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Association of Mangrove Bark Properties and Manglicolous lichen establishment; A case study from Rekawa lagoon, Southern Coast of Sri Lanka

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Abstract

Many lichenological studies, carried out in Sri Lanka have focused mainly on lichen diversity but not on the ecological prospects. Moreover, 'Manglicolous lichens' have received lesser attention when compared to other terrestrial lichens. Mangrove trees are frequently exposed to very harsh conditions like frequent inundation, hypoxic conditions, high irradiance etc. Therefore, the primary goal of this study was to study 'Manglicolous lichens' concerning bark properties of mangrove species such as girth, bark pH, salinity, and texture. An association between Manglicolous lichens and bark properties was tested by surveying mangrove trees in the Rekawa Lagoon in the Southern coast of Sri Lanka. The lichen survey was conducted first in selected eight plots (10m×10m). Accordingly, *Ceriops tagal* was found to be the most common mangrove species in the study sites while *Avicennia officinalis* was the least. Furthermore, *Aegiceras corniculatum* hosts the majority of lichens (Species 117) identified while *Avicennia marina* has the lowest number of lichens (species 6). Pearson's chi square test revealed that there was a significant association between the mangrove species and lichens ($p < 0.05$). According to Kruskal-Wallis H test results, bark salinity and bark texture were significantly associated with the lichen establishment. The rest studied was non-significant. Previous literature suggests bark texture i.e., smooth peeling barks and rough barks with fissures tend to have less lichens. Also, the continuous salt spray from the ocean which lead to the deposition of salt on the superficial bark of mangroves have a "potential" to create a sort of "stressed" environment for lichens and limit their growth. These two factors might explain the association of lichens and mangroves in the study sites up to a certain extent, however, it is strongly suggested that more specific studies are needed to investigate the individual (lichen species) responses towards these different factors. Further, it is recommended to take light intensity, air quality, and humidity into account in future research.

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