first comprehensive population, ecological, and propagation data for *E. haeckeliana*, forming an essential foundation for its long-term conservation and the formulation of an effective recovery plan.

Keywords: *Conservation, endemic, niche modeling, population structure, propagation*

Acknowledgement: we gratefully acknowledge the administration of Barberyn Beach Ayurveda Resort, Weligama for their generous support in conducting this study.