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Notes on the Palaearctic fauna of *Limnia* (Diptera, Sciomyzidae)

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Abstract. The Palaearctic fauna of the genus *Limnia* Robineau-Desvoidy, 1830 is reviewed. Recently *Pherbina testacea* has been transferred back to the genus *Limnia*, while *Neodictya jakovlevi* is transferred to *Limnia* herein. The reasonableness of these transfers is discussed. Two synonyms are newly proposed: *L. unguicornis* Scopoli, 1763 = *L. paludicola* Elberg, 1965, **syn. nov**. and *L. pacifica* Elberg, 1965 = *L. japonica* Yano, 1978, **syn. nov**. The negative consequences of using the structure of genitalia as the only diagnostic character are discussed. A new identification key for both sexes of Palaearctic *Limnia* is proposed.

Keywords: Diptera, Sciomyzidae, *Limnia*, taxonomy, synonyms

Заметки по палеарктической фауне *Limnia* (Diptera, Sciomyzidae)

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Аннотация. Дан обзор палеарктической фауны рода *Limnia* Robineau-Desvoidy, 1830. Недавно *Pherbina testacea* была вновь переведена в род *Limnia*; *Neodictya jakovlevi* переведена в *Limnia* в данной работе. Обсуждена обоснованность этих переводов. Предложены два новых синонима: *L. unguicornis* Scopoli, 1763 = *L. paludicola* Elberg, 1965, **syn. nov**. и *L. pacifica* Elberg, 1965 = *L. japonica* Yano, 1978, **syn. nov**. Обсуждены негативные последствия использования структуры гениталий как единственного диагностического признака. Предложен новый определительный ключ для самцов и самок палеарктических видов рода *Limnia*.

Ключевые слова: Diptera, Sciomyzidae, *Limnia*, систематика, синонимы

Introduction

Everyone who has ever worked with European Sciomyzidae knows *Limnia unguicornis*, one of the most common species of the family. At the moment, authors regard as valid the following seven species in the genus *Limnia* Robineau-Desvoidy, 1830 (in the description time order):

L. unguicornis Scopoli, 1763
L. testacea Sack, 1939
L. jakovlevi Elberg, 1965, **stat. nov**. (previously, *Neodictya jakovlevi*)
L. pacifica Elberg, 1965
L. paludicola Elberg, 1965
L. japonica Yano, 1978
L. kassebeeri Mohamadzade Namin, 2017

In the present work I offer two new synonyms: *L. unguicornis* Scopoli, 1763 = *L. paludicola* Elberg, 1965, **syn. nov**. and *L. pacifica* Elberg, 1965 = *L. japonica* Yano, 1978, **syn. nov**. Newly proposed synonymies, generic affiliation of *L. testacea* and *L. jakovlevi,* and taxonomic difficulties with *L. kassebeeri* are discussed in the annotated list below, each under respective species listed in the same order as description dates.

With two synonyms newly proposed and *L. kassebeeri* postponed for the future reconsideration, four remaining species of *Limnia* may be reliably distinguished in both sexes as proposed in the key below. Examination of the rich material of Zoological Museum of Moscow University (not indicated in the text) and Zoological Institute of Saint Petersburg (indicated as ZIN) significantly clarified the distribution of *Limnia* in the eastern part of Palaearctic.

Material and methods

Localities are given as follows: country, region/province (in italics), and geographical coordinates in the decimal-degree format (in brackets, if not indicated on the original label). The full names of regions of Russian administrative subdivisions are an entangled result of political and historical events of no interest for zoology, so they are listed as a name and the word "Region" (abbreviated in the text as "Reg.").

Illustrations are original unless otherwise credited. When referring to figures, to avoid confusion I capitalize the first letter (Fig. or Figs.) for those appearing in this paper and use lowercase (fig. or figs.) for those published elsewhere.

Annotated list of examined material with distributional data and taxonomic remarks

Limnia unguicornis Scopoli, 1763
Figs. 1–4, 12, 13
Limnia paludicola Elberg, 1965, **syn. nov**.
Male holotype and female paratype of *L. paludicola*: ESTONIA, Parnu County, Tuhu marsh (58.57°N, 23.84°E), 16.06.1961, K. Elberg (ZIN).
ARMENIA, Lichk (≈ 39.058°N, 46.175°E, 1800 m), 10.06.1955, L. Zimina, 1♀.
AUSTRIA, Hallein distr., Haunsperg — Hammer (≈ 47.65°N, 13.19°E), 17.07.2007, G. Pennards, 1♀.

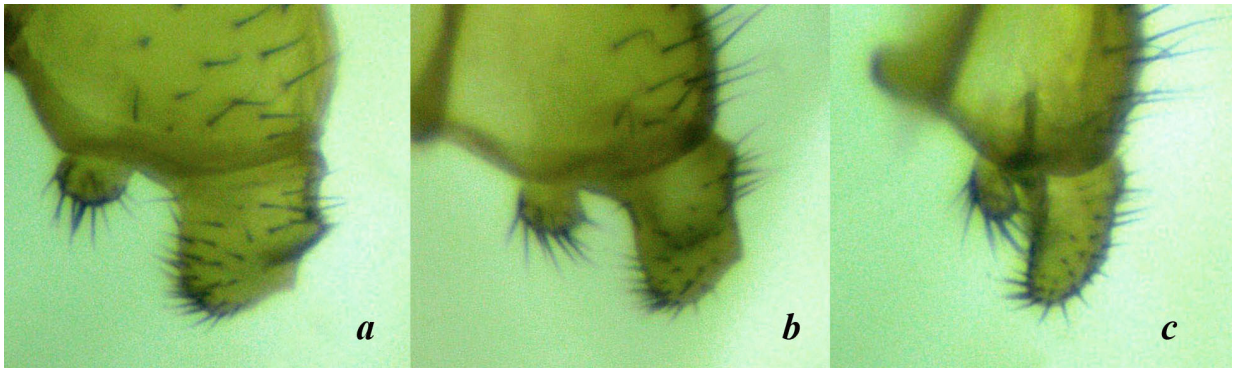
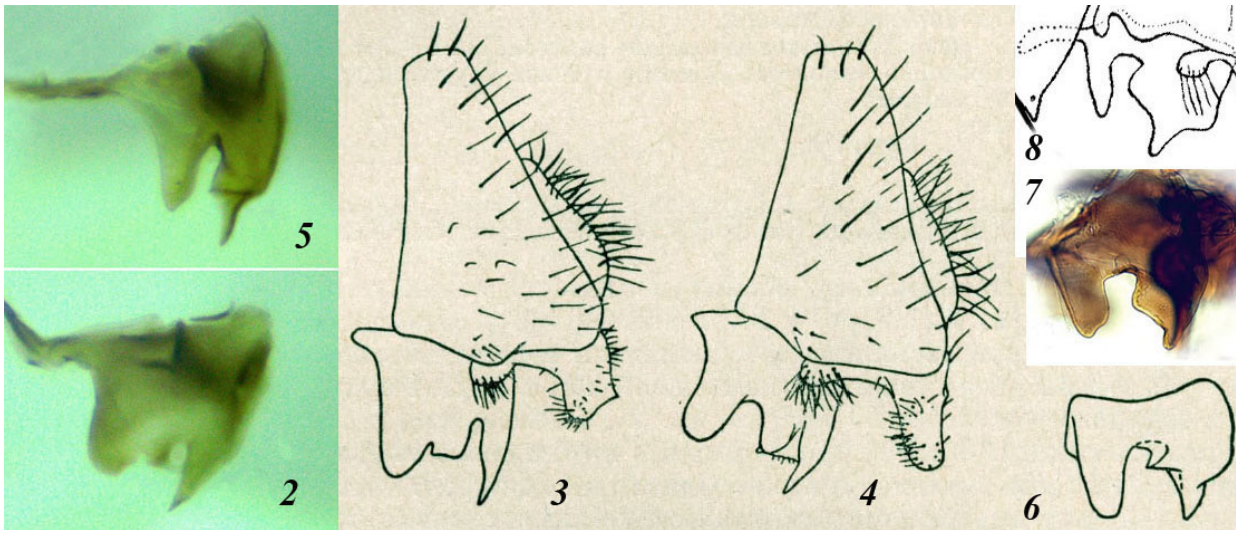


Fig. 1. Surstyli of the same specimen of *L. unguicornis* photographed under different angles of view

Рис. 1. Сурстили одного и того же экземпляра *L. unguicornis*, снятые под разными углами зрения



Figs. 2–8. Hypandrium of *Limnia*: *2–4*, *L. unguicornis*: *2* — our photo; *3* — *L. paludicola*; *4* — *L. unguicornis* (*3, 4* from Elberg 1965: figs. 16, 17); *5–8* — *L. pacifica*: *5* — our photo; *6* — (from Elberg 1965: fig. 18); *7* — (from Przhiboro 2016: fig. 13); *8* — (from Yano 1978: fig. 9)

Рис. 2–8. Гипандриум *Limnia*: *2–4*, *L. unguicornis*: *2* — наше фото; *3* — *L. paludicola*; *4* — *L. unguicornis* (*3, 4* из Elberg 1965: figs. 16, 17); *5–8* — *L. pacifica*: *5* — наше фото; *6* — (из Elberg 1965: fig. 18); *7* — (из Przhiboro 2016: fig. 13); *8* — (из Yano 1978: fig. 9)

BELARUS: *Gomel* Reg., Mozyr env., 52.05°N, 29.31°E, 11–14.06.2019, N. Vikhrev, 10♂, 6♀; *Vitebsk* Reg., Orsha env. 54.58°N, 30.45°E, 2.08.2019, N. Vikhrev, 1♂, 1♀.

FRANCE, *Occitanie* Reg., Gers dep., Pichoy (Fources) (≈ 43.995°N, 0.208°E): 2.06.2006, G. Pennards, 1♂; 10.05.2007, G. Pennards, 1♂; 23.05.2007, G. Pennards, 1♂, 1♀.

KAZAKHSTAN, *South Kazakhstan* Reg., Aksu-Zhabagly Nat. Res. (≈42.5°N, 70.5°E): 9.06.1965, L. Zimina, 1♀; 20.06.1965, L. Zimina, 1♀.

KYRGYZSTAN, *Chuy* Reg., Tokmak (≈ 42.82°N, 75.32°E), 9.08.1969, E. Narchuk, 4♂, 2♀ (ZIN); *Issyk-Kul* Reg., Ananjevo (≈ 42.73°N, 77.69°E), 28.07.1961, L. Zimina, 1♀.

MOLDOVA, Chishinau env. (≈ 47.01°N, 28.86°E): 1.07.1970, R. Kamenskaya, 1♀; 2.07.1970, R. Kamenskaya, 1♀.

NETHERLANDS: Beek (≈ 50.93°N, 5.80°E), 13.06.1999, G. Pennards, 1♀; Kwade Hoek (≈ 51.832°N, 4.004°E), 21.05.2005, G. Pennards, 1♂.

RUSSIA: *Altai Republic* Reg., Seminsky pass env., Sarlyk R., 1200 m, 28–30.06.2016, N. Vikhrev, 1♂;

Amur Reg., Zeya env. (≈ 53.71°N, 127.19°E), 1.09.1981, A. Shatalkin, 1♂;

Arkhangelsk Reg.: Arkhangelsk, 64.55°N, 40.60°E, 4.07.2011, D. Gavryushin, 1♂; Solvychegodsk, 61.333°N, 46.922°E, 11.08.2010, D. Gavryushin, 2♀;

Bashkortostan Reg.: Abzakovo, 53.82°N, 58.62°E, 500 m, 15–19.06.2020, N. Vikhrev, 7♂, 1♀; Beloretsk distr., Makhmutovo, Belaya R., 54.33°N, 58.81°E, 15.07.2015, D. Gavryushin, 1♂, 1♀;

Buryatia Reg., Kyren env., 51.7°N, 102.1°E, 750 m, 16–19.06.2021, E. Makovetskaya, 1♀;

Dagestan Reg., Samur forest, 41.86°N, 48.56°E, 25.06.2021, O. Kosterin, 1♂;

Donetsk Reg., Volnovakha distr., 10 km E of Donskoe (47.50°N, 37.65°E), K. Tomkovich, 20–31.08.2008, 3♂, 1♀;

Irkutsk Reg., Yurty (≈ 56.05°N, 97.63°E), 11.06.1912, Mishin, 1♀ (ZIN);

Karelia Reg., Myaranduksa L., 62.3°N, 33.1°E, 14.07.2018, D. Astakhov, 1♀;

Khakasia Reg., Shira distr., Borets, 54.46°N, 90.36°E, 29.06.2011, K. Tomkovich, 1♀;

Khanty-Mansi Reg., Seliyarovo env., 61.467°N, 70.731°E, 17–20.07.2010, K. Tomkovich, 1♂, 1♀;

Krasnodar Reg. (Krasnaya Polyana), Alpika-service, 43.682°N, 40.236°E, 600 m, 11–13.06.2008, K. Tomkovich, 5♂, 4♀;

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Krasnoyarsk Reg., Krasnoyarsk, West bank (of Yenisei R.), Udachniy distr. env. (≈ 55.978°N, 92.710°E), 28.07.2009, K. Tomkovich, 1♀;
Kursk Reg., Selikhovy Dvory (≈ 51.58°N, 36.07°E), 25.05.2007, N. Vikhrev, 2♂, 3♀;
Mordovia Reg., Pushta vill. env., 54.71°N, 43.22°E, 22–26.06.2020, M. Yanbulat, 5♂, 3♀;
Moscow Reg.: Burtsevo env. (55.981°N, 35.597°E): on parsley, 1–15.07.2008, M. Krivosheina, 1♂, 3♀; on hogweed, 6–14.07.2008, M. Krivosheina, 1♀; Izmaylovo (≈ 55.564N, 37.649E): 5.06.1983, A. Ozerov, 1♂; 2.07.1983, A. Ozerov, 1♂;
North Osetia Reg., S of Alagir (42.90°N, 44.15°E, 1700 m), 28–30.06.1990, A Shatalkin, 2♂, 3♀; Alagir (43.04°N, 44.21°E, 800 m), 9.07.1990, A. Ozerov, 1♂, 1♀;
Novosibirsk Reg., Akademgorodok, 54.87°N, 83.05°E, 18–19.06.2016, N. Vikhrev, 1♂; Akademgorodok, Zyryanka R., Botanical garden, 54.825°N, 83.115°E, 14.06.2008, O. Kosterin, 4♂, 3♀;
Omsk Reg., Omsk distr., Fadino vill., 54.79°N, 73.34°E, 9.06.2007, O. Kosterin, 1♂, 2♀;
Saint Petersburg Reg., Kiperort Penins., 60.48°N, 28.56°E, 15–25.05.2012, K. Tomkovich, 1♂;
Tuva Reg., Uyuk R., 800 m, 52.07°N, 94.04°E, 1–3.07.2017, N. Vikhrev, 1♂;
Tver Reg., Ostashkov (57.15°N, 33.10°E), 14.07.1936, B. Rodendorf, 1♂.
SERBIA, Crni Vrh env., 43.396°N, 22.605°E, 1000 m, 4.07.2015, A. Ozerov, 1♂.
TURKEY, Bolu prov., 6 km S of Kartalkaya Ski Resort, 40.642°N, 31.763°E, 1480 m, 16–18.06.2010, N. Vikhrev, 1♂.
UK, Oxford, 5–20.09.1998, M. Krivosheina, 1♂.
UKRAINE, *Zakarpatskaya* Reg.: Uzhgorod distr., Turja Polyana (≈ 48.70°N, 22.80°E), 25.06.1964, L. Zimina, 1♀.

DISTRIBUTION. One of the most common Sciomyzidae in Europe, less common in W. Siberia, uncommon in Central Siberia, ranges to the east to Xinjiang province of China (Li et al. 2019) and Lake Baikal SE periphery, the single easternmost specimen available is from Amur region. The southern limit of distribution is the Northern Mediterranean (Italy, Greece, Turkey), also present in Central Asia; the northern limit of distribution is about 65°N (Karelia, Arkhangelsk, Khanty-Mansi regions).

SYNONYMY. *L. paludicola* Elberg, 1965 was described from a large series of specimens collected from E Europe (Estonia) to Central Siberia. Thus, Elberg (1965: 195–197) hypothesized that this series belongs to a new species which is sympatric to *L. unguicornis* on a vast territory of Palaearctic. It was claimed to differ from *L. unguicornis* in males only by the fine structure of surstylus and hypandrium (posterior surstyli in Elberg), in females by a darker brown median stripe on the mesonotum. For more than 50 years Sciomyzidae experts have supported this hypothesis, but I would like to express my opinion that the description of *L. paludicola* was quite groundless.

Concerning females, Elberg (1965) did not discuss on what basis he "married" *L. paludicola* males to females with a darker but not with a lighter mesonotal stripe, so, I suppose that this character was chosen arbitrarily. Indeed, median vitta on female mesonotum may be brownish or yellowish, I regard their colour as intraspecific variability of *L. unguicornis* until someone presents a justification to the contrary.

Let us concentrate on male genitalia.

Apart from my doubts that the shape of the weakly sclerotized surstyli of *L. unguicornis* is really important for reproductive isolation of specimens, there is no difference in that shape between *L. unguicornis* and *L. paludicola*. Figure 1 shows that the same surstylus may look, depending on the angle of view, as "hyper-*paludicola*" (a), as *paludicola* (b) or as *unguicornis* (c) (compare with Figs. 3, 4).

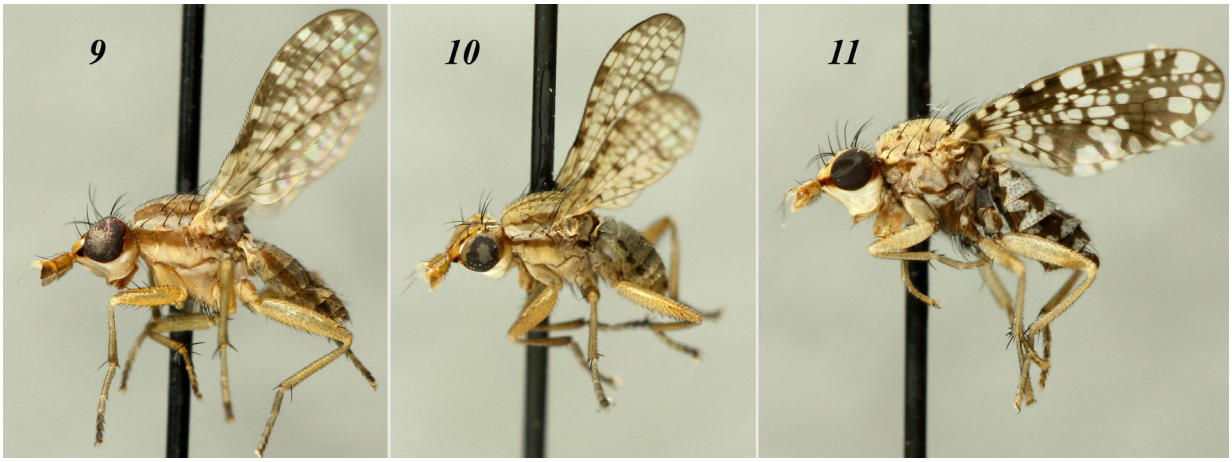
The shape of the hypandrium also depends on the angle of view. I will not tire myself and the reader with examples of how unrecognizably its appearance can change in a photo. Even when I did my best to orient it in such a way (Fig. 2) that it looks as similar as possible to Elberg's drawings (Figs 3, 4), it is unclear how to interpret what we see.

This case contrasts the difference between the hypandrium of *L. unguicornis* and

L. pacifica, which may be verbalized. In *L. unguicornis* the median projection of the hypandrium sprouts from its base (Figs. 2–4), while in *L. pacifica* the median projection sprouts from the posterior projection (Figs. 5–8). (*L. pacifica* is listed below, but I believe that the form of its hypandrium is appropriate to discuss here, together with *L. unguicornis*.) Again, I did my best to orient the hypandrium of *L. pacifica* in such a way (Fig. 5) that it looks as similar as possible to Elberg's drawings (Fig. 6). However, after choosing a different angle of view, other authors (Przhiboro 2016: fig. 13) or (Yano 1978: fig. 9, as *L. japonica*) got a different shape of the hypandrium, similar to each other (Figs. 7–8), but not very similar to the shape from Elberg or mine (Figs 5–6). It shows how easy a new species may be described by the apparent "difference" in a fine structure of the genitalia.

Let us compare two species described by Elberg in 1965. *L. pacifica* is very similar to *L. unguicornis* but these species are geographically isolated (1); may be reliably distinguished in both sexes (2); they have a small but reliable difference in the structure of male genitalia (3). At the same time, *L. paludicola* is sympatric with *L. unguicornis* from W Europe to Baikalia (1); without any non-genitalic difference (2); the genitalic difference is either absent or not intelligibly explained by anyone (3). So, *L. unguicornis* Scopoli, 1763 = *L. paludicola* Elberg, 1965, **syn. nov**.

Limnia testacea Sack, 1939
Fig. 9
Limnia testacea Sack, 1939
Pherbina testacea Sack, 1939 (Leclercq 1981)
Limnia setosa Yano, 1978 (Mortelmans 2020)
Limnia testacea Sack, 1939 (Mortelmans 2020)
RUSSIA: *Buryatia* Reg.: Kyren env., 51.7°N, 102.1°E, 750 m, 16–19.06.2021, N. Vikhrev, 5♂, 6♀; E. Makovetskaya, 1♂, 3♀.
Jewish Reg., Babstovo, 48.12°N, 132.48°E, 15–20.06.2013, I. Melnik, 1♀;
Khabarovsk Reg.: 4 km S Gur R. (near road P454), 50.01°N, 137.08°E, 21.06.2022, N. Vikhrev, 5♂, 5♀; Bychikha, 48.30°N, 134.82°E, 13.07.2014, N. Vikhrev, 3♂, 1♀; Khabarovsk suburb, 48.6°N, 135.1°E: 25.07.2014, N. Vikhrev, 1♀; 27–30.06.2022, N. Vikhrev, 8♂, 3♀; Mayak env., 48.90°N, 136.19°E: 8.06.2022, 2♂; 24.06.2022, 1♂, 1♀;
Primorsky Reg.: Andreevka, 42.64°N, 131.13°E, 25–30.06.2014, N. Vikhrev, 3♂; Khanka L., 45.06°N, 131.99°E, 15–19.06.2014, N. Vikhrev, 1♂, 7♀; Khasansky distr., Ryazanovka (≈ 42.79°N, 131.26°E), 8.06.1989, A. Shatalkin, 3♂, 4♀; Lotos L.: 42.46°N, 130.64°E, 1–3.07.2014, N. Vikhrev, 2♂, 1♀; 28.07.2018, 1♂; Spassk-Dalny, 44.58°N, 132.85°E, 15.06.2014, N. Vikhrev, 2♂.
DISTRIBUTION. Described from China, Heilongjiang province, Harbin. One of the most common Sciomyzidae in Primorsky and Khabarovsk regions, less common in the Japanese and Kuril Islands, the westernmost finding is SE Baikalia.



Figs. 9–11. General view: *9* — female *Limnia testacea*; *10* — male *Limnia jakovlevi*; *11* — female *Trypetoptera punctulata*

Рис. 9–11. Общий вид: *9* — самка *Limnia testacea*; *10* — самец *Limnia jakovlevi*; *11* — самка *Trypetoptera punctulata*

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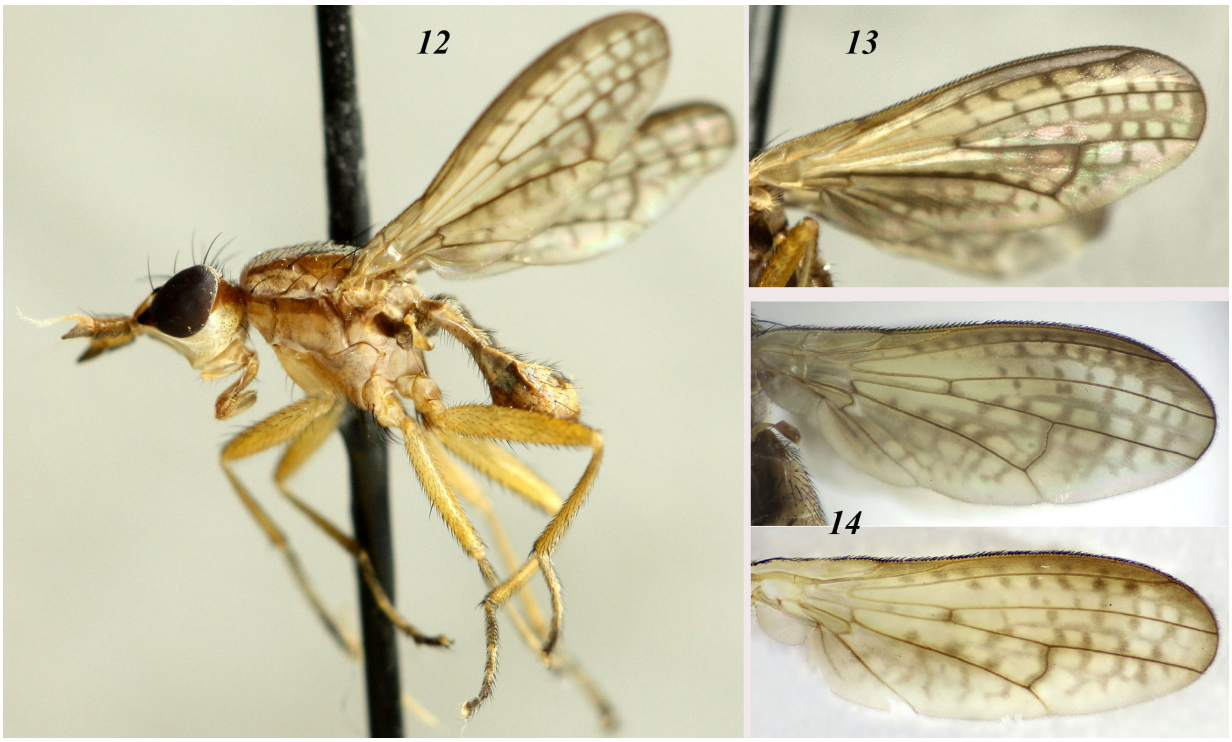
REMARKS. *L. testacea* Sack, 1939 (Fig. 9) is a species with a complicated history; Leclercq (1981) transferred it to the genus *Pherbina*, Mortelmans (2020) transferred it back to *Limnia*. The same species was described as *Limnia setosa* Yano, 1978 and synonymized with *L. testacea* by Mortelmans (2020). I rather agree with Mortelmans's decision.

However, the presence of both *unguicornis* and *testacea* in the same genus makes it problematic to formulate the generic diagnosis for *Limnia*. These species have different wing patterns and share only few characters: anepisternum and anepimeron with at least some setulae; hind coxa with hairs on inner posterior margin. However, these characters are also present in *Psacadina*, *Pherbina*, *Trypetoptera* and even in *Ilione, Elgiva* or *Dictya*. At the same time, since most authors (Sack, Yano, Mortelmans) regarded the taxon *testacea* (= *setosa*) as belonging to *Limnia*, I believe that it is better to leave the existing division of Tetanocerini into genera where possible. Note also that the Nearctic *Limnia* species with *unguicornis*-like or *testacea*-like wing pattern are all included in the genus *Limnia*.

I hope that one day molecular data will clarify the phylogeny of Tetanocerini. So far, the molecular data (Chapman et al. 2012; Tothova et al. 2012) indicated a close relationship between genera *Limnia*, *Trypetoptera*, *Pherbina* and probable paraphyly of the genus *Limnia*. What is more, the data by Chapman et al. (2012) indicated that in the case of Nearctic *Limnia*, the species with *unguicornis*-like wing pattern are not congeneric with those with *testacea*-like (or in America *boscii*-like) wing pattern. If this is confirmed, then *L. testacea* and related species will move to another genus once again.

Limnia jakovlevi Elberg, 1965
Fig. 10
Neodictya jakovlevi Elberg, 1965
Limnia jakovlevi Elberg, 1965, **stat. nov**.
Type material: the holotype, male, Irkutsk (52.28°N, 104.24°E, 1848, V. Yakovlev) (ZIN).
New material examined:
RUSSIA: *Khakasia* Reg., Shira distr., Borets, 54.46°N, 90.36°E, 29.06.2011, K. Tomkovich, 1♂; *Tuva* Reg., Uyuk R., 800 m, 52.07°N, 94.04°E, 1–3.07.2017, N. Vikhrev, 1♂.
DISTRIBUTION. Seems to be a rare species known from the south of Central Siberia: Irkutsk, Khakassia and Tuva regions of Russia and Inner Mongolia province of China (Li et al. 2019).
REMARKS. This is another problematic taxon. It was previously known by the single male holotype. I was lucky to examine two more specimens of this taxon, one of them is shown in Fig. 10. In 1965, *L. testacea* was well forgotten and *L. setosa* was not yet described, so Elberg placed *jakovlevi* in a separate genus *Neodictya* Elberg, 1965. Presently, there are three possible solutions regarding the generic status of this species: to leave it in the monotypic genus *Neodictya* (1); to transfer it to the genus *Trypetoptera* (2); to transfer it to the genus *Limnia* (3). Similar possibilities concerning the relationship of these genera were discussed in Murphy et al. (2018: 153). As follows from the identification key given below, the species *jakovlevi* shares more characters with *Trypetoptera punctulata* Scopoli, 1763 than with *L. testacea*, but generally it is very similar to the latter (see Figs. 9–11). I propose leaving the monophyletic genus *Trypetoptera* as it is, and place the Elberg's species in the genus *Limnia* for the time being seemingly artificial.

Limnia pacifica Elberg, 1965
Figs. 5–8, 14
Limnia japonica Yano, 1978 **syn. nov**.
RUSSIA, *Sakhalin* Reg.: Kunashir Isl.: Alekhino (≈ 43.917°N, 145.528°E), 2.06.1968, E. Narchuk, 1♀; Mendeleevo (43.957°N, 145.689°E), 29–30.07.1971, E. Narchuk, 1♂, 1♀; Sernovodsk: (≈ 43.906°N, 145.642°E), 30.06.1971, E. Narchuk, 1♀; I. Kerzhener, 26.08.1973, 1♀; Tretyakovo (≈ 43.988°N, 145.644°E): 4–5.07.1968, E. Narchuk, 1♂, 2♀; 9.07.1971, E. Narchuk, 1♂; V. Tanasiychuk, 6.09.1971, 1♀ (all ZIN); Mendeleev volcano env. (≈ 43.98°N, 145.73°E), 20.07.1985, S. Churkin, 1♀; Stolbchaty cape (≈ 44.02°N, 145.69°E), 13.07.1985, S. Churkin, 1♀; Andreevsky Cordon, 43.54°N, 145.37°E, 6–8.07.2014, A. Gomyranov, 1♂, 1♀; Saratovsky Cordon, 44.15°N, 146.06°E, 19–23.07.2014, A. Gomyranov, 1♀; Yuzhno-Kurilsk, 43.59°N, 145.38°E, 15–18.07.2014,



Figs. 12–14. *L. unguicornis*, *12, 13: 12* — male, general view; *13* — wing; *L. pacifica*: *14* — wings (from Przhiboro 2016: figs. 6, 7)

Рис. 12–14. *L. unguicornis*, *12, 13: 12* — самец, общий вид; *13* — крыло; *L. pacifica*: *14* — крылья (из Przhiboro 2016: figs 6, 7)

A. Gomyranov, 1♀; Shikotan Isl., Tserkovnaya Bay, 43.75°N, 146.70°E, 11–17.06.2012, Yu. Sundukov, 1♂; Iturup Isl., Goryachie Kluchi, 45.0°N, 147.8°E, 17–29.08.2022, V. Savitsky, 1♂.

DISTRIBUTION. Restricted to Pacific Islands: the Kuril Islands (Kunashir, Shikotan and Iturup) and Japan (known from Honshu and Kyushu).

REMARKS. Two females from Kunashir have strong (as in *Psacadina*) seta on anepisternum.

SYNONYMY. Alas, it is sometimes assumed that for describing a new species, it is enough to indicate a character not mentioned in the original description of a similar species, though this character well may be a result of intraspecific variability. In the worst case, not a single character is even indicated, as in the case of *L. japonica*. On the other hand, many colleagues are convinced that serious justifications are required for the suggestion of synonymy. With this approach, it becomes increasingly difficult to distinguish species, but biodiversity gets "enriched" every year. Meanwhile, in accordance with the basic method of scientific knowledge (Occam's principle), any doubts should be interpreted in favor of synonymy, so as not to produce unnecessary entities. Synonymy is not a verdict but only a statement of the fact that there is no reason to consider some species as different, for example, the populations of *unguicornis*-like *Limnia* in the Kuril and Japanese Islands. No comprehensible difference follows either from the original description or from other publications, while a short publication with an indication of reliable diagnostic characters would be enough for the resurrection of the synonymized species.

L. japonica was described from specimens collected from Honshu and Kyushu Islands of Japan. Yano (1978: 5–10) compared his other species (*L. setosa*) with hardly similar *L. pacifica*, but Yano compared *L. japonica* only with the W Palaearctic *L. unguicornis* but not with *L. pacifica* distributed in the Pacific Islands. According to Yano, *L. japonica* and *L. unguicornis* differ only in the male genitalia structure. Actually, as follows from the discussion under *L. unguicornis* and Figs. 5–8, *L. japonica*

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has the same genitalia as *L. pacifica*. Rozkosny (1987: 66–67) tried to save the validity of *L. japonica* proposing brownish longitudal stripe in the middle of the face as a diagnostic character. However, Sueyoshi (2001: 497–498) found out, after examination of a large series, that there is a gradual intraspecific variability: the facial stripe is distinct in S Japan and indistinct in N Japan (we could add: usually absent in the Kuril Islands). So, *L. pacifica* Elberg, 1965 = *L. japonica* Yano, 1978 **syn. nov**.

Limnia kassebeeri Mohamadzade Namin, 2017

REMARKS. The species was described from a series of specimens from NW regions of Iran (Kurdistan, E Azerbaijan and Gilan provinces). According to the diagnosis, "… in some specimens of *L. kassebeeri*, anepisternum contains one small seta in addition to fine hairs. Hypandrium in *L. kassebeeri* sp. n. has two ventral processes, whereas in *L. unguicornis* and *L. paludicola* the number of ventral processes of hypandrium is three ...". In the photo of the holotype of *L. kassebeeri* (Sadr, Namin 2017: fig. 2A) we can see: (*a*) scutum with grey submedian vittae; (*b*) postpedicel about as long as pedicel; (*c*) costal margin of wing with distinct round dark spots; (*d*) rather strong seta on anepisternum.

Characters *a* and *b* are typical for *L. unguicornis*.

Character *c* is typical for *L. pacifica*. Some specimens of *L. unguicornis* have indistinct costal spots, only one female from S Dagestan (again Caspian region) has very distinct dark costal spots.

Character *d* was never found in *L. unguicornis*. Two our specimens of *L. pacifica* have remarkably strong anepisternal seta, several more specimens have shorter but still elongated setulae on anepisternum.

We have a female specimen from Lichk (Armenia), collected 30 km north of some specimens from E Azerbaijan province listed as *L. kassebeeri* by Sadr & Namin (2017). This female is typical *L. unguicornis*.

I tend to regard the above data as manifesting a curious variability of *Limnia*. However, if to correct wording by Sadr & Namin (2017) from "some specimens" to "those specimens which have seta on anepisternum and bilobed hypandrium in male", then *L. kassebeeri* would at least have a comprehendible diagnosis with two independent diagnostic characters. Thus, my decision is to postpone *L. kassebeeri* for now for the future reexamination of the type material and examination specimens to be collected in the Caspian region.

Key to Palaearctic ***Limnia*** and ***Trypetoptera***
♂♀

1. Costal margin of wing (= cell R1) entirely darkened, without white areas (Figs. 12–14). Katatergite much darker than adjacent pleura. (Prosternum always setulose. Anepisternum without strong seta(e), only with setulae) **2**
— Costal margin of wing (= cell R1) with alternating black and white rectangular sections, some black sections have a white spot inside (Figs. 12–14). Katatergite concolorous with adjacent pleura **3**
2. Mesonotum from scutellum to neck with a pair of distinct, wide, grey submedian vittae. Postpedicel longer, almost as long as pedicel. Costal margin of wing (= cell R1) more or less evenly darkened, usually unspotted (Figs. 12–13), rarely with indistinct spots. Anepisternal setulae minute. Palaearctic from Europe to East Siberia. Common in Europe, less common in W Siberia, rare in E Siberia. ♂: Median projection of hypandrium attached to its base (Figs. 2–4) ..... ***unguicornis*** Scopoli
— Mesonotum without distinct grey submedian vittae, i.e., submedian vittae light brown, almost concolourous with the rest surface of mesonotum. Postpedicel distinctly shorter than pedicel. Costal margin of wing (= cell R1) darkened not evenly, with 7-8 rounded darker spots (Fig. 14). Anepisternal setulae longer, especially so a row of 3–5 setulae on the posterior margin. Far Eastern islands: the Kurils and Japan. ♂: Median projection of hypandrium attached to its posterior projection (Figs 5–8) ..... ***pacifica*** Elberg
3. Arista with sparse whitish hairs, stem of arista dark. Prosternum hairy. Anepisternum without strong seta, with setulae only.

Mesonotum without grey vittae. (Fig. 9) 4

— Arista with dense white hairs, stem of arista also white. Prosternum bare. Anepisternum with strong seta apart from fine setulae. Mesonotum with a pair of distinct, wide, grey submedian vittae . . . . . ***testacea*** Sack

4. Prosternum with only one pair of setulae. Abdomen with very wide and distinct lateral vittae. Wing pattern contrasting (Fig. 11). Mesonotum with several dark-brown spots . . . . . ***Trypetoptera punctulata*** Scopoli

— Prosternum widely setulose. Abdomen with narrow and less distinct lateral vittae. Wing pattern much less contrasting (Fig. 10). Mesonotum without distinct dark spots . . . . . ***jakovlevi*** Elberg

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