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A new species of the genus Trichodrilus (Oligochaeta, Lumbriculidae)  
from water bodies of the Karelian ASSR

by

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UDC 595.142.3 Lumbriculidae, *Trichodrilus*

A new species of the genus *Trichodrilus* (Oligochaeta,  
Lumbriculidae) from water bodies of the Karelian ASSR

by V.I. Popchenko

Petrozavodsk State University

The described species of the genus *Trichodrilus* Claparede, 1862 was discovered in 1963 in Vangozero which is located in southern Karelia in the Lake Onega basin. After examining clarified preparations and serial sections of these worms, as well as data from the literature, we are inclined to establish it as a new species.

*Trichodrilus aporophorus* Popchenko, sp. n.

Holotype: specimen No. 13/1-4, body length 10 mm, diameter in clitellar region 0.3 mm, number of segments 69. Vangozero in the Lake Onega basin (southern Karelia), 62°32' N lat., 34°48' E long., 27 June 1963, depth 1.0 m, homogeneous coarsely detrital dark brown slurry. Stored at the museum of the Department of Zoology and Darwinism of Petrozavodsk University.

This species is found in the coastal region on various silts and silted sands in an abundance equal to 22-26 specimens/m<sup>2</sup>. Mature individuals are observed from the end of June.

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The spermathecal and atrial ampullae contained spermatozoids. Inadequate fixation of the material did not permit us to study the nephridia of this species.

The species name is based on the absence of porophores in the segment bearing the atria.

These are small worms. Specimens fixed in alcohol are light yellow. The prostomium is elongated; its length is more than 1.5 times greater than the width at the base. Secondary annulation is manifest from segment II to segment XV; the anterior ring is wider than the posterior one. The body integuments are smooth (see fig., A). The dorsal and ventral setae are of the same type. Each bundle contains 2 thin (5-6  $\mu$ ) S-shaped, distally acuminate monodont setae 153-204  $\mu$  in length, with a well-developed distal nodulus (see fig., B). The setae on the anterior segments are shorter (153  $\mu$ ) than on the middle (170-172  $\mu$ ) and posterior segments (187-204  $\mu$ ).

The clitellum is muff-shaped, and occupies segments IX-XII. There is a pair of male genital apertures on the furrow <sup>separating</sup> the two rings behind the ventral setae of segment X. There are no porophores. There is a pair of female pores in intersegmental furrow XI/XII, slightly more ventrad of the line of ventral setae. Two pairs of spermathecal pores are found behind the ventral setae of segments XI and XII. The body wall is relatively thick (see table).

Thickness of layers of body wall in mature specimens of *Trichodrilus aporophorus* sp. n.

Layers of body wall	Thickness up to clitellum, $\mu$	Thickness in clitellar region, $\mu$
Epithelium	9.0	50.0
Circular muscles	2.4	3.4
Longitudinal muscles	17.0	27.2

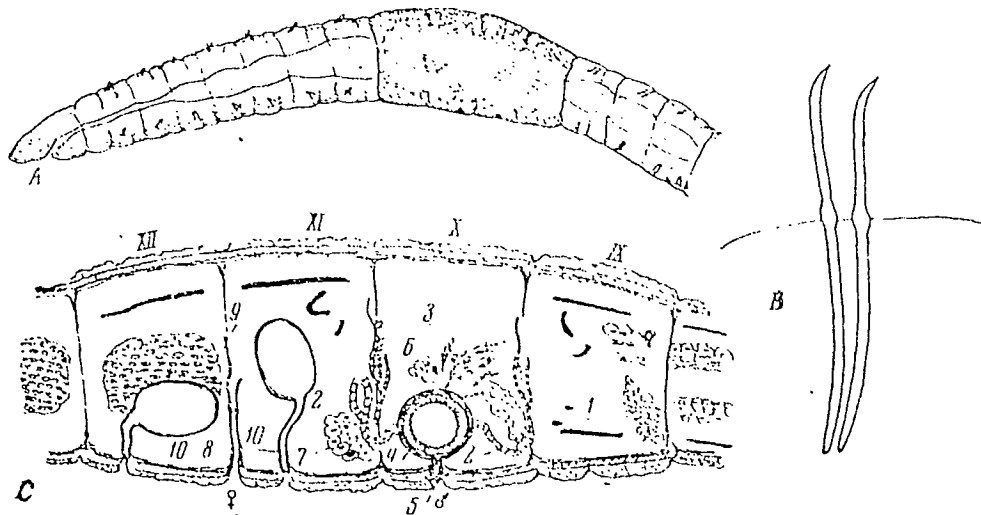
The pharynx goes into segment III and then, gradually expanding, passes into a thin oesophagus which, upon reaching segment VII, gradually passes into a thick gizzard. The oesophageal glands are in segments IV-VII. The walls of the intestine are massive and approximately 32  $\mu$  thick. The chloragogen cells begin from segment VII. Several pairs of blind contractile vessels with secondary branching in the distal part extend from the dorsal vessel in each segment. There is no ventral vessel in the postlarval segments.

There are two pairs of testes on the ventral side of segments IX and X; they are attached to dissepiments VIII/IX and IX/X. They are quite large, 108 x 76  $\mu$ . The sperm funnels on dissepiments IX/X and X/XI open anteriorly. The vasa deferentia are thick (up to 30  $\mu$ ), contorted, and fall into the middle part of the atrium; the posterior pair of vasa deferentia form a loop in segment XI. The anterior vas deferens is shorter than the posterior one, and passes under the testis. There is one pair of atria in the posterior of segment X. They consist of spherical ampullae and short (45  $\mu$ ), thick (34  $\mu$ ) penises which do not protrude beyond the body wall of the worm. The walls of the atrial ampulla are thick (internal epithelium 12-17  $\mu$ , muscles 27-30  $\mu$ ); the width and length of the ampulla are equal (126 x 126  $\mu$ ). The atrium is covered on the outside with a layer of oblong prostatic cells up to 90  $\mu$  in height (see fig.,C).

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There is one pair of ovaries on the ventral side of segment XI, and one pair of egg funnels on dissepiment XI/XII. There are two pairs of spermathecae, in segments XI and XII. They consist of egg-shaped, oblong, thin-walled ampullae (6-7  $\mu$  thick) measuring

119-136 x 204-221  $\mu$ , and well-separated, long (up to 230  $\mu$ ), wide (about 40  $\mu$ ), S-shaped ducts. The location of the spermathecal ampullae in the segments differs, i.e. the anterior spermatheca, which is almost transverse to the segment, is directed posteriorly with its proximal end, while the posterior spermatheca, found along the ventral wall of the body, is directed anteriorly. The seminal vesicles, which begin from the dissepiment, reach segment XIII, and the ovisacs end in segment XVII.



*Trichodrillus aporophorus* sp. n.

A - exterior; B - bundle of setae; C - reproductive system; 1 - testes, 2 - vasa deferentia, 3 - sperm funnels, 4 - atrial ampulla, 5 - penis, 6 - prostatic cells, 7 - ovary, 8 - egg funnel, 9 - spermathecal ampullae, 10 - efferent ducts of spermathecae

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**D i a g n o s i s.** The prostomium is elongated. The anterior segments are biannulate. The setae are monodont, thin, S-shaped, with a well-developed distal nodulus. The ones on the anterior segments are shorter than on the middle and posterior ones. The clitellum is muff-shaped and occupies segments IX-XII. There is

a pair of male pores on the furrow separating the secondary rings behind the ventral setae of segment X. There are no porophores. One pair of female pores is found in intersegmental furrow XI/XII, slightly more ventrad of the line of ventral setae. Two pairs of spermathecal pores are found behind the ventral setae of segments XI and XII. The oesophageal glands are in segments IV-VII. The walls of the intestine are massive. The chloragogen cells cover the intestine from the beginning of segment VII. The blind processes of the dorsal vessel have secondary branches. There is no ventral vessel in the postlarval somites. There are two pairs of testes in segments IX and X, and one pair of ovaries in segment XI. Two pairs of sperm funnels are found on dissepiments IX/X and X/XI in the ventral half of the body. There is a pair of atria in the posterior part of segment X. They consist of spherical ampullae and short thick penises which do not protrude beyond the body walls. Oblong prostatic cells cover the proximal part of the atrium. The walls of the atrial ampulla are thick. There are two pairs of spermathecae, in segments XI and XII. They consist of egg-shaped, oblong, thick-walled ampullae and well-separated, long, wide ducts. There is a pair of egg funnels on dissepiment XI/XII. The body is 8-13 mm long, 0.3-0.4 mm in diameter in the clitellar region, and consists of 62-81 segments.

Comments regarding taxonomy. Of all the currently known oligochaetes of the genus *Trichodrilus* (Finogenova, 1973; Sokol'skaya, 1973; Claparede, 1862; Cook, 1968; Hrabe, 1936, 1937, 1938, 1954, 1960, 1963; Michaelsen, 1933; Timm, 1970; Vejdovsky, 1875, etc.),

our specimens belong to the group of species (*Trichodrilus icenorum* Beddard, *T. hrabei* Cook, *T. moravicus* Hrabe, *T. macroporophorus* Hrabe, *T. tenuis* Hr., etc.) which have a pair of atria in segment X and 2 pairs of spermathecae in segments XI and XII. The one most similar to our species is the British *T. hrabei* (Cook, 1968) which, like our species, has no porophores at the apex of the male genital apertures, oesophageal glands in segments IV-VII, and no longitudinal ventral blood vessels in the postclitellar somites. The new species is distinguished from *T. hrabei* by the spherical shape and large size of the atrial ampulla and the point where the vasa deferentia fall into them, as well as by the presence of a well-defined penis and thickened muscular walls of the atrium. The (141  
much larger size of the setae, the shape of the atrium and the location of the spermathecal ampullae are the major characters distinguishing our specimens from the known species of the genus *Trichodrilus*.

Up to the present time, we know of five occurrences of *Trichodrilus* species on USSR territory, i.e. *Trichodrilus* sp. from mud on the bank of the Oka R. (Lastochkin, 1927), *Trichodrilus* sp. from Estonian lakes (Timm, 1970), *T. macroporophorus* from the southern Bug R. (Grigor'yev, Finogenova, 1967), the new species *T. pauper* Finogenova from the Caspian Sea (Finogenova, 1973) and *T. itchaensis* Sokolskaja from Kamchatka rivers (Sokol'skaya, 1973).

I was greatly assisted in my work by the late Prof. V.V. Izosimov, who examined the drawings of the serial sections, and Prof. S.A. Hrabe from Brno, Czechoslovakia, who contributed his valuable comments regarding the description of the species.

### References

1. Grigor'yev B.F., Finogenova N.P., 1967. Oligochaetes from the lower reaches of the southern Bug R. *Gidrobiol. zhurnal*, 3, 6, pp. 56-65.
2. Lastochkin D.A., 1927. Data on the Oligochaeta limicola fauna of Russia. IV. Oligochaeta limicola of the Oka R. *Raboty Oksk. biol. st.*, 5, 1, pp. 1-36.
3. Sokol'skaya N.L., 1973. A new species of *Trichodrilus* (Oligochaeta, Lumbriculidae) from Kamchatka. *Zool. zh.*, 52, 11, pp. 1714-1716.
4. Finogenova N.P., 1973. New species of Oligochaeta from the Caspian Sea. *Zool. zh.*, 52, 1, pp. 121-124.
5. Claparede E.R., 1862. Recherches sur l'anatomie d'Oligochaetes. *Mem. Soc. Phys. et Hist. Nat.*, Geneva, 16, pp. 217-291.
6. Cook D.G., 1968. The genera of the family Lumbriculidae and genus *Doridrilus* (Annelida, Oligochaeta). *J. Zool.*, London, 156, pp. 273-289.
7. Hrabe S.A., 1936. *Trichodrilus strandi* n. sp., a new representative of the troglodytic Lumbriculidae. *Festschrift zum 60 Geburtstag von Prof. Dr. Embrik Strand*, 1; 1937. Contribution a l'etude du genre *Trichodrilus* (Oligochaeta, Lumbriculidae) et description de deux especes nouvelles. *Bull. du Mus. r. d'hist. nat. de Belgique*, 13, 32, pp. 1-23; 1938. *Trichodrilus moravicus* and *T. claparedei*, new Lumbriculidae. *Zool. Anz.*, 121, pp. 73-85; 1954. *Trichodrilus macroporophorus* n. sp., a new species of Lumbriculidae from Austria. *Zool. Anz.*, 153, pp. 1-7; 1960. Oligochaeta limicola from the collection of Dr. S. Husmann. *Publ. Fac. Sci. Univ. Brno*, 415, pp. 245-277; 1963. Oligochaeta limicola from Slovenia. *Bioloski Vestnik*, 11, Ljubljana, pp. 67-75.
8. Michaelsen W., 1933. Troglodytic Oligochaeta. *Mitt. über Höhlen-Karstforschung.*, Jahrg. 1933, 1, pp. 1-19.
9. Timm T.E., 1970. On the fauna of the Estonian Oligochaeta. *Pedobiologia*, 10, pp. 52-78.
10. Vejdovsky F., 1875. Contributions to the knowledge of the Oligochaeta of Bohemia. *Sb. böhm. Gest. Wis.*, pp. 191-201.

- Григорьев Б. Ф., Финногенова Н. П., 1967. Малоцетниковые черви низовья южного Буга, Гидробиол. ж., 3, 6: 56—65.
- Ласточкин Д. А., 1927. Материалы по фауне *Oligochaeta limicola* России. IV. *Oligochaeta limicola* р. Оки, Работы Окск. биол. ст., 5, 1: 1—36.
- Сокольская Н. Л., 1973. Новый вид *Trichodrilus* (*Oligochaeta*, *Lumbriculidae*) с Камчатки, Зоол. ж., 52, 11: 1714—1716.
- Финногенова Н. П., 1973. Новые виды *Oligochaeta* из Каспийского моря. Зоол. ж., 52, 1: 121—124.
- Claparède E. R., 1862. Recherches sur l'anatomie d'*Oligochaètes*, Mém. Soc. Phys. et Hist. Nat., Genève, 16: 217—291.
- Cook D. G., 1968. The genera of the family Lumbriculidae and genus *Doridrilus* (Annelida, Oligochaeta), J. Zool., Lond., 156: 273—289.
- Hrabě S. A., 1936. *Trichodrilus strandi* n. sp., ein neuer Vertreter der Höhlen-Lumbriculiden. Festschrift zum 60. Geburtstag von Prof. Dr. Embrik Strand, 1.—1937. Contribution à l'étude du genre *Trichodrilus* (*Oligochaeta*, *Lumbriculidae*) et description de deux espèces nouvelles, Bull. du Mus. r. d'hist. nat. de Belgique, 13, 32: 1—23.—1938. *Trichodrilus moravicus* und *claparèdei* — neue Lumbriculiden, Zool. Anz., 121: 73—85.—1954. *Trichodrilus macroporphorus* n. sp.—eine neue Lumbriculiden — Art aus Österreich, Zool. Anz., 153: 1—7.—1960. *Oligochaeta limicola* from the collection of Dr. S. Husmann, Publ. Fac. Sci. Univ. Brno, 415: 245—277.—1963. *Oligochaeta limicola* from Slovenia, Biološki Vestnik, 11, Ljubljana: 67—75.
- Michaelsen W., 1933. Über Höhlen — Oligochaeten. Mitt. über Höhlen-Karstforschung., Jahrg. 1933, H. 1: 1—19.
- Timm T. E., 1970. On the fauna of the Estonia *Oligochaeta*, Pedobiologia, 10: 52—78.
- Vejdovsky F., 1875. Beiträge zur Oligochaeten-fauna Böhmen, Sb. böhm. Gest. Wis.: 191—201.

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A NEW SPECIES OF THE GENUS *TRICHODRILUS* (*OLIGOCHAETA*,  
*LUMBRICULIDAE*) FROM WATER BODIES OF KARELIA

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Summary

*Trichodrilus aporphorus* sp. n. was found in the Vangozero Lake of the Onega Lake Basin (South Karelia). It belongs to the group of *Trichodrilus* species having one pair of atria in X segment and two pairs of spermathecae in XI and XII segments. The characteristic features which distinguish *P. aporphorus* sp. n. from all known species of the genus are the form of atrium, position of spermathecal ampullae and larger bristles.