

(ID 138)**Species Distribution Modeling and Climate Change Impact Assessment for *Indianthus virgatus* (Roxb.) Suksathan and Borchs. in India and Sri Lanka****Bhat, V.S.K., Pandi, V.***

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Abstract

Species distribution modeling (SDM) is a fundamental tool for conservation, offering insights into the ecological requirements and potential habitats of a species. In the context of our study, we delved into SDM for *Indianthus virgatus* (Roxb.) Suksathan and Borchs. a monotypic plant species renowned for its striking disjunct distribution pattern, endemic to the wet evergreen, moist slopy hills of India and Sri Lanka. In the Indian context, the distribution of *I. virgatus* is characterized by its presence in the Central Western Ghats, Southern Western Ghats, and the Nilgiris. According to the 2020 Red List, *I. virgatus* is classified as critically endangered in Sri Lanka, while its status in India remains unknown. What sets this species apart is not only its ecological significance as a monotypic species but also its compelling evidence of socio-economic and pharmacological importance. Using *MaxEnt 3.4.4*, we integrated environmental data and occurrence records to predict the potential distribution of *I. virgatus*. Occurrence data were sourced from herbarium collections, botanical surveys, and literature. Environmental variables, encompassing climate, topography, and land cover, were incorporated into the model. The model highlighted specific ecological niches in these regions crucial for the species' survival. The monotypic nature and limited distribution of *I. virgatus*, this study underscores the urgency of preserving these habitats. Furthermore, we assessed the impact of *IPCC* climate change scenarios on *I. virgatus* distribution. Our analysis demonstrated that changing environmental conditions may pose additional threats to this critically endangered species, particularly in Sri Lanka. These findings hold significant implications for *I. virgatus* conservation, offering valuable insights into habitat preferences, distribution, and the critical need for adaptive conservation measures in the face of climate change. This study provides a foundation for targeted conservation strategies and land management practices, ensuring the continued survival of this unique plant species.

Keywords: Monotypic taxa, MaxEnt, Conservation, Angiosperms, Critically Endangered