

The occurrence and significance of moss animals (Bryozoa) in the River Someş/Szamos¹

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Abstract

Till now very few data has been reported concerning the occurrence of bryozoans in the Someş. In the „united“ Someş *Plumatella emarginata* var. *spongiosa* (Krapelin, 1887) was found. Earlier data are not known about this species in Romania. It can be found almost on every stone of the bed covering 25-30 % of their surface along a 45 km long section of the river. Considering the occurrence and the distribution of colonies at the sampling sites of Someş-Odorhei, Țicău and Sălsig, it is supposed that they play an important role in the biological purification of this mesosaprobe water.

Keywords: Bryozoa, River Someş, natural purification.

Introduction

Researchers has not studied systematically the bryozoans in Transylvanian rivers before and there are also only sporadic data referring to other parts of Romania.

Sebestyén (1959) gave a modern system of this class but concerning their distribution she still leans on Vángel's works (1894, 1897, 1897a). Vángel summarised the literature references up to that time but he could find reliable data only about *Plumatella repens* L. in Transylvanian river valleys:

- Someş/Szamos Valley: var. *fungosa* Pall. - Park Lake, Cluj (leg. Dezső B.)
- Gherla Lake (leg. Mártonfi L.)
- Mureş/Maros Valley: - Park Lake, Arad (leg. Simonkai L.)
- var. *fungosa* Pall. - skating lake, Arad (leg. Daday J.)

Vángel also mentions Cserni's data according to which he collected the *Plumatella Ehrenbergii*, *Cristatella mucedo* Cuv. and *Plumatella repens* L. var. *fungosa* Pall. species in the vicinity of Alba Iulia but both Daday and Vángel doubt the reliability of these data.

Having studied the White Criş / Körös in 1993, at Inău we also found moss animal colonies on bed stones but unfortunately we could not examine living individuals and since the lack of statoblasts only the genus (*Plumatella* sp.) could be determined from the material preserved in formalin.

¹ The first name is Romanian, and the second Hungarian

The literature references mention the role of bryozoans in the consumption of organic detritus. It is also well known that they serve as food for snails, and caddisflies (Sebestyén, 1959) and for fish (Kolosváry, 1968). Nevertheless Lampert (1904) and Sebestyén (1959) do not attach great importance to these organisms in the material conversion of waters.

Materials and methods

The moss animal samples were collected mostly by hand from the stones and from underwater macrophytes. In the same time they got into the Surber benthometer together with other benthic organisms. The collected animals were examined alive in little water under stereomicroscope while they were stretching their tentacles, then they were fixed in alcohol and in order to prepare them in statoblasts we enlarged them.

The material from the Park Lake of Cluj was collected in September, 1995. The larvae grew on the water-plants and the colonies were bred in an aquarium for two months. The material from Someş-Odorhei, Țicău and Sălsig was collected in June and July 1992, as well in August 1996. In 1997 at the beginning of September specimen having statoblasts were collected again.

Discussion

The Park Lake in Cluj receives its water from the mill-canal of the Someşul Mic, thus its fauna is closely related to that of the Someş. The occasionally collected moss animals were put in an aquarium arranged from this lake. These colonies were determined as *Plumatella repens* L. Based on the shape of growth of the colonies Sebestyén (1959) differentiates three forms of this species. When the colonies were very young, meaning they had only 2-12 individuals, we could not follow the forms of growth. Unfortunately, when the closely related colonies reached this stage of development, a *Cloeon dipterum* L. larva swallowed them during the observation.

The *Plumatella repens* var. *fungosa* Pall. quoted by Vángel (1894) from this place in Sebestyén's (1959) opinions is identical to *Plumatella fungosa* Pallas. Consequently we collected another species from the same place. We identified the *P. fungosa* in the Fizeş brook (a tributary of the river Someş) in Țaga Lake, where it is quite frequent.

We consider really significant the occurrence of *Plumatella emarginata* Allman var. *spongiosa* Krapelin in large numbers on a 45 km long section of „united“ Someş between Someş-Odorhei and the inflow of Lăpuş. We mention at the same time that this species has not been identified either in Someş or in other Transylvanian rivers. The occurrence of this species and distribution of colonies were examined at the following sampling places: Someş-Odorhei, Țicău and Sălsig. At a cross-section of the river we lifted out 20-25 stones and estimated the percentage of moss animals on them. The average results were as follows: Someş-Odorhei 25 %, Țicău 27 % and Sălsig 21 %. The

Plumatella colonies occur only in fast-flowing and stony riverbeds. River Someş between Dej and Someş-Odorhei (approximately 80 kilometres) due to chemical and biological natural purification the pollution decreases. At Someş-Odorhei the oxygen supply of the water, which is not so deep and running on a stony bottom, is really good and the polluting organic substances probably serve as food for the extended moss animal colonies. They filtrate and purify the water, thus making suitable to develop their shells. Unfortunately this process is only possible until the inflow of Lăpuş. The Lăpuş river brings the polluted waters of Săsar brook, which is loaded with industrial residuals from the factories of Baia Mare. This wastewater contains not only organic materials but also lots of xenobiotics that poison both the moss animals and shells. This example, in agreement with literature data shows clearly that the bryozoans can have an effective role in the epuration of communal sewage. Related to this it is worth to mention that Pavlovski and Jadin (1950, ap. Sebestyén, 1959) rank *Pl. repens* and *Pl. articulata* among B-mesosaprobic organisms.

References

- Lampert Kurt (1904): Az édesvizek élete. - Kir. Magyar Természettudományi Társulat, Budapest, 27 - 46.
- Sebestyén Olga (1959): Tapogatókoszorúsok - Tentaculata. In: Székely, V. edit. - Fauna Hungariae. **19**, 4, 1 - 18.
- Vámgel, J. (1894): Az édesvizimohaállatok. - Term. tud. Közlöny Pótfüz., 26, 69 - 85.
- Vámgel, J. (1897): Mohaállatok (Bryozoa). - A Balaton tudományos tanulmányozásának eredményei, 2, 125 - 132.
- Vámgel, J. (1897a): Bryozoa. In: Fauna Regni Hungariae. - Ed. Regia Soc. Scient. Nat. Hungarica, Budapest, 1, 3.

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