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The morphological structure of neotropical and temperate forest ant communities

Carlos Roberto F. Brandão, Rogerio R. Silva

Morphological approaches can provide insights into the mechanisms that drive community organization and species coexistence and it is increasingly recognized that tests of community assembly need to incorporate information about functional characteristics of species. In the present study we compared the morphological space of ant communities in tropical and temperate forests. Further, we used a trait-based approach to determine the relative importance of niche and environmental filters in determining ant community structure, comparing trait dispersion between tropical and temperate regions. We surveyed ant communities at 26 sites along a latitudinal gradient of twenty degrees in the Atlantic forest (Eastern Brazil) and at 67 sites spanning 10 degrees of latitude in temperate forests (Northeastern United States), at 1000 meters of elevation in both datasets. We used mini-winklers apparatuses to sample leaf-litter ants in tropical forests, pitfall traps and systematic hand collecting to sample ants in temperate forests. We measured fifteen morphological traits on the basis of their putative function in 516 tropical ant species and 92 temperate ant species. Our morphological data set comprises 31,000 measures from 608 ant species, representing 2,000 individuals from Neotropical and 600 ant individuals from temperate-zone forests. Our results shall identify the major functional traits and environmental factors that shape assemblies of tropical and temperate ant communities. The relationship between species richness and the morphological space occupied may provide insights into the processes that outline patterns of ant biodiversity. Fapesp (Grant 98/05083-0 to CRF Brandão; grants 06/02190-8, 10/51194-1 and 10/20570-8 to RR Silva)