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Submission Type:
Oral Session

Title:
Canopy structure is not an important factor driving tree community regeneration in a forest fragment

Main Topic :
Community and Population Ecology of Tropical Species

Abstract:

Forest fragments frequently show canopy destructuring (i.e. higher forest gap area and tree coverage by climbers, and lower mean canopy height) that affect tree regeneration at different spatial scales. Focusing on a local scale, we tested whether the characteristics of the regenerating tree community respond to canopy structure in a fragment of seasonal semideciduous tropical forest in southeastern Brazil. In 100 contiguous 10x10-m plots, we represented canopy structure by a PCA axis depicting a negative correlation between canopy height and climber coverage estimated on canopy trees in 2019-2020. In 2020 and 2023, we measured trees with perimeter at breast height (PBH) ≥5cm and <15cm (regenerants hereafter) for PBH and height, and estimated climber coverage on regenerants. We also identified the regenerants' species, and categorized them into conservative or acquisitive, and into evergreen or deciduous. Last, we analysed regenerant data from 2023 using regression analyses, and observed that, under a more structured canopy, regenerants were taller and showed a lower climber coverage. These results are likely explained by the absence of recent local disturbances that lead to death or breakage of plants in the understory, and by lower climber abundance resulting from low light incidence under the structured canopy. Additionally, canopy structure did not affect regenerant richness, diversity, density, basal area, and recruitment, diametric growth, and mortality rates (calculated for the 2020-2023 period). Last, we found no relationship between the demographic rates and canopy structure within the four functional groups. Even though the

fragment studied shows spatial variation in canopy structure, most structural characteristics and the dynamics of the regenerating tree community are not driven by such variation, indicating that niche-based processes, at least those related to the regeneration niche, are not important in the forest. Candidate coexistence mechanisms to be investigated in future studies include neutral processes and negative-density dependence.

Keywords:
Demography, functional traits, regeneration niche

One sentence summary:
Most structural characteristics and the dynamics of the regenerating tree community are not driven by canopy structure in a disturbed fragment of seasonal semideciduous tropical forest in southeastern Brazil

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No, I do not wish to apply / Not Eligible