

Lauterbornia 38: 63-66, D-84424-Dinkelscherben, 2000-06-15

The pelagic zooplankton of several coastal lakes in North-East Bulgaria

Stanoy Kovachev and Vihra Hainadjieva

With 1 table

Keywords: Zooplankton, Rotatoria, Crustacea, Bulgaria, coastal lake, faunistics

Schlagwörter: Zooplankton, Rotatoria, Crustacea, Bulgarien, Küstensee, Faunistik

The species spectrum of the zooplankton of the coastal lakes Shabla, Ezerets, Shablenska Touzla, Durankulak and the Orlovo swamp in Northeast Bulgaria has been studied. 25 species of Rotatoria, 15 of Cladocera and 11 of Copepoda have been found. The similarity between the lakes is significant with the exception of Shablenska Touzla, where the species spectrum is considerably poorer probably because of its myxohaline character.

1 Introduction

The study of the aquatic communities is part of a complex ecological investigation of the protected wetlands. Its aim is to gather new information about the present state of their biodiversity. The data obtained about composition, distribution and trends in the development are of great importance for the performance of the administration of the protected wetlands. Recently new data on the benthic communities has been published (STOICHEV 1998, KOVACHEV & al. 1999), where some short descriptions of the lakes studied can be found. The present paper includes new information on the zooplankton community. The quantitative parameters of the community are not subject of this article.

2 Previous investigations

NAIDENOW (1998) published a comprehensive list of 71 pelagic, pseudoplanktonic and phytophilous species that he found in the lakes of Shabla and Ezerets. This study is the only one so far on these lakes. There are 29 typical pelagic plankters in Shabla and 27 in Ezerets; 20 and 17 species respectively occur simultaneously in the pelagial and in the phytal. The great diversity up to 71 species is based on the phytophilous ones. A first investigation on the zooplankton in Durankulak was done by DIMOV (1967). The community was dominated by Crustacea all over the year followed by Rotatoria. Unfortunately the author did not publish any species composition. Later, NAIDENOW (1981) published his data of the zooplankton in Durankulak (43 species) collected 1977-1979. During the first year Cladocera dominated, gradually being replaced by Copepoda in the

last year. No later information is available. The other two basins, Shablenska Touzla and Orlovo Swamp, have not been studied and no information is available on their zooplankters so far.

3 Sampling sites and material

Samples were taken from 9 sites in the open part of the lakes: 4 in Shabla and Ezerets, 3 in Durankulak and 1 site in Shablenska Touzla and the Orlovo Swamp: nine times in all the lakes from July 1995 to October 1996 and additional random samples during the next two years. A net was used with a mouth of 20 cm and a mesh size of 47 μm .

4 Qualitative composition

Shabla and Ezerets. A total of 41 zooplankters has been identified at species level in these lakes (23 Rotatoria, 14 Cladocera and 8 Copepoda; Tab. 1). The larger part of the species number falls to the Rotatoria, which are nearly the same in both lakes. This group is obviously rather tolerant to the environmental conditions. The community in Shabla and Ezerets is very similar; in the Shabla there are less Cladocera species, i.e. less effective filtrators. The species composition is not very rich and is typical for lakes with advanced degree of eutrophication.

Shablenska Touzla. The zooplankton of this lake is extremely poor. During the study *Eurytemora velox* was the exclusive dominant, except in May 1995, when it was accompanied by *Daphnia magna*. The presence of these large species is a pressure on the other zooplankters, especially the Rotatoria which occur only accidentally. On the other hand, the shortage of food may limit the occurrence of further species. The blue-green algae that cause water blooms, are practically not edible for the filtrators. Finally, the myxohaline water and the detectable presence of hydrogen sulphide are obstacles to the development of a more diverse zooplankton. Future changes in the hydrological regime and the salinity by limitation of the influx of mineral water would probably change the zooplankton composition dramatically.

Durankulak and Orlovo Swamp. A total of 45 species of zooplankton was found in both of the lakes, 40 in Durankulak, and 28 in Orlovo Swamp. The species list (Tab. 1) includes 22 Rotatoria, 13 Cladocera and 10 Copepoda. This number of species is nearly the same as published by NAIDENOW (1981). Both lakes have relatively high faunal similarity in spite of some environmental differences (total surface, depth, water chemistry). This is mostly due to the Rotatoria, among which there are many euryoecious and ubiquitous species. DIMOV (1967) noted the inferior position of the Rotatoria, and NAIDENOW (1981) confirmed the leading role of the Cladocera, gradually replaced by Copepoda. At the present

time the Rotatoria play the leading role confirming the obvious instability of the community and the dynamic changes in the environment in these lakes.

Table 1. Species composition and distribution of the zooplankton in the lakes Shabla (1), Ezerets (2), Shabla Tuzla (3), Durankulak (4) and Orlovo Swamp (5)

Taxon/Site	1	2	3	4	5
ROTATORIA					
<i>Asplanchna sieboldi</i> (LEYDIG)	X	X	X	X	X
<i>Asplanchna girodi</i> GUERNE				X	X
<i>Brachionus angularis</i> GOSSE	X	X		X	X
<i>Brachionus calyciflorus calyciflorus</i> PALLAS	X	X		X	X
<i>Brachionus calyciflorus dorcasi</i> GOSSE	X	X		X	
<i>Brachionus quadridentatus</i> HERRMANN	X	X	X	X	X
<i>Brachionus urceolaris</i> (LINNAEUS)	X	X	X	X	X
<i>Euchlanis dilatata</i> EHRENBERG		X			
<i>Filinia longiseta</i> (EHRENBERG)	X	X		X	X
<i>Filinia terminalis</i> (PLATE)	X	X		X	
<i>Hexarthra mira</i> (HUDSON)		X		X	
<i>Keratella cochlearis</i> (GOSSE)	X	X	X	X	X
<i>Keratella quadrata</i> (MUELLER)	X	X			X
<i>Keratella tecta</i> (GOSSE)	X	X		X	
<i>Keratella tropica</i> (APSTEIN)	X	X		X	
<i>Keratella valga</i> (EHRENBERG)	X	X		X	X
<i>Lecane lunaris</i> (EHRENBERG)	X	X		X	X
<i>Notolca acuminata</i> (EHRENBERG)		X			
<i>Polyarthra dolichoptera</i> IDELSON	X	X		X	X
<i>Pompholix complanata</i> GOSSE	X	X		X	
<i>Synchaeta pectinata</i> EHRENBERG	X	X		X	X
<i>Synchaeta cecilia</i> ROUSSELET	X	X		X	X
<i>Testudinella patina</i> (HERRMANN)	X			X	
<i>Testudinella</i> sp.				X	
<i>Trichocerca similis</i> (WIERZEJSKI)	X	X	X		
CLADOCERA					
<i>Alona rectangula</i> SARS	X	X	X	X	X
<i>Alonella nana</i> (BAIRD)			X	X	
<i>Ceriodaphnia quadrangula</i> (O. F. MUELLER)	X			X	X
<i>Chidorus sphaericus</i> (O. F. MUELLER)	X	X		X	X
<i>Daphnia magna</i> STRAUS			X		X
<i>Daphnia cuculata</i> SARS		X	X	X	
<i>Daphnia galeata</i> SARS	X			X	X
<i>Daphnia longispina</i> (O. F. MUELLER)		X			
<i>Diaphanosoma lacustris</i> NEGREA		X		X	
<i>Leydigia leydigi</i> (SCHOEDLER)					X
<i>Moina micrura dubia</i> GUERNE & RICHARD	X			X	X
<i>Macrothrix hirsuticornis</i> NORMAN & BRADY					X
<i>Oxyurella tenuicaudis</i> (SARS)	X				
<i>Scapholeberis mucronata</i> (O. F. MUELLER)				X	
<i>Simocephalus vetulus</i> (O. F. MUELLER)		X		X	

Taxon/Site	1	2	3	4	5
COPEPODA					
Calanoida					
Calanipeda aquaedulcis KRITSCHAGIN		X			X
Euritemora lacustris (POPPE)					X
Euritemora velox (LILJEBORG)	X	X	X	X	
Cyclopoida					
Acanthocyclops robustus (SARS)	X	X		X	X
Cyclops strenuus FISCHER	X	X		X	X
Cyclops vicinus (JURINE)	X	X		X	X
Eucyclops serrulatus (FISCHER)	X			X	X
Mesocyclops leuckarti (CLAUS)	X	X		X	
Megacyclops viridis (JURINE)	X			X	
Thermocyclops crassus (FISCHER)				X	
nauplii	X	X	X	X	X
copepodites	X	X	X	X	X
BRANCHIURA					
Argulus foliaceus (LINNAEUS) ectoparasite on fish		X		X	

Acknowledgements

An essential part of this study was carried out in the framework of the Project "Northern wetlands" of the Bulgarian-Swiss Biodiversity Conservation Programme.

References

- DIMOV, I. (1967): Seasonal and annual dynamics of the biomass of the zooplankton in some lakes along the Bulgarian Black Sea coast.- Proceedings of the Institute for Fish Resources Varna 8: 167-176 (In Bulgarian with English summary), Varna
- KOVACHEV, S., S. STOICHEV & V. HAINADJIEVA (1999): The zoobenthos of several lakes along the Northern Bulgarian Black Sea coast.- *Lauterbornia* 35: 33-38, Dinkelscherben
- NAIDENOV, W. (1981): Struktur und Dynamik des Zooplanktons im See Durankulak.- *Hydrobiologia* 15: 62-73, Sofia (In Bulgarian with German summary)
- NAIDENOV, W. 1998 Struktur und Horizontalverteilung des Zooplanktons in zwei Kuensteseen am Schwarzen Meer in Northost Bulgarien (Schabla-See und Eserez-See).- In: GOLEMANSKY, V. G. & W. T. NAIDENOV (eds.): Biodiversity of Shabla Lake System.- "Prof. Marin Drinov" Publishing House, 51-87, Sofia
- STOICHEV, S. (1998): The zoobenthos from the lakes Shabla-Ezerets (northern Black Sea Coast of Bulgaria).- In: GOLEMANSKY, V. G. & W. T. NAIDENOV (eds.): Biodiversity of Shabla Lake System.- "Prof. Marin Drinov" Publishing House, 91-99, Sofia

Addresses of the authors: Assoc. Prof. Dr Stanoy Kovachev and Vihra Hainadjieva, Sofia University, Biological Faculty, Boul. Dragan Tsankov 8, BG-1421 Sofia, Bulgaria

Received: 1999-06-29

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Lauterbornia](#)

Jahr/Year: 2000

Band/Volume: [2000_38](#)

Autor(en)/Author(s): Kovachev Stanoy, Hainadjieva Vihra

Artikel/Article: [The pelagic zooplankton of several coastal lakes in North-East Bulgaria. 63-66](#)