CANADIAN TRANSLATION OF FISHERIES AND AQUATIC SCIENCES

No. 4968

A revision of the genera Peipsidrilus Timm, 1977 and Umbadrilus Timm, 1978 (Tubificidae, Oligochaeta)

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Original Title: (Unknown)

From: Akad. Nauk SSSR. Limnologicheskie Issled. na Zalive Onezhskogo Ozera Bol'shoye Onego: Sbornik Nauchnykh Trudov, p. 199-203, 1982

Translated by the Translation Bureau
Multilingual Services Division
Department of the Secretary of State of Canada

Department of Fisheries and Oceans
Institute of Oceans Sciences
Sidney, B.C.

1983

6 **pages typescript**

Secretary of State / Secrétariat d'État

MULTILINGUAL SERVICES DIVISION – DIVISION DES SERVICES MULTILINGUES

TRANSLATION BUREAU / BUREAU DES TRADUCTIONS

LIBRARY IDENTIFICATION – FICHE SIGNALÉTIQUE

CTFAS 4968

Translated from - Traduction de	Into - En
Russian	English

Author - Auteur
N.P. Finogenova

Title in English or French - Titre anglais ou français
Academy of Sciences USSR. Zoological Institute. Limnological research at Bol'shoye Onego Bay, Lake Onega: Collection of scientific works

Title in foreign language (Transliterate foreign characters)
Titre en langue étrangère (Transcrire en caractères romains)
Akademiya Nauk SSSR. Zoologicheskii institute. Limnologicheskie issledovaniya na zalive Onezhskogo ozera Bol'shoye Onego: Sbornik nauchnykh trudov

Reference in foreign language (Name of book or publication) in full, transliterate foreign characters.
Référence en langue étrangère (Nom du livre ou publication), au complet, transcrire en caractères romains.

Reference in English or French - Référence en anglais ou français

Publication info				
Publisher - Éditeur	DATE OF PUBLICATION / DATE DE PUBLICATION			Page Numbers in original / Numéros des pages dans l'original
	Year / Année	Volume	Issue No. / Numéro	199-203
Place of Publication / Lieu de publication: Leningrad [USSR]	1982			Number of typed pages / Nombre de pages dactylographiées: 6

Requesting Department / Ministère-Client: DFO

Translation Bureau No. / Notre dossier nº: 155922

Branch or Division / Direction ou Division: SIPB

Translation (Initials) / Traducteur (Initiales): MW

Person requesting / Demandé par: A.T. Reid

Your Number / Votre dossier nº:

Date of Request / Date de la demande: 10 March 1983

MAY 13 1983

UNEDITED TRANSLATION
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TRADUCTION NON REVISÉE
Information seulement

SEC 5-111 (81/01)

Secretary of State | Secrétariat d'État

MULTILINGUAL SERVICES DIVISION – DIVISION DES SERVICES MULTILINGUES

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Client's No.–N° du client	Department – Ministère	Division/Branch – Division/Direction	City – Ville
	DFO	SIPB	Ottawa
Bureau No.–N° du bureau	**Language – Langue**	**Translator (Initials) – Traducteur (Initiales)**	
1155922	Russian	MW	MAY 13 1983

Source: Akademiya Nauk SSSR (Academy of Sciences USSR). Zoologicheskii institut (Zoological Institute). Limnologicheskie issledovaniya na zalive Onezhskogo ozera Bol'shoye Onego: Sbornik nauchnykh trudov (Limnological research at Bol'shoye Onego Bay, Lake Onega: Collection of scientific works), 1982, Leningrad, pp 199-203 [USSR].

A REVISION OF THE GENERA PEIPSIDRILUS TIMM, 1977 AND UMBADRILUS TIMM, 1978 (TUBIFICIDAE, OLIGOCHAETA)

by

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In 1977 Timm described the new species and genus Peipsidrilus /199
pusillus from Pskov-Chudskoye Lake [Lake Peipus], and in 1978 he also described (in an article co-authored with Popchenko) the new species and genus Umbadrilus saamicus from bodies of water on the Kola Peninsula.

In the innermost portion [head] of Gorskaya Inlet and the south of Lake Onega we discovered sexually mature worms, a study of whose morphology enabled us, after changes in the diagnosis of the genus Peipsidrilus, to merge both genera into one, leaving the designation Peipsidrilus as the earlier one and abolishing Umbadrilus. The change in the diagnosis of the genus Peipsidrilus involves the structure of the atrium, specifically the presence or absence of a prostate gland. In the diagnosis of this genus given by Timm, it is noted that the atrium is without a prostate gland. An

* Numbers in the right-hand margin refer to the corresponding page in the Russian text.--Translator.

analysis, however, of a series of anatomical sections of the Onega specimens and of the type specimen from Pskov-Chudskoye Lake showed that a small prostate gland (the size of the ampulla of the atrium in the Onega specimens and quite tiny in the Pskov-Chudskoye Lake specimen) is present and opens /200 into the central portion of the ampulla of the atrium (Figure 1).

Рис. 1. P. pusillus, срез в области впадения простатической железы в атрий.

1 — простатическая железа, *2* — атрий

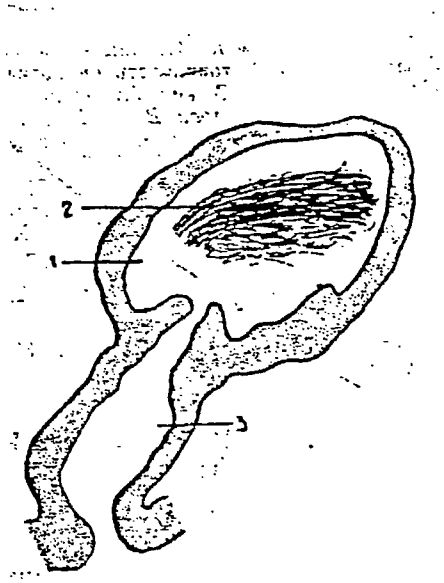

Рис. 2. P. pusillus, семяприемник (реконструкция).

1 — ампула, *2* — сперми, *3* — выводной проток

Figure 1: P. pusillus, section in the region of the opening of the prostate gland into the atrium.
1. prostate gland
2. atrium

Figure 2: P. pusillus, spermatheca (reconstruction)
1. ampulla
2. spermatozoa
3. efferent duct

The Onega specimens of P. pusillus differ insignificantly from the Pskov-Chudskoye specimen in the size of their reproductive apparatus and in the shape of the efferent duct of the spermatheca. In the former the ampulla of the atrium is 25 μ wide and 50 μ long, and the efferent portion of the atrium is 17.5 μ wide, while the latter exhibits corresponding

sizes of 17 μ, 36 μ, and 9-10 μ. The efferent duct of the spermatheca of the Onega worms has a wide (7.5-20 μ; Figure 2) lumen; that of the Pskov-Chudskoye specimen a very narrow (3 μ) lumen. It is likely that the Pskov-Chudskoye material was not fully mature. Moreover, double-segmentation of some anterior segments is observed only in the Onega specimens, but this feature depends to a great extent on the fixation of the material. Both the Onega and the Pskov-Chudskoye specimens have a penile chitinoid lining of characteristic shape with a folded surface (Figures 3 and 4). /201 We shall note that Timm was not entirely accurate either in describing the ordinary setae of P. pusillus or in illustrating the spermathecal seta. Timm points out that the teeth of the setae are even. In fact, in both the Onega and Pskov-Chudskoye specimens (Timm was kind enough to present me with a wholemount and a series of sections of the type specimen from Pskov-Chudskoye Lake) the teeth of setae II and the postclitellar segments are even, while in the other segments the upper tooth is longer than the lower. The spermathecal seta of this species is similar in type to that of the genus Potamothrix, about which Timm writes, but which he depicts, not quite accurately, as biramous.

Material from Lake Onega: Gorskaya Inlet (station 19), depth 4-6 m, soil of grey clay with brown silt deposition + sand and ore:

(a) 3 June 1978, 5 sexually semi-mature and 5 juvenile specimens;

(b) 16 June 1979, 6 sexually mature and 2 juvenile specimens;

(c) 25 June 1979, 5 sexually mature and 2 juvenile specimens;

Рис. 3. P. pusillus, срез в области пениса.
1 — хитиноидная обкладка пениса

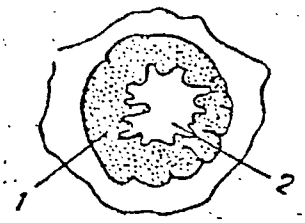

Рис. 4. P. pusillus, терминальная часть мужского гонодукта.
1 — хитиноидная обкладка пениса, *2* — мужское половое отверстие

Figure 3: P. pusillus, section from the area of the penis
1. chitinoid lining of the penis

Figure 4: P. pusillus, terminal portion of the male gonoduct
1. chitinoid lining of the penis
2. male reproductive aperture

(d) 14 July 1979, 1 sexually mature specimen, southern Lake Onega (station 8);

(e) 20 July 1979, 1 sexually mature specimen.

Comparing the diagnoses of the genus Peipsidrilus and the genus Umbadrilus, we can note correspondence in a series of taxonomically important features, which permits them to be united in a single genus. The topography of the reproductive apparatus is common to these genera, and it is common knowledge that the systematics of tubificid worms is chiefly constructed on the peculiarities of the organization of the male gonoducts. Another feature common to Peipsidrilus and Umbadrilus and also systematically important is the absence of large cavity-type bodies [corpuscles] and spermatozeugmata. Differences between these genera are less serious and

can be considered at the species level. Thus, only bicuspid setae are characteristics of Peipsidrilus, while in segment X in abdominal bundles they are replaced by modified spermathecal setae. Umbadrilus has capillary and fan-shaped setae in the dorsal bundles; special copulatory setae have not been noted. Moreover, a forward shift of the reproductive system is observed in Umbadrilus as an individual variation: the chloragogenic tissue begins with segment VIII (with segment VI in Peipsidrilus), while the muscular tissue is strongly developed.

As for the shape of the setae, it is sometimes ranked as a generic feature. On the other hand, however, well-defined genera (Potamothrix, Aulodrilus), in which the type of setae is considered a species feature, can be found among the tubificid worms. Furthermore, subspecies are known that have setae of a varying type (for example, Tubifex tubifex tubifex and T. tubifex blanchardi, Psammoryctides deserticola deserticola, and P. deserticola lastočkini). Consequently, this feature, unsupported by other material features, does not inspire confidence as a generic feature. The shift of the male reproductive system (a feature not necessarily occurring) is also known among species in other genera of tubificid worms, for example, among species of the genus Potamothrix. The character of muscular tissue development cannot, however, serve as a generic feature due to the lack of comparative material on other genera, since investigators describing species of tubificid worms usually omit the structure of the muscular system. Consequently, the significance of this feature cannot be clarified at the present time. /203

Based on the foregoing, we recommend the abolishment of the genus Umbadrilus, leaving only the genus Peipsidrilus with the two species P. pusillus Timm and P. saamicus (Timm).

Diagnosis of the genus Peipsidrilus:

The setae are of various types; sometimes there are spermathecal setae. There are no large coelomocytes. The vasa deferentia are much (2-3 times) longer than the atria. The atria are not large and consist of an indistinct ampulla and a relatively short efferent part. Each atrium has one compact prostate gland with a narrow stalk. Penes are located in large penile bursae included in a thin chitinoid lining or pipe. Spermathecae may sometimes be absent. There are no spermatozeugmata. A forward shift of the reproductive system is possible as an individual variation.

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