



Diversity and Ecosystem Health of Inland Mangrove Forest in Garanduwa Lagoon, Southern Province, Sri Lanka

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Abstract

Mangrove forests along the Sri Lankan coastline have extensively been studied although Garanduwa inland mangrove forest in the southern province received very little attention. Therefore, this study was conducted to investigate the species diversity, plant density and community structure in order to understand health of this inland mangrove. The lagoon vegetation and the variation of edaphic factors were studied along seven belt transects (5 m × ~50 m) selected to represent the entire mangrove stand. The results showed that Garanduwa lagoon only consists of two true mangrove species; *Bruguiera sexangula* (Lour.) Poir. which forms larger monospecific stands and *Sonneratia caseolaris* (L.) Engl. which is sparsely distributed. Mangrove fern, *Acrostichum aureum* L. had a scattered distribution. The plant density in mangrove area was 2.2 m⁻² and the plant diversity was low (Simpson's index: 0.019). Larger trees of the dominant species, *B. sexangula*, were rare and the mean height and girth of the plants were 2.4±0.8 m and 27.5±2.9 cm respectively, indicating a higher exploitation of mangrove timber from the stand. No conspicuous stratification was observed. High seedling bank of *B. sexangula* was present in the mangrove. The mean salinity and pH of soil were 2.0±1.0 psu and 6.4±0.3, respectively and no variation of salinity and pH was recorded along transects. The lagoon is located about 3.5 km away from the sea and connected to the sea through a narrow 1 km long canal, Udupila Ela. Presently, the canal is almost blocked due to the establishment of settlements and dumping of waste. This completely restricts tidal inflow, forming a freshwater dominated lagoon which is further confirmed by the low saline regimes, recorded. These hydrological changes may have caused low saline species to be dominant over the true mangrove species. Unless, necessary actions are taken to facilitate natural recruitment in the lagoon (restoration of hydrology), it will be difficult to restore new plant species in order to increase bio diversity of this stand.

Key words: Ecology, human pressure, hydrology, plant density, species diversity

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