

Background: Species composition of plant communities is shaped by the interplay between dispersal limitation, environmental filters and stochastic events.

Aims: The aim of this work was to investigate the effects of dispersal limitation and environmental filtering on tree recruitment. To accomplish this, we employed the unified neutral theory of biodiversity and biogeography to examine migration within the metacommunity, defined as a set of interacting local communities linked by the dispersal of multiple potentially interacting species.

Methods: We sampled 12,975 individuals with $\text{dbh} \geq 1$ cm in 26 1-ha permanent plots, including habitats of *terra firme*, transitional forests, *várzea* and *campinarana*, on the upper Madeira River, Brazilian Amazon.

Results: *Campinarana* drew individuals from outside the metacommunity species pool at a mean probability of recruitment of 0.06, a much lower probability than *terra firme* (0.31), transitional (0.21) and *várzea* forests (0.22). Environmental variables, such as water table depth, soil texture and fertility, were related to differences in community assembly.

Conclusions: Species abundance distribution and diversity patterns of plant assemblages in a large river landscape in the Amazon highlight the importance of environmental heterogeneity that conditions beta-diversity. The high variation in recruitment probabilities from the metacommunity species pool to local communities suggests high habitat variability in the process of maintaining patterns of local diversity.

