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Cover: A male Scarlet Skimmer perching on vegetation by the banks of a waterbody. Ink and watercolour illustration by Anandita Pascal.

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SHORT COMMUNICATION

Abundance and distribution of the Critically Endangered Giant Staghorn Fern *Platycerium grande* (A.Cunn. ex Hook.) J.Sm. in Maguindanao del Sur, BARMM, Philippines

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Abstract: *Platycerium grande*, commonly known as the Giant Staghorn Fern, is a notable species of the Pteridophyte family, Polypodiaceae – confined to the tropical forests of the Malay Archipelago, especially in Mindanao, part of the Philippines. This study assessed the abundance and distribution of *P. grande* in Maguindanao del Sur, as a baseline for future conservation efforts. Using purposive sampling, individuals were counted and georeferenced across multiple sites. A total of 186 individuals were recorded, predominantly thriving on large trees such as *Mangifera indica* (Mango), *Pterocarpus indicus* forma *indicus* (Narra), and *Samanea saman* (commonly called as Acacia in the Philippines), within an elevation range of approximately 672–754 m. A notable observation was the occurrence of the endangered fern, *Ophioderma pendulum,* attached to the basal fronds of *P. grande.* The findings provide valuable insights into the current status of this Critically Endangered fern in the Philippines and fill existing gaps in botanical knowledge of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM), and support future conservation plans and strategies in compliance with Republic Act No. 9147 (2001), the Wildlife Resources Conservation and Protection Act of the Philippines.

Keywords: BARMM, biodiversity, conservation, epiphytic fern, phorophyte, polypodiaceae, *Ophioderma pendulum*, staghorn fern.

Platycerium Desv., commonly known as staghorn ferns, is a genus of epiphytic ferns within the family Polypodiaceae. Members of this genus are commonly grown as ornamental plants and are of high value in horticulture due to their unique morphology (Hoshizaki & Moran 2001; Poremski & Biedinger 2001; Darnaedi & Praptosuwiryo 2003). It consists of about 18 species and is predominantly found in subtropical and tropical lowland forests of Africa, Madagascar, Australia, and Asia (Kreier & Schneider 2006). One notable species is the *Platycerium grande*, commonly known as the giant staghorn, which was once tagged as endemic to the Philippines, but is currently confined also to the Sulawesi in Indonesia and is occurring in the Malay Archipelago (Darnaedi & Clayton 2020; POWO 2025). This species can be distinguished from the other *Platycerium* species by its distinctive morphology, which consists of dimorphic fronds, with broad and shield-like sterile fronds, and antler-like fertile fronds which can grow to a considerable size while attaching to its phorophytes without harming or damaging them (Hoshizaki 1972; Hennipman & Roos 1982; Lee 1989; Hoshizaki & Price 1990; Hoshizaki & Moran 2001).

Although *P. grande* was recognized for its high economic value, this species is categorized in the DENR Administrative Order (DAO) No. 2017-11 as a

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critically endangered fern in the Philippines. *P. grande* is reported to be progressively vulnerable due to habitat loss, deforestation, and climate change (Amoroso & Aspiras 2011; DENR 2017). Moreover, due to its high demand for its attractive appearance and majestic size (Madulid 1985), the overharvesting of this species by plant enthusiasts has raised concerns regarding its potential impact (Baker 2018), especially since its spores are difficult to germinate in nature (Amoroso 1992; Amoroso & Amoroso 1998; 2003).

Studying its abundance and distribution can contribute knowledge to the currently limited data about this species, especially in less surveyed regions like Maguindanao in the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) (Ong et al. 2002; MENRE-BARMM 2021). In this regard, this study aimed to determine the abundance and distribution of *P. grande* in Maguindanao del Sur and provided a baseline for the conservation strategies in compliance with Republic Act No. 9147 (2001), otherwise known as the Wildlife Resources Conservation and Protection Act of the Philippines, 2001.

Materials and Methods

The study was conducted in South Upi, located in the province of Maguindanao del Sur, Philippines (Image 1). The area is characterized by mixed land use, including residential home lots, farm lots, and roadside vegetation, with open but shaded microhabitats receiving patchy sunlight. Purposive sampling was conducted without a fixed transect, following the methodology of Mangaoang & Gumban (2020). Fieldwork was conducted on 1–3 May 2025. The actual number of individual plants and the positions where *P. grande* is attached were counted and documented. Species identification was based on morphological characteristics, including the structure of the basal, vegetative fronds and the presence & form of the soral patch. Identification was further validated using references such as Copeland (1958), Hovenkamp et al. (1998), and Pelser et al., (2011). Additionally, a distribution map was created using the QGIS application. No specimens were collected during the study, in compliance with Republic Act No. 9147 (2001; Wildlife Resources Conservation and Protection Act).

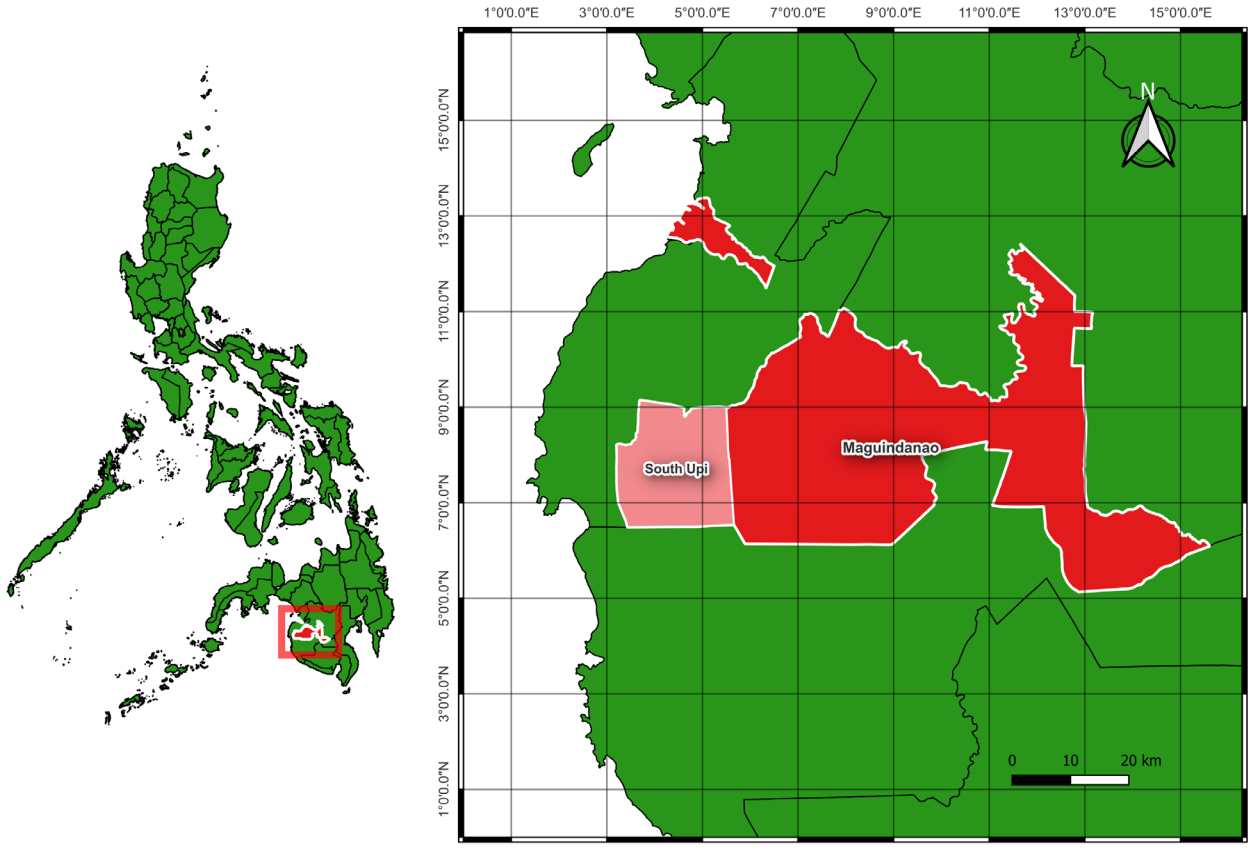

Image 1. Sampling site location in South Upi, Maguindanao del Sur, Philippines: (Green) Philippine Boundary. (Red) Province of Maguindanao del Sur. (Pink) Municipality of South Upi.

Results and Discussions

Platycerium grande was mostly observed at approximately 672–754 m, thriving in open but shaded areas with patchy sunlight. Individuals were commonly found along roadsides, in residential home lots, and on farm lots in selected areas of Maguindanao del Sur. A total of 186 individuals of *P. grande* were recorded, often attached to large trees and coconut palms. Notably, a great abundance was observed on trees such as *Samanea saman* (commonly called as Acacia in the Philippines), *Pterocarpus indicus* forma *indicus* (Narra), and *Mangifera indica* (Mango), consistent with previous records of host tree associations for this species (Mangaoang & Gumban 2020).

As shown in Image 2, most *P. grande* individuals were located on trees at the following elevations: *Mangifera indica* at 682 m, *Pterocarpus indicus* forma *indicus* at 687 m, and *Samanea saman* at 686 m, and 733 m. While *P. grande* was often abundant on a single tree, particularly in *S. saman*, where a single tree had up to 16 individuals, it was sparse or even absent on adjacent trees. This pattern may indicate a localized microhabitat preference or limitations in spore dispersal, although such ecological factors are beyond the scope of the current study. It was also observed that two individuals were attached to a coconut tree approximately 1.5 km away from the main cluster, suggesting possible long-distance wind dispersal. Similar mechanisms have been reported in related species (Bhatia & Uniyal 2022).

Platycerium grande's presence in various areas, including human-modified habitats such as roadsides, residential areas, and farm lots, indicates a certain degree of ecological tolerance. Nevertheless, the distance-dependent decline in individual counts suggests that suitable habitat features are not uniformly distributed across the study site (Ong et al. 2002). Although there are fewer *P. grande* individuals in some specific trees, as shown in Image 3, the overall findings indicate that *P. grande* is relatively abundant within the study area, with specific elevation ranges and host tree associations.

The documentation of *P. grande* across multiple areas in Maguindanao del Sur provides valuable insights into its current abundance and distribution. These baseline data strengthen our understanding of its localized population status and underscore the need for continued field studies in the Bangsamoro region (Ong et al. 2002; MENRE-BARMM 2021). Although species interactions were not a primary focus of this study,

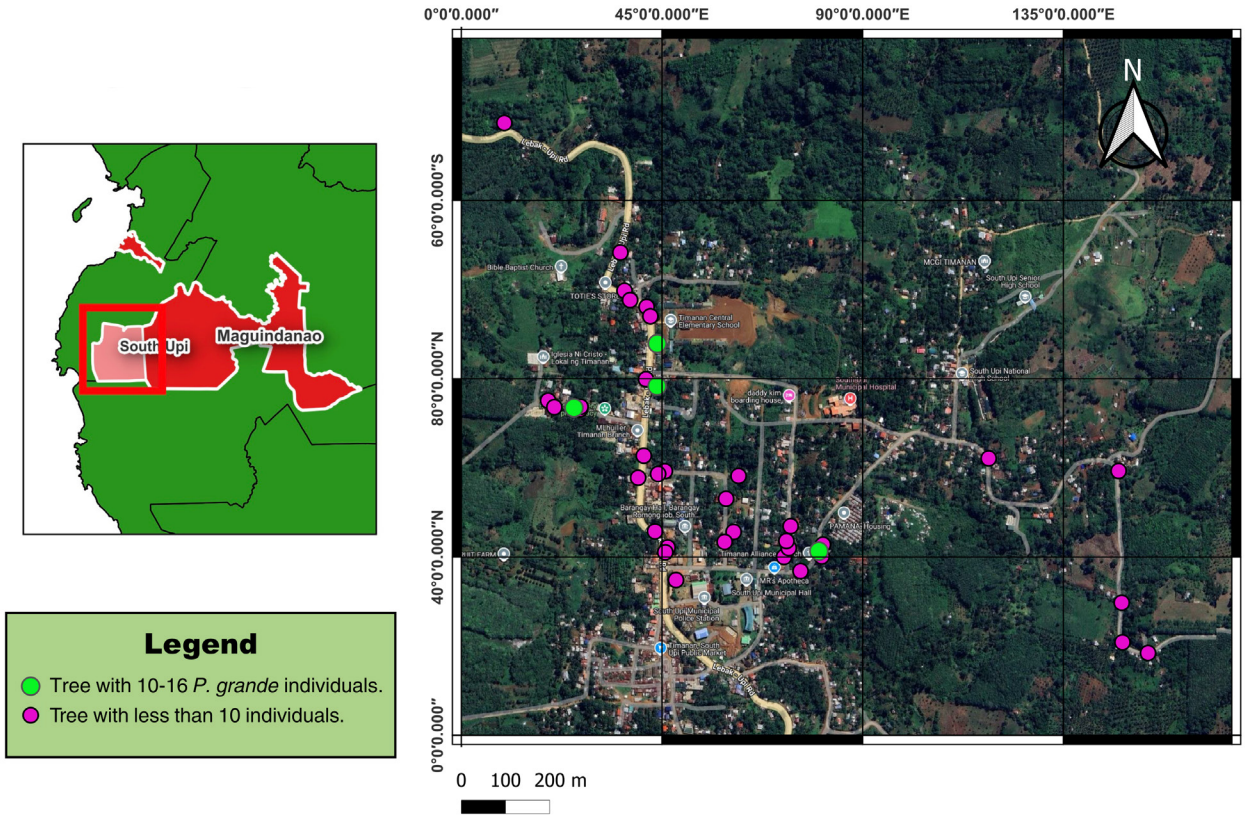

Image 2. Distribution of *Platycerium grande* in Maguindanao del Sur, Philippines.

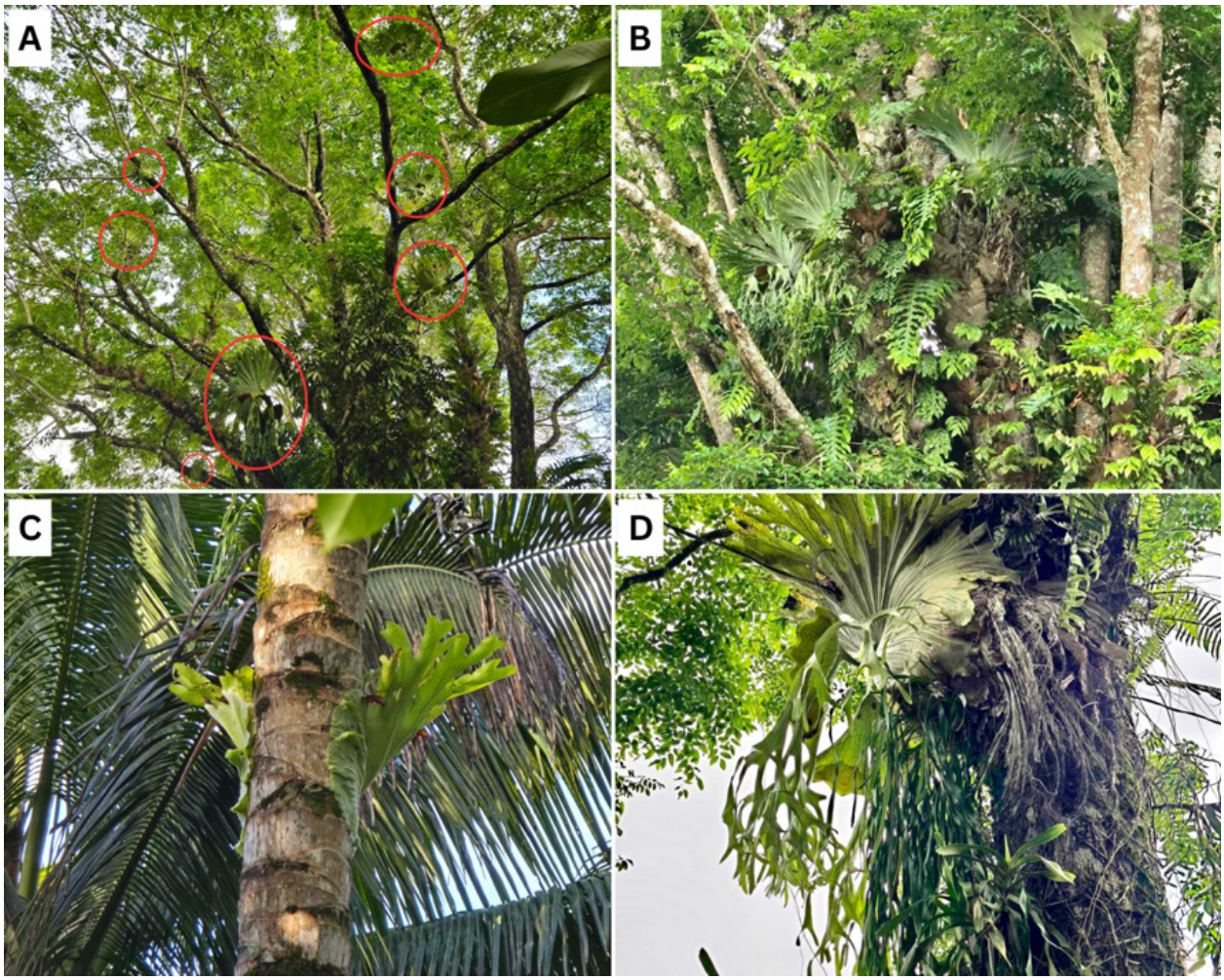

Image 3. Observed *Platycerium grande* in Maguindanao del Sur, Philippines: A–B—Trees with abundant *P. grande* individuals | C—Tree with fewer abundant *P. grande* individuals | D—*P. grande* with *Ophioderma pendulum* growing on the sterile frond. © Authors.

the incidental observation of *Ophioderma pendulum* at the same sites highlights the ecological relevance of these habitats and their potential role in conservation of multiple threatened fern species (Amoroso & Aspiras 2011).

Furthermore, it was also observed that some *P. grande* individuals are attached to dead trees, which are at risk of collapsing at any time. Nevertheless, according to personal communication with the Ministry of Environment, Natural Resources and Energy (MENRE), these individuals are planned to be carefully pruned and will then be transferred to more suitable and stable phorophytes to ensure their continued survival.

Conclusions and Recommendations

This study offers baseline data on the current abundance and distribution of *P. grande*, a critically endangered fern species in the Philippines. A total of 186 individuals were recorded, predominantly growing in open but shaded environments along roadsides, residential areas, and farm lots in Maguindanao del Sur, BARMM. The localized clustering of individuals and limited presence in surrounding areas indicate a fragmented distribution pattern across the region.

Additionally, the results of this study contribute valuable information on the current abundance and distribution of *P. grande*, an endemic species in the Malay Archipelago, and provide insights that serve as useful reference for future research. Furthermore, the findings of this study can aid in crafting and implementing local conservation strategies for *Platycerium* species, especially *P. grande*. To support its conservation, further research focusing on its ecology, reproduction, dispersal mechanisms, and microhabitat preferences are strongly recommended. These efforts will support the protection and sustainable management of *P. grande* populations in Bangsamoro

Autonomous Region and ensure compliance with Republic Act No. 9147 (2001) of the Philippines.

References

Amoroso, V.B. (1992). Valuable ferns in Mindanao. *CMU Journal of Science* 6(2): 22–36.

Amoroso, C.B. & V.B Amoroso (1998). Spore culture of some economic ferns of Mindanao. *Acta Horticulturae* 461: 231–235. In: Proceedings of the International Symposium on Biotechnology of Tropical and Subtropical Species. Part 2, Brisbane, Queensland, Australia, 29 September–3 October 1997.

Amoroso, C.B. & V.B. Amoroso (2003). Plantlet production of the Philippine giant staghorn fern [*Platycerium grande* (Fee) C.Presl.] through spore culture, pp. 491–495. In: Chandra, S. & H. Srivastava (eds.). *Pteridology in the New Millennium*. Kluwer Academic Publishers, The Netherlands.

Amoroso, V.B. & R.A. Aspiras (2011). Philippine medicinal ferns: potential source of herbal medicine. *CMU Journal of Science* 15: 27–46.

Baker, J. (2018). *The Staghorn Fern: A Guide to Cultivation and Conservation*. Horticultural Press, London, United Kingdom, 214 pp.

Bhatia, M. & P.L. Uniyal (2022). In vitro gametophyte development, reproductive biology, and nitric oxide signaling in ferns, pp. 261–283 In: Marimuthu, J., H. Fernandez, A. Kumar & S. Thangaiah (ed.). *Ferns, Biotechnology, Propagation, Medicinal Uses and Environmental Regulation*. Springer, Cham. https://doi.org/10.1007/978-981-16-6170-9_12

Copeland, E.B. (1958). *Ferns of the Philippines*. Bureau of Printing, Manila, 555 pp.

Darnaedi, D. & L. Clayton (2020). The Nantu *Platycerium grande* (Polypodiaceae), a new generic record of *Platycerium* in Sulawesi, Indonesia. *Reinwardtia* 19(2): 81–85. https://doi.org/10.14203/REINWARDTIA.V1912.3860

Darnaedi, D. & T.N. Praptosuwiryo (2003). *Platycerium bifurcatum*, pp. 157–159. In: de Winter, W.P. & V.B. Amoroso (eds.). *Plant Resources of South-East Asia, Vol. 15(2) Cryptogams: Ferns and Fern Allies*. Backhuys Publisher, Leiden, Netherlands.

DENR Administrative Order [DAO] No. 2017-11 (2017). *Updated National List of Threatened Philippine Plants and Their Categories*. Department of Environment and Natural Resources, Philippines. http://www.denr.gov.ph, 30 pp.

Hennipman, E. & M.C. Roos (1982). A monograph of the fern genus *Platycerium* (Polypodiaceae). *Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen, Afdeeling Natuurkunde*, Tweede Reeks 80: 1–126.

Hoshizaki, B.J. (1972). Morphology and phylogeny of *Platycerium* species. *Biotropica* 4: 93–117.

Hoshizaki, B.J. & R. Moran (2001). *Fern Grower's Manual - 2nd Edition*. Timber Press, Portland, Oregon, USA.

Hoshizaki, B.J. & M.C. Price (1990). *Platycerium* update. *American Fern Journal* 80: 53–69.

Hovenkamp, P., G. de Joncheere & K.U. Kramer (1998). *Flora Malesiana: Series II – Ferns and fern allies,* vol. 3. Nationaal Herbarium Nederland, Leiden, The Netherlands, 387pp.

Kreier, H.P. & H. Schneider (2006). Phylogeny and biogeography of the staghorn fern genus *Platycerium* (Polypodiaceae, Polypodiidae). *American Journal of Botany* 93(2): 217–225. https://doi.org/10.3732/ajb.93.2.217

Lee, Y.H. (1989). Development of mantle leaves in *Platycerium bifurcatum* (Polypodiaceae). *Plant Systematics and Evolution* 165: 199–209.

Mangaoang, C.C. & C.J.A. Gumban (2020). New distribution record of the endemic and critically endangered Giant Staghorn Fern *Platycerium grande* (Fee) Kunze (Polypodiaceae) in Central Mindanao. *Journal of Threatened Taxa* 12(10): 16368–16372. https://doi.org/10.11609/jott.5486.12.10.16368-16372

Madulid, D.A. (1985). Status of plant systematic collections in the Philippines. In: Sohmer, S.H. (ed.). *Forum on Systematic Resources in the Pacific*, 2003. B.P. Bishop Museum Special Publication. 74: 71–74.

MENRE-BARMM (2021). *State of the Environment Report*. Ministry of Environment, Natural Resources, and Energy (MENRE) MENRE, Philippines, 102 pp.

Ong, P.S., L.E. Afuang & R.G. Rosell-Ambal (eds.) (2002). *Philippine Biodiversity Conservation Priorities: A Second Iteration of the National Biodiversity strategy and Action Plan*. Department of Environment and Natural Resources-Protected Areas and Wildlife Bureau, Conservation International Philippines, Biodiversity Conservation Program-University of the Philippines Center for Integrative and Development Studies, and Foundation for the Philippine Environment, Quezon City, Philippines, 113 pp.

Pelser, P.B., J.F. Barcelona & D.I. Nickrent (eds.) (2011 onwards). *Co's Digital Flora of the Philippines*. www.philippineplants.org

Poremski, S. & N. Biedinger (2001). Epiphytic ferns for sale: influence of commercial plant collection on the frequency of *Platycerium stemaria* (Polypodiaceae) in coconut plantations on the southeastern Ivory Coast. *Plant Biology (Stuttgart)* 3: 72–76. https://doi.org/10.1055/s-2001-11752

POWO (2024). *Platycerium grande* (Fée) C.Presl. *Plants of the World Online*. Facilitated by the Royal Botanic Gardens, Kew. https://powo.science.kew.org/ Accessed on 27.x.2025.

Republic Act No. 9147 (2001). *Wildlife Resources Conservation and Protection Act*. Government of the Philippines. https://www.officialgazette.gov.ph/2001/07/30/republic-act-no-9417/ Accessed on 27.x.2025.

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