

Some *Epeorus yougoslavicus* (Šamal, 1935) data from the Balkan Peninsula (Ephemeroptera: Heptageniidae)

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ABSTRACT: The authors report data on *Epeorus yougoslavicus* from Albania (1 locality), Bulgaria (2 localities) and Montenegro (7 localities). The species was not known from Albania until now.

Introduction

Epeorus yougoslavicus is widely distributed in the mountainous regions of southeastern Europe (BAUERNFEIND & SOLDÁN 2012). Originally described from North Macedonia (ŠAMAL 1935), later reported from Bulgaria, Italy, Sicily (BRAASCH 1980), Bosnia and Herzegovina, Greece, Montenegro (PUTHZ 1980), Serbia (PETROVIĆ *et al.* 2006; PUTHZ (1974) reports it as a new species from Serbia: “Pećska Bistrica nahe Bjeluha”, but this locality is in Montenegro) and Kosovo (XËRXA *et al.* 2019).

The species was mentioned among the *Besdolus illyricus* (Plecoptera: Perlodidae) coexisting species from Montenegro, without exact localities (KOVÁCS & ZWICK 2008), the detailed data can be found below. In our article, we present the data of the specimens we have collected over the past 23 years.

Material and methods

For collecting methods of larvae see Kovács *et al.* (1998). The specimens collected have been preserved in 70% ethanol, and housed in the Mátra Museum of the Hungarian Natural History Museum, Gyöngyös (MM).

Abbreviations: Collectors – JP = Juhász Péter, HA = Hunyadi András, KT = Kovács Tibor, MD = Murányi Dávid, OP = Olajos Péter, SP = Sevola Pertti, UL = Urbán László; life stages – L = larva.

Results and discussion

Albania, Prokletije Mts, Shalë River above Palna e Tasit, 480 m, N42°20'26.8", E19°46'15.9", Fig. 2a, 09.06.2022, 2L, HA-KT-MD-OP (MM: 2022-80) – **Bulgaria**, Rila Mts, Rilski Manastir, Complex Zodiac, Rilska Reka, 1215 m, N42°08'30.8", E23°21'27.2", Fig. 2b, 21.06.2011, 4L, JP-KT-UL (MM: 2011-76); Rila Mts, Sestrimo, Jazovir Belmeken, Kriva Reka, 1245 m, N42°12'08.3", E23°51'20.0", 23.06.2011, 3L, JP-KT-UL (MM: 2011-89) – **Montenegro**, Bjelasica Mts, between Mojkovac and Rovačko Trebaljevo, Sljivlje, Jezerstica, 860 m, N42°54'48.8", E19°34'29.9", 02.04.2001, 1L, JP-KT-SP (MM: Tara-4); Bjelasica

Mts-Sinjajevina Mts, between Mojkovac and Rovačko Trebaljevo, Sjerogošte, Tara River, 865 m, N42°54'23.4", E19°33'49.2", 04.04.2001, 1L, JP-KT-SP (MM: Tara-14); Bjelasica Mts-Sinjajevina Mts, Rovačko Trebaljevo, Tara River, 900 m, N42°51'45.8", E19°31'35.7", 02.04.2001, 3L, JP-KT-SP (MM: Tara-2); Sinjajevina Mts, Bistrica, Ljevak, Rijeka, 845 m, N42°59'15.0", E19°26'02.6", 04.04.2000, 3L, JP-KT-SP (MM: Tara-12); Sinjajevina Mts, Gornja Polja, Zoljski Ljevak, 895 m, N42°57'48.5", E19°31'35.8", Fig. 2c, 02.04.2002, 1L, JP-KT-SP (MM: 2002-20-21); 29.04.2002, 1L, JP-KT (MM: 2002-39); 06.05.2003, 2L, JP-KT-SP (MM: 2003-54); 17.05.2004, 1L, JP-KT-SP (MM: 2004-47); Sinjajevina Mts, Štitarića, Štitarička Reka, 935 m, N42°55'26.3", E19°32'35.6", 04.04.2001, 5L, JP-KT-SP (MM: Tara-15); Visitor Mts, Murino, Murinska Rijeka, 885 m, N42°39'19.1", E19°52'48.3", Fig. 2d, 11.06.2022, 5L, HA-KT-MD-OP (MM: 2022-87).

The authors report data on *Epeorus yougoslavicus* from 10 localities: Albania 1, Bulgaria 2 and Montenegro 7. The species is recorded for the first time from Albania. The localities are shown on Fig. 1.

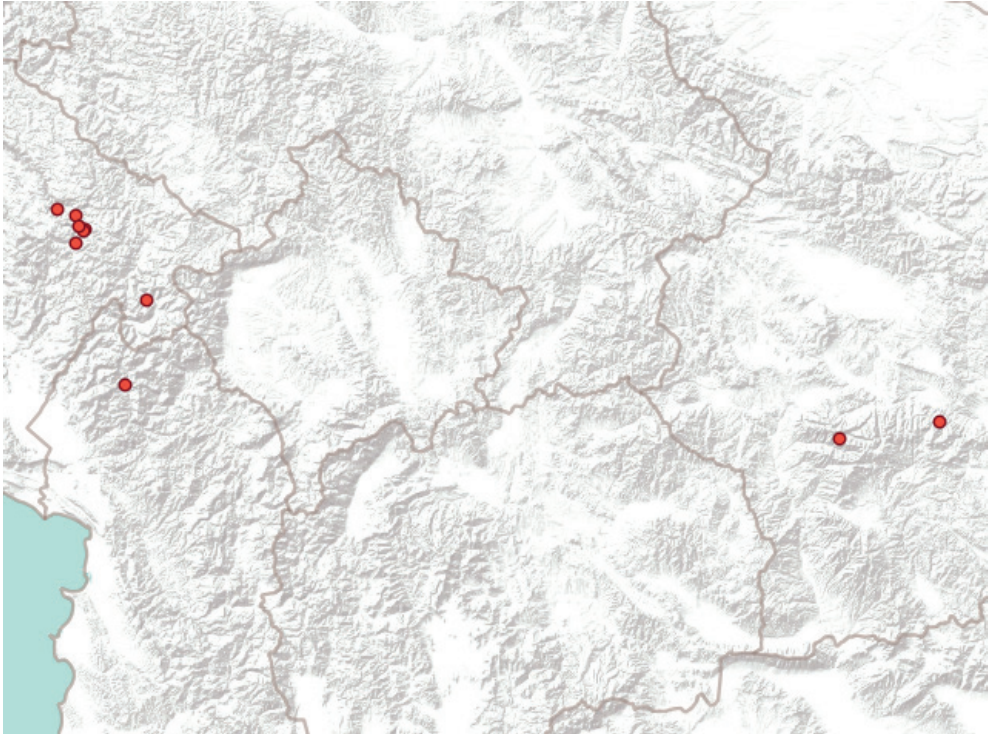


Fig. 1. Our collection sites of *Epeorus yougoslavicus* in the Balkan Peninsula

The highest habitat is Kriva Reka (Bulgaria, Rila Mts) at 1245 meters, while the lowest is Shalë River (Albania, Prokletije Mts) at 480 meters. Ranging from mountain streams of few meters wide (e.g. Jezerstica, Zoljski Ljevak), it can also be found in the more than 10 m wide Tara and Shalë Rivers (Fig. 2).

The size of the larvae collected at the earliest period, at the beginning of April, are 4-6.5 mm. The immature females collected in the Shalë River at the latest period, at the beginning of June, measured 9-9.4 mm (Fig. 3a, b - left). Only 4 male larvae collected in Murinska Rijeka on 11.06.2022 were already matured (Fig. 3a, b - right), their size were 7.5-9.1 mm and there was an immature female of 7.2 mm. The data suggest that the adults appear in the summer.

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Fig. 2. Habitats of *Epeorus yougoslavicus*: a = Albania, Shalë River, 09.06.2022; b = Bulgaria, Rilska Reka, 21.06.2011; c = Montenegro, Zoljski Ljevak, 12.04.2010; Montenegro, Murinska Rijeka, 11.06.2022; (photos: a, b, c – T. Kovács; d – P. Olajos)

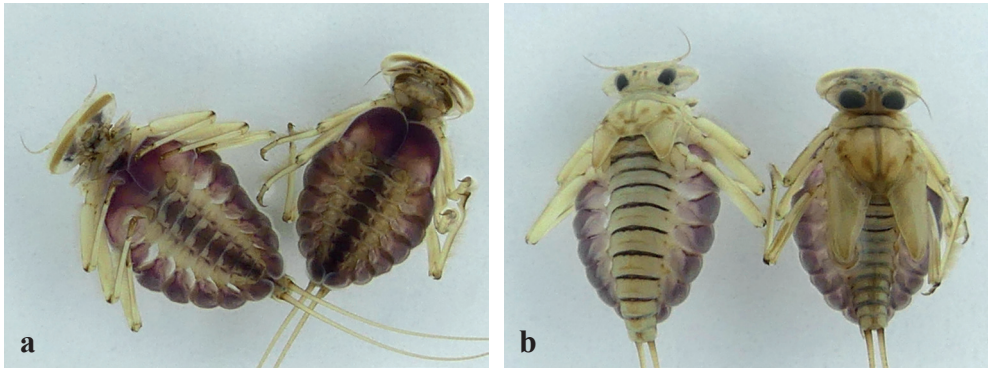


Fig. 3. Larvae of *Epeorus yougoslavicus*; female (Shalë River) and mature male (Murinska Rijeka): a = ventral view, b = dorsal view (photos: T. Kovács)

References

- BAUERNFEIND E. & SOLDÁN T. (2012). The Mayflies of Europe (Ephemeroptera). – Apollo Books. Ollerup, 781 pp.
- BRAASCH D. (1980): Iron yougoslavicus Šamal neu für Italien und Bulgarien (Insecta, Ephemeroptera, Heptageniidae). – Faunistische Abhandlungen - Staatliches Museum für Tierkunde Dresden, 8: 81.
- KOVÁCS T., AMBRUS A., BÁNKUTI K. & JUHÁSZ P. (1998): New Hungarian mayfly (Ephemeroptera) species arising from collectings of larvae. – Miscellanea zoologica hungarica, 12: 55–60.
- KOVÁCS T. & ZWICK P. (2008): Contribution to the knowledge of genus *Besdolus* (Plecoptera: Perlodidae). – Aquatic Insects, 30(2): 179–186.
- PETROVIĆ A., SIMIĆ V., PAUNOVIĆ M. & STOJANOVIĆ B. (2006). A new records of *Epeorus yougoslavicus* (Šamal, 1935) [Ephemeroptera] in Serbia and Montenegro. – Biotechnology & Biotechnological Equipment, 20: 67–71.
- PUTHZ V. (1974): Niekoľko Ephemeropter z Juhoslávie, prevažne z Čiernej hory a Srbska. Einige Ephemeropteren aus Jugoslawien, vorwiegend aus Montenegro und Serbien (Insecta, Ephemeroptera). – Acta rerum naturalium Musei Nationalis Slovaci, 19(2): 147–156.
- PUTHZ V. (1980): Ergebnisse der Albanien-Expedition 1961 des Deutschen Entomologischen Instituts. 94. Beitrag: Ephemeroptera. – Beiträge zur Entomologie, 30(2): 343–355.
- ŠAMAL J. (1935): Les Éphémères et les Plécoptères des ruisseaux de la Yougoslavie méridionale. – Verhandlungen der Internationalen Vereinigung für Theoretische und Angewandte Limnologie, 7: 113–116.
- XËRXA B. L., SARTORI M., GASHI A. & GATTOLLIAT J-L. (2019): First checklist of mayflies (Insecta, Ephemeroptera) from Kosovo. – ZooKeys, 874: 69–82.

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