Some new records of chironomids (Diptera: Chironomidae) from the Czech Republic

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Some new records of chironomids (Diptera: Chironomidae) from the Czech Republic. – Acta Mus. Siles. Sci. Natur. 65: 143-147, 2016.

Abstract: Six chironomid species: *Paraboreochlus minutissimus* (Strobl, 1894), *Trissopelopia longimanus* (Staeger 1839), *Boreoheptagyia monticola* (Serra-Tosio, 1964), *Cricotopus* (s.str.) *similis* Goetghebuer 1921, *Heleniella serratosioi* Ringe, 1976, *Krenosmittia camptophleps* (Edwards, 1929), were recorded in Czech Republic for the first time. The pupal exuviae were collected in July 2009 from Otava River in the vicinity of Rejštejn village in the central part of the Bohemian Forest. The notes on known distribution and ecology of the species are presented.

Key words: Chironomidae, Podonominae, Tanypodinae, Diamesinae, Orthocladiinae, ecological notes, distribution

Introduction

Pupal exuviae sampling has proved to be an excellent tool to identify the occurrence, distribution and ecology of chironomids in various water biotopes. This method greatly contributed, among other things, to the knowledge of the regional fauna (see e.g. Bitušík 1993). Last time, Sýrovátka & Langton (2015) demonstrated again that even one sample taken from a locality can bring surprising results and this paper also proves it. During the limnological investigations of the lakes in the Bohemian Forest, one sample of pupal exuviae was taken from Otava River in the vicinity of Rejštejn village in July 28, 2009. Here we present the results of our survey.

Material and methods

Otava River originates at the confluence of two mountain streams Křemelná and Vydra in the central part of the Bohemian Forest. The sampling site was located at 590 m a.s.l. just about 3 km bellow the confluence (49°08'02.2'' N, 13°30'02.4'' E). This is an unpolluted section of the Otava River with low content of nutrients, brownish water due to humic substances and preserved hydromorphology.

The current is strong and the bottom is composed largely of cobbles and boulders with considerable proportion of mosses on their surface. The width of the river was 15 - 20 m in time of sampling.

Floating chironomid material was sampled along the right shore of the stream by skimming the water surface with a hand net with telescopic handle (mesh size 250 µm, frame diameter 25 cm). Collected material containing pupal exuviae and adults was placed into a labelled plastic bottle and preserved with 75% ethanol. Sorted exuviae were mounted to microscopic slides and identified using Langton (1991) and Langton & Visser (2003). Nomenclature and distribution follow Sæther & Spies (2013).

All specimens were collected and identified by the authors, and the material is deposited in the collection of the Dept. of Biology and Ecology, Faculty of Science, Matthias Belius University in Banská Bystrica.

Survey of species

A total of 286 pupal exuviae and 7 males were identified, mostly at species level. The diverse chironomid assemblage consisted of 36 taxa/ species: *Paraboreochlus minutissimus* (Strobl, 1894), *Trissopelopia longimanus* (Staeger 1839), *Thienemannimyia geijskesi* (Goetghebuer 1934), *Nilotanypus dubius* (Meigen, 1804), *Boreoheptagyia monticola* (Serra-Tosio, 1964), *Potthastia* cf. *gaedii* (Meigen, 1838), *Cardiocladius capucinus* (Zetterstedt, 1850), *Corynoneura celtica* Edwards, 1924, *Corynoneura* Pe4 Langton 1991, *Cricotopus*

(s.str.) *tremulus* (Linnaeus 1758), *C.* (s.str.) *similis* Goetghebuer 1921, *C.* (s.str.) *fuscus* (Kieffer 1909), *Eukiefferiella coerulescens* (Kieffer, 1926), *E. fuldensis* Lehmann, 1972, *E. similis* Goetghebuer, 1939, *E. clypeata* (Thienemann, 1919), *E. brevicealcar* (Kieffer, 1911), *E. devonica* (Edwards, 1929), *E. minor* (Edwards, 1929)/ *fittkau* Lehmann, 1972, *Heleniella serratosioi* Ringe, 1976, *Krenosmittia camptophleps* (Edwards, 1929), *Nanocladius* (s.str.) *parvulus* (Kieffer, 1909), *N.* (s.str.) *rectinervis* (Kieffer, 1911), *Orthocladius* (s.str.) *rubicundus* (Meigen 1818), *O.* (*Mesorthocladius*) *frigidus* (Zetterstedt 1838), *O.* (*Euorthocladius*) *ashei* Sponis, 1990, *O.* (*E.*) *rivicola* Kieffer, 1911, *O.* (*E.*) *saxosus* (Tokunaga, 1939), *Paracricotopus niger* (Kieffer 1913), *Pseudosmittia* Pe1 Langton 1991, *Synorthocladius semivirens* (Kieffer, 1909), *Tvetenia calvescens* (Edwards, 1929), *Thienemanniella* Pe2b Langton 1991, *P.* (s.str.) *laetum* (Meigen, 1818), *Polypedilum* (s.str.) *pedestre* (Meigen, 1830). Six of the collected taxa were recorded in the Czech Republic for the first time:

SUBFAMILY PODONOMINAE

***Paraboreochlus minutissimus* (Strobl, 1895)**

Material examined: 1 pupal exuvia, female

Distribution: A rare species, its findings are up to now limited to small number of countries in West, Central and South Europe, East Palaearctic and Near East and North Africa. It represents the third record of the subfamily Podonominae from the Czech Republic (Bohemia).

Comments: *P. minutissimus* has been traditionally listed among spring dwellers (Thienemann 1936) and some later findings have confirmed this as well (Lindegaard 1995, Ferrarese 2005). On the other hand, the record from Otava River is further evidence that larvae live in the higher order streams (Schmid-Araya & Schmid 1995, Janeček & Moog 1995, Bitušik & Hamerlík 2001, Hayford 2009). Ferrarese (2005) concluded that the presence of moss is not necessary in the habitat but larvae require some amount of fine organic particles.

P. minutissimus is evidently an infrequent species. Only one pupal exuviae was always found amongst hundreds of specimens collected from two streams in Slovakia. Hayford (2009) has supposed that larvae could have inhabited the hyporheic zone of the rivers and this could explain the rare occurrence of the preimaginal stages in samples taken by conventional sampling methods.

SUBFAMILY TANYPODINAE

***Trissopelopia longimanus* (Staeger 1839)**

Material examined: 1 praepupa

Distribution: Palaearctic species, recently known mostly from south-western, and partly from central European countries.

Comments: Larvae of *T. longimanus* can be considered to be oligo-stenothermic. They have been found in springs, mountain brooks and also in the littoral of some Scandinavian lakes (Vallenduuk & Moller Pillot 2007 and citations therein). Larvae live in streams where they prefer mosses even in hygropetric conditions (Fittkau 1962, Lindegaard *et al.* 1975) but Hildrew *et al.* (1985) found them mainly between dead leaves on a stream bottom.

SUBFAMILY DIAMESINAE

Boreoheptagyia monticola (Serra-Tosio, 1964)

Material examined: 2 pupal exuviae, females

Distribution: West Palaearctic distribution, known recently from a small number of European countries situated rather in South and Central Europe including Poland and Slovakia.

Comments: Larvae of *Boreoheptagyia* inhabit rocks and boulders at the splash zone of cool streams where feed on periphyton. *B. monticola* is a cold-stenothermic species that was found as a member of kryal chironomid community at high altitudes in the Italian Alps (Lencioni *et al.* 2007). On the other hand, Langton & Casas (1999) found larvae of *B. monticola* in Sierra Nevada in permanent streams at ≈ 700 m a.s.l.

SUBFAMILY ORTHOCLADIINAE

Cricotopus (Cricotopus) similis Goetghebuer 1921

Material examined: 2 pupal exuviae, 1 male, 1 female

Distribution: Palaearctic species widely distributed across Europe but has not been recorded in all countries. White spots on the map are most likely due to rather insufficient data than actual absence of the species.

Comments: Rheophilic species, larvae live in brooks and streams with exception of large rivers and mountain brooks (e.g. Gendron & Laville 1997, Moller Pillot 2013). In Slovakia, pupal exuviae were found in sub-mountain and lowland rivers including polluted sites. It occurs together with other species of the subgenus, especially with *C. tremulus*, *C. fuscus*, *C. triannulatus*, *C. bicinctus* and *C. vierriensis* but seems to be much less numerous than those species.

Heleniella serratosioi Ringe, 1976

Material examined: 4 pupal exuviae, 3 males, 1 female

Distribution: Seems to be west Palaearctic species, more or less continuously distributed in west and central Europe, Finland is only northern European country with presence of the species.

Comments: The species is rheophilic and cold-stenothermic with occurrence in springs and rhithral zone of streams. The larvae live on bottom with layers of fine detritus (Moller Pillot 2013 and citation therein). It seems that in Slovakia the species occurs more frequently than *H. ornaticollis*.

Krenosmittia camptophleps (Edwards, 1929)

Material examined: 12 pupal exuviae, 5 males, 7 females

Distribution: Palaearctic species widely distributed across Europe, however, due to insufficient data there are many white spots on the map of its occurrence.

Comments: Rheophilic and rather cold-stenothermic larvae of the species inhabit depositions of fine detritus in microhabitats with slower current. In comparison with *K. boreoalpina* it seems to be less linked to montane regions and can be found in streams of higher orders (hyporhithral). In Slovakia, both species are frequently found together. Thienemann (1954) found larvae of *K. camptophleps* in terrestrial habitats.

Acknowledgements: Thanks are due to our colleague Laci Hamerlík for helpful comments and language corrections of the manuscript. This chironomid study was supported by project ITMS 26210120024 "Renewal and development of infrastructure for ecological and environmental research at UMB".

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Niekoľko nových nálezov pakomárov (Diptera: Chironomidae) z Českej republiky

Počas výskumu šumavských jazier bola 28. júla 2009 boli odobrané exúviá pakomárov z hladiny rieky Otava asi 3 km pod sútokom Křemelnej a Vydry (49°08'02.2'' N, 13°30'02.4'' E). Vzorka obsahovala 286 exúvií, ktoré boli identifikované do 36 druhov, resp. taxónov. Z nich šesť bolo zaznamenaných na území Českej republiky po

prvýkrát: *Paraboreochlus minutissimus* (Strobl, 1894), *Trissopelopia longimanus* (Staeger 1839), *Boreoheptagyia monticola* (Serra-Tosio, 1964), *Cricotopus* (s.str.) *similis* Goetghebuer 1921, *Heleniella serratosioi* Ringe, 1976 a *Krenosmittia camptophleps* (Edwards, 1929). Prehľad druhov je doplnený informáciami o ich súčasnom rozšírení a ekologických nárokoch.

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