

A New Rhyacodrilin (Oligochaeta) Record (*Bothrioneurum vej dovskyanum* Štolc, 1886) for Turkey*

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Abstract

In this study, *Bothrioneurum vej dovskyanum* Štolc, 1886 was reported for the first time in Turkey. The species was collected in the Karamenderes Stream-Çanakkale in May 2009. Furthermore, data about habitat and environmental variables of the species was presented.

Keywords: *Bothrioneurum vej dovskyanum*, Karamenderes Stream, Çanakkale, Turkey.

Türkiye'den yeni bir Rhyacodrilin (*Bothrioneurum vej dovskyanum* Štolc, 1886) Kaydı

Özet

Bu çalışmada, *Bothrioneurum vej dovskyanum* Štolc, 1886 türünün Türkiye'den ilk kaydı rapor edilmiştir. Mayıs 2009 periyodunda Karamenderes Çayı-Çanakkale'den toplanan türlerin, habitat ve çevresel değişkenlere ait bilgileri verilmiştir.

Anahtar kelimeler: *Bothrioneurum vej dovskyanum*, Karamenderes Çayı, Çanakkale, Türkiye.

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INTRODUCTION

Bothrioneurum vej dovskyanum has been considered a rare species among the subfamily Rhyacodrilinae (Timm, 1997; Atanoković et al., 2013). So far only one species of Rhyacodrilinae, *Rhyacodrilus coccineus* (Vej dovsky, 1876), has been reported from different parts of Turkey (Gümüş River-Öntürk and Arslan, 2003; Tunca River-Çamur-Elipek et al., 2006; Balıkdanı wetland-Arslan et al., 2007; Lake Uluabat-Kökmen et al., 2007; Porsuk River-Arslan and İlhan, 2010 and Trace region-Taş et al., 2012; Tuzla Stream-Odabaşı, 2013). The genus *Bothrioneurum* is separated by the presence of a dorsal pit with cilia in its prostomium (Brinkhurst and Jamieson, 1971). The genus *Bothrioneurum* includes six species in the tropic region of South America (excluded *B. iris* Beddard, 1901 extended from South America to Asia and tropical Africa), *B. vej dovskyanum* is only species distributed widely in the Holarctic (Timm, 1997). *B. vej dovskyanum*, with a cosmopolitan distribution, is remarkable for its reproduction by architomy (fission followed by development of the rest of the body), which is quite rare in the Tubificidae family. It is known that *B. vej dovskyanum* is distributed in Mediterranean, the Central Uplands in Germany, Carpathian Mountains, the North European Plain and England (ecoregion 3; ecoregion 9; ecoregion 10; ecoregions 14, 15 and ecoregion 18

respectively) (Illies, 1978). Its known distribution includes Europe, except the southeastern e.g. the Balkans (Fauna Europea, 2011). However, according to Šundić et al. (2011) *B. vej dovskyanum* occurs in Bulgaria exceptional in the Balkan Peninsula. Recent intensive investigations have made clear the presence of many oligochaete species in freshwater of Turkey (Polatdemir-Arslan and Şahin, 2003; Arslan 2006; Yıldız et al., 2007; 2010; 2012; 2016a; 2016b; Taş et al., 2008; 2012; Arslan and İlhan, 2010). To date, the occurrence of this species in Turkey has not been reported. In this paper, data are presented on the first record and the occurrence of *Bothrioneurum vej dovskyanum* in Turkey (Karamenderes Stream – Çanakkale). The aim of this study was to contribute to the diversity and distribution of aquatic oligochaetes from inland waters in Turkey.

MATERIAL and METHODS

Sampling was carried out from 4 different stations at the Karamenderes Stream (Çanakkale) seasonally, between November 2008 and August 2009 in order to determine the Oligochaeta fauna (see Figure 1). Oligochaetes were sampled with a surbernet (mesh size 500 µm;) covering an area of 0.09 m², according to the multi-habitat sampling procedure. Sampled animals were fixed with 4% formalin solution *in situ*. Oligochaete samples were transferred into 70% alcohol in order to get ready for identification as temporal or permanent mounts on slides using glycerin and Canada balsam respectively. Oligochaeta were identified to species level using the keys of Hrabě (1954; 1981), Kathman and Brinkhurst (1998), Timm (2009). Specimens that mounted on slides prepared by Canada balsam were inspected for taxonomic characters. Prostomium, whole body and external spermatophores were photographed using a Carl Zeiss invert AXIOVERT 200M microscope, with digital microscopic camera software AxioVision 4.5.

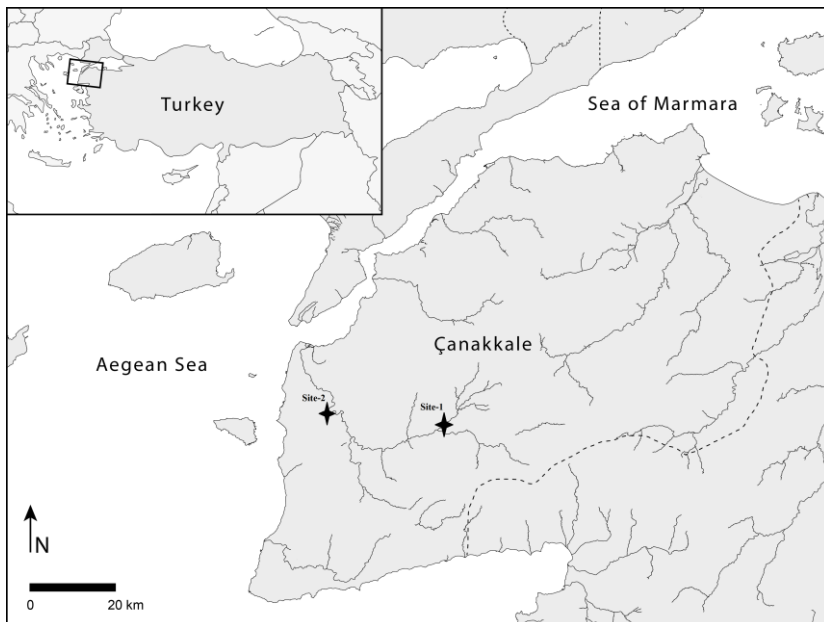


Figure 1. Sampling sites.

***Bothrioneurum vej dovskyanum* ŠTOLC, 1886**

Material: Two mature individuals were recorded from sampling site no. 1 and 2 (as shown in Tab. 1) found in samples collected in May 2009, Serpil Odabaşı leg.

Diagnosis: Length 27–36 mm. Anterior bundles with 5 bifid chaetae with upper teeth longer than lower, posteriorly fewer (2–4) with teeth equally long. Spermathecae is absent. Body wall may appear spotted or papillate, but smooth. Prostomium has dorsal sensory pit (see Figure 2, 3 and 4). Hair chaeta is absent.

Habitat: The sampling site namely Karamenderes Stream is located on the western part of the South Marmara Region in north-western Anatolia (Turkey) (Fig. 1). Karamenderes Stream rises from the Kaz Dağı where has had a National Park established in 1993 on the Biga Peninsula, north-western Turkey (Demirsoy et al., 2005). The stream is rather shallow but flows along year and its benthic habitat dominated by cobol-gravel substrate in the upstream and sandy with submerged vegetation in the downstream. Specimens obtained from upstream in habitat with sand and stony substrates. The coexisting taxa the oligochaeta were *Chaetogaster diaphanus*, *Ophidonais serpentina*, *Stylaria lacustris*, *Slavina appendiculata*, *Nais barbata*, *Nais bretscheri*, *Nais variabilis*, *Tubifex tubifex*, *Psammoryctides albicola*, *Limnodrilus udekemianus*, *Limnodrilus hoffmeisteri*.



Figure 2. *B. vej dovskyanum*, whole body.

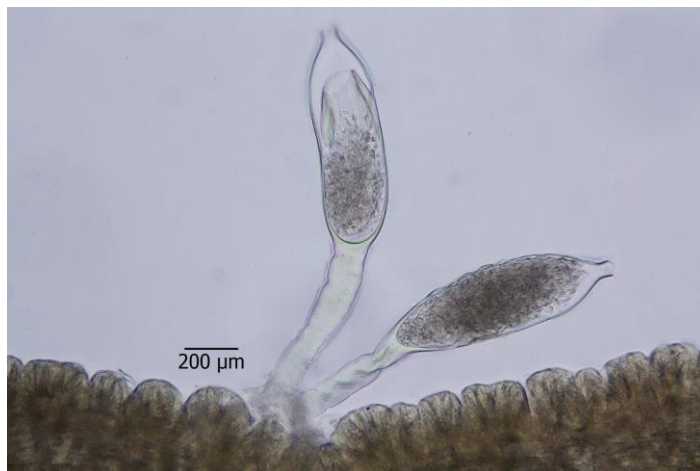


Figure 3. Segment IX with external spermatophores.



Figure 4. *B. vej dovskyanum*, prostomium with sensory pit.

Table 1. Environmental variables recorded at the sampling sites where the *B. vej dovskyanum* found.

	St. 1	St. 2
Coordinates	N 39° 77' 538" E 26° 69' 165"	N 39° 50' 484" E 026° 19' 322"
Altitude	163	29
NO₃-N (mgL⁻¹)	0.3	0.3
PO₄-P (mgL⁻¹)	4.32*	8.34*
Temp. (°C)	16.92	16.71
pH	6.17	6.76
EC (µScm⁻¹)	256.25	394
DO (O₂ mgL⁻¹)	11.205	9.02
% DO	117.75	92.83
COD (mgL⁻¹)	12.9	14
BOD₅ (mgL⁻¹)	1.32	1.125
Turbidity (NTU)	1	6

*IV. Class of Quality (Turkish Environmental Guidelines, 10/08/2016-29797)

DISCUSSION

Distributional data on the *B. vej dovskyanum* is scarce (Timm, 1997). To date, the presence of this species known from European countries mostly central and northern regions; Germany, Carpathian Mountains, the North European Plain, England (Illies, 1978) as well as Slovakia (Sporka and Mláka, 2008), South America; Brazil and Asia; Russia. The southeastern most dispersal points of the species in Europe are Balkans such as Bulgaria, Montenegro (Šundić et al., 2011) and Serbia (Atanaković et al., 2012).

Earlier studies by Timm (1987) and Kathman & Brinkhurst (1998) reported that *B. vej dovskyanum* has been usually sampled in sandy and gravelly bottoms. Our findings are conforming to this information. It is tolerant to eutrophication and has been found together with other tolerant taxa such as *Limnodrilus* spp. and *Tubifex tubifex* (Dumnicka, 2007; Sporka and Mláka, 2008; Graf et al., 2008; Timm, 2009). In addition Uzunov et al. (1988) indicated that *B. vej dovskyanum* is beta-mesosaprobic species. Our observations show *Bothrioneurum vej dovskyanum* to be tolerant to organic pollution (as shown in Table 1). According to Turkish Environmental Guidelines, both sites where the *B. vej dovskyanum* found were in IV. quality class. Although dissolved oxygen level was high but PO₄-P level 4.32 mgL⁻¹ and 8.34 mgL⁻¹ at station 1 and 2 respectively. This situation may explain by a short-term discharge effect. Therefore, our data are insufficient to specify the impact of particular environmental variables because of only one time measurement. This species has excellent regeneration ability; mature individuals are rare and occur only during a short period.

In conclusion, this species is firstly recorded from Turkey. Thus, we suggest that further studies should be addressed in order to reveal distribution of this species in the Turkish river basins. On the other hand, studies related to reproduction and habitat preferences (for example water quality demands) of the species may be helpful to understand of its biology. Based on the both published and unpublished data, for freshwater invertebrates in Turkey, we can conclude that *B. vej dovskyanum* is a rarely encountered species. The present finding extends the limits of distribution of this rare species.

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