

A Preliminary Study of the Gastrotricha of Northern Indiana

GEORGE H. PFALTZGRAFF, Manchester College

Gastrotrichs are microscopic, aquatic animals, similar in size and habitat to rotifers. The class Gastrotricha is divided into two orders. The marine order is hermaphroditic, while the fresh-water order is composed of females reproducing parthenogenetically. The fresh-water gastrotrichs are characterized by ventral ciliation; a body that is easily divided into head, neck, and trunk regions; spines, scales, or a cuticular covering; and furca, which are two posterior extensions of the body.

The writer intensively sampled lakes and ponds in LaPorte and Wabash counties with occasional collections in Elkhart, Fulton, Kosciusko, and LaGrange counties. The samples were examined after they were collected and periodically for several months. It is not expected that the species found represent the entire fauna of Northern Indiana. Brunson (1,2) found fourteen species in Michigan and Robbins (5) found eight other species in Illinois which were not seen in this study. Some of these twenty-two species might be expected to occur in Indiana. The results of this study indicate that there is a large number of gastrotrich species in Northern Indiana. The following species were identified with the aid of Brunson (3), Remane (4), Robbins (5), and Voigt (6). Those species not fitting the descriptions are given alphabetical identifications.

Genus *Lepidodermella* Blake 1933

Scales that are not keeled; spines absent; furca short.

1. *Lepidodermella squamatum* (Dujardin) 1841

Scales in alternating rows; head five-lobed with two pairs of ciliary tufts; anterior and posterior tactile bristles present; pharynx weakly double bulbed; length, 110-170 μ . Distribution: Elkhart county, Kosciusko county, LaPorte county, Wabash county.

2. *Lepidodermella trilobum* Brunson 1950

Scales small and indistinct; head three-lobed with one pair of ciliary tufts; cuticle of anterior part of the head thickened to form a cephalic shield; length, 170 μ . Distribution: Wabash county.

Genus *Ichthydium* Ehrenberg 1830

No spines or scales; body covering smooth except for cuticular grooves or tactile bristles; furca short.

3. *Ichthydium auritum* Brunson 1950

Cuticle smooth; head three-lobed with lateral flap-like lobes; cephalic shield present; length 140 μ . Distribution: Fulton county, LaGrange county, Wabash county.

4. *Ichthydium sulcatum* Stokes 1887

Cuticle transversely grooved; head five-lobed; length 180 μ . Distribution: Wabash county.

5. *Ichthydium* sp. A

Cuticle transversely grooved; head indistinctly five-lobed; anterior and posterior tactile bristles present; pharynx weakly triple bulbed; length, 162 μ . Distribution: LaPorte county.

6. *Ichthydium* sp. B

Cuticle smooth; head indistinctly five-lobed; anterior and posterior tactile bristles present; length 120 μ . Distribution: Wabash county.

7. *Ichthydium* sp. C

Cuticle crosshatched; head rounded with distinct cephalic shield; post oral groove present; eight tactile bristles at bases of furca; length, 216 μ . Distribution: Wabash county.

Genus *Chaetonotus* Ehrenberg 1830

Spines or spines and scales; furca short.

8. *Chaetonotus acanthophorus* Stokes 1887

Spines short (3 μ) on the head and neck increasing abruptly in length to 20 μ on the trunk; head five-lobed with two pairs of ciliary tufts; length, 90-110 μ . Distribution: Elkhart county, Fulton county, Kosciusko county, LaPorte county, Wabash county.

9. *Chaetonotus bisacer* Greuter 1919

Spines in a transverse circlet around the middle of the trunk (differs from the European species in that the trunk spines are equally bifurcate at the distal end with a web between the Y-shaped barbs); pharynx pear-shaped; several spines and bristles anterior to the furca; length 167 μ . Distribution: Wabash county.

10. *Chaetonotus gastrocyaneus* Brunson 1950

Spines bifurcate, bent, with a three pronged base; head irregularly lobed and blunt with two ciliary tufts; cephalic shield present; the gut colored deep blue; length, 365-453 μ . Distribution: LaPorte county.

11. *Chaetonotus tachyneusticus* Brunson 1948

Spines short on the head increasing gradually to 20 μ at the base of the furca; head five-lobed; length 285 μ . Distribution: Wabash county.

12. *Chaetonotus* sp. A

Spines short anteriorly increasing gradually toward the posterior with spines absent anterior to the furca; head five-lobed; cephalic shield small; base of the furca wide and rectangular; length, 115 μ . Distribution: LaPorte county.

13. *Chaetonotus* sp. B

Spines short (4 μ) on the head increasing gradually to long spines (24 μ) at the furca; each spine embedded in a raised portion of the cuticle; head five-lobed; cephalic shield present; length, 260-295 μ . Distribution: Wabash county.

14. *Chaetonotus* sp. C

Spines short (5μ) on the head and neck, increasing abruptly (12μ) posterior to the union of the pharynx and gut, increasing gradually to long spines (16μ) on the trunk, and decreasing to short spines (5μ) above the furca; four tactile bristles at the base of the furca; head five-lobed; length 143-220 μ . Distribution: Elkhart county, Kosciusko county, Wabash county.

15. *Chaetonotus* sp. D.

Spines short (23μ) on the head and neck; spines long (36μ) on the trunk; head irregularly five-lobed with two pairs of ciliary tufts; pharynx double bulbed; cephalic shield present; length, 286 μ . Distribution: LaPorte county.

16. *Chaetonotus* sp. E

Spines short on the head and neck with longer, unequally bifurcate spines on the trunk; head five-lobed; length, 107-127 μ . Distribution: LaPorte county, Wabash county.

17. *Chaetonotus* sp. F

Spines short over the entire body; head five-lobed; posterior tactile bristles present; length, 110-190 μ . Distribution: LaPorte county, Wabash county.

18. *Chaetonotus* sp. G

Spines short (5μ) over the entire body; head indistinctly three-lobed; cephalic shield and post oral groove present; posterior tactile bristles present; length, 170 μ . Distribution: LaPorte county.

19. *Chaetonotus* sp. H

Spines limited to the trunk; scales on the dorsal surface; head five-lobed; length, 116 μ . Distribution: Wabash county.

20. *Chaetonotus* sp. I

Spines in one lateral row; anterior spines short increasing to long posterior spines (20μ); head weakly five-lobed; pharynx double bulbed; base of furca spread apart; length 110-135 μ . Distribution: LaGrange county, Kosciusko county.

21. *Chaetonotus* sp. J

Spines with elaborate winged and pouchlike scales; large mouth with hooks; little neck constriction; anterior and posterior tactile bristles present; one pair short barbs anterior to and inside the furca; one tactile bristle between the furca; length, 300-315 μ . Distribution: LaPorte county.

Genus *Polymerurus* Remane 1927

Furca long and segmented

22. *Polymerurus callosus* Brunson 1950

Furca long and segmented with the terminal segment the longest; cuticle smooth with small pointed excrescences; beaded oral ring; ce-

phalic shield and post oral groove present; length, 316 μ . Distribution: Wabash county.

23. *Polymerurus nodicaudus* var. *comatus* Greuter 1917

Spines over the entire body increasing gradually in size to 16 μ ; cephalic shield present; gut dark; minute barbs around the rings segmenting the furca; length 350-450 μ . Distribution: LaGrange county, LaPorte county.

24. *Polymerurus* sp. A

Spines limited to the trunk with one row of long spines down the center of the dorsal side; length, 380 μ . Distribution: LaPorte county.

25. *Polymerurus* sp. B

Cuticle arranged in transverse grooves with small spines (10 μ) originating from the crests of the ridges over the entire body; head three-lobed with lateral lobelike flaps; cephalic shield and post oral groove present; length, 330-334 μ ; distribution: Wabash county.

26. *Polymerurus* sp. C

Scales over the entire body; scales teardrop shaped thickened anteriorly and keeled posteriorly; furca segmented to the distal end; head with two lateral flap-like lobes; cephalic shield and post oral groove present; two pairs of ciliary tufts; one pair of tactile bristles on the head, one pair on the neck anterior to the gut, and one pair anterior to the furca; length, 330-360 μ . Distribution: LaPorte county.

Genus *Dasydytes* Gosse 1887

Furca absent; no other posterior protrubances except tactile bristles.

27. *Dasydytes goniathrix* Gosse 1851

Spines long (76 μ), unequally bifurcate at the bend toward the extreme distal end of the anterior spines; spines arranged in bundles lying in two lateral rows; dies at temperatures above 15°C; length, 160-170 μ . Distribution: Wabash county.

28. *Dasydytes* sp. A

Seven lateral spines which do not cross posteriorly; head weakly five-lobed; two posterior bristles each embedded in a cuticular collar; length, 130-160 μ . Distribution: Wabash county.

29. *Dasydytes* sp. B

Spines long and trailing, crossing posteriorly; spines do not cross over the trunk; posterior bristles absent; length, 110 μ . Distribution: Wabash county.

30. *Dasydytes* sp. C

Spines long (160 μ) and doubly bifurcate; head rounded; pharynx pear-shaped; circular bodies present in the anterior part of the trunk between the two groups of spines; length, 170 μ . Distribution: Wabash county.

Literature Cited

1. Brunson, R. B. 1947. Gastrotricha of North America. II. Four new species of *Ichthyidium* from Michigan. Trans. Mich. Aca. Sci. Arts and Let. **33**:59-62.
2. ————. 1950. An introduction to the taxonomy of the Gastrotricha with a study of eighteen species from Michigan. Trans. Amer. Micros. Soc. **69**:325-352.
3. ————. 1959. Gastrotricha. In: Edmundson, W. T., editor, **Fresh-water biology**, 2nd ed. John Wiley & Sons, Inc. New York.
4. Remane, A. 1931. Gastrotricha und Kinorhyncha. In: Bronns Klassen und Ordnungen des Tierreichs. Band 4, Abt. 2, Buch 1, Teil 2. Leipzig.
5. Robbins, Clyde E. 1963. Studies on the taxonomy and distribution of the Gastrotricha of Illinois. Unpublished PhD thesis, University of Illinois.
6. Voigt, M. 1959. Gastrotricha. In: Brohmer, P., P. Ehrmann, and B. Ulmer. **Die Tierwelt Mitteleuropas**. Band 1, Lief. 4a. Leipzig.