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Characterisation of the floristic structure and composition of an upper montane rain forest, Thotupolakanda

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Detailed overstorey and understorey floristic structure and floristic composition of an upper montane rain forest, Thotupolakanda was investigated during this study. Due to floristic heterogeneity, vegetation was studied in the following strata; lower elevation (2200 m – 2270 m), middle elevation (2270 m - 2340 m) and higher elevation (above 2340 m) with stratified random sampling method. Vegetation structure was surveyed with vertical distribution, girth class distribution and life form distribution with 31 plots, each 10 m × 10 m in size. Plant species higher than 1 m and gbh greater or equal to 10 cm were considered as overstorey vegetation. The remaining plants in the understorey vegetation was sampled with two randomly selected sub plots (1 m × 1 m) in each main plot. The floristic richness and endemics were also studied. The identity of the collected plant specimens were confirmed with the National Herbarium, Peradeniya.

During the study 1824 individuals were enumerated and 108 species of 64 genera belonging to 39 families were revealed. The overstorey consisted of 42 plant species and understorey consisted of 66 plant species. Poorly distinct two strata were recognized in the lower elevation as canopy (6 m –12 m) and sub canopy (1 m – 5 m). No clear stratification was distinct at higher altitude and draft vegetation was recognized from the middle elevation. Girth class distribution of stems showed the typical reverse “J” shaped curve with girth of most of the individuals within 11 cm – 20 cm at each elevation level while very few individuals attained girth more than 70 cm. Both plant height and gbh decreased with increasing altitude. Life forms recorded in the overstorey were trees and shrubs while herbs, shrubs, epiphytes and climbers were in the understorey. The prominent life form in the overstorey and understorey was trees and shrubs respectively.

Compared to the species richness in the overstorey vegetation, higher species richness was recorded in the understorey vegetation. The highest understorey species richness was recorded in the middle elevation. Of the total recorded plant species 48% are endemic to Sri Lanka. The overstorey comprises 67% and understorey comprises 46% endemic species. Critically endangered possibly extinct endemic plant species *Hedyotis quinquinervia* (Rubiaceae) was rediscovered after 107 years in Sri Lanka during this study.

Keywords: Floristic composition, floristic structure, overstorey, Thotupolakanda