

Sri Lanka, The Land of Lichens: Understanding Lichen Richness in a Mega Diverse Hotspot

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Abstract

The unique geology and topography of the tropical island nation of Sri Lanka has resulted in its present status as a 'hot spot' of biodiversity with high levels of endemism in all groups. Lichens are generally considered two-membered partnerships made up of a fungus (mycobiont) and a green alga or cyanobacterium (photobiont) living together. However, fungi, including lichenized species, are still amongst the least studied organisms in Sri Lanka, so compared to its overall rich biodiversity both macro and micro lichens remain underexplored.

The main purpose of this study is to document the distribution of lichen diversity in Sri Lanka. A parametric method was used to predict the Island's lichen species richness in relation to vegetation composition using a GIS-based grid map approach. The model employs linear regression between observed species richness, sample score and vegetation composition per 100 km² grid square to predict species richness. Total lichen species richness of the Island is predicted using interpolation of the species in the grid squares.

The total lichen species richness exceeds 1800 in 65,000Km² of the island. The recent research studies carried in Sri Lanka from 2014 to 2017 has documented no less than 1000 lichen species over 45 species new to science. These lichens include terrestrial, epiphytic, rocky, sand dune and coastal, mangrove, and freshwater species. Over 800 lichens are awaiting to be documented in Sri Lanka including many novel species from diverse habitats. The highest lichen species richness is found in the fast disappearing rain forests and montane forests; 600 species in Sinharaja and KDN rain forests, and 800 species in Central Mountain Region. The lichen biota in the country is severely threatened by large scale destruction of natural habitats; 06 species to be totally extinct from 10km² of their local habitat. By describing the present lichen diversity and its location on the island, we can better understand which regions need further protection and monitoring in the future.

oxidant activity, DPPH