

Influence of Climate Change on Tree Vegetation: A Case Study of "Cerro Azul" Meambar National Park (PANACAM), Honduras¹

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Abstract

Tree vegetation was evaluated through the establishment of 14 Permanent Monitoring Plots (PMP) in "Cerro Azul" Meambar National Park (PANACAM), located in central Honduras. The plots were distributed in four elevational ranges (900 - 1,200, 1,200 - 1,500; 1,500 - 1,800 and 1,800 - 2,080 m), where a total of 1,896 individuals belonging to 231 species, 135 genera and 69 families were recorded. No significant differences were found for richness, diversity and structure between the elevational ranges; however, there is a low similarity in species composition between ranges, where those that showed the greatest similarity share only 29% of the same species. Correlation tests showed that species composition is mostly correlated to mean annual precipitation followed by the temperature of the coldest month and elevation. On the other hand, no correlations were found with the precipitation of the driest month, slope and geographic coordinates. The modeling projected to 2050 using emission scenarios, one optimistic (B1) and one pessimistic (A2) of the Intergovernmental Panel on Climate Change (IPCC), showed that there is a high probability of reduced plant populations due to the projected change in the climatic variables under study. The A2 scenario is the one that has the greatest impact on the change in areas with species presence, which shows a loss of 300 of 9,200 modeled ha, with the areas with the highest elevation being the most affected. Although there was no significant difference for structure, richness and diversity along the elevational gradient, elevation is considered to be a determining factor in composition since the elevational ranges that presented the greatest similarity were those that were in continuous form, but not those with a greater elevational difference. Continuous ranges shared up to 29% of the same species, whereas the ranges with the highest elevational difference shared only 7% of the species.

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