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Freshwater *Gastrotricha* of Poland. V. *Gastrotricha*  
of alder woods

[With 1 map and 1 table]

**Abstract.** *Gastrotricha* of alder woods in western and eastern Poland have been investigated. 48 species were recorded. *Aspidiophorus slovinensis* has been found for the second time, whereas *Chaetonotus octonarius* — for the first time in Poland. The fauna of alder woods has a great specific variety, the most abundant species being *Heterolepidoderma gracile*. Also abundant are the species of the family *Dasydytidae*.

The paper presents the results of faunistic research on *Gastrotricha* in alder woods of western and eastern Poland. *Gastrotricha* of this environment have been examined earlier by KISIELEWSKA (1982), who has conducted quantitative and qualitative studies in two complexes of peat-hags near Siedlce. One of the complexes is on the area of a small degraded alder wood where the author has found 28 species of *Gastrotricha*. The third paper of the present series (KISIELEWSKA and KISIELEWSKI 1986b) gives, apart from data from other environments, the results of investigations on two alder woods in the Białowieża National Park. Altogether, on these two localities, 33 species were recorded. Fragmentary data on the occurrence of *Gastrotricha* in alder woods can be also found in three taxonomic papers (KISIELEWSKI 1979, 1984, 1986). Full faunistic data, which have been partly used in the three above mentioned papers, are included here.

METHODS

In accordance with the principle accepted for this series, detailed investigation methods are not discussed as it has been already done in the first paper of the series (KISIELEWSKI and KISIELEWSKA 1986). Only some subsidiary information is necessary. In principle the

qualitatively analysed material on Petri dishes was surveyed till the last gastrotrich was caught. Thus, in calculations of individual dominance ( $D$ ) and general diversity index ( $H'$ ) both the results of quantitative and qualitative investigations could be used. However, the paper contains among others results of investigations between 1972 and 1975, when individuals were caught selectively from the dish but of course these data were not used in calculations of individual dominance and diversity index. Similarly as in other papers of the series some samples parented aquarium cultures, in which *Gastrotricha* were examined for a longer period of time. Thus obtained results enriched the list of species, but they could not be taken into consideration when giving the phenological data. The list of months in which particular *Gastrotricha* occur, given in the review of species, is based on the identifications of these species during 48 hours after sampling.

### MATERIAL AND RESEARCH AREA

Alder woods are a habitat of swampy forests with the prevalence of alders (*Alnus* spp.). They are accompanied, mainly in north-eastern Poland, by birches (*Betula* spp.) and spruce (*Picea abies*). In the abundant undergrowth of forest floor very important are the high sedge associations (*Magnocaricion*). Peat-mosses are not a typical vegetation component. The floor of a typical alder wood has a spatial structure differentiated into hummocks and valley mires. In this environment there are great fluctuations of water level; in spring there is usually a water level among trees, and in drier alder woods there are at least some pools. In summer and autumn this habitat gradually dries up and the surface waters disappear entirely or partly.

The studies were conducted between 1972 and 1975, and between 1981 and 1984, in the latter period more regularly. Samples were taken between March and April, and between June and September. On the whole 29 samples were taken consisting of 1-5 subsamples, depending on the surface area of alder wood and the existing water conditions; 7 of these samples were quantitative ones.

Samples were taken from the following localities (see also the map):

1. Ciechocin, commune Cekeyn, Bydgoszcz province. Small, rather dry alder wood with abundant high sedge vegetation but without a fully formed hummock structure. 1 qualitative sample.

2. Murucin, commune Sicienko, Bydgoszcz province. Typical but small alder wood, usually swampy and surrounded by meadows. 1 qualitative sample, afterwards aquarium culture.

3. Pobiedziska surroundings, Poznań province. Freshly cut alder wood without a hummock structure. 1 qualitative sample.

4. Włocławek surroundings, close to road E 16, near the kilometrepost 119. Small alder wood without typical vegetation. 1 qualitative sample, afterwards aquarium culture.

5. Niezgodą, commune Żmigród, Wrocław province. Part of a vast alder wood complex to the right of the road from Milicz to Żmigród. Typical vegetation and structure. There was an exceptional drought (August 1983) when sampling and the material was taken from small hollows, where there was still some water left. 3 samples, 1 of them quantitative.

6. Niezgodą, the same vast alder wood complex as on the previous locality, to the left of the road from Milicz to Żmigród. Exceptional drought limited the sampling only to the deepest hollows with some water. 3 samples, 1 of them quantitative.

7. Olszowa Droga, commune Goniądz, Łomża province. The alder wood is a part of a vast complex with typical vegetation and structure. 1 quantitative sample.

8. Gugny, commune Trzeccanne, Łomża province. Alder wood eastwards from the road between Gugny and Strękowa Góra. Vast alder wood with typical vegetation and structure. 1 quantitative sample.

9. Strękowa Góra, commune Trzcianne, Łomża province, 1–1.5 km to the north from the village. Fragment of a vast complex with typical vegetation and structure. 1 quantitative sample.

10. Krześlin, commune Suchożebry, Siedlce province. Alder wood rather dry, without a fully developed hummock structure, with plenty of birches and high sedge associations. 1 quantitative sample, afterwards aquarium culture.



Map. 1. Distribution of localities examined. Explanations in the text.

11. Pruszyń-Pieńki, commune and province Siedlce. Small alder wood with a not very typical vegetation and plenty of birches. In peat-hags there is always water. 2 qualitative samples.

12. Domanice surroundings, commune Skórzec, Siedlce province. Small alder wood surrounded by meadows. 1 qualitative sample.

13. Sabinka, commune Kotuń, Siedlce province. Small alder wood surrounded by meadows. 1 qualitative sample.

14. Kotuń, Siedlce province, 1.5 km to the east from the village, near railway tracks. Small alder wood with typical vegetation, surrounded by wet sedge meadows and meadows. 1 qualitative sample.

15. Koszewnica, commune Kotuń, Siedlce province, some 1.5 km north from the village. A relatively vast complex with typical vegetation and spatial structure. 1 quantitative sample.

16. Mrozy, Siedlce province, alder wood near railway station, small, usually rather dry with a not very typical structure and vegetation. 2 qualitative samples.

17. Kolbiel surroundings, Siedlce province, NE from the road crossing from Góra Kalwaria to Mińsk Mazowiecki and Warsaw-Lublin. Small alder wood with typical vegetation, surrounded by meadows. 1 qualitative sample, afterwards aquarium culture.

18. Wólka Wytycka, commune Urszulin, Chełm province. Alder wood with a typical spatial structure, usually wet, on one side meadows, on the other — *Sphagnum* bog. 2 qualitative samples.

19. Wytyczno, commune Urszulin, Chełm province. Alder wood having a typical structure. 4 qualitative samples.

## REVIEW OF SPECIES

Out of 48 species of *Gastrotricha* found during the investigations 41 have been identified. Other, mostly unknown and not studied sufficiently, are indicated only in the table. General occurrence is described only for species not mentioned in the previous papers, for those that have been mentioned only the recent records are repeated and earlier observations in alder woods.

### Genus *Chaetonotus* EHRENBERG

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

Material. 7 localities, 8 samples, 10 specimens including 1 from aquarium culture. April and June till August. Locality 4, 6, 9, 11, 13, 14 and 19.

Recently recorded by NESTERUK (1986) from fish ponds near Siedlce. Previously recorded from peat-hags on the area of degraded alder wood (KISIELEWSKA 1982) and from alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b).

#### 2. *Ch. brevispinosus* ZELINKA, 1889

Material. 2 localities, 2 samples, 9 specimens including 2 from aquarium cultures. April and June. Locality 1 and 10.

Recently recorded from eutrophic waters of the Białowieża Glade (KISIELEWSKA and KISIELEWSKI 1986b)

#### 3. *Ch. cordiformis* GREUTER, 1917

Material. 1 sample, 2 specimens. July. Locality 18.

Recently recorded from one of the lakes in the Słowiński National Park (KISIELEWSKA and KISIELEWSKI 1986a). Recorded also from the Białowieża Forest, where it occurs both in eutrophic water bodies beyond the forest area and in alder woods (KISIELEWSKA and KISIELEWSKI 1986b).

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

Material. 3 localities, 3 samples, 8 specimens including 1 from aquarium culture. April. Locality 2, 10 and 14.

Given in all papers of the series. Also occurred irregularly in peat-hags of degraded alder wood at Białki near Siedlce (KISIELEWSKA 1982) and in

alder woods of the Białowieża Forest, being there one of the most abundant species as regards individual dominance ( $D$  9.4%; KISIELEWSKA and KISIELEWSKI 1986b).

5. *Ch. heideri* BREHM, 1917

Material. 2 localities, 2 samples, 7 specimens. April and July. Locality 10 and 13.

Recently recorded from a fertile water body in the Tatra Mountains (KISIELEWSKI and KISIELEWSKA 1986), seaside lakes of the Słowiński National Park (KISIELEWSKA and KISIELEWSKI 1986a), and also from the Białowieża Forest, where it occurs both in eutrophic water bodies beyond forest area and in alder woods (KISIELEWSKA and KISIELEWSKI 1986b).

6. *Ch. heteracanthus* REMANE, 1927

Material. 3 localities, 4 samples, 8 specimens. July and August. Locality 5, 6 and 18.

This gastrotrich was recently recorded from the Tatra Mountains from two water bodies varying in fertility (KISIELEWSKI and KISIELEWSKA 1986). Previously recorded in a degraded alder wood near Siedlce, where it occurs in peat-hags in small numbers but regularly (KISIELEWSKA 1982).

7. *Ch. ?murrayi* REMANE, 1929

Material. 2 localities, 2 samples, 6 individuals including 5 from aquarium cultures. March. Locality 2 and 4.

Described from Germany without indicating the locality and habitat. Later recorded only from *Sphagnum* peat-bogs in Poland (KISIELEWSKI 1981) and from alder woods of the Białowieża National Park (KISIELEWSKA and KISIELEWSKI 1986b).

8. *Ch. oculifer* KISIELEWSKI, 1981

Material. 2 localities, 2 samples, 8 specimens. April and August. Locality 5 and 10.

Mentioned in almost all previous papers of the series, also as a species occurring in alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b).

9. *Ch. pawlowskii* KISIELEWSKI, 1984

Material. 3 localities, 3 samples, 4 specimens. June and August. Locality 6, 8 and 9.

This recently described species was recorded from one of the seaside lakes (KISIELEWSKA and KISIELEWSKI 1986a), from eutrophic water bodies and alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b) and from fish ponds near Siedlce (NESTERUK 1986).

10. *Ch. polypinosus* GREUTER, 1917

Material. 2 localities, 2 samples, 4 specimens including 1 from aquarium culture. March and April. Locality 2 and 10.

Mentioned in all previous papers of the series. Only few specimens were found in peat-hags of degraded alder wood near Siedlce (KISIELEWSKA 1982).

11. *Ch. rafalskii* KISIELEWSKI, 1979

Material. 3 localities, 3 samples, 6 individuals. April and June. Locality 9, 10 and 18.

Recently recorded from a fertile lake in the Tatra Mountains (KISIELEWSKI and KISIELEWSKA 1986). Also recorded from peat-hags in a degraded alder wood (KISIELEWSKA 1982), where it occurred irregularly and in small numbers and from alder woods in the Białowieża Forest, where it also occurred in small numbers (KISIELEWSKA and KISIELEWSKI 1986b). *Ch. rafalskii* had been described also from material from one of the alder woods (locality 18 in the present paper; KISIELEWSKI 1979).

12. *Ch. similis* ZELINKA, 1889

Material. 1 specimen from aquarium culture. Locality 2.

Mentioned in all previous papers of the series. Not recorded yet from alder woods.

13. *Ch. sphagnophilus* KISIELEWSKI, 1981

Material. 2 localities, 2 samples, 4 specimens including 3 from aquarium culture. August. Locality 2 and 6.

Specimens on locality 2 slightly differed from the typical form of this species. Total number of longitudinal rows of spined scales was high: 36–37, spines were shorter.

Recently recorded from a fertile habitat in the Tatra Mountains (KISIELEWSKI and KISIELEWSKA 1986) and from extremely eutrophic water bodies of the Białowieża Glade (KISIELEWSKA and KISIELEWSKI 1986b).

14. *Ch. zelinkai* GRÜNSPAN, 1908

Material. 1 specimen. April. Locality 10.

Recently recorded from various aquatic habitats of the Tatra Mountains (KISIELEWSKI and KISIELEWSKA 1986), from one of the lakes of the Słowiński National Park (KISIELEWSKA and KISIELEWSKI 1986a) and from alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b).

15. *Ch. hystrix* MEČNIKOV, 1865

Material. 7 localities, 7 samples, 11 specimens including 3 from aquarium cultures. March, April, June and July. Locality 1, 2, 5, 10, 11, 17 and 18.

Recently recorded from the Tatra Mountains from waters varying as to fertility (KISIELEWSKI and KISIELEWSKA 1986), from eutrophic water bodies and alder woods of the Białowieża Forest, occurring abundantly in the latter (KISIELEWSKA and KISIELEWSKI 1986b) and from fish ponds near Siedlce (NESTERUK 1986).

16. *Ch. macrochaetus* ZELINKA, 1889

Material. 2 localities, 2 samples, 2 specimens. April and June. Locality 7 and 10.

Mentioned in all previous papers of the series, recorded also from alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b).

17. *Ch. octonarius* STOKES, 1887

Material. 2 localities, 2 samples, 2 specimens. July and September. Locality 15 and 16.

Known from the United States of North America, recorded also from a number of European localities. A species new to Poland.

18. *Ch. persetosus* ZELINKA, 1889

Material. 1 sample, 3 specimens. April. Locality 10.

Recently recorded from the Tatra Mountains, where it was found in a fertile lake and a stream connected with a transitional peat-bog (KISIELEWSKI and KISIELEWSKA 1986).

19. *Ch. greuteri* REMANE, 1927

Material. 4 localities, 6 samples, 13 specimens. From June to August. Locality 3, 5, 6 and 9.

Recently this gastrotrich was recorded from eutrophic water bodies of the Białowieża Glade (KISIELEWSKA and KISIELEWSKI 1986b) and from fish ponds near Siedlce (NESTERUK 1986).

20. *Ch. bisacer* GREUTER, 1917

Material. 7 localities, 8 samples, 11 specimens. April, June, July and September. Locality 3, 8, 12, 14, 16, 18 and 19.

Recently recorded from one of the seaside lakes of the Słowiński National Park (KISIELEWSKA and KISIELEWSKI 1986a). Recorded from alder woods by KISIELEWSKI (1979; locality 18 in the present paper) and by KISIELEWSKA (1982), who has recorded one specimen in a peat-hag on the area of the degraded alder wood near Siedlce, and by KISIELEWSKA and KISIELEWSKI (1986b) from an alder wood in the Białowieża Forest.

21. *Ch. macrolepidotus* GREUTER, 1917

Material. 4 localities, 5 samples, 6 specimens. April, July and August. Locality 6, 11, 14 and 18.

Recently recorded from eutrophic water bodies and alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b) and from fish ponds near Siedlce (NESTERUK 1986). Also recorded irregularly and in small numbers from alder wood complex of peat-hags near Siedlce (KISIELEWSKA 1982).

22. *Ch. ophiogaster* REMANE, 1927

Material. 4 localities, 4 samples, 6 specimens. April, August and September. Locality 5, 6, 10 and 16.

Recently recorded from eutrophic water bodies of the Białowieża Glade (KISIELEWSKA and KISIELEWSKI 1986b) and also from fish ponds near Siedlce (NESTERUK 1986). Recorded by KISIELEWSKA (1982) from peat-hags on the area of alder wood as a species occurring regularly and not too abundantly.

23. *Ch. succinctus* VOIGT, 1902

Material. 3 localities, 4 samples, 4 specimens. June, July and September. Locality 8, 18 and 19.

Recently recorded from eutrophic water bodies of the Białowieża Glade (KISIELEWSKA and KISIELEWSKI 1986b) and from fish ponds near Siedlce (NESTERUK 1986). KISIELEWSKA (1982) has recorded this species as occurring regularly and periodically abundantly in the alder wood complex of peat-hags near Siedlce.

Genus *Heterolepidoderma* REMANE24. *H. gracile* REMANE, 1927

Material. 12 localities, 15 samples, 37 specimens including 4 from aquarium cultures. March, April, June to September. Locality 2, 3, 5, 6, 8, 10, 11, 14, 15, 17, 18 and 19.

Recently recorded from one of the seaside lakes of the Słowiński National Park (KISIELEWSKA and KISIELEWSKI 1986a) and also from fish ponds near Siedlce (NESTERUK 1986). Strongly connected with alder woods, where it had been found by KISIELEWSKA (1982) in peat-hags of degraded alder wood near Siedlce regularly but not abundantly. Also found by KISIELEWSKA and KISIELEWSKI (1986b) in alder woods of the Białowieża Forest, where it was one of the most abundant species. Thus according to results of the present paper it is a species occurring most abundantly and regularly in alder woods.

25. *H. macrops* KISIELEWSKI, 1981

Material. 1 sample, 2 specimens. August. Locality 6.

Recently recorded from a fertile lake in the Tatra Mountains (KISIELEWSKI and KISIELEWSKA 1986b), from eutrophic water bodies and alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b) and from fish ponds near Siedlce (NESTERUK 1986). KISIELEWSKA (1982) found also some specimens in peat-hags of the alder wood near Siedlce.

26. *H. majus* REMANE, 1927

Material. 6 localities, 6 samples, 22 specimens including 1 from aquarium culture. April, June and August. Locality 1, 4, 5, 6, 9 and 10.

Given in all papers of the series, including the record from alder woods of the Białowieża Forest, where it was one of the most abundant species (KISIELEWSKA and KISIELEWSKI 1986b).

27. *H. ocellatum* (MEČNIKOV) sensu KISIELEWSKI 1981

Material. 1 specimen. June. Locality 7.

Recently recorded from various types of waters in the Tatra and Karkonosze Mountains (KISIELEWSKI and KISIELEWSKA 1986), and also from eutrophic waters and alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b).

Genus *Lepidodermella* BLAKE28. *L. squamatum* (DUJARDIN, 1841)

Material. 2 localities, 2 samples, 2 specimens including 1 from aquarium culture. July. Locality 4 and 11.

Recently recorded from oligotrophic lakes in the Tatra Mountains (KISIELEWSKI and KISIELEWSKA 1986), from seaside lakes (KISIELEWSKA and KISIELEWSKI 1986a) and from eutrophic waters of the Białowieża Glade (KISIELEWSKA and KISIELEWSKI 1986b). The species was also recorded from the peat-hags complex of the degraded alder wood near Siedlce (KISIELEWSKA 1982).



Genus *Aspidiophorus* VOIGT29. *A. bibulbosus* KISIELEWSKI, 1979

Material. 5 localities, 6 samples, 10 specimens. June to August. Locality 6, 7, 8, 13 and 18.

Recently recorded from one of the seaside lakes in the Słowiński National Park (KISIELEWSKA and KISIELEWSKI 1986a), from eutrophic water bodies and alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b) and fish ponds near Siedlce (NESTERUK 1986). The species described from one of the alder woods (locality 18 in present paper); occurred regularly although not abundantly in this habitat (KISIELEWSKA 1982).

30. *A. oculifer* KISIELEWSKI, 1981

Material. 1 sample, 5 specimens. April. Locality 10.

Recently recorded from oligotrophic lakes in the Karkonosze Mountains and more fertile water bodies in the Tatra Mountains (KISIELEWSKI and KISIELEWSKA 1986), from one of the seaside lakes (KISIELEWSKA and KISIELEWSKI 1986a) and also from alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b).

31. *A. ?paradoxus* (VOIGT, 1902)

Material. 1 specimen. July. Locality 15.

Recently recorded by NESTERUK (1986) from fish ponds near Siedlce. It also occurred in peat-hags of degraded alder wood at Białki near Siedlce — sporadically and not abundantly (KISIELEWSKA 1982).

32. *A. slovinensis* KISIELEWSKI, 1986

Material. 1 specimen. June. Locality 8.

Recently described from lake Dołgie Wielkie in the Słowiński National Park. Not recorded from any other locality yet.

Genus *Ichthydium* EHRENBERG33. *I. forficula* REMANE, 1927

Material. 1 specimen. June. Locality 8.

Recently recorded from one of the alder woods of the Białowieża National Park, where one specimen was found (KISIELEWSKA and KISIELEWSKI 1986b).

34. *I. palustre* KISIELEWSKI, 1981

Material. 5 localities, 5 samples, 7 specimens. June to August. Locality 3, 5, 7, 8 and 9.

Recently recorded from a fertile lake in the Tatra Mountains (KISIELEWSKI and KISIELEWSKA 1986), from eutrophic waters and alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b) and fish ponds near Siedlce (NESTERUK 1986). Occurs irregularly and not abundantly in peat-hags of degraded alder wood near Siedlce (KISIELEWSKA 1982).

35. *I. ?podura* (MÜLLER, 1773)

Material. 1 specimen. July. Locality 18.

Recently recorded from eutrophic water bodies of the Białowieża Glade (KISIELEWSKA and KISIELEWSKI 1986b) and from fish ponds near Siedlce (NESTERUK 1986). Not recorded yet from alder woods.

### Genus *Polymerurus* REMANE

#### 36. *P. nodicaudus* (VOIGT, 1901)

Material. 1 locality, 2 samples, 2 specimens. August. Locality 6.

Recently recorded from eutrophic water bodies and alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b) and from fish ponds near Siedlce (NESTERUK 1986). Also found irregularly by KISIELEWSKA (1982) in peat-hags of the alder wood near Siedlce.

#### 37. *P. rhomboides* (STOKES, 1887)

Material. 2 localities, 2 samples, 2 specimens. June and July. Locality 8 and 13.

The species occurs regularly in seaside lakes of the Słowiński National Park (KISIELEWSKA and KISIELEWSKI 1986a); it occurs quite abundantly in eutrophic water bodies of the Białowieża Glade (KISIELEWSKA and KISIELEWSKI 1986b); also recorded from fish ponds near Siedlce (NESTERUK 1986). KISIELEWSKA (1982) describes it as a species occurring irregularly and not abundantly in peat-hags of alder wood at Białki near Siedlce.

### Genus *Dasydytes* GOSSE

#### 38. *D. ornatus* VOIGT, 1909

Material. 7 localities, 7 samples, 10 specimens including 4 from aquarium cultures. March, April, June and August. Locality 2, 4, 6, 7, 10, 17 and 18.

Recently recorded from eutrophic waters of the Białowieża Glade (KISIELEWSKA and KISIELEWSKI 1986b) and from fish ponds near Siedlce (NESTERUK 1986). It occurred regularly and abundantly in peat-hags of degraded alder wood at Białki, with the exception of summer months (KISIELEWSKA 1982).

#### 39. *D. tongiorgii* BALSAMO, 1983

Material. 7 localities, 8 samples, 20 specimens including 2 from aquarium cultures. April and June to September. Locality 2, 6, 9, 10, 11, 16 and 18.

Recently recorded from eutrophic water bodies and alder woods of the Białowieża Forest, being in the latter one of the most abundant species (KISIELEWSKA and KISIELEWSKI 1986b). NESTERUK (1986) has recorded it also from fish ponds near Siedlce. This gastrotrich was the most abundant of all in peat-hags of degraded alder wood at Białki near Siedlce (KISIELEWSKA 1982 sub *D. dubius* VOIGT, see KISIELEWSKA and KISIELEWSKI 1986b).

#### 40. *D. crassus* GREUTER, 1917

Material. 5 localities, 6 samples, 10 specimens including 3 from aquarium cultures. June to August. Locality 2, 3, 6, 8 and 18.

Recently recorded from eutrophic water bodies and alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b) and also from fish ponds near Siedlce (NESTERUK 1986). Recorded also by KISIELEWSKA (1982) in peat-hags of alder wood, where it occurred regularly, sometimes very abundantly.

#### Genus *Stylochaeta* HLAVA

##### 41. *S. fusiformis* (SPENCER, 1890)

Material. 2 localities, 2 samples, 4 specimens including 1 from aquarium culture. July. Locality 11 and 19.

Recently recorded from eutrophic water bodies and alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b) and from fish ponds near Siedlce (NESTERUK 1986). It also occurred irregularly and not abundantly in summer in peat-hags of alder wood at Białki (KISIELEWSKA 1982).

#### CHARACTERISTICS OF OCCURRENCE

Among the 41 species identified 37 belong to the family *Chaetonotidae*, whereas 4 to the family *Dasydytidae*. *Chaetonotus octonarius* is a species new to Poland, whereas the locality of *Aspidiophorus slovinensis* is the first known one of this species after its description. *Heterolepidoderma gracile*, recorded on 12 out of 19 localities examined, is the most regularly occurring species in alder woods. It is also the most abundant one; individual dominance (*D*) reached 14.6% (see Table I). Other species occurring regularly in alder woods are: *Chaetonotus simrothi*, *Ch. hystrix*, *Ch. bisacer*, *Dasydytes ornatus* and *D. tongiorgii* (7 localities each), *Heterolepidoderma majus* (6 localities), also *Aspidiophorus bibulbosus*, *Ichthyidium palustre* and *Dasydytes crassus* (5 localities each). One should also mention here the closely related forms *Chaetonotus macrolepidotus* and *Ch. ophiogaster*, each found on 4 localities (altogether on 7). The family *Dasydytidae* (individual dominance of all family species together – 13.6%), and especially the three above mentioned species of the genus *Dasydytes*, contribute significantly to the gastrotrichan fauna of alder woods. In separate publications on alder woods of the Białowieża Forest (KISIELEWSKA and KISIELEWSKI 1986b) the contribution of species of this family is said to be similar, the total *D* 12.9% (calculated on data from Table I of paper cited). It should be remembered that representatives of the family *Dasydytidae* in peat-hags of degraded alder wood at Białki are more numerous than those of the family *Chaetonotidae*, mainly because of mass occurrence of *Dasydytes tongiorgii* (KISIELEWSKA 1982). But the family *Dasydytidae* has not been recorded from waters in the Tatra and Karkonosze Mountains (KISIELEWSKI and KISIELEWSKA 1986) or from young lakes of the Słowiński National Park (KISIELEWSKA and KISIELEWSKI 1986a).

Table I. Individual dominance (*D*). Species found only in aquarium cultures are indicated by +.

No	Species	<i>D</i> (%)
1	2	3
1	<i>Chaetonotus simrothi</i>	2.5
2	<i>Ch. brevispinosus</i>	2.5
3	<i>Ch. cordiformis</i>	+
4	<i>Ch. disiunctus</i>	2.5
5	<i>Ch. heideri</i>	2.5
6	<i>Ch. heteracanthus</i>	2.1
7	<i>Ch. ?murrayi</i>	0.4
8	<i>Ch. oculifer</i>	2.9
9	<i>Ch. pawlowskii</i>	1.4
10	<i>Ch. polyspinosus</i>	1.1
11	<i>Ch. rafalskii</i>	1.1
12	<i>Ch. similis</i>	+
13	<i>Ch. sphagnophilus</i>	0.4
14	<i>Ch. zelinkai</i>	0.4
15	<i>Ch. hystrix</i>	1.8
16	<i>Ch. macrochaetus</i>	0.7
17	<i>Ch. octonarius</i>	0.7
18	<i>Ch. persetosus</i>	1.1
19	<i>Ch. greuteri</i>	4.6
20	<i>Ch. bisacer</i>	2.9
21	<i>Ch. macrolepidotus</i>	1.8
22	<i>Ch. ophiogaster</i>	2.1
23	<i>Ch. succinctus</i>	0.4
24	<i>Ch. sp. 1</i>	3.6
25	<i>Ch. sp. 2</i>	0.4
26	<i>Ch. sp. 3</i>	0.4
27	<i>Ch. sp. 4</i>	0.4
28	<i>Ch. sp. 5</i>	0.4
	<i>Chaetonotus</i> — indet.	3.2
29	<i>Heterolepidoderma gracile</i>	14.6
30	<i>H. macrops</i>	0.7
31	<i>H. majus</i>	7.5
32	<i>H. ocellatum</i>	0.4
	<i>Heterolepidoderma</i> — indet.	0.4
33	<i>Lepidodermella squamatum</i>	0.4
34	<i>Aspidiophorus bibulbosus</i>	3.2
35	<i>A. oculifer</i>	1.8
36	<i>A. ?paradoxus</i>	0.4
37	<i>A. slovinensis</i>	0.4
	<i>Aspidiophorus</i> — indet.	2.9
38	<i>Ichthydium forficula</i>	0.4
39	<i>I. palustre</i>	2.5
40	<i>I. ?podura</i>	+
	<i>Ichthydium</i> — indet.	1.4
41	<i>Polymerurus nodicaudus</i>	0.7

Table I — cont.

1	2	3
42	<i>P. rhomboides</i>	0.7
	<i>Chaetonotidae</i> — indet.	4.3
43	<i>Dasydytes ornatus</i>	2.1
44	<i>D. tongiorgii</i>	6.4
45	<i>D. (Setopus) sp.</i>	1.1
46	<i>D. crassus</i>	2.5
47	<i>Stylochaeta fusiformis</i>	1.1
48	<i>S. sp.</i>	0.4
Total		100.6

Gastrotrichan fauna of alder woods is greatly diversified. The general diversity index  $H'$  for all localities is 3.29 and is much higher than previously given ones.  $H'$  was estimated also for the two biggest alder wood complexes examined; 2.55 during an exceptional drought for alder woods around Żmigród (localities 5 and 6), for those on the Biebrza River (localities 7, 8 and 9) — 2.74. One may compare here the  $H'$  for transitional peat-bogs in Poland — 2.64 (KISIELEWSKI 1981), and  $H'$  for fertile water bodies in the Tatra and Karkonosze Mts, 2.54 and to 2.03, respectively (KISIELEWSKI and KISIELEWSKA 1986), for young seaside lakes — 2.47 (KISIELEWSKA and KISIELEWSKI 1986a) and eutrophic water bodies on the Białowieża Glade — 1.82 (KISIELEWSKA and KISIELEWSKI 1986b).  $H'$  in the latter paper being 2.95 for gastrotrichs of alder woods of the Białowieża National Park, confirms the high degree of diversity of fauna in the habitat discussed.

The abundance of gastrotrichs in 7 quantitative samples fluctuated between 6.0 (locality 15, July 8, 1981) and 80.0 ind./cm<sup>3</sup> of slime (locality 10, April 21, 1982), the average being 29.2 ind./cm<sup>3</sup> of slime. High fluctuations in numbers are not surprising considering the lability of aquatic relations in alder woods and also the different character of localities examined (from small dried up degraded fragments to big complexes having typical structure and water relations).

#### FAUNA RENEWAL AFTER DROUGHT

Because of the specific character of water relations the alder woods are a suitable object for investigations on the degree of fauna renewal after drought. Such observations were conducted on localities 7, 8 and 9 in the Biebrza valley. Gastrotrichan fauna of these alder woods was investigated in June 1984 at an average and low water level. The year before the whole area was dry throughout summer and autumn, because of an exceptional drought all over Poland. The localities mentioned were inspected in September 1983 and no traces of surface waters were recorded, whereas the litter and soil in places of later sampling were parched at least to the depth of 50 cm.

The investigations conducted in 1984 allowed to state that altogether 18 gastrotrichan species were found on localities above mentioned. The abundance approximated the average value (from 20.0 to 45.0 ind./cm<sup>3</sup> of slime) and the already given  $H'$  value (2.74) can be considered as a high one. These results show that the gastrotrichan fauna can renew itself after a total drought practically during one season. One may assume that a greater number of species than hitherto given (KISIELEWSKI 1981) can survive the drought in the egg form, but it can not be excluded that individuals or eggs in a deeper moist soil layer or those arriving in spring together with surface waters are of some significance.

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#### REFERENCES

- KISIELEWSKA G. 1982. *Gastrotricha* of two complexes of peat hags near Siedlce. *Fragm. faun.*, Warszawa, **27**: 39–57.
- KISIELEWSKA G., KISIELEWSKI J. 1986a. Freshwater *Gastrotricha* of Poland. II. *Gastrotricha* from the seaside lakes in the Słowiński National Park. *Fragm. faun.*, Warszawa, **30**: 183–194.
- KISIELEWSKA G., KISIELEWSKI J. 1986b. Freshwater *Gastrotricha* of Poland. III. *Gastrotricha* from the Białowieża Forest and the Białowieża Glade. *Fragm. faun.*, Warszawa, **30**: 195–213.
- KISIELEWSKI J. 1979. New and insufficiently known freshwater *Gastrotricha* from Poland. *Ann. zool.*, Warszawa, **34**: 415–435.
- KISIELEWSKI J. 1981. *Gastrotricha* from raised and transitional peat bogs in Poland. *Monogr. Fauny Pol.*, **11**. Kraków, 143 pp.
- KISIELEWSKI J. 1984. Three new freshwater gastrotrichs of the genus *Chaetonotus* EHRENBURG (*Chaetonotida*) from Poland. *Bull. Acad. pol. Sci., Biol.*, Varsovie, **32**: 293–301.
- KISIELEWSKI J. 1986. Taxonomic notes on freshwater gastrotrichs of the genus *Aspidiophorus* VOIGT (*Gastrotricha: Chaetonotidae*) with descriptions of four new species. *Fragm. faun.*, Warszawa, **30**: 139–156.
- KISIELEWSKI J., KISIELEWSKA G. 1986. Freshwater *Gastrotricha* of Poland. I. *Gastrotricha* from the Tatra and Karkonosze Mountains. *Fragm. faun.*, Warszawa, **30**: 157–182.
- NESTERUK T. 1986. Freshwater *Gastrotricha* of Poland. IV. *Gastrotricha* from the fish ponds in the vicinity of Siedlce. *Fragm. faun.*, Warszawa, **30**: 215–233.
- REMANE A. 1929. *Gastrotricha*. In: KÜKENTHAL W., KRUMBACH T., *Handbuch der Zoologie*, **2**, 6. Berlin, pp. 121–186.
- STOKES A. C. 1887. Observations sur les *Chaetonotus*. *J. Microgr.*, Paris, **11**: 560–565.

## STRESZCZENIE

[Tytuł: *Gastrotricha* słodkowodne Polski. V. *Gastrotricha* olsów]

Autorzy przeprowadzili badania brzuchorzęsków w olsach Polski Zachodniej i Wschodniej w latach 1972–1975 i 1981–1984. Na 19 stanowiskach wykrytych zostało 48 gatunków, z których oznaczono 41 (37 z rodziny *Chaetonotidae* i 4 z rodziny *Dasydytidae*). Wykrycie *Aspidiophorus slovinensis* stanowi drugie stwierdzenie tego brzuchorzęska w ogóle, a *Chaetonotus octonarius* jest gatunkiem nowym dla Polski. Najliczniejszym i najbardziej regularnie występującym w olsach gatunkiem jest *Heterolepidoderma gracile*, stwierdzona na 12 stanowiskach przy dominacji indywidualnej  $D = 14,6\%$ . Ważny i regularnie występujący składnik fauny olsów stanowią przedstawiciele rodziny *Dasydytidae*, których łączna dominacja osiąga 13,5%.

Fauna brzuchorzęsków olsów odznacza się bardzo dużą różnorodnością. Ogólny wskaźnik różnorodności gatunkowej  $H'$ , obliczony globalnie dla wszystkich stanowisk, osiągnął nie notowaną dotąd w badaniach *Gastrotricha* słodkowodnych wartość 3,29; wartość  $H'$  uzyskana dla rozległych olsów pod Żmigrodem wynosi 2,55, a dla olsów w dolinie Biebrzy 2,74. Abundancja wahała się w granicach 6,0–80,0 osobnika/cm<sup>3</sup> mułu, osiągając średnią wartość 29,2.

Autorzy wykazali, że fauna brzuchorzęsków olsów odnawia się po okresie całkowitej suszy w ciągu jednego sezonu.

## РЕЗЮМЕ

[Заглавие: Пресноводные *Gastrotricha* Польши. V. *Gastrotricha* ольсов]

Авторы вели исследования по брюхоресничным в ольсах западной и восточной Польши в период 1972–1975 и 1981–1984. На 19 станциях найдено 48 видов, из которых 41 вид был определен (37 из семейства *Chaetonotidae* и 4 из семейства *Dasydytidae*). Обнаружение *Aspidiophorus slovinensis* является второй находкой этого вида вообще, а *Chaetonotus octonarius* является новым видом для фауны Польши. Наиболее многочисленно и регулярно встречается в ольсах *Heterolepidoderma gracile*, найденный в 12 местонахождениях. Его индивидуальная доминанция ( $D$ ) составила 14,6%. Истотный и регулярно встречающийся компонент фауны ольсов составляют представители семейства *Dasydytidae*, их доминанция составляет в общем величину 13,5%.

Фауна брюхоресничных ольсов отличается очень значительным разнообразием. Общий показатель разнообразия видов  $H'$  высчитанный в сумме для всех станций достиг величины 3,29, не отмечаемой до настоящего времени в исследованиях по пресноводным *Gastrotricha*; величина  $H'$  найденная для обширных ольсов, располо-

женных около Жмигорода, составляет 2,55, а для ольсов в долине р. Бебжи 2,74. Абунданция колебалась в границах от 6,0 до 80,0 особей/см<sup>3</sup> ила, достигая в среднем 29,2.

Авторы обнаружили, что фауна брюхохоресничных ольсов после периода полной суши восстанавливается на протяжении одного сезона.