PARASETODES RESPERSELLUS (RAMBUR 1842) – A NEW CADDISFLY (TRICHOPTERA, LEPTOCERIDAE) SPECIES TO LITHUANIAN AND LATVIAN FAUNA

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Introduction

We present the first records of caddisfly *Parasetodes respersellus* (Rambur 1842) from Lithuania and Latvia. This species has been known from the neighbouring countries Kaliningrad region (Russia) and Belarus, but the data are extremely rare throughout Europe (Buczyńska *et al*., 2014; Móra *et al*., 2014; Višinskienė *et al*., 2018; Ostrovsky, 2021). Within the Leptoceridae family, 9 genera and 33 species were previously known from Lithuania and 11 genera with 37 species from Latvia (Spuris, 1989; Kalniņš & Spuņģis, 2002; Višinskienė, 2009). Information on the new caddisfly species and the peculiarities of its distribution in Europe, some characteristics of larvae and adults are provided in this paper.

Material and Methods

Observations of adult insects were carried out at night, attracting insects to a source of artificial light from a 160 W mercury tungsten blended lamp, in 2018 in southeastern part of Lithuania by Žilvinas Pūtys (Ž.P.). Research of adult insects in Latvia took place in 2022 during non-standardized night insect surveys using 250W and 160W mixed-light mercury vapour bulbs set up by white cloth by Uģis Piterāns (U.P.) or were caught in funnel type autonomous light trap operating with 250W mercury vapour bulb by Nikolajs Savenkovs (N.S.) in three sites of the country.

Parasetodes respersellus caddisflies (both males and females) have a very distinctive colour and wing pattern, so identification is simple without microscopy. Specimens were identified according to Malicky (2004). Taxonomical treatment of the taxa follows the Fauna Europaea database (Malicky, 2013). The collected specimen from Lithuania is stored in the private collection of Ž. Pūtys. Specimens collected from Latvia are deposited in the collection of the Latvian National Museum of Natural History.

List of localities

Locality	Administrative district	Coordinates (LAT, LONG)
Raveliai	Šalčininkai distr., Lithuania	54.42059, 25.19598
Stīpnieki	Olaine distr., Latvia	56.70670, 24.11660
Carnikava	Ādaži distr., Latvia	57.12490, 24.30280
Birzgale	Ogre distr., Latvia	56.62660, 24.67620

***Parasetodes respersellus* (Rambur 1842)** (Fig. 1)

Birzgale 23 08 2022, 1 ♀ (U.P.); Carnikava, 21 08 2022, 2 specimens, one ♀ of which was left to the collection (N.S.);. Raveliai, 21 09 2018, 1 ♂ (Ž.P.); Stīpnieki, 18 08 2022, 1 ♂ (U.P.).

Figure 1. *Parasetodes respersellus* from Lithuania (left, photo by Ž.P.) and from Latvia (right, photo by U.P.)

Discussion

Parasetodes respersellus (Rambur, 1842) (Syn. *Setodes respersellus* Rambur, 1842) belongs to species rich Leptoceridae family of Trichoptera order. *P. respersellus* is the only one species of genus *Parasetodes* in Europe. As mentioned, coloration of the wings is very distinctive in both sexes – this is distinguishing feature of the species even without genital dissecting (Fig. 1). The total body length of the male and female of *P. respersellus* is 10.5–13 mm; the total lengths of the forewings are 9.8–12.2 mm, wingspan about 21–22 mm (Buczyńska *et al*., 2014; Višinskienė *et al*., 2018).

All *Parasetodes* species (7 species and 1 subspecies) distributed in the Afrotropical, Palaearctic and Oriental Regions (Móra *et al*., 2014). It should be noted that the name of this species in some sources is written as *P. respersella* but it is not as synonym, only different spelling (Malicky, 2004, 2005). Globally, *P. respersellus* appears to be a wide distributed species – there is information about species distribution in North Africa, Asia, Russian Caucasus region, the Far East, Japan, China, Nepal, Birma, Sri Lanka, Thailand, Laos, Vietnam, Bali, Indonesia, Cambodia, India, and the Philippines (Buczyńska *et al*., 2014). *P. respersellus* is a rare species with local distribution in European regions. It is known from 8 countries (more than 25 sites): France, Greece, Hungary, Italy, Romania, the Kaliningrad region of Russia, Belarus, and Ukraine (Buczyńska *et al*., 2014; Malicky, 2014; Višinskienė *et al*., 2018; Ostrovsky, 2021). Up to now, the Russian part of the Curonian Spit (in the vicinity of the Rybachy – Biological Station of the Zoological Institute of the Russian Academy of Sciences) was northernmost location of *P. respersellus*, but Latvian data extended the limits of the northern distribution of the species. The locality of Carnikava is currently the furthest known locality to the north in Europe.

After combining the latest information (2011–2022) on the distribution of *P. respersellus* in the neighboring countries, we have 7 localities distributed in the Kaliningrad region (Russia), Lithuania, Belarus and Latvia (Fig. 2). According to Polish and Latvian scientists, this species has not been found in their country yet (personal

information from Agnija Skuja (Latvia) and Edyta Buczyńska (Poland)). So, this species supplemented the lists of Lithuanian and Latvian caddisflies.

According to the data of 2011–2022 from all neighbouring countries, the flying period of *P. respersellus* is the end of summer – the beginning of autumn. All individuals were caught between 30 of July and 18 of September (Buczyńska *et al*., 2014; Višinskienė *et al*., 2018; Ostrovsky, 2021). Some other species of Leptoceridae have a flight period in July-September too, for example Athripsodes albifrons, Ceraclea alboguttata, Leptocerus interruptus, Setodes punctatus and others (Višinskienė, 2010).

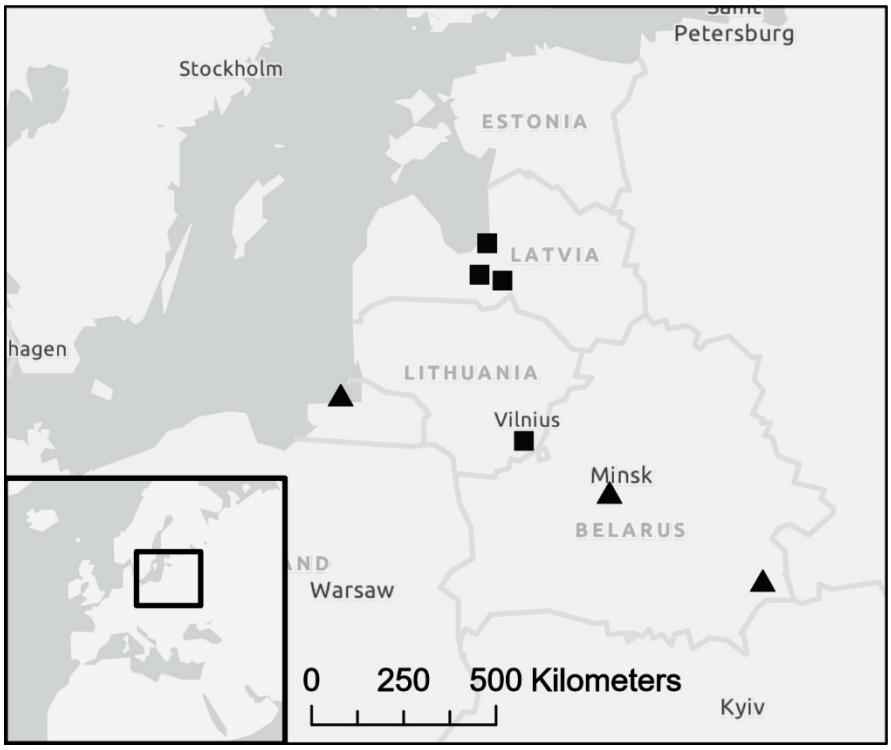

Figure 2. *Parasetodes respersellus* records from Lithuania and neighbouring countries in 2011–2022. Squares – new records from Lithuania and Latvia, triangles – records from literature (Buczyńska *et al.*, 2014; Višinskienė *et al.*, 2018; Ostrovsky, 2021).

Almost all identified specimens were adults, larva of this species was described only in 2014 from the Tisza River in Hungary (Móra *et al*., 2014). The article presents the morphological characters of *P. respersellus* larvae, with particular emphasis on how to distinguish *Parasetodes* genera from genera *A*thripsodes and Ceraclea. Larva of the fifth instar was 18,9 mm long with straight case made of small overlapping plant pieces, with additional stem fragment attached longitudinally. In the River Tisza *P. respersellus* larvae were collected on sandy, silt-sandy bottom with woody debris. Some submerged vegetation is also required for larvae, at least for the case building (Móra *et al*., 2014).

In most cases, *P. respersellus* adults were caught near rivers of different sizes (Móra *et al*., 2014). Although it remains unclear where the individuals caught in the Curonian Spit came from. The Curonian Spit itself is area without rivers, and near the light trap (with a radius of 10 km) only some very small water bodies and ditches of standing water were recorded. It is believed that the larvae developed in the nearest river and somehow got to this place. The possibility of insect migration is also not ruled out (Buczyńska *et al*., 2014). It is possible, that larvae of *P. respersellus* could live in standing water (like some other Leptoceridae species), but so far there is no data proving

it.

Nearest rivers in Belarus localities where *P. respersellus* adults were registered were small (rivers size typology based on catchment area according to Noble & Cowx, 2002) Usa river (right tributary of Nemunas) and very large Sozh river (Višinskienė *et al*., 2018; Ostrovsky, 2021). According to our results, there were rivers of different sizes nearby the locations of the captured caddisflies too. Lithuanian research site was close to small river Upėsė and not far from the larger Merkys river. There were small, large, and very large rivers near the places where the caddisfly adults were caught in Latvia – Daugava, Gauja, Lielupe, Zvirgzde, Iecava and Misa rivers. All these rivers seem to be dominated by slow current, sandy bottom with aquatic vegetation and varying amounts of debris.

There are still unanswered questions and undiscovered information, but Lithuanian and Latvian fauna have been supplemented with new species of caddisfly, and at the same time new knowledge about the distribution of *Parasetodes respersellus* species in Europe was obtained.

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***Parasetodes respersellus* (Rambur, 1842) – nauja apsiuvų (Trichoptera, Leptoceridae) rūšis Lietuvos ir Latvijos faunai**

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Santrauka

Straipsnyje pateikiami duomenys apie naują apsiuvų rūšį *Parasetodes respersellus* Lietuvos ir Latvijos faunai, kuri praplečia turėtas žinias apie jos paplitimo arealą. Centrinė Latvija šiuo metu tampa šiauriausia rūšies paplitimo riba Europoje. Abiejose šalyse apsiuvos buvo sugautos suaugėlio stadijoje gaudant vabzdžius naktį su šviesa. Iš kaimyninių šalių taip pat žinomos tik imago *P. respersellus* apsiuvos. Straipsnyje pateikiamas Lietuvos ir aplinkinių kaimyninių šalių žemėlapis su rūšies paplitimo taškais bei aptariami *Parasetodes respersellus* biologijos ir ekologijos bruožai.

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