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Rhyacodrilus svetlovi sp. n. (Oligochaeta, Tubificidae) from water  
bodies of the Chukchi Peninsula

by N. L. Sokol'skaya

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Rhyacodrilus svetlovi sp. n. (Oligochaeta, Tubificidae)from water bodies of the Chukchi Peninsula

by

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Zoological Museum of the Moscow State University

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(1094)\*

The described new species of the genus Rhyacodrilus Bretscher, 1901 was singled out during the processing of oligochaete collections from the Chukchi expedition of the Far Eastern Scientific Centre of the USSR Academy of Sciences conducted in 1972. The materials were sent to us for processing by I. M. Levanidova, to whom we express sincere gratitude.

Rhyacodrilus svetlovi Sokolskaja, sp. n.

(Fig.)

Holotype: Zoological Museum of the Moscow University, No. 1047 (series of sagittal sections). Paratypes: Zoological Museum of the Moscow University, Nos. 1048 and 1049 (series of sagittal sections).

\*The numbers in the right-hand margin are the pages of the Russian text - translator

We have named the species in honour of Pavel Grigoryevich Svetlov, an outstanding embryologist and zoologist, one of the first oligochaete researchers in our country.

Prostomium broad, dome-shaped or spherical-quadrangular; ratio of length to width of base variable (20:22, 23:25, 24:25, 15:23), length from 151 to 265 μ (material fixed with alcohol). Worms with conical prostomium 189-216 μ in length much less common (occurrence ratio 1:5). Anterior segments with secondary annulation (up to 5-6 rings). Epidermis contains glandular granules, giving integuments a cross-striated pattern; parts with granules arranged in the form of fairly wide transverse ribbons coinciding with secondary rings.

Ventral setae of anterior segments 4-6(7) in each bundle, bicuspid, distal tooth much longer and somewhat thinner than proximal one, distal nodules 80-97 μ in length. Number of ventral setae in each bundle drops to 3 behind clitellum and to 2 in the tail portion, distal tooth becomes noticeably shorter (see Fig.). Ventral setae of 10th segment modified to form spermathecal setae, 2-3 in each bundle, 114-154 μ in length (longer than locomotive ones) with a very long distal tooth and short proximal one varying in degree of reduction (see Fig.), nodulus distal (10:25). Penial setae arranged fanwise, have hooked distal end, bicuspid (more frequently) or lacking teeth; length of penial setae 110-123 μ, nodulus distal (8:20). Dorsal bundles of anterior segments each with 2 plumose trichoid setae over 245 μ in length and up to 4 (usually 3) flabellate setae 93-97 μ in length with distal tooth longer and thinner than proximal one. Trichoid setae present only on anterior 13th-15th segments. Dorsal bundles beyond 15th segment with 2-3 bicuspid setae (similar to ventral ones) 84-88 μ in length, but with intermediate denticles.

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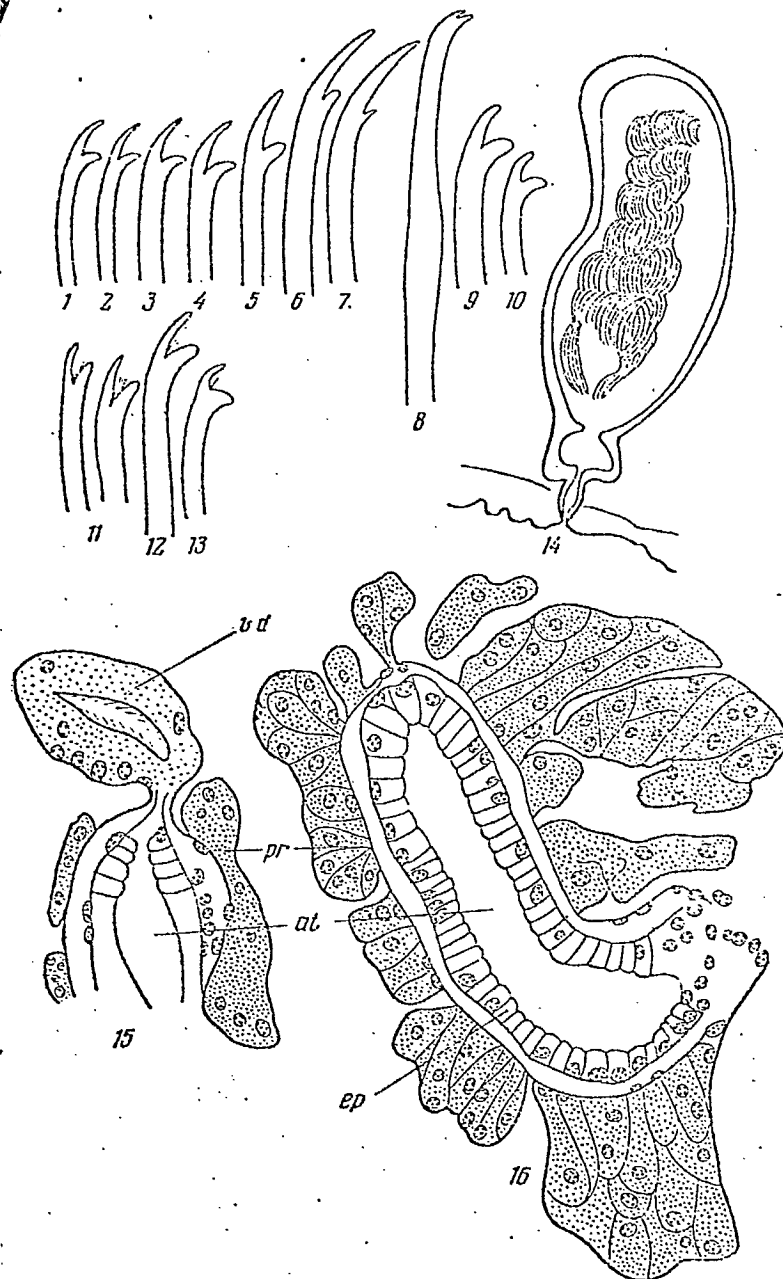


Fig. Rhyacodrilus svetlovi Sokolskaja, sp. n.

1-10 - distal ends of ventral setae (1, 2 - of 2nd segment, 3 - of 3rd segment, 4 - of 4th segment, 5-7 - spermathecal setae, 8 - penial setae, 9 - of 32nd segment, 10 - of tail portion); 11-13 - distal ends of dorsal flabellate setae (11 - of 2nd segment, 12 - of 5th segment, 13 - of setae behind clitellum); 14 - spermatheca; 15 - entrance of gonoduct into atrium; 16 - atrium (at - atrial ampulla; ep - epithelium lining atrial cavity; pr - prostate cells; vd - gonoduct).

Cocoon-like clitellum on 10-12th ( $1/n$  13th) segments. One pair of spermathecal openings on 10th segment at 9/10th intersegmental furrow on the line of ventral setae or slightly more laterad. One pair of male pores on 11th segment laterad of ventral setae in the form of falcate openings. One pair of female pores in 11/12th intersegmental furrow.

Pharynx in 2nd-3rd segments, pharyngeal glands in 3rd-4th segments. Chloragogen tissue of intestine begins in 5th segment. Postseptale of anterior nephridium in 7th segment. Nephridiopores on line of ventral setae in front of corresponding bundle. Presence of contractile "hearts" in sanguiferous system not established due to standard fixation of worms (with alcohol), however lateral vessels of 10th and 11th segments very wide. Diameter of spheroid, granular, nuclear coelomocytes 16-22  $\mu$  when measured on whole worms and 11-13  $\mu$  on series of sections stained with Erlich's hematoxylin.

One pair testes extend from ventral part of anterior intersegmental septum in 10th segment. One pair ovaries in 11th segment extend from ventral part of anterior intersegmental septum. One pair seminal funnels on anterior surface of 10/11th intersegmental septum, one pair ovary funnels on anterior surface of 11/12th intersegmental septum. Gonoducts short (71-98  $\mu$ ), always shorter than atria, straight or with 1-2 flexures. Very narrow and short (18-22  $\mu$ ) proximal part of gonoduct sharply expands, passing into broad main part with diameter of 44-48  $\mu$  and very thick walls (18-22  $\mu$ ). Gonoduct narrow throughout and lined with ciliated epithelium. Gonoducts fall into atria apically. One pair narrow (diameter 31-40  $\mu$ , 35  $\mu$  in holotype) tubular atria with geniculate flexure in 11th segment. Length of atria from 78 to 141  $\mu$  (100  $\mu$  in holotype). Atria covered with thick layer of prostate cells. Atrial ducts somewhat narrowed distally, considerably shorter than atria, with thin walls (5  $\mu$ ) and pores opening in

falciform depressions of clitellum. Pseudopenises lacking. One pair spermathecae in 10th segment with large saccular or cylindrical ampullae 229-441  $\mu$  in length and 92-141  $\mu$  in diameter (in holotype 251 and 105  $\mu$  respectively) and with short (up to 44  $\mu$ ) ducts approximately 35  $\mu$  in cross-section. Seminal vesicles unpaired: anterior one begins at 9/10th intersegmental septum and extends into 9th segment, posterior one stems from 10/11th intersegmental septum and extends up to 15th segment. Ovisac begins at 11/12th intersegmental septum and extends into 19th segment.

Description of reproductive system based on series of sagittal sections of four individuals with filled spermathecae, seminal vesicles and ovisacs.

Body dimensions: length 9-14 mm, diameter in region of clitellum 0.6-0.8 mm. Number of segments 52-65.

Chukchi Peninsula: a stream on the outskirts of Lavrentiy settlement at a distance of 0.15, 1.5 and 1.8 km from the settlement; depth from 0.05 to 0.25 m; current slow, moderate and rapid; bottom mixed (stones and large pebbles; stones, small pebbles and sand; large stones, sand and mud) (a total of 105 specimens, 52 mature ones, collected by I. A. Chereshnev, June 26th and July 27-28, 1972). A stream in the vicinity of the 105th kilometre of the Egvekinot—Iul'tin route 0.5 km beyond the bridge, depth 0.2 m (2 mature specimens, collected by I. A. Chereshnev, July 12, 1972). Iul'tin settlement, Tyoplyy klyuch (1 mature specimen, collected by I. M. Levanidova, June 28, 1972). A total of 108 specimens, 55 of them mature.

Holotype found on Chukchi Peninsula, in a stream 1.6 km from the Lavrentiy settlement at a depth of 0.05 m, current rapid, bottom - large stones and sand (collected by I. A. Chereshnev, July 27, 1972).

Rh. svetlovi is distinguished by the following features: presence of dorsal trichoid setae only on anterior (up to 13th-15th) segments,

presence of spermathecal setae, a short straight or slightly contorted gonoduct entering atrium apically, and a narrow tubular atrium. Distinguished by a structure of male gonoduct (presence of tubular atrium, absence of pseudopenis). Rh. svetlovi similar to the Altaic Rh. altaianus Michaelsen from Lake Sredne-Kochurlinskoye (Central Altai) (Michaelsen, 1935), recently discovered by Hrabě (1974) in collections from Lake Teletskoye. It should be noted that a tubular and cylindrical atrium is rarely encountered in species of Rhyacodrilus, in which the atrial ampulla is usually spherical, ovate or pear-shaped. A cylindrical atrium has been observed in Rh. lepnevae Malevič 1949 emend. Hrabě, 1974 from Lake Teletskoye. However, certain characteristics of this species (absence of coelomocytes and penial setae, lateral position of spermathecal openings) indicate that this species probably belongs to another genus (Hrabě, 1974). Rh. svetlovi is clearly distinguished from Rh. altaianus by the form of the setae (flabellate dorsal ones, ventral and penial), the distribution of trichoid setae on the body and the presence of spermathecal setae in the first species, and by the position of the pharyngeal glands. Spermathecal setae are extremely rare in members of the genus Rhyacodrilus. Apart from being encountered in Rh. svetlovi, they have been observed only in a new species recently found in a stream in the mountainous part of the Crimea by E. B. Dembitsky (1975), which is distinguished from the Chukchi species by a number of morphological characteristics, particularly the structure of the male gonoduct and form of the setae.

The male gonoduct in Rh. svetlovi appears primitive to us. An indication of this is the poorly developed (short and barely contorted) gonoduct which passes into a narrow tubular atrium, the diameter of which does not exceed the cross-section of the gonoduct. Apparently, the gonoduct of the Chukchi species can be considered as one of the lower stages of differentiation of the male efferent system in Rhyacodrilus.

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## SUMMARY:

**RHYACODRILUS SVETLOVI SP. N. (OLIGOCHAETA, TUBIFICIDAE)  
FROM WATER BODIES OF CHUKOT PENINSULA**

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## Summary

*Rh. svetlovi* is characterized by short, almost non-coiled seminal duct, long tubular atrium, sac-like cylindrical ampulla of <sup>spermatheca</sup> ~~estera~~ and presence of specialized spermathecal setae. By the structure of male gonoduct, the species is close to *Rh. altaianus* Michaelsen, but differs from it in the form of dorsal fanshaped, ventral and penial setae and the distribution of hair-like setae over the body. The new species reveals primitive features in the structure of male gonoduct.