



Diversity and community patterns of testate amoebae (Protists) in the channelled and restored sections of river Thur (Switzerland)

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Floodplains are highly diverse ecosystems because of their spatial complexity and temporal dynamism related to erosion-sedimentation as well as community succession during ecosystem development following major floods. The idea that floodplains are highly diverse is however based mainly on the observation of macroscopic organisms, mainly flowering plants and animals. The degree to which floodplains are also diversity hotspots for microorganisms is less clear. Among the different groups of microorganisms there is especially little data on the protozoa. To address this gap in knowledge we study the testate amoebae to assess if the patterns of diversity and community structure are similar or not to those observed for other taxonomic and functional groups and how these patterns relate to ecosystem processes.

Testate amoebae have a generation time of several days and the fluctuations in their density and community structure is lower than for many other microorganisms. This constitutes an advantage for their use as bioindicators as there can be expected to be significantly less spatial and temporal variability in diversity and community patterns. However testate amoeba communities change significantly faster than vascular plants and most animals. The comparatively low dynamism of testate amoebae also implies that they should be more sensitive to perturbations such as mechanical disturbance by flood events. Finally testate amoebae are known to respond very clearly to micro-environmental gradients and soil humus type. Taken together these characteristics suggest that testate amoebae should theoretically constitute an interesting group of bioindicators.

We analysed testate amoebae communities in seven habitats spanning the full disturbance gradient of a restored stretch of river Thur (Switzerland) from the dynamic gravel bars to mature hardwood ash and maple-dominated forest. We also included samples taken in a control part of the river upstream of the restored stretch and where the former embankment remains. This is the first detailed study of the diversity of testate amoebae in floodplain. We discuss the potential usefulness of testate amoebae as bioindicators of river restoration.