Forest Reserve situated in Kalutara District, low country wet zone of Sri Lanka. In this study, the above ground biomass of different species available in that forest were predicted using the diameter at breast height (dbh).

45 tree species were identified in the forest and models were separately developed for each species. For each species, 3 classes were established using the size, i.e., small, medium, and large. For class 1 and 2 trees, the main stem and the average size branch were divided into sections and for each section end diameters and length were measured. The volume of each section was estimated using Smalian's formula. The total branch volume was estimated by multiplying the average branch volume by number of branches. Then a volume and biomass relationship was estimated for each species by measuring the biomass of a known volume.

The leaf biomass in the crown was estimated by measuring that in $1 m^3$ of crown volume. Then it was converted to the entire crown via crown volume. Finally above ground tree biomass was calculated by adding branch and crown biomass to stem biomass.

Then allometric relationships were developed to predict the above ground biomass of each of 45 species separately using dbh. A strong relationship was found between total tree biomass and dbh of all species with R^2 values over 95%. In order to test further improvement of the models, total height was added as the second explanatory variable. However, it did not improve the R^2 and for most species height became non-significant. Therefore the finally selected basic model structure was log biomass = $a + b$ log dbh. The model parameters however, indicated different values for a and b for the different species, varying a from -1.71 (*Mastixia tetranda*) to - 0.73 (*Xylopia parvifolia*) and b from 2.01 (*Putranjiva zeylanica*) to 3.29 (*Syzygium cordifolium*).

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An assessment of vegetation and canopy structure of moderately exploited natural forest area in Yagirala forest reserve

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Study assessed the vegetation composition and structure and the forest canopy structure in terms of Leaf Area Index (LAI), Mean Leaf Angle (MLA) and canopy openness in different elevational classes of moderately exploited natural forest area which covers about 82% of total natural forest cover in Yagirala forest reserve, a tropical lowland rain forest selectively logged by State Timber Cooperation in late 70's.

Canopy architecture termed as angle distribution of foliage elements (Chen *et al.* 1992), can be quantified by the leaf area index (LAI) and mean leaf angle (MLA). In this study Hemispherical photographic method was used to characterize canopy architecture at three elevational classes (i.e. valley, mid-slope and ridge top). At each elevational class, hemispherical photos of the forest canopy were taken at each sampling point at a height of 1m above the ground along transects up to 200m at 50m intervals. Hemispherical photographs were analyzed using HemiView 2.1 canopy analysis software.

A vegetation survey was carried out to determine floristic composition of dominant species and families, which contribute more to the forest canopy. The enumeration was carried out using 0.05 ha circular plots at three elevational classes, totally covering 0.6ha of the area. Individuals taller 1m were enumerated and species, diameter at breast height (dbh) and total height measurements were recorded and relative basal area, relative frequency, relative density and Importance Value Index (IVI), diameter class distribution were estimated.

Leaf area index (LAI) and mean leaf angle (MLA) did not show significant variation between three elevational classes. LAI mean value of low elevation areas show high value of 2.256 and mean value of high elevation areas show low value of 2.087. Average MLA value for the moderately exploited area is 29.14. Canopy openness given in terms of visual sky fraction is also not significantly diferent between three elevational classes. The results give an estimation of homogeneity of canopy openness within the moderately exploited natural forest.