

Abstract*

Composition of assemblages of ants (Hymenoptera: Formicidae) and associated arthropods (Heteroptera, Orthoptera, Araneae) at natural forest edges

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The central region of the Great Hungarian Plain (Kiskunság) consists mainly of agricultural fields and small patches of natural forest-steppe. We studied the spatial changes occurring along a perpendicular gradient to a dense juniper bush-open grassland edge (site 1) and a poplar forest with a juniper bush-open grassland (site 2) edge. We used 100 pitfall traps at both sites, arranged in 10 parallel transects running from the grassland through the edge into the forest interior. The traps were operated eight times in 2004 and 2005. Each sampling period lasted for two weeks.

Hierarchical cluster analysis and the Wilson-Schmidia β -diversity index revealed that the ants exhibited abrupt changes in assemblage structure at site 1, under the juniper bushes a few metres from the edge. At site 2, we also found a sharp edge effect of the ant assemblages, which occurred on grassland 4 - 6 metres from the first poplar trees (Fig. 1). This phenomenon is possibly brought about by the effect of the arboreal vegetation on the microclimate: at site 2, a stripe of the grassland (a few metres wide) is shaded and covered by leaf-litter from the tall poplar trees.

At both sites, we found significant differences between the ant assemblages of the forest and the grassland (non-parametric MANOVA site 1: $F = 24.2$, $p < 0.01$; site 2: $F = 10.3$, $p < 0.001$).

The predominant ant species in the forest were *Camponotus vagus* (SCOPOLI, 1763) and *Formica fusca* LINNAEUS, 1758. The most abundant species on the grassland were *Cataglyphis aenescens* (NYLANDER, 1849), *Formica cunicularia* LATREILLE, 1798, *Lasius psammophilus* SEIFERT, 1992 and *Plagiolepis vindobonensis* LOMNICKI, 1925.

The spider assemblages displayed a similar edge effect, but the abrupt change in the assemblages was shifted 4 - 5 metres towards the grassland (GALLÉ & al. 2007).

For the two phytophagous groups (Heteroptera and Orthoptera), we detected continuous decreases of the numbers of species and individuals towards the forest interior, where only a few specimens were collected.

The between-habitat boundary is vaguest for the ant assemblages as their response to the habitat heterogeneity is larger-scaled as compared to the other studied assemblages, possibly as a consequence of larger spatial requirements of the ant colonies influencing the collection in several neighbouring traps (STEINER & SCHLICK-STEINER 2004).

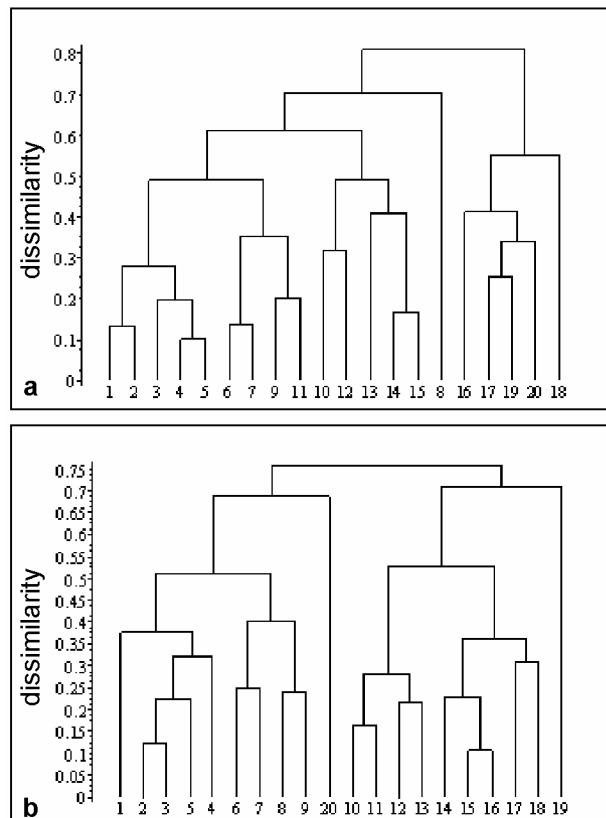


Fig. 1: Results of the hierarchical cluster analysis for (a) the juniper bush-open grassland edge (site 1) and (b) the poplar forest with the juniper bushes-open grassland edge (site 2).

References

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