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Caddisfly larvae (Trichoptera, Insecta) from the Vrachanska Planina Mountains

VESELA EVTIMOVA, VIOLETA TYUFEKCHIEVA, LYUBOMIR KENDEROV

Abstract. Faunistic data on the larval stages of the insect order Trichoptera from the Vrachanska Planina Mts. are presented for the first time. A total of six locations in four rivers were sampled. Twenty-one taxa belonging to seven families were recorded. They represent a little more than 8% of the Trichoptera species, found on the territory of Bulgaria. This estimate is based on the total number of caddisflies from Bulgaria (including adult and larval stages). Two of the recorded taxa are classified as rare, while *Odontocerum hellenicum* Malicky, 1972 is a Balkan endemic. These figures are likely higher owing to the fact that a considerable number of the caddisfly larvae of the rare and endemic species are lacking description.

Key words: Trichoptera larvae, Vrachanska Planina Mts., Balkan Mts., Bulgaria.

Introduction

The Vrachanska Planina Mts. lies in the west of the Bulgarian part of the Balkan Mts.. There is no species inventory of the aquatic Trichoptera fauna from the region as data in the available literature are largely lacking. At present, Bulgarian Trichoptera fauna includes 258 species, as based on the adult stages of this insect order (Kumanski 2007).

Kumanski (1985, 1988, 2007) in his contribution to the Fauna of Bulgaria series presents data on the distribution of the adults of the order Trichoptera from Bulgaria. Among the localities of many of the species he mentions the Balkan Mts.. However, there is no specific information on the caddisfly fauna from the Vrachanska Planina Mts..

The aim of the current study is to present original data on the taxonomic composition of Trichoptera order from rivers in the Vrachanska Planina Mts. with notes on endemism and rare species.

Material and Methods

The caddis specimens were collected from four rivers on the territory of the Vrachanska Planina Mts., North-western Bulgaria: Desna River, Leva River, Gluharska River and Cherna River. A total of six sampling locations were visited (Table 1). One sampling site was selected in Desna and Leva Rivers each, while the upper and lower stretch of the Gluharska (stations 1 and 2) and Cherna (stations 1 and 2) Rivers were sampled. All Universal Transverse Mercator coordinate system (UTM) codes of the rivers are according to the Bulgarian UTM Directory computer programme (Michev 1999).

Table 1. Sampling locations with geographical coordinates, altitudes and UTM codes.

	Desna River	Leva River	Gluharska River st. 1	Gluharska River st. 2	Cherna River st. 1	Cherna River st. 2
Northing	43°09'30.5"	43°10'10.3"	43°10'27.0"	43°11'35.4"	43°13'07.5"	43°14'18.2"
Easting	23°29'14.9"	23°30'21.6"	23°27'15.3"	23°25'30.0"	23°23'35.0"	23°21'33.9"
Altitude, m a.s.l.	801	564	608	412	328	278
UTM code	GN08	GN08	FN98	FN98	FN99	FN99

The field-work was carried out in June 2013. Macroinvertebrate samples were collected following the multi-habitat approach adapted for Bulgaria (Cheshmedjiev *et al.* 2011). All benthic samples were fixed in 70% ethanol upon collection. Their taxonomic identification was done following Waringer & Graf (1997, 2013); Ivanov *et al.* (2001); Wallace *et al.* (2003); Kumanski *et al.* (2004); Karaouzas (2009) and Oscoz *et al.* (2011). The caddisflies are currently stored at the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (IBER- BAS, Sofia).

Results

We registered a total of 21 taxa of Trichoptera larvae from the six sampling localities (Table 2). They belong to seven families. The total number of taxa found at a station varies between four (Desna River) and 11 (Gluharska River 2).

Table 2. Taxon list of Trichoptera larvae registered from Vrachanska Planina Mts., Northwestern Bulgaria.

Family/ Taxon	Desna River	Leva River	Gluharska River st.1	Gluharska River st.2	Cherna River st.1	Cherna River st.2
Philopotamidae						
Philopotamus montanus (Donovan, 1813)	+		+	+		
Polycentropodidae						
Plectrocnemia conspersa (Curtis, 1834)	+					
Hydropsychidae						
Hydropsyche tabacarui Botosaneanu, 1960		+	+	+	+	+
Hydropsyche cf. *instabilis* (Curtis, 1834)		+	+	+	+	
Hydropsyche ornatula McLachlan, 1878		+				
Hydropsyche cf. *peristerica* Botosaneanu & Marinkovic´ -Gospodnetic´, 1966			+	+		+
Hydropsyche cf. *incognita* Pitsch, 1993					+	+
Hydropsyche sp. (instar I-IV)						
Cheumatopsyche lepida (Pictet, 1834)					+	
Pupae Hydropsychidae		+	+	+	+	
Rhyacophilidae						
Rhyacophila obliterata McLachlan, 1863			+	+		
Rhyacophila nubila (Zetterstedt, 1840)		+	+		+	+
Rhyacophila fasciata Hagen, 1859		+		+	+	+
Rhyacophila sp. (instar I-IV)						
Limnephilidae						
Micropterna cf. *nycterobia* McLachlan, 1875	+					
Chaetopteryx s.l. *villosa*	+	+		+		
Drusus sp.			+			
Halesus cf. *digitatus* (Schrank, 1781)				+		
cf. *Anabolia* sp.				+		
Euriciformi indet sp.1 (cf. Limnephilidae)						+
Odontoceridae						
Odontocerum hellenicum Malicky, 1972				+		
Sericostomatidae						
Sericostoma flavicorne Schneider, 1845				+		
Euriciformi indet sp.2 (cf. Sericostomatidae)			+		+	
Unidentified						
Euriciformi indet sp.3		+				

Caseless larvae dominate the samples except for Desna River. The most taxon-rich family is Hydropsychidae with six taxa, followed by Limnephilidae with five taxa. Three of the families are represented by one taxon only.

Rare are three of the recorded species: *Hydropsyche tabacarui* Botosaneanu, 1960; *H. ornatula* McLachlan, 1878 (Kumanski 1985) and *Halesus* cf. *digitatus* [(Schrank 1781), Hubenov *et al.* 2000]. One of the species we have found is classified as a Balkan endemic: *Odontocerum hellenicum* Malicky, 1972 (Hubenov *et al.* 2000).

Discussion

This paper presents original results on the larvae of Trichoptera for the Vrachanska Planina Mts.. The recoded taxa represent about 8% of the Bulgarian species as based on the figures for the adult stages of the order (Kumanski 2007). Noteworthy is the fact that the aquatic stages of some of the caddisfly species, whose adult stages are known from Bulgaria, have not been described yet. Thus, their identification is a rather challenging task and the number of the Trichoptera larvae recorded on the territory of the country is likely lower than the total number given for the adult stages by Kumanski (2007).

Currently Trichoptera order is not included in the Red List of Threatened Invertebrates of Bulgaria (Golemansky ed. 2011), while only four extinct species are included in the IUCN Red List of caddisflies (IUCN 2014). The above hinders us from providing information on the conservation status of the recorded species.

Presently, 52 rare taxa of caddisflies are known from Bulgaria; 18 are Balkan and 17 Bulgarian endemics (Hubenov *et al.* 1998, 2000). Three rare species and three endemics have been recorded from the Western Balkan Mts. (Hubenov *et al.* 1998). However, the larval stages of many of the endemic or rare species are unknown. Therefore, the guides used for the taxonomic determination of the taxa (see Material and Methods) often lack a substantial percentage of the species which is the case, for instance, for the genera *Hydropsyche* and *Rhyacophila*. Moreover, we have recorded *Chaetopteryx* sp. from the *villosa* group from Desna, Leva and Gluharska (at station 2) rivers. Kumanski (1988) has found two Balkan endemics of the genus in Bulgaria: *Ch. stankovici* Marinkovic, 1966 and *Ch. bosniaca* Marinkovic, 1955 but their larvae have not been described so far.

Additionally, our investigation included only a small number of rivers located on the territory of the Vrachanska Mountain. Therefore, the taxon list presented in the current work is not exhaustive and further research on the taxonomic diversity of the Trichoptera fauna from the mountain is needed.

Trichoptera larvae are known to be sensitive to various anthropogenic disturbances, *e.g.* organic pollution, acidity, impoundment and extreme events in hydrological regime (Lenat 1988, Barbour *et al.* 1996, Wallace *et al.* 1996, Sandin & Johnson 2000, Power *et al.* 2008, Evtimova 2013, Evtimova & Donohue 2014). Therefore, expanding our understanding on their taxonomy and distribution will not only advance scientists' knowledge on biodiversity but could serve as a basis for future monitoring programmes and assist ecological assessment of aquatic ecosystems.

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Authors' addresses:

VESELA EVTIMOVA[1*], VIOLETA TYUFEKCHIEVA[1], LYUBOMIR KENDEROV[2]

[1]Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., Sofia 1000, Bulgaria

[2]Faculty of Biology, Sofia University "St. Kliment Ohridski", 8 Dragan Tsankov Blvd., Sofia 1164, Bulgaria

*****Corresponding author's email: vesela.evtimova@gmail.com

Ручейници (Trichoptera, Insecta) от Врачанска планина

ВЕСЕЛА ЕВТИМОВА, ВИОЛЕТА ТЮФЕКЧИЕВА, ЛЮБОМИР КЕНДЕРОВ

(Резюме)

Настоящата работа представя за първи път данни за ларвите на насекомите от разред Трихоптера (ручейници) от Врачанска планина. Пробите бяха събрани от общо шест пункта в четири реки. Установени бяха 21 таксона, принадлежащи към седем семейства. Те представляват малко над 8% от ручейниците, регистрирани на територията на България. Тази оценка се базира на общия брой трихоптерни видове от България (включително и възрастни екземпляри). Два от съобщените таксона могат да се определят като редки, а *Odontocerum hellenicum* Malicky, 1972 е балкански ендемит. Най-вероятно тези стойности са по-големи, тъй като за значителна част от ларвите на ручейниците на редките и ендемични видове липсва описание.