OC22 - The type of human-induced transformation in the catchment area determines the diversity of crustaceans in small water bodies

Kuczyńska-Kippen, N.[a]

[a]Department of Water Protection, Faculty of Biology, Adam Mickiewicz University of Poznań, Poznań, Poland

Cladocerans are often designated as model organisms in biological studies. They can also be a very suitable instrument for ecological analyses, including those targeted at the role of the surrounding area as a determinant of the community structure of freshwater cladocerans and copepods.

The sampling area was composed of 365 small water bodies with different trophic conditions. Due to the need to restrict the strong structuring effect of macrophytes, reflecting the habitat heterogeneity, on crustacean occurrence, only the open water sites were chosen.

The research was aimed at establishing a pattern of crustacean diversity in ponds differing in respect to the type of surrounding area (low vs. high human-induced impact; field vs. forest catchment). It was hypothesized that cladocerans and copepods serve as a valuable tool for detecting the level of anthropogenic transformation in small and shallow aquatic ecosystems.

A total of 92 crustacean species (59 cladocerans, 33 copepods) were identified. The species composition of both groups of crustaceans was significantly lower in human-transformed ponds (cladocerans: 3 on average in a pond, copepods: 1) than in non-transformed ponds (5, 2, respectively). More stable conditions in low human-impacted ponds were also confirmed by a more diverse composition of the dominating species, among which large daphnids (such as *Daphnia pulex, D. longispina* and *D. galeata*), filter feeders that contribute to the improvement of water quality, dominated in high frequency. Moreover, in this type of pond generally more diverse crustacean fauna, with more rare species of high ecological value, were recorded.

Considering the impact of type of catchment area only in the case of cladocerans the species diversity was substantially higher in forest-associated ponds (6 species on average) compared to field-surrounded water bodies (4).

The obtained results indicate that crustacean species composition can be implemented for distinguishing various levels of human stress in the direct catchment area of a small water body and thus it can be used for predicting changes in the food web of a pond.