

The effect of habitat heterogeneity on the spatial relationship between two competing predators in a forest floor habitat

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Disentangling the contribution of biotic interactions and environmental heterogeneity to the formation of spatial patterns between predators is crucial for a better understanding of food-web interactions. We studied the spatial relationship between two abundant spider species and its dependence on habitat heterogeneity in the Kellerwald strict forest reserve “Locheiche”. Both spider species were sampled at monthly intervals throughout a 12 month study period utilizing a regular sampling grid of pitfall traps. Temperature loggers recorded microclimate data at each trap location and techniques for spatial point pattern analysis were used to describe spatial relationships between individuals of both species while accounting for environmental heterogeneity. It was found that both *C. terrestris* and *T. zimmermanni* preferred areas with cooler microclimates, but still occurred less frequently than under the assumption of independent occurrence (i.e. were segregated). Additional data on both species highlights the fact that the observed spatial distributions are a consequence of both: a) microhabitat needs and b) biotic interactions between individuals of two potentially competing species. Our analyses further demonstrate the need to account for habitat heterogeneity while analyzing species interactions in space, as oversimplified spatial analyses may lead to a spurious description of aggregation or species-species associations.

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