

Assessment of Tree Species Composition, Diversity and Population Structure of Tropical Moist Deciduous Forest of Eastern Himalayas, Northeast India

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Abstract—A study was carried out in tropical moist deciduous forest in Balipara Reserve Forest of Sonitpur district, Assam, Northeast India during July to September 2015 by following random quadrat sampling in 0.5 hectare. The main purpose was to assess phytosociological studies, species diversity and population structure of tree species. The forest stand density was 332 individual ha^{-1} and basal area of 41.0 $m^2 ha^{-1}$. A total of 93 tree species belonging to 78 genera and 43 families that were classified into three groups, seedlings (< 10 cm), saplings (10-30 cm) and adult trees (>30 cm). The most dominance was shown by *Shorea robusta* with highest IVI (30.64%) and density (19.27%) followed by *Bixa orellana* with IVI (16.67%) and density (6.62%). Dipterocarpaceae is the dominant family with highest FIV (37.9%) followed by Sterculiaceae (24.9%). Shannon Weiner diversity and evenness were 3.60 and 0.87 respectively, which highlighted that the forest was bestowed with great number of plant diversity and evenly distributed. Overall species shows of contagious distribution pattern. The distribution of both species richness and stand density of tree species in different girth classes shows irregular reverse J-shaped population structure while basal area distribution yielded typically J-shaped curve which indicates fair regeneration and stable communities with maximum exploitation of matured trees by the local inhabitants. The forest is experiencing mild level of disturbance with 37.95%. The result revealed that the forest should be explore in a sustainable way at the earliest since the local inhabitants were exploiting the resources at an alarming rate which may hampered the population structure of those economically important plant species such as *Bixa orellana*, *Vatica lanceaefolia* and *Tetrameles nudiflora*.

Keywords: Disturbance - Distribution pattern - Dominance - Phytosociological analysis- Population structure.