

Abstract

The relative importance of local and regional factors to community build-up is a core issue in contemporary ecology. Studies based on research of newly created aquatic habitats may improve understanding of these processes.

We monitored zooplankton colonization rates and community assemblage in 20 newly dug and isolated temporary pools in Kokořínsko Protected Landscape Area. The region is characterised by deep stream valleys, extensive land use, low human influence, low waterfowl migration activity and practically absence of large water bodies. After the first hyproperiod all temporary pools were rebuilt to a permanent form.

In contrast to expectations, in both cases we observed immediate colonization of newly created habitats by two main groups of zooplankton (crustaceans and rotifers), but only rotifers (Rotifera) were capable of fast successful establishment of viable populations. Cladocerans (Crustacea: Cladocera) and copepods (Crustacea: Copepoda) were observed rarely and usually in low abundances ($< 1 \text{ ind}^{-1}$). 10 months after the filling of permanent pools one ostracod species (Crustacea: Ostracoda), *Notodromas monacha*, was recorded as well.

During the 8 months of temporary pools existence the presence of 1 cladoceran and 1 cyclopoid copepod species and 12 rotifer taxa was recorded, including *Resticula gelida* that is rare in Czech rotifer fauna. In total, 35 different species were found during first 17 months of community build-up in permanent pools, representing 52 % of the total species richness observed in zooplankton communities in five water bodies in the immediate neighborhood (within 3 km) of the locality. During this period, an average of 1.5 cladoceran, 0.6 cyclopoid copepod, 0.7 ostracod and 13,3 rotifer species colonized each pool. Based on these results, detected colonization rates are comparable to colonization rates documented in lowlands of Belgium and Spain (Doñana National Park), where dispersal of aquatic invertebrates by migratory waterfowl is common.

In Redundancy analysis (RDA), species-abundance data for zooplankton were related to 13 measured environmental variables. Concentration of chlorophyll *a*, position of pool (north-south gradient), abundance of phantom midge *Chaoborus crystallinus* and percentage saturation of dissolved oxygen, were identified as the most important ones ($P < 0,01$). It shows that the community build-up in new created pools is controlled by both biotic (predation, competition, priority effect) and abiotic factors.

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Keywords: Zooplankton, colonization, dispersal, community build-up, local vs. regional factors, new habitat, pool.