

# FRAGMENTA FAUNISTICA

Tom 27 Warszawa, 30 XII 1982 Nr 4

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## *Gastrotricha* of two complexes of peat hags near Siedlce

[With 3 figures and 4 tables in the text]

### Abstract

The communities of *Gastrotricha* inhabiting two complexes of peat hags were investigated in 1976–1980. 31 species of gastrotrichs were found, including 2 species new to science and 3 species new to fauna of Poland. The species composition, abundance and dominance structure of communities are described.

### INTRODUCTION

*Gastrotricha* living in fresh waters still belong to least known animals. So far they have been studied qualitatively. Only KISIELEWSKI (1981) made an attempt to estimate the number of *Gastrotricha* inhabiting peat moss and described their dominance structure. The purpose of the present paper is to estimate the number of *Gastrotricha* in two complexes of peat hags, by means of a quantitative method used for the first time. The paper also provides data on the species composition of *Gastrotricha* communities and on their dominance structure in the two complexes compared.

### Study area

The study was conducted in two complexes of peat hags, subsequently called complexes A and B. They are located near the village of Białki, 4 km south of Siedlce.

Complex A. It is located about 1200 m south-west of Białki. It consists of three peat hags surrounded with meadows. Single alders and birches grow at the



edges. At a high water level a part of the meadow is regularly submerged and particular water bodies are joined. Samples were mostly taken from the treeless edge of the middle peat hag. The surface area of this hag is about 60 m<sup>2</sup>. It is covered with duckweed and sparse frogbit. An average water depth in this place is about 40 cm, and the difference between the lowest and highest levels, as measured in 1977, was 58 cm. The temperature of water at the surface of bottom sediments ranged from 0°C when iced to 16°C in summer. A total of 40 samples were taken, including 28 quantitative and 12 qualitative. Gastrotrichs were found in 34 samples.

Complex B. It is located about 1100 m south of Bialka and about 800 m east of complex A. It consists of more than ten peat hags, usually joined with each other even at a low water level. All they are in the area of a degraded alderswamp adjacent to meadows. In summer most of the hags are completely covered with duckweed. Samples were regularly taken in the same places at the edges of two hags (B<sub>1</sub> and B<sub>2</sub>), and other four hags were occasionally sampled. The depth of the two hags at the mean water level was 15–20 cm, and the temperature of water ranged from 0°C when iced to 17°C in summer. A total of 72 samples were taken, including 56 quantitative and 16 qualitative. Gastrotrichs were found in 71 samples.

#### Material and methods

The study was carried out from September 1976 to January 1980.

The mud was taken by samples of 0.5 or 1.0 l in volume. The top mud layer was mixed before sampling. The material was analysed on the date of sampling.

For the first time in the study of fresh-water benthic gastrotrichs the following quantitative method was used. The samples were carefully mixed and then 2 ml of water with mud were taken by means of a syringe. The syringe was kept perpendicularly for about one minute, and then the thickness of the mud layer was measured. The known volume of the mud was examined on Petri dishes 50 mm in diameter to catch all gastrotrichs. The most suitable portion of the mud used for a single examination is 0.15–0.2 ml, depending on its consistency. At least 0.6 ml of mud were taken from each sample for the examination.

The indices of abundance (A) and individual dominance (D) were calculated. The abundance is expressed as the number of individuals per 1 ml of the mud. To find the mean monthly abundance of a species also the empty samples, in which this species was absent, were included. The index of individual dominance in successive months represents the percentage of individuals of a given species in the total number of gastrotrichs in particular months.

Throughout the study period the abundance was estimated for particular



species of the families *Dasydytidae* and *Neogosseidae*, and jointly for all representatives of the family *Chaetonotidae* (Tab. III); the abundance of the species of the family *Chaetonotidae* was investigated from May to October (Tab. IV).

## TAXONOMIC REVIEW OF THE SPECIES

### Family *Chaetonotidae*

#### Genus *Chaetonotus* EHRENBERG

##### 1. *Ch. insigniformis* GREUTER, 1917

Material. Complex B: March, December, 3 samples, 3 specimens.

Known from Switzerland (GREUTER 1917) and USSR (PREOBRAJENSKAJA 1926). In Poland found in ponds and lakes of the Poznań region (ROSZCZAK 1935, 1968) and in a heavily eutrophicated transitional peat bog near Siedlce (KISIELEWSKI 1981).

##### 2. *Ch. simrothi* VOIGT, 1909

Material. Complex A: April, October, 2 samples, 2 specimens. Complex B: February-April, June, October, November, 9 samples, 12 specimens.

Known from many sites in Europe. In Poland recorded by ROSZCZAK (1935, 1968) and KISIELEWSKI (1981) from eutrophic water bodies in the Wielkopolska region.

##### 3. *Ch. arquatus* VOIGT, 1903

Material. Complex A: August, 1 sample, 1 specimen. Complex B: May, June, 3 samples, 3 specimens.

The specimens recorded correspond to the description made by VOIGT, particularly with reference to the shape of the head, pharynx and adhesive tubes, and to the distribution and length of spines. Spines, however, emerge from large elliptic one-lobed scales and not, as mentioned in the original description, from small rhomboicones. At the basis of spines there are clear cut thickenings the shape and size of which correspond to the scales drawn by VOIGT. It may be expected that the differences in the interpretation of the scale structure stem from the fact that the individuals described by VOIGT had less developed scale edges so that he did not notice them at all and he took thickened basal parts of spines for scales. The identity of the two forms is additionally confirmed by the similarity of the measurements given below.



## After VOIGT material (2 specimens) Present

Body length	230 $\mu\text{m}$	220 $\mu\text{m}$	210 $\mu\text{m}$
Length of caudal appendages	46 $\mu\text{m}$	39 $\mu\text{m}$	39 $\mu\text{m}$
Length of adhesive tubes	—	29 $\mu\text{m}$	30 $\mu\text{m}$
at: ph index <sup>1</sup>	—	58%	61%
Pharynx length	53 $\mu\text{m}$	50 $\mu\text{m}$	49 $\mu\text{m}$
Pharynx formula <sup>1</sup>	—	27%	29%
		20%	20%
		44%	39%
Total number of longitudinal rows of scales	—	14	14
Number of scales in a longitudinal row	—	13	13
Index of scale distribution <sup>1</sup>	—	108%	108%
Length of dorsal head spines	—	12 $\mu\text{m}$	—
Length of lateral head spines	—	38 $\mu\text{m}$	—
Length of neck spines <sup>2</sup>	10 $\mu\text{m}$	—	—
Length of dorsal neck spines	—	13 $\mu\text{m}$	—
Length of lateral neck spines	—	42 $\mu\text{m}$	39.5 $\mu\text{m}$
Length of trunk spines <sup>2</sup>	40 $\mu\text{m}$	—	—
Length of dorsal trunk spines	—	39.5 $\mu\text{m}$	34 $\mu\text{m}$
Length of lateral trunk spines	—	42.5 $\mu\text{m}$	38 $\mu\text{m}$
Length of last pair of lateral spines	—	47 $\mu\text{m}$	35 $\mu\text{m}$
Length of neck scales	—	5 $\mu\text{m}$	—
Width of neck scales	—	7 $\mu\text{m}$	—
Length of trunk scales	—	9 $\mu\text{m}$	—
Width of trunk scales	—	11 $\mu\text{m}$	—

<sup>1</sup> Calculated as suggested by KISIELEWSKI (1981).

<sup>2</sup> Not specified by VOIGT whether data concern dorsal or lateral spines.

The original description of *Ch. arquatus* should be complemented with characteristics of the ventral field. In examined specimens the pharynx section of the field was covered with poorly seen keels. The intestinal part was covered with 7 longitudinal, alternating rows of keels or keeled scales 4–6  $\mu\text{m}$  long. At the end of the field there was a pair of keeled scales 8  $\mu\text{m}$  long.

Known from Central Europe. In Poland recorded only from Budzyńskie Lake in the Wielkopolski National Park (ROSZCZAK 1968).

#### 4. *Ch. disiunctus* GREUTER, 1917

Material. Complex A: October, 1 sample, 1 specimen. Complex B: March–May, September–December, 8 samples, 18 specimens.

Known from Europe and Japan (SAITO 1937). In Poland found in lakes of Poznań region (ROSZCZAK 1968) and in transitional peat bogs (KISIELEWSKI 1981).

#### 5. *Ch. heteracanthus* REMANE, 1927

Material. Complex A: April–October, 13 samples, 38 specimens. Complex B: February, May–October, December, 17 samples, 25 specimens.



A part of the specimens totally conformed to the original description, but some specimens had much thinner though typically distributed spines.

So far recorded from Germany (REMANE 1927) and Rumania (RUDESCU 1967). In Poland known from pond Żabiak in the Wielkopolski National Park (KISIELEWSKI 1974).

#### 6. *Ch. maximus* EHRENBERG, 1830

Material. Complex B: March, April, 2 samples, 2 specimens.

Recorded from many sites in Europe and Japan (SAITO 1937). In Poland known from water bodies of the Poznań region (ROSZCZAK 1935, 1968) and from one site located at the edge of a spruce forest on peat in the Białowieża Forest (KISIELEWSKI 1981).

#### 7. *Ch. polyspinosus* GREUTER, 1917

Material. Complex B: October, November, 2 samples, 2 specimens.

Known from many countries of Europe, including Poland (ROSZCZAK 1968, KISIELEWSKI 1981). Common in various types of water bodies and in heavily eutrophicated transitional peat bogs.

#### 8. *Ch. rafalskii* KISIELEWSKI, 1979

Material. Complex A: March, April, 4 samples, 6 specimens. Complex B: January–June, October–November, 17 samples, 23 specimens.

Described by KISIELEWSKI (1979) from pond Żabiak in Wielkopolska and from an alder swamp in the Łęczna-Włodawa Lake District.

#### 9. *Ch. sp.*

Material. Complex B: May, July, August, 4 samples, 6 specimens.

This species has not been described so far. The material collected, though not complete yet, indicates that it differs from all the known species of the genus *Chaetonotus* EHRENBERG.

The body is uniformly covered with spines of the length gradually increasing towards the posterior part. Pharynx with large thickenings in the anterior and posterior parts. Hypostomium is exceptionally large, narrowed in the middle part with a characteristic strong transverse selvage.

#### 10. *Ch. rectaculeatus* KISIELEWSKA, 1981

Material. Complex B: February, April–November, 32 samples, 87 specimens.

This species is described in a separate paper (KISIELEWSKA 1981).



11. *Ch. (Zonochaeta) bisacer* GREUTER, 1917

Material. Complex B: May, 1 sample, 1 specimen.

Many times recorded from Europe and also from Japan (where it is described as *Ch. truncatus* SAITO; see KISIELEWSKI 1979). In Poland it is known from various habitats in the region of Poznań, Tuchola Forests, Siedlce, and in the Łęczna-Włodawa Lake District (ROSZCZAK 1968, KISIELEWSKI 1979).

12. *Ch. (Z.) multisetosus* PREOBRAJENSKAJA, 1926

Material. Complex B: June, 2 samples, 3 specimens.

The species new to Poland. So far recorded from the region of Moscow, USSR (PREOBRAJENSKAJA 1926) and from Rumania (RUDESCU 1967).

13. *Ch. (Z.) macrolepidotus* GREUTER, 1917

Material. Complex A: September, October, 3 samples, 3 specimens. Complex B: May, August, October–December, 5 samples, 6 specimens.

Known from Switzerland (GREUTER 1917), USSR (PREOBRAJENSKAJA 1926) and Rumania (RUDESCU 1967). In Poland was recorded by ROSZCZAK (1968) from Lake Kaliszańskie (Wielkopolska).

14. *Ch. (Z.) ophiogaster* REMANE, 1927

Material. Complex A: July–September, November, 5 samples, 7 specimens. Complex B: February, May–November, 18 samples, 24 specimens.

Known from Germany (REMANE 1927). In Poland recorded from heavily eutrophicated water bodies and from transitional peat bogs of Wielkopolska (KISIELEWSKI 1974, 1981).

15. *Ch. (Z.) succinctus* VOIGT, 1904

Material. Complex A: October, 2 samples, 4 specimens. Complex B: January, March, June–December, 26 samples, 49 specimens.

Known from many sites in Europe and from Japan (SAITO 1937). In Poland recorded from Otomińskie Wetlands near Gdańsk (LUCKS 1909), from eutrophic water bodies of Wielkopolska (ROSZCZAK 1935, 1968), and from transitional and low peat bogs (KISIELEWSKI 1981).

Genus *Heterolepidoderma* REMANE16. *H. gracile* REMANE, 1927

Material. Complex B: May–September, 7 samples, 9 specimens.



Known from Europe, Japan (SAITO 1937) and USA (ROBBINS 1973). In Poland recorded by ROSZCZAK (1968) from eutrophicated water bodies near Poznań and by KISIELEWSKI (1981) from lowland peat bogs over the country.

17. *H. macrops* KISIELEWSKI, 1981

Material. Complex B: March, April, 3 samples, 4 specimens.

Known from spruce forest on peat in the Białowieża Forest (KISIELEWSKI 1981).

18. *H. ocellatum* (METSCHNIKOFF) s. KISIELEWSKI, 1981

Material. Complex A: July, 1 sample, 1 specimen.

KISIELEWSKI (1981) found many sites of this species on raised and transitional peat bogs of Poland.

Genus *Lepidodermella* BLAKE

19. *L. squamatum* (DUJARDIN, 1841)

Material. Complex B: August, 1 sample, 1 specimen.

A cosmopolitan species (D'HONDT 1978) and eurytopic. In Poland recorded from Wielkopolska (ROSZCZAK 1935, 1968) and from low and transitional peat bogs over the country (KISIELEWSKI 1981).

Genus *Aspidiophorus* VOIGT

20. *A. bibulbosus* KISIELEWSKI, 1979

Material. Complex A: May, June, August, 4 samples, 4 specimens. Complex B: January, May, July–October, 8 samples, 12 specimens.

Described by KISIELEWSKI (1979) from the Wolin Island and from the Łęczna-Włodawa Lake District, and then recorded by the same author from transitional peat bogs of Poland (KISIELEWSKI 1981).

21. *A.?* *paradoxus* VOIGT, 1904

Material. Complex A: June, October, 2 samples, 3 specimens. Complex B: August, October, 3 samples, 3 specimens.

The specimens found were clearly smaller than those described by VOIGT, and the posterior pair of the head lobes was less protruded.

Known from Europe. In Poland ROSZCZAK (1968) found a typical form of this species in a pond and a lake of the Wielkopolska region.



Genus *Ichthyidium* EHRENBERG22. *I. palustre* KISIELEWSKI, 1981

Material. Complex A: September, October, 2 samples, 3 specimens. Complex B: June, October, 2 samples, 2 specimens.

The species was described by KISIELEWSKI (1981) from several peat bogs of Poland.

Genus *Polymerurus* REMANE23. *P. nodicaudus* (VOIGT, 1901)

Material. Complex A: May, 2 samples, 2 specimens. Complex B: February, August, October, December, 10 samples, 13 specimens.

Recorded from many countries of Europe, and also from Japan (SAITO 1937), North America (PACKARD 1959) and India (VISVESVARA 1964). In Poland recorded by ROSZCZAK (1935, 1968) and KISIELEWSKI (1981) from rich water bodies of the Wielkopolska region.

24. *P. rhomboides* (STOKES, 1887)

Material. Complex B: April, May, October, 3 samples, 3 specimens.

Known from many countries of Europe, from North America (STOKES 1887) and South America (GROSSO 1975). In Poland recorded from many sites (ROSZCZAK 1968, KISIELEWSKI 1979, 1981).

25. *P. serraticaudus* (VOIGT, 1901)

Material. Complex A: September, 1 sample, 1 specimen.

Known from many sites of Europe. In Poland recorded from wetlands of the Warmia region by STEINECKE (1924) and from the Poznań region by ROSZCZAK (1968).

26. *P. squamofurcatus* (PREOBRAJENSKAJA 1926).

Material. Complex A: April, 1 sample, 2 specimens. Complex B: February, April, June, July, October, 5 samples, 5 specimens.

Known from the region of Moskow, USSR (PREOBRAJENSKAJA 1926) and from Rumania (RUDESCU 1967). In Poland the only specimen was found by KISIELEWSKI (1979) in a peat hag in Tuchola Forests.



Family *Neogosseidae*Genus *Neogossea* REMANE27. *N. antennigera* (GOSSE, 1851)

Material. Complex A: June, 1 sample, 7 specimens.

The species new to Poland. Known from many sites in Europe and from India (VISVESVARA 1964).

Family *Dasydytidae*Genus *Dasydytes* GOSSE28. *D. (Dasydytes) ornatus* VOIGT, 1909

Material. Complex A: March–May, September–December, 12 samples, 15 specimens.  
Complex B: January–June, September–December, 44 samples, 165 specimens.

Known from many sites in Europe. In Poland recorded by ROSZCZAK (1935, 1968) from the region of Poznań and by KISIELEWSKI (1981) from a transitional peat bog in the Słowiński National Park and from a ditch in the Białowieża Forest.

29. *D. (Setopus) dubius* VOIGT, 1909

Material. Complex A: March–June, August–December, 26 samples, 127 specimens.  
Complex B: January–December, 62 samples, 765 specimens.

The species new to Poland. Known from many sites in Europe (D'HONDT 1978).

30. *D. (Haltidytes) crassus* GREUTER, 1917

Material. Complex A: February–August, October, December, 21 samples, 38 specimens.  
Complex B: January–December, 29 samples, 91 specimens.

Known from Europe and South America (GROSSO 1973). In Poland recorded by KISIELEWSKI (1974, 1981) from small eutrophic water bodies of the Wielkopolska region and from transitional peat bogs of northern and western Poland.

Genus *Stylochaeta* HLAVA31. *S. fusiformis* (SPENCER, 1890)

Material. Complex A: August, 1 sample, 1 specimen. Complex B: June–August, 3 samples, 3 specimens.

Known from many countries of Europe. In Poland recorded by ROSZCZAK (1968) from small water bodies of the region of Poznań and by KISIELEWSKI (1981) from transitional peat bogs over the country.



## OCCURRENCE

## Species composition and dominance (Tabs I and II)

The gastrotrichs of the peat hags under study are members of three families: the family *Chaetonotidae* was represented by 26 species, the family *Neogosseidae* by 1 species, and the family *Dasydytidae* by 4 species. Though the

Table I. Dominance (%) of different species of the families *Dasydytidae* and *Neogosseidae* and of all the species jointly of the family *Chaetonotidae* in successive months over the year

Species	Site	Months											
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
<i>Neogossea antennigera</i>	A						18.9						
	B												
<i>Dasydytes (D.) ornatus</i>	A			11.8	6.4	6.9				×	4.1	×	×
	B	38.5	18.4	23.4	14.0	4.2	0.8			2.1	7.8	9.4	14.6
<i>D. (Setopus) dubius</i>	A			47.0	40.4	48.3	32.4		38.1	×	28.8	53.8	28.0
	B	38.5	36.8	24.7	26.4	52.5	59.0	55.7	53.2	52.1	49.5	55.3	56.2
<i>D. (Haltidytes) crassus</i>	A		60.0	17.6	8.5	10.3	10.8	16.7	19.0		11.0		8.0
	B	2.6	3.5	2.5	4.6	2.1	2.4	16.1	2.1	13.5	9.4	8.2	2.2
<i>Stylochaeta fusiformis</i>	A								2.4				
	B						0.8	0.7	0.7				
<i>Chaetonotidae</i>	A		40.0	23.5	44.7	34.4	37.8	83.3	40.5	100.0	56.2	46.1	64.0
	B	20.5	41.2	49.4	55.0	41.6	36.8	27.7	43.7	32.4	33.2	27.0	27.0

× – recorded only in qualitative samples

Table II. Dominance (%) of particular species of the family *Chaetonotidae* from May to October

Species	Site	Months					
		V	VI	VII	VIII	IX	X
<i>Chaetonotus simrothi</i>	A						1.4
	B		0.8				0.9
<i>Ch. arquatus</i>	A				2.4		
	B	1.4	×				
<i>Ch. disiunctus</i>	A						1.4
	B	5.7				×	0.9
<i>Ch. heteracanthus</i>	A	17.2	8.1	25.0	11.9	22.2	24.6
	B	2.1	1.6	2.7	0.7	6.2	2.1
<i>Ch. polyspinosus</i>	A						
	B						0.3
<i>Ch. rafalskii</i>	A						
	B	1.4	0.8				0.3



Table II. continued

Species	Site	Months					
		V	VI	VII	VIII	IX	X
<i>Ch.</i> sp.	A						
	B	1.4		2.0	0.7		
<i>Ch. rectaculeatus</i>	A						
	B	6.4	7.4	11.4	10.6	5.2	7.9
<i>Ch. (Zonochaeta) bisacer</i>	A						
	B	0.7					
<i>Ch. (Z.) multisetosus</i>	A						
	B		0.8				
<i>Ch. (Z.) macrolepidotus</i>	A					×	2.7
	B	0.7			0.7		0.6
<i>Ch. (Z.) ophiogaster</i>	A			16.7	4.8	22.2	
	B	0.7	1.6	0.7	3.5	3.4	3.0
<i>Ch. (Z.) succinctus</i>	A						5.5
	B	1.4	4.1	3.4	4.2	8.3	4.2
<i>Heterolepidoderma gracile</i>	A						
	B	0.7	3.3	0.7	0.7	×	
<i>H. ocellatum</i>	A			8.3			
	B						
<i>Lepidodermella squamatum</i>	A						
	B				0.7		
<i>Aspidiophorus bibulbosus</i>	A	3.4	2.7		2.4		
	B	2.1		0.7	2.1	1.0	0.9
<i>A. † paradoxus</i>	A		5.4				1.4
	B				1.4		0.3
<i>Ichthyidium palustre</i>	A					22.2	1.4
	B		0.8				0.3
<i>Polymerurus nodicaudus</i>	A	6.9					
	B				1.4		1.5
<i>P. rhomboides</i>	A						
	B	0.7					0.3
<i>P. serraticaudus</i>	A					11.1	
	B						
<i>P. squamofurcatus</i>	A						
	B		0.8	0.7			0.3
<i>Chaetonotidae</i> not identified	A	6.9	21.6	33.3	19.0	22.2	17.8
	B	16.2	14.8	5.4	17.0	8.3	9.4
Total	A	34.4	37.8	83.3	40.5	100.0	56.2
	B	41.6	36.8	27.7	43.7	32.4	33.2

× — recorded only in qualitative samples



family *Chaetonotidae* consisted of the highest number of species, the representatives of *Dasydytidae* were most abundant, their average dominance for all the months being 55.4%.

It is worth noticing that all the species of the genus *Polymerurus* REMANE known from Poland were recorded, and also 5 of the six known from Poland species of the subgenus *Chaetonotus* (*Zonochaeta*) REMANE. Instead, none of the six known from Poland species of the *Ch. spinulosus* group (ROSZCZAK 1968, KISIELEWSKI 1981) was found.

So far there has been only one paper (KISIELEWSKI 1981) characterizing dominance of gastrotrichs dwelling inland habitats, and the material was collected from raised and transitional peat bogs of Poland. Only two out of 10 species classified by KISIELEWSKI to the groups of eudominants and dominants (*Chaetonotus polyspinosus* and *Heterolepidoderma ocellatum*) have been recorded in the present study; they occurred sporadically, however, though the latter was even numerous in July. Following the criteria used by KISIELEWSKI, in present study the group of eudominants and dominants consists of *Chaetonotus heteracanthus*, *Ch. rectaculeatus*, *Ch. ophiogaster*, *Dasydytes* (*S.*) *dubius*, and *D.* (*H.*) *crassus*, and in winter also *D.* (*D.*) *ornatus*. Only three of these species, *Ch. ophiogaster*, *D.* (*H.*) *crassus* and *D.* (*D.*) *ornatus*, have been reported by KISIELEWSKI (1981) but all of them are classified to the group of subrecessive species, that is, their dominance did not exceed 1%. These data show that the fauna of peat bogs distinctly differs from that of the peat hags under study.

#### Abundance; seasonal changes (Tabs III and IV)

There were seasonal changes in the total abundance of gastrotrichs in the peat hags under study (Tab. III). It was lowest in January and February, and began to increase in March. The average total abundance for the remaining months of the year was 39.0 individuals per 1 ml of the mud in complex A and 61.4 in complex B. In particular samples the abundance was frequently much higher, reaching maximum values of 100.0 and 166.7 for the two complexes respectively. Seasonal changes in numbers from November 1976 to October 1977 are shown in Figures 1 and 2. Since changes in numbers of the most abundant species, *Dasydytes* (*Setopus*) *dubius*, have major effect on the total picture, two curves are drawn, one for all the species and the other for all the species except for the dominant. In complex A (Fig. 1) there was one peak of numbers, occurring in July and August; in winter, particularly on the turn of January and February, a distinct decrease in numbers was observed. Changes occurring in complex B (Fig. 2) were of different character. If *D.* (*S.*) *dubius* is excluded, it can be stated that the annual amplitude of changes in numbers was much smaller than in complex A. There was not a clear decrease in abundance during winter, and this was largely due to an abundant emergence of *D.* (*D.*) *ornatus*.



Table III. Abundance (number of individuals per 1 ml of mud) of particular species of the families *Dasydytidae* and *Neogosseidae* and all the species jointly of the family *Chaetonotidae* in successive months of the year

Species	Site	Months											
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
<i>Neogossea antennigera</i>	A						7.3						
	B												
<i>Dasydytes (D.) ornatus</i>	A			2.2	3.1	1.8				×	2.1	×	×
	B	10.4	4.5	9.0	7.5	2.2	0.2			2.0	5.7	3.3	6.3
<i>D. (Setopus) dubius</i>	A			9.5	17.2	18.0	15.4		15.6	×	11.0	11.6	9.4
	B	9.8	8.7	9.9	14.1	22.8	36.2	39.9	46.0	51.5	35.4	19.9	28.8
<i>D. (Haltidytes) crassus</i>	A		5.8	3.5	4.0	3.4	5.2	7.1	7.8		4.2		3.3
	B	1.0	1.3	1.0	2.5	0.9	1.3	7.4	1.0	13.9	6.7	2.9	1.0
<i>Stylochaeta fusiformis</i>	A								0.6				
	B						0.4	0.5	0.4				
<i>Chaetonotidae</i>	A		3.8	4.5	21.3	10.8	19.2	41.3	20.9	29.7	26.1	10.0	24.0
	B	4.5	8.6	18.7	29.6	19.9	22.5	19.5	22.0	31.9	24.2	9.8	12.7
Total	A		9.6	19.7	45.6	34.0	47.1	48.4	44.9	29.7	43.4	21.6	36.7
	B	25.7	23.1	38.6	53.7	45.8	60.6	67.3	69.4	99.3	72.0	36.0	48.8

× - recorded only in qualitative samples

Table IV. Abundance (number of individuals per 1 ml of mud) of particular species of the family *Chaetonotidae* from May to October

Species	Site	Months					
		V	VI	VII	VIII	IX	X
<i>Chaetonotus simrothi</i>	A						0.4
	B		0.4				0.6
<i>Ch. arquatus</i>	A				0.6		
	B	0.6	×				
<i>Ch. disiunctus</i>	A						0.4
	B	3.0				×	0.7
<i>Ch. heteracanthus</i>	A	5.5	3.6	15.0	6.6	6.6	11.2
	B	1.2	0.8	1.8	0.3	6.2	1.4
<i>Ch. polyspinosus</i>	A						
	B						0.2
<i>Ch. rafalskii</i>	A						
	B	0.5	0.2				0.2
<i>Ch. sp.</i>	A						
	B	0.6		1.4	0.4		



Table IV. continued

Species	Site	Months					
		V	VI	VII	VIII	IX	X
<i>Ch. rectaculeatus</i>	A						
	B	2.9	3.8	8.1	5.4	5.3	5.9
<i>Ch. (Zonochaeta) bisacer</i>	A						
	B	0.3					
<i>Ch. (Z.) multisetosus</i>	A						
	B		0.4				
<i>Ch. (Z.) macrolepidotus</i>	A					×	0.9
	B	0.4			0.3		0.4
<i>Ch. (Z.) ophiogaster</i>	A			10.0	1.3	6.6	
	B	0.3	1.4	0.5	1.7	3.3	2.1
<i>Ch. (Z.) succinctus</i>	A						1.6
	B	0.6	2.8	2.6	2.1	8.4	3.1
<i>Heterolepidoderma gracile</i>	A						
	B	0.3	2.6	0.5	0.3	×	
<i>H. ocellatum</i>	A			2.1			
	B						
<i>Lepidodermella squamatum</i>	A						
	B				0.3		
<i>Aspidiophorus bibulbosus</i>	A	0.4	1.0		1.7		
	B	0.8		0.9	1.1	0.9	0.8
<i>A. ? paradoxus</i>	A		3.0				0.4
	B				0.7		0.2
<i>Ichthydium palustre</i>	A					6.6	0.4
	B		0.4				0.2
<i>Polymerurus nodicaudus</i>	A	3.1					
	B				0.7		1.0
<i>P. rhomboides</i>	A						
	B	0.4					0.2
<i>P. serraticaudus</i>	A					3.3	
	B						
<i>P. squamofurcatus</i>	A						
	B		0.4	0.5			0.2
<i>Chaetonotidae</i> not identified	A	1.8	11.6	14.2	10.7	6.6	10.8
	B	7.5	9.3	3.7	8.7	7.8	7.0
Total	A	10.8	19.2	41.3	20.9	29.7	26.1
	B	19.9	22.5	19.5	22.0	31.9	24.2

× — recorded only in qualitative samples



Two peak numbers were observed in this complex, one in spring and the other in autumn.

As noted above, *Dasydytes (S.) dubius* was the most numerous species in the two complexes. The abundance of this species gradually increased usually for several weeks and then abruptly decreased. Despite these oscillations,

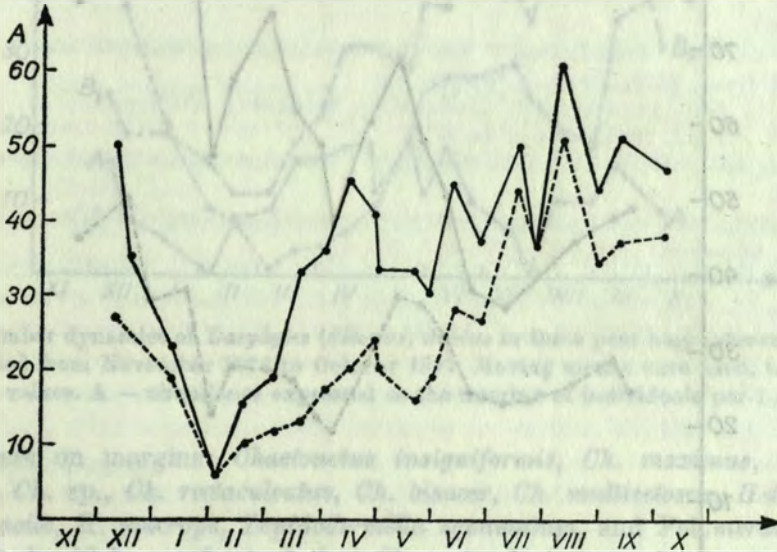


Fig. 1. Number dynamics of gastrotrichs in the middle peat hag of complex A in the period from November 1976 to October 1977. Moving means were used, taking three successive values.

A — abundance expressed as the number of individuals per 1 ml of mud. Solid line — all species; dashed line — all species except for *Dasydytes (Setopus) dubius*.

seasonal changes in numbers could be observed (Fig. 3). In all the peat hags under study the abundance markedly dropped in winter, and it gradually increased during spring. In the peat hags of complex B it also increased in the first half of summer. During the period from July to the turn of August and September the abundance decreased in all the peat hags, and this species even completely disappeared in the peat hags of complex A. The highest abundance of *D. (S.) dubius* recorded in the study period was 90.0 individuals/ml (in complex B on September 1, 1977).

Two species of the family *Dasydytidae* had seasonal occurrence. *Stylochaeta fusiformis* occurred only in summer, while *Dasydytes (D.) ornatus* was recorded throughout the year, except for summer, its abundance being particularly high in winter.



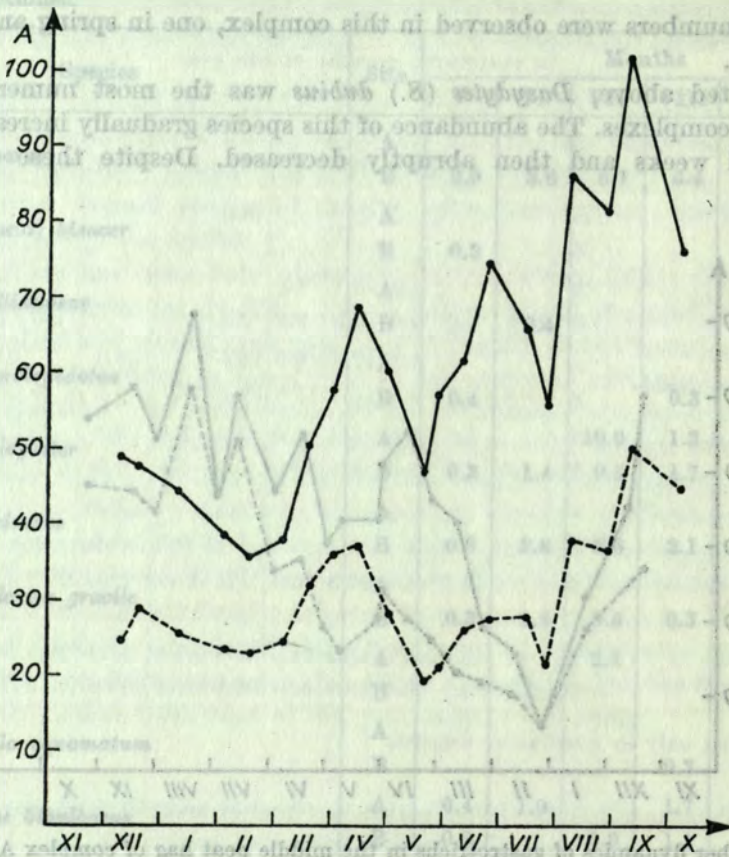


Fig. 2. Number dynamics of gastrotrichs in peat hags of complex B in the period from November 1976 to October 1977. Moving means were used, taking three successive values. A — abundance expressed as the number of individuals per 1 ml of mud. Solid line — all species; dashed line — all species except for *Dasydites* (*Setopus*) *dubius*.

#### Comparison of the fauna of *Gastrotricha* in the two complexes

Although the distance between the two complexes of peat hags was small and they were joined during spring floods, they differ markedly in the occurrence of gastrotrichs.

The following species were recorded only in the mid-meadow complex A: *Heterolepidoderma ocellatum*, *Polymerurus serraticaudus* and *Neogossea antennigera*. In addition, *Chaetonotus heteracanthus* was much more abundant than in complex B. The total abundance in particular months of the year was lower than in complex B.

The following species were found only in complex B, densely covered



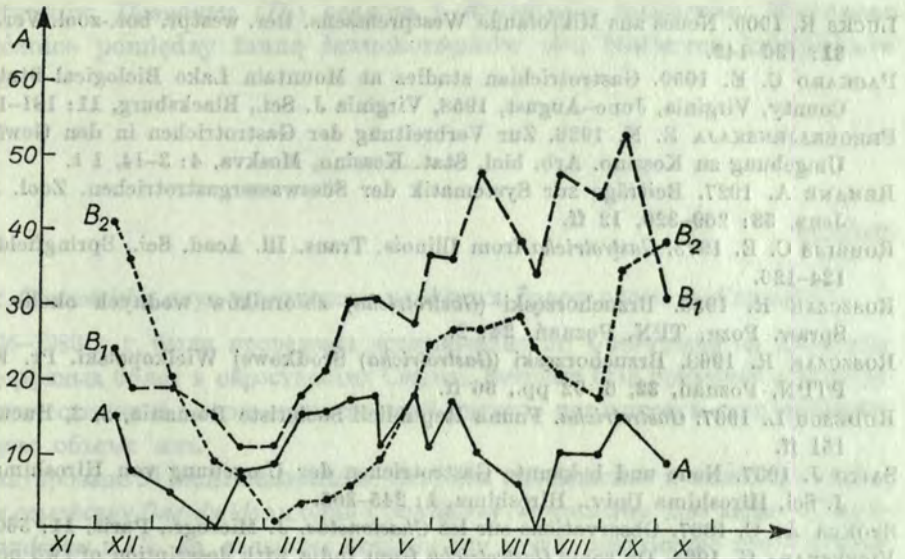


Fig. 3. Number dynamics of *Dasydytes (Setopus) dubius* in three peat bogs intensely sampled in the period from November 1976 to October 1977. Moving means were used, taking three successive values. A — abundance expressed as the number of individuals per 1 ml of mud.

with alders on margins: *Chaetonotus insigniformis*, *Ch. maximus*, *Ch. poly-spinosus*, *Ch. sp.*, *Ch. rectaculeatus*, *Ch. bisacer*, *Ch. multisetosus*, *Heterolepido-derma gracile*, *H. macrops*, *Lepidodermella squamatum*, and *Polymerurus rhomboides*. It should be emphasized that *Ch. rectaculeatus*, an abundant species in complex B, has not been recorded in complex A. Three other species, *Chaetonotus succinctus*, *Dasydytes (D.) ornatus* and *D. (Setopus) dubius*, were found in complex A but they were more abundant in complex B.

#### REFERENCES

- GREUTER A. 1917. Beiträge zur Systematic der Gastrotrichen in der Schweiz. Rev. suisse Zool., Genève, 25: 37-76, 2t.
- GROSSO L. E. 1973. Notas sobre gastrótricos argentinos II. Neotropica, La Plata, 19: 87-89, 3 ff.
- GROSSO L. E. 1975. Especies argentinos del género *Polymerurus* REMANE 1927 (*Gastrotricha*). Neotropica, La Plata, 21: 46-50, 7 ff.
- HONDT J.-L. d' 1978. *Gastrotricha*. In: Limnofauna Europaea, pp. 92-97.
- KISIELEWSKA G. 1981. *Chaetonotus rectaculeatus* — a new species of *Gastrotricha*. Bull. Acad. pol. Sci., Warszawa, Sér. sc. biol., 29: 163-166, 2 ff.
- KISIELEWSKI J. 1974. Nowe dla fauny Polski gatunki brzuchorzęsków (*Gastrotricha*) słodkowodnych. Bad. fizjogr. Pol. zach., Poznań, Ser. C, 27: 103-111, 5 ff.
- KISIELEWSKI J. 1979. New and insufficiently known freshwater *Gastrotricha* from Poland. Ann. zool., Warszawa, 34: 415-435, 17 ff.
- KISIELEWSKI J. 1981. *Gastrotricha* from raised and transitional peat bogs in Poland. Monogr. Fauny Pol., 11, Kraków, 143 pp.



- LUCKS R. 1909. Neues aus Mikrofauna Westpreussens. Ber. westpr. bot.-zool. Ver., Gdańsk, **31**: 136-142.
- PACKARD C. E. 1959. Gastrotrichian studies at Mountain Lake Biological Station, Giles County, Virginia, June-August, 1958, Virginia J. Sci., Blacksburg, **11**: 181-182.
- PREOBRAJENSKAJA E. N. 1926. Zur Verbreitung der Gastrotrichen in den Gewässern der Umgebung zu Kossino. Arb. biol. Stat. Kossino, Moskva, **4**: 3-14, 1 t.
- REMANE A. 1927. Beiträge zur Systematik der Süßwassergastrotrichen. Zool. Jb. Syst., Jena, **53**: 269-320, 12 ff.
- ROBBINS C. E. 1973. *Gastrotricha* from Illinois. Trans. Ill. Acad. Sci., Springfield, **66**: 3-4, 124-126.
- ROSZCZAK R. 1935. Brzuchorzęski (*Gastrotricha*) zbiorników wodnych okolic Poznania. Spraw. Pozn. TPN, Poznań, **24**: 2.
- ROSZCZAK R. 1968. Brzuchorzęski (*Gastrotricha*) Środkowej Wielkopolski. Pr. Kom. biol. PTPN, Poznań, **32**, 6, 92 pp., 56 ff.
- RUDESCU L. 1967. *Gastrotricha*. Fauna Republicii Socialistice Romania, 2, 3, Bucuresti, 289, 151 ff.
- SAITO J. 1937. Neue und bekannte Gastrotrichen der Umgebung von Hiroshima (Japan). J. Sci. Hiroshima Univ., Hiroshima, **1**: 245-265.
- STOKES A. C. 1887. Observations sur les *Chaetonotus*. J. Microgr., Paris, **11**: 560-565, 2 t.
- VISVESVARA G. 1964. On some *Gastrotricha* from India with description of two new species. Ann. Mag. nat. Hist., London, **13**: 435-443.
- VOIGT M. 1903. Eine neue Gastrotrichenspezies (*Chaetonotus arguatus*). Forsch. Biol. Stat. Plön., **10**.

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## STRESZCZENIE

[Tytuł: *Gastrotricha* dwu kompleksów torfianek koło Siedlec]

W latach 1976-1980 przeprowadzono badania brzuchorzęsków w dwu kompleksach torfianek w okolicach Siedlec. W badaniach zastosowano po raz pierwszy metodę ilościową, pozwalającą na ustalenie liczebności brzuchorzęsków w znanej objętości mułu.

Stwierdzono 31 gatunków brzuchorzęsków; 26 należy do rodziny *Chaetonotidae*, 4 do rodziny *Dasydytidae* i jeden do rodziny *Neogosseidae*. Dwa gatunki, *Chaetonotus rectaculeatus* i *Ch. sp.* są nowe dla nauki, a trzy dalsze, *Chaetonotus multisetosus*, *Neogossea antennigera* i *Dasydytes (Setopus) dubius*, są nowe dla fauny Polski. Najliczniejszym gatunkiem był *Dasydytes (Setopus) dubius*, a łączna dominacja wszystkich gatunków z rodziny *Dasydytidae* wynosiła średnio dla wszystkich miesięcy 55,4%. Zaobserwowano wyraźne sezonowe zmiany liczebności; w styczniu i lutym abundancja brzuchorzęsków była najniższa, w miesiącach od kwietnia do grudnia w poszczególnych kompleksach wynosiła średnio 39,0 i 61,4 osobnika na 1 ml mułu. Sezonowość była szczególnie widocz-



na u gatunków *Dasydytes* (*D.*) *ornatus* i *Stylochaeta fusiformis*. Wykazano istotne różnice pomiędzy fauną brzuchorzęsków obu badanych kompleksów torfianek.

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## РЕЗЮМЕ

[Заглавие: *Gastrotricha* двух комплексов торфяных болот около г. Седльце]

В 1976–1980 г. г. были проведены исследования по *Gastrotricha* из двух комплексов торфяных болот в окрестностях Седлец. Впервые был применен в исследованиях количественный метод, позволяющий оценить численность этих животных в известном объеме ила.

Констатировано 31 виды *Gastrotricha*; 26 из них принадлежат к семейству *Chaetonotidae*, 4 к семейству *Dasydytidae* и один к семейству *Neogosseidae*. Два вида — *Chaetonotus rectaculeatus* и *Ch. sp.* являются новыми для науки; следующие три — *Chaetonotus multisetosus*, *Neogossea antennigera* и *Dasydytes (Setopus) dubius* — для фауны Польши. Наиболее многочисленным видом был *Dasydytes (Setopus) dubius*, а общее доминирование всех видов из семейства *Dasydytidae* составляло в среднем для всех месяцев 55,4%. Наблюдались четкие сезонные изменения численности. В январе и в феврале численность была самая низкая; с апреля до декабря составляла в отдельных комплексах в среднем 39,0 и 61,4 особи на мл ила. Особенно четко была выражена сезонность у видов *Dasydytes (D.) ornatus* и *Stylochaeta fusiformis*. Оба исследованных комплекса существенно отличались друг от друга по фауне *Gastrotricha*.

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