SPIXIANA	37	1	89–92	München, August 2014	ISSN 0341–8391

New records of non-biting midges from coastal regions of Croatia and Montenegro

(Diptera, Chironomidae)

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Płóciennik, M., Gadawski, P. & Kazimierczak, J. 2014. New records of non-biting midges from coastal regions of Croatia and Montenegro (Diptera, Chironomidae). Spixiana 37 (1): 89–92.

The Balkan Peninsula is one of the last regions of Europe where the aquatic insect fauna is rather poorly known. However, the presence of diverse freshwater habitats indicates potentially high biodiversity in the region. During autumn of 2010 and summer of 2012, samples of imagines and pupal exuviae of non-biting midges (Diptera, Chironomidae) were collected in coastal areas of Montenegro and Croatia. The findings result in new species records of *Eukiefferiella fuldensis* for Montenegro, and of *Tanytarsus lactescens* and *Kiefferulus tendipediformis* for Croatia. With these new records, the list of chironomid taxa reported from Montenegro contains 30 species, the list for Croatia 77 species.

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Introduction

The family Chironomidae is one of the most diverse and widespread groups of aquatic insects (Ferrington 2008). In Europe, around 1250 species are currently recognised as valid (Sæther & Spies 2013). In the Mediterranean region, the chironomid fauna of the Apennine and Iberian Peninsulas are relatively well known. In contrast, midges of the Balkan Peninsula are poorly documented, even if compared to those found along the North African coast (Boumaiza & Laville 1988; Kettani et al. 2001; Kettani & Langton 2011; Chaib et al. 2011, 2013). Data on the chironomid fauna of the Balkan Peninsula comes from few large regional investigations (e. g. Janković 1978, Milošević et al. 2011), ecological research (e. g. Čerba et al. 2010), and from occasional smaller contributions (e. g. Płóciennik et al. 2012). In the present paper we add new records of three chironomid species from the eastern Adriatic coast.

Material and results

Chironomid imagines and pupal exuviae were collected in autumn 2010 and summer 2012 in coastal regions of Montenegro and Croatia (Fig. 1). The material was identified using the keys in Langton & Visser (2003), Langton & Pinder (2007) and Giłka (2011a), as applicable. The following three species had not been recorded from the respective country.

Two pupal exuviae of *Eukiefferiella fuldensis* Lehmann, 1972 (Fig. 2C,D) were collected from a stream near Petrovac, N 42°07'14.30", E 19°04'09.48", Montenegro (Fig. 1A), on 2010-10-08. The material was collected by forceps directly from the sample of stream water poured over a dish. At the sampling site about 200 m from the sea shore, the stream was small and fast flowing with stony bottom. Surrounding terrestrial vegetation consisted of pine forest.

Two adult males of *Tanytarsus lactescens* Edwards, 1929 (Fig. 2B) and one male of *Kiefferulus tendipedi-*

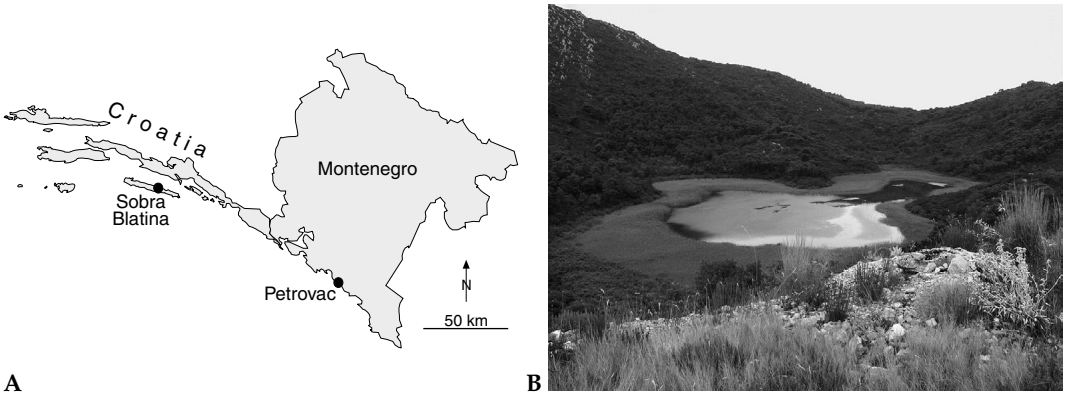

Fig. 1. A. The study areas near Petrovac, Montenegro, and Sobra Blatina, Croatia (**B**). The map shows selected parts of Croatia only.

formis (Goetghebuer, 1921) (Fig. 2A) were collected in Sobra Blatina, N 42°43'53.76", E 17°36'00.24", on Mljet Island, Croatia (Fig. 1B,C), on 2012-07-12, using a light trap with 500 W mercury vapor lamp bulb. Sobra Blatina is a brackish-water lake surrounded by steep Cretaceous limestone and dolomite hills overgrown with *Quercetea ilicis* forest and maquis. It is a eutrophic, stagnant, warm-water body typical for Mljet. The lakeshore vegetation of rushes and reeds is dominated by *Phragmites communis* (Boršić et al. 2009).

Discussion

All three recorded species are widespread in Europe. *Eukiefferiella fuldensis* occurs in cold, fast-flowing mountain streams but not in riverine potamal zones (Moller Pillot 2013). Although the species has been reported from many western and central European areas (Sæther & Spies 2013), its distribution can be considered as incompletely known. Other species of *Eukiefferiella* previously recorded from Montenegro are *E. brevicalcar* and *E. clypeata*. Larvae belonging to the *E. fittkaui* aggregate or the *E. ilkleyensis* agg. have been found in the river Morača and in a few small streams (Płóciennik & Pešić 2012).

Tanytarsus lactescens and *Kiefferulus tendipediformis* seem to be associated with slow-flowing and stagnant eutrophic waters. Larvae of *K. tendipediformis* have been found, e. g. in ponds, pools and ditches. The species occurs in habitats with accumulated detritus, such as fens and brackish-water bodies. According to Moller Pillot (2009), it has been collected in the French Camargue in water with a chloride content of about 2000 mg/l. In the Netherlands the species inhabits waters with more than 1000 mg Cl/l. In the Balkan Peninsula *K. tendipediformis* has been found in Bulgaria, Greece, Romania, and doubtfully in the European part of Turkey. It was recorded also in Hungary and doubtfully in Ukraine (Móra & Csabai 2008, Sæther & Spies 2013, Płóciennik & Karaouzas 2014). In the Balkan region, *T. lactescens* has been found in Romania, Bosnia & Herzegovina, and Crete. It has a generally northern Palearctic distribution but disperses southward from its main range. The larvae occur only in limnic waterbodies, inhabiting shallow and warm lakes, ponds and artificial waters that are oligo- to eutrophic (Moller Pillot & Klink 2003; Giłka 2009, 2011b).

With the additions of the above records, the list of Chironomidae reported from Croatia contains 77 species, and the list for Montenegro includes 30 species. All the above-mentioned taxa are relatively common members of the western Palearctic fauna. Their findings confirm the strong association of the Balkanic aquatic fauna with the European biogeographic province. Further faunistic and taxonomic research in the region, including studies of cryptic diversity in large waterbodies like tectonic lakes (e. g. Skadar Lake, Ohrid Lake) or in big rivers (e. g. Morava River, Iskyr River) may verify to what extent the Mediterranean aquatic entomofauna is related to the north-European one.

Acknowledgements

We would like to thank Henk Moller Pillot, Henk Vallenduuk and Wojciech Giłka for verification of our identifications, and Michał Grabowski for linguistic corrections. An anonymous reviewer is gratefully acknowledged for helpful comments on the manuscript.

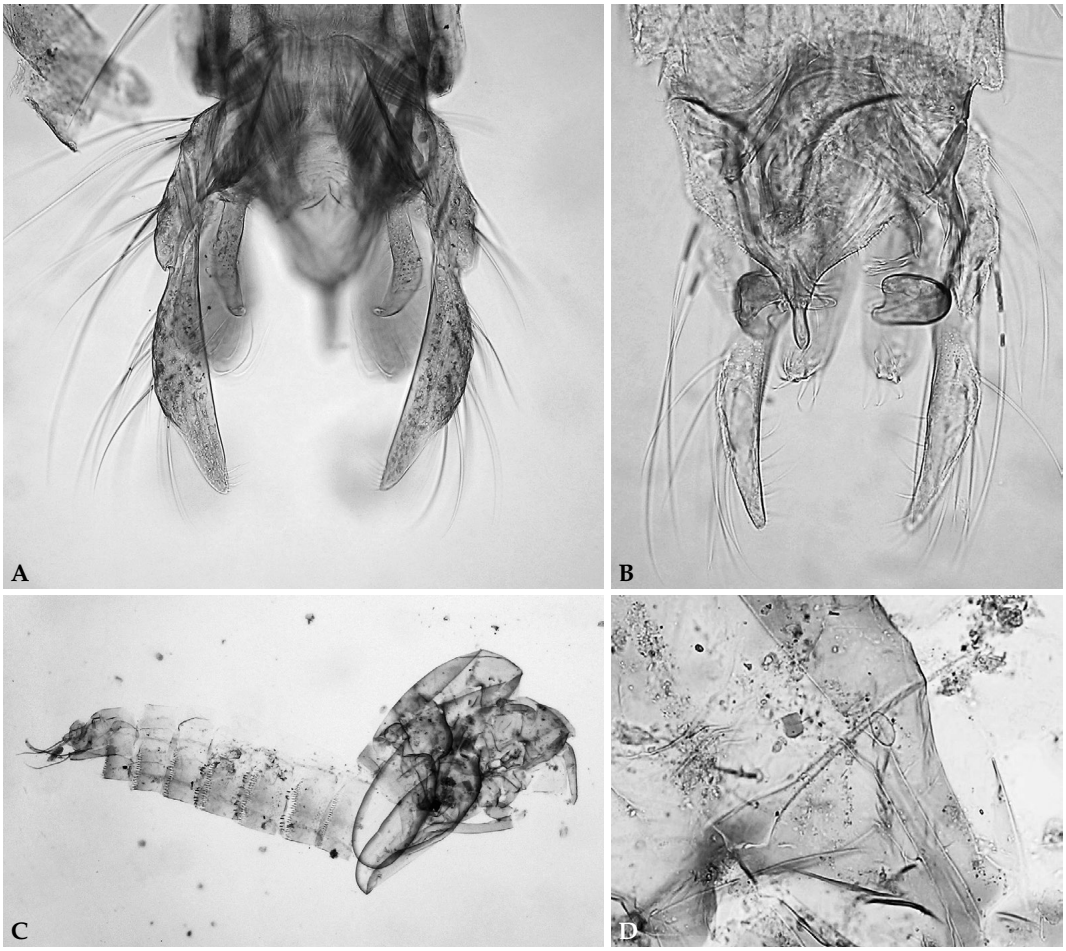

Fig. 2. Microphotographs of collected specimens. **A.** *Kiefferulus tendipediformis* (Goetghebuer, 1921), male hypopygium; **B.** *Tanytarsus lactescens* Edwards, 1929, male hypopygium; **C,D.** *Eukiefferiella fuldensis* Lehmann, 1972, pupal exuviae in lateral view, and thoracic horn.

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