THE ROLE OF MICROHABITAT ASSOCIATIONS IN PRODUCING CROSS-TAXA CONGRUENCE

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ABSTRACT

Ecological interactions between taxa and environmental factors influencing the distribution of multiple taxa are both thought to generate spatial concordance, or congruence, in diversity. Observational studies have generally failed to find evidence for strong cross-taxa congruence across sites, and examples of experimental studies testing for congruence as a result of an underlying ecological mechanism are largely lacking. Here I present the results of an experimental study employing downed wood additions in a BACI design to test for an association of small mammals, carabid beetles, plants and amphibians with volume of downed wood as a possible mechanism for congruence. In addition, I tested for spatial co-variation in diversity patterns across these four taxa. After one field season, there was no significant effect of treatment on within-group abundance, species richness or diversity. Species richness was not significantly correlated across taxa for any taxa pair. Small mammals, carabids and plants showed weak but significant congruence in community similarity, while the amphibian assemblage was not congruent with any other taxon. These results suggest that other sources of environmental variation and other ecological processes may be more important than use of downed wood by these four taxa in generating congruent diversity at a local scale. Furthermore, the potential of one taxon to act as an indicator of species-level diversity within another taxon may be limited.