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Faunistic Investigation of the Nematoda Fauna in the Sazlijka River, Central and South-East Bulgaria

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With 2 Tables

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Schlagwörter: Nematoda, Sazlijka, Bulgarien, Erstfund, Faunistik

The present study gives for the first time a detailed information about the free-living Nematoda fauna of the Sazlijka (Rakitnitsa) River in the Central and South-East Bulgaria. A total of 30 species have been identified. 3 species, 2 genera and 1 family are newly discovered for the Bulgarian aquatic fauna. Biocenotic data are presented.

1 Introduction

First information about the free-living nematodes in Bulgaria was given by Valkanov (1934, 1935) who reported 13 species belonging to 6 genera. Information about freshwater nematodes was given by Russev (1979) who reported 2 species from the Bulgarian-Romanian stretch of the Danube. Detailed information on the free-living freshwater nematodes in Bulgaria was presented by Stoichev (1996a, 1996b, 1998, 1999a, 1999b, 2000a, 2000b). A total of 70 free-living nematodes have been established so far in the Bulgarian freshwater. The goal of the present study is to make a faunistic investigation of the free-living nematode fauna in the Sazlijka River (Central and South-East Bulgaria).

2 Study Area

Sazlijka (Rakitnitsa) River flows from Surnena Gora Mountain. The upper part of the river valley is narrow and shallow with short and sloping banks covered with vineyards and meadows. Before it reaches Kazanka village the river flows southword. Below the village it changes its direction to the east and flows through the Stara Zagora spa. After that the river makes a big curve to the west and flows through the village of Liaskovo and the village of Surnevo in the Stara Zagora plain. In this part the banks are short and overflown at high water level. The river bottom is sandy, gravel and easily changing its shape. In its lower reaches the river has marshy banks. It flows again southword through the towns of Radnevo and Gulabovo to near Maritsa town where it empties into the Maritsa River.

3 Material and Method

The material was collected in the period 1996-2000. The following sites wer sampled:

1. Sazlijka River above Kazanka village
2. Sazlijka River below Kazanka village
3. Sazlijka River above Stara Zagora spa
4. Sazlijka River bellow Stara Zagora spa
5. Sazlijka River above Liaskovo village
6. Sazlijka River bellow Liaskovo village
7. Sazlijka River near Surnevo villag
8. Sazlijka River near Radnevo
9. Sazlijka River above Gulabovo
10. Sazlijka River bellow Gulabovo
11. Sazlijka River bellow Maritsa

A total of 33 samples were processed. Collected samples were rinsed wit two screens with mesh diameter sizes of 500 μm and 150 μm, respectively. A important preliminary procedure before fixing and processing the samples their careful heating up to 60°C in water bath. As a result the nematodes b come slacken and erected and thus more convenient for measuring. Freshwat nematodes are a rather delicate material and their conservation for a long p riod is only possible in a 4% formalin solution, since alcohol and other fixativ dehydrate their bodies.

The identification and systematic presentation of the nematode species w made according to Gagarin (1981). The determination of the nematode speci qualitative composition was made according to the formula of De Man (1886). The analysis of dominant quantitative presence (frequency of occurrence, p %, frequency of dominance, DF %, range of dominance, Dt %) was made a cording to the method of De Vries (1937)

4 Results

A total of 30 species belonging to 15 genera, 10 families and 5 orders have bee identified (Tab. 1). Compared to the data about the European part of the fo mer Soviet Union (Gagarin 1981), the Austrian part of the Danube (Humpesc 1994) and Romania (Carausu 1943), our results show that the free-living nem tode fauna in the river is well investigated. New findings for the Bulgaria fauna are 3 species (marked by +), 2 genera (marked by o) and 1 famil (marked by *).

Table 1 shows that *Dorylaimus stagnalis* and *Monhystera stagnalis* could b found along the whole reaches of the Sazlijka River. *Eumonhystera filiform* and *Tobrilus gracilis* could be found almost everywhere.

Tab. 1. Species composition, distribution and dominant analysis of the zoobenthic species found in the Sazlijka River

	Station										Dominant analysis		
Taxa	1	2	3	4	5	6	7	8	9	10	pF%	DF%	Dt%
Dorylaimus stagnalis Dujardin, 1848	X	X	X	X	X	X	X	X	X	X	84.8	45.4	53.5
Dorylaimus montanus Stefanskii, 1924							X				3.0		
Dorylaimus paradoxus Eliava, 1967	X										3.0		
Dorylaimus sp.						X					3.0		
Paradorylaimus filiformis (Bastian, 1865) Andrassy, 1969			X		X		X				21.2		
Laimydorus flavomaculatus (Linstow, 1876) Siddiqi, 1963						X	X		X	X	18.1		
Laimydorus agilis (de Man, 1880) Siddiqi, 1969				X	X		X				15.1	3.0	19.8
Mesodorylaimus bastiani (Buetschli, 1873) Andrassy, 1959 + o								X			3.0		
Eudorylaimus carteri (Bastian, 1865)											6.0	3.0	50
Eudorylaimus sp.							X				3.0		
Chrysonemoides holsaticus (Schneider, 1925) Siddiqi, 1969 + o				X		X		X			9.0		
Mononchus truncatus Bastian, 1865	X		X		X	X	X		X	X	45.4	6.0	13.2
Mononchus sp.							X				3.0		
Monhystera stagnalis Bastian, 1865	X	X	X	X	X	X	X	X		X	87.8	75.7	86.2
Eumonhystera filiformis Bastian, 1865	X		X		X	X	X	X	X	X	78.7	6.0	7.62
Monhystera paludicola de Man, 1880				X							3.0		
Monhystera sp.							X				3.0		
Enoploides fluviailis Micoletzky, 1923						X	X	X			9.1		
Enoploides sp.						X					3.0		
Tripyla glomerans Bastian, 1865		X			X	X	X				12.1		
Tripyla sp.								X			3.0		
Tobrilus gracilis (Bastian, 1865) Andrassy, 1969	X	X		X		X	X	X	X	X	69.6	3.0	4.3
Tobrilus stefanskii (Micoletzky, 1925)							X				6.0		
Tobrilus sp.						X					3.0		
Rhabditis filiformis Buetschli, 1873		X		X	X						3.0		
Prodesmodora circulata (Micoletzky, 1913) Micoletzky, 1922				X	X	X					9.1		
Punctodora bioculata (Schultze in Carus, 1857)						X					3.0		
Plectus cirratus Bastian, 1865					X	X	X				12.1		
Plectus parvus Bastian, 1865 +								X			3.0		
Plectus sp.						X					3.0		

The results of the species dominance analysis are presented in Tab. 1. The values of the index pF and the range of dominance Dt also indicate that very frequently occuring species dominate qualitatively in the nematode complex in the various parts of the Sazlijka River.

Besides species with high pF and Dt values (*Dorylaimus stagnalis* and *Monhystera stagnalis*), species of high Dt and low pF values (*Laimydorus agilis* and *Eudorylaimus carteri*) have been found. The results obtained illustrate the stenobiontic character of some species. The abundant development of these species is possible only within narrow environmental limits. Outside of these limits they do not occur or they cannot be frequently found.

According to the classification of frequency of free-living freshwater nematodes of Stoichev (1996a) the species found in the Sazlijka River can be grouped as follows:

1. Very frequently found (pF > 50 %): *Dorylaimus stagnalis*, *Eumonhystera stagnalis*, *Monhystera filiformis* (Total: 4 species);
2. Frequently found (pF 10-50 %): *Paradorylaimus filiformis*, *Laimydorus flavomaculatus*, *Laimydorus agilis* (Total: 6 species);
3. Rarely found (pF 1-10 %): *Dorylaimus montanus*, *Dorylaimus paradoxus*, *Mesodorylaimus bastiani* (Total: 20 species);
4. Very rarely found (pF < 1 %) Total: 0 species.

The distribution of the species is shown in Tab. 2. It illustrates that the gravel and sand habitats have the greatest number of species (27), followed by sludge (18), sludge and sand (14), coarse sand (9), sand (7), gravel (7), clay and sand (2) and clay (1). Tab. 2 also shows that many species are able to inhabit various habitats which can be explained with the tendency of nematode species to enlarge their range and their eurobiontic character as an expression of the biological progress of the group.

Tab. 2. Distribution of nematodes in different habitats

Taxa	gravel	gravel sand	sludge	sludge sand	sand	coarse sand	clay sand	clay
Dorylaimus stagnalis		X	X		X	X		
Dorylaimus montanus		X		X		X		
Dorylaimus paradoxus			X	X	X			
Dorylaimus sp.		X						
Paradorylaimus filiformis		X	X	X	X	X		
Laimydorus flavomaculatus		X		X				
Laimydorus agilis		X	X					
Mesodorylaimus bastiani		X	X	X				
Eudorylaimus carteri	X	X						
Eudorylaimus sp.			X					
Chrysonemoides holsaticus		X		X				

Taxa	gravel	gravel sand	sludge	sludge sand	sand	coarse sand	clay sand	clay
Mononchus truncatus	X	X	X					
Mononchus sp.	X	X		X			X	
Monhystera stagnalis		X	X					
Monhystera filiformis		X		X	X	X		
Monhystera paludicola			X	X				
Monhystera sp.	X	X		X				
Enoploides fluviailis	X	X	X					X
Enoploides sp.		X	X	X			X	
Tripyla glomerans		X	X		X	X		
Tripyla sp.		X						
Tobrilus gracilis		X	X			X		
Tobrilus stefanskii		X						
Tobrilus sp.		X		X				
Rhabditis filiformis	X	X	X		X	X		
Prodesmodora circulata	X	X	X					
Punctodora bioculata		X	X	X	X	X		
Plectus cirratus		X	X			X		
Plectus parvus		X		X				
Plectus sp.		X	X					

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