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ГЛАСНИК ОДЈЕЉЕЊА ПРИРОДНИХ НАУКА, 5, 1986.

ЧЕРНОГОРСКАЈА АКАДЕМИЈА НАУК И ИСКУССТВ
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**THREE NEW SPECIES OF LUMBRICULIDS WORMS OF GENERA
TRICHODRILUS CLAPARÈDE (*OLIGOCHAETA*-
LUMBRICULIDAE) FROM YUGOSLAVIA**

TRI NOVE VRSTE LUMBRICULIDNIH CRVA IZ RODA
TRICHODRILUS CLAPARÈDE (*OLIGOCHAETA-LUMBRICULIDAE*)
IZ JUGOSLAVIJE

Abstract

The author studies a small collection of *Oligochaeta* from the hyporheic waters of some rivers of Yugoslavia. There have been found and described three new species from the genus *Trichodrilus* (family *Lumbriculidae*): *T. macedonicus* n.sp., *T. metohiensis* n.sp. and *T. drimi* n.sp. The key is also given for the determination of all known species from the genus *Trichodrilus* of Yugoslavia.

Izvod

Autorica je proučila malu kolekciju *Oligochaeta* iz hiporeičnih voda nekih reka Jugoslavije. Otkrivene su i opisane tri nove vrste iz roda *Trichodrilus* (familija *Lumbriculidae*): *T. macedonicus* n.sp., *T. metohiensis* n.sp. i *T. drimi* n.sp. Dat je i ključ za determinaciju svih poznatih vrsta roda *Trichodrilus* iz Jugoslavije.

INTRODUCTION

As known from previous investigations, the *Lumbriculidae* family is slightly represented in the waters of Yugoslavia. It should be probably necessary to direct the investigations to the hyporheic environment in order to get to know better about the structure of the lumbricoid fauna.

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It was studied a small collection of Oligochaeta, that dr Gordan Karaman had collected during the investigation of the hyporheic fauna in the waters of the south-east Yugoslavia. On the basis of the collected material, the conclusion has been drawn that the species of the *Tubificidae* family are living in the overground waters while the representatives of *Lumbriculidae* are mainly met in the hyporheic environment. In the enclosed material three new species of the genus *Trichodrilus* Claparède were identified, the description of which is given with the key for the determination of the known species of this genus in Yugoslavia.

Acknowledgments: I am indebted to Gordan S. Karaman from the Biological Institute in Titograd (Yugoslavia) for the loan of material used in this study.

Taxonomic part:

Trichodrilus macedonicus n.sp.

Fig. 1—3

Description: The body length 16—24 mm, the width of the front part 0,36—0,48 mm. The number of body segments varies from 54 to 76. The prostomium is round, wide and short, its length is smaller than the width on the basis of the peristome. Only the first eight segments and the posterior body segments have the secondary annulation which is clearly expressed. The anterior segments are divided into two annuli the front one being 4 times shorter than the last one. The segments of the posterior body part are divided into several annuli of equal length. The setae are very short, sigmoidal and simply pointed. Their length is 62—125 μm . On the front (II—X) and posterior segments the setae are slightly shorter (62—75 μm). Clitellum is not developed.

The pharyngeal glands extend to the VI segment, the chloragogene cells begin in the VI segment. Blind lateral blood vessels absent. Two pair testes in the IX and X segments. Vasa deferentia joins the atrium apically. A pair of atria in the X segment, ovoid shaped, 148 μm long, 92 μm wide with the 14 μm thick muscle layer. The prostate cells form a 111—148 μm thick layer which covers the whole atrium. They are grouped into 5—6 clearly separated groups. There is a lot of sperms in the central cavity of the atrium. The openings of the atrium are located on the X segment next to the ventral setae. Ovaries are in the XI segment. A pair of spermathecae in the XII segment with 296 μm long tubular ampullae, 93—125 μm diameter, and discrete 74 μm long duct. The spermathecae don't pass into the adjacent segment; they open in the XII segment next to the ventral setae. There is a lot of sperms in the spermathecae; a small quantity of sperms is found in the atrium cavity.

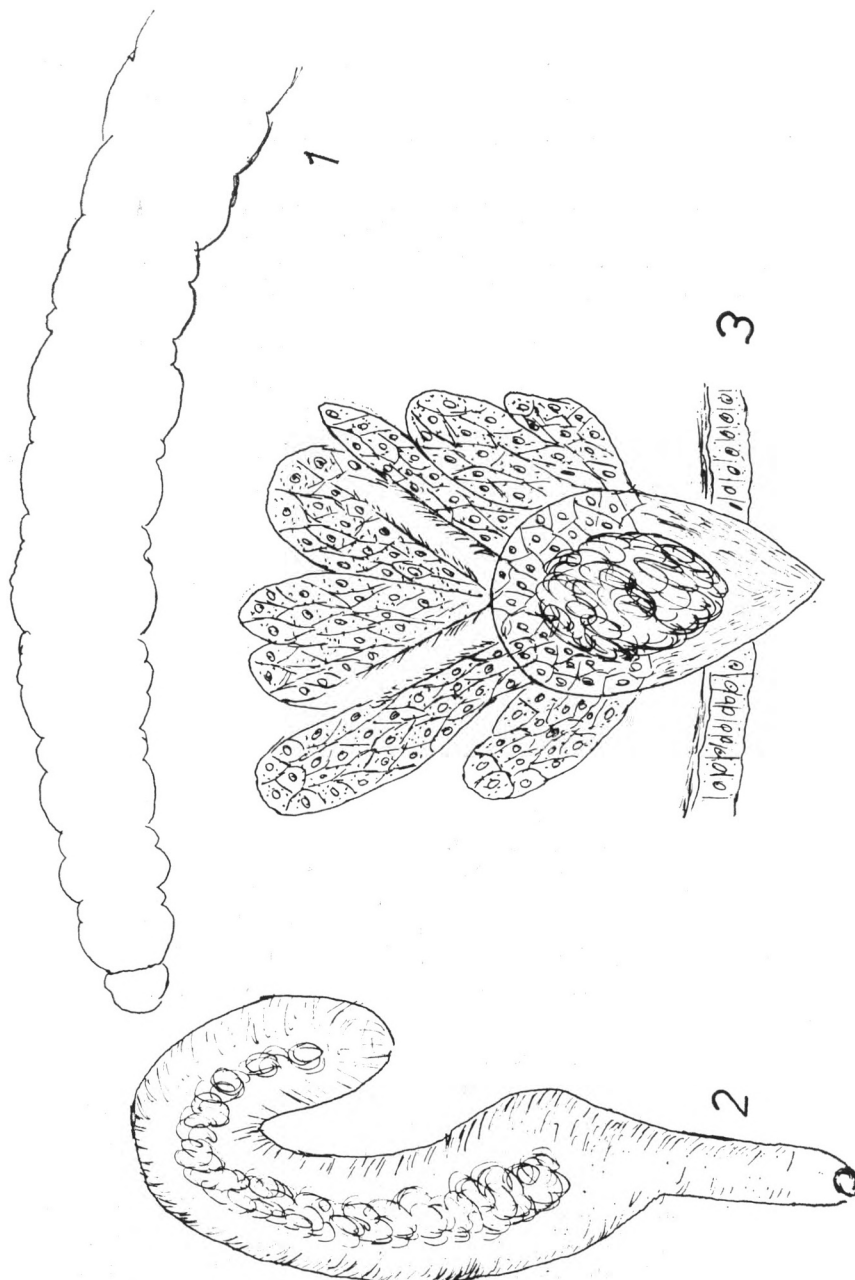


Fig. I. *Trichodrilus macedonicus*, n. sp., Bošava river: 1 = anterior part of body; 2 = spermatheca; 3 = artium with prostata glands.

Sl. I. *Trichodrilus macedonicus*, n. sp., Bošava rijeka: 1 = prednji dio tijela; 2 = spermateka; 3 = artium sa prostatnim žljezdama.

Material examined: Four mature specimens from the hyporheic water of the Bošava river near Demir-Kapija, on the 16 Sept., 1974., the Vardar system of Macedonia (leg. Gordan Karaman).

Holotype and paratypes are deposited in autor's collection in Kragujevac.

Discussion: This new species is closely related to the *T. sketi*, species described by Hrabec in Slovenia (Dovjež, the Sava river near Ljubljana). The main characteristics which differentiate these two species are given in the following table:

	<i>T. sketi</i>	<i>T. macedonicus</i>
body length	32 mm	16—24
number of segments	96	76
clitellum	present	absent
setae length	177—200 μm	62—125 μm
spermathecae	XI	XII
distribution	Slovenia, Sava river Danube drainage	Macedonia, Vardar river Aegean drainage

Trichodrilus metohiensis n.sp.

Fig. 4—6

Description: The body length 36 mm, the width on the clitellum 0,9 mm, 64 body segments. The prostomium is shorter than it is broad at the peristome. The secondary annuli are present from the III to the XIV segments. Each segment is divided into two annuli the first one being three times broader than the last one. The setae are moderately long, sigmoidal and simply pointed. All body setae are of equal length (125—238 μm). Clitellum developed on IX to XII segment.

The pharyngeal glands extend to the VIII segment. The chloragogen cells begin in the VII segment. The posterior lateral blood vessels absent. The testes in the VIII and IX segments. Vasa deferentia joins the atrium apically. One pair of atria in the IX, ovoid shaped, 332 μm long, the greatest with amounts to 203 μm with a 37 μm thick muscle layer. The prostate cells are well developed and grouped into 5—6 visible groups; they form a 111—166 μm thick layer covering the whole atrium. Male pores paired on the IX segment. A pair of spermathecae pores on the X segment next to the ventral setae. A pair of spermathecae on the X segment consist of 1939 μm long tubular ampulla the diameter of which amounts to 606 μm . The ampulle fill the X and XI segments, the outlet duct is narrow and 181 μm long.

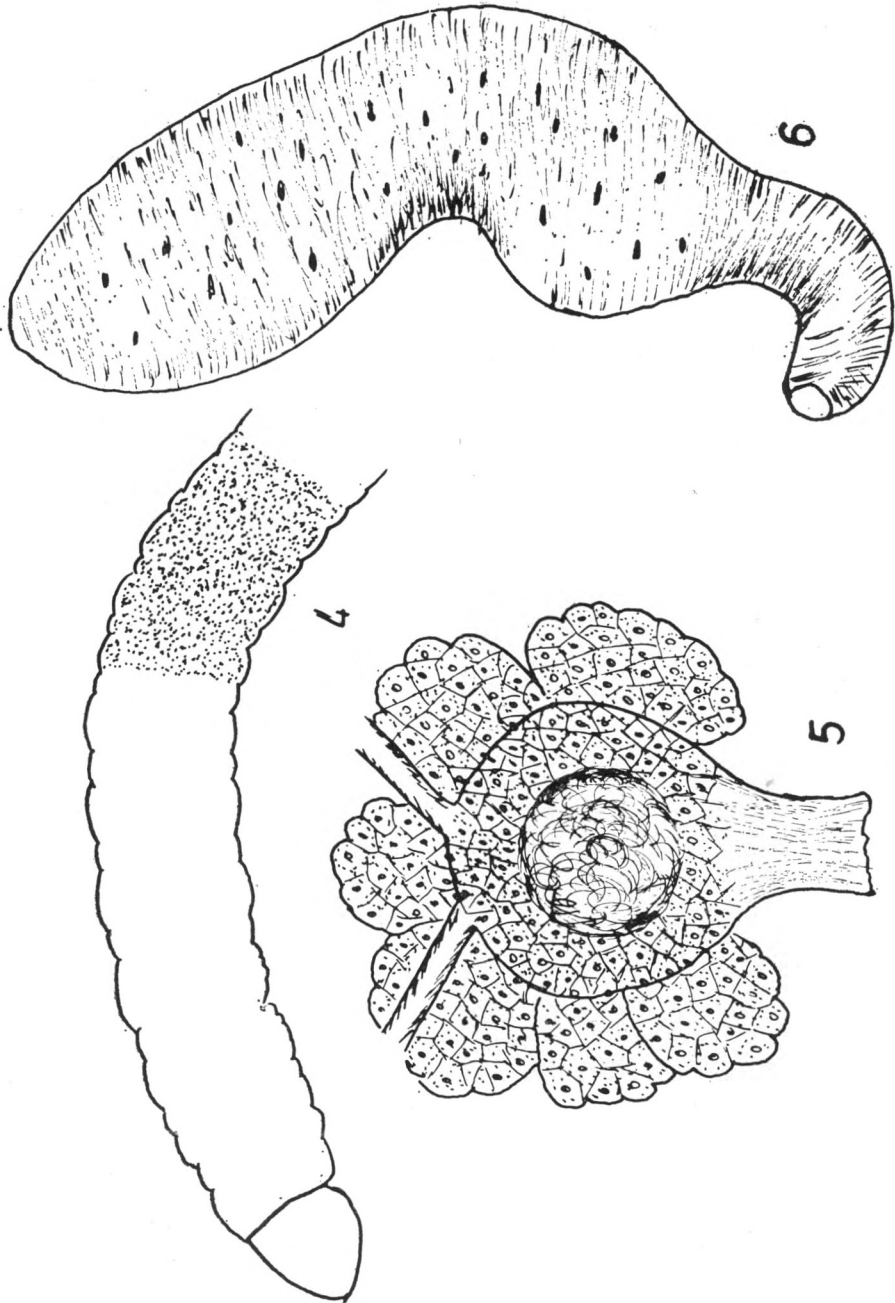


Fig. II. *Trichodrilus metohiensis*, n.sp., Beli Drim river: 4 = anterior part of body; 5 = atrium with prostata glands; 6 = spermatheca.

Sl. II. *Trichodrilus metohiensis*, n.sp., Beli Drim rijeka: 4 = prednji dio tijela; 5 = artium sa prostatnim žljezdama; 6 = spermateka.

Material examined: Four mature specimens, accompanied by *T. drimi*, from the hyporheic water of the Beli Drim river near the village of Radovac, Serbia, 18. Nov. 1978., (leg. Gordan Karaman).

Holotype and paratype are deposited in autor's collection in Kragujevac.

Discussion: This species is closely related to the species *T. strandi* and *T. ptujensis*. Only with regard to the position of the sexual organs: testes, atria and spermathecae which are moved forward for one segment, *T. metohiensis* is similar to the species *T. strandi*. But it differs from later in some details of the structure of sexual organs, presence of clitellum, shape of setae and secondary annulation. The differences between these three species are given in the following table:

	<i>T. ptujensis</i>	<i>T. metohiensis</i>	<i>T. strandi</i>
body length	18,5 mm	36 mm	?
number of segments	76	64	?
secondary annuli	III—XIV	III—XIV	from VII
setae length	156—180 μ m	125—280 μ m	?
clitellum	X—XIII	IX—XII	absent
male pores	X	IX	IX
spermathecae pores	XI	X	X
testes in segm.	IX and X	VIII and IX	VIII and IX
atrium muscle layer	26 μ m	37 μ m	8 μ m
penis	present	absent	present

Trichodrilus drimi n.sp.

Fig. 7—9

Description: The body length 32 mm, the width 0,25—0,5 mm, 74 body segments. The prostomium is shorter than it is broad at the peristome. The secondary annuli present on the III to the VII segment, consisting of 2 annuli the first one being three times broader than the second one. Dorsal and ventral setae are of equal length, simply pointed and moderately sigmoidal. The length of the setae of the front body portion is 137—175 μ m and that of the posterior part is 112—162 μ m. Clitellum not developed. Male pores paired on the X segment next to the ventral setae. One pair of spermathecae pores on the XI segment nex to the ventral setae.

The pharyngeal glands extend to the VII segment. The chloragogen cells begin in the VI segment. Posterior lateral blood vessels absent. Testes in the IX and X segments. Vasa deferentia joins the atrium apically. The atria are spherical 333 μm long, 285 μm wide a 62 μm thick muscle layer; 125 μm long ducts, maximum diameter amounts to 50 μm . The atria cavity is 156 μm long. The prostate cells are well developed and grouped into 5–6 visible groups; they form a 100–165 μm thick layer covering the whole atrium. Ovaries in the XI segment. One pair of spermathecae in the XI segment, bottle-shaped, 225 μm long, 137 μm diameter (the broadest part).

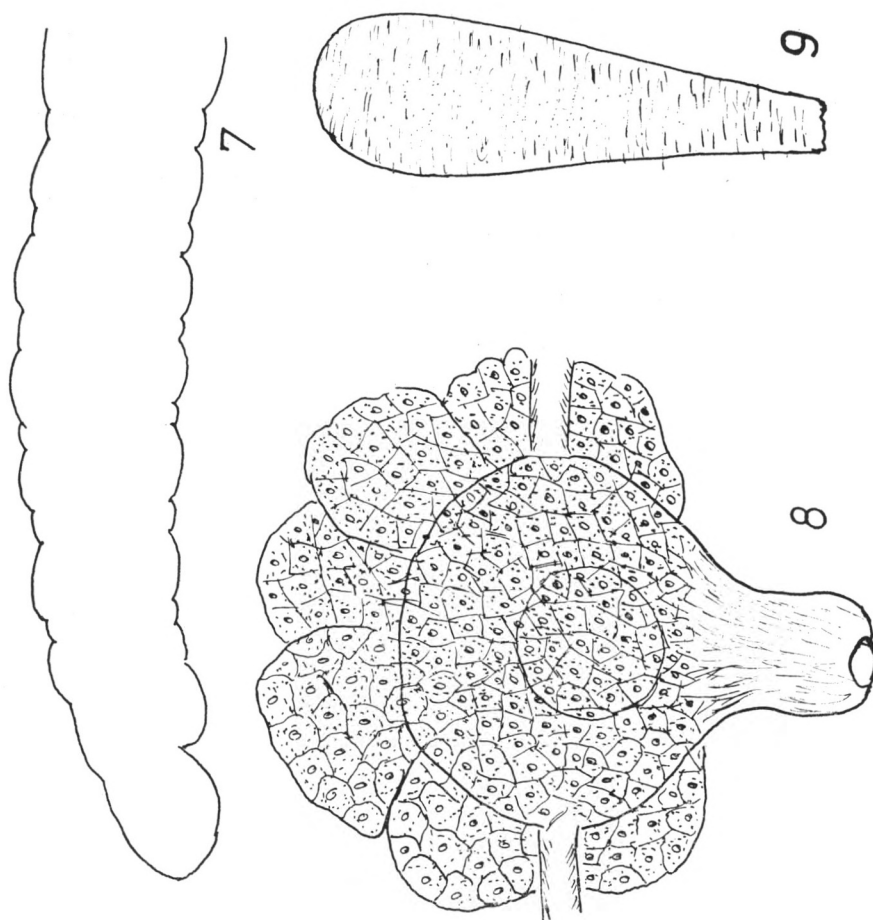


Fig. III. *Trichodrilus drimi*, n. sp., Beli Drim river: 7 = anterior part of body; 8 = atrium with prostata glands; 9 = spermatheca.

Sl. III. *Trichodrilus drimi*, n. sp., Beli Drim rijeka: 7 = prednji dio tijela; 8 = artium sa prostatnim žljezdama; 9 = spermateka.

Material examined: One mature specimen from the hyporheic water of the Beli Drim river near the village of Radovac, Serbia, 18, Nov. 1978., (leg. Gordan Karaman).

Holotype is deposited in autor's collection in Kragujevac.

Discussion: This new species is closely related to the species *T. stammeri* Hrabe 1937 which was fragmentary described by Hrabe in several studies. In 1971 Brinkhurst redescribed the species on the basis of all descriptions and by using the original preparations of the unique specimen which had served for the establishment of the species. He cites Austria as the locality of this species. In the descriptions of Hrabe 1942, we found out that under the picture of atrium of the species *T. stammeri*, Hrabe had cited that species came from Istria. In the paper from 1938 Hrabe cites that the species *T. stammeri* lives in the subterranean cave waters. On the basis of this data a conclusion can be drawn that the species *T. stammeri* lives in the cave waters of Istria; closer localities are unknown at this moment. *T. drimi* differs from the species *T. stammeri* by the form and structure of sexual organ. Dimensions and number of body segments of the species *T. stammeri* are unknown so these characteristics can not be compared. The main differences between these two species are given in the table.

	<i>T. stammeri</i>	<i>T. drimi</i>
atria	pyriforme elongate	ovoid
muscle layer	20 μm	62 μm
spermathecae	with large ampulle which extend into XII	not passing to the next segment
distribution	Istria, subterranean water in cave	Beli Drim Adriat. drainage system

Of all known species of this genus, the species *T. drimi* is characterized by the thickest atrium wall.

Key for identification of *Trichodrilus* species in Yugoslavia

1. 2 pairs of spermathecae present in XI and XII segment . . . 2
- 1 pair of spermathecae present in X or XII segment . . . 3
2. Atria tubular length 255 μm , wide 80 μm
Slovenia: Danube system-Tacen *T. tacensis*, Hrabe 1963
- Atria spherical length 212 μm , wide 176 μm
Montenegro: lake Skadar *T. montenegrinus*, Karaman 1973
3. Setae bifid, with upper tooth reduced. Atria pear-shaped, with long, discrete proximal duct, muscle layer 8 μm thick. One pair of spermathecae in X segment.

- Slovenia: subterranean water of Postojna—Cerknica cavern system *T. strandi*, Hrabe 1936
- Setae single, pointed 4
4. Spermathecae in X segment. Atria pear-shaped in IX segment, atrial muscle 37 μm thick. Clitellum developed on IX to XII segment. Sekundary annuly segment on II to XIV segment.
Serbia: river Beli Drim *T. metohiensis* n.sp.
- Spermathecae in XI or XII segment 5
5. 1 pair of spermathecae in XI segment 6
- 1 pair of spermathecae in XII segment. Atria pear-shaped in X segment. Atrial muscle 14 μm thick. Clitellum not developed.
Macedonia: river Vardar *T. macedonicus* n.sp.
6. Vasa deferentia joint atria apically. Clitellum developed on X to XIII segment 7
- Vasa deferentia joint atria medially. Clitellum not developed 8
7. Atria ovoid, with muscle layer 5 μm thick, penis absent. Spermathecae in XI segment, with very long ampullae passing to the next segment.
Slovenia: Sava river *T. sketi*, Hrabe 1963
- Atria pear-shaped, with muscle layer 26 μm thick, small conical penis present. Spermathecae in XI segment not passing to the next segment.
Slovenia: Ptuj *T. ptujensis*, Hrabe 1963
8. Atria piriform, 264 μm long, with muscle layer 20 μm thick. Spermathecae in XI segment, with large ampullae which extend into XII segment.
Istria: in cave water *T. stammeri*, Hrabe 1937
- Atria spherical, 333 μm long, with muscle layer 62 μm thick. Spermathecae in XI segment, not passing to the next segment.
Serbia: river Beli Drim *T. drimi* n.sp.

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TRI NOVE VRSTE LUMBRICULIDNIH CRVA IZ RODA *TRICHODRILUS*
CLAPARÈDE (*OLIGOCHAETA-LUMBRICULIDAE*) IZ JUGOSLAVIJE**Spasenija D. Karaman****Re z i m e**

Istražujući malu kolekciju *Oligochaeta* iz hiporeičnih voda Srbije i Makedonije autorica je proučila i opisala 3 nove vrste roda *Trichodrilus*: *T. macedonicus*, *T. metohiensis* i *T. drimi*: *T. macedonicus* iz sistema reke Vardar, *T. metohiensis* i *T. drimi* iz sistema reke Drim koji pripada jadranskom slivu. Dat je ključ za determinaciju svih do sada poznatih vrsta roda *Trichodrilus* iz Jugoslavije.