

Research Article

Assessing elevational change relationships with species richness distribution and diversity of woody riparian species along Mulunguzi River in Zomba Mountain, Malawi

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ABSTRACT

Zomba Mountain has enormous plant species diversity, mainly contributed by the riparian forest along the Mulunguzi River. Most of these plant species are undisturbed remnants of natural vegetation. This study was carried out in this riparian zone, to explore the relationships for the distribution of species richness and diversity of riparian woody species (shrubs and trees) against elevational change. The nested quadrat method was used to sample woody plants with demarcated dimensions of (50m x20m) for trees, and (5m x 5m) for shrubs in their natural environment. The results portrayed the occurrence of inverse relationships between the distribution of woody species richness and its diversity with increasing elevation. These results led to a monotonic decreasing pattern of species richness and diversity, where more woody species existed in lower elevations than those in higher elevations. These results were ascertained by a single-factor analysis of variance that tested the hypothesis and discovered the existence of their relationships. Significant negative correlation relationships for woody species richness and diversity with elevational change were also supported by both simple linear regression and correlation and the Carl-Pearson correlation coefficient. This study may assist in the formulation of effective measures for the management and conservation of the forest ecosystem.

Key words: Negative correlation, Nested plots, Diversity parameters, Climatic variables, Monotonic decrease, Tolerance range

