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FIRST RECORD OF *LIMNEPHILUS CENTRALIS* CURTIS, 1834 (INSECTA: TRICHOPTERA) FROM THE REPUBLIC OF KOSOVO

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Abstract - The Limnephilid species *Limnephilus centralis* is present mostly in Western and Central Europe and has been rarely sampled in Southeastern Europe. In this paper we present first record of this species from the Republic of Kosovo, more precisely from Mokna Mountain. In some European countries or areas during the last decades *Limnephilus centralis* has been assessed as extinct, vanished or rare. In Kosovo it belongs to the group of rare species. *Limnephilus centralis* is the ninth species of the genus *Limnephilus* reported from Kosovo.
Other species associated with *Limnephilus centralis* in investigated locality are: *Rhyacophila laevis, Philopotamus montanus, Potamophylax luctuosus, Limnephilus bipunctatus* and *Beraea pullata.*

KEY WORDS: *Limnephilus centralis*, Kosovo, Trichoptera, Balkan Peninsula.

Izvleček – PRVI PODATKI O VRSTI *LIMNEPHILUS CENTRALIS* CURTIS, 1834 (INSECTA: TRICHOPTERA) V REPUBLIKI KOSOVO

Limnephilus centralis, vrsta družine Limnephilidae, je razširjena predvsem v zahodni in srednji Evropi, v jugovzhodni Evropi je bila redko najdena. V prispevku predstavljava prvo najdbo te vrste v Republiki Kosovo, natančneje na gori Mokna. V nekaterih evropskih državah ali območjih je bila v zadnjih desetletjih vrsta *Limnephilus centralis* opredeljena za izumrlo, izginulo ali redko. Na Kosovu pripada skupini redkih vrst. Je deveta vrsta rodu *Limnephilus*, zabeležena na Kosovu. Druge vrste, pridružene vrsti *Limnephilus centralis* na preiskanem najdišču, so *Rhyacophila laevis,*

Philopotamus montanus, Potamophylax luctuosus, Limnephilus bipunctatus in *Beraea pullata.*

KLJUČNE BESEDE: *Limnephilus centralis*, Kosovo, Trichoptera, Balkanski polotok.

Introduction

The Integripalpian family Limnephilidae is one of the most species rich families of caddisflies, distributed mostly in northern temperate regions. All species have aquatic larvae with the exception of the genus *Enoicyla* Rambur, 1842, whose larvae are terrestrial. Their aquatic larvae are notable for constructing portable cases from different material of plant, mineral and even animal origin.

The genus *Limnephilus* Leach, 1815 has more than 200 known extant species worldwide (Morse 2016) distributed mostly across Holarctic region. Adults usually fly from May to October. Larvae of *Limnephilus centralis* Curtis, 1834 are found mostly in eucrenal and hypocrenal zone but sometimes in epirhithral zone as well (Graf *et al.* 2008). This species is found in a wide variety of altitudes with adults emerging mostly in spring and autumn, but in lesser number in summer as well. While widespread in some countries of Western and Central Europe, it is rarely sampled in most part of the Southeastern Europe. The goal of this paper is to contribute to the knowledge of the distribution of *Limnephilus centralis* in this part of the European continent where large and systematic inventories of caddisflies are still missing.

Material and methods

Data sampling and processing

Adult caddisfly specimens were collected with entomological net and ultraviolet light trap three times during 2015. Ultraviolet light was placed above the white pan of 60 cm in diameter filled 10 cm with water with a few drops of detergent. The light trap was placed on stream bank and operated from dusk until next morning. Collected samples were preserved in 80 % ethanol. The specimens were identified under a stereomicroscope with determination keys from Malicky (2004) and Kumanski (1985, 1988). The collection is deposited at the Laboratory of Zoology of the Faculty of Natural and Mathematical Sciences, University of Prishtina, Kosovo.

Study area

The sampling site is located at Mokna Mountains in northwestern part of Kosovo. This mountain area is part of Bjeshkët e Nemuna Mountains and is shared by Kosovo, Serbia and Montenegro.

The sampling site (Figure 1) is located in a stream originating from this range of mountains above the Istog town (42.88737˚N, 20.56192˚E, and 1669 m above sea level). The streambed is moderately shaded by nearby vegetation and consists of gravel, sand and stones of different sizes.

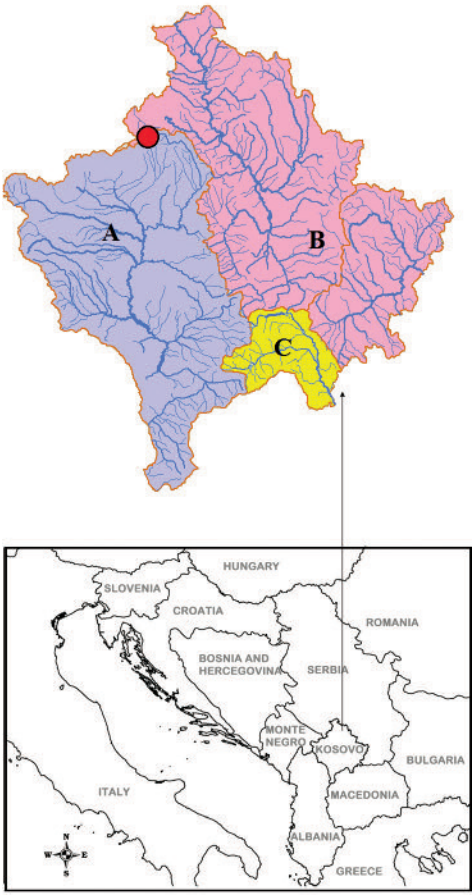

Fig. 1: Sampling site in Mokna Mountain with indicated watersheds in the Republic of Kosovo: A – Adriatic Sea watershed, B – Black Sea watershed, C – Aegean Sea watershed.

Results

Material examined:
Family Limnephilidae
Limnephilus Leach, 1815
***Limnephilus centralis* Curtis, 1834**

One adult male specimen was caught with UV light trap on 21st of July 2015.

Other species associated with *Limnephilus centralis* in this sample are: *Rhyacophila laevis* Pictet, 1834 (1♂), *Philopotamus montanus* (Donovan, 1813) (2♂♂, 2♀♀), *Potamophylax luctuosus* (Piller & Mitterpacher, 1783) (1♂), *Limnephilus bipunctatus* Curtis, 1834 (2♀♀) and *Beraea pullata* (Curtis, 1834) (7♂♂, 2♀♀).

One adult female specimen was caught with entomological net on 23rd of July 2015.

Other species associated with *Limnephilus centralis* in this sample are: *Rhyacophila laevis* (1♂), *Philopotamus montanus* (9♂♂, 2♀♀), and *Beraea pullata* (12♂♂, 3♀♀).

One adult male specimen was caught with UV light trap on 26th of August 2015.

Other species associated with *Limnephilus centralis* in this sample are: *Philopotamus montanus* (1♂♂), *Potamophylax cingulatus/luctuosus* (1♀), *Potamophylax pallidus* (Klapalek, 1899) (1♀), *Beraea pullata* (2♂♂) and *Hydropsyche* spp. (2♀♀).

Discussion

During this investigation we found *Limnephilus centralis* for the first time in the Republic of Kosovo. The species belongs to the group of rare species in Kosovo. From more than 150 localities all over Kosovo sampled during the last years (e.g. Gashi *et al.* 2015, Gashi and Ibrahimi 2008, Ibrahimi *et al.* 2013, 2014, 2015a, 2015b, 2015c, 2015d, 2016, Ibrahimi and Gashi 2008, Olah *et al.* 2014, 2015) *Limnephilus centralis* is found in one locality only. The species is sampled rarely elsewhere in Southeastern Europe as well. Only in Bulgaria this species has been found in considerably more localities (Figure 2, DAET 2016). In Figure 2 are summarized major findings of *L. centralis* in Europe according to DAET (2016). In addition, this species is also present in Slovenia and Serbia (Krušnik and Urbanič 2002, Živić *et al*. 2006). In several European countries during the last decades *L. centralis* has been assessed as extinct, vanished or rare. In Hungary and some parts of Germany it hasn't been

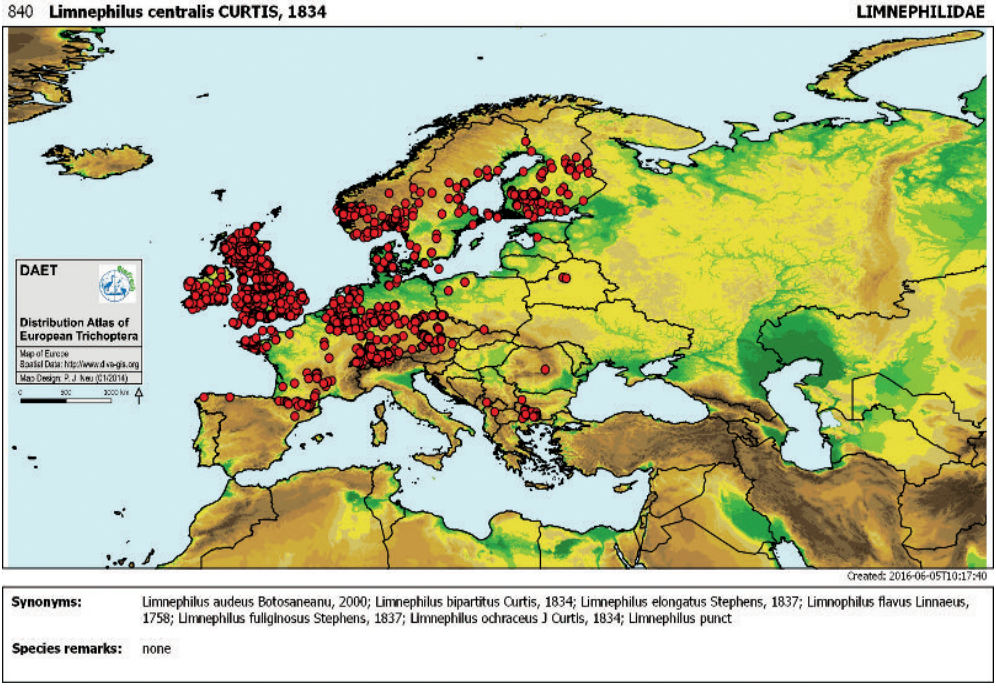

Fig. 2: Distribution of *Limnephilus centralis* in Europe prior to the current investigation, according to the Distribution Atlas of European Trichoptera (DAET 2016).

recorded during the past several decades and is thus categorized as extinct/vanished species (Nogradi and Uherkovich 1999, Klima 1991). *L. centralis* has been rarely sampled in Czech Republic, some parts of Germany, France, Luxemburg and some Balkan countries (Maradova and Soldan 2012, Neu 2005, DAET 2016). *L. centralis* is the ninth species of the genus *Limnephilus* registered in the Republic of Kosovo.

Three other species collected during this investigation together with *L. centralis* also belong to the group of rare species in Kosovo: *Beraea pullata, Rhyacophila laevis* and *Potamophylax luctuosus*. Prior to this investigation *B. pullata* has only been found in one locality, upper stream of Lloqan River in Bjeshkët e Nemuna (Ibrahimi *et al.* 2015d). *R. laevis* and *P. luctuosus* previously have been found in less than 5 localities in Kosovo (Ibrahimi *et al.* 2014).

This investigation contributes to the inventory of the caddisfly fauna of the Republic of Kosovo and especially emphasizes Mokna Mountain as area rich with rare species of caddisflies.

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