

Synecology of spiders (Araneae) of gravel banks and environmental constraints along a lowland river system, the Common Meuse (Belgium, the Netherlands)

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Abstract: Gravel banks along the Common Meuse (Belgium) were sampled for epigeal invertebrates in order to investigate how assemblages are structured in relation to gravel bank characteristics (size, degree of isolation, vegetation cover, silt and periodic flooding). The spider species composition was dominated by Linyphiidae and Lycosidae. Species having short life cycles and well-developed aerial dispersal, litter-dependent hygrophiles and agrobionts were collected on all sites. The presence of xerothermic species and gravel-bank specialists was limited to scarcely covered, less dynamic gravel banks. By means of an ordination, we were able to reveal important characteristics that relate to invertebrate predator assemblage structure on the different gravel banks. Besides isolation and the level of flooding disturbance, the vegetation density and the presence of silt appeared to affect general diversity patterns, but also the diversity of species belonging to different ecological groups. The influence of the number and area of the banks in the vicinity can be interpreted as an ecological landscape effect. To preserve riparian specialists, river management along the Common Meuse should maintain disturbances caused by regular inundations of the riverine habitats. Overall we can state that there is not an univocal definition of “the” gravel bank. Therefore the aims of the current and future conservation policy should imply both dynamic and more elevated banks, in order to guarantee a high degree of local and regional heterogeneity throughout the river system.

Key words: spider assemblages, river banks, flood disturbance, landscape structure, river ecosystem