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DISTRIBUTION PATTERNS OF WOODY SPECIES IN RESPONSE TO EDAPHIC FACTORS IN TROPICAL SAVANNIC AND FOREST HABITATS

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Plant species distribution can be explained by edaphic gradients on a local scale, being important for understanding the diversity and ecology of plants. However, few studies have evaluated the individual responses of different plant species to edaphic gradients, especially in ecotonal areas. The study was conducted at Caminhos dos Gerais State Park, located at Serra Geral, Northern Minas Gerais state, Brazil. We verified the distribution of 87 woody species, and evaluated the importance of soils (14 edaphic variables) in shaping species distribution, synthesizing soil data into two PCA axes (Axis 1 - soil fertility and Axis 1 - soil texture). We used logistic regression analysis to construct species response curves to the edaphic gradients, using presence-absence plant species data as the dependent variable and PCA axes as explanatory variables. It is important to note that all habitats differed significantly in their soil characteristics. We recorded that 73% of species responded to the edaphic gradients (texture and fertility). The other 27% of species distribution was not explained by edaphic gradients, which implies the existence of alternative factors determining their occurrence. Soil fertility was the greater factor explaining plant distribution in forest habitats (65% of the species which showed significant response to nutritional status), whereas soil texture explained 55% off species occurrence in open habitats. Thus, soil texture was more limiting in savannic formation and nutrients were less limiting, while the opposite trend was observed in forest formation. Most species showed a unimodal response related to both edaphic gradients, which is in agreement with literature. Our study indicated soil largely regulating plant species distribution in tropical habitats, yet not-investigated factors may have an effect on several studied species. Models of species distribution that includes environmental heterogeneity are important for conservation and restoration strategies of ecosystems.

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