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STUDIES ON AMERICAN NAID OLIGOCHAETES

1. PRELIMINARY NOTE ON NAIDS OF DOUGLAS LAKE, MICHIGAN¹

BY

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During July and August, 1921, I was engaged in a study of the Naididae of the region around the University of Michigan Biological Station on Douglas Lake in the upper end of the southern peninsula. This locality afforded a wealth of material for such a study, including a number of sexually mature forms. A full discussion of the systematic aspects of this work is in course of preparation, to be followed by papers dealing with the morphology and histology of the various naids, especially of the mature individuals.

As a preliminary report on this work, I wish to place on record here, for the benefit of other students of this family of the Oligochaeta, a list of the species noted, together with brief diagnoses of two new species and notes on two new varieties. The following established species were represented by forms which did not differ appreciably from the published descriptions:

Aulophorus furcatus (Oken)
Chaetogaster diaphanus (Gruithuisen)
Chaetogaster langi Bretscher
Chaetogaster limnaei K. von Baer
Dero limosa Leidy
Dero perrieri Bousfield
Nais communis Piguet
Nais pseudoobtusa Piguet
Nais simplex Piguet
Nais variabilis Piguet
Pristina longiseta Ehrenberg
Slavina appendiculata (d'Udekem)
Stylaria fossularis Leidy
Stylaria lacustris (L.)
Vejdovskyella comata (Vejdovsky)

¹Contribution from the University of Michigan Biological Station, and contributions from the Biological Laboratory of the University of Richmond, No. 1.

With the exception of *Stylaria fossularis* and *Vejdovskyella comata*, all these species were found in considerable numbers. Of these two species only one individual of each was found. In each case, however, the species is unique and its characteristics sufficiently pronounced to prevent any error in the identification.

The following species was represented by forms which showed only one marked difference from the type.

Pristina aequisetata Bourne

The individuals of this species agreed closely with the description of *Naidium tentaculatum* given by Pigué (1906), which species was later united by the same writer (1909) with *Pristina aequisetata* Bourne (1891). In the forms described by Pigué and Bourne, however, there are peculiarly enlarged setae in the ventral bundles of segment 4; while in the forms that came under my observation these setae were, with one exception, on segment 5. Whether this amounts to a varietal difference or whether the position of these setae is a matter of no importance, remains to be seen.

The following is, in my opinion, entitled to rank as a variety:

Chaetogaster diaphanus, var. *cyclops*, var. nov.

This is in most respects similar to the type form of the species, but differs from it in the presence of a very definite median pigmented body intimately associated with the brain and strikingly like an eyespot.

The following species have not hitherto been described:

Dero polycardia sp. nov.

Worms quite large, 7–10 mm. in length, about 300 microns in diameter. Color reddish. Swimming actively. Ventral setae of segments 2–5, four to six in number, about 135 microns long, nodulus proximal, distal tooth longer than proximal and with a slight swelling at base. Ventral setae of other segments, four to six in number, about 95 microns long, nodulus a trifle distal, teeth about equal, distal tooth half as thick as proximal, and with a slight swelling at base. Dorsal setae beginning on segment 6, with one or two capilliform setae, somewhat longer than the diameter of the body, and one or two needle-like setae, about 87.5 microns long, slender, bifid, nodulus distal, distal tooth longer than proximal, proximal part of the seta almost straight, distal part strongly curved. Contractile transverse vessels (“hearts”) up to eight pair, in segments 6–13 inclusive, though one or more of the last few pair may be lacking. Blood quite red. Intestinal dilation in segments 9 and 10. First nephridia in segment 7. Respiratory bursa with dorsal lip, consisting of a median portion and two lateral ciliated processes. Gills, two pair, of the pyramidal type. Budding takes place between segments 25 and 36. Sexually mature forms

not yet observed. Habitat, in felted masses of blue-green algae attached to slightly submerged logs in a marshy pond near Burt Lake, Michigan.

Haemonais ciliata sp. nov.

Worms large, as much as 16 mm. in the case of double chains, but able to contract to about one third of their length. Diameter, about 500 microns. Very active and, because of their rapid contractions and expansions, rather leech-like in their movements. Color, light reddish. Number of segments up to 55 in individual worms, and up to 100 in double chains. Prostomium rather acuminate; when expanded, slightly longer than broad at the base. Eyes absent. Prostomium covered with fine, straight tactile processes; a zone of similar processes around each segment. Remainder of body surface bears frequent smaller processes which are sharply reflexed and terminate in a bulbous swelling. As far back as the first segment bearing dorsal setae, body surface ciliated. Setae about middle of segment. Ventral setae usually three in number, about 90 microns long, sigmoid, nodulus about middle, teeth equal in length, distal tooth half as thick as proximal, and with a slight swelling at base. In all the individuals observed, nine in number, the first four or five segments were very short, and the setae of these segments, while having the same form as those following, were relatively smaller. Dorsal setae beginning on any segment from 14 to 22 inclusive: with one capilliform seta, about 160 microns long, slightly sigmoid, distal half more curved than proximal; and one biuncinate seta, about 110 microns long, slightly sigmoid, nodulus barely distal, teeth long, distal tooth longer and a trifle thinner and with a very slight swelling at base. Pharynx short, pigmented at both ends. Remainder of canal not highly specialized. Contractile transverse vessels ("hearts") in most of segments 4–20 inclusive. Circulatory system more like the usual naid type than that of *H. waldvogeli* Bretscher (1900). Budding takes place after segment 40. Mature forms not yet observed. Habitat, in felted masses of blue-green algae attached to slightly submerged logs, and in water-macerated wood, from a marshy pool near Burt Lake, Michigan. In Bretscher's (1900) description of *H. waldvogeli*, no mention is made of the presence of cilia on the body surface, and as this is such a noticeable feature of *H. ciliata*, I have ventured to indicate this fact in the specific name.

The attention of systematic zoologists is called to the existence in this country of representatives of two genera not given in the key to the Naididae on pages 638–640 of Ward and Whipple's "Fresh-Water Biology": namely, *Haemonais* and *Vejdovskyella*. The latter will be found in Michaelsen (1909), as well as, under the older name *Bohemilla*, in Michaelsen (1900). *Haemonais*, hitherto known only through the single species, *H. waldvogeli*, is described in Bretscher (1900). These two genera may be

added to the key in Ward and Whipple by altering the text of page 639 as follows:

- 10 (11) Setae of dorsal bundles all uncinata
 *Paranais* Czerniavsky 1880.
- 11 (10) Dorsal setae nearly straight, slightly toothed or simple-pointed.....*Ophidonais* Gervais 1838.
- 12 (9) Capilliform setae present in dorsal bundles.....13.
- 13 (13½, 21) First anterior dorsal setae on XII to XXII
*Haemonais* Bretscher 1900.
- 13½ (13, 21) First anterior dorsal setae on V or VI.....14.
- 14 (18) Posterior end not modified into a gill-bearing respiratory organ.....15.
- 15 (15½) Capilliform setae of dorsal bundle with a series of very prominent teeth; first anterior dorsal setae on V.
*Vejdovskyella* Michaelsen 1903
- 15½ (16, 17) Capilliform setae without teeth; one or more capilliform setae of VI much longer than those of other somites and equal to three or four times the diameter of the body.....*Slavina* Vejdovsky 1883.
- 16 (15½, 17) Prostomium elongated to form a proboscis; dorsal setae of VI similar in length to those of other somites
*Stylaria* Lamarck 1816.
- 17 (15½, 16) Without proboscis; dorsal setae of VI similar in length to those of other somites.....*Nais* Müller 1774.
- 18 (14) Posterior end modified into a gill-bearing respiratory organ, the branchial area.....19.
- 19 (20) Ventral margin of the branchial area with a pair of long processes.....*Aulophorus* Schmarda 1861.

Two ecological notes may be made very briefly here. The observation of Mrazek (1917) as to the ingestion of trematode larvae by *Chaetogaster limnaei* is similar in all respects to observations made in the course of my study of this form in Michigan. *Chaetogaster* is in general carnivorous, especially *Ch. diaphanus*. This latter species, particularly the *cyclops* variety, is actively predaceous and even cannibalistic, and those who are just beginning the study of these worms are warned to keep their chaetogasters away from vessels containing other genera, as they will depopulate a culture of naids in a very little time.

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