Association between invertebrate assemblages and mesohabitats in a lowland river (Spree, Germany): A chance for predictions?

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With 7 figures and 2 tables

Abstract: The influence of hydrological and sedimentological variables on invertebrate assemblages was investigated in the 6th order lowland river Spree (Germany). The river bottom consisted of eight visually distinguishable organic and inorganic mesohabitats: Dreissena-bank, unionid mussel bed, rip-rap, coarse woody debris, alder roots, stable sand, shifting sand and mud. The mesohabitats differed in their physical structure, substrate properties, temporal stability, flow velocity and grain size composition. Taxon richness and abundances varied markedly between mesohabitats. Ordination analyses revealed significant differences in taxonomic composition and dominance structure. Nevertheless, similarities in assemblage structure were found for (a) Dreissena-banks and unionid beds, (b) alder roots and coarse woody debris and (c) shifting sand, stable sand and mud. Thus four main habitat groups can be distinguished; mussel, rip-rap, woody, and fine sediment mesohabitats. Mussel mesohabitats, rip-rap and wood mesohabitats exhibited transitions in assemblage structure towards fine mesohabitats. In the case of mussel and wood mesohabitats, these transitions were temporal and occurred during extended periods of low flow and concomitant deposition of seston. In rip-rap these transitions were spatial and occurred when distances to fine sediment mesohabitats were small and nearbed flow velocities were low. Mesoscale predictions of assemblages for this section of river appear to be feasible when processes are taken into account that might affect transitions.

Key words: lowland river, mesohabitats, invertebrate assemblages, hydrological gradients, sedimentation.

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