

Abstract*

Succession of ant-communities on old-fields (Hymenoptera: Formicidae; Spermatophyta)

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Comparative analysis of insect communities is a frequently applied approach in ecological monitoring studies. Ants are one of the most abundant insect groups and they occur almost in every type of terrestrial habitat, which makes them perfect candidates for the subject of such studies (GALLÉ 1991, AGOSTI & al. 2000, VEPSÄLÄINEN & al. 2000). As significant proportions of agricultural lands are abandoned nowadays the study of insect versus plant community succession on such old-fields could help us understand how these lands transform and eventually return to a semi-natural state (DAUBER & al. 2006). We studied epigeic ant communities of abandoned old-fields in order to elucidate how these communities change structurally in time, and which factors could determine these changes. Pitfall traps were used on four different old-fields (1-, 8-, 16-, and 30-years old) as well as on two control sites (a reference grassland and a shrubland) near Suatu in Transylvania, Romania. Collections were carried out for 10 days in spring 2006. Parallel to sampling of ant communities the structure of plant communities was also analyzed. Altogether 18 ant species were identified, the most abundant species were the disturbance-tolerant *Lasius paralienus* SEIFERT, 1992, *Lasius niger* (LINNAEUS, 1758), and *Tetramorium cf. caespitum* (LINNAEUS, 1758), but *Myrmica sabuleti* MEINERT, 1861, *Myrmica specioides* BONDROIT, 1918 and *Tapinoma ambiguum* EMERY, 1925 were also quite frequent. Contrary to any expectations the ant species number does not show any abrupt changes during the aging of the fields, whereas the number of plant species grows. Parallel to this the diversity of the vegetation also increases in time, but the diversity of ant communities shows a slight decrease (Fig. 1). Although the studied fields clearly differ in structural properties and in the composition of the vegetation (cover, the proportion of different life forms, etc.), these differences were not in the least mirrored by ant communities. The dominance of disturbance-tolerant ant species stays unaltered during the succession, and they also dominate in the possible end stages (grassland and shrub-land). An en-

hanced mosaic pattern can be observed in the 1-year field, which becomes more uniform with time. In conclusion, the ant species pool is relatively poor and only slight changes occur further on in the structure of ant communities.

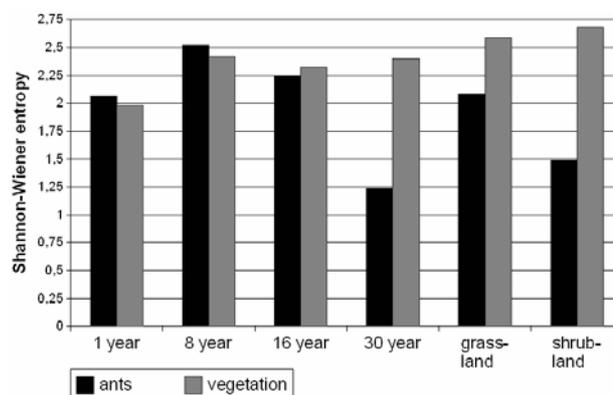


Fig. 1: Changes in the diversity of ant communities and vegetation during succession on old-fields and the two control sites, grassland and shrubland (Shannon-Wiener entropy, \log_2).

References

- AGOSTI, D., MAJER, J.D., ALONSO, L.E. & SCHULTZ, T.R. (Eds.) 2000: Ants: standard methods for measuring and monitoring biodiversity. – Smithsonian Institution Press, Washington, 280 pp.
- DAUBER, J., BENGTTSSON, J. & LENOIR, L. 2006: Evaluating effects of habitat loss and land-use continuity on ant species richness in seminatural grasslands remnants. – *Conservation Biology* 20: 1150-1160.
- GALLÉ, L. 1991: Structure and succession of ant assemblages in a north European sand dune area. – *Holarctic Ecology* 14: 31-37.
- VEPSÄLÄINEN, K., SAVOLAINEN, R., TIAINEN, J. & VILÉN, J. 2000: Successional changes of ant assemblages after ditching of bogs. – *Annales Zoologici Fennici* 37: 135-149.

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