



Conference Abstract

Response of carabid and arachnid assemblages on plant invasion in woodlots within an agricultural landscape

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Abstract

Landscape simplification and the spread of invasive species are considered the main threats to global biodiversity. It is well recognized that non-crop habitats bring complexity to farmland and provide refuge for arthropods. However, knowledge about the effects of invasive trees on arthropods in non-crop habitats in intensive agricultural landscapes is still weak. Therefore, we examined differences in the carabid and arachnid assemblages between woodlots formed by the invasive black locust (*Robinia pseudoacacia* L.) and by native deciduous tree species in the intensive agricultural landscape in the Czech Republic, Central Europe. We sampled carabids, harvestmen and spiders by using pitfall traps, sweeping the vegetation and light trapping. Effects of woodlot's habitat structure, land cover composition in the surroundings and the area of woodlots were included to the analyses. The abundance of carabids was lower in *R. pseudoacacia* woodlots. Carabid individuals could benefit from the more favourable microclimate in the native woodlots, in which relatively greater humidity may support more ample food resources. On the contrary, species richness of carabids did not differ between the woodlot types. The abundance and species richness of arachnids did not differ between the woodlot types. Number of individuals increased with increasing woodlot's area and the species richness increased

with the more open woodlot's habitat structure. The forest specialists of both groups were associated with the native woodlots with more developed canopy and shrub layers. The diversity losses of the arachnid forest specialists in the *R. pseudoacacia* woodlots were replaced by the species exploiting well-developed herb layer, and open-habitat specialists, including threatened species. Conversely, carabids of open habitats had no affinity to woodlot types. Native woodlots and those formed by *R. pseudoacacia* differed in vegetation structure and hosted different arachnid and carabid assemblages. Therefore, parallel presence of both types of woodlots supports arthropod diversity in otherwise simplified agricultural landscapes through creating more complex mosaic of habitats.

Keywords

biological invasion, Carabidae, forest fragments, invasive plants, non-crop habitats, *Robinia pseudoacacia*, spiders

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Author contributions

MŠ, TK, and PS conceived basic idea and designed the study; MŠ, TK, and MS collected the samples; MŘ determined the spiders and harvestmen; MS and PS determined the carabids and MŠ analysed the data. All authors have been involved in an interpreting the data and contributed to drafts.