

Species Composition and Diversity of Tree Species at Bukit Lagong Forest Reserve

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Structured Abstract

Background: Tropical rain forests are major ecosystems with high biodiversity and important ecological roles. Malaysian hill dipterocarp forests are one of the ecologically most valuable forest but are currently increasingly under threat from anthropogenic influences like logging. The research was carried out in Bukit Lagong Forest Reserve (BLFR), which is a hill dipterocarp forest in Selangor, to evaluate the tree species composition, diversity, and tree structure of the forest. Despite the ecological importance of such forests, knowledge on their species composition and biomass contribution remains limited, hindering conservation efforts. The objectives of this study were to determine the species composition, quantify the forest structure, and estimate the biomass of tree species at BLFR.

Methods: A total of 25 quadrats (20 m × 20 m each) were established randomly across a 1-hectare plot. Trees with DBH 5 cm and more were measured, tagged, and sampled for species identification. Data analysis comprised calculation of abundance indices, basal area, importance value index (IVI), diversity indices (Shannon, Evenness, Margalef), and above and below ground biomass estimates. PAST software was also used to measure the values of diversity indices, evenness, and species richness.

Results: 276 trees were counted, and they represented 140 species distributed in a total of 41 families. Dipterocarpaceae dominated emergent canopy and added the maximum biomass value (1,794.03 t/ha), which is a reflection of their ecological dominance. Shannon Diversity Index ($H' = 4.45$) and Margalef's Richness Index (24.73) represent high species richness and diversity, but Evenness Index of 0.61 reflects the middle-level distribution of the individuals among species. The forest structure showed an uneven-aged stand with regeneration activity and presence of large and old trees like *Shorea curtisii* and *Neobalanocarpus heimii*.

Conclusion The results show that BLFR is a structurally complicated and biologically varied ecosystem of major ecological and conservation significance. It is recommended that long-term monitoring, protection against anthropogenic threats, and public awareness initiatives be implemented to ensure the sustainability of this forest reserve. These efforts will be critical in preserving its biodiversity, enhancing carbon storage capacity, and supporting essential ecosystem services.

Keywords: Hill Dipterocarp Forest, Dipterocarpaceae, Species Composition, Forest Structure

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