Redescription of the Piscicolid Leech

_Trulliobdella capitis_ Brinkmann

**ABSTRACT:** The Antarctic leech _Trulliobdella capitis_ Brinkmann, 1947 is redescribed based on recently collected specimens and subsequent re-examination of the type material. The leech possesses three pairs of tentacles on the oral sucker, up to five pairs of eyes on both oral sucker and nuchal region, up to 14 ocelli on the caudal sucker, 11 pairs of pulsatile vesicles, esophageal diverticula, six pairs of cleft crop ceca, postceca with four pairs of cleft lateral ceca, and five pairs of testisacs.

The genus _Trulliobdella_ Brinkmann, 1947 was established for a leech infesting _Parachaenichthys georgianus_ (Fisher) and _Chaenocephalus aceratus_ (Lönnberg) (as _Chaenocephalus bouvetensis_ Nybelin), from South Georgia and Bouvet islands, respectively. This leech, _Trulliobdella capitis_ Brinkmann, 1947, was taken by the Norwegian Expeditions to the southern oceans, 1927–1928, but was not studied until 20 yr later (Brinkmann, 1947, 1948).

A study of relatively fresh, mature and immature, engorged and unfed specimens shows that affinities of the genus have been obscured by the omission of certain anatomic characteristics from the original description, undoubtedly due to the poor condition of the 20-yr-old specimens. The present paper, based on the new material and a re-examination of Brinkmann’s type material, attempts to clarify the anatomy of this leech and emends accordingly the description of _Trulliobdella._

**Material Examined**

Syntypes, Zoologisk Museum, Universitetet, Bergen, Norway, No. 41817, 8 specimens in Bouin’s, 2 whole mounts, 1 complete set each sagittal, frontal, and transverse sections. The following material was received from the Smithsonian Oceanographic Sorting Center: _Islas Orcadas_ cruise 575, May 1975, Sta. 55, 57°47.2’S, 26°22.5’W, 64–88 m, 2 mounted specimens; Sta. 56, 57°47.2’S, 26°22.2’W, 90 m, 84 specimens, 10 mounted; Sta. 57, 57°43.9’S, 26°24.1’W, 37–55 m, 1 mounted specimen. _Hero_ cruise 702, March 1970, Sta. 459, 62°58.3’S, 60°47.2’W, 110–165 m, 8 specimens, 3 mounted; Sta. 509, 64°49.9’S, 63°33.0’W, 46 m, 2 specimens. _Eltanin_ cruise 6, January 1963, Sta. 435, 63°14’S, 58°40’W, 73 m, 4 specimens, 1 mounted, from chaenichthyid; Sta. 437, 62°50’S, 60°35’W, 267–311 m, 5 specimens, 1 mounted, from chaenichthyid; Sta. 445, 62°02’S, 59°05’W, 101 m, 5 specimens, 1 mounted. _Eltanin_ cruise 9, August 1963, Sta. 671, 54°41’S, 38°31’W, 220–320 m, 5 specimens, 2 mounted, 1 sectioned. Eight specimens (4 mounted) collected at South Georgia from _Chaenocephalus aceratus_ on 2 April 1978 were received from V. Siegel, Institut für Seefischerei, Hamburg, Germany. Twenty-seven specimens from _Champsocephalus gunneri_ Lönnberg: _Islas Orcadas_ cruise 876, 16 February 1976, Sta. UMO 108, 60°25.9’S, 46°23.6’W to 60°25.4’S, 46°24.4’W; and 26 specimens from _Chaenocephalus aceratus: Islas Orcadas_ cruise 876, 20 February 1976, Sta. UMO 117, 62°11.3’S, 42°43.3’W to
62°11.0'S, 42°43.9'W were gifts of Bruce Daniels. One whole mount and one complete series each of frontal, sagittal, and transverse sections were made from 4 specimens from C. aceratus.

Descriptive measurements include the mean followed by the range in parentheses. Length measurements include both suckers, are based on 10 or more readings, and are in millimeters unless otherwise indicated.

**Trulliobdella Brinkmann, 1947**

**Diagnosis:** Body dorsoventrally flattened, with short, subcylindrical trachelosome; urosome longer and wider than trachelosome; body surface smooth, without tubercles, papillae, or gills; pulsatile vesicles present; tentacles and eyes on oral sucker, eyes on nuchal region; complete segments 3-annulate, each annulus further but less distinctly divided; metameric ocelli on a2, paired dorsally and ventrally; ocelli on posterior sucker; esophageal ceca and postceca present; common oviduct opens into large invaginated pouch; testisacs 5 pairs.

**Type and only species:** *Trulliobdella capitis* Brinkmann, 1947.

**Trulliobdella capitis Brinkmann, 1947**

(Figs. 1, 2)

**Diagnosis:** Size up to 40 long and 15.1 wide; oral sucker with 3 pairs of tentacles and up to 5 pairs of eyes; first 2 nuchal annuli with up to 5 pairs of eyes; urosome with 11 pairs of pulsatile vesicles and up to 10 pairs of metameric

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Figure 1. *Trulliobdella capitis*, sagittal section through terminal genitalia. C, invaginated pouch; F, female gonopore; M, male gonopore; O, common oviduct.
ocelli; caudal sucker with up to 14 ocelli; crop with 6 pairs of cleft lateral ceca; postceca fused, with 4 pairs of cleft lateral ceca.

**EXTERNAL FEATURES:** Body usually divided into short, subcylindrical trachelosome and much longer and wider, dorsoventrally flattened urosome, resembling Glossiphoniidae, 28.4 (11.9–40.0) long × 10.0 (3.4–15.1) wide. Immature and some unfed specimens not sharply divided into trachelosome and urosome. Oral sucker 2.2 (1.0–3.1) in diameter, eccentrically attached, with 3 pairs of wart-shaped elevations or small “tentacles” and up to 5 pairs of crescent-shaped eyes. Concavities of eyes facing posterolaterally. First 2 nuchal annuli of trachelosome with up to 5 pairs of eyes, concavities facing anterolaterally. Four eyes not uncommon in either region, on one or both sides, occasionally 3 or 6 eyes. Urosome margins subparallel, but converging posteriorly. Body surface smooth, lacking tubercles, papillae, or gills. Complete segments 3-annulate with each primary annulus further, but less distinctly, divided. Segmental ocelli present, paired dorsally and ventrally; mature specimens possess up to 10 pairs, immature specimens may possess 11 to 12 pairs. Male and female gonopores large and conspicuous, separated by 2 annuli. Anus 2 annuli anterior to centrally attached caudal sucker, 2.8 (1.0–3.5) in diameter. Caudal sucker with up to 4 marginal ocelli.

**REPRODUCTIVE SYSTEM:** Testisacs 5 pairs, at XIV through XVII, alternating with crop ceca. Vasa deferentia pass forward to about IV, where they widen and become coiled. Anterior limbs widen further, forming seminal vesicles, situated dorsal and lateral to atrial cornu. Seminal vesicles continuing anteriorly to X, then bending ventromedially caudad and entering apex of atrial cornu. Cornua, in XI, large, bulbous, muscular, and unite to form male atrium. Female gonopore, in XII, actually opening to large invaginated pouch (Fig. 1). Common oviduct opens into anterior margin of pouch. Oviduct bending dorsally from pouch opening and bifurcating into 2 ovisacs that bend posterolaterally and extend, dorsal to pouch, to ganglion in XIV. Ovisacs become convoluted, commonly winding anteriorly to level of female gonopore.

**DIGESTIVE SYSTEM:** Mouth central within small raised area in oral sucker. Esophageal ceca emerging from esophagus in anterior portion of XI and extending anteriorly into X. Crop with 6 pairs of deeply cleft lateral ceca (Fig. 2), branching into postceca and intestine at XIX. Postceca fused, with 4 pairs of cleft lateral ceca; intestine with 4 pairs of simple ceca, decreasing in size posteriorly. In mature specimens first 2 pairs of intestinal ceca directed anterolaterally, then bending sharply laterally; second 2 pairs either may be directed anterolaterally, then bending laterally or posterolaterally, or may be directed only laterally. In immature specimens all intestinal ceca are directed only laterally. Posterior to last cecum, intestine opens into so-called “folded-organ,” followed by large rectum.

**KNOWN HOSTS:** Syntypes from *Parachaenichthys georgianus* and *Chaenoecephalus aceratus* (as *C. bouvetensis*). Other hosts include *Pseudochaenichthys georgianus* Norman, *Champsocephalus gunnari*, and *Chionodraco* sp.

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**Figure 2.** *Trulliobdella capitis*, digestive system, with intestine displaced laterally to show postceca and fenestrae, dorsal view.

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KNOWN LOCALITIES: Syntypes from South Georgia and Bouvet islands. Other localities include South Sandwich Islands, South Orkney Islands, and South Shetland Islands.

Discussion

Trulliobdella capitis was described from a series of specimens that had been fixed unrelaxed and preserved for 20 yr. Leeches often suffer some deformation in the course of haphazard fixation and long storage, so that many anatomical structures may not be discernible. This is especially true of empty, collapsed alimentary tract ceca, which may be difficult or impossible to detect even in serial sections. In addition, eyes and ocelli are often not discernible, even in recently preserved specimens after clearing, let alone in 20-yr-old specimens. The present redescription elucidates structures omitted from the original description for reasons mentioned above, and more clearly defines the range of variations, thus making the species easier to identify.

The invaginated pouch of the female reproductive system in T. capitis is remarkably similar to the so-called seminal receptacle in Mysisobdella borealis described and figured by Burreson and Allen (1978). In M. borealis the ovisacs, after passing dorsal to the large, invaginated "seminal receptacle," bend ventrally and fuse into a common oviduct that opens through the ventral body wall as the true female gonopore anterior to the invaginated pouch opening. In T. capitis, however, the common oviduct opens into the anterior face of the invaginated pouch and the pouch opening becomes the female gonopore.

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Literature Cited