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A NEW RECORD OF *HAPLOTAXIS GORDIOIDES* (HARTMANN, 1821) (OLIGOCHAETA, ANNELIDA) IN THE BENTHOCENOSES OF A POTAMON-TYPE RIVER (SAVA RIVER, SERBIAN SECTOR)

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Abstract - The species *Haplotaxis gordioides* (Hartmann, 1821), from the family Haplotaxidae (Oligochaeta), was found for the first time in a lowland, potamon-type river (Sava River, Serbian sector) in 2002. This new record adds to our knowledge of the range and spreading of the given species.

Key words: Oligochaeta, *Haplotaxis gordioides*, new record, species distribution, Sava River, Belgrade Region

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591.9 (497.11 Sava)

INTRODUCTION

Haplotaxid worms are primitive oligochaetes (B r i n k h u r s t, 1984, 1992) found primarily in groundwater. The family has a cosmopolitan distribution, but many species are restricted to specific localities or habitats (B r i n k h u r s t, 1978; B r i n k h u r s t and J a m i e s o n, 1971). Also, because the haplotaxids are rarely collected, detailed distribution patterns for most individual species are lacking. B r i n k h u r s t and J a m i e s o n (1971) described the distribution of *H. gordioides* as Holarctic, and the former author listed several areas of Europe where it has been, or is expected to be found (B r i n k h u r s t, 1978).

Haplotoxis gordioides has not been previously recorded in the oligochaete fauna of the Serbian sector of the Sava River.

This Serbian section of the Sava (206 km long) is a typical lowland watercourse located at an altitude lower than 80 m with 0,098‰ declination. The river bed is characterized by a maximal width of close to 1000 m and relatively thick depositions dominated by fractions of fine sand and mud in quiet places. The long-term average water discharge at Sremska Mitrovica is up to 1.500 m^3s^{-1}.

This paper presents the first records of *H. gordioides* in the oligochete fauna of the Sava River in the Belgrade region, which is the first such finding in this specific type of habitat.

MATERIAL AND METHODS

Our investigations were limited to a 61.5-km-long part of the lower reach of the Sava (M a r t i n o v i ć-V i t a n o v i ć *et al*., 2004; Paunović, 2004). Sampling was performed in May of 2002 along the right river bank from soft sediment using a Van Veen-type grab with a capacity of of 270 cm^2. Specimens were found in a habitat with domination of soft bottom substrates (silt, fine sand deposits, and detritus). Animals were separated from sediment with a 200-µm sieve. The samples were fixed with 4% formaldehyde in the field. Sorting and identification were carried out using a binocular magnifier (5 – 50 x) and a microscope (10 x 10 and 10 x 40). The preparations of *H. gordioides* were treated with lactophenol before examination in the laboratory. Taxonomic status was determined according to the guides of B r i n k h u r s t and J a m i e s o n (1971) and B r i n k h u r s t (1988). Specimen photos were made using a digital camera with 6 x magnification.

At the Zabran locality on the Sava River (28.3 km), two partially mature specimens and one immature specimen of *H. gordioides* (Hartmann, 1821) were ascertained. The observed specimens were consigned to the biological

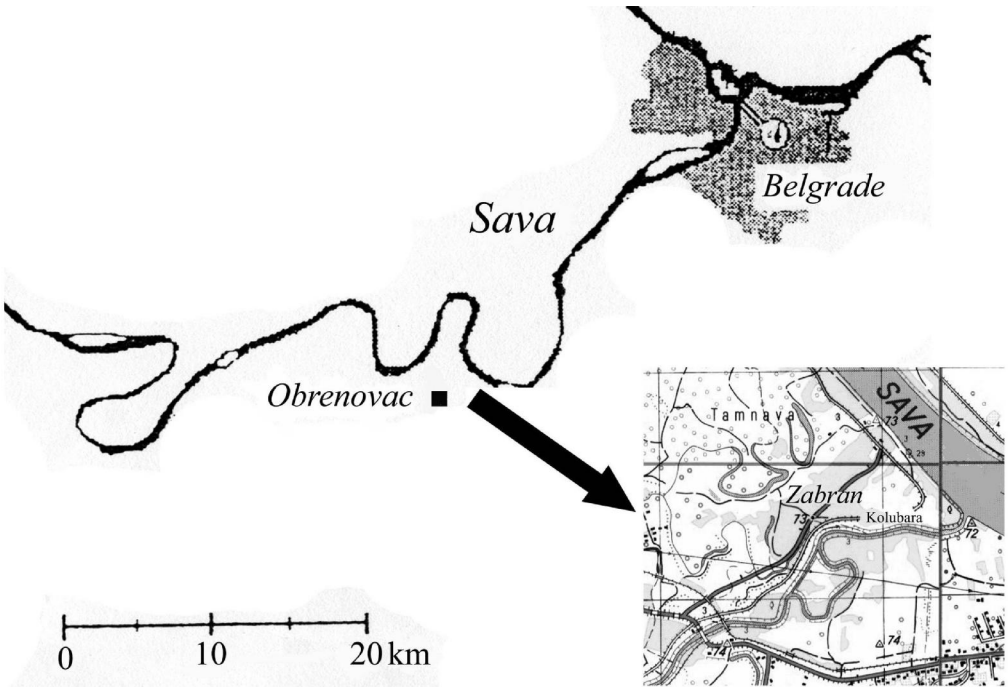

Fig. 1. Map of the Sava River in the Belgrade Region showing the Zabran locality near Obrenovac (geographical coordinates: N 44º44.103' - E 20º14.691').

material collection of the Benthological Section, Institute for Biological Research, Belgrade (ref. number 23/2002). Their dimensions were: 1) 63 mm long, diameter 0.5 mm; 2) 52 mm long, diameter 0.5 mm; 3) 40 mm long, diameter 0.3 mm.

RESULTS AND DISCUSSION

According to Š p o r k a (1984), the species *H. gordioides* was found in cold mountain streams. S c h w a n k`s data (1981, 1982) refer to *H. gordioides* as an interstitial–psammophylic and stenothermic species recorded in mountain springs, streams and head waters in Germany. Later, Š p o r k a (1998) reported the finding of this species in a gravel substratum in the Slovak-Hungarian parts of the Danube River. In Serbia, *H. gordioides* was previously collected as part of the benthofauna in highland streams only (S i m i ć *et al*., 1993; J a k o v č e v, 1996; K a l a f a t i ć *et al*., 1999; P a u n o v i ć *et al*., 2003). Their habitats were characterized by pebbles, sand, and a thin layer of silt with periphyton. The stream benthofauna consisted mostly of insects (Diptera, Ephemeroptera, Trichoptera, Plecoptera).

The finding reported in this paper is the first one in a lowland, potamon-type river (lower sector of the Sava River). Results of quantitative analysis of benthic cenoses recorded at the Zabran locality are shown in Table 1.

At the Zabran locality, *H. gordioides* was detected only in spring in places where the bottom fauna was characterized by a uniform macrozoobenthic community (H=1.03) with domination of gastropods (66.04%) (Table 1).

Table 1. Qualitative and quantitative composition of macrozoobentic coenoses of the Sava River, Localitz Zabran, in Maz 2002. Abbreviations: N= number of individulas.

Taxa	N	%	Ind/m2
Nematoda	1	1,89	37
Hapolotaxis gordioides (Hartmann, 1821)	3	5,66	111
Tubifex tubifex (Müller, 1774)	7	13,21	259
Limnodrilus sp.	2	3,77	74
Potamothrix hammoniensis (Michaelsen, 1902)	2	3,77	74
Psammoryctides albicola (Michaelsen, 1901)	2	3,77	74
Pontogammarus obesus (Sars, 1896)	1	1,89	37
Lithoglyphus naticoides (C.Pfeiffer, 1828)	35	66,04	1295
total	**53**	**100,00**	**1961**
saprobic index "S" (Pantle-Buck,1955)		**2,44**	
saprobic level		**β - α**	
classis		**II-III**	
H index (Shannon and Weaver,1949)		**1,03**	

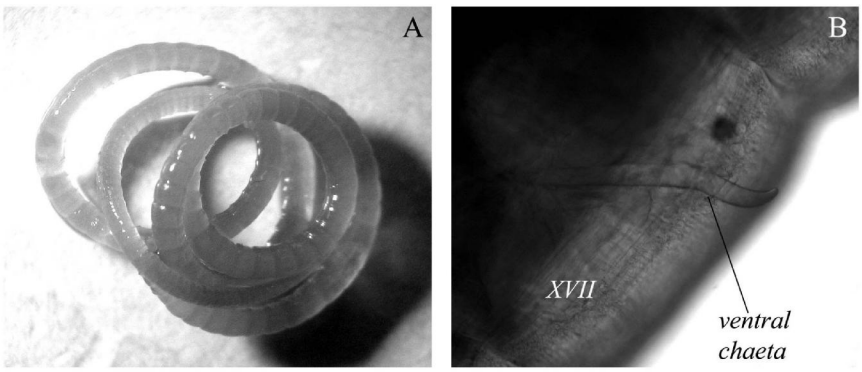

Fig. 2. The shoot with digital camera: A – individuals; B – ventral chaeta of body segment XVII (Krüss microscope, 10 x 2.5).

The investigated sector is directly influenced by urban waste waters from numerous settlements. The saprobic status of the Sava River at the Zabran locality, corresponds to mesosaprobic conditions (β-meso- to α-mesosaprobity) (Table 1).

The record of *H. gordioides* in the Sava River in the Belgrade region (Zabran) is especially interesting because this species is not characteristic of lowland rivers.

We hope this new record will contribute to a better understanding of the distribution of *H. gordioides* in Serbia and throughout the Balkan Peninsula.

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REFERENCES

Brinkhurst, R.O. (1978). Oligochaeta. - In: *Limnofauna Europae*. (Ed. J. Illies), 139-144, New York.

Brinkhurst, R.O. (1984). The position of the Haplotaxidae in the evolution of oligochaete annelids. - *Hydrobiologia*, **115**, 25-36.

Brinkhurst, R.O. (1988). A taxonomic analysis of the Haplotaxidae (Annelida, Oligochaeta). *Can.J.Zool*. **66**, 2243-2252.

Brinkhurst, R.O. (1992). Evolutionary relationships within the Clitellata. *Soil Biol. Biochem*., **24**, 1201-1205.

Brinkhurst R.O. and *Jamieson, B.G.M.* (1971). *Aquatic Oligochaeta of the World.* University of Toronto Press, Toronto, 860 pp.

Jakovčev, D. (1996). *Der saprobiologische Zustand der Bodenfauna von Bergbächen in der südöstlichen montanen Region (Stara Planina) in Serbien (Jugoslawien).* 31. Konferenz der IAD, Baja – Ungarn 1996, Wissenschaftliche Referate.

Kalafatić, V., Jakovčev, D. and Martinović-Vitanović, V. (1999). The first record of Haplotaxis gordioides (Hartman, 1821) (Oligochaeta, Annelida) in the oligochaetous fauna of Serbia, Yugoslavia. *Contribution to the Zoogeography and Ecology of the Eastern Mediterranean Region* **1**, 243-250.

Martinović-Vitanović, V., Jakovčev-Todorović, D., Djikanović, V. and *Kalafatić, V*. (2004). The saprobiological analysis of benthic communities in the Sava River in the Belgrade Region. In: *Proceedings of the 35th IAD Conference, Limnological reports*, **35**, 341-347, Novi Sad.

Pantle, R. and *Buck, H*. (1955). Die biologische Überwachung der Gewässer und die Darstellung der Ergebnisse. *Gas und Wasserfach*, **96**, 604.

Paunović, M. (2004). Qualitative composition of macroinvertebrate communities in the Serbian sector of the Sava River. In: *Proceedings of the 35th IAD Conference, Limnological reports*, **35**, 349-354, Novi Sad.

Paunović, M., Kalafatić, V., Jakovčev, D. and *Martinović-Vitanović, V.* (2003). Oligochaetes (Annelida, Oligochaeta) of the Vlasina River (South-East Serbia): diversity and distribution. *Biologia*, Bratislava, **58**, 903-911.

Schwank, P. (1981). Turbellarien, Oligochaeten und Archianneliden des Breitenbachs und anderer oberhessischer Mittelgebirgsbäche. I. Lokalgeographische Verbreitung und die Verteilung der Arten in den einzelnen Gewässern in Abhängigkeit vom Substrat. Schlitzer Produktionsbiologische Studien (43-1). *Archiv für Hydrobiologie/Suppl*. **62**(**1**), 1-85.

Schwank, P. (1982). Turbellarien, Oligochaeten und Archianneliden des Breitenbachs und anderer oberhessischer Mittelgebirgsbäche. III. Die Taxozönosen der Turbellarien und Oligochaeten in Fliessgewässern – eine synökologische Gliederung. Schlitzer Produktionsbiologische Studien (43-3). *Archiv für Hydrobiologie /Suppl.* **62**(**2**), 191-253, Stuttgart.

Shannon, C.E. and *Weaver, W*. (1949). *The Mathematical Theory of Communication*, 19-27, 82-83, 104-107. The University of Illinois Press, Urbana, IL.

Simić, V., Simić, S. and *Ostojić, A*. (1993). Uticaj otpadnih voda Svrljiga na kvalitet vode Svrljiškog Timoka. *Zbornik radova,* 151-158, Zaštita voda `93, Arandjelovac, Jugoslovensko društvo za zaštitu voda, Beograd (in Serbian).

Šporka, F. (1984). Oligochaeta des flusses Belá. *Prace Laboratoria rybarstva a hydrobiologie* **4**: 99-117, Bratislava.

Šporka F. (1998). The typology of flood plain water bodies of the Middle Danube (Slovakia) on the basis of the superficial polychaete and oligochaete fauna, *Hydrobiologia* **386**, 55-62.

НОВИ НАЛАЗ *HAPLOTAXIS GORDIOIDES* (HARTMANN, 1821) (OLIGOCHAETA, ANNELIDA) У БЕНТОЦЕНОЗИ ПОТАМОНА РЕКЕ САВЕ (СЕКТОР КРОЗ СРБИЈУ)

ДУЊА ЈАКОВЧЕВ-ТОДОРОВИЋ, ВЕСНА ЂИКАНОВИЋ, СНЕЖАНА МИЛОШЕВИЋ и П. ЦАКИЋ

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Циљ рада је приказ новог налаза врсте *Haplotaxis gordioides* (Hartmann, 1821), из фамилије Haplotaxidae (Oligochaeta), која је први пут нађена 2002. у потамону низијске реке (река Сава, сектор кроз Србију). Овај нови налаз је посебно важан за разумевање подручја распрострањења и ширења ове олигохетне врсте.