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Species Distribution Models to Predict Suitable Habitats for Conservation of the Endangered *Lagenandra bogneri* (Araceae)

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Abstract

The genus Lagenandra is represented by 16 species and is confined to Sri Lanka, India and Bangladesh. Out of those recorded species, Sri Lanka harbours eight species of which seven are endemic to the island. The species *Lagenandra bogneri*, is an endemic, listed under the endangered category during the National Red Listing, 2012. The plants show a restricted distribution in the wet zone of the country and according to the last revision of the flora in 1987, it has been recorded from the Sinharaja Man and Biosphere Reserve of the Rathnapura district and in an another unknown location. Hence, the objective of the present study was to identify the potential areas of occurrence or the suitable habitats for the introduction of the species which would enable the conservation of this endangered endemic species using distribution models. Extensive field visits were conducted in the wet zone exploring new locations in addition to the recorded, and GPS locations of the identified populations were logged. Using the location data coupled with spatial environmental covariates; namely climatic and topographic, species distribution was first modeled and mapped. Resulted maps revealed areas that have a high probability of occurrence of *L. bogneri*. Apart from the recorded location in and around Sinharaja reserve, the other location that was used for extracting data for modelling was from Morapitiya, Runakande forest reserve, a new record for the occurrence of the species. The resulting model identified three areas with high probability value for the possible occurrence of the species of which two lie within protected forest patches; Gilimale and Peak wilderness Forest Reserves (Ratnapura district), and two other possible areas outside of the protected areas of the same district. The information would provide insight for further exploration as well as possible habitats for introducing of this endangered species with narrow habitat requirements in view of conserving the plant in future.

Keywords: Conservation, Endangered species, Species distribution model, Biodiversity