

Tarmo TIMM

PEIPSIDRILUS PUSILLUS gen. n. sp. n. (**OLIGOCHAETA,**
TUBIFICIDAE)

Material. The present new species will be described on the ground of six mature specimens taken among the ordinary zoobenthos samples from the sublittoral of Lake Peipsi-Pihkva (Pskovsko-Chudskoye), at the border of the Estonian SSR and the Russian SFSR. The sampling stations were: No II₂ (2 specimens 04.06.1975), II₃ (1 specimen 05.06.1975), and II₄ (1 specimen 02.06.1971, and 2 specimens 02.06.1974). The animals were examined as whole mounts in glycerine, three of them also as series of sections (5 μm thick, stained in toto with Ehrlich's haematoxyline).

External characters. Length 6—8 mm, thickness of the genital region up to 0.20—0.35 mm, number of segments 33—48. Prostomium as long as wide or a little shorter, roundly conical. Body without any appendages, smooth. Intersegmental furrows weak. Ordinary setae developed as crotchets with two equal teeth only; nodulus always distal. Length of setae 24—48 μm, thickness 1.5 μm; usually the setae of II are the smallest. There are 2—6 setae per bundle in the anteclytellar segments; their number is maximal in VI, decreasing forwards and backwards. In II, VII and VIII only 2—3 setae per bundle were observed, and only 2 in IX; the postclytellar bundles contain 1—2 setae. In XI the ventral bundles are lacking, replaced by male pores on obtuse papillae. Behind them, in the intersegmental furrow XI/XII, hardly noticeable female pores are situated. In every ventral bundle of X in typical case a spermathecal seta of *Potamothrix* type, 41—53 μm long, is sitting in a stout muscular follicle. Sometimes in place of it a single crotchet with a length of 35 μm and with distal tooth twice longer than the proximal one was observed, or two ordinary crotchets. The oval spermathecal pores lie closely behind and above the spermathecal setae. Clitellum, weakly developed in the examined specimens, is lying on XI—XII.

Internal somatic characters. Body wall thin and transparent, usually measuring 5—6 μm, while 8—15 μm on the clitellum. Besides, the clitellar epithel measures up to 11 μm, while on the dorsal side it is thicker than on the ventral. The thickened dorsal wall of the pharynx in III is covered by numerous small multicellular glands externally. No chromophilous glands on the oesophagus in the subsequent segments. The chloragogen tissue on the oesophagus has its start in V or VI. In VIII the oesophagus gradually turns into a wider and clearer intestine. The dorsal blood vessel lies laterally or even ventrally in some places, especially in the genital segments. Every preclitellar segment contains a pair of transversal vessels, those of II—V form long loops. No "hearts". Nephridia are present in

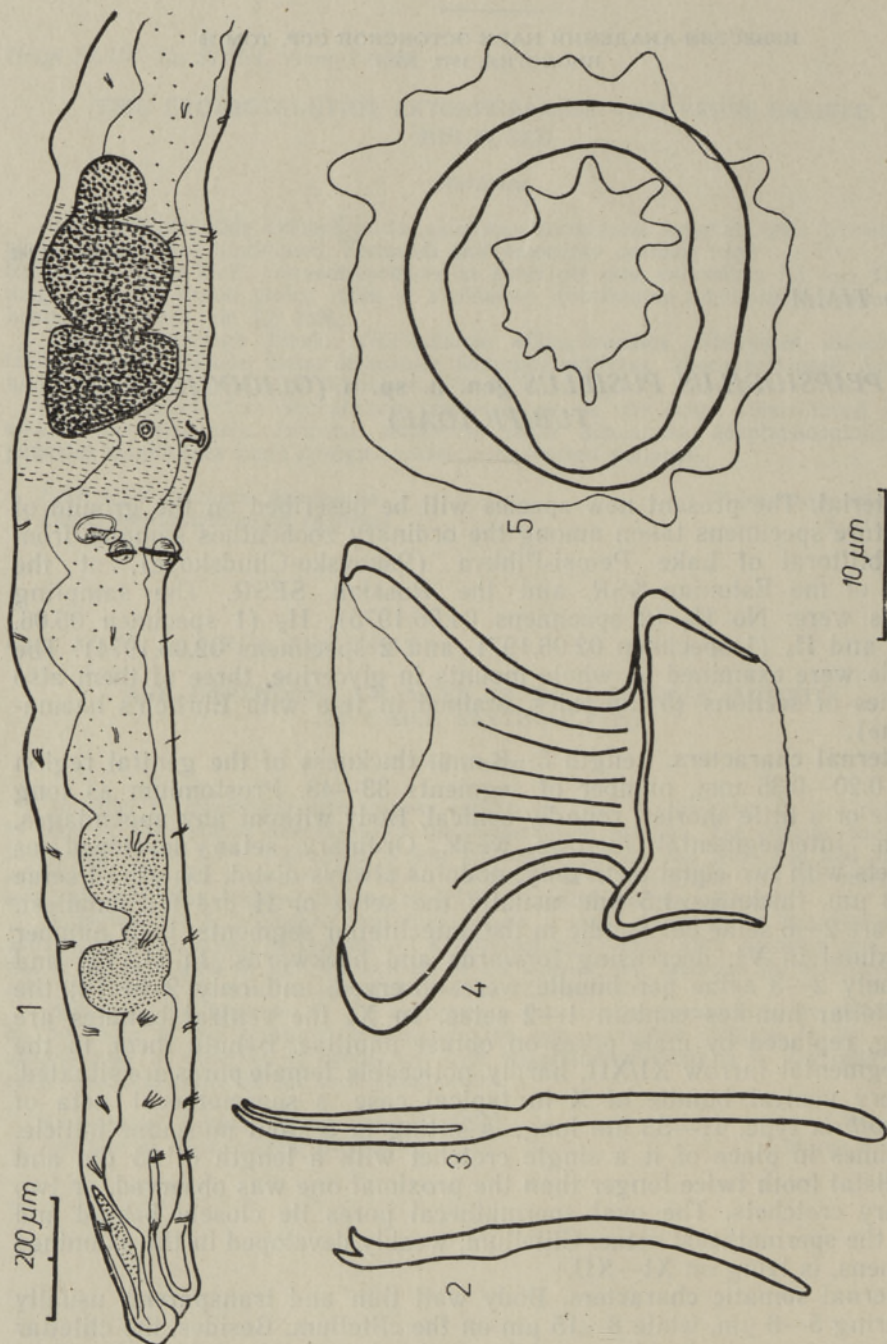


Fig. 1. *Peipsidrilus pusillus* gen. n. sp. n. Whole mount of the holotype: 1 — general view of the anterior part, 2 — ordinary seta, 3 — spermathecal seta, 4 — lateral view of a penial sheath, 5 — apical view of another penial sheath.

VII—IX and further beginning again in XIII. Their postseptale is rather large, consisting of loops of a 11—14 μm wide nephridial canal, collected in an irregular loose bunch, and of an elongated ampulla, up to 20 μm wide, with granular contents. The nephridial duct is only 4 μm wide and opens in the anterior half of the segment on the line of the ventral setae. No large coelomocytes. Some specimens bear single unknown

granular balls (parasites?), 55 μm wide, in the body cavity, mostly in middle segments.

Internal sexual organs are situated in segments typical of the family. Testes lie in X; mature spermatozoa were also observed in the coelomic cavity of this segment. Sperm sacs were not found. Large ovaries in XI, together with developing egg cells. A single ripe, yolk-rich egg fills the unpaired egg sac reaching backwards up to XIII or XIV.

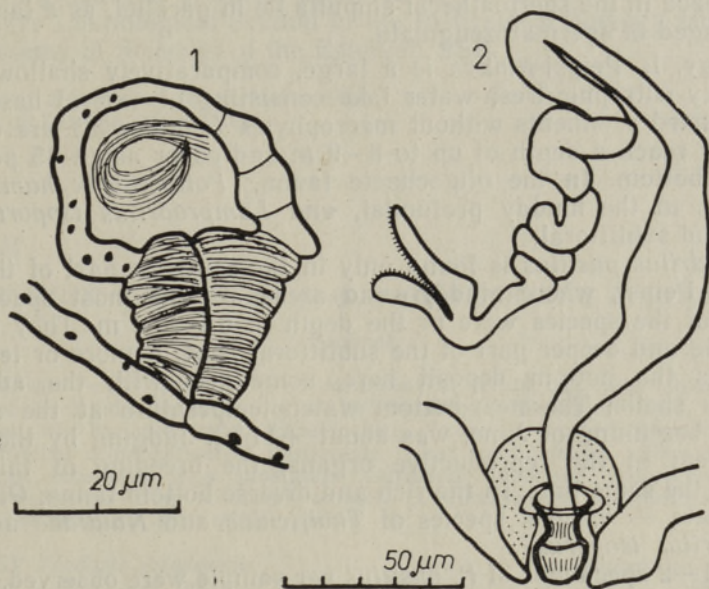


Fig. 2. *Peipsidrilus pusillus* gen. n. sp. n. Reconstructions of internal reproductive organs of paratypes: 1 — spermatheca (from transversal sections), 2 — male ducts (from sagittal sections).

Sperm funnels are attached to the ventral part of dissepiment X/XI. They are thin-walled, narrow, 35 μm long and 20 μm high. Sperm ducts 8—11 μm wide, much longer than atria, forming small loops in XI. They discharge into atria apically. Atria tiny, nestling close to the lateral body wall. They consist of the oval ampulla and of the ejaculatory duct. The ampulla is 17 μm wide and up to 36 μm long, its wall is made up of rather flat clear cells. The ejaculatory duct is longer than the ampulla (about 50 μm) and nearly as wide as the sperm duct (9—10 μm); it discharges into the proximal end of the penis. No prostate glands.

Penes are equipped with characteristic chitinous sheaths, distinctly visible in whole mounts. The penial sheath is mushroom-shaped, 30 μm long and about as wide in its funnel-like proximal end. The distal end ("the mushroom cap") is a little narrowing, while the middle part ("the mushroom stalk") is the slenderest one and bears longitudinal folds. Both edges of the penial sheath are thin and undulated. Penis together with the sheath is situated in a penial sac, surrounded by a stout muscular bulb. The latter partially extends over the body surface and forms a papilla embracing the male pore. This papilla is covered with thin epithel only, unlike the clitellum. In a whole mount, ring-shaped distal aperture of the penial sheath often can be observed in the male pore.

Small egg funnels of irregular shape are attached to the dissepiment XI/XII.

Spermathecae in X. Their globular or slightly misshapen ampulla measures 30—50 μm , the wall being 2—6 μm thick. Well-distinguished spermathecal duct is short (24—30 μm) and thick-walled, with very strait lumen (up to 3 μm). The thickness of the duct is 19—22 μm near the ampulla and somewhat less, 14—17 μm , in its distal part. The duct opens with a slit-form pore on a little papilla near the spermathecal seta. Spermatozoa in the spermathecal ampulla lie in parallel, as a large bunch, not arranged in spermatozeugmata.

Ecology. *L. Peipsi-Pihkva* is a large, comparatively shallow (15 m), moderately eutrophic fresh-water lake consisting of several basins. Wide areas of hard sediments without macrophytes (sublittoral) are characteristic; they reach a depth of up to 8—9 m and cover about 45 per cent of the lake bottom. In the oligochaete fauna, *Potamothrix hammoniensis* dominates in the muddy profundal, and *Lamprodrilus isoporus* in the littoral and sublittoral.

Peipsidrilus pusillus is found only in the southern part of the largest basin, *L. Peipsi*, where muddy sand areas are the most spacious. The habitats of the species were at the depth of 6.5—8.4 m. They belong to the middle and deeper part of the sublittoral zone. A more or less muddy sand was the bottom deposit here, sometimes with the addition of *Dreissena* shells. The near-bottom water temperature at the sampling-time, the beginning of June, was about +11 °C. Judging by the stage of development of the reproductive organs, the breeding of this species occurs at the same time. In the rich and diverse bottom fauna, *Oligochaeta* predominate — various species of *Tubificidae* and *Naididae* as well as *Lamprodrilus isoporus*.

Only 1—2 specimens of *P. pusillus* per sample were observed, and none in most samples gathered at the same stations in 1964—1975. The 6 known specimens of *P. pusillus* constitute a very inconsiderable part of the 25,000 oligochaete worms investigated in the whole lake during this period. Therefore the species must be regarded as a very rare one. Juvenile specimens of *P. pusillus* were not found; perhaps they did not remain on the sieve due to their small dimensions, but some might also be confused with the young of *Limnodrilus hoffmeisteri*, abundant in this zone.

Systematic position. The combination of characters occurring in this species (lacking of prostate cells, spermatozeugmata, and large coelomocytes) do not suit the diagnosis of any known genus or even subfamily of *Tubificidae*. Some external similarity to *Isochaetides* species can be noted, especially to *I. suspectus* Sokolskaja, also having both spermathecal setae and penial sheaths. The general form of male ducts is also fitting. However, the lack of prostate glands and, especially, spermatozeugmata, places the species outside the genus *Isochaetides* and the whole subfamily *Tubificinae*. Therefore, the present new species must be interpreted as a representative of a new genus of *Tubificidae*, not belonging to any subfamily described so far.

Diagnosis of *Peipsidrilus* gen. n. Ordinary setae bifid. Spermathecal setae present. No large coelomocytes. Postseptale of the nephridia not glandular. Genital ducts and spermathecae paired. Sperm duct longer than the atrium. Atrium consists of the ampulla and the ejaculatory duct, without any prostate glands. Penis in a penial sac; there is a chitinous penial sheath of characteristic shape. Spermatheca consists of a distinguished ampulla and duct; spermatozoa in the ampulla not arranged as spermatozeugmata. The only species: *P. pusillus* sp. n.

Etymology. The genus name *Peipsidrilus* is derived from the Estonian lake name "Peipsi" (the largest, northern basin of L. Peipsi-Pihkva). The epithet *pusillus* indicates to the small dimensions of the worm.

Types. Holotype: one specimen in a whole mount, 8 mm long, 48 segments, collected at the station No II₂, 04.06.1975. 4 paratypes: another, smaller specimen in the same whole mount; 2 series of transversal sections, the worms collected at II₄, 02.06.1974; one series of sagittal sections of genital segments of a worm, collected at II₃, 05.06.1975. Deposited at the Võrtsjärv Limnological Station of the Institute of Zoology and Botany of the Academy of Sciences of the Estonian SSR.

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PEIPSIDRILUS PUSILLUS gen. n. sp. n. (*OLIGOCHAETA, TUBIFICIDAE*)

Resümee

Kirjeldatakse Peipsi järve lõunaosa sublitoraalist leitud uut mudatuplaste liiki ja monotüüpilist perekonda. Sellele ussile on iseloomulikud väikesed mõõtmised, kahehambalised lokomotoorsed harjased, spermatekaalharjaste olemasolu, suurte tsöloomotsüütide puudumine, nefriidide mittenäärmeline postseptale, pikad seemnejuhad, väikesed ampullist ja viimajuhast koosnevad ilma prostatata aatriumid, lühikesed iseloomuliku kujuga kitiinsed peniaaltorud ning eristunud ampulli ja viimajuhaga seemnehoidlad, milles seemneiidid ei moodusta spermatoseugmasid.

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Резюме

Описываются новый вид и монотипический род тубифицид из sublitorали южной части Чудского озера. Кроме небольших размеров, этот червь характеризуется двузубчатыми щетинками, наличием spermateкальных щетинок, отсутствием крупных цöломöцитов, нежелезистым постсептале нефридиев, длинными семяпроводами, небольшими атриями с ампулой и протоком (но без простаты), короткими хитоновыми пениальными трубками своеобразной формы, семеприемниками из обособленных протока и ампулы, в которой spermatoзоиды не образуют spermatoзейгм.

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