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PLANKTONIC ROTIFER COMMUNITIES OF DIFFERENT TYPES OF PEAT-BOG RESERVOIRS AND WETLANDS OF POLESKI NATIONAL PARK (EASTERN POLAND)

Andrzej Demetraki-Paleolog

Department of Hydrobiology, University of Life Sciences in Lublin
Dobrzańskiego str. 37, 20-262 Lublin, daga@pro.onet.pl

Summary. Small water bodies – peat-bog reservoirs and wetlands – constitute valuable and not well recognised water ecosystems of the Łęczna-Włodawa Lakeland. Studies of planktonic rotifers comprised seven peat-bog reservoirs (five carbonate, one humic and one eutrophic) and 3 wetlands. The paper presents the physical and chemical parameters of water (temperature, pH, conductivity, dissolved oxygen, chlorophyll *a*, total phosphorous, phosphates, nitrates, ammonium nitrogen and total nitrogen) as well the structure of macrophytes in the studied reservoirs. The analysis of planktonic rotifers communities showed high species diversity, in particular in carbonate peat-bog reservoirs and wetlands. In the carbonate reservoirs rare species were identified. All types of peat-bog reservoirs were inhabited numerously by periphytic and benthic-periphytic rotifer species. Studied ecosystems showed significant faunistic differences. The highest similarity was found between wetlands and eutrophic peat-bog reservoir and carbonate reservoirs with humic reservoir. Studied ecosystems showed low food resources, mostly due to low number of indicatory species, low densities and biomass of rotifers, absence of *Keratella cochlearis* f. *tecta* in peat-bog reservoirs and high ratio of algaevorous to detritivorous species.

Key words: peat-bog reservoirs, wetlands, planktonic rotifers, Poleski National Park

INTRODUCTION

The area of the Poleski National Park is abundant in small water bodies. Carbonate, humic and eutrophic peat-bog reservoirs represent high ecological value. Up to now studies of the reservoirs focused on physical and chemical parameters of water as well protozoan fauna [Mieczan 2007]. Rotifer communities have not been investigated previously. Planktonic rotifers in peat-bog reservoirs are an important component of small zooplankton [Radwan 1974]. As con-

sumers of bacteria, algae, protozoa and detritus, planktonic rotifers play an important role in the trophic structure of freshwater ecosystems [Hillbricht-Ilkowska 1964, Radwan 1973, Arndt 1993]. Particular rotifers species can be used as indicators of water quality [Karabin 1985, Radwan *et al.* 1988, Paleolog *et al.* 1997].

The aims of the present study were: 1) ecological characteristic of peat-bog reservoirs and wetlands based on planktonic rotifer communities and 2) evaluation whether type of peat-bog reservoir or wetland determine the structure of rotifer community.

STUDY AREA

The studies were conducted in the area of the Poleski National Park. The area included the most valuable water ecosystems of the Łęczna-Włodawa Lakeland, especially peatbogs (lowmoors, transitional and highmoors), swamps and wetlands [Harasimiuk *et al.* 1998]. The situation of the studied reservoirs is presented in Fig. 1.

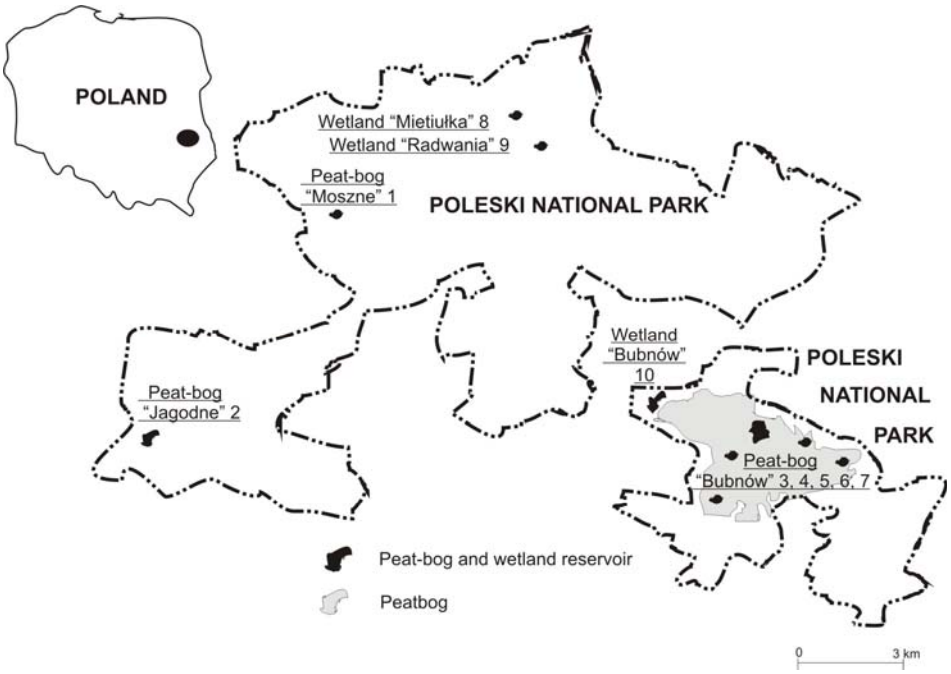

Fig. 1. Location of studied peat-bog reservoirs and wetlands in the area of Poleski National Park

Moszne peat-bog reservoir (No. 1) is the deepest (max. depth of 2 m), humic and surrounded by forest. In comparison to the other ecosystems, reservoir No. 1 is characterised by acid pH and low concentrations of total phosphorous and dissolved oxygen and higher concentrations of total nitrogen and chlorophyll *a*

Table 1. Average values of physical and chemical parameters (±SD) of studied peat-bog reservoirs and wetlands of Poleski National Park in 2008 [acc. Wojciechowska 2008]

Parameters	No. of reservoir according plans of Poleski National Park									
	peat-bog reservoir							wetlands		
	no. 1	no. 2	no. 3	no. 4	no. 5	no. 6	no. 7	no. 8	no. 9	no. 10
	humic Moszne	eutrophic Jagodne	carbonate-Bubnów	carbonate-Bubnów	carbonate-Bubnów	carbonate-Bubnów	carbonate-Bubnów	Mietiułka	Radwania	Bubnów
Temperature, ^{o}C	16.6 ±0.56	16.2 ±0.53	24.75 ±0.78	23.85 ±0.92	24.1 ±0.28	26.25 ±0.07	24.2 ±1.41	19.4 ±0.56	19.45 ±0.49	26.4 ±2.97
pH	4.70 ±1.14	6.50 ±0.93	8.50 ±2.19	7.69 ±0.48	7.66 ±0.26	7.78 ±0.76	8.34 ±0.03	7.20 ±0.26	5.95 ±0.13	8.97 ±0.15
Conductivity, µS cm^{-2}	88.3 ±9.5	245.5 ±21.9	176.6 ±21.8	520.5 ±26.2	488.0 ±111.7	390.5 ±38.9	306.0 ±15.5	183.5 ±30.4	161.3 ±67.5	417.0 ±21.4
O_2, mg dm^{-3}	4.9 ±0.9	- -	12.1 ±2.1	7.4 ±1.2	5.9 ±3.3	5.9 ±1.3	9.0 ±3.1	6.0 ±2.7	5.1 ±2.2	10.9 ±5.4
Chlorophyll *a*, mg dm^{-3}	236.69 ±111.8	- -	17.13 ±3.4	- -	- -	6.92 ±4.1	20.85 ±5.3	- -	- -	188.38 ±99.3
$P\text{-}PO_4$, mg dm^{-3}	0.006 ±0.008	0.318 ±0.260	0.015 ±0.018	0.011 ±0.0127	0.014 ±0.004	0.013 ±0.013	0.020 ±0.016	0.006 ±0.006	0.180 ±0.212	0.011 ±0.013
Total P, mg dm^{-3}	0.095 ±0.066	0.684 ±0.592	0.021 ±0.017	0.034 ±0.011	0.015 ±0.006	0.054 ±0.066	0.038 ±0.022	0.081 ±0.026	0.442 ±0.253	0.179 ±0.068
$N\text{-}NO_3$, mg dm^{-3}	0.844 ±0.814	0.478 ±0.028	0.886 ±0.507	0.488 ±0.213	0.528 ±0.318	0.300 ±0.098	0.465 ±0.117	0.476 ±0.254	1.000 ±0.442	0.443 ±0.192
$N\text{-}NH_4$, mg dm^{-3}	4.848 ±1.518	2.961 ±2.142	1.102 ±0.282	0.656 ±0.112	0.594 ±0.086	0.780 ±0.206	0.684 ±0.240	0.611 ±0.183	2.390 ±1.286	0.655 ± 0.213
Total N, mg dm^{-3}	7.396 ±2.695	4.282 ±1.084	2.898 ±1.169	1.842 ±1.230	1.376 ±0.616	1.332 ±0.525	1.982 ±1.411	1.443 ±0.347	4.718 ±3.171	2.147 ± 1.648

Table 2. Species structure and cover (in %) of macrophytes in peat-bog reservoirs and wetlands of Poleski National Park in 2008 [acc. Sender 2008]

Species	No. of reservoir according plans of Poleski National Park									
	peat-bog reservoir							wetlands		
	no. 1	no. 2	no. 3	no. 4	no. 5	no. 6	no. 7	no. 8	no. 9	no. 10
	humic Moszne	eutrophic Jagodne	carbonate Bubnów	carbonate Bubnów	carbonate Bubnów	carbonate Bubnów	carbonate Bubnów	Mietiułka	Radwania	Bubnów
Carex elata All.										20
Caricetum vesicaria L.									30	
Chara aculeolata Ktitz.				100	100					
Chara globularis Thuill.										10
Chara hispida L.							40			
Cicuto-Caricetum pseudocyperi de Boer	30							10		
Elodea canadensis Michx.										10
Hottonia palustris L.		5								
Lemna minor L. – *Salvinia natans* (L.)								5		
Myriophyllum spicatum L.			10							
Nymphaea candida Presl.						10				
Phalaridetum arundinaceae Libb.								10		
Phragmites australis (Cav.)Trin. ex Steud					40	50	50	10	20	
Potamogeton natans L.	30		20			10	20			
Salicetum pentandro-cinerea (Almq.)		30								
Typha latifolia L.	20	60		10						30
Typha angustifolia L.								10	20	
Utricularia vulgaris L.			10							
Aldrovanda vesiculosa L.	40									

(Tab. 1). Jagodne peat-bog reservoir (No. 2) is eutrophic, densely overgrown by macrophytes (Tab. 2), its pH is slightly acid, concentrations of total phosphorous and nitrogen are very high (Tab. 1). The next five peat-bog reservoirs (No. 3, 4, 5, 6, 7) are situated in the area of Bagno Bubnów. The ecosystems are carbonate, very shallow (max. depth 1 m), covered by vegetation (Tab. 2), the pH of water is slightly alkaline, concentrations of dissolved oxygen and chlorophyll-a are much lower than in the lakes of the studied area. The nutrients concentrations are rather low (Tab. 1). Studied wetlands – Mietiułka (No. 8), Radwania (No. 9) and Bubnów (No. 10) are shallow and differ in surface area. The waters show pH from slightly acid to slightly alkaline, different nutrients concentrations and are usually poorly saturated (Tab. 1).

MATERIAL AND METHODS

Samples were taken in spring and autumn during the years 2008–2009. Planktonic rotifers were collected from 7 peat-bog reservoirs and 3 wetlands of the Poleski National Park: humic Moszne peat-bog reservoir (No. 1), eutrophic Jagodne peat-bog reservoir (No. 2), carbonate peat-bog reservoirs (No. 3, 4, 5, 6, 7) and wetlands (No. 8, 9, 10). Each time at each site three samples were taken. One sample consisted of 10 dm^{-3} of water, collected by „Toń II" apparatus at the depth of 0–0.5 m. Water was strained through planktonic net No. 25 and condensed to the constant volume of 100 cm^3. Samples were preserved with Lugol liquid and, after some hours, with 4% formaldehyde with glycerine.

The collected rotifers were identified and counted under inverted microscope. The numbers of individuals were calculated per 1 dm^3 of water. The normal distribution of the data was checked using the Shapiro-Wilk test. The significance of differences in the density of planktonic rotifers between studied peat-bog reservoirs and wetlands was verified using non-parametric ANOVA rang test of Kruskal-Wallis by SAS Programme. The similarity of rotifer communities between reservoirs was determined by calculating the Jaccard index using the cluster method performed by MVSP-3,1 Programme. The analysis of faunistic similarity of rotifer communities was determined using the UPGMA method. Additionally the influence of dominating rotifer species on the similarity of rotifer communities was estimated using PCA analysis of MVSP-3,1 Programme. For ecological characteristic of studied peat-bog reservoirs and wetlands the Shannon-Wiener index of species diversity and the index of domination were calculated. Each rotifer community was evaluated under sustainability of domination structure [Bielańska-Grajner 2005]. Collected rotifer species were classified into ecological groups [Radwan 1973, Ejsmont-Karabin *et al.* 2004].

RESULTS AND DISCUSSION

In total, 57 planktonic rotifer species were identified in the studied peat-bog reservoirs and wetlands. The ecosystems did not differ significantly in terms of species number. The highest number of species (12–15) was observed in the carbonate reservoirs, while the lowest (8 species) in the humic reservoir. In the wetlands and the eutrophic peat-bog reservoir the number of species showed intermediate values (Tab. 3). Similar low species richness was observed in peat-bog reservoirs in the Himalayas [Sharma and Shivaraj Bhattariai 2005]. In reservoirs near Parczew and in the area of the Wielkopolski National Park the numbers of rotifer species reached much higher values [Radwan 1974, Klimaszyk and Kuczyńska-Kippen 2006].

Species diversity of planktonic rotifers of peat-bog reservoirs of the Poleski National Park, expressed as values of the Shannon-Wiener index, ranged in a wide scale (Tab. 3). The highest values (H = 2.57–3.59) were noted in the carbonate reservoirs, the lowest (H = 0.88) in the eutrophic reservoir. In the humic reservoir the value of H index reached 2.4, much lower than in the carbonate reservoirs. The observed values of diversity index resulted from low densities of particular rotifer species.

The ecological structure of planktonic rotifer species showed a pattern opposite to that found for planktonic rotifers in lakes of the Łęczyna-Włodawa Lakeland [Radwan 1973, Demetraki-Paleolog 2009a, b] and rivers of the Lublin Region [Demetraki-Paleolog 2007]. Those ecosystems were inhabited mostly by euplanktonic species, while the rotifer communities in the studied peat-bog reservoirs were dominated by periphytic and benthic-periphytic species. The highest percentage of these groups (from 64 up to 75%) was observed in the eutrophic, humic and two of carbonate (No. 3 and 4) reservoirs (Tab. 3). The advantage of periphytic and benthic-periphytic species over euplanktonic forms is probably not a consequence of the trophic status of the reservoir. The highest and the lowest shares of periphytic and benthic-periphytic forms were noted in the carbonate reservoirs. Very high dominance of periphytic species, amounting to 80% of total density, was observed by Radwan [1974] in peat-bog reservoirs near Parczew, about 40 km distant from the Poleski National Park. In the studied wetlands the percentage of euplanktonic species was almost equal to or a little higher than that of periphytic and benthic-periphytic forms (Tab. 3).

Rare species were noted in two carbonate peat-bog reservoirs; in reservoir No. 7 – *Lepadella Rottenbergi* (Gosie) and in reservoir No. 3 – *Trichocerca cavia* (Gosse) and *Platyias patulus* (Müll.) (Tab. 3).

The number of indicatory species was very low (Tab. 3). Rotifer species typical for eutrophic waters were observed in the eutrophic reservoir Jagodne – *Anuraeopsis fissa* Gosse and *Keratella cochlearis* f. *tecta* (Gosse); in wetlands Mietiułka and Bubnów – *Keratella cochlearis f. tecta* (Gosse) and *Keratella quadrata* (Müll.). In the studied carbonate reservoirs three indicatory species of oligotrophic waters were noted – *Chromogaster ovalis* (Berg.), *Conochilus hippocrepis*

Table 3. Ecological characteristic of planktonic rotifers (±SD) in studied peat-bog reservoirs and wetlands of Poleski National Park during spring and autumn 2008–2009

Abundance of planktonic rotifers	Peat-bog reservoir							Wetlands		
	no. 1	no. 2	no. 3	no. 4	no. 5	no. 6	no. 7	no. 8	no. 9	no. 10
	humic Moszne	eutrophic Jagodne	carbonate-Bubnów	carbonate-Bubnów	carbonate-Bubnów	carbonate-Bubnów	carbonate-Bubnów	Mietiułka	Radwania	Bubnów
Number of rare species	0	0	2	0	0	0	1	0	0	0
Number of indicatory species for eutrophic waters	1	2	0	1	0	1	1	2	1	2
Number of indicatory species for oligotrophic waters	0	0	1	1	2	2	1	0	0	0
Number of indicatory species for dystrophic waters	0	1	0	2	0	2	1	2	0	0
Number of euplanktonic species	1	3	3	4	6	6	6	6	6	5
Number of benthic-periphytic species	5	4	6	8	6	5	4	2	3	3
Number of periphytic species	1	3	3	3	1	3	4	1	3	2
Number of epibiontic species	1	1	0	0	0	0	0	0	0	0
Number of predatory species	0	0	0	0	0	0	0	0	0	0
Number of detritivorous species	0	1	1	2	2	3	1	2	2	3
Number of algaevorous species	1	4	3	3	4	5	5	4	4	4
Number of omnivorous species	7	6	8	9	7	6	6	3	6	3
Total number of species	8	11	12	15	13	14	14	9	12	10
Shannon index	2.40	0.88	3.17	3.59	3.37	3.50	2.57	3.01	3.05	2.71
Density, ind. dm^{-3}	20^{a} ±4.56	423.5^{b} ±71.29	22.5^{a} ±5.11	26^{a} ±4.89	26.5^{a} ±6.22	22.5^{a} ±7.21	75^{c} ±13.81	14.5^{d} ±3.31	35^{e} ±7.45	30^{e} ±8.31
Biomass, µg WW dm^{-3}	5.88^{a} ±1.34	37.181^{d} ±9.12	17.231^{c} ±3.91	7.94^{a} ±1.81	11.31^{b} ±2.65	7.52^{a} ±2.41	16.8765^{c} ±5.11	8.48^{a} ±2.21	29.409^{d} ±6.26	29.598^{d} ±8.2
Biomass : number ratio (BN^{-1} µg ind^{-1})	0.29	0.09	0.77	0.31	0.43	0.33	0.23	0.59	0.84	0.99

Densities marked by the same letters (20^{a} and 22.5^{a}) don`t differ significantly.

(Schr.) and *Conochiloides natans* (Seligo). Rotifer species typical for dystrophic habitats (*Macrochaetus subqudratus* Perty, *Mytilina crassipes* (Lucks) and *Microcodides chlaena* Gosse.) appeared in four of the studied peat-bog reservoirs and in one wetland (Tab. 3).

According to the classification of Gliwicz [1974], planktonic rotifers can be divided into four groups: detritivorous, algaevorous, omnivorous and predators. In limnoplankton detritivorous species usually dominate over algaevorous forms [Gliwicz 1974, Ejsmont-Karabin 1996, Wallace and Ricci 2002], the same relation is usually observed in running waters [Demetraki-Paleolog 2007]. In the studied peat-bog reservoirs and wetlands algaevorous forms showed visibly higher numbers than detritivorous species (Tab. 3). The advantage of algaevorous forms can be a consequence of low nutrients concentration and poor food resources [Gliwicz 1974]. Under low concentration of mineral compounds in water, the phytoplankton community is dominated by small algae of large body surface areas. These algae constitute the most available food for rotifers. In waters of low fertility the fraction of small detritus is poor, which enhances rapid development of algaevorous forms.

The densities of planktonic rotifers in the studied peat-bog reservoirs and wetlands were low, probably as a result of low food resources. Only in the eutrophic reservoir their density amounted to 424 ind. dm^{-3} (Tab. 3). In the carbonate reservoir No. 7 the number of individuals reached 75 ind. dm^{-3}, in the remaining reservoirs the density of rotifers ranged from 20 to 27 ind. dm^{-3}; in the wetlands their density varied from 15 to 35 ind. dm^{-3} (Tab. 3). Similar numbers were observed in slightly eutrophic reservoirs in the Himalayas – 15 ind. dm^{-3} [Sharma and Shivaraj Bhattariai 2005] and in peat-bog reservoirs near Parczew [Radwan 1974]. Much higher densities of planktonic rotifers – 250–400 ind. dm^{-3} were noted by Kuczyńska-Kippen *et al*. [2006] in peat-bog reservoirs near Turwia in the Wielkopolska region.

The biomass of planktonic rotifers in the peat-bog reservoirs and wetlands showed low values. In the humic reservoir rotifer biomass amounted to only 5.9 µg dm^{-3}; in the carbonate reservoirs and the eutrophic reservoir it ranged from 29.4 to 37.2 µg l^{-3} (Tab. 3). Karabin [1985] and Ejsmont-Karabin [1996] stressed the importance of the biomass:number (BN^{-1}) ratio. According to those authors, low values of the ratio are an evidence of high water trophy. Such an observation has been confirmed by studies on small rivers of the Lublin Region [Demetraki-Paleolog 2007]. In the studied peat-bog reservoirs the lowest value of BN^{-1} ratio (0.09 µg $ind.^{-1}$) was observed in the eutrophic reservoir (Tab. 3). In the humic and carbonate reservoirs the values of BN^{-1} ratio were similarly low (0.23–0.77 µg $ind.^{-1}$); much higher values were noted in the wetlands (0.59–0.99 $\mu g \cdot ind^{-1}$) (Tab. 3). For comparison, the BN^{-1} ratio for humic mid-forest rivers of the catchment of river San reached 1.56–4.61 $\mu g \cdot ind^{-1}$ and in eutrophic rivers of Bystrzyca Lubelska and Vistula catchments that ratio amounted to 0.42–1.28 $\mu g \cdot ind^{-1}$ [Demetraki-Paleolog 2007]. The low values of BN^{-1} ratio observed in the studied ecosystems are probably a result of high percentage of small algaevorous rotifer species and lack of large predators, such as *Asplanchna* sp.

The significance of differences between mean densities and biomasses of rotifer communities in the studied reservoirs is presented in Table 3.

The group of dominants in the studied peat-bog reservoirs and wetlands included 32 rotifer species, which constitutes 56% of all noted rotifers species. Such a high number of dominants is a consequence of faunistic differentiation of the studied peat-bog reservoirs and wetlands (Fig. 2). Similar results were noted in peat-bog reservoirs near Turwia in the Wielkopolska region, where only 4% of all rotifer species were common [Kuczyńska-Kippen *et al.* 2006]. Müller [1984] and Bielańska-Grajner [2005] classified rotifer communities for sustain able and

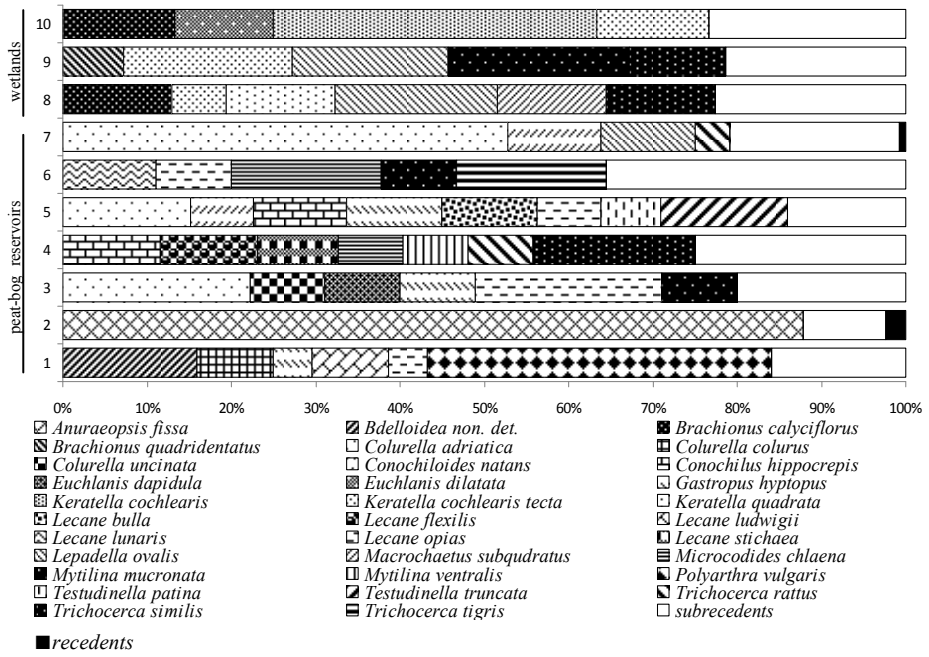

Fig. 2. Relative abundances of particular rotifer species in studied peat-bog reservoirs and wetlands of Poleski National Park in spring and autumn 2008–2009; humic peat-bog reservoir Moszne – 1; eutrophic peat-bog reservoir Jagodne – 2; carbonate peat-bog reservoirs – 3, 4, 5, 6, 7; wetland Mietiułka – 8; wetland Radwania – 9; wetland Bubnów – 10

non-sustainable domination structure. The authors assumed a community as sustainable when there occurred 3 domination classes (dominants, subdominants and recedents), at least 3 species represented dominants and none of them exceeded 45% of total density. Under such criteria, in none of the studied reservoirs or wetlands the planktonic rotifer community had a sustainable domination structure. Only in two of the studied reservoirs three domination classes were observed, but in both ecosystems the percentage of dominating species was too high; 50.6% (*Colurella adriatica* in carbonate reservoir No. 7) and 87.9% (*Anuraeopsis fissa* in the eutrophic reservoir) (Fig. 2). Similar numbers of domi-

nants (4–6 species) were noted in the wetlands. The percentages of particular dominants did not exceed 38%, but in none of the studied wetlands was a group of recedents distinguished.

Cluster analysis of planktonic rotifer communities based on density structure showed the existence of very small faunistic similarity between the particular peat-bog reservoirs and wetlands. The similarities, expressed as values of the Jaccard index, ranged from 0.06 to 0.29 (Fig. 3). The analysis allowed to distinguish two groups of reservoirs. The first group (A) included 3 wetlands and the eutrophic peat-bog reservoir (Fig. 3). Their similarity varied from 0.12 to 0.19 (Fig. 3). The second group (B) included the humic and carbonate peat-bog reservoirs; the similarity ranged from 0.12 to 0.29 (Fig. 3).

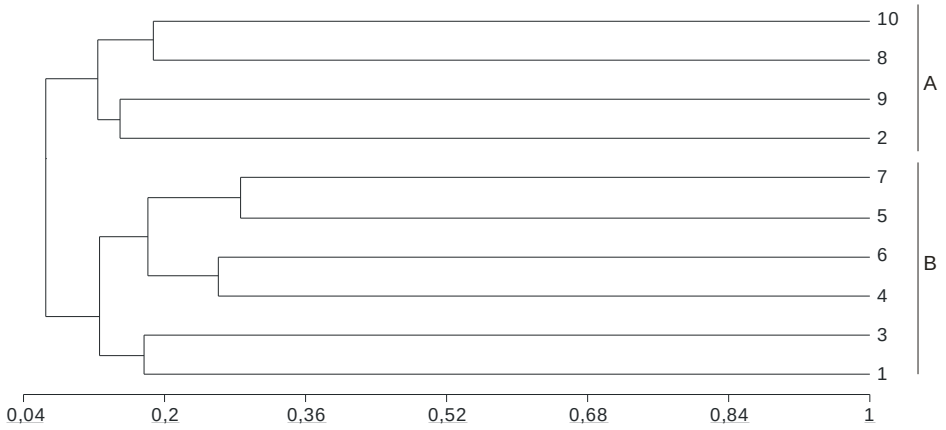

Fig. 3. Structure of similarity of rotifer communities based on rotifer densities in studied peat-bog reservoirs and wetlands of Poleski National Park; 1–10 – like in Fig. 2

The PCA analysis based on the densities of planktonic rotifer communities confirmed the results obtained in the cluster method and showed important faunistic differences of rotifers inhabiting the peat-bog reservoirs and wetlands (Fig. 4). Among the peat-bog reservoirs, the carbonate and humic reservoirs presented higher mutual faunistic similarity. The wetlands – according PCA analysis – were highly differentiated. Only wetland No. 8 was slightly similar to the peat-bog reservoirs (Fig. 4). The analysis showed the importance of Axis 1 and Axis 2 which explained the variability of rotifers in 18 and 15%, respectively.

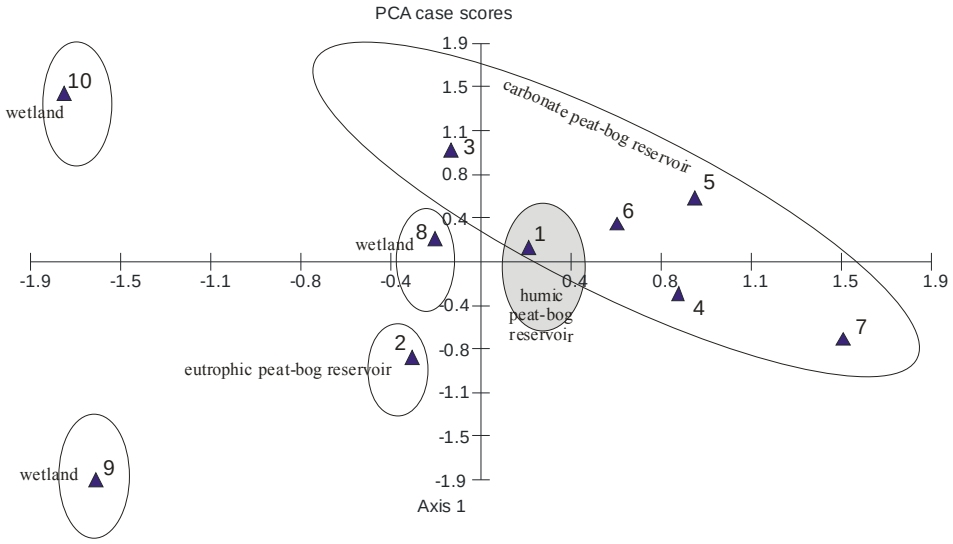

Fig. 4. PCA analysis of rotifer communities based on rotifer densities in studied peat-bog reservoirs of Poleski National Park

CONCLUSIONS

The peat-bog reservoirs and wetlands of the Poleski National Park constitute habitats for rare rotifer communities, mostly due to:

– high species diversity, especially in the carbonate peat-bog reservoirs and wetlands, lower in the humic peat-bog reservoir and the lowest in the eutrophic peat-bog reservoir;

– presence of rare rotifer species for Poland: *Lepadella Rottenbergi* (Gosie), *Trichocerca cavia* (Gosse) and *Platyias p-atulus* (Müll.);

– domination of periphytic and benthic-periphytic species over euplanktonic species, irrespective of the type of peat-bog reservoir;

– high faunistic differences between the studied peat-bog reservoirs and wetlands, confirmed by cluster and PCA analysis; the wetlands showed similarity to the eutrophic peat-bog reservoir; the carbonate peat-bog reservoirs to the humic reservoir;

– high percentage of dominating species (32 species, constituting 56% of all rotifers species) in the domination structure; high differentiation of domination structure between the studied reservoirs, in each of the peat-bog reservoirs different dominating species were noted;

– non-sustainable domination structure of rotifer communities in the studied restored ecosystems (lack of recedents or very high domination of one taxon in the eutrophic and one of the carbonate peat-bog reservoirs);

– rotifer communities of the carbonate and humic peat-bog reservoirs typical for waters with low trophy, rare in the area of the Lakeland;

– low concentration of nutrients or their low availability, confirmed by the low numbers and density of indicatory species for eutrophic waters and the lack of *Keratella cochlearis* f. *tecta* (Gosse) in the peat-bog reservoirs;

– domination of algaevorous species over detritivorous forms;

– very low densities and biomass of planktonic rotifers.

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ZGRUPOWANIA WROTKÓW PLANKTONOWYCH W RÓŻNYCH RODZAJACH TORFIANEK I W ROZLEWISKACH POLESKIEGO PARKU NARODOWEGO (WSCHODNIA POLSKA)

Streszczenie. Jednym z ciekawszych i mniej poznanych ekosystemów wodnych Pojezierza Łęczyńsko-Włodawskiego są drobne zbiorniki – torfianki oraz rozlewiska. W 7 takich torfiankach (5 węglanowych, humusowej i eutroficznej) i 3 rozlewiskach badano zgrupowania wrotków. W pracy przdstawiono również podstawowe parametry fizyczne i chemiczne (temperatura, pH, przewodnictwo elektrolityczne, O_2, chlorofil *a*, P-PO_4, TP, N-NO_3, N-NH_4, TN) oraz charakterystykę gatunkową makrofitów. Analiza wrotków planktonowych wykazała dużą różnorodność gatunkową szczególnie w torfiankach węglanowych i rozlewiskach. W torfiankach węglanowych stwierdzono obecność gatunków rzadkich dla Polski, a cechą wszystkich torfianek był duży udział wrotków peryfitonowych i bentosowo-peryfitonowych. Badane zbiorniki mocno różniły się faunistycznie między sobą. W zróżnicowaniu tym rozlewiska bardziej były podobne do torfianki eutroficznej, a torfianki węglanowe do torfianki humusowej. Mała liczba gatunków wskaźnikowych eutrofii, niewielkie liczebności i biomasy wrotków, niewystępowanie *Keratella cochlearis* f. *tecta* w torfiankach oraz przewaga gatunków roślinożernych nad detrytusożernymi wskazywały na małą zasobność pokarmową badanych wód.

Słowa kluczowe: torfianki, rozlewiska, wrotki planktonowe, Poleski Park Narodowy