

Floristic and forest structure of hill Mixed Dipterocarp Forest at Bukit Kana National Park, Sarawak, Malaysia

ABSTRACT

In Sarawak, the upland hills dominated by the dipterocarps is termed as Mixed Dipterocarp Forest and these forests are important source of timber for the state. However, forest degradation and over-exploitation are threatening the biodiversity and ecological services provided by these forests. The objective of this study was to assess the floristic and forest structure of the hill forest. The study was conducted in the vicinity of the Bukit Kana National Park office. A transect line was established along the trail. A total of 12 study plots (20 x 20 m) was established covering an area of 0.48 ha. Trees of 20 cm dbh and above were tagged and identified. Analysis showed that, there are 201 individual trees belonging to 96 species in 57 genera representing 34 families. The Dipterocarpaceae represents about 28% while the non Dipterocarpaceae 72% of the families recorded. The five most common families in term of the number of trees were Dipterocarpaceae (27.9%), Fagaceae (12.9%), Lauraceae (9.0%), Myrtaceae (7.0%) and Myristicaceae (5.0%). Based on the Important Value Index (IVI), the most important species was *Shorea macrophylla* (IVI=79.7). About 12.5% of the total species are endemic to Borneo while 6.3% are protected under the Sarawak law, in addition of 2.1% under Appendix II of CITES and 8.3% as Critically Endangered and Endangered under IUCN Red List. The total tree density was 201 trees/0.48ha. Field observations suggest that the forest is very dense with smaller tree size. The average tree diameter at breast height was 37.8 ± 16.9 cm (mean \pm S.D.). When the data were plotted, an inverted J-curve pattern was observed showing the smaller size tree dominated and decreased to the large diameter size classes. The pattern reported is common in a tropical forests which suggests a healthy forest recruitment process. The average height was 17.4 ± 5.6 m (mean \pm S.D.) with a range of 7.4 to 45 m. About 62% was contributed by strata B and C indicating the main canopy of the forest is still intact. The total basal area was 27 m² /0.48ha whereas, the estimated biomass was 281 t/0.48 per ha. *Lithocarpus urceolaris* was reported to store 66.5 tonnes of biomass representing 24% of the total trees. As half of biomass is carbon, it is estimated the Bukit Kana hill forest has the potential to store 293 tC/ha. The forest still exhibits the typical feature of a hill mixed dipterocarp forest, despite the Dipterocarpaceae has a low percentage, the most important families with IVI is represented by *Shorea macrophylla*. This forest has the potential to be one of the sites for seed production, gene bank and tree conservation.

Keyword: Species; Hill dipterocarp forest; Biomass