

## FAUNISTIC COMPOSITION OF ZOOPLANKTON IN THE ŠUMARICE LAKE (KRAGUJEVAC, SERBIA)

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**ABSTRACT.** Qualitative analysis of zooplankton in the Šumarice Lake showed the presence of 114 taxa. The most diverse group was Rotifera with 79 taxa. Compared to other artificial lakes on the territory of Kragujevac city and its surroundings, we registered a greater diversity of zooplankton. According to the indicator values, the more than half of taxa (44) are indicators of I and II category. These results indicate lake's water quality as satisfactory.

**Key words:** zooplankton, Šumarice Lake, water quality.

### INTRODUCTION

There are four artificial lakes on the territory of Kragujevac city and its surroundings. Two of them (Grošnica and Gruža Reservoirs) are used for water supply of the city, one (lake in the Šumarice Memorial Park) serves for the rest and recreation of the city's residents, and the smallest one (so-called Lake Bujanj) is pond in the center of the city (OSTOJIĆ, 2004).

History of limnological researches in Kragujevac vicinity is approximately 50 years long. The first limnological study (including the fauna of zooplankton) was initiated on the Grošnica Reservoir in 1950 and lasted until the end of 1952 (JANKOVIĆ, 1967). More than 40 years later (1996-1998), the investigations of zooplankton community of the same lake as well as physical and chemical analyses of its water were conducted (OSTOJIĆ, 2000b). The first results of zooplankton community in the Gruža Reservoir are from the period immediately after lake formation (KARAMAN and KARAMAN, 1989; MARTINOVIĆ-VITANOVIĆ and KALAFATIĆ, 1990). Similar investigations were realized again during the period 1996-1998 (OSTOJIĆ, 2000a). Hydrobiological investigations (including the fauna of zooplankton) of Lake Bujanj were carried out during the period of 1992-1994 (OSTOJIĆ, 2004).

The only one reservoir in which the composition of zooplankton was not examined is the Šumarice Lake. Considering it, the aim of this study was exactly to determine the faunistic composition of zooplankton in the Šumarice Lake.

## DESCRIPTION OF INVESTIGATED LOCALITY

Šumarice Lake has been formed in period 1964-1967 when a dam was constructed on the stream Sušički potok (STEPANOVIĆ, 1974). It is located 5 km north-west from the Kragujevac city (Fig. 1). Its preliminary purpose was irrigation and recreation. Lake's total volume is  $950 \times 10^3 \text{ m}^3$  and surface area 14 ha, maximum depth is approximately 15.5 m, length 1350 m, and average width 175 m. Today this reservoir is surrounded by oak woods on one side, while the other side is modified for recreation.



Figure 1. – Position of Šumarice Reservoir.

## MATERIAL AND METHODS

Samplings for qualitative analysis of zooplankton were carried out during the April, July and September of 2011. In order to gain as accurate as possible a picture of the state of affairs in this artificial ecosystem, four permanent sampling points were selected: I – at the deepest part of the lake beside the dam (deep to the 15.5 m), II – the central part of the lake (to the 7 m of depth), III – the shallowest part of the lake (mouth of tributary), and IV – gravel littoral near artificial beaches. Qualitative samples of plankton were taken by using the plankton net (eyelet size 25  $\mu\text{m}$ ). Samples were preserved with 4% formalin at the collection site and deposited in the collection of Kragujevac Faculty of Science.

## RESULTS AND DISCUSSION

Identification was performed to the species level (and additionally to the level of subspecies, variety, or form in some instances), or only to the genus level in cases where a precise identification of species was impossible. In addition to the groups indicated in Table 1, the composition of zooplankton sometimes also included representatives of other groups which are not constant components of the zooplankton (Nematoda, Oligochaeta, Gastrotricha, Tardigrada, Ostracoda, Chironomidae).

Analysis of the faunistic composition of analyzed zooplankton indicated a relatively great diversity, which is reflected through the number of recorded taxa belonging to different

groups. Qualitative analysis revealed the presence of 114 taxa in the composition of zooplankton (Table 1).

The most diverse group was Rotifera with 79 taxa. In the other groups a fewer taxa were recorded: Rhizopoda – 8, Ciliophora – 8, Cladocera – 17, and Copepoda – 6 taxa.

As far as dominance is concerned, Rotatoria exhibited absolute dominance (primarily due to the *Asplanchna* species) in spring, whereas *Keratella*, *Polyarthra* and *Trichocerca* species were most abundant in autumn.

Compared to the other artificial lakes on territory of Kragujevac, one fact can be noticed - the largest number of taxa is recorded [(the Gruža Reservoir – 99 taxa, the Grošnica Reservoir – 105, and the Bujanj Lake – 41) OSTOJIĆ, 2000a; OSTOJIĆ, 2000b; OSTOJIĆ, 2004; respectively]. Explanation could be in the large number of taxa that related to habitat with plenty of aquatic vegetation, what is the case in the Šumarice Lake. Considerably more taxa (on the species or genus level) were recorded during the warmer months, and in shallowest part of reservoir, i.e. largest number of recorded taxa are epiphytic and phytophilous, while the true planktonic species have significantly lower presence.

Considering the distribution, most of the identified taxa are cosmopolitan.

## CONCLUSION

Among the registered were 21 taxa which are not on the list of the indicator organisms (HOFRAT and OTTENDORFER, 1983). According to the indicator values, the greatest number of taxa (44) are indicators of the I and II category; 24 taxa are indicators of the I category; 21 taxa are indicators of the II category, and only 4 taxa are indicators of the III category. These results indicate that Šumarice Lake's water quality is satisfactory.

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