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Some Diptera families from beer traps in the Volga region (Russia)

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Abstract. We have studied the material of some Diptera families collected with beer traps from middle part of the Volga River region (central part of European Russia: Nizhny Novgorod and Ulyanovsk regions, and southeastern part of European Russia: Saratov Region). Thirty species from 10 Diptera families are reported: Culicidae (2 spp.), Dryomyzidae (2 spp.), Lauxaniidae (7 spp.), Limoniidae (3 spp.), Pallopteridae (4 spp.), Periscelididae (1 sp.), Platystomatidae (2 spp.), Sciomyzidae (2 spp.), Tabanidae (1 sp.), Ulidiidae (6 spp.). Two species, *Peplomyza intermedia* Remm, 1979 (Lauxaniidae) and *Periscelis annulipes* Loew, 1858 (Periscelididae) are recorded from Russia for the first time.

Key words: flies, beer traps, Nizhny Novgorod Region, Ulyanovsk Region, Saratov Region.

Некоторые семейства двукрылых из пивных ловушек в Поволжье (Россия)

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Резюме. Изучен материал по двукрылым, собранным с помощью пивных ловушек в средней части Поволжья (центральная часть Европейской России (Нижегородская и Ульяновская области) и юго-восток Европейской России (Саратовская область)). Зарегистрировано 30 видов из 10 семейств Diptera: Culicidae (2 вида), Dryomyzidae (2 вида), Lauxaniidae (7 видов), Limoniidae (3 вида), Pallopteridae (4 вида), Periscelididae (1 вид), Platystomatidae (2 вида), Sciomyzidae (2 вида), Tabanidae (1 вид), Ulidiidae (6 видов). *Peplomyza intermedia* Remm, 1979 (Lauxaniidae) и *Periscelis annulipes* Loew, 1858 (Periscelididae) приводятся для России впервые.

Ключевые слова: мухи, пивные ловушки, Нижегородская область, Ульяновская область, Саратовская область.

Introduction

Insects are the basic component of terrestrial diversity and are considered among the most important terrestrial animals [Stork, 2018]. The study of insect biodiversity is most often carried out using a small set of methods and techniques. At the same time, the most popular techniques are manual collection, pitfall trap, light trap, sweeping, Malaise traps, flight interception trap, cow manure-baited pitfall traps, green Lindgren funnel traps, baited tube traps, emergence traps covering tree hollows, and others [Vrdoljak, Samways, 2012; Ali et al., 2015; Jocque et al., 2016; McCravy et al., 2016; McCravy, 2017; Tomaszewska et al., 2018; Ruchin, Mikhailenko, 2018]. However, there is another method that has worked well for studying biodiversity – bait traps. It is based on attracting insects to fermenting liquids, for example, fermenting beer or wine [Allemand, Aberlenc, 1991].

The bait traps, especially the beer ones, are one of the often used passive methods for capturing a wide range of insects [Manko et al., 2018; Touroult, Witté, 2020; Ruchin et al., 2020a, 2021a; Ruchin, 2021; Makarkin, Ruchin, 2021]. Their advantage is mainly minimum time spent in the field (not too activity of the collector is necessary, only regular collection of captured material, e.g. in a weekly interval), affordability (they are cheap and can be made at home), they can be placed in any environment (where they can be safely attached to vegetation or some construction for example) [Dvořák et al., 2019, 2020a, b; Dvořáková et al., 2020; Hribar, 2020]. This method is suitable for trapping rare insects, but also for monitoring studies of selected invasive species and pests [Albacete et al., 2020; Lioy et al., 2020; Mariychuk et al., 2020; Maceda-Veiga et al., 2021; Manko et al., 2021]. This method has proven itself quite well in the study of the post-fire insect fauna [Ruchin et al., 2021c], in the study of the seasonal cycles of Coleoptera [Ruchin et al., 2021b], as well as in the study of the spatial insects distribution [Ruchin, Egorov, 2021].

The purpose of the current study was to evaluated the fauna of selected Diptera families collected using beer traps in the Volga region (Russia).

Material and methods

The study was carried out during the whole season of 2020 in the Volga region (Russia) (Fig. 1) by the last author. Each trap was a plastic container with a window cut out on one side, at a distance of 10 cm from the bottom. In each case, fermenting beer was used as bait, the detailed description of traps and their application methods are given

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Fig. 1. Location of the study regions.
1 – Nizhny Novgorod Region; 2 – Ulyanovsk Region; 3 – Saratov Region.
Рис. 1. Расположение регионов исследования.
1 – Нижегородская область; 2 – Ульяновская область; 3 – Саратовская область.

in Ruchin et al. [2020a]. We set traps in different biotopes and on different trees (oak, linden etc.). Usually the trap was hung on a large tree branch so that it could withstand the weight of the bait trap. The height of the traps varied from 1.5 m (shrubby level) to 7 m (tree canopy).

The study region consists of the following parts: central European Russia – Nizhny Novgorod Region (NIZ – 23 sites), Ulyanovsk Region (ULY – 28 sites), and southeastern European Russia – Saratov Region (SAR – 3 sites). For more detail, see localities under study.

The list of Diptera families identified by the authors is as follows (the used identification keys are in square brackets): the first author identified Pallopteridae [Ozerov, 2009], Periscelididae [Roháček, Andrade, 2017], Platystomatidae [Hendel, 1913; Hennig, 1945; Richter, 1989a], Tabanidae [Chvála et al., 1972], and Ulidiidae [Richter, 1989b; Kameneva, 1997); the second author identified Dryomyzidae [Ozerov, 1987], Lauxaniidae [Shatalkin, 2000], and Sciomyzidae [Rozkošný, 1987]; the third author identified Limoniidae [Oosterbroek, 2021] and Culicidae [Becker et al., 2010].

There were many other Diptera families presented in big numbers in the beer traps, like Muscidae, Sarcophagidae, Calliphoridae, Drosophilidae, Syrphidae, and others. The authors determined only members of families, which are in the scope of their scientific interest.

We use the abbreviation RU-RUC for central European Russia, RU-RUS for southeastern European Russia according to the Fauna Europaea website [https://fauna-eu.org]. In the section 'Results', the taxa are listed alphabetically after family names (i.e. not systematically).

Distribution of species is given according to Fauna Europaea [https://fauna-eu.org] and publications referred to in the relevant section.

Localities under study

Nizhny Novgorod Region:

NIZ 1 – Kulebaki urban district, Teplovo village, pine forest, 55°25′16.6″N / 42°52′32.2″E, 16–29.06.2020.

NIZ 2 – Ardatov District, Zhuralevka village, deciduous forest, 55°11′48.1″N / 43°01′58.3″E, 16–29.06.2020.

NIZ 3 – Pervomaysk town, mixed forest, 54°53′40.4″N / 43°44′17.0″E, 28.07–10.08.2020.

NIZ 4 – Navashino town, mixed forest, 55°30′32.3″N / 42°13′25.7″E, 21.07–2.08.2020.

NIZ 5 – Pervomaysk urban district, Nikolaevka village, deciduous forest, 54°50′15.3″N / 43°52′22.0″E, 28.07–10.08.2020.

NIZ 6 – Vyksa urban district, Malinovka village, deciduous forest, 55°10′14.9″N / 42°26′38.7″E, 29.06–13.07.2020.

NIZ 7 – Ardatov District, Chuvarley-Maydan village, deciduous forest, 55°08′25.9″N / 42°52′09.7″E, 3–16.06.2020.

NIZ 8 – Ardatov District, Aleksandrovka village, deciduous forest, 55°08′23.0″N / 42°50′09.4″E, 3–16.06.2020.

NIZ 9 – Voznesenskoe District, 4 km N Kalinovka village, deciduous forest, 55°03′17.3″N / 42°43′48.8″E, 3–16.06.2020.

NIZ 10 – Kulebaki urban district, Lomovka village, pine forest, 55°24′46.1″N / 42°45′33.2″E, 16–29.06.2020.

NIZ 11 – 8 km SE Navashino town, mixed forest, 55°28′39.1″N / 42°14′23.8″E, 29.06–13.07.2020.

NIZ 12 – Ardatov District, Karkaley village, deciduous forest, 55°08′30.6″N / 42°48′00.5″E, 3–16.06.2020.

NIZ 13 – Ardatov District, 3 km NW Siyaz'ma village, deciduous forest, 55°09′44.0″N / 42°56′19.8″E, 16–29.06.2020.

NIZ 14 – Kulebaki urban district, Pervomayskiy village, deciduous forest, 55°25′33.7″N / 42°25′14.2″E, 29.06–13.07.2020.

NIZ 15 – Voznesenskoe District, Bukaley village, birch forest, 54°56′56.8″N / 42°43′12.3″E, 20.05–3.06.2020.

NIZ 16 – Vyksa urban district, Vilya village, deciduous forest, 55°13′39.4″N / 42°14′32.8″E, 29.06–13.07.2020.

NIZ 17 – Sosnovskoe District, Zales'e village, deciduous forest, 55°35′48.2″N / 43°07′21.5″E, 29.09–2.10.2020.

NIZ 18 – Pervomaysk urban district, Steklyannyi village, mixed forest, 54°53′54.8″N / 43°36′50.9″E, 28.07–10.08.2020.

NIZ 19 – Ardatov District, Mukhtolovo village, mixed forest, 55°26′46.7″N / 43°10′37.8″E, 29.09 –2.10.2020.

NIZ 20 – Vyksa urban district, Krasnoe Solntse village, deciduous forest, 55°05′01.4″N / 42°44′45.7″E, 3–16.06.2020.

NIZ 21 – Voznesenskoe District, 10 km NE Bogorodsk village, deciduous forest, 55°04′01.7″N / 42°44′25.7″E, 3–16.06.2020.

NIZ 22 – Kulebaki urban district, Novaya Savasleyka village, mixed forest, 55°26′20.3″N / 42°22′59.8″E, 29.06–13.07.2020.

NIZ 23 – Voznesenskoe District, Pochinki village, deciduous forest, 54°52′05.9″N / 42°42′06.2″E, 20.05–3.06.2020.

Saratov Region:

SAR 1 – Petrovsk District, Ruzaevka village, deciduous forest, 52°20′04.0″N / 45°25′44.6″E, 7–20.08.2020.

SAR 2 – urban district of the city of Saratov, Sinen'kie village, deciduous forest, 52°20′24.5″N / 45°32′25.6″E, 7–20.08.2020.

SAR 3 – Petrovsk town, deciduous forest, 52°20′22.9″N / 45°21′57.2″E, 7–20.08.2020.

Ulyanovsk Region:

ULY 1 – Inza District, Boyarkino village, mixed forest, 53°46′21.8″N / 46°25′35.4″E, 23.07–6.08.2020.

ULY 2 – Surskoe District, Surskoe village, deciduous forest, 54°27′16.6″N / 46°44′31.9″E, 9–23.07.2020.

ULY 3 – Surskoe District, Surskoe village, deciduous forest, 54°27′16.0″N / 46°44′33.7″E, 24.06–9.07.2020.

ULY 4 – Veshkayma District, Ozerki village, mixed forest, 53°57′41.9″N / 47°07′25.7″E, 9–23.07.2020.

ULY 5 – Barysh District, Akshuat village, deciduous forest, 53°39′50.0″N / 47°24′22.5″E, 9–23.07.2020.

ULY 6 – Barysh District, Alinkino village, mixed forest, 53°42′37.5″N / 46°56′42.8″E, 23.07–6.08.2020.

ULY 7 – Barysh District, Opytnyy village, deciduous forest, 53°46′23.2″N / 47°07′44.3″E, 9–23.07.2020.

ULY 8 – Barysh District, Pokrovskaya Reshetka village, deciduous forest, 53°41′58.6″N / 46°53′57.3″E, 23.07–6.08.2020.

ULY 9 – Barysh District, Vodoratskie Vyselki village, mixed forest, 53°38′53.5″N 47°21′09.8″E, 9–23.07.2020.

ULY 10 – Barysh District, Vodoratskie Vyselki village, mixed forest, 53°39′25.9″N / 47°22′13.8″E, 9–23.07.2020.

ULY 11 – Bazarnyy Syzgan District, Lapshaur village, deciduous forest, 53°44′11.5″N / 46°47′15.1″E, 23.07–6.08.2020.

ULY 12 – Inza District, Ekaterinovka village, deciduous forest, 53°51′57.1″N / 46°11′21.5″E, 6–19.08.2020.

ULY 13 – Inza District, Syuksyum village, field-protective belt forest, 53°48′23.6″N / 46°29′02.5″E, 23.07–6.08.2020.

ULY 14 – Inza District, Trusleyka village, deciduous forest, 53°55′59.6″N / 46°21′25.9″E, 23.07–6.08.2020.

ULY 15 – Inza District, Zabaluyka village, field-protective belt forest, 53°52′18.0″N / 46°14′23.4″E, 6–19.08.2020.

ULY 16 – Karsun District, Ureno-Karlinskoe village, deciduous forest, 54°13′01.6″N / 47°17′53.6″E, 24.06–9.07.2020.

ULY 17 – Kuzovatovo District, Koromyslovka village, deciduous forest, 53°39′18.1″N / 47°41′46.0″E, 24.06–9.07.2020.

ULY 18 – Kuzovatovo District, Uvarovka village, deciduous forest, 53°40′22.5″N / 47°42′11.6″E, 24.06–9.07.2020.

ULY 19 – Mayna District, 4 km SW Abramovka village, deciduous forest, 54°09′26.8″N / 47°39′29.1″E, 11–24.06.2020.

ULY 20 – Mayna District, Ignatovka village, deciduous forest, 53°55′31.3″N / 47°39′20.4″E, 24.06–9.07.2020.

ULY 21 – Mayna District, Kartsovka village, deciduous forest, 54°04′16.5″N / 47°36′06.5″E, 24.06–9.07.2020.

ULY 22 – Mayna District, Kopyshovka village, deciduous forest, 54°14′42.0″N / 47°40′32.6″E, 11–24.06.2020.

ULY 23 – Mayna village, deciduous forest, 54°06′32.6″N / 47°33′54.6″E, 24.06–9.07.2020.

ULY 24 – Mayna village, deciduous forest, 54°06′33.4″N / 47°33′53.6″E, 24.06–9.07.2020.

ULY 25 – Mayna village, deciduous forest, 54°08′07.0″N / 47°37′37.3″E, 11–24.06.2020.

ULY 26 – Mayna District, Podlesnoe village, deciduous forest, 54°17′21.1″N / 47°32′45.7″E, 11–24.06.2020.

ULY 27 – Surskoe District, Nikitino village, mixed forest, 54°28′33.4″N / 47°05′35.3″E, 11–24.06.2020.

ULY 28 – Surskoe village, deciduous forest, 54°27′16.0″N / 46°44′33.7″E, 11–24.06.2020.

Results

During the survey, the material from 54 traps was studied. Altogether, 368 specimens belonging to 30 species of 10 Diptera families were identified.

Family Culicidae

Ochlerotatus (*Ochlerotatus*) *communis* (De Geer, 1776)

Material. ULY 4: 1♂.

Notes. The females feed on blood and are troublesome for warmblooded creatures in forest areas [Becker et al., 2010]. Males feed on plant juices as a source of carbohydrates. The presence of mosquitoes in beer traps is therefore interesting. We do not assume that they would be attracted to bait, they probably used a trap as a place of shelter [Dvořáková et al., 2020].

Distribution. It is a Holarctic, North American, and Eurasian species. It can also be found along the eastern shores of the Baltic Sea, the eastern distribution range stretches from the Ukrainian steppes to Central Kazakhstan.

Ochlerotatus (*Ochlerotatus*) *annulipes* (Meigen, 1830)

Material. ULY 28: 3♂.

Distribution. This is a western Palaearctic species reported from southern Scandinavia to the Mediterranean region. The species is widespread, but the most abundant in central parts of the continent, where it can be very dominant locally. The males were found around the breeding sites for several days after emergence [Becker et al., 2010].

Family Dryomyzidae

Dryomyza anilis Fallén, 1820

Material. NIZ 3: 3♂, 3♀; NIZ 4: 1♂, 1♀; NIZ 6: 1♂, 3♀; NIZ 14: 1♀; NIZ 16: 1♀; NIZ 17: 2♀; NIZ 22: 1♀; ULY 5: 3♂, 6♀.

Distribution. This is a common and widely distributed species, known from Canada, USA, Europe, Korea, Japan, Russian Far East [Mathis, Sueyoshi, 2011], RU-RUC [Soós, 1984a]. It has been reported as a common species in beer traps in Mordovia [Dvořák et al., 2020].

Dryope decrepita (Zetterstedt, 1838)

Material. NIZ 2: 1♂; NIZ 6: 1♀; NIZ 19: 1♂.

Distribution. This species is known from several regions in Canada, USA, Europe, except for the southern parts, and Asian Russia. It is also listed from European Russia [Mathis, Sueyoshi, 2011]. It has been recorded in beer traps in Mordovia [Dvořák et al., 2020].

Family Lauxaniidae

Meiosimyza decempunctata (Fallén, 1820)

Material. NIZ 18: 1♂; ULY 7: 1♂, 6♀; ULY 11: 1♀.

Distribution. This species is known from most of Europe, and also from RU-RUC [Merz, 2013a]. It has been recorded in beer traps in Mordovia [Dvořák et al., 2020].

Meiosimyza rorida (Fallén, 1820)

Material. NIZ 19: 1♀; ULY 11: 1♀.

Distribution. This species is known from North America, most of Europe, the Near East, and also from RU-RUC [Merz, 2013a]. It has been reported as a common species in beer traps in Mordovia [Dvořák et al., 2020].

Peplomyza discoidea (Meigen, 1830)

Material. NIZ 9: 1♀; ULY 7: 1♂.

Distribution. This species is known from most of Europe and also from RU-RUC [Merz, 2013a].

Peplomyza intermedia Remm, 1979

Material. NIZ 5: 1♀; SAR 1: 1♀; SAR 3: 1♂, 1♀.

Distribution. The species is known from Central and Southern Europe [Merz, 2013a] including Andorra [Carles-Tolrá, Pujade-Villar, 2003] and Spain [Carles-Tolrá, Lencina, 2010]. The first record for Russia.

Pseudolyciella pallidiventris (Fallén, 1820)

Material. NIZ 20: 1♂; ULY 9: 1♂.

Distribution. This species is known from most of Europe and also from RU-RUC [Merz, 2013a]. It has been recorded in beer traps in Mordovia [Dvořák et al., 2020].

Pseudolyciella stylata Papp, 1978

Material. ULY 2: 1♂, 1♀.

Distribution. This species is known from most of Europe and also from northwest of the European Russia [Merz, 2013a]. The first record for RU-RUC.

Pseudolyciella sp.

Material. SAR 1: 1♀.

Tricholauxania praeusta (Fallén, 1820)

Material. NIZ 5: 1♂; ULY 14: 1♀.

Distribution. This species is known from most of Europe and also from RU-RUC [Merz, 2013a].

Family Limoniidae

Metalimnobia bifasciata (Schrank, 1781)

Material. NIZ 1: 1♀; NIZ 3: 1♂; NIZ 5: 7♂, 8♀; NIZ 7: 1 ex.; NIZ 10: 1♀; NIZ 13: 1♀; NIZ 18: 3♂; NIZ 19: 1♂; ULY 5: 4♂; ULY 7: 1♂; ULY 9: 2♂, 1♀; ULY 11: 4♂, 2♀; ULY 12: 1♀; ULY 25: 1♀.

Distribution. This is a Palaearctic and Oriental species, common in Europe and Asia. In Russia, it is known from almost all parts including Siberia and the Russian Far East [Pilipenko et al., 2020; Oosterbroek, 2021]. It has been reported as a common species in beer traps in Mordovia [Dvořák et al., 2020].

Metalimnobia quadrimaculata (Linnaeus, 1760)

Material. NIZ 2: 1 ex.; NIZ 3: 2♀; NIZ 4: 2♂, 3♀; NIZ 5: 1 ♂, 2♀; NIZ 6: 8♀; NIZ 7: 2♀; NIZ 8: 4♂, 2♀; NIZ 9: 2♀; NIZ 10: 1♀; NIZ 11: 1♀; NIZ 13: 1♀; NIZ 14: 1 ex.; NIZ 15: 1 ex.; NIZ 18: 1♂, 14♀; NIZ 20: 2♂, 3♀; NIZ 21: 1♂, 4♀; NIZ 23: 2 ex.; SAR 2: 2♂, 12♀; SAR 3: 1♀; ULY 1: 1♀; ULY 5: 10♂, 8♀; ULY 6: 1♂; ULY 7: 3♀, 1 ex.; ULY 9: 1♂; ULY 11: 2♀; ULY 12: 1 ex.; ULY 25: 2♀, 3 ex.

Distribution. This is a Holarctic species, common in the USA, Europe and Asia. In Russia, it is known from almost all parts including Siberia, the Russian Far East, and also RU-RUS (Saratov Region) [Pilipenko et al., 2020; Oosterbroek, 2021]. It has been reported as a common species in beer traps in Mordovia [Dvořák et al., 2020].

Rhipidia uniseriata Schiner, 1864

Material. ULY 11: 1♂.

Distribution. This is a Western and Eastern Palaearctic species, common in Europe and Asia. In Russia it is known from almost all parts including Siberia, the Russian Far East, and also RU-RUC [Oosterbroek, 2021].

Family Pallopteridae

Palloptera umbellatarum (Fabricius, 1775)

Material. ULY 15: 1♀.

Distribution. It is a widely distributed species across Europe. Merz [2013b] did not show the distribution from Russia, although Ozerov [2009] reported *P. umbellatarum* from Leningrad and Moscow regions. The species was recently reported from Turkey [Yaran, 2019].

Toxoneura basimaculata (Czerny, 1934)

Material. ULY 28: 1♂.

Distribution. So far this rarely collected species was known from Germany, Poland, Czechia, Austria, Italy, Croatia, Hungary, Kazakhstan, and Russia (Yaroslavl and Samara regions, Republic of Dagestan) [Ozerov, 2009; Merz, 2013b]. The records were published from Slovakia [Dvořák, 2012], Turkey [Yaran, 2019], and also from beer traps in Mordovia [Dvořák et al., 2020].

Toxoneura trimacula (Meigen, 1826)

Material. NIZ 6: 1♀.

Distribution. This species is known from many European countries. Merz [2013b] did not show the distribution from Russia, although Ozerov [2009] reported *T. trimacula* from European Russia, Ural (Chelyabinsk Region) and Altai. It was recently reported from Turkey [Yaran, 2019].

Toxoneura usta (Meigen, 1826)

Material. NIZ 1: 2♂; NIZ 4: 1♀; NIZ 11: 1♂, 1♀; ULY 4: 1♀; ULY 7: 1♂, 1♀; ULY 9: 2♂, 4♀; ULY 11: 2♂, 4♀; ULY 27: 2♂, 1♀.

Distribution. This species is known from Europe including European Russia, and also from the Republic of Altai and Primorskiy Region (Russia) [Ozerov, 2009]. As a new species for RU-RUC it has been reported from beer traps in Mordovia by Dvořák et al. [2020].

Family Periscelididae

Periscelis annulipes Loew, 1858

Material. NIZ 8: 3♀; NIZ 13: 1♂.

Distribution. This species is known from Finland, France, Germany, Switzerland, Czechia, Slovakia, Poland, South Ukraine [Papp, Withers, 2011; Mathis, Rung, 2011; Roháček, Andrade, 2017]. The first record for Russia.

Family Platystomatidae

Platystoma lugubre (Robineau-Desvoidy, 1830)

Material. ULY 5: 1♂; ULY 17: 13♂, 9♀; ULY 18: 1♂, 1♀; ULY 20: 1♂.

Distribution. This species is known from the temperate and southern parts of Europe, the Caucasus, and Turkey [Soós, 1984b], and also from RU-RUC [Lyubvina, 2016]. It has been recorded in beer traps in Mordovia [Dvořák et al., 2020].

Platystoma seminationis (Fabricius, 1775)

Material. ULY 3: 13♂; ULY 5: 1♂; ULY 16: 17♂, 1♀; ULY 19: 1♂; ULY 23: 1♂; ULY 24: 1♀; ULY 28: 15♂, 4♀.

Distribution. *Platystoma seminationis* forms several subspecies [Hendel, 1913; Hennig, 1945], which are difficult to be identified well and solving the problem needs a molecular pool of data now with good comparative analysis of morphology (V. Korneev, personal communication). Several subspecies are known from various parts of Russia [Soós, 1984b; Richter, 1989a], but without solving above-mentioned problems it is impossible to tell, which subspecies were caught.

Family Sciomyzidae

Euthycera chaerophylli (Fabricius, 1798)

Material. NIZ 6: 1♂, 2♀.

Distribution. This is a common species, known from almost the whole of Europe, Turkey, and also from RU-RUC [Rozkošný, 2013]. It has been recorded in beer traps from Mordovia [Dvořák et al., 2020].

Pherbellia pallidiventris (Fallén, 1820)

Material. ULY 11: 1♀.

Distribution. This is a common species, known from almost the whole of Europe, the Eastern Palaearctic, and also from RU-RUC [Rozkošný, 2013].

Family Tabanidae

Tabanus bovinus Linnaeus, 1758

Material. ULY 28: 1♂.

Distribution. This species is widely distributed in North Africa, Europe, and Near East, also in RU-RUC [Chvála, 2013].

Family Ulidiidae

Ceroxys urticae (Linnaeus, 1758)

Material. ULY 28: 1♂.

Distribution. This is a common species, known from almost the whole of Europe, the Eastern Palaearctic, and also from RU-RUC [Greve, Kameneva, 2013].

Myennis sibirica Portschinsky, 1892

Material. ULY 1: 1♂; ULY 2: 1♀; ULY 3: 1♀; ULY 9: 1♀; ULY 11: 2♂, 3♀; ULY 14: 1♂, 3♀; ULY 21: 1♀; ULY 23: 1♀; ULY 28: 2♂, 2♀.

Distribution. This species is known from the Ukraine [Kameneva et al., 2013], the southern part of the Russian Far East [Krivosheina, Krivosheina, 1997; Kameneva, Korneyev, 2006], Korea [Han, 2013]. It has been published from Mordovia as a new species for European Russia [Dvořák et al., 2020].

Otites ruficeps (Fabricius, 1805)

Material. ULY 20: 2♂; ULY 22: 1♂; ULY 26: 1♀.

Distribution. This species is known from central, east, and southeast Europe, Near East, the Eastern Palearctic, and also from RU-RUC [Kameneva, Korneev, 2019].

Pseudotephritis millepunctata (Hennig, 1939)

Material. NIZ 8: 2♂; ULY 9: 1♀; ULY 10: 1♂; ULY 13: 1♂; ULY 24: 1♂; ULY 27: 1♂.

Distribution. This species was recently reported from the Russian Far East: Primorskiy Region, Amur Region; northeastern China; Republic of Korea [Kameneva, Korneyev, 2006; Han, 2013; Krivosheina, Krivosheina, 2019]. It was first published for Europe from Mordovia [Ruchin et al., 2020b; Dvořák et al., 2020]. In this publication, we confirm the findings of the species and its wider distribution in European Russia.

Seioptera vibrans (Linnaeus, 1758)

Material. ULY 2: 7♂, 2♀; ULY 19: 1♂; ULY 27: 1♀.

Distribution. This species is known from central, eastern, and southeastern Europe, Near East, the Eastern Palearctic, the Nearctic, and also from RU-RUC [Kameneva, 2008].

Tetanops sintenisi Becker, 1909

Material. NIZ 1: 1♂; NIZ 6: 1♂; NIZ 12: 1♂.

Distribution. The website Fauna Europaea [Greve, Kameneva, 2013] shows the species' distribution in the Eastern Palaearctic, the Netherlands, Germany, Poland, Latvia, Finland, the Ukraine and south of European Russia. Our comments are concerning two items:

1) Distribution in European Russia. Hennig [1940] recorded the species from Yaroslavl (central European Russia) and vicinity of Saint Petersburg (northwestern European Russia) and Lobanov [1972] from Ivanovo (central European Russia). Kameneva [2000] correctly wrote about the distribution of *T. sintenisi*, that it is known from "north and center of the European part", but mistakenly [Greve, Kameneva, 2013] from RU-RUS.

2) Distribution outside Russia. In her dissertation, Kameneva [2000] reported the distribution also from Lithuania. This mistake was based on incorrect translation of the type locality "Livland" in Becker [1909] as "Lithuania", although in fact it is Latvia. *Tetanops sintenisi* was recorded for Lithuania several years later [Lutovinovas, Petrašiūnas, 2013], and that is the reason, why Greve and Kameneva [2013] did not show the species' presence in Lithuania. Except this mistake, *T. sintenisi* was reported also from Belgium [Mortelmans et al., 2012] and Denmark [Hansen et al., 2015].

Conclusion

In the present study, 30 Diptera species from 10 families were recorded: Culicidae (2 species) Dryomyzidae (2 species), Lauxaniidae (7 species), Limoniidae (3 species), Pallopteridae (4 species), Periscelididae (1 species), Platystomatidae (2 species), Sciomyzidae (2 species), Tabanidae (1 species), and Ulidiidae (6 species). The traps with the highest numbers of captured Diptera specimens were: ULY 11 with eight species, ULY 9 with six species, NIZ 6, ULY 5, ULY 7, and ULY 28 with five species, and NIZ 5 with four species. Most frequent species often occurring in traps were *Metalimnobia quadrimaculata* (in 27 traps – what is 50% of the total number of traps), *Metalimnobia bifasciata* (14 traps – 26%), *Myennis sibirica* (9 traps – 17%), *Dryomyza anilis* (8 traps – 15%), *Toxoneura usta* (8 traps – 15%), and *Platystoma seminatione* (7 traps – 13%). The most abundant species in traps were as follows (the numbers in parentheses represent – total number / maximum per trap / minimum per trap): *Metalimnobia quadrimaculata* (109/18/1), *Platystoma seminatione* (54/19/1), *Metalimnobia bifasciata* (40/15/1), *Dryomyza anilis* (26/9/1), *Platystoma lugubre* (26/22/1), *Toxoneura usta* (25/6/1), and *Myennis sibirica* (19/5/1).

It is impossible to compare species spectrum and abundance between forest types due to very different site numbers: field-protective belt forest (2 traps), pine forest (2 traps), mixed forest (12 traps), deciduous forest (38 traps). We did not find any remarkable species or numbers of specimens in less represented forest types as compared to deciduous forests.

Beer traps are a very suitable passive way for mapping the biodiversity of selected groups of insects, which are attracted to this type of bait. This method is suitable for trapping rare insects, but also to monitor of selected invasive species and pests, like *Drosophila suzukii* (Matsumura, 1931) (Drosophilidae), *Callopistromyia annulipes* Macquart, 1855, *Euxesta notata* (Wiedemann, 1830) or *Euxesta pechumani* Curran, 1938 (all Ulidiidae) [Manko et al., 2018, 2021; Dvořák et al., 2019, 2020; Dvořáková et al., 2020; Ruchin et al., 2021a, b, c, etc.]. Their simplicity and functionality predetermines them as a suitable supplement for primary entomological research, such as Malaise trap, yellow pan traps, emergent traps, sticky cartons or sweeping.

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