**Testate amoebae communities in aquatic and semi-aquatic habitats of Caucasus region**

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Testate amoebae are unicellular eukaryotes that are ubiquitous in aquatic and semi-aquatic habitats, and they play an essential role in the biogeochemical cycling of nutrients and energy[1, 2]. The Caucasus region is known for its high biodiversity[3], but the factors that shape the communities of testate amoebae in this region are not well understood. In this study, we aim to investigate the diversity and community structure of testate amoebae in aquatic and semi-aquatic habitats in the Caucasus region and to identify the spatial scale of the factors that influence testate amoeba community distribution patterns.

To achieve our research goals, we used a dataset of 72 samples from four different kinds of biotopes, including terrestrial habitats, ponds, mires, and stream habitats. However, basing on the species accumulation curves, we found that the number of samples in the stream and pond habitats was not enough. Therefore, we decided to combine these habitats into a single type of “aquatic biotopes” for further analysis. We employed an analysis of additive partitioning of diversity[4] by four hierarchical spatial levels to identify the scale of the most important environmental factors that determine the distribution and abundance of different testate amoeba species in the region. Applying of the approach of additive partitioning of diversity to very broad spatial (geographical) scale is a main novelty of our study.

Our data showed that the three kinds of biotopes differed significantly in community composition, with the aquatic and mire habitats having the highest species richness and abundance. Furthermore, we found that the total diversity of testate amoebae communities in the Caucasus region was high, and the beta diversity was the dominant component of the total diversity. Overall, our study highlights the importance of considering both local and macroregional factors in understanding the diversity and distribution patterns of testate amoebae communities in the Caucasus region.

In the perspective of our study, we plan to use an approach of multiplicative partitioning of diversity for the same spatial hierarchy to compare its results with ones gained from the additive partitioning approach.

**References**

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