

Contribution to the study of the free-living freshwater nematode fauna of Neretva River (Bosna and Herzegovina)

STEFAN STOICHEV

Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 2, Str. "Major Yuri Gagarin", 1113 Sofia, Bulgaria, stefanstoichev@yahoo.com

Abstract. Hydrobiological studies of Neretva River were performed during the 2019. The present study provides the first information on free-living freshwater nematodes from the Neretva River. The identified species are new to the hydrofauna of Bosna and Herzegovina. In our study, we identified 8 species of freshwater free-living nematodes belonging to 7 genera. The identified species and genera are new to the hydrofauna of the Neretva River, They are also new to the hydrofauna of Bosna and Herzegovina.

Key words: Free-living freshwater nematods, Neretva River, Bosna and Herzegovina.

Introduction

The Neretva River originates from Zelenagora Mountain (part of the Dinaric Mountains), at 1120 m above sea level, in the southeastern part of Bosna and Herzegovina. In its upper and middle course, it crosses the Dinaric Mountains at the beginning in the northwest, and after it flows out of the Yablanitsa dam - in the south in a picturesque canyon-like valley, which is an extremely popular destination for tourism. Along the left bank of the river rise the mountains Tsrvan and Pren, and along the right - Treskavitsa, Visochitsa, Belashnitsa, Bitovnia, Chersnitsa and Chabulya, all parts of the Dinaric mountain system. After the city of Mostar, its valley widens considerably. The city of Mostar is located on both banks of the Neretva River. Mostar is a city and municipality in Bosnia and Herzegovina. It is the largest and among the most important settlements in the Herzegovina region, as well as the administrative center of the Herzegovina-Neretva Canton of the Federation of Bosnia and Herzegovina.

Material and Methods

A total of 7 samples were collected in the area of the city of Mostar. (Fig.1 A and B). Samples were fixed in 4% formalin then heated in a water bath to stretch and measure. The determination and the presentation of the species were made according to Gagarin (1981). The formula of De Man (1886) was used to determine the species qualitative composition.

In our study, we identified 8 species of freshwater free-living nematodes belonging to 7 genera. The identified species and genera are new to the hydrofauna of the Neretva River. These species and genera are also new to the fauna of Bosna and Herzegovina.

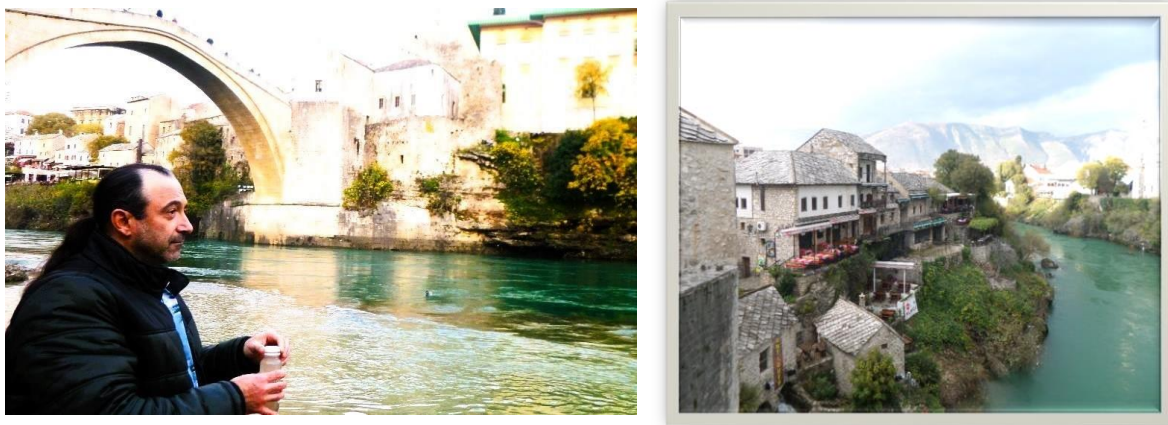


Fig. 1 (A, B). Neretva River in the city of Mostar (Bosna and Herzegovina, Photo: A - Evgeniya Tosheva) and Photo B - Stefan Stoichev.

Results and Discussion

The present study provides the first information on free-living freshwater nematodes from the Neretva River. The identified species are new to the hydrofauna of Bosna and Herzegovina. The enormous quantity of the nematodes, which, according to some authors (Rees 1940), amount to several millions of specimens/m², determines their significance for the balance of the organic substances in the water basins. Nematoda are an example of such a state in the evolution of a given taxonomic unit, which is designed by Severtsov (according to Paramonov 1970) with the term biological progress. Free-living nematodes are a major component of freshwater meiofaunal communities, where they often attain very high densities (>1 million individuals per m²; Traunspurger, 2000; Traunspurger *et al.*, 2012). The distribution of free-living freshwater nematodes found by us is presented in Table 1.

Table 1. Species composition and distribution of free-living freshwater nematodes in Neretva River.

	Nematoda	Distribution
1	<i>Dorylaimus stagnalis</i> (Dujardin, 1848)	Cosmopolitan in the European part of Russia, Ukraine, Moldova, Georgia, Romania, Bulgaria. It is found in Serbia, Greece, Bosna and Herzegovina. It is possible to find it all over Europe.
2	<i>Dorylaimus</i> sp.	
3	<i>Eudorylaimus carteri</i> (Bastian, 1865)	Cosmopolitan in the European part of Russia, Ukraine, Romania, Bulgaria. It is found in Serbia, Greece, Bosna and Herzegovina. It is possible to find it all over Europe.
4	<i>Eudorylaimus</i> sp.	
5	<i>Mononchus truncatus</i> (Bastian, 1865)	Cosmopolitan in the European part of Russia, Romania, Bulgaria. It is found in Serbia, Greece, Bosna and Herzegovina. It is possible to find it all over Europe.
6	<i>Mononchus</i> sp.	
7	<i>Monhystera stagnalis</i> (Bastian, 1865)	Cosmopolitan in the European part of Russia, Ukraine, Moldova, Georgia, Romania,

		Bulgaria. It is found in Serbia, Greece, Bosna and Herzegovina. It is possible to find it all over Europe.
8	<i>Monhystera filiformis</i> Bastian, 1865	Cosmopolitan in the European part of Russia, Ukraine, Moldova, Georgia, Romania, Bulgaria. It is found in Serbia, Greece, Bosna and Herzegovina. It is possible to find it all over Europe.
9	<i>Monhystera</i> sp.	Cosmopolitan in the European part of Russia, Ukraine, Moldova, Georgia, Romania, Bulgaria. It is found in Serbia, Greece, Bosna and Herzegovina. It is possible to find it all over Europe.
10	<i>Tripyla glomerans</i> (Bastian, 1865)	Cosmopolitan in the European part of Russia, Ukraine, Moldova, Georgia, Romania, Bulgaria. It is found in Serbia, Greece, Bosna and Herzegovina. It is possible to find it all over Europe.
11	<i>Tripyla</i> sp.	
12	<i>Tobrilus gracilis</i> (Bastian, 1865) Andrassy, 1959	Cosmopolitan in the European part of Russia, Ukraine, Moldova, Georgia, Romania, Bulgaria. It is found in Serbia, Greece, Bosna and Herzegovina. It is possible to find it all over Europe.
13	<i>Tobrilus</i> sp.	
14	<i>Plectus cirratus</i> Bastian, 1865	It is found in sandy and clayey bottoms. Found in the European part of Russia, Bulgaria, Bosna and Herzegovina.
15	<i>Plectus</i> sp.	

Acknowledgements: I like to thank Evgeniya Tosheva for her help in collecting the material. I express my gratitude to my sons Atanas and Russi for the technical support.

References

- Gagarin, V. (1981) *Opredelitel - presnovodnie nematody evropejskoj chasti SSSR*. Nauka, St. Petersburg, 248 pp.
- Man, J. (1886) *Anatomische Untersuchungen über freilebende Nordsee Nematoden*. (P. Froberg) Leipzig, 82 pp.
- Paramonov, A. (1970) *Osnovy fitogel'mintologii*. Nauka, Moskva, 3, 254 pp. (in Russian).
- Rees, C. (1940) A preliminary study of the ecology of a mud flat. *Journal of the Marine Biological Association of the United Kingdom*, 24: 185-199.
- Traunspurger W. (2000) The biology and ecology of lotic nematodes. *Freshwater Biology*, 4: 29-45.
- Traunspurger W., Höss S., Witthöft-Mühlmann A., Wessels M. & Güde H. (2012) Meiobenthic community patterns of oligotrophic and deep lake Constance in relation to water depth and nutrients. *Fundamental and Applied Limnology*, 180: 233-248.