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Which processes govern community assembly of West African savanna termites

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What are the determinants of species community assembly in tropical ecosystems? This is a specifically challenging question because here many similar species coexist at the local scale. There are two major theories that can explain community assembly, composition and diversity. First, the classical niche theory, which states that species have to differ in their niches to coexist. Here deterministic processes structure communities (e.g. environmental filtering and species interactions). On the other side, there is the unified neutral theory of biodiversity, which says that species are demographically equivalent and niche differences are not essential for coexistence. Here species distribution is due to random effects like dispersal, disturbance and stochastic processes. Our study organisms, termites, seem to have nearly identical niche requirements but still more than 20 species coexist in African savanna regions. We tested the importance of deterministic vs. neutral processes for termites in a West African savanna (Togo), where they are important ecosystem engineers. We combined specific pattern analyses of termite communities in natural, undisturbed ecosystems with cross-sectional studies of communities representing different assembly stages after anthropogenic disturbance (agriculture). Here the dynamics of community assembly could be followed. We will analyse community structure across assembly stages to show the impact of phylogeny, niche traits, and environmental factors on community assembly. With this we can test whether and how community structure changes during the assembly process.