Composition, distribution and ecological characteristics of *Sphagnum*-dwelling testate amoebae in Bulgaria

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Summary

The thesis contains summarized data about the composition, distribution and ecology of *Sphagnum*-dwelling testate amoebae from Bulgaria. The materials were collected from Vitosha and Stara Planina Mountains in 2016, Rila and Pirin Mountains in 2017 and Rhodopes Mountains in 2018. A total of 266 samples (one qualitative and one quantitative) from 133 localities of 17 *Sphagnum* species were examined. As a result of the present study we established 148 species from 41 genera and 17 families

There is a high degree of similarity between the different mountains, as the number of species varies within narrow limits (between 110 in Stara Planina and 116 species in Pirin). Most of the registered testate amoebae are typical sphagnophilic representatives belonging to the genera *Assulina, Cyphoderia, Gibbocarina, Hyalosphenia, Longinebela, Nebela, Playfairina, Quadrulella* and *Sphenoderia*. A large percent of the commonly found species are eurybionts (*Argynnia dentistoma, Centropyxis aerophila, Centropyxis aculeata, Corythion dubium, Trachelocorythion pulchellum, Euglypha* spp. and *Trinema* spp.). Among the accidentally imported as a result of meteorological conditions (wind and/or running water) are testaceans characteristic of aerophilous mosses (*Awerintzewia cyclostoma* and *Bullinularia indica*), as well as typical freshwater (*Arcella* spp., *Difflugia* spp. and *Netzelia* spp.) and soil (*Centropyxis* spp., *Plagiopyxis* spp. and *Phryganella* spp.) representatives.

The analysis of the data from testate amoebae communities from different mountain shows that in general, they are characterized by extremely high similarity (82.88% – 88.70%). The small differences in the fauna of these mountains can be explained mainly by the presence of a relatively large number of rare species found in only one of the mountains (27 species in total, 18.2% of all found). When comparing different regions, the results

clearly show that relatively distant areas from different mountains form well-separated clusters. A decisive role for the development of similar fauna has the presence of similar ecological conditions.

In the quantitative studies genera showing the largest numbers in the testacean communities in Vitosha, Stara Planina, Rila and Pirin are *Hyalosphenia*, *Trinema*, *Euglypha*, *Assulina* and *Nebela*. An exception is the Rhodopes Mountains, where as dominant genus is registered *Archerella*. In all mountains the structural parameters vary in a relatively narrow range. High values of the Shannon-Weaver, Margalef and Pielu's indices are observed, and at the same time very low for the Simpson's dominance index. These values show in general, that the ecological conditions in *Sphagnum* mosses are very favorable and the testate amoebae communities are characterized by high species diversity and high degree of species uniformity.

The relationship between testate amoebae communities and environmental factors has been studied through ordinal analysis. Environmental factors with highest impact on the distribution and community structure are the type of substrate (*Sphagnum* moss), groundwater level, oxygen content and pH.