

SS06

INDICATION OF STREAM INTERMITTENCY USING MACROINVERTEBRATE COMMUNITIES – SEARCHING FOR AN APPLICABLE APPROACH IN THE CZECH REPUBLIC

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Climate change has brought remarkable alterations in hydrological regime over the last decades and the lack of summer precipitation causes consequent periodical drying of 1st to 4th Strahler order streams. The lack of data from regularly dried up streams in the Czech Republic led us to start a project focused on such streams. The extent of changes in macroinvertebrate community is related to various abiotic parameters (hydromorphology in relation to refugia availability, frequency and regularity of desiccation etc.), as well as to biotic factors (presence of fish, competition, predation etc.). Regardless the specific conditions of each locality, the impact of drought is considered to be one of the crucial ecological filters leaving its footprint in the assemblage composition for a specific time corresponding with the extent of impairment.

Based on these assumptions we are testing three approaches to bioindication of streams affected by annual or irregular drying. Firstly it is the usability of potential intermittency/permanency indicators selected using published data from intermittent streams. The second approach involves the use of preselected species traits enabling a long time survival of taxa in regularly dried up streams. And finally we are going to test suitable (multimetric) indices to distinguish between intermittent and permanent stream communities.

Preliminary results show a remarkable shift in the composition of intermittent stream assemblages to species with higher resistance (e.g. drought-resistant stages, ability to survive in hyporheal) or resilience (e.g. high recolonization capacity). Many specific species traits such as life cycle duration or timing and synchronisation of emergence are also important for species survival especially in case of temporary fauna, which abundance and number of taxa often decrease in the after-drought period. The “drought filter” eliminates a certain part of the community, namely taxa with specific ecological requirements (e.g. oxyphilic or rheophilic species – permanency indicators), while resistant taxa - unspecific indicators (e.g. with lower oxygen demands surviving in residual pools), can colonize rewetted habitats faster. However, gradual turnover in taxonomic composition and species traits representation exists along the intermittency-permanency gradient and the partial overlap of the communities complicates undoubted differentiation between both stream types.

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