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A new species of Trichodrilus (Oligochaeta, Lumbriculidae) from Kamchatka

by

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UDC 595.142.34 *Trichodrilus* sp. n. (571.66)

A new species of *Trichodrilus* (Oligochaeta, Lumbriculidae) from Kamchatka

by N.L. Sokol'skaya

(Zoological Museum of Moscow State University)

The Holarctic genus *Trichodrilus* Claparede, 1862 includes 19 European species with a distribution confined mainly to ground and subterranean waters (Cook, 1971a). In North America, members of this genus have been observed three times; in two cases, the determination of the species (*T. allobrogum* Claparede, 1862) is regarded as questionable (Cook, 1971a). Therefore, there has been only one accurate indication of a definite species of *Trichodrilus* in the Nearctic Region (the discovery of *T. allegheniensis* Cook, 1971 in a cavern in southern Tennessee). *Trichodrilus* species had been unknown in the fauna of the USSR until recently (Chekanovskaya, 1962). There have since been indications that some have been found in the USSR. *Trichodrilus* sp. has been noted in the littoral of some small Estonian lakes (Timm, 1970); Popchenko (1972) has apparently discovered a new species of this genus in Karelian waters, and *T. pauper* Finogenova has been described from the Caspian Sea (Finogenova, 1973). The discovery of a new species of *Trichodrilus*

in Kamchatka is interesting as the first indication of a *Trichodrilus* species for Asia, which has linked the European and American parts of the range of this genus.

We believe that it is possible to describe the new species from a single mature specimen, as it is clearly differentiated from the known species of this genus. The holotype (No. 1039) is stored at the Zoological Museum of Moscow University.

Trichodrilus itchaensis Sokolskaja sp. n.
(see Fig.)

The prostomium is dome-shaped. The anterior (preclitellar) segments, beginning with segment III, are biannulate; the anterior ring, which bears bundles of setae, is 5-7 times wider than the posterior ring. The setae are slightly S-shaped, with an acuminate distal end and a distal nodulus. The ventral setae of segment IX are 140 μ long, the location of the nodulus is 12:19; the ventral setae of segments XL-L are 155-164 μ long and 6 μ thick, the location of the nodulus is 15:22 and 14:25. The body wall is quite thick; in segment XIV, the epidermis is 15-17 μ and the longitudinal muscular layer is 21 μ thick. The pharyngeal glands are located in segments IV-VI. The chloragogen cells of the oesophagus begin from segment VI.

The clitellum occupies segments 1/n IX-XIII. There is a pair of male pores on segment X behind the ventral bundles of setae, at midpoint between them and intersegmental furrow X/XI. One pair of spermathecal apertures is found on segment XI behind the ventral bundles of setae. There is a pair of female pores in intersegmental furrow XI/XII on the line of ventral setae, in the form of slit-like apertures. Two pairs of testes are attached to the

anterior dissepiments of segments IX and X. One pair of long ovaries is attached to dissepiment X/XI and occupies the ventral part of segments XI, XII and XIII. There are two pairs of sperm funnels in segments IX and X on dissepiments IX/X and X/XI. The posterior pair of vasa deferentia pass into segment XI where it forms a loop and returns into segment X. The anterior and posterior vasa deferentia are 13-17 μ in diameter. The vasa deferentia enter the wall of the atrial ampulla in its distal part above the initial point of the atrial duct and fall into the atrial cavity at about 1/3 of the length of the ampulla from the distal end. There is a pair of atria in segment X, with an ovoid thick-walled ampulla (length up to 252 μ, maximum diameter 139 μ, width of cavity 29-34 μ[1]) and a comparatively short (84 μ) and wide (70 μ) atrial duct. The atrial ampulla is covered with a thick layer (67 μ) of prostatic glandular cells. The wall of the ampulla consists of an epithelial lining (13 μ thick) and a thick (up to 40-50 μ) muscular layer with a well-defined protoplasmic part made up of myoblasts with nuclei[2]. The ratio of the thickness of the muscular layer of the atrial wall to the maximum diameter of the atrium is 0.29[3]. The atrial duct has thick muscular walls (muscular layer 8.4 μ thick); the diameter of the canal is 25 μ. The duct ends in a conical penis (length 25 μ, diameter of base 21 μ). There is a pair of egg funnels on the anterior surface of dissepiment XI/XII. One pair of spermathecae is found

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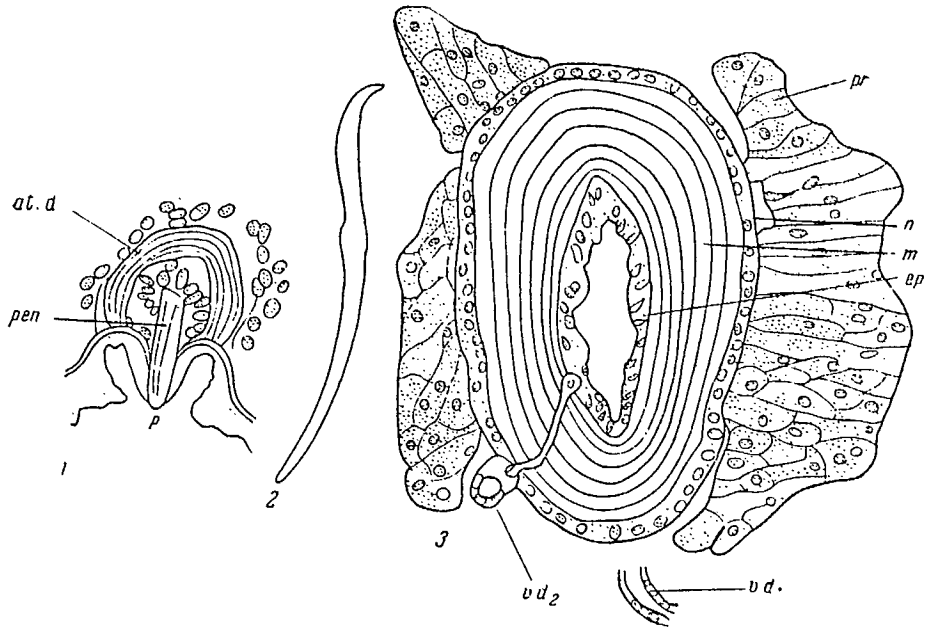
[1] The atria were empty.
[2] A similar layer has been described by Hrabě (1963) in *T. ptujensis*, in which the muscles of the atrial wall are also highly developed.
[3] When describing *Trichodrilus* species, we suggest using this ratio which levels the differences in the thickness of the muscular layer of the atrial wall, differences which are caused by the size variability of the worms and their organs.

in segment XI; they have a long sacciform ampulla up to 134 μ in diameter and a thick-walled duct (length 210 μ, width 67 μ). The unpaired anterior seminal vesicle begins from dissepiment VIII/IX, and is located in segment VIII; the posterior one extends from dissepiment X/XI and ends in segment XIX. The ovisac goes into segment XXI.

Dimensions (holotype): length of body 20 mm, diameter of body in clitellar region 1.0 mm, number of segments 71.



Trichodrilus itchaensis sp.n.

1 - sagittal section in the region of the male pore; 2 - seta of segment L; 3 - atrial ampulla (at.d - atrial duct, ep - epithelial lining of atrial cavity, m - muscular layer, n - protoplasmic part of myoblasts with nuclei, pr - prostatic cells, pen - penis, p - male pore, $v.d_1$ - anterior vas deferens, $v.d_2$ - posterior vas deferens)

The specimen studied had full seminal vesicles and ovisacs; the spermathecae contained spermatozoids, and their walls were highly vacuolized (resorption of spermatozoids). Inadequate fixation of the material did not permit us to detect the nephridia, or ascertain the absence of lateral blood vessels in the posterior segments of the body.

Holotype: Kamchatka, Icha, Poteryannaya side channel, 21 March 1960.

The species was named after the Icha R., the place where it was discovered.

T. itchaensis belongs to the group of *Trichodrilus* species with one pair of spermathecae in segment XI (*T. cernosvitovi* Hrabě, 1937; *T. pragensis* Vejdovsky, 1875;[4] *T. ptujensis* Hrabě, 1963; *T. sketi* Hrabě, 1963; *T. stammeri* Hrabě, 1937; *T. tatrensis* Hrabě, 1937). *T. spelaeus* Moszynski, 1936 (described from a single specimen) also has one pair of spermathecae in segment XI, but it differs from the above-mentioned species in that one of the atrial pores is located on segment IX, and the other one is found on segment X (Moszynski, 1936; Hrabě, 1960). Cook (1971) assigns this species to the category "Species inquirenda". The new species is distinguished from the ones listed above by the shape and structure of the atrium, and by the junction of the atrium and vasa deferentia (the vasa deferentia in *T. itchaensis* fall into the distal part of the atrial ampulla, while those in the other species fall into it apically, subapically or medially). *T. itchaensis* is characterized by a highly developed muscular layer in the wall of the atrial ampulla (up to 50 μ thick) and by some of the biannulation features of the anterior segments (the anterior

[4]The species was recently redescribed by Hrabě (1971).

ring is much wider than the posterior one). Furthermore, the new species is distinguished from the above-mentioned ones by the location of the pharyngeal glands (from *T. černosvitovi*, *T. pragensis*, *T. ptujensis*, *T. sketi*, *T. stammeri*) and chloragogen tissue of the oesophagus (from *T. pragensis* and *T. ptujensis*), the entry of the posterior vasa deferentia into segment XI (from *T. tatrensis*) and by the location of the spermathecal pores (from *T. ptujensis*).

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A NEW SPECIES OF *TRICHODRILUS* (OLIGOCHAETA, LUMBRICULIDAE) FROM KAMCHATKA

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Summary

Trichodrilus itchaensis Sokolskaja sp. n., the first representative of the genus in Asia, is described. The species is characterized by the presence of one pair of spermathecae in XI segment, connection of vasa deferentia with the distal part of the ovoid atrial ampulla, and a very thick (40—50 μ) muscle layer of the atrium wall. The two latter features differ *T. itchaensis* from all other species of *Trichodrilus* with one pair of spermathecae in XI segment.