

BRAUERIA (Lunz am See, Austria) 46:22-24 (2019)

Caddisflies from the Belgorod area, Russia

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Abstract. A total of 58 species of caddisflies was collected using light and bait traps from the Belgorod area in southwest Russia in 2011 – 2012. Referring to IVANOV'S list (2011), *Orthotrichia angustella* (MCLACHLAN 1865) is a new species to Russia and eleven species are new to the Central Black Soil Region.

Introduction

Caddisflies are attracted to light traps abundantly (e.g. CRICHTON 1965, SVENSSON 1974). Red wine- and beer-based bait traps for Lepidoptera also attract caddisflies, mainly Phryganeidae and Limnephilidae (SALOKANNEL & MATTILA 2018). Therefore, I've regularly been studying caddisflies from such trap contents provided by diligent lepidopterologists. This is one of those studies, and a contribution to the Russian caddisfly fauna. The data from the first year of study has been provided to the DAET project and therefore already included in Neu et al. (2018). However, the most interesting results of the study are all from the second year.

Material and Methods

The material was collected from three sites in the Belgorod area throughout both seasons in 2011 – 2012, except in Rovenki only in 2012. It was stored in a freezer and brought to Finland afterwards. Lepidoptera were studied first, but caddisflies were still reasonably fresh when I got them. However, I examined them mostly in liquid to make examination of the genitalia easier and to minimize the "moth-dust", to which I have become somewhat sensitive for over the years. For the identification work, I used MALICKY'S (2004) atlas as the main reference. In addition, some of the specimens were DNA-barcoded. All the sites are located in the Russian Central Black Soil Region, Belgorod oblast (Table 1).

Results

In all, 58 species of caddisflies were identified. *Orthotrichia angustella* (MCLACHLAN 1865) was reported as new to Russia. Eleven species were recorded as new to the Central Black Soil Region (see Table 2).

O. angustella was found only from Stenki together with the two other wide-spread (NEU et al. 2018) European *Orthotrichia*-species: *O. costalis* (CURTIS 1834) and *O. tragetti* MOSELY 1930. The records of *O. angustella* are from 18–20 June (7 males, 10 females) and 11–17 Sept. (1 male) 2012.

Two rare species (see Discussion) were recorded; *Plectrocnemia conjuncta* MARTYNOV, 1914 and *Parasetodes respersellus* (RAMBUR 1842). Two male specimens of *P. conjuncta* were caught with light traps in Stenki within period 5–11 June 2012. *P. respersellus* was recorded from light traps in Stenki 12–23 July (2 exx) and 25 Sept–8 Oct. (1 ex).

Several species were recorded from all the three sites and they were often present in relatively large numbers: *Agraylea sexmaculata* CURTIS 1834, *Ecnomus tenellus* (RAMBUR 1842), *Neureclipsis bimaculata* (LINNAEUS 1758), *Hydropsyche pellucidula* (CURTIS 1834), *Phryganea grandis* LINNAEUS 1758, *Limnephilus lunatus* CURTIS 1834,

Glyptotaelius pellucidus (RETZIUS 1783), *Oecetis lacustris* (PICTET 1834), *O. ochracea* (CURTIS 1825), *Leptocerus interruptus* (FABRICIUS 1775), and *L. tineiformis* CURTIS 1834.

Discussion

The number of recorded species (58) can be considered as somewhat expected from the central European low-lands. These caddisflies are typical of slow-flowing rivers and ponds which are the dominant water habitats at these sites. Most of the recorded species are common and wide-spread European "basics". Meanwhile, the fauna confined to cool waters and higher oxygen levels is generally absent. There are only 100 species listed from the Central Black Soil Region (IVANOV 2011) while the real number should be clearly higher, perhaps even 200. Therefore, finding 11 species new to the area is not surprising; even more could have occurred. Based on the low number of records in NEU et al. (2018), *Plectrocnemia conjuncta* and *Parasetodes respersellus* (Rambur 1842) may be considered as rare species, and thus these are the most remarkable records of the study along with *Orthotrichia angustella*.

Further notes on two species

In addition to the characteristic male and female genitalia, *O. angustella* males have an extraordinary row of dark scales along the subcosta of the fore wings which makes it easy to distinguish them from other hydroptilids present in the area. One specimen of *O. angustella* was sent for DNA barcoding; a full-length (658 bp) sequence is publicly available with specimen identifier JSIk-2013F055 in the BOLD database. In my limited DNA barcode reference material, the genetic distance of *O. angustella* is very clear, about 15% from both *O. costalis* and *O. tragetti*. Also, the phenology may be worth of a note: the majority of the specimens of *O. angustella* were caught in June, but one male was recorded in September. This might suggest two generations.

Plectrocnemia conjuncta is a polycentropodid known from Northeast Europe (NEU et al. 2018). The record from Stenki may be the most southern of all. The ecology of the species is poorly known, but it seems to live in very small running waters. For example, I have regularly caught it with a sweeping net from about a 20 cm wide trickle that starts from a large, slightly alkaline pond in northern Finland. The trickle is not dry when the species is on the wing in July, and probably does not dry up at all during the short northern summer. In Stenki, there probably is a suitable trickle or a small brook, perhaps connected to a nearby river. However, the habitat is likely to be very limited, as no other taxa confined to small running waters occurred.

Acknowledgements

I want to express my sincere gratitude to Karl-Erik Lundsten and Bo Wikström for providing the material and all the related information and guidance. Also, the study would not have been possible without the local help in Belgorod: Director A. Shapovalov who made the project possible in the Belgorod Oblast, Dr. A.I. Mezentsev who took care of the traps and preservation of the collected material during many years, Natalia Golzova, the main coordinator in Russia who took also care of the logistics, and many people in different locations who emptied the traps and took care of the material. The manuscript was reviewed by Dr Vladimir D. Ivanov and proof-read by Hanna Kirjavainen.

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Site name	WGS84N	WGS84E	Traps 2011	Traps 2012	Main habitats
Borisovka	50.633	35.966	2 LT, 2 BT	2 LT, 2 BT	Eutrophic large pond, slow-flowing brook
Stenki	50.636	37.651	1 LT	2 LT	River
Rovenki	49.934	38.902	-	2 LT	Small slow-flowing river

Table 1. Site names, coordinates, number of traps (LT = light trap, BT = bait trap), and the main habitats. The amount of collected material was reasonably high. During the first year of study, the number of all trapped caddisflies was only 2103 specimens. In the second year, the number of light traps was increased and the total number of specimens from both years climbed approximately to 5000 in all.

Appendix. The list of caddisflies collected from the Belgorod area

TRICHOPTERA	Borisovka	Stenki	Rovenki	new to region
Hydroptilidae				
<i>Agraylea sexmaculata</i> CURTIS 1834	x	x	x	
<i>Hydroptila sparsa</i> CURTIS 1834		x	x	
<i>Ithytrichia lamellaris</i> EATON 1873		x		
<i>Orthotrichia angustella</i> (MCLACHLAN 1865)		x		x
<i>Orthotrichia costalis</i> (CURTIS 1834)		x	x	
<i>Orthotrichia tragetti</i> MOSELY 1930	x	x		x
<i>Oxyethira flavicornis</i> (PICTET 1834)		x		
<i>Oxyethira tristella</i> K LAPÁLEK 1895			x	
Psychomyiidae				
<i>Lype phaeopa</i> (STEPHENS 1836)	x		x	
Ecnomidae				
<i>Ecnomus tenellus</i> (RAMBUR 1842)	x	x	x	
Polycentropodidae				
<i>Neureclipsis bimaculata</i> (LINNAEUS 1758)	x	x	x	
<i>Plectrocnemia conjuncta</i> MARTYNOV 1914		x		x
<i>Plectrocnemia conspersa</i> (CURTIS 1834)	x			
<i>Holocentropus picicornis</i> (STEPHENS 1836)	x			
<i>Cyrnus crenaticornis</i> (KOLENATI 1859)	x			
<i>Cyrnus flavidus</i> MCLACHLAN 1864			x	
Hydropsychidae				
<i>Hydropsyche angustipennis</i> (CURTIS 1834)	x		x	
<i>Hydropsyche contubernalis</i> MCLACHLAN 1865	x	x	x	
<i>Hydropsyche pellucidula</i> (CURTIS 1834)		x	x	

Phryganeidae				
<i>Trichostegia minor</i> (CURTIS 1834)	x			x
<i>Agrypnia pagetana</i> CURTIS 1835	x	x		
<i>Agrypnia varia</i> (FABRICIUS 1793)	x		x	
<i>Phryganea bipunctata</i> RETZIUS 1783	x		x	
<i>Phryganea grandis</i> LINNAEUS 1758	x	x	x	
Brachycentridae				
<i>Brachycentrus subnubilus</i> CURTIS 1834		x	x	
Limnephilidae				
<i>Ironoquia dubia</i> (STEPHENS 1837)	x			x
<i>Limnephilus binotatus</i> CURTIS 1834	x	x		
<i>Limnephilus decipiens</i> (KOLENATI 1848)	x			
<i>Limnephilus extricatus</i> MCLACHLAN 1865	x			
<i>Limnephilus flavicornis</i> (FABRICIUS 1787)	x	x		
<i>Limnephilus griseus</i> (LINNAEUS 1758)	x	x		
<i>Limnephilus ignavus</i> MCLACHLAN 1865	x	x		
<i>Limnephilus lunatus</i> CURTIS 1834	x	x	x	x
<i>Limnephilus nigriceps</i> (ZETTERSTEDT 1840)	x			
<i>Limnephilus politus</i> MCLACHLAN 1865	x			
<i>Limnephilus sparsus</i> CURTIS 1834	x			
<i>Colpotaulius incisus</i> (CURTIS 1834)			x	
<i>Grammotaulius nitidus</i> (MÜLLER 1764)	x		x	
<i>Glyphotaelius pellucidus</i> (RETZIUS 1783)	x	x	x	x
<i>Anabolia furcata</i> BRAUER 1857	x			
<i>Potamophylax rotundipennis</i> (BRAUER 1857)	x			x
<i>Halesus tessellatus</i> (RAMBUR 1842)	x	x		
<i>Micropterna lateralis</i> (STEPHENS 1837)	x			
<i>Micropterna nycterobia</i> MACLACHLAN 1875	x			
Molannidae				
<i>Molannodes tinctus</i> (ZETTERSTEDT 1840)	x		x	
Leptoceridae				
<i>Ceraclea albimacula</i> (RAMBUR 1842)	x	x		
<i>Ceraclea dissimilis</i> (STEPHENS 1836)	x	x		
<i>Ceraclea senilis</i> (BURMEISTER 1839)	x	x		x
<i>Mystacides azurea</i> (LINNAEUS 1761)		x		
<i>Mystacides longicornis</i> (LINNAEUS 1758)	x	x		
<i>Oecetis furva</i> (RAMBUR 1842)	x		x	
<i>Oecetis lacustris</i> (PICTET 1834)	x	x	x	
<i>Oecetis notata</i> (RAMBUR 1842)		x		x
<i>Oecetis ochracea</i> (CURTIS 1825)	x	x	x	
<i>Oecetis tripunctata</i> (FABRICIUS 1793)		x		
<i>Parasetodes respersellus</i> (RAMBUR 1842)		x	x	x
<i>Leptocerus interruptus</i> (FABRICIUS 1775)	x	x	x	
<i>Leptocerus tineiformis</i> CURTIS 1834	x	x	x	
Species count	43	34	26	11

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Zeitschrift/Journal: [Braueria](#)

Jahr/Year: 2019

Band/Volume: [46](#)

Autor(en)/Author(s): Salokannel Juha

Artikel/Article: [Caddisflies from the Belgorod area, Russia 22-24](#)