



The Diversity of Lichens in the Mangrove Ecosystems: An Assessment Between Disturbed and Undisturbed Sites of Dummala Modara Canal, Kalutara, Sri Lanka

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Mangroves are among the world's most productive ecosystems, providing critical services such as biodiversity conservation, coastal protection and carbon sequestration. However, mangrove habitats in Sri Lanka are increasingly threatened by degradation. Mangroves also support diverse lichen communities, which serve as sensitive bioindicators of ecosystem health, yet their diversity remains poorly documented. This study assessed the diversity and abundance of true mangrove species and their associated manglicolous lichen species in Dummala Modara Canal in Kalutara District, Sri Lanka. Six locations, comprising three undisturbed (L1, L2, L3) and three anthropogenically disturbed (L4, L5, L6) were surveyed using belt transects of varying lengths and widths. Lichens were sampled using a 20 cm × 20 cm transparent grid placed at breast height on mangrove trunks. Both true mangrove and lichen species were identified using standard keys and the relevant volumes of the Flora of Ceylon. Lichen samples were examined using a stereomicroscope and a light microscope. Selected specimens were further examined under ultraviolet (UV) light to confirm the identification of *Pyxine* species. Diversity indices were calculated for both true mangroves and lichen species separately. A total of seven true mangrove species belonging to five families were recorded, with *Rhizophora apiculata* being the dominant species. Undisturbed sites (L2, L3) exhibited an overall higher species richness; however, L5, a disturbed location, recorded the highest diversity ($H'=1.3778$, $D=0.7160$) values among all sites. A total of 61 lichen species were recorded, belonging to 12 genera, with *Cryptothecia* being the most abundant genus. Additionally, *Graphis* and *Porina* were the most common lichen genera in the study area. *Leptogium*, *Lecidea*, and *Pertusaria* were the rarest lichen genera in the study area. Undisturbed sites exhibited higher lichen species diversity than disturbed sites. L2, an undisturbed location, recorded the highest lichen diversity ($H'=2.1428$, $D=0.8449$) for manglicolous lichens. As sensitive bioindicators of environmental conditions, lichens can help to evaluate the health and ecological status of mangrove ecosystems. These findings as baseline information, can support future environmental monitoring, habitat restoration, and management strategies for conserving mangrove ecosystems in Sri Lanka, particularly in the Dummala Modara Canal.

Keywords: Mangrove diversity, True mangroves, Lichen diversity, Dummala Modara Canal, Belt transect