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PRELIMINARY STUDIES ON THE BENTHIC DIATOM COMMUNITIES FROM THE SOMEŞU MARE RIVER, SECTION BECLEAN (TRANSYLVANIA, ROMANIA)

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Abstract: The paper deals with the comparative investigation (qualitative and quantitative composition) of the benthic diatom communities inhabiting the middle course of the Someşu Mare river, upstream and downstream of the town Beclean in July, September and December 2002. There have been identified 152 taxa belonging to 30 genera. Most of the diatoms are indifferent elements, basiphilic (almost one third of the total taxa identified), as well as halophilic forms. The community pattern was determined by the truncated normal curve model [7] based on the relative abundance of taxa. There have also been analyzed the floristic affinities among the various communities (PAST), the degree of water saprobity [14] and water quality (Biological Diatom Index).

According to the present findings the benthic diatom communities occurring upstream Beclean (at Săsarm), might be considered as natural (high truncated normal curves), but below the town (at Măluţ), due to the inflow of industrial and urban sewage, the communities became rather affected by pollution (flattened curves). Based on the SI employed, the river is β- and β-α-mesosaprobic, the organic pollution being moderate, respectively moderate to strong. The values of the BDI indicate good or acceptable water quality upstream Beclean, and ordinary one below the town.

Introduction

Diatoms possess several morphological, taxonomical and ecological attributes which make them suitable for biological monitoring of river ecosystems. They are largely distributed and occur in almost all types of aquatic habitat. Some diatoms are sensitive to the physical and chemical changes of the water (stenotropic), are less tolerant and require well definite ecological conditions. Seemingly most taxa have no preferences for a certain type of substratum. Their life history is short and they quickly colonizes new habitats. Modifications in the composition of diatom communities are prompt answers to the environmental changes. The diatoms taxonomy is relative well established and a large bibliography is available. The identification of taxa is based on the structure of silica frustules mounted in permanent preparations, which allow their repeated reexamination.

Previous investigations on the diatoms occurring in the Someşu Mare river basin were carried out for the rivers Bistriţa, Şieu and Dipşa [1, 2, 3, 4], Someşu Mare [6], Someşu Cald [9, 13], Someşu Rece [12], Someşu Mic [8, 9] and Someş [10, 11].

Material and Method

Benthic diatom samples were collected from the Someşu Mare river in July, September and December 2002, in two stations: Săsarm, upstream Beclean at the confluence with the Şieu river, and Măluţ, downstream Beclean. The samples collected from the surface of underwater stones, sediment (silt and epipel) and aquatic plants, were fixed in 4% formalin. The frustules were repeatedly washed in distilled water, cleaned by heating and mounted in colophony. The examination of the preps and the identification of the taxa was carried out by using Nikon

Eclipse E 400 oil-immersion lens based on the recent monographs of Krammer and Lange-Bertalot [5].

There have been counted at least 800 specimens for each sample in order to estimate the relative abundance of the species in a particular community. The structural pattern of communities was determined by the model of truncated normal curve [7]. The floristic affinities among communities (stands) was investigated by using the similarity index of Sörensen and running the statistical program PAST.

The degree of saprobity of the water was established by the method of Zelinka and Marvan (1961):

$SI = \frac{\sum S_i G_i H_i}{\sum G_i H_i}$, in which SI is the saprobity index, S_i is the saprobic value of the *i*th species, G_i is the indicative importance of the *i*th species and H_i is the frequency of the *i*th species.

The water quality was estimated by the Biological Diatom Index [15], according to which a particular water body belongs to one of the following five quality classes: excellent water, good water, acceptable water, ordinary water and inferior water.

Results and Discussion

There have been identified 152 diatom taxa, most of them belonging to the genera *Navicula* (40 taxa), *Nitzschia* (26 taxa) and *Cymbella* (16 taxa) (Tab. 1).

Table 1: Composition of algal communities of the Someşu Mare river, according to season (July, September, December) and substratum

Sampling sites	27.07.2002					26.09.2002					10.12.2002			
	Săsarm			Măluț		Săsarm			Măluț		Săsarm		Măluț	
Taxa	**1**	**2**	**3**	**1**	**2**	**1**	**2**	**3**	**1**	**2**	**1**	**2**	**1**	**2**
Achnanthes lanceolata	-	-	-	-	-	-	-	+	-	-	+	-	-	-
A. minutissima var. minutissima	-	+	-	+	-	+	+	+	-	+	+	+	+	+
A. minutissima var.affinis	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Amphipleura pellucida	+	+	+	-	-	+	+	+	-	-	+	-	-	-
Amphora libyca	-	-	-	-	-	-	-	+	-	-	-	-	-	-
A. montana	+	-	+	+	+	-	-	-	+	+	-	-	+	+
A. ovalis	-	-	-	-	-	+	-	+	-	-	+	+	-	-
A. pediculus	-	-	+	-	+	+	+	+	-	-	+	-	-	+
A. veneta	-	-	-	-	-	-	-	-	+	+	-	-	+	+
Bacillaria paradoxa	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Caloneis amphisbaena	-	-	-	-	+	+	+	-	-	-	+	-	-	-
C. amphisbaena var.subsalina	-	+	-	-	-	-	-	-	-	-	-	-	-	-
C. bacillum	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Cocconeis pediculus	+	+	+	+	+	+	+	+	+	-	+	-	-	+
C. placentula	-	+	+	+	+	+	+	+	+	-	+	+	+	-
Cyclostephanos invisitatus	-	-	-	-	-	-	-	+	-	-	-	-	+	-
Cyclotella meneghiniana	+	+	+	+	+	+	+	+	+	+	+	-	+	+
Cymatopleura elliptica	+	-	+	-	-	-	-	+	-	-	-	-	-	-
C. solea	-	+	+	-	-	+	+	+	-	-	+	+	+	-
Cymbella affinis	-	-	-	-	-	+	-	+	-	-	-	-	-	-
C. aspera	-	-	-	-	-	-	+	-	-	-	-	-	-	-
C. caespitosa	-	-	-	-	-	-	-	-	-	-	-	-	+	-
C. cistula	+	+	+	+	-	+	+	+	+	+	+	-	+	-

C. cymbiformis	-	-	-	-	-	+	-	+	-	-	-	-	-	-
C. gracilis	-	-	-	-	-	+	-	+	-	-	+	-	-	-
C. helvetica	-	+	-	-	-	-	-	+	-	-	+	+	-	-
C. lanceolata	+	-	+	-	-	-	-	-	-	-	-	+	-	-
C. mesiana	-	-	-	-	-	-	-	-	-	-	+	-	-	-
C. minuta	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C. naviculiformis	-	-	-	-	-	-	-	+	-	-	-	-	-	-
C. prostrata	+	+	+	+	-	+	-	+	-	+	+	+	+	-
C. silesiaca	-	-	-	+	-	+	-	+	-	+	-	-	-	-
C. sinuata	+	+	+	+	+	+	+	+	-	+	+	+	+	-
C. tumida	+	+	+	+	-	+	+	+	+	+	-	-	-	-
C. ventricosa	+	-	-	-	-	+	-	-	-	-	-	-	-	-
Diatoma ehrenbergii	+	-	+	+	+	+	+	+	-	-	-	-	-	-
D. hyemalis	-	+	+	-	-	+	-	+	-	-	-	-	+	+
D. mesodon	-	+	-	-	+	+	+	-	-	-	-	-	-	-
D. moniliformis	+	-	+	+	-	+	+	+	+	-	+	+	+	+
D. vulgaris	+	+	+	+	+	+	+	+	+	-	+	+	+	+
Didymosphenia geminata	+	+	+	+	+	+	+	+	+	-	+	+	+	+
Entomoneis palludosa	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Epithemia adnata	-	-	-	-	-	+	-	-	-	-	+	+	-	-
Fragilaria arcus	+	+	+	+	+	+	+	+	+	+	+	+	+	+
F. capucina var. capucina	-	-	-	-	-	+	-	+	-	-	-	-	-	-
F. capucina var.vaucheriae	-	-	-	-	-	+	-	+	-	-	+	+	+	-
F. construens var.binodis	-	-	-	-	-	-	-	+	-	-	-	-	-	-
F. pulchella	-	-	-	-	-	-	-	-	-	+	-	-	-	-
F. ulna	+	+	+	+	+	+	+	+	+	-	+	+	+	+
F. virescens	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Frustulia vulgaris	-	-	+	-	-	+	+	+	-	-	-	+	-	+
Gomphonema angustatum	-	-	-	-	-	+	-	+	-	-	-	-	-	-
G. angustum	-	-	-	-	-	+	-	-	-	-	+	-	-	-
G. clavatum	-	-	-	-	-	-	-	-	-	-	+	-	-	-
G. olivaceum	+	+	+	+	+	+	+	+	-	-	+	+	+	-
G. parvulum	+	+	+	+	+	+	+	+	-	-	+	-	+	-
G. pseudoaugur	-	-	-	-	-	-	-	-	+	-	-	-	-	-
G. tergestinum	-	-	-	-	-	-	-	+	-	-	+	-	-	-
G. truncatum	-	+	+	-	-	+	+	-	-	-	-	-	-	-
Gyrosigma acuminatum	+	+	+	-	-	+	+	+	+	-	+	+	-	-
G. attenuatum	+	+	-	-	-	+	+	+	-	-	-	-	+	+
G. scalproides	+	+	+	+	+	+	+	+	+	-	+	+	+	+
G. spencerii	-	-	-	-	-	+	-	+	-	-	-	-	-	-
Hantzschia amphioxys	-	-	-	-	-	+	-	+	+	+	+	+	+	-
Melosira varians	-	+	+	+	+	+	+	+	+	+	+	+	+	+
Meridion circulare	+	-	-	-	-	+	+	+	-	-	+	-	-	-
Navicula accomoda	-	-	-	+	-	+	-	+	+	+	+	-	+	+
N. ambigua	+	-	+	-	+	-	+	-	-	-	-	-	-	-
N. arvensis	-	-	-	-	-	-	-	-	+	-	-	-	-	+
N. atomus	-	-	-	-	-	-	-	-	+	-	-	-	-	+
N. capitatoradiata	+	+	+	+	+	+	+	+	-	-	+	+	+	+
N. cincta	-	-	-	-	-	-	+	+	+	-	-	-	+	+
N. cocconeiformis	+	-	-	-	-	-	-	+	-	-	-	-	-	-
N. contenta	-	-	-	-	-	-	-	-	-	-	+	-	-	-
N. crucicula	-	-	-	-	-	+	-	-	-	-	-	-	-	-

N. cryptocephala	+	-	-	+	-	+	+	+	-	+	+	-	+	-
N. cryptotenella	-	-	+	-	-	+	-	-	-	-	-	-	-	-
N. cuspidata	-	-	-	-	-	+	-	-	+	+	+	+	+	-
N. decussis	+	-	+	-	-	-	-	-	-	-	-	-	-	-
N. erifuga	-	-	-	-	-	-	-	-	-	+	-	-	-	-
N. goeppertiana	-	-	-	-	-	-	-	-	+	+	-	-	+	-
N. gracilis	-	+	-	-	-	-	-	-	-	-	-	-	-	-
N. gregaria	-	-	-	-	-	+	-	+	-	-	-	+	+	+
N. halophila	-	-	-	-	-	-	-	+	-	-	-	-	-	-
N. hungarica	-	-	-	-	-	+	-	-	+	+	-	-	-	-
N. integra	-	-	-	-	-	-	-	-	-	+	-	-	-	-
N. lanceolata	+	+	+	+	-	+	+	+	-	+	+	+	-	-
N. minima	+	-	-	-	-	-	-	+	-	-	-	-	-	-
N. minuscula var. minuscula	-	-	-	-	-	-	-	-	+	-	-	-	-	+
N. minuscula var.muralis	-	-	-	+	-	-	-	-	-	-	-	-	-	-
N. mutica	-	-	-	-	-	-	-	+	-	+	-	-	-	-
N. pelliculosa	-	-	-	-	-	-	-	+	-	-	-	-	-	-
N. placentula	-	-	-	-	-	-	-	-	-	-	+	-	-	-
N. pupula	+	-	-	+	-	+	-	+	+	-	-	-	-	-
N. pygmaea	-	-	-	-	-	-	+	-	+	-	-	-	-	+
N. radiosa	+	-	+	-	-	+	+	+	-	-	-	-	-	-
N. reinhardtii	-	-	-	-	-	-	-	+	-	-	-	-	-	-
N. rhynchocephala	-	-	-	+	-	+	+	+	-	+	-	-	+	-
N. salinarum	-	-	-	-	-	-	-	+	+	-	-	+	-	-
N. saprophila	-	-	-	+	-	-	-	-	+	-	-	-	+	-
N. spicula	-	-	-	-	-	+	-	-	-	-	+	-	-	-
N. subminuscula	-	-	-	-	-	-	-	+	-	-	-	-	-	-
N. tripunctata	+	-	+	-	+	+	+	+	+	+	+	+	+	-
N. trivialis	+	-	-	+	+	-	-	+	-	-	-	+	-	-
N. veneta	-	-	-	+	-	-	-	-	+	-	-	-	+	+
N. viridula	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Neidium affine	-	-	-	-	-	-	-	+	-	-	-	-	-	-
N. bisulcatum	+	-	-	-	-	+	-	-	-	-	-	-	-	-
N. dubium	-	+	-	-	-	-	+	-	-	-	-	-	-	-
Nitzschia acicularis	-	-	-	-	-	+	-	-	-	-	-	-	-	-
N. amphibia	+	-	-	+	+	+	-	-	-	+	-	-	+	-
N. capitellata	-	-	-	-	-	-	-	-	+	-	-	-	-	-
N. clausii	-	-	-	-	-	+	-	-	-	-	+	-	-	-
N. communis	+	-	-	-	-	+	-	-	-	-	-	-	-	-
N. constricta	-	+	-	-	-	+	+	+	+	-	-	-	-	-
N. dissipata	-	+	-	+	-	+	+	+	-	+	+	+	+	-
N. dubia	-	-	-	-	-	+	-	-	-	-	-	-	-	-
N. filiformis	-	-	-	-	-	-	-	-	+	-	-	-	-	-
N. frustulum	-	-	-	-	-	+	-	+	+	-	-	-	+	-
N. gracilis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. hungarica	-	-	-	-	-	-	-	+	-	-	-	-	-	-
N. inconspicua	-	-	-	+	+	+	-	+	-	+	-	-	-	-
N. levidensis	-	-	-	-	-	+	-	+	-	-	-	-	-	-
N. linearis	+	+	-	+	+	+	+	+	-	-	+	+	+	+
N. palea	-	+	-	+	-	+	-	+	+	+	-	+	+	+
N. paleacea	-	+	-	-	-	-	-	-	-	-	-	-	-	-
N. recta	-	-	-	+	+	-	+	-	-	-	-	+	+	-

N. reversa	-	-	-	-	-	-	-	-	-	-	+	-	-	-
N. sigma	-	+	-	-	-	+	+	-	-	-	-	+	-	+
N. sigmoidea	-	-	-	-	-	+	+	+	-	-	+	-	-	-
N. sinuata	-	-	-	-	-	+	-	-	-	-	-	-	-	-
N. sociabilis	-	+	-	+	-	+	+	+	+	-	+	-	-	-
N. sublinearis	+	-	-	-	-	+	-	+	-	-	-	-	-	-
N. umbonata	-	-	+	+	-	-	-	+	-	-	-	+	+	-
N. vermicularis	-	-	-	-	-	-	-	+	-	-	+	-	+	-
Pinnularia borealis	+	-	-	-	-	+	+	-	-	-	+	-	-	-
P. brébissonii	-	+	-	-	-	-	-	-	-	-	-	-	-	-
P. major	-	-	-	-	-	-	-	+	-	-	-	-	-	-
P. microstauron	+	-	-	-	-	+	+	-	-	-	-	-	+	-
P. viridis	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Rhoicosphenia abbreviata	-	-	-	-	-	-	+	+	-	+	-	-	-	-
R. curvata	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Rhopalodia gibberula	-	-	-	-	-	-	+	-	-	-	-	+	-	-
Stauroneis anceps	-	-	-	-	-	+	-	-	+	-	-	-	-	-
S. phoenicenteron	-	-	-	-	-	+	-	+	-	-	-	-	-	-
Surirella angusta	-	-	+	+	+	-	+	-	-	+	+	-	-	-
S. brébissonii var. brébissonii	+	+	+	+	-	+	+	+	-	+	+	+	-	+
S. brébissonii var. kuetzingii	-	-	-	-	-	-	+	+	-	-	-	-	-	-
S. linearis	+	-	-	-	-	+	+	+	-	+	-	-	+	-
S. minuta	-	-	-	-	-	+	+	-	-	-	-	-	-	-
S. ovalis	-	-	-	-	-	+	-	+	+	+	+	+	+	+
Tabellaria flocculosa	-	-	-	-	-	-	-	+	-	-	-	-	-	-

Legend: 1 = epilithic; 2 = epipelic; 3 = epiphytic; + = present; - = absent.

Most of the identified diatoms are indifferent forms, largely distributed in water bodies of various character, like: *Achnanthes minutissima*, *Cocconeis placentula*, *Cyclotella meneghiniana*, *Cymatopleura solea*, *Cymbella minuta*, *C. sinuata*, *Diatoma vulgaris*, *Fragilaria ulna*, *Gomphonema parvulum*, *Melosira varians*, *Navicula gracilis*, *N. lanceolata*, *Nitzschia linearis*, *Surirella brébissoni* and others. There are also many basiphilic elements, such as: *Amphora ovalis*, *Cymbella lanceolata*, *Navicula accomoda*, *N. capitatoradiata*, *Nitzschia sociabilis*, *Surirella brébissonii* or even typical halophilic ones: *Cyclotella meneghiniana*, *Cymbella affinis*, *Navicula halophyla*, *N. salinarum*, *N. crucicula* and *Nitzschia constricta*.

In addition one should note the occurence of rheophilous elements like: *Cymbella gracilis*, *C. helvetica*, *Diatoma hyemalis, D. mesodon*, *Didymosphenia geminata*, *Fragilaria arcus*, *Hantzschia amphioxys*, *Meridion circulare*, *Neidium bisulcatum*.

Didymosphenia geminata, a boreal-alpine element, previously found in Sălăuța [4], was observed for the first time in the Someşu Mare river. According to Momeu and Gudasz (unpublished) the species should be considered as ”invader”, present in many river basins, at lower or higher altitudes, sometimes in rivers with critical saprobic level.

The saprobic indicator diatoms present in the river belong to various categories. Xenosaprobic species are: *Cymbella gracilis*, *C. mesiana*, *Neidium bisulcatum* and *Pinnularia major*. Oligosaprobic elements are: *Cymbella cymbiformis*, *C. helvetica*, *Diatoma hyemalis*, *Gomphonema clavatum*, *Neidium affine*, *Pinnularia viridis*, *Surirella linearis* and *Tabellaria flocculosa*. Oligo-β-mesosaprobic taxa are: *Amphora ovalis*, *Cymbella lanceolata*, *Navicula decussis*, *Nitzschia recta*, *Pinnularia borealis*. Typical β-mesosaprobic forms should be considered: *Achnanthes minutissima*, *Cocconeis* ssp., *Cymbella sinuata*, *Diatoma vulgaris*, *Gomphonema olivaceum*, *Navicula mutica* and *Nitzschia dissipata*. β-α-mesosaprobic are: *Fragilaria capucina* var. *vaucheriae*, *Gomphonema pseudoaugur*, *Melosira varians*, *Navicula*

capitatoradiata, *N. integra*, *Nitzschia amphibia* and *Surirella brébissonii*. *Fragilaria pulchella*, *Navicula cincta*, *N. gregaria*, *N. trivialis*, *Nitzschia constricta* and *Surirella ovalis* are α-mesosaprobic. α-polisaprobic elements are: *Gomphonema parvulum*, *Navicula goeppertiana*, *N. minima*, *Nitzschia communis*, *N. palea*; polisaprobic elements: *Navicula atomus*, *N. saprophila*, *Nitzschia capitellata* and *N. umbonata*.

The epilithic samples collected upstream Beclean were dominated by *Navicula capitatoradiata* in July (31%) and *Achnanthes minutissima* in September (25%) and December (17%). The epipel dominated by *Achnanthes minutissima* in July (21.5%) and especially in September (22.7%), was overgrown by *Navicula capitatoradiata* in December (20.8%).

Downstream Beclean (station Măluţ) the dominant diatoms were quite different. The epilithic community was dominated by *Nitzschia sociabilis* in July (13%), *Navicula accomoda* in September (19%) and *N. gregaria* in winter (15%). The dominant diatoms on epipel were *Nitzschia amphibia* in July (34%), *Navicula rhynchocephala* in September (28%) and *N. accomoda* in December (15%).

The pattern of the communities was investigated by the method of truncated normal curves too [7]. According to the present findings the shape and features of the curves describing community structures, both epilithic and epipelic, are characteristic for less disturbed diatom assemblages (almost natural) especially upstream than those living in the river bed below Beclean (more flattend curves). These differences are possibly due to pollution stress caused by the inflow of industrial and domestic wastes.

The matrix of floristic similarities among the diatom communities based on the index of Sörensen was searched for structure by cladistic analyzes (Fig. 1). The communities are grouped mostly according to station and season. As such, one of the aggregates contains the epilithic and epiphytic communities living upstream Beclean in September (69% similarity). Other ones are formed, showing almost equal similarity levels by upstream samples collected in July and September at Săsarm. The aggregates representing the downstream and the upstream communities are joined at a similarity level of 50% or less.

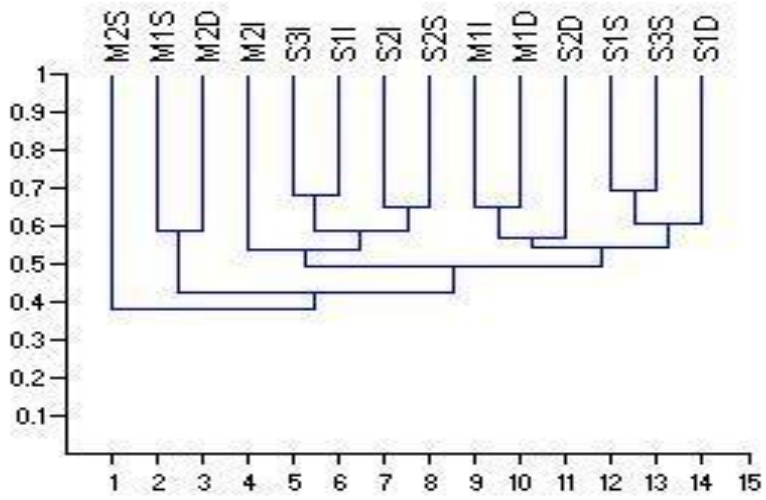

Fig. 1: Dendrogram showing the floristic similarities of the investigated diatom communities.
Samples collected in July 27, 2002: M1I=Măluţ, epilithic; M2I=Măluţ, epipelic; S1I=Săsarm, epilithic,; S2I=Săsarm, epipelic,; S3I=Săsarm, epiphytic. Samples collected in September 29, 2002: M1S=Măluţ, epilithic; M2S=Măluţ, epipelic; S1S=Săsarm, epilithic; S2S=Săsarm, epipelic; S3S=Săsarm, epiphytic. Samples collected in December 10, 2002: M1D=Măluţ, epilithic; M2D=Măluţ, epipelic; S1D= Săsarm, epilithic; S2D=Săsarm, epipelic.

The saprobity index (SI, Tab. 2) varies between relatively narrow ranges (1.8 and 2.4) indicating that the water of the river at Beclean should be placed into the II and the II-III quality classes. Accordingly, the organic pollution upstream Beclean (SI = 1.8-2.1) is moderate (β-mesosaprobic), respectively moderate to strong (SI = 2.1-2.4) downstream — at station Săsarm (β-α-mesosaprobic), being affected by domestic wastes.

According to the Biological Diatom Index (BDI, Tab. 2) ranging between 5.8 and 8.7 for the station Măluț and between 11.9 and 14.3 for Săsarm the water quality is good or acceptable upstream Beclean and just moderate in the downstream station.

Table 2: Values of SI and BDI

Sampling sites	Season	Type of sample	SI	BDI
Săsarm	July	Epilithic	1.90	11.90
		Epipelic	2.00	13.10
		Epiphytic	1.80	13.00
	September	Epilithic	1.90	14.30
		Epipelic	2.00	13.70
		Epiphytic	1.80	14.00
	December	Epilithic	1.90	12.90
		Epipelic	2.10	12.80
Măluț	July	Epilithic	2.20	8.70
		Epipelic	2.10	7.00
	September	Epilithic	2.30	5.90
		Epipelic	2.10	5.80
	December	Epilithic	2.30	7.30
		Epipelic	2.40	7.30

Conclusions

- The algal communities of the Someşu Mare river, section Beclean, are dominated by cosmopolitan, eurytropic elements, the basiphilic ones representing 34.8% of the identified taxa, including the halophilic forms.

- The overall changes in the river can also be detected by the pattern of benthic diatom communities inhabiting particular stands, expressed by the method of truncated normal curves. Upstream Beclean, the diatom communities are seemingly closer to the undisturbed ones, the curves describing them being comparatively higher than those obtained for communities living downstream, presumably affected by pollution.

- The values of the saprobity index indicate β-mesosaprobic and β-α-mesosaprobic conditions in the river, placing it into II and II-III water quality classes. This findings are confirmed by the Biological Diatom Index, according to which the river has good or acceptable water quality upstream Beclean and ordinary one downstream.

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DATE PRELIMINARE PRIVIND COMUNITĂŢILE DE DIATOMEE DIN RÂUL SOMEŞU MARE, SECŢIUNEA BECLEAN (TRANSILVANIA, ROMÂNIA)

(Rezumat)

În realizarea acestei lucrări am urmărit, comparativ, compoziţia calitativă şi cantitativă a comunităţilor de diatomee, amonte şi aval de Beclean, folosind aceste date în evaluarea calităţii apei râului Someşu Mare. Materialul algologic a fost prelevat din staţiile Săsarm, amonte de Beclean, şi Măluţ, aval de Beclean, în 3 sezoane (vară, toamnă şi iarnă 2002) din zona litorală a cursului râului, de pe substraturi diferite (pietre, mâl, plante acvatice).

În probele analizate s-au identificat 152 de taxoni, aparţinând la 30 de genuri. Majoritatea acestora sunt elemente indiferente, dar se întâlnesc şi elemente basifile şi halofile. La Săsarm predomină *Navicula capitatoradiata* în probele epilitice, vara şi în cele epipelice, în sezonul rece, iar *Achnanthes minutissima* este dominantă în probele epilitice, toamna-iarna şi în cele epipelice, vara-toamna. La Măluţ apare dominantă *Nitzschia sociabilis* în probele epilitice şi *N. amphibia* în cele epipelice, vara, speciile de *Navicula* (*N. accomoda*, *N. gregaria*, *N. rynchocephala*) predomină toamna-iarna, pe ambele substraturi.

Pe baza modelului curbei normale s-au identificat comunităţi algale apropiate de cele naturale (curbe înalte pe 10-11 intervale) amonte de Beclean, în schimb, aval de oraş curbele devin aplatizate, în special în cazul comunităţilor algale epipelice.

Valoarea maximă a gradului de afinitate floristică este de 69% între comunităţile algale de toamnă epilitice şi epifitice, la Săsarm. Încadrarea apei râului în clasele de calitate II şi II-III indică o poluare moderată, respectiv moderată până la puternică. Pe baza Indicelui Biologic de Diatomee putem aprecia calitatea apei ca fiind bună sau acceptabilă, amonte de Beclean, respectiv mediocră, în aval.