

Explaining the abundance of ants in lowland tropical rainforest canopies

ABSTRACT

The extraordinary abundance of ants in tropical rainforest canopies has led to speculation that numerous arboreal ant taxa feed principally as “herbivores” of plant and insect exudates. Based on nitrogen (N) isotope ratios of plants, known herbivores, arthropod predators, and ants from Amazonia and Borneo, we find that many arboreal ant species obtain little N through predation and scavenging. Microsymbionts of ants and their hemipteran trophobionts might play key roles in the nutrition of taxa specializing on N-poor exudates. For plants, the combined costs of biotic defenses and herbivory by ants and tended Hemiptera are substantial, and forest losses to insect herbivores vastly exceed current estimates.