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Diversity of tree flora of the catchments of Hiyare reservoir

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Abstract

Hiyare forest which acts as the catchments of the Hiyare man-made reservoir, is located in the Galle district of Sri Lanka. It spans in an area of 243 ha and is an extension of Kottawa- Kumbala forest reserve. This study was focused on the diversity of tree species and the floristic structure of the catchments of Hiyare reservoir.

Sampling was carried out in the catchments of Hiyare reservoir using randomly placed twenty, 20 m × 20 m plots. Diameter at breast height (dbh) of all 'trees' - single, woody stems ≥ 5 cm dbh, were measured in each plot. Relative frequency, relative density, relative basal area, important value index (IVI) were calculated to identify dominant plant species/families. Shannon diversity index and Simpson's index were calculated and multivariate statistical approach was used to identify floristic communities in the study site. Two 100 m line transects were placed randomly and all plant species (> 1 m height) encountered on transects were recorded to produce profile diagrams. Voucher specimens of sampled trees were collected to confirm the identification.

The study revealed a total of 1055 individuals belonging to 71 tree species of 47 genera and 27 plant families. Among them were 36 endemic species. Three most dominant tree species based on IVI values were *Dipterocarpus zeylanicus*, *Myristica dactyloides* and *Anisophyllea cinnamomoides*. *Dipterocarpus zeylanicus* exhibited a localized distribution while *Myristica dactyloides* and *Anisophyllea cinnamomoides* were widespread in the forest. Dipterocarpaceae, Anacardiaceae and Clusiaceae were recorded as the three most dominant plant families in Hiyare forest. Shannon Diversity index and Simpson's index of Hiyare forest were 1.543 and 0.013 respectively which indicated less species diversity and higher dominance compared to other lowland rain forests of the country. The study revealed seven nationally threatened species, five near threatened species and eleven globally threatened species. Of the recorded species, 28.2% were medicinally important. Cluster analysis and principal component analysis revealed presence of two distinct plant communities. A comprehensible vertical stratification was observed in profile diagrams and more trees were abundant in the sub canopy (10-20 m) and understory strata (5-10 m). Considering the dominant species recorded at different strata, Hiyare forest was recognized to be similar to *Vitex-Dillenia-Chaetocarpus-Anisophyllea* community identified by de Rosayro in 1942 and was inferred to be in the early successional phase of a lowland primary forest.

Hiyare forest is vital for the sustenance of the Hiyare reservoir. The site at present is used for recreation purposes. Further research on floristic would enable better conservation and management of the Hiyare forest and the reservoir.

Key words: Hiyare, floristics, tree diversity