Doctoral Thesis

Functional Trait Based Community Assembly in a Secondary Tropical Dry Forest

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Abstract

This study aimed at understanding community assembly with respect to plant functional traits in a secondary tropical dry forest in central Myanmar. I conducted vegetation and soil survey in the forest, which had been disturbed 24 years ago, using thirty 400-m^2-quadrats. For 30 species, the overall density was 706 individuals/ha and the basal area was 2.92 m^2/ha. The forest was a mosaic of six community types; each included a locally dominant species. The spatial distributions of species were influenced by soil texture, soil pH, soil hardness and soil depth. Additionally, community weighted mean (e.g., specific leaf area) traits were shifted along certain soil gradients (e.g., soil depth). It suggested habitat filtering processes for community assembly. A field experiment on sprouting ability of the species demonstrated a high incidence of sprouting indicating an important regenerative trait. Shrub species sprouted vigorously more than tree species. I also studied seed germination and seedling performances of common woody plant species. Smaller-seeded species had larger leaf area ratio and higher growth rates than larger-seeded species. Allocating more resources to roots ensured higher seedling survival. Thus, seedling growth and survival could be related to life history of the species. The current vegetation was dominated by some of the tree species with colonizing characteristics such as higher germination and growth rates. The present research suggested that vegetation recovery after disturbance was initiated by sprouting mechanism and followed by seed regeneration while community assembly was chiefly driven by habitat filtering processes.