

FIRST RECORD OF CADDISFLY *RHYACOPHILA LAEVIS* PICTET, 1834 (INSECTA: TRICHOPTERA) IN CROATIA

RENATA ĆUK & IVAN VUČKOVIĆ*

Hrvatske vode, Central Water Management Laboratory,
Ulica grada Vukovara 220, 10000 Zagreb, Croatia

Ćuk, R. & Vučković, I.: First record of caddisfly *Rhyacophila laevis* Pictet, 1834 (Insecta: Trichoptera) in Croatia. *Nat. Croat.*, Vol. 18, No. 2., 449–453, 2009, Zagreb.

Žumberačka reka is a stream situated in the Žumberak – Samoborsko gorje Nature Park. During the research conducted in September 2009, whose purpose was analyzing the benthic community structure, caddisfly species *Rhyacophila laevis* Pictet, 1834 was found for the first time in Croatia.

Key words: Trichoptera, *Rhyacophila laevis*, Žumberačka Reka, Croatia

Ćuk, R. & Vučković, I.: Prvi nalaz tulara *Rhyacophila laevis* Pictet, 1834 (Insecta: Trichoptera) u Hrvatskoj. *Nat. Croat.*, Vol. 18, No. 2., 449–453, 2009, Zagreb.

Žumberačka Reka je rijeka koji se nalazi u Parku prirode Žumberak – Samoborsko gorje. Tijekom istraživanja koje je provedeno u rujnu 2009. godine, kojem je za cilj bilo utvrđivanje sastava i strukture bentičkih beskralješnjaka, u rijeci je utvrđena vrsta tulara *Rhyacophila laevis* Pictet, 1834 i ovo je za sada prvi i jedini lokalitet na kojem je pronađena ta vrsta.

Ključne riječi: Trichoptera, *Rhyacophila laevis*, Žumberačka Reka, Hrvatska

Caddisflies are among the most frequent groups of macroinvertebrates in the running freshwater ecosystems. They inhabit almost every type of habitats although their biodiversity is the greatest in streams and small rivers (WALLACE *et al.*, 1990). Unfortunately they are poorly investigated in Croatia. Although huge amount of literature exists on that topic, lack of detailed information on the source of data, the exact sampling locality, the collector and on the collection where the samples are deposited, decreases the value of these data (KRUŠNIK, 1987a, 1987b; MARINKOVIĆ-GOSPODNETIĆ, 1971; 1979). Thus every new record of a certain species is of great importance for the overall knowledge on Croatian fauna.

* corresponding author: Ivan.Vuckovic@voda.hr

In the last few years systematic investigations have been conducted in the catchment area of the Drava River (PREVIŠIĆ *et al.*, 2007b), the Petrinjčica River (MIČETIĆ *et al.*, 2008), the Una River (BUČAR *et al.*, unpublished data), the Cetina River (VUČKOVIĆ *et al.*, 2009), in the area of the Plitvice National Park (HABDIJA, 1988; PREVIŠIĆ *et al.*, 2007a; KRULIK *et al.*, unpublished data), and in the past, in continental karstic area (HABDIJA, 1979; HABDIJA & PRIMC, 1987; HABDIJA *et al.*, 2002). As a result of these investigations three larvae were described in their terminal larval stage: *Drusus croaticus* Marinković-Gospodnetić, 1971 (KUČINIĆ *et al.*, 2008), *Tinodes braueri* McLachlan, 1878 (GRAF *et al.*, 2008) and *Annitella apfelbecki* Klapalek, 1899 (WARINGER *et al.*, 2009).

The Žumberačka reka stream is situated in the Žumberak – Samoborsko gorje Nature Park. It is classified as a small calcareous, mountain stream (804 m a.s.l.). The dominant substrates are microlithal (diameter: 2–6 cm) and akal (diameter: 0.2–2 cm).

The investigation of Žumberačka Reka was conducted on September 8th, 2009 (N 45° 44' 88", E 15° 34' 68", Fig. 1, 2). The sampling was conducted according to AQEM sampling method (HERING *et al.*, 2004) by using a hand net with a mesh size of 500 µm. All microhabitats represented with more than 5% coverage were sampled. The collected material was preserved with ethanol in the field and the final concentration was 70%. Sorting of organisms and determination were done in the laboratory by using a binocular stereomicroscope (Olympus SZX9). WARINGER & GRAF (1997) was used as a key for the determination of Trichoptera larvae.

At this sampling station three specimens of *R. laevis* were documented for the first time in Croatia. We present the taxa list of the benthic community found at the



Fig. 1. Map of Croatia with the location of the studied area.



Fig. 2. The Žumberačka Reka stream (photo: M. Miličić).

site: *Odontocerum albicorne* (Scopoli, 1763), *Isoperla* sp., *Leuctra* sp. (juveniles), *Protonemura* sp. (juveniles), *Baetis* sp. (juveniles), *Ephemerella major* (Klapálek, 1905), *Rhitrogena* sp. (juveniles), *Elmis maugetii* Latreille, 1798, *Limnius volckmari* (Panzer, 1793), *Gammarus fossarum* Koch, 1835, *Aterix marginata* (Fabricius, 1798), *Dicranota* sp., *Simulium* sp., *Tipula* sp., *Eiseinella tetraedra* (Savigny, 1826), *Hydraena* sp. and *Polycelis* sp.

Although only larvae of *R. laevis* were found, the record is reliable as the morphology of the larva is unique and cannot be misinterpreted (Fig. 3).

Considering all data, including caddiesflies collected up to the year of 1995 which are stored in the collection of the Croatian National History Museum in Zagreb and which were identified by Prof. Dr. Hans Malicky (unpublished data),



Fig. 3. *R. laevis*; larva, dorsal view (photo: I. Stanković).

ca. 150 species of caddisflies have been recorded (MALICKY, 1996; 2007; 2009; KUČINIĆ & ILIĆ, 1992/93; KUČINIĆ *et al.*, 2000; KUČINIĆ & MALICKY, 2002; KUČINIĆ, M., PREVIŠIĆ, A., VUČKOVIĆ, J., unpublished data).

For all of the above-mentioned reasons this finding is important for the overall knowledge on Croatian caddisfly fauna. This finding does not point at faunistic specificity of the Žumberačka Reka, but to the fact that caddisfly fauna of Croatia is still not explored enough and further investigations are needed.

ACKNOWLEDGEMENT

We are very grateful to our colleagues Maja Miličić and Igor Stanković for providing photographs, to Dr Mladen Kučinić from Department of Zoology, Faculty of Science of the University of Zagreb and to Dr Wolfram Graf from Department of Freshwater Ecology, University of Vienna for their valuable advices.

Received November 1, 2009

REFERENCES

- GRAF, W., KUČINIĆ, M., PREVIŠIĆ, A., VUČKOVIĆ, I. & WARINGER, J., 2008: The Larva, ecology and distribution of *Tinodes braueri* McLachlan, 1878 (Trichoptera: Psychomyiidae). *Aquatic insects* **30** (4), 295–299.
- HABDIJA, I., 1979: Ličinke Trichoptera kao indikatori ekologijskih prilika u bentosu krških voda. Zbornik radova »II kongresa ekologija Jugoslavije«, knjiga I, 1837–1849.
- HABDIJA, I. & PRIMC, B., 1987: Biocenotical Classification of the Lithoreophilous Communities in the Karts Running Waters according to the Macro Benthic Fauna. *Acta hydrochim. Hydrobiologia* **15** (5), 495–503.
- HABDIJA, I., 1988. Trophic importance of trichopterous larvae in bentos of the lakes of Plitvice. *Periodicum Biologorum*. **90**, 355–361.
- HABDIJA, I., RADANOVIĆ, I., PRIMC-HABDIJA, B. & ŠPOLJAR, M., 2002: Vegetation Cover and Substrate Type as factor Influencing the Spatial Distribution of Trichoptera along a Karstic River. *International Review of Hydrobiology* **87**, 423–437.
- HERING, D., MOOG, O., SANDIN, L. & VERDONSCHOT, P. F. M., 2004: Overview and application of the AQEM assessment system. *Hydrobiologia (The Hague)* **516**, 1–20.
- KRUŠNIK, C., 1987a: Prispevek k poznavanju favne mladoletnic (Insecta, Trichoptera) from Pohorje. *Biološki vestnik* **35** (2), 47–60.
- KRUŠNIK, C., 1987b: Trichoptera (Insecta). *Fauna Durmitora* **2**, 201–224.
- KUČINIĆ, M. & ILIĆ, D., 1992/93: *Micropterna testacea* Gmelin, 1789 (Insecta, Trichoptera) nova vrsta u fauni tulara Republike Hrvatske. *Rad HAZU* **26**, 125–131.
- KUČINIĆ, M., KEROVEC, M., HABDIJA, I. & MIHALJEVIĆ, Z., 2000: The present knowledge of the fauna of Trichoptera in the area of Croatia. Program & Abstracts of 10th International Symposium on Trichoptera (Potsdam, 30.VII.–5.VIII.2000) 33–34.
- KUČINIĆ, M. & MALICKY, H., 2002: *Rhyacophila dorsalis plitvicensis*, a new subspecies (Trichoptera: Rhyacophilidae) from Croatia. Proceedings of the 10th International Symposium on Trichoptera. *Nova Supplementa Entomologica* **15**, 145–147.
- KUČINIĆ, M., PREVIŠIĆ, A., GOTTSTEIN, A., HRAŠOVEC, B., STANIĆ-KOŠTROMAN S., PERNEK, M. & DELIĆ, A. 2008: Description of the larvae of *Drusus radovanovici septentrionis* Marinković-Gospodnetić, 1976 and *Drusus croaticus* Marinković-Gospodnetić, 1971 (Trichoptera: Limnephilidae) from Bosnia and Herzegovina and Croatia. *Zootaxa*, **1783**, 1–17.

- MALICKY, H., 1996: Das Problem der allopatrischen Arten bei europäischen Köcherfliegen (Insecta: Trichoptera). *Natura Croatica* **5** (1), 11–23.
- MALICKY, H., PREVIŠIĆ, A. & KUČINIĆ, M., 2007: *Rhyacophila cabrankensis* nov. spec. from Croatia. *Braueria* **34**, 14.
- MALICKY, H., 2009: Die Köcherfliegen (Insecta, Trichoptera) der Sammlung von Franjo Košćec im Museum Varaždin, Kroatien. *Natura Croatica* **18** (1), 129–134.
- MARINKOVIĆ-GOSPODNETIĆ, M., 1971: The species of the genus *Drusus* in Yugoslavia. *Godišnjak Biološkog Instituta u Sarajevu* **24**, 105–109.
- MARINKOVIĆ-GOSPODNETIĆ, M., 1979: Trichoptera (Insecta) velikih karstnih izvora u Dinari-dima. Zbornik radova »II. kongresa ekologija Jugoslavije«, knjiga I, 1837–1849.
- MIČETIĆ, V., V., BUČAR, M., IVKOVIĆ, M., PIRIA, M., KRULIK, I., MIHOCI, I., DELIĆ, A. & KUČINIĆ, M., 2008: Feeding ecology of *Sabanejewia balcanica* and *Cobitis elongata* in Croatia. *Folia Zoologica* **57** (1–2), 181–190.
- PREVIŠIĆ, A., KEROVEC, M. & KUČINIĆ, M., 2007a: Emergence and composition of Trichoptera from karst habitats, Plitvice lakes region, Croatia. *International Review of Hydrobiology* **92**, 61–83.
- PREVIŠIĆ, A., MIHALJEVIĆ, Z. & KEROVEC, M., 2007b: Caddisfly (Insecta: Trichoptera) fauna of altered and man-made habitats in Drava river, NW Croatia. *Natura Croatica* **16** (3), 181–187.
- WARINGER, J. & GRAF, W., 1997: Atlas der Österreichischen Köcherfliegenlarven. Facultus Universitätsverlag, Wien, 1–286.
- WARINGER, J., GRAF, W., KUČINIĆ, M., PREVIŠIĆ, A. & VUČKOVIĆ, I., 2009: The Larva and life cycle of *Annitella apfelbecki* Klapalek, 1899, including a re-description of *Melampophylax nepos* McLachlan, 1880 (Trichoptera: Limnephilidae). *Aquatic Insects* **31** (1), 71–80.
- VUČKOVIĆ, I., BOŽAK, I., IVKOVIĆ, M., JELENČIĆ, M., KEROVEC, M., POPIJAČ, A., PREVIŠIĆ, A., ŠIRAC, S., ZRINSKI, I. & KUČINIĆ, M., 2009: Composition and structure of benthic macro-invertebrate communities in a Mediterranean karst river Cetina, Croatia. *Natura Croatica* **18** (1), 49–82.
- WALLACE, I.D., WALACE, B. & PHILIPSON, G. N., 1990: *A key to the Case-bearing Caddis larvae of Britain and Ireland*. Scientific Publication 51, Freshwater Biological Association, Ambleside, Cumbria, 1–237.

SAŽETAK

Prvi nalaz tulara *Rhyacophila laevis* (Insecta: Trichoptera) u Hrvatskoj

Renata Ćuk & Ivan Vučković

Poznavanje faune Trichoptera Hrvatske je vrlo oskudno. Pedesetih godina započinju istraživanja koja se bave detaljnim istraživanjem biocenoza naših tekućica u kojima se djelomično obrađuju i tulari. Takvim istraživanjima u početku je utvrđeno 40-tak vrsta Trichoptera, a istraživanja se nastavljaju do današnjih dana. Dosadašnjim je radom zabilježeno 100-tinjak vrsta tulara. Utvrđeni broji vrsta čini najvjerojatnije 40–45% potencijalne faune Hrvatske, za koju možemo pretpostaviti da broji više od 200, a manje od 250 vrsta. Žumberačka Reka je rijeka koja se nalazi se u parku prirode Žumberak – Samoborsko gorje i za sada je jedini lokalitet na kojem je nađen tular *Rhyacophila laevis* Pictet, 1834.