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EFFECT OF NUTRIENT AVAILABILITY ON ARBOREAL ANT COMMUNITIES: COMPARING STOICHIOMETRICALLY CONTRASTING SPECIES

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Resource-ratio theory predicts that consumers aim to target optimal ratios of complementary nutrients. Accordingly, arboreal ants, which have a surplus of carbohydrate-rich food resources and a protein-stressed diet, should be attracted to the most limited resource in the environment (protein). However, different functional groups of arboreal ants have stoichiometric discrepancies among them, ranging from high N-limited to least N-limited (trophobiont tenders = TT, leaf foragers = LF and predators = PD), which may promote interspecific differences in nutritional requirements within the assembly. Here we report results from a manipulative field experiment using protein and carbohydrate (CHO) supplementation on trees to answer: do different functional groups show different responses to protein and CHO supplementation according to differences in the extent to which they are N-limited? We found that protein supplements were more attractive to the overall ant community, with ant abundance at protein baits being three-fold higher than at carbohydrate baits, and mean richness approximately 20% higher. The same pattern was found for TT, which is the most N-limited functional group. In contrast, functional groups less N-limited showed higher species richness (LF) and abundance (PD) in CHO-rich supplements. The different functional group responses were reflected in differences in overall species composition among supplements. This study highlights the nutrient availability as a driver of arboreal ant communities. We suggest that differences in taxon-specific nutritional needs determine patterns of resources utilization and species assembly in arboreal ant communities.

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