



Manglicolous Lichen Diversity and Their Spatial Distribution in Rekawa Lagoon, Southern Coast of Sri Lanka

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ABSTRACT

Lichenology has received much attention in recent decades due to two major reasons; functioning as bio-indicators and having chemicals with industrial significance. However, Manglicolous lichens (i.e., mangroves lichens) have not yet been extensively studied compared to other terrestrial lichens, particularly in Sri Lanka. Hence, this study was aimed to investigate the lichen diversity in Rekawa mangrove forest to strengthen the baseline database of Manglicolous lichens. In addition, we studied whether the spatial distribution of Manglicolous lichens is salinity-driven. Lichen diversity was assessed in eight sites which consisted seventeen plots, by calculating Lichen diversity value (LDV). In addition, other factors linked with lichen diversity including; tree height, girth, diameter, crown height, inclination, bark properties (pH, salinity, conductivity, moisture content, texture) and, canopy closure were considered. According to results, 24 lichen genera belonging to 14 families were recorded. *Graphis* sp (Graphidaceae family) and *Dirinaria* sp (Caliciaceae family) were the most abundant. The highest LDV recorded was 35.1, and the lowest was 1.5. Notable pattern was not observed among the lichens and host mangroves. However, the *Avicennia* sp recorded the lowest number of lichens, probably due to the bark peeling. Principal Component Analysis (PCA) of LDV and variables suggested that variables except girth and inclination have a negative effect on LDV. Moreover, PCA biplot showed most lichen species clustered around the variables tree height, canopy closure, crown height, bark pH, and bark texture. According to the Generalized Linear Model (AIC = 80.9), the LDV of the selected sites was best explained by canopy closure ($p < 0.05$), which was negatively correlated to LDV. Considering the scale of the study, the results suggested that the study area (intermediate climate zone) has a considerable amount of lichen diversity, which is worthy of further exploration. Bark salinity was not the main factor that drives the spatial distribution of lichen diversity of the study area, but the canopy closure.

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Keywords: Lagoon, LDV, Lichens, Mangroves, Rekawa