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50TH ANNIVERSARY MEETING

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Comparing tree communities of white-sand and terra-firme forests across Amazonian regions

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Americas B-C (Herradura San Jose)

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Local processes, such as species interaction, environmental sorting, and random dynamics have remained the focus of studies comparing tree alpha- and beta-diversity of white-sand and terra-firme forests in the Amazon. The focus on local processes can be explained by the design of most floristic studies that analyze data from single sites or individual regions. Yet, patterns observed at a local scale in a given region may not apply to other regions as a distinct evolutionary history shaped the current landscape and tree diversity across the Amazon. To date, the large-scale and long-term processes influencing tree diversity of white-sand and terra-firme forests still remain largely unexplored. Here, we address this knowledge gap by analyzing the extent to which tree alpha- and beta-diversity of white-sand and terra-firme forests vary across Amazonian regions. We base our analysis on a dataset containing 93,081 trees (≥ 10 cm DBH) sampled in 192 tree inventory plots established in white-sand and terra-firme forests of three regions: the surroundings of Manaus, the Guianas, and the upper Rio Negro. We found that white-sand forests in the surroundings of Manaus have a higher average tree alpha-diversity (average Fisher's alpha = 56.78) than those in the upper Rio Negro (30.27) and the Guianas (10.89). Additionally, we found that beta-diversity within each region, of both white-sand and terra-firme forests, is lower than between regions. We discuss our results emphasizing the contribution of landscape evolution and habitat size for the current tree alpha- and beta-diversity. The upper Rio Negro and the surroundings of Manaus hold only small and isolated patches of white-sand forests surrounded by a non terra-firme forest. We conclude that variation in habitat size contributes to the patterns of tree alpha- and beta-diversity across the three regions analyzed here.

See more of: Floristics, Ecology and Evolution of Vegetation in Oligotrophic White-Sand and Sandstone Habitats in the Neotropics
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