

## NEW CADDISFLY (TRICHOPTERA) SPECIES FOR THE FAUNA OF BELARUS

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### Introduction

Data on 4 new caddisfly species for the fauna of Belarus are provided. We present the first records of *Lype phaeopa* (Stephens, 1836) (Psychomyiidae), *Anabolia concentrica* (Zetterstedt, 1840), *Limnephilus germanus* McLachlan, 1875 (Limnephilidae), and *Parasetodes respersellus* (Rambur, 1842) (Leptoceridae) from Belarus. These species supplement the last checklist of Belarusian caddisflies (Moroz & Lipinskaya, 2014) to 161 species. Information on species distribution in Europe, some characteristics of larvae and adults are presented.

### Material and Methods

In 2013–2018, caddisflies were collected by A. Pisanenko (A.P.) and subsequently identified by G. Višinskienė. The material was collected at a light trap with a DRL-400 mercury-fluorescent lamp. In addition, imagoes were captured by swinging sweep net along the coastal vegetation at the places of emergency from water bodies. Male genitalia were dissected to identify *Parasetodes respersellus* and preserved in glycerine. All adults were identified according to Malicky (2004) and Tobias & Tobias (2010). Taxonomical treatment of the taxa follows the Fauna Europaea database (Malicky, 2013). Data on *A. concentrica* was obtained from Evgenyj Derzhinsky (E.D.), who was running the light trap in the Vitebsk region. All specimens were photographed by A. Pisanenko, measurements of wingspan (distance from one wing tip to other wing tip) are given at each photo (mm). The collected material is stored in the collection of Zoological Museum of Belorussian State University (Minsk) and in private collection of A. Pisanenko.

### List of localities

Locality	Administrative district	Coordinates (LAT, LONG)
Podberezhje village	Dzerzhinsk district	53.70404, 27.28245
Udranka village 1	Molodechno district	54.19652, 27.23892
Udranka village 2	Molodechno district	54.18157, 27.23097
Osipovo village	Liozno district	54.90386, 30.38132

**List of species**

PSYCHOMYIIDAE Curtis, 1835

***Lype phaeopa* (Stephens, 1836)** (Fig. 1)

Minsk prov., Molodechno distr., 1,8 km NNW from the village Udranka, left bank of the Rybchanka River, sweeping net, 19 06 2014, 2♂; 1,3 km W from the village Udranka, left bank of the Rybchanka River, sweeping net, 19 06 2014, 2♂ (A.P.).

LIMNEPHILIDAE Kolenati, 1848

***Anabolia concentrica* (Zetterstedt, 1840)** (Fig. 2)

Vitebsk prov., Liozno distr., village Osipovo, the Luchesa river valley, light trap, 10 10 2013, 2♂ (E. D.)

***Limnephilus germanus* McLachlan, 1875** (Fig. 3)

Minsk prov., Dzerzhinsk distr., 1,5 km SE from the village Berezha, garden plot "Podberezhje", light trap with lamp DRL-400, 01-02 09 2013, 1♂ (A.P.).

LEPTOCERIDAE Leach, 1815

***Parasetodes respersellus* (Rambur 1842)** (Fig. 4)

Minsk prov., Dzerzhinsk distr., 1,5 km SE from the village Berezha, garden plot "Podberezhje", light trap with lamp DRL-400, 09 09 2017, 1♂, 11 09 2017, 1♀, 30 07 2018, 1♀, 10 08 2018, 1♀, 02 08 2018, 2♀ (A.P.).



Figure 1. *Lype phaeopa* ♂, wingspan - 10,5 mm      Figure 2. *Anabolia concentrica* ♂, wingspan - 40 mm

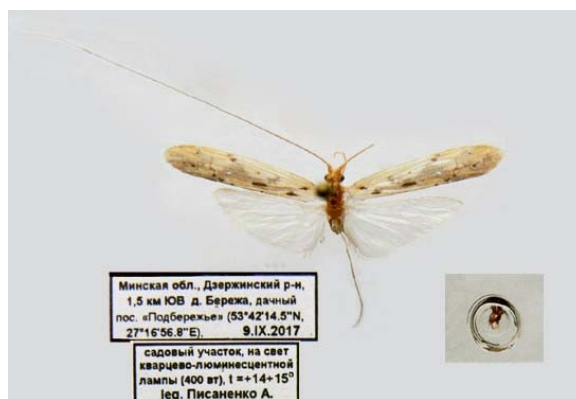


Figure 3. *Limnephilus germanus* ♂, wingspan - 24 mm      Figure 4. *Parasetodes respersellus* ♂, wingspan ♂ - 21,5 mm,

## Discussion

The study of Trichoptera fauna in Belarus has recently received considerable attention in connection to the use of species of this group as indicators of pollution of the aquatic environment. Most publications are based on the collection material of the larval stage of caddisflies (Czachorowski & Moroz, 1997, 2007; Moroz *et al.*, 2006; Giginyak, 2013). There was lack of special attention to the study of the imago stage of caddisflies, while the diagnosis of species is more reliable using the morphological and genitalia structures of caddisfly adults. According to the latest information (Moroz & Lipinskaya, 2014), 157 species of these amphibious insects were known in Belarus. Our research allowed us to identify 4 more species previously unknown to the fauna of Belarus.

*Lype phaeopa* (Fig. 1). According to the Fauna Europaea (Malicky, 2013) *L. phaeopa* is a widespread species, referred from 32 European countries, including the neighbouring countries, Poland, Ukraine, Latvia, and Lithuania. In Lithuania, *L. phaeopa* is a rare species according to the adults and common species according to the larvae investigations (Višinskienė, 2009, 2010). Flight period in Lithuania was observed from the end of June until early September (Višinskienė, 2010). But in Ireland adults of *Lype phaeopa* could be found from April to September (Barnard & Ross, 2012). Larvae have no preferences to water stream velocity, so they could be found in ponds, lakes, streams and rivers. The species shows a preference for neutral to alkaline water and can occur in brackish water. The main substrate is woody debris, submerged aquatic vegetation where larvae build galleries of wood fragments and sand held together by silk. Larvae are mainly grazers (feed on algae, fungi, detritus), with some feeding on woody debris (Wallace *et al.*, 2003). Another species of this genus that is known from Belarus – *Lype reducta* (Hagen 1868) (Moroz & Lipinskaya, 2014). It is difficult to distinguish these two species in larval stage due to their color variations.

*Anabolia concentrica* (Fig. 2). Rare Palearctic species mentioned in eight countries (Malicky, 2013), and Romania is the only country where *A. concentrica* is distributed to the south of Belarus. We have only four localities of *A. concentrica* in Lithuania (Lazdijai, Ukmergė, Utena, and Vilnius districts) in which adults were observed during mid-August and mid-October (Višinskienė, 2009, 2010). The last caddisfly checklist includes 4 *Anabolia* species identified in Belarus (Moroz & Lipinskaya, 2014). *A. concentrica* is also characterized by the fact that it is difficult to identify species in larval stage, especially younger larvae. There is not much information about the biology and ecology of *A. concentrica*. Larvae from Sweden are known to live in small and cold forest streams originating from small bogs with the stream bottom consisting of sand and gravel, and the stream shores with the overgrowth of *Sphagnum* and *Carex*. Larvae of fifth instar are 22-23 mm long (Solem & Johansson, 1991; Johansson & Nilsson, 1994).

*Limnephilus germanus* (Fig. 3). It is widespread European species, referred from at least 13 countries, including Lithuania, Latvia, Poland (Malicky, 2013). *L. germanus* specimens were identified only as adults in Lithuania, mostly during investigations using different light traps. Species is registered in 7 Lithuanian districts – Plungė, Tauragė, Lazdijai, Utena, Zarasai, Vilnius, Trakai from the late August till the end of October (Višinskienė, 2009, 2010). The characteristic biotopes for larvae are lakes, streams and rivers – places where the current velocity is reduced but the oxygen concentration is high (Denis & Malicky, 1985). These water bodies are often covered with macrophytes such as *Carex*, *Phragmites*, *Scirpus* etc.

*Parasetodes respersellus* (Fig. 4). It should be noted that the name of this species in some sources is referred as *P. respersella* but it is not a synonym, only different spelling (Malicky 2004, 2005). *P. respersellus* is a rare species in Europe with local distribution. It is known from France, Greece, Hungary, Italy, Romania, the Kaliningrad region of Russia and Ukraine (Buczyńska *et al.*, 2014). All identified specimens were adults, larva of this species was described only in 2014 from the Tisza River in Hungary (Móra *et al.*, 2014). 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). All specimens were collected by us during the period of two years (2017–2018) at night to the light of a bright lamp in a transformed habitat among agricultural fields and at considerable distance from water bodies. Species has very distinctive colour and pattern of the wings. According to the literature and new records, *P. respersellus* seems to be rare, but has quite wide distribution area, so it could be expected in Lithuania too.

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## Naujos Baltarusijos faunos apsiuvų (Trichoptera) rūšys

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### Santrauka

Straipsnyje pateikiami duomenys apie keturias naujas Baltarusijos faunai apsiuvų rūšis – *Lype phaeopa*, *Anabolia concentrica*, *Limnephilus germanus* ir *Parasetodes respersellus*. Pastaroji rūšis nežinoma ir mūsų šalyje. Kiekvienai rūšiai pateikiamos radimo vietos, data, stebėtų individų skaičius, rinkėjai.

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