



Functional profiles of generalist and specialist plants in the Atlantic Forest

Jhonnatas Gomes Paiva, Angela Pierre Vitória, Alexandre Fadigas Souza, José Luiz Alves Silva

Variation in functional traits results from genetic constraints and phenotypic plasticity of species, and the degree of trait variability must determine the range of species distribution and abundance. Generalist species tend to have a wider geographical distribution, as they have great trait variability and are more adaptable to environmental changes. However, it does not imply that generalists are always the most abundant species at the community scale. In addition, generalists tend to be more functionally similar to each in comparison with specialists. The evaluation of functional profiles of these groups of species can shed light on an important aspect of biodiversity, particularly in hyperdiverse biomes. This study aims to compare the functional profiles of generalist and specialist plants in the Atlantic Forest. Three questions are addressed in this study: (1) do generalist and specialist species have distinct functional profiles?; (2) which functional trait best reveals the difference between these groups?; and (3) are functional differences associated with climatic and topographic variations across local communities? We will consider three functional traits (specific leaf area, wood density and plant height) and their variations along four environmental gradients (thermal and precipitation seasonality, elevation and aridity). Functional traits and species abundance have already been compiled from the literature and were assembled in two datasets. The filtering of both datasets will be necessary to determine the total number of species and communities that we will use. After this procedure, we will calculate the differences in trait values between groups of species for each community. Only the most abundant species in each community will be selected to represent the generalist. Less abundant species will be chosen in a way that the sum of their relative abundances is $< 5\%$. Climatic and topographical variables will be obtained from the WorldClim project. We expect that generalist and specialist species show very distinct functional profiles. Furthermore, the specific leaf area may reveal the greatest differences among groups of species. Finally, we expect that the environment will be related to functional differences, particularly through aridity.