



Prioritization of timber species richness hotspots for optimal harvesting and conservation planning - a spatial statistics approach

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Abstract: Proper pre-harvest planning is a pre-requisite for any forestry operation particularly for timber harvesting. This pre-harvest plan should be based on economic return and regeneration status of timber product without compromising the timber species richness or diversity of the forest. In this article an application of spatial statistics analysis has been demonstrated to prioritise timber species richness hotspots in a bamboo mixed forest for optimal harvesting and conservation planning. Langting Mupa reserve forest, one of the biggest reserve forests in the north eastern region of India has been selected for the study. Satellite remote sensing data provided the required stratification base for optimal ground sampling for collection of field data on distribution and diversity of timber species. Richness of timber species has been worked out for all the sample points with Margalef richness Index. Strong spatial autocorrelation ($p < 0.005$) among the sample points have been observed in terms of timber species richness as indicated by Moran's I index. General G statistics has been calculated to categorize the forest area based on species richness index and tested for statistical significance. Based on this G statistics, timber species richness hot spots and cold spots in the reserve forest could be identified and recommendations were made for optimal harvesting and conservation planning.

Keywords: Stratified random sampling, Margalef richness Index, Spatial Autocorrelation, Moran's I index, G statistics, Hot spot, Cold spot