Russian Entomol. J. 32(2): 234–238

To the fauna of Pallopteridae (Diptera) of Russia

К фауне двукрылых семейства Pallopteridae (Diptera) России

A.L. Ozerov[1,3], M.G. Krivosheina[2]
А.Л. Озеров[1,3], М.Г. Кривошеина[2]

[1]Zoological Museum, Moscow Lomonosov State University, Bol'shaya Nikitskaya 2, Moscow 125009, Russia.
E-mail: ozerov2455@rambler.ru

[1]Зоологический музей, Московский государственный университет им. М.В. Ломоносова, Большая Никитская ул., 2, Москва 125009, Россия.

[2]A.N. Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences, Leninsky prospect, 33, Moscow 119071, Russia.
E-mail: dipteramarina@rambler.ru

[2]Институт проблем экологии и эволюции им. А.Н. Северцова РАН, Ленинский проспект, 33, Москва 119071, Россия.

[3]corresponding author

KEY WORDS: Diptera, Pallopteridae, Russia, fauna, new records, new species, checklist.

КЛЮЧЕВЫЕ СЛОВА: Diptera, Pallopteridae, Россия, фауна, новые данные по распространению, новый вид, список родов и видов.

ABSTRACT. New data on flies of the family Pallopteridae of the fauna of Russia are presented. The genus *Eurygnathomyia* Czerny, 1904 was firstly recorded on the territory of Russia and in the Asian part of the Palearctic based on materials from the Khabarovsk Krai. One species, *Toxoneura biamoensis*, is described as new to science. Checklist of genera and species of Russian Pallopteridae is provided.

РЕЗЮМЕ. Приведены новые данные о двукрылых семейства Pallopteridae фауны России. Род *Eurygnathomyia* Czerny, 1904 впервые отмечен на территории России и в азиатской части Палеарктики по материалам из Хабаровского Края. Один вид, *Toxoneura biamoensis*, описан как новый для науки. Приведен список родов и видов фауны России.

Introduction

Pallopteridae are small or middle-sized (2.5–7.0 mm) flies, most of which have a dark-patterned wing. They are a small family of acalyptrate flies with about 70 species worldwide from 12 genera [Merz, 1998; Merz, Sueyoshi, 2002; Merz, Chen, 2005; Ozerov, 2009, 2010; Ozerov, Krivosheina, 2019].

Fauna of Russia included 22 species from 3 genera: *Gorbunia* Ozerov, 1993 (1 species), *Palloptera* Fallén, 1820 (4 species) and *Toxoneura* Macquart, 1835 (17 species) [Ozerov, 2009].

Adults of saproxylic Pallopteridae can be found in exposed situations on dead wood, on foliage of trees and shrubs and in thick vegetation close to the ground. One of the phytophagous species, *Palloptera quinquemaculata* (Macquart, 1835), was observed on plant *Heracleum sphondylium* at the base of stem and under leaves. As a result the sweeping for adults with a hand net is unlikely to be effective, especially in thick vegetation (Rotheray, 2014). Greve [1993] reported about Pallopteridae caught in Malaise traps, but only females were collected. Suction traps demonstrated effectiveness for collecting of *Palloptera* species in evening time [Lewis, Taylor, 1965]. Larvae of some *Palloptera* develop in herabaceous plants and are found in stems of Umbelliferae and the flowerheads of Compositae, many species are connected with dead trees and develop under the bark in the presence of wood-destroying insects, single species is reported to inhabit fir cone [Ferrar, 1987]. Larvae are maily saprophagous, some species were reported to be phytophagous and predators [Ferrar, 1987]. The larvae of *Toxoneura ephippium* (Zetterstedt, 1860) were found under the bark of *Abies sibirica* in tunnels of *Polygraphus proximus* Blandford, 1894 and were supposed to be predators [Krivosheina et al., 2018].

Eurygnathomyia bicolor (Zetterstedt, 1837) and one undescibed species was found after examination of the material collected in Russian Far East and kept in the collection of Pallopteridae in the Zoological Museum, Moscow University (ZMUM).

Eurygnathomyia Czerny, 1904 is a monotypic genus which most of dipterologists consider in the family Pallopteridae. However, there is a point of view that the genus *Eurygnathomyia* is to be considered in a separate family Eurygnathomyiidae (*e.g.*, Papp [2011]).

Ozerov [2009] in the review of the Pallopteridae fauna of Russia, included in the identification key for the genera all genera of Pallopteridae known in the

How to cite this article: Ozerov A.L., Krivosheina M.G. 2023. To the fauna of Pallopteridae (Diptera) of Russia // Russian Entomol. J. Vol.32. No.2. P.234–238. doi: 10.15298/rusentj.32.2.14

Palearctic, among them the genus *Eurygnathomyia*, although this genus was not registered in Russia.

The genus *Eurygnathomyia* easily differs from other genera of Pallopteridae, noted in Russia by the following characters: 1) the costal vein is spinose, 2) the katepisternum along the upper border with 4–5 strong setae, 3) the scutum with two presutural dorsocentral setae. The description of *Eurygnathomyia bicolor* (Zetterstedt, 1837), as well as data on the distribution of this species and lifestyle, are given below.

In addition, one species, *Toxoneura biamoensis*, is described as new to science on material from Primorsky Krai (Russia) and checklist of genera and species of Russian Pallopteridae is provided.

The terminology used in the species descriptions follows McAlpine [1981], Cumming & Wood [2009], and Stuckenberg [1999 (postpedicel)].

Taxonomic part

Eurygnathomyia bicolor (Zetterstedt, 1838)

Figs 1, 2.

bicolor Zetterstedt, 1837: 50 (*Sciomyza*). Nomen nudum.

bicolor Zetterstedt, 1838: 739 (*Sciomyza*). Type-locality: "Hab. in Lapponia Umensi rarissime; tantum in silva ad Withelmiiia d. 15–20. Jul. inventa. In Norvegia a D Boheman etiam lecta. (Lapponia.)".

opomyzina Zetterstedt, 1855: 4793 (*Heteromyza*). Type-locality: "Scania" [Skåne] (Sweden).

MATERIAL. **Russia**: Khabarovsk Krai, Ikchu River (49.11ºN, 139.27ºE), 350 m, 14.VI.2022, N. Vikhrev (2 ♂♂, 1 ♀, ZMUM).

DESCRIPTION. Male (Fig. 1). Female. Length of body 4.5–5.2 mm. Length of wing 5.2–5.8 mm.

Head in profile slightly higher than long (Fig. 1). Frons reddish-yellow in ground colour, more or less parallel-sided, slightly broader than long when viewed dorsally; covered in anterior half by black setulae. Face, gena and parafacial from yellow to black. Gena covered by black setulae. Genal height approximately equal to vertical diameter of eye. Postcranium yellow, covered by black setulae. Head with following paired setae: 1 ocellar, 2 orbitals (anterior small), 1 inner vertical, 1 outer vertical, and 1 small postocellar. Antenna short (Fig. 1). Scapus and pedicel reddish-yellow; postpedicel brownish, but yellowish basally, rounded in profile, with long and bare arista (Fig. 1). Palpus reddish-yellow, with black apex.

Thorax densely grey dusted. Scutum covered with rare black setulae and with the following paired setae: 2 postpronotals, 2 equal notopleurals, 1+2 supra-alars, 2 postalars, 2+3 dorsocentrals; acrostichal setae in 1–2 rather well-defined rows. Proepisternum bare, without setulae, but with one strong seta near lower margin. Anepisternum bare. Katepisternum with 4–5 strong setae along upper margin and covered with black setulae in lower corner. Scutellum densely grey dusted, with two pairs of setae approximately equal to each other.

Legs yellow. Fore femur with rows of long posterodorsal and posteroventral setae. Fore tibia with 1 dorsal preapical and 1 posterodorsal preapical setae. Mid femur with 4–5 posteroventral setulae apically. Mid tibia with 1 anterodorsal preapical, 1 posterodorsal preapical, 1 anteroventral apical and 1 posteroventral apical setae. Hind femur with 2 anterodorsal thin setae in apical third and several posteroventral setulae in apical quarter. Hind tibia with 1 anterodorsal preapical and 1 posterodorsal preapical setae.

Wing (Figs 1, 2) transparent with 3 dark areas: along r-m and dm-cu crossveins, also at apex; dark area between costal vein and vein R_{2+3} can start from the confluence of subcostal vein in costal vein. Veins yellow. Costal vein spinose (Fig. 2).

Abdomen densely grey dusted, covered with black setulae. End of male abdomen after tergite 6 yellow. End of female abdomen after tergite 6 shining black. The male genitalia were fully described and illustrated by L. Papp [2011].

DISTRIBUTION. Rare boreal-mountain species. Until now was known from Great Britain [Chandler, 1998], France [Mr. Bruno Tissot, pers. comm., 2022], Austria, Germany, Slovakia, Switzerland [Merz, 1997, 2004], Czech Republic [Dvořák, 2017], Poland [Klasa, 2002; Klasa, Palaczyk, 2016], Scandinavia (Finland, Norway, Sweden) [Andersson, 1990; Winqvist, Kahanpää, 2007].

In Russia, the species is recorded for the first time. It is also the first time this species has been observed for the Asian part of the Palearctic.

HABITATS. Adults of *E. bicolor* prefer moist forests with trees such as alder and birch, near rivers and streams. Adults are recorded from the end of May to the end of June or July (Scandinavia) and are usually observed running and resting on foliage.

In Poland, the species was recorded in the Carpathians at an altitude of 740 m, in an alder forest [Klasa, Palaczyk, 2016]. In Czech Republic, this species was collected in spruce forest with an admixture of maple in the valley of the Pstružího stream [Dvořák, 2017]. In the Khabarovsk Krai, all three specimens of *E. bicolor* were collected by sweeping in the valley of the Ikchu River with a predominance of alder tree.

Biology unknown.

Toxoneura biamoensis Ozerov et Krivosheina, **sp.n.**

Figs 3, 4.

MATERIAL. Holotype male, labeled "Примор. кр./р. Биамо 14.VIII.1976 Н. Синиченкова" [**Russia**: Primorsky Krai, Biamo River [now = Bol'shaya Svetlovodnaya River] (ca. 46.392ºN, 137.086ºE), 14.VIII.1976, N. Sinichenkova] (ZMUM).

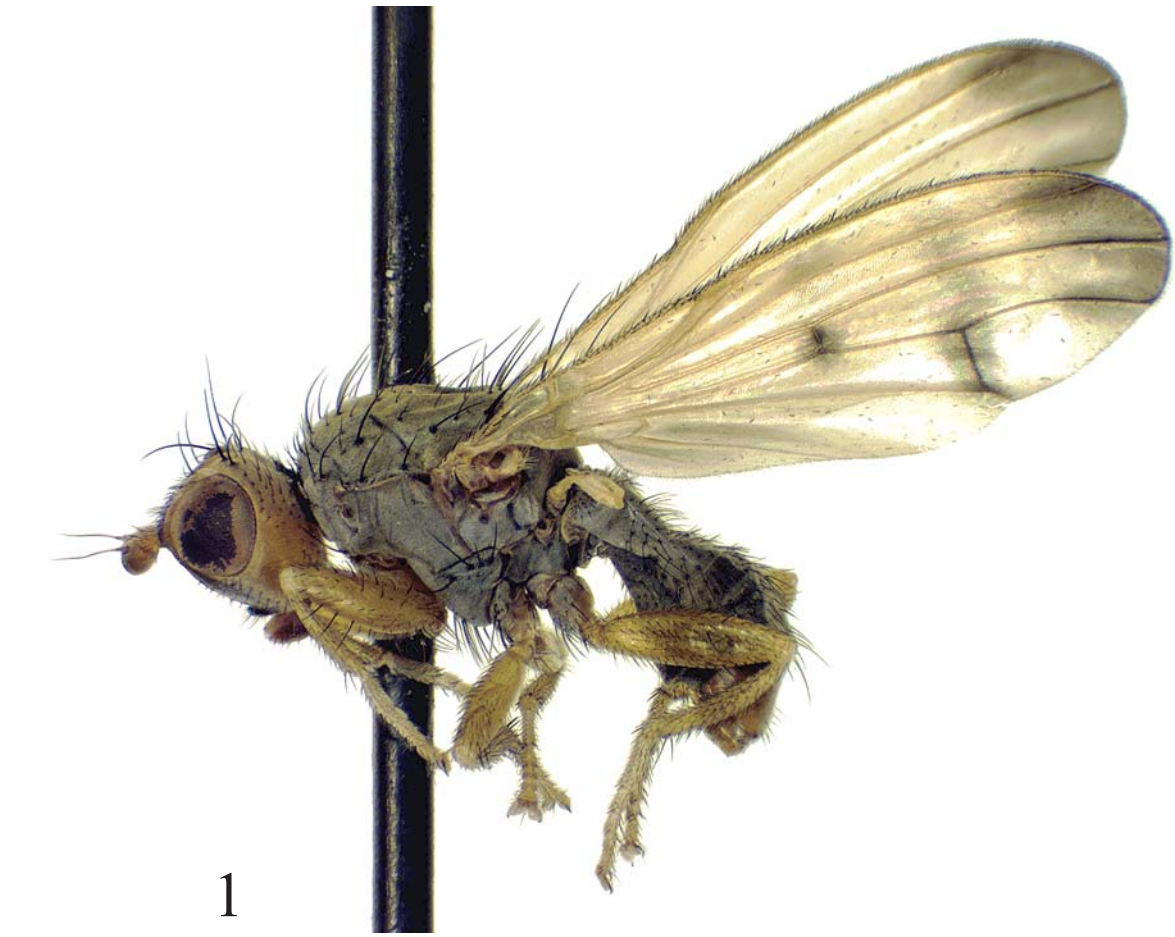
DESCRIPTION. Male (Fig. 3). Length of body ca. 3.0 mm. Length of wing 3.2 mm. Body in ground colour, antennae and legs pale yellow; postcranium black in upper third (Fig. 4); scutum with large black spot (Fig. 4); mediotergite and abdominal tergites 1–4 mostly blackish.

Head in profile about as high as wide. Length of frons slightly more than its width. Height of gena below eye is about 1/3 of vertical diameter of eye. Head with 1 orbital, 1 ocellar, 1 outer vertical, and 1 inner vertical setae; postocellar absent. Gena and postcranium with thin black setulae. Postpedicel approximately 1.2 times as long as wide. Arista long, short haired on whole length; the longest setulae on arista equal to basal diameter of arista.

Thorax. Scutum shiny, covered with short yellow hairs, with the following paired setae: 1 notopleural (posterior), 1 postalar, 1 postsutural dorsocentral (Fig. 4). Scutellum shiny, with two pairs of setae approximately equal to each other. Pleural sclerites subshining.

Legs covered with yellow hairs, without striking setae.

Wing surface transparent with two dark areas: along crossvein dm-cu and at apex (Fig. 3). Veins very short setulose only.



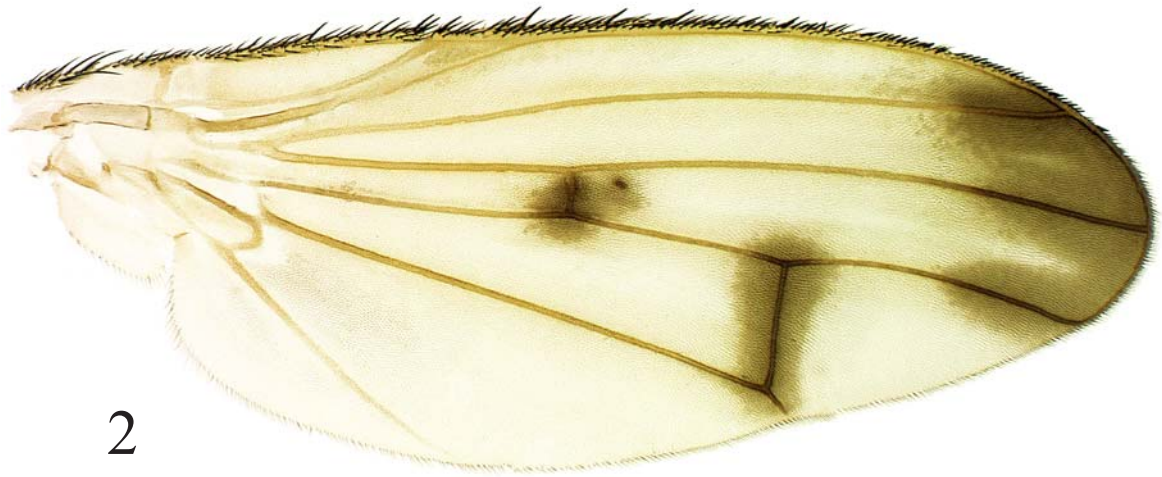


Fig. 1–2. *Eurygnathomyia bicolor* (Zetterstedt): 1 — male in lateral view; 2 — wing.
Рис. 1–2. *Eurygnathomyia bicolor* (Zetterstedt): 1 — самец, сбоку; 2 — крыло.

Abdomen covered with yellow setulae, without noticeable setae.

SIMILARITY. The new species is more similar to *Toxoneura ambusta* (Meigen, 1826) and *Toxoneura shatalkini* (Ozerov, 1993) in wing pattern (Fig. 3), but clearly differs from both species by the absence of supra-alar seta, only one notopleural (posterior) and one postalar setae. *T. ambusta* and *T. shatalkini* have supra-alar seta, 2 notopleural and 2 postalar setae. All the three species differ from each other in the pattern on the scutum (Figs 4–6): scutum of *T. ambusta*

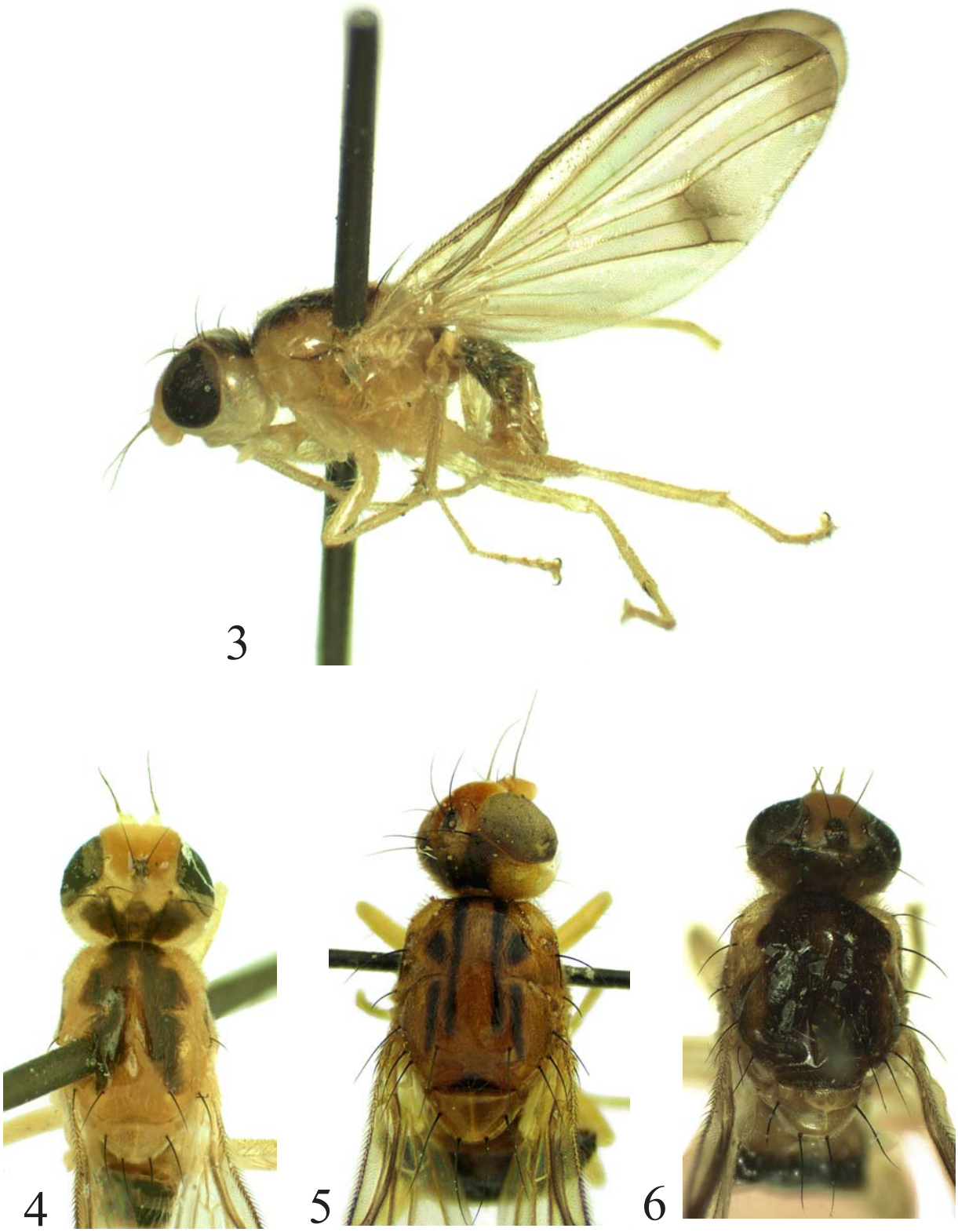


Fig. 3–6. Male holotype in lateral view (3) and scutum (4–6) of *Toxoneura* spp.: 3, 4 — *T. biamoensis* sp.n.; 5 — *T. ambusta* (Meigen); 6 — *T. shatalkini* (Ozerov).

Рис. 3–6. Самец, голотип сбоку (3) и среднеспинка (4–6) *Toxoneura* spp.: 3, 4 — *T. biamoensis* sp.n.; 5 — *T. ambusta* (Meigen); 6 — *T. shatalkini* (Ozerov).

yellow with four black stripes (Fig. 5), scutum of *T. shatalkini* has large shiny black spot (Fig. 6), and *T. biamoensis* with spot as in Fig. 4. Some European dipterists believe that the drawing on the scutum of *T. ambusta* and *T. shatalkini* is a color variation [https://diptera.info/forum/viewthread.php?thread_id=92819].

Checklist of the family Pallopteridae of Russia

EURYGNATHOMYIINAE
Eurygnathomyia Czerny, 1904
bicolor (Zetterstedt, 1838) (*Sciomyza*)

PALLOPTERINAE
Gorbunia Ozerov, 1993
insularis Ozerov, 1993 (*Gorbunia*)

Palloptera Fallén, 1820
formosa Frey, 1930 (*Palloptera*)
marginata (Meigen, 1826) (*Sapromyza*)
umbellatarum (Fabricius, 1775) (*Musca*)
ustulata Fallén, 1820 (*Palloptera*)

Toxoneura Macquart, 1835
=*Temnosira* Enderlein, 1936
ambusta (Meigen, 1826) (*Sapromyza*)
basimaculata (Czerny, 1934) (*Palloptera*)
biamoensis Ozerov et Krivosheina, **sp.n.** (*Toxoneura*)
carterosoma Ozerov, 1993 (*Toxoneura*)
czurkini (Ozerov, 1993) (*Temnosira*)
ephippium (Zetterstedt, 1860) (*Palloptera*)
=*septentrionalis* (Czerny, 1934) (*Palloptera*)
laetabilis (Loew, 1873) (*Palloptera*)
longipennis (Czerny, 1934) (*Palloptera*)
modesta (Meigen, 1830) (*Opomyza*)
nigriscutata (Ozerov, 1993) (*Temnosira*)
orientana (Kovalev, 1972) (*Palloptera*)
quinquemaculata (Macquart, 1835) (*Sapromyza*)
saltuum (Linnaeus, 1758) (*Musca*)
shatalkini (Ozerov, 1993) (*Temnosira*)
trichaeta (Ozerov, 1993) (*Temnosira*)
trimacula (Meigen, 1826) (*Sapromyza*)
usta (Meigen, 1826) (*Sapromyza*)
=*paralia* Ozerov, 1993 (*Toxoneura*)
venusta (Loew, 1858) (*Palloptera*)

Acknowledgements. The investigation was fulfilled within the state project of the Institute of the Ecology and Evolution RAS (M.G. Krivosheina) and the State project No 121032300105-0 (A.L. Ozerov).

References

Andersson H. 1990. De svenska prickflugorna (Diptera, Pallopteridae), med typdesigneringar och nya synonymer // Entomologisk Tidskrift. Arg.111. P.123–131.

Chandler P.J. 1998. Checklists of Insects of the British Isles (New Series) Part 1: Diptera // Handbooks for the Identification of British Insects. Vol.12. P.1–234.

Cumming J.M., Wood D.M. 2009. Adult morphology and terminology // Brown *et al*. (eds.). Manual of Central American Diptera. Vol.1. Ottawa: National Research Council Press. P.9–50.

Dvořák L. 2017. Diptera Mariánskolázeňska I. Pallopteridae (Diptera of the Marienbad Region I. Pallopteridae (western Bohemia, Czech Republic)) // Západočské entomologické listy. Vol.8. P.26–33.

Ferrar P. 1987. A guide to the breeding habits and immature stages of Diptera Cyclorrhapha // Entomonograph. Vol.8 (Part 1: text; Part 2: figures). P.1–907.

Greve L. 1993. Family Pallopteridae (Diptera) in Norway // Fauna norvegica. Series B. Vol.40. P.37–44.

Klasa A. 2002. Tephritoidea (Platystomatidae, Ulidiidae, Tephritidae, Pallopteridae) (Diptera) Ojcowskiego Parku Narodowego, Pienin i Babiej Góry // Roczniki Muzeum górnośląskiego (Przyroda). Vol.16. P.1–142.

Klasa A., Palaczyk A. 2016. Pallopteridae (Diptera) of the Bieszczady Mountains // Dipteron. T.32. P.32–43.

Krivosheina M.G., Krivosheina N.P., Kerchev I.A. 2018. Flies (Diptera) associated with *Polygraphus proximus* Blandford, 1894 (Coleoptera, Curculionidae) in Siberia and the Russian Far East // Entomological Review. Vol.98. No.2. P.156–164.

Lewis T., Taylor L.R. 1965. Diurnal Periodicity of flight by insects // Transactions Royal Entomological Society London. Vol.116. P.393–435.

McAlpine J.F. 1981. Morphology and terminology-adults // McAlpine J.F., Peterson B.V., Shewell G.E., Teskey H.J., Vockeroth J.R., Wood D.M. (Coordinators). Manual of Nearctic Diptera. Vol.2. Ottawa: Research Branch. Agriculture Canada. Monograph 27. P.9–63.

Merz B. 1997. Zur Faunistik der Pallopteridae der Schweiz (Diptera) // Mitteilungen der Schweizerischen Entomologischen Gesellschaft. Bd.70. S.225–230.

Merz B. 1998. 3.14. Family Pallopteridae // Papp L., Darvas B. (eds.). Contributions to a Manual of Palaearctic Diptera. Vol.3. Budapest: Science Herald. P.201–210.

Merz B. 2004. Fauna Europaea: Pallopteridae // Pape T. (ed.) (2004) Fauna Europaea: Diptera, Brachycera. Fauna Europaea version 1.1, http://www.faunaeur.org.

Merz B., Chen X. 2005. A new species of *Palloptera* Fallén from China (Diptera, Pallopteridae) // Mitteilungen der Schweizerischen Entomologischen Gesellschaft. Vol.78. P.117–123.

Merz B., Sueyoshi M. 2002. Descriptions of new species of Pallopteridae (Diptera) from Taiwan, Korea and Japan, and notes on some other species from Eastern Asia // Studia dipterologica. Vol.9. No.1. P.293–306.

Ozerov A.L. 2009. [Review of the family Pallopteridae (Diptera) of the fauna of Russia] // Russian Entomological Journal. Vol.18. No.2. P.129–146 [in Russian].

Ozerov A.L. 2010. On the Pallopteridae (Diptera) of Tajikistan, with a description of a new species // Studia dipterologica. Bd.16 (2009). Heft.1/2. S.69–72.

Ozerov A.L., Krivosheina M.G. 2019. The genus *Toxoneura* Macquart (Diptera, Pallopteridae) of the Oriental Region // Zootaxa. Vol.4576. No.3. P.591–595.

Papp L. 2011. Description of a new genus and a new family Circumphallidae fam. nov., of the acalyptrate flies (Diptera) // Acta Zoologica Academiae Scientiarum Hungaricae. Vol.57. No.4. P.315–341.

Rotheray G.E. 2014. Development sites, feeding modes and early stages of seven European *Palloptera* species (Diptera, Pallopteridae) // Zootaxa. Vol.3900. No.1. P.50–76.

Stuckenberg B.R. 1999. Antennal evolution in the Brachycera (Diptera), with a reassessment of terminology relating to the flagellum // Studia Dipterologica. Vol.6. S.33–48.

Winqvist K., Kahanpää J. 2007. Checklist of Finnish flies: superfamilies Tephritoidea and Sciomyzoidea (Diptera: Brachycera) // Sahlbergia. Vol.12. P.20–32.

Zetterstedt J.W. 1837. Conspectus familiarum, generum et specierum dipterorum, in fauna insectorum Lapponica descriptorum // Isis (Oken's). Vol.21 P.28–67.

Zetterstedt J.W. 1838. Sectio tertia. Diptera. Dipterologis scandinaviae // Insecta lapponica. Lipsiae [= Leipzig]: Leopoldi Voss. P.477–868

Zetterstedt J.W. 1855. Diptera Scandinaviae. Disposita et descripta. Lundae. Vol.12. P.4547–4942.