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A further contribution to the knowledge of the fauna of fungus gnats (Diptera: Bolitophilidae, Keroplatidae, Mycetophilidae) from the Republic of Dagestan

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Abstract. A list of 87 species of fungus gnats (Diptera: Bolitophilidae, Keroplatidae, Mycetophilidae) which are newly recorded from the Republic of Dagestan is provided. The number of species known from the region is increased to 141, i. e., more than two and a half times. Four species, *Orfelia georgica* Kurina and Jürgenstein, 2013, *Phthinia hyrcanica* Zaitzev, 1984, *Exechiopsis (Exechiopsis) intersecta* (Meigen, 1818), and *Lusitanoneura chandleri* (Caspers, 1991), are recorded for the first time from Russia, the latter also being the first record of the genus from Russia. New data on species previously recorded from the region are reported. For a number of more interesting species illustrations of male terminalia are given.

Keywords: Diptera, Bolitophilidae, Keroplatidae, Mycetophilidae, fungus gnats, Republic of Dagestan, faunistics, species list, new records

Дополнительные сведения к познанию фауны грибных комаров (Diptera: Bolitophilidae, Keroplatidae, Mycetophilidae) Республики Дагестан

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Аннотация. Приводится список 87 видов грибных комаров (Diptera: Bolitophilidae, Keroplatidae, Mycetophilidae), являющихся новыми находками для Республики Дагестан. Число видов, отмеченных в данном регионе, увеличено до 141, т. е. более чем в два с половиной раза. Четыре вида, *Orfelia georgica* Kurina and Jürgenstein, 2013, *Phthinia hyrcanica* Zaitzev, 1984, *Exechiopsis (Exechiopsis) intersecta* (Meigen, 1818) и *Lusitanoneura chandleri* (Caspers, 1991), впервые указываются для фауны России, при этом последний из них также является первым указанием этого рода из России. Сообщаются новые сведения о видах грибных комаров, указанных ранее из данного региона. Для ряда интересных видов даются иллюстрации терминалий самцов.

Ключевые слова: Diptera, Bolitophilidae, Keroplatidae, Mycetophilidae, грибные комары, Республика Дагестан, фаунистика, список видов, новые находки

Introduction

This paper is a continuation of the author's previous work on the fauna of fungus gnats from the Republic of Dagestan (Gavryushin 2022). Once again, the study area was visited in late October which allowed, to an extent, for a comparison of species composition and relative abundance in the same season; then a collecting trip in late April provided substantial material from a different season. Still, the regional fauna remains vastly understudied and a large number of species is yet to be discovered.

Material and methods

All the examined material was collected by the author unless stated otherwise. It is part dried specimens glued to insect pins, part specimens stored in alcohol. Collecting was done by sweeping in the periods from 17 to 30 October 2022 and from 23 to 29 April 2023. The material is deposited in the Zoological Museum of the Moscow State University (ZMMU). The collecting localities are coded as follows:

[1] = RUSSIA, Dagestan, Derbent env., Achigsirt Mt., 42°02′31″N, 48°15′47″E, 410 m a. s. l.

[2] = RUSSIA, Dagestan, Derbent env., Achigsirt Mt., 42°02′31″N, 48°15′40″E, 440 m a. s. l.

[3] = RUSSIA, Dagestan, Magaramkentsky distr., Samur Forest, 41°50′49″N, 48°28′59″E, 20 m a. s. l.

[4] = RUSSIA, Dagestan, Magaramkentsky distr., Samur Forest, 41°51′22″N, 48°28′55″E, 10 m a. s. l.

[5] = RUSSIA, Dagestan, Derbent env., Jalgan Mt., 42°02′06″N, 48°14′56″E, 580 m a. s. l.

[6] = RUSSIA, Dagestan, Kaytagsky distr., Barshamay env., 42°7′12″N, 47°50′42″E, 580 m a. s. l.

[7] = RUSSIA, Dagestan, Kaytagsky distr., Sanchi env., 42°7′59″N, 47°47′20″E, 710 m a. s. l.

[8] = RUSSIA, Dagestan, Tabasaransky distr., Khuchni env., 41°58′37″N, 47°55′26″E, 720 m a. s. l.

[9] = RUSSIA, Dagestan, Derbentsky distr., Jalgan env., 42°01′44″N, 48°15′29″E, 540 m a. s. l.

[10] = RUSSIA, Dagestan, Derbent env., Achigsirt Mt., 42°02′20″N, 48°15′43″E, 390 m a. s. l.

[11] = RUSSIA, Dagestan, Magaramkentsky distr., Samur Forest, Bilbil-Kazmalyar env., 41°49′16″N, 48°32′06″E, 20 m a. s. l.

[1A] = RUSSIA, Dagestan, Magaramkentsky distr., Samur Forest, Primorsky env., 41°50′42″N, 48°34′19″E, –3 m a. s. l.

[2A] = RUSSIA, Dagestan, Dokuzparinsky distr., Mikrakh env., 41°22′16″N, 47°53′38″E, 1235 m a. s. l.

[3A] = RUSSIA, Dagestan, Derbent env., Achigsirt Mt., 42°02′35″N, 48°15′40″E, 435 m a. s. l.

The localities examined in October 2022 can be briefly characterised as submontane oak and hornbeam forests at elevations not higher than 720m (Fig. 1), those in Barshamay (Fig. 2) and Khuchni env. being less humid and stronger affected by grazing; three short collecting trips were taken to the unique lowland Samur Forest in Magaramkentsky distr.; accessed in the area close to Samur railway station. In April 2023, fungus gnats were extensively collected in the Samur Forest, mostly in the vicinity of Primorsky village (Fig. 3); three short collecting trips were taken to Derbent; during a single, relatively short period of time fungus gnats were collected in a small oak grove strongly affected by grazing at higher elevation of 1,235 m (Dokuzparinsky distr., Mikrakh env.). Detailed information on the Samur Forest and the forest vegetation of Dagestan in general can be found elsewhere (Novikova, Polyanskaya 1994; Sergeeva et al. 2004).

To prepare the illustrations, male genitalia were boiled in 10% solution of potassium hydroxide (KOH) for 60 to 90s, neutralised by a 10% solution of acetic acid (CH3COOH), rinsed in water and then stored in glycerol. Dissected male genitalia were examined with a Nikon SMZ645 binocular microscope and then photographed using an eTREK DCM900 camera on MBI-1 microscope; stacked images were obtained using either CombineZP or Helicon Focus software. Pictures of habitats were taken with a Huawei Honor 20 smart phone.

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Figs. 1–3. Some collecting localities: *1* — Sanchi env.; *2* — Barshamay env.; *3* — the Samur Forest, 23 April 2023

Рис. 1–3. Некоторые места сборов: *1* — окр. Агачаула; *2* — окр. Дербента; *3* — Самурский лес, 23.04.2023

Results

In total, 2,061 specimens were identified, 1,991 of them males and 70 females, resulting in 130 species of three families, viz., one species of Bolitophilidae, nine species of Keroplatidae, and 120 species of Mycetophilidae. The two periods of different seasons compared, 87 species were collected in October 2022, 47 of them were new records for the Republic of Dagestan, with respective numbers of 86 and 37 in the spring of 2023. Among the specimens collected in early August 2023 by O. Kosterin, three more species represent new records for the region. Among Keroplatidae, one species, *Orfelia georgica* Kurina and Jürgenstein, 2013, and of Mycetophilidae, three species, *Phthinia hyrcanica* Zaitzev, 1984, *Exechiopsis (Exechiopsis) intersecta* (Meigen, 1818) and *Lusitanoneura chandleri* (Caspers, 1991), represent new records for Russia, the latter also being the first record of the genus from Russia. The systematic list of species is given below; it mostly follows the classification accepted at the Fungus Gnats Online web site (Family-group names 2023). More detailed distributions of species newly recorded from Russia are mostly according to the Fauna Europaea web site (Chandler 2013).

The list of species newly recorded from the Republic of Dagestan

Family **Keroplatidae** Rondani, 1856
Subfamily **Macrocerinae** Rondani, 1856

Macrocera fasciata Meigen, 1804
Material examined: 2♂, [3A], 27.04.2023; 2♂, ibidem, 29.04.2023.
Distribution: Palaearctic.

Subfamily **Keroplatinae** Rondani, 1856

Cerotelion racovitzai Matile & Burghele-Balacesco, 1969
Material examined: 2♂, [3], 20.10.2022; 2♂, [1A], 23.04.2023; 4♂, ibidem, 24.04.2023; 6♂, ibidem, 26.04.2023; 1♂, Dagestan, Samur forest, 41°51′00″N, 48°33′00″E, 23–28.04.2023, N. Vikhrev leg.
Distribution: Western Palaearctic.

Isoneuromyia semirufa (Meigen, 1818)
Material examined: 1♂, Dagestan, Tsuntinsky distr., Khupri env., 42°2′36″N, 45°49′12″E, 1600 m a. s. l., 01–03.08.2023, O. Kosterin leg.
Distribution: Holarctic.

Neoplatyura modesta (Winnertz, 1863)
Material examined: 1♂, [2], 19.10.2022.
Distribution: Europe.

Neoplatyura nigricauda (Strobl, 1893)
Material examined: 1♂, [1], 19.10.2022; 1♂, [3], 20.10.2022.

Distribution: Europe.

Orfelia fasciata (Meigen, 1804)
Material examined: 1♂, 1♀, [1A], 26.04.2023.
Distribution: Palaearctic.

Orfelia georgica Kurina and Jürgenstein, 2013
Figs. 4–5
Material examined: 1♂, [1A], 23.04.2023; 3♂, ibidem, 24.04.2023; 42♂, ibidem, 26.04.2023; 1♂, Dagestan, Samur forest, 41°51′00″N, 48°33′00″E, 23-28.04.2023, N. Vikhrev leg.
Distribution: Georgia, Russia (first record).

Pyratula zonata (Zetterstedt, 1855)
Material examined: 4♂, [1A], 23.04.2023; 10♂, ibidem, 24.04.2023; 24♂, ibidem, 26.04.2023; 4♂, [3A], 27.04.2023; 1♂, Dagestan, Samur forest, 41°51′00″N, 48°33′00″E, 23–28.04.2023, N. Vikhrev leg; 1♂, Dagestan, Derbent, 42°02′35″N, 48°15′36″E, 29.04.2023, N. Vikhrev leg.
Distribution: Europe.

Family **Mycetophilidae** Newman, 1834
Subfamily **Mycomyinae** Edwards, 1925

Mycomya (Cymomya) circumdata (Stæger, 1840)
Material examined: 6♂, [3A], 27.04.2022.
Distribution: Palaearctic.

Mycomya (Mycomya) marginata (Meigen, 1818)
Material examined: 1♂, [11], 28.10.2022.
Distribution: Palaearctic.

Mycomya (Mycomya) tenuis (Walker, 1856)
Material examined: 1♂, [1A], 24.04.2023; 2♂, [3A], 27.04.2023; 2♂, ibidem, 29.04.2023.
Distribution: Palaearctic.

Mycomya (Mycomyopsis) penicillata (Dziedzicki, 1885)
Material examined: 2♂, [1A], 23.04.2023; 1♂, ibidem, 24.04.2023; 1♂, ibidem, 26.04.2023; 91♂, 10♀, [3A], 27.04.2023; 21♂, ibidem, 29.04.2023.
Distribution: Palaearctic.

Subfamily **Sciophilinae** Rondani, 1840

Acnemia hyrcanica Zaitzev, 1984
Material examined: 1♂, [1A], 23.04.2023; 2♂, ibidem, 24.04.2023; 3♂, [3A], 27.04.2023; 2♂, ibidem, 29.04.2023.
Distribution: Russia (Krasnodar territory), Azerbaijan, Georgia.

Azana (Azana) anomala (Stæger, 1840)
Figs. 6–7
Material examined: 2♂, 1♀, [3A], 27.04.2023.
Distribution: Europe.

Megalopelma nigroclavatum (Strobl, 1910)
Material examined: 1♂, [1A], 23.04.2023.
Distribution: Holarctic.

Monoclona rufilatera (Walker, 1837)
Material examined: 1♂, [10], 30.10.2022; 17♂, 2♀, [3A], 27.04.2023; 2♂, ibidem, 29.04.2023.
Distribution: Holarctic.

Phthinia hyrcanica Zaitzev, 1984
Fig. 8
Material examined: 1♂, [7], 25.10.2022.
Distribution: Azerbaijan, Georgia; Russia (first record).

Polylepta zonata Zetterstedt, 1852
Material examined: 1♂, [6], 25.10.2022; 1♂, [10], 27.10.2022; 1♂, [11], 28.10.2022; 1♂, [1A], 26.04.2023; 1♀, [3A], 27.04.2023.
Distribution: Europe.

Sciophila arizonensis Zaitzev, 1982
Figs. 9–10
Material examined: 1♂, [11], 28.10.2022.
Distribution: Holarctic.

Subfamily **Gnoristinae** Edwards, 1925

Boletina populina Polevoi, 1995
Material examined: 4♂, [3A], 27.04.2023; 2♂, ibidem, 29.04.2023.
Distribution: Europe.

Boletina sciarina Stæger, 1840
Material examined: 2♂, [3A], 27.04.2023; 3♂, ibidem, 29.04.2023.
Distribution: Holarctic.

Boletina trivittata (Meigen, 1818)
Material examined: 1♂, [6], 25.10.2022.
Distribution: Palaearctic.

Coelosia fusca Bezzi, 1892
Material examined: 1♂, [1], 17.10.2022.
Distribution: Western Palaearctic.

Subfamily **Leiinae** Edwards, 1925

Docosia gilvipes (Haliday in Walker, 1856)
Material examined: 2♂, [10], 27.10.2022; 1♂, ibidem, 30.10.2022.

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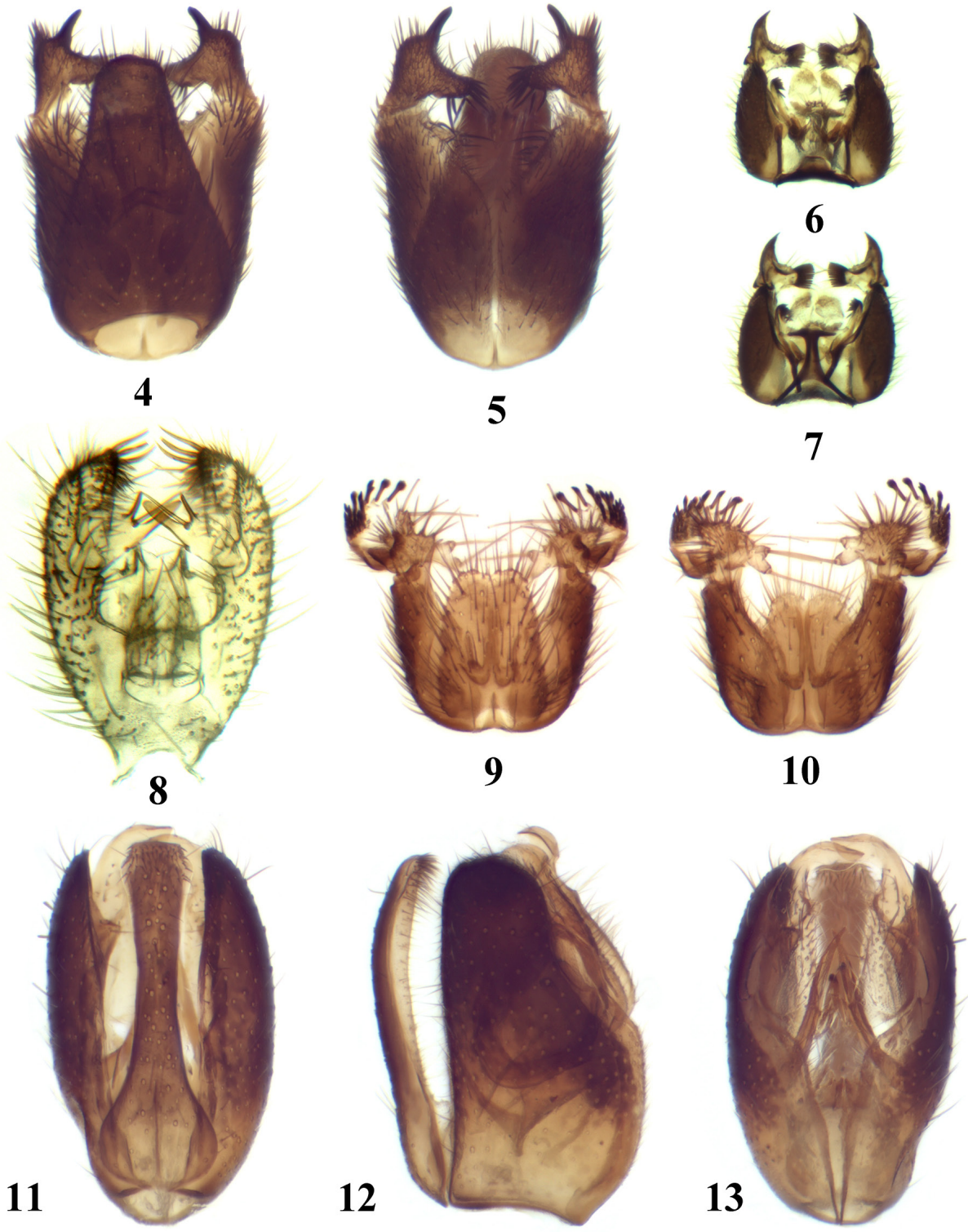

Figs. 4–13. Male genitalia: *4–5 — Orfelia georgica*; *6–7 — Azana anomala*; *8 — Phthinia hyrcanica*; *9–10 — Sciophila arizonensis*; *11–13 — Lusitanoneura chandleri*; *4–13* — hypopygium; *4, 6, 8–9, 11* — dorsal view; *5, 7, 10, 13* — ventral view; *12* — lateral view. Not to the same scale

Рис. 4–13. Гениталии самцов: *4–5 — Orfelia georgica*; *6–7 — Azana anomala*; *8 — Phthinia hyrcanica*; *9–10 — Sciophila arizonensis*; *11–13 — Lusitanoneura chandleri*; *4–13* — гипопигий; *4, 6, 8–9, 11* — сверху; *5, 7, 10, 13* — снизу; *12* — сбоку. Масштаб разный

Distribution: Palaearctic.

Lusitanoneura chandleri (Caspers, 1991)
Figs. 11–13
Material examined: 1♂, [3A], 27.04.2023.
Distribution: Europe: Greece (Crete), Cyprus, Georgia; Russia (first record).

Subfamily **Mycetophilinae** Newman, 1834
Tribe **Exechiini** Edwards, 1925

Allodiopsis domestica (Meigen, 1830)
Material examined: 1♂, [3A], 27.04.2023.
Distribution: Holarctic.

Allodiopsis rustica (Edwards, 1941)
Material examined: 2♂, [3A], 27.04.2023; 4♂, ibidem, 29.04.2023.
Distribution: Palaearctic.

Anatella turi Dziedzicki, 1923
Material examined: 1♂, Dagestan, Tsuntinsky distr., Khupri env., 42°12′36″N, 45°49′12″E, 1600 m a. s. l., 01–03.08.2023, O. Kosterin leg.
Distribution: Palaearctic.

Brachycampta alternans (Zetterstedt, 1838)
Material examined: 1♂, [3A], 27.04.2023.
Distribution: Holarctic.

Brachycampta foliifera (Strobl, 1910)
Material examined: 1♂, [1A], 24.04.2023.
Distribution: Holarctic.

Brachycampta pistillata (Lundström, 1911)
Material examined: 1♂, [2], 19.10.2022; 1♂, [2A], 25.04.2023; 1♂, [3A], 27.04.2023; 1♂, ibidem, 29.04.2023.
Distribution: Holarctic.

Brachycampta westerholti Caspers, 1980
Material examined: 2♂, [3A], 27.04.2023.
Distribution: Western Palaearctic.

Brevicornu auriculatum (Edwards, 1925)
Material examined: 5♂, [2A], 25.04.2023.
Distribution: Palaearctic.

Brevicornu fuscipenne (Stæger, 1840)
Material examined: 1♂, [3A], 27.04.2023; 4♂, ibidem, 29.04.2023.
Distribution: Holarctic.

Brevicornu verralli (Edwards, 1925)
Material examined: 2♂, [1A], 24.04.2023; 1♂, [2A], 25.04.2023; 1♂, [3A], 27.04.2023; 1♂, Dagestan, Samur forest, 41°51′00″N, 48°33′00″E, 23–28.04.2023, N. Vikhrev leg.
Distribution: Palaearctic.

Cordyla brevicornis (Stæger, 1840)
Material examined: 1♂, [10], 27.10.2022.
Distribution: Palaearctic.

Cordyla crassicornis Meigen, 1818
Material examined: 1♂, [2], 19.10.2022; 1♂, [4], 22.10.2022; 2♂, [5], 24.10.2022; 1♂, [6], 25.10.2022; 1♂, [2A], 25.04.2023.
Distribution: Palaearctic.

Cordyla fissa Edwards, 1925
Material examined: 1♂, [4], 22.10.2022; 1♂, [10], 27.10.2022; 1♂, ibidem, 30.10.2022; 7♂, [3A], 27.04.2023; 1♂, Dagestan, Tsuntinsky distr., Khupri env., 42°12′36″N, 45°49′12″E, 1600 m a. s. l., 01–03.08.2023, O. Kosterin leg.
Distribution: Palaearctic.

Exechia dorsalis (Stæger, 1840)
Material examined: 2♂, [2], 19.10.2022; 1♂, [5], 24.10.2022; 1♂, [10], 27.10.2022; 1♂, ibidem, 30.10.2022; 1♂, [3A], 27.04.2023.
Distribution: Palaearctic.

Exechia separata Lundström, 1912
Material examined: 1♂, [5], 24.10.2022.
Distribution: Holarctic.

Exechiopsis (Exechiopsis) intersecta (Meigen, 1818)
Figs. 14–16
Material examined: 1♂, [8], 26.10.2022.
Distribution: Europe: quite widespread but rare, apparently cavernicolous; Russia (first record).

Exechiopsis (Exechiopsis) pulchella (Winnertz, 1863)
Material examined: 1♂, [9], 26.10.2022.
Distribution: Europe.

Exechiopsis (Xenexechia) leptura (Meigen, 1830)
Material examined: 1♂, [9], 26.10.2022.
Distribution: Europe.

Pseudexechia trisignata (Edwards, 1913)
Material examined: 1♂, [5], 24.10.2022.
Distribution: Palaearctic.

Pseudexechia trivittata (Stæger, 1840)
Material examined: 1♂, [1A], 26.04.2023.
Distribution: Palaearctic.

Rymosia fasciata (Meigen, 1804)
Material examined: 3♂, [2], 19.10.2022; 4♂, [5], 24.10.2022; 2♂, [2], 25.10.2022; 4♂, [7],

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25.10.2022; 1♂, [9], 26.10.2022; 14♂, [10], 30.10.2022.
Distribution: Europe.

Rymosia spinipes Winnertz, 1863
Material examined: 1♂, [10], 27.10.2022.
Distribution: Western Palaearctic.

Tribe **Mycetophilini** Edwards, 1925

Epicypta fumigata (Dziedzicki, 1923)
Material examined: 1♂, [3A], 27.04.2023.
Distribution: Europe.

Mycetophila alea Laffoon, 1965
Material examined: 1♂, [2], 19.10.2022; 1♂, [3], 20.10.2022; 1♂, [10], 27.10.2022; 1♂, [1A], 23.04.2023; 5♂, ibidem, 26.04.2023; 4♂, [3A], 27.04.2023.
Distribution: Holarctic.

Mycetophila curviseta Lundström, 1911
Material examined: 1♂, Dagestan, Tsuntinsky distr., Khupri env., 42°12′36″N, 45°49′12″E, 1600 m a. s. l., 01–03.08.2023, O. Kosterin leg.
Distribution: Palaearctic.

Mycetophila deflexa Chandler, 2001
Material examined: 1♂, [4], 22.10.2022.
Distribution: Palaearctic.

Mycetophila dentata Lundström, 1915
Material examined: 2♂, [4], 22.10.2022.
Distribution: Holarctic.

Mycetophila distigma Meigen, 1830
Fig. 17
Material examined: 1♂, [3], 20.10.2022; 3♂, [11], 28.10.2022.
Distribution: Europe.

Mycetophila edwardsi Lundström, 1913
Material examined: 1♂, [10], 27.10.2022; 1♂, [3A], 27.04.2023; 2♂, 1♀, Dagestan, Tsuntinsky distr., Khupri env., 42°12′36″N, 45°49′12″E, 1600 m a. s. l., 01–03.08.2023, O. Kosterin leg.
Distribution: Europe.

Mycetophila hyrcania Laštovka & Matile, 1964
Material examined: 1♂, [6], 25.10.2022; 1♂, [7], 25.10.2022.
Distribution: Western Palaearctic.

Mycetophila ichneumonea Say, 1823
Material examined: 1♂, [2], 19.10.2022; 1♂, [3A], 27.04.2023.
Distribution: Holarctic.

Mycetophila marginata Winnertz, 1863
Material examined: 2♂, [2], 19.10.2022; 1♂, [3], 20.10.2022; 4♂, [5], 24.10.2022; 1♂, [6], 25.10.2022; 1♂, [11], 28.10.2022; 4♂, [10], 30.10.2022; 1♂, Dagestan, Mikrakh, 41°22′12″N, 47°53′42″E, 1250 m a. s. l., 25.04.2023, N. Vikhrev leg.; 1♂, [3A], 27.04.2023.
Distribution: Europe.

Mycetophila nigrofusca Dziedzicki, 1884
Material examined: 1♂, [4], 22.10.2022; 1♂, [1A], 23.04.2023.
Distribution: Palaearctic.

Mycetophila ocellus Walker, 1848
Material examined: 3♂, [3A], 27.04.2023; 1♂, Dagestan, Tsuntinsky distr., Khupri env., 42°12′36″N, 45°49′12″E, 1600 m a. s. l., 01–03.08.2023, O. Kosterin leg.
Distribution: Holarctic.

Mycetophila ornata Stephens, 1846
Material examined: 1♂, [2A], 25.04.2023.
Distribution: Palaearctic.

Mycetophila pictula Meigen, 1830
Material examined: 23♂, 4♀, [3A], 27.04.2023.
Distribution: Holarctic.

Mycetophila pumila Winnertz, 1863
Material examined: 1♂, [7], 25.10.2022; 1♂, [8], 26.10.2022.
Distribution: Palaearctic.

Mycetophila sordida van der Wulp, 1874
Material examined: 1♂, [8], 26.10.2022; 2♂, Dagestan, Mikrakh, 41°22′12″N, 47°53′42″E, 1250 m a. s. l., 25.04.2023, N. Vikhrev leg.; 1♂, [3A], 27.04.2023; 3♂, 1♀, Dagestan, Tsuntinsky distr., Khupri env., 42°12′36″N, 45°49′12″E, 1600 m a. s. l., 01–03.08.2023, O. Kosterin leg.
Distribution: Holarctic.

Mycetophila spectabilis Winnertz, 1863
Material examined: 1♂, [2A], 25.04.2023.
Distribution: Europe.

Mycetophila stolida Walker, 1856
Material examined: 1♂, Dagestan, Sergokala distr., 3 km SW Myurego village, the Inchkheozen' River upper valley, 42°22′26″–42°22′55″N, 47°40′12″–47°40′23″E, 617–685 m a. s. l., 25.05.2023, O. Kosterin leg.

Figs. 14–27. Male genitalia: *14–16 — Exechiopsis intersecta*; *17— Mycetophila distigma*; *18–22 — Trichonta* cf. *comica*; *23–27 — Trichonta* sp.; *14–19, 23–24* — hypopygium; *20–22, 25–27* — gonostylus; *14, 20, 25* — caudal view; *15, 18, 23* — dorsal view; *16–17, 19, 24* — ventral view; *21, 26* — inner view; *22, 27* — outer view. Not to the same scale

Рис. 14–27. Гениталии самцов: *14–16 — Exechiopsis intersecta*; *17— Mycetophila distigma*; *18–22 — Trichonta* cf. *comica*; *23–27 — Trichonta* sp.; *14–19, 23–24* — гипопигий; *20–22, 25–27* — гоностиль; *14, 20, 25* — сзади; *15, 18, 23* — сверху; *16–17, 19, 24* — снизу; *21, 26* — изнутри; *22, 27* — снаружи. Масштаб разный

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Distribution: Holarctic.

Mycetophila vittipes Zetterstedt, 1852
Material examined: 1♂, [6], 25.10.2022.
Distribution: Palaearctic.

Phronia humeralis Winnertz, 1863
Material examined: 3♂, [3A], 27.04.2023.
Distribution: Palaearctic.

Phronia petulans Dziedzicki, 1889
Material examined: 3♂, [3A], 27.04.2023; 1♂, ibidem, 29.04.2023.
Distribution: Holarctic.

Phronia sylvatica Dziedzicki, 1889
Material examined: 1♂, [3A], 29.04.2023.
Distribution: Holarctic.

Phronia taczanowskyi Dziedzicki, 1889
Material examined: 1♂, [1A], 24.04.2023; 1♂, ibidem, 26.04.2023.
Distribution: Holarctic.

Phronia triangularis Winnertz, 1863
Material examined: 1♂, [3A], 27.04.2023; 2♂, ibidem, 29.04.2023.
Distribution: Palaearctic.

Sceptonia flavipuncta Edwards, 1925
Material examined: 1♂, [5], 24.10.2022; 1♂, [7], 25.10.2022; 1♂, [10], 27.10.2022; 1♂, [11], 28.10.2022; 1♂, [10], 30.10.2022; 1♂, [1A], 26.04.2023; 5♂, [3A], 27.04.2023.
Distribution: Europe.

Sceptonia membranacea Edwards, 1925
Material examined: 3♂, [2], 19.10.2022; 1♂, [5], 24.10.2022; 2♂, [6], 25.10.2022.
Distribution: Europe.

Sceptonia nigra (Meigen, 1804)
Material examined: 1♂, [4], 22.10.2022.
Distribution: Palaearctic.

Sceptonia pilosa Bukowski, 1934
Material examined: 1♂, [6], 25.10.2022.
Distribution: Europe.

Trichonta aberrans Lundström, 1911
Material examined: 3♂, [10], 27.10.2022; 1♂, [3A], 29.04.2023.
Distribution: Europe.

Trichonta bezzii Landrock, 1913
Material examined: 1♂, [3A], 29.04.2023.
Distribution: Holarctic.

Trichonta falcata Lundström, 1911
Material examined: 2♂, [3A], 27.04.2023; 2♂, ibidem, 29.04.2023.
Distribution: Holarctic.

Trichonta fragilis Gagné, 1981
Material examined: 1♂, [8], 26.10.2022; 1♂, [10], 27.10.2022; 1♂, [3A], 27.04.2023.
Distribution: Holarctic.

Trichonta girschneri Landrock, 1912
Material examined: 1♂, [10], 30.10.2022.
Distribution: Holarctic.

Trichonta melanura (Stæger, 1840)
Material examined: 1♂, [1A], 26.04.2023.
Distribution: Holarctic.

Trichonta terminalis (Walker, 1856)
Material examined: 1♂, [6], 25.10.2022; 1♂, [10], 27.10.2022.
Distribution: Holarctic.

Trichonta cf. ***comica*** Gagné, 1981
Figs. 18–22
Material examined: 1♂, [5], 24.10.2022; 1♂, [10], 27.10.2022.
Distribution: Holarctic.
Notes. Identification uncertain.

Trichonta sp.
Figs. 23–27
Material examined: 1♂, [10], 27.10.2022.
Notes. No good match among the described species was found.

Zygomyia humeralis (Wiedemann, 1817)
Material examined: 2♂, [5], 24.10.2022; 1♂, [6], 25.10.2022; 1♂, [7], 25.10.2022; 1♂, [11], 28.10.2022; 1♂, [1A], 24.04.2023; 1♂, ibidem, 26.04.2023; 4♂, [3A], 27.04.2023.
Distribution: Europe.

Zygomyia pictipennis (Stæger, 1840)
Material examined: 1♂, [3], 20.10.2022.
Distribution: Europe.

Zygomyia valida Winnertz, 1863
Material examined: 1♂, [2], 19.10.2022; 1♂, [3], 20.10.2022; 2♂, [5], 24.10.2022; 1♂, [11], 28.10.2022; 1♂, [3A], 27.04.2023.
Distribution: Palaearctic.

Additional data for some previously recorded species (listed alphabetically within each family)

Family ***Bolitophilidae***

Bolitophila pseudohybrida Landrock, 1912
Material examined: 10♂, [2], 19.10.2022; 13♂, [5], 24.10.2022; 2♂, [9], 26.10.2022; 8♂,

[10], 27.10.2022; 1♂, [11], 28.10.2022; 6♂, [10], 30.10.2022.

Family ***Keroplatidae***

Macrocera stigmoides Edwards, 1925
Material examined: 6♂, [2], 19.10.2022; 8♂, [3], 20.10.2022; 4♂, [10], 27.10.2022; 9♂, [11], 28.10.2022; 16♂, 1♀, [1A], 23.04.2023; 5♂, [3A], 27.04.2023.

Family ***Mycetophilidae***

Allodia ornaticollis (Meigen, 1818)
Material examined: 1♂, [1], 17.10.2022; 1♂, [2], 19.10.2022; 1♂, [3], 20.10.2022; 1♂, [4], 22.10.2022; 12♂, [5], 24.10.2022; 2♂, [7], 25.10.2022; 1♂, [9], 26.10.2022; 2♂, [10], 27.10.2022; 5♂, ibidem, 30.10.2022; 2♂, [1A], 26.04.2023.

Boletina gripha Dziedzicki, 1885
Material examined: 1♂, [2], 19.10.2022; 7♂, [5], 24.10.2022; 1♂, [7], 25.10.2022; 1♂, [8], 26.10.2022; 13♂, [10], 27.10.2022; 17♂, ibidem, 30.10.2022; 1♂, [1A], 24.04.2023; 2♂, [3A], 27.04.2023; 6♂, ibidem, 29.04.2023.

Brachycampta grata (Meigen, 1830)
Material examined: 1♂, [1], 17.10.2022; 3♂, [2], 19.10.2022; 1♂, [5], 24.10.2022; 2♂, [10], 27.10.2022; 1♂, [11], 28.10.2022; 1♂, [10], 30.10.2022; 3♂, [1A], 23.04.2023; 1♂, ibidem, 24.04.2023; 2♂, ibidem, 26.04.2023; 29♂, [3A], 27.04.2023; 9♂, ibidem, 29.04.2023; 1♂, Dagestan, Samur forest, 41°51′00″N, 48°33′00″E, 23–28.04.2023, N. Vikhrev leg.

Brevicornu griseicolle (Stæger, 1840)
Material examined: 1♂, [1], 17.10.2022; 5♂, [2], 19.10.2022; 1♂, [3], 20.10.2022; 3♂, [6], 25.10.2022; 1♂, [7], 25.10.2022; 1♂, [8], 26.10.2022; 7♂, [10], 27.10.2022; 1♂, ibidem, 30.10.2022; 1♂, [1A], 23.04.2023; 2♂, ibidem, 26.04.2023; 110♂, [3A], 27.04.2023; 43♂, ibidem, 29.10.2023.

Brevicornu sericoma (Meigen, 1830)
Material examined: 1♂, [10], 30.10.2022; 1♂, [3A], 29.04.2023.

Cordyla nitens Winnertz, 1863
Material examined: 3♂, [1], 17.10.2022; 2♂, [2], 19.10.2022; 12♂, [5], 24.10.2022; 5♂, [10], 27.10.2022; 2♂, ibidem, 30.10.2022.

Cordyla nitidula Edwards, 1925
Material examined: 10♂, [1], 17.10.2022; 14♂, [2], 19.10.2022; 8♂, [5], 24.10.2022; 5♂, [10], 27.10.2022.

Exechia bicincta (Stæger, 1840)
Material examined: 1♂, [1], 17.10.2022; 7♂, [2], 19.10.2022; 4♂, [3], 20.10.2022; 1♂, [4], 22.10.2022; 10♂, [5], 24.10.2022; 1♂, [7], 25.10.2022; 20♂, [10], 27.10.2022; 6♂, ibidem, 30.10.2022; 1♂, [1A], 23.04.2023; 2♂, ibidem, 24.04.2023.

Exechia fusca (Meigen, 1804)
Material examined: 5♂, [2], 19.10.2022; 4♂, [5], 24.10.2022; 1♂, [6], 25.10.2022; 1♂, [8], 26.10.2022; 2♂, [9], 26.10.2022; 2♂, [10], 27.10.2022; 5♂, ibidem, 30.10.2022; 2♂, [2A], 25.04.2023; 1♂, Dagestan, Mikrakh, 41°22′12″N, 47°53′42″E, 1250 m a. s. l., 25.04.2023, N. Vikhrev leg.; 1♂, [3A], 29.04.2023.

Exechia repanda Johannsen, 1912
Material examined: 1♂, [3], 20.10.2022; 1♂, [4], 22.10.2022; 1♂, [3A], 27.04.2023.

Exechia seriata (Meigen, 1830)
Material examined: 1♂, [3], 20.10.2022; 2♂, [11], 28.10.2022

Leia bimaculata (Meigen, 1804)
Material examined: 1♂, 3♀, [1], 17.10.2022; 4♂, 2♀, [2], 19.10.2022; 2♂, 2♀, [3], 20.10.2022; 2♂, 2♀, [5], 24.10.2022; 1♀, [6], 25.10.2022; 1♀, [7], 25.10.2022; 4♂, [10], 27.10.2022; 1♂, 1♀, [11], 28.10.2022; 2♂, 2♀, [1A], 23.04.2023; 5♂, 6♀, ibidem, 24.04.2023; 5♂, 3♀, ibidem, 26.04.2023; 19♂, 4♀, [3A], 27.04.2023; 7♂, 1♀, ibidem, 29.04.2023; 1♂, Dagestan, Samur forest, 41°51′00″N, 48°33′00″E, 23–28.04.2023, N. Vikhrev leg.

Mycetophila formosa Lundström, 1911
Material examined: 1♂, [2], 19.10.2022; 3♂, [5], 24.10.2022; 2♂, [10], 27.10.2022; 3♂, ibidem, 30.10.2022.

Mycetophila idonea Laštovka, 1972
Material examined: 1♂, [2], 19.10.2022; 1♂, [8], 26.10.2022; 1♂, [10], 27.10.2022; 1♂, [11], 28.10.2022.

Mycetophila lunata Meigen, 1804
Material examined: 1♂, [2], 19.10.2022; 1♂, [1A], 23.04.2023; 1♂, ibidem, 24.04.2023; 1♂, [3A], 27.04.2023.

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Mycetophila occultans Lundström, 1913
Material examined: 1♂, [2], 19.10.2022; 1♂, [5], 24.10.2022; 1♂, [10], 27.10.2022; 1♂, [1A], 23.04.2023; 2♂, ibidem, 24.04.2023; 2♂, ibidem, 26.04.2023; 4♂, [3A], 27.04.2023.

Mycetophila perpallida Chandler, 1993
Material examined: 3♂, [5], 24.10.2022; 1♂, [7], 25.10.2022.

Mycetophila signatoides Dziedzicki, 1884
Material examined: 1♂, [10], 27.10.2022; 1♂, [11], 28.10.2022; 1♂, [3A], 27.04.2023.

Mycetophila trinotata Stæger, 1840
Material examined: 1♂, [2], 19.10.2022; 2♂, [3], 20.10.2022; 10♂, [4], 22.10.2022; 1♂, [5], 24.10.2022; 2♂, [11], 28.10.2022; 1♂, [1A], 23.04.2023; 1♂, [2A], 25.04.2023.

Mycomya (Mycomya) flavicollis (Zetterstedt, 1852)
Material examined: 1♂, [2], 19.10.2022; 1♂, [3], 20.10.2022; 1♂, [4], 22.10.2022; 14♂, [5], 24.10.2022; 2♂, [7], 25.10.2022; 8♂, [10], 27.10.2022; 2♂, [11], 28.10.2022; 11♂, [10], 30.10.2022; 3♂, [1A], 23.04.2023; 5♂, ibidem, 24.04.2023; 3♂, ibidem, 26.04.2023; 9♂, [3A], 27.04.2023.

Mycomya (Mycomya) matilei Väisänen, 1984
Material examined: 1♂, [7], 25.10.2022.

Mycomya (Mycomya) tumida (Winnertz, 1863)
Material examined: 2♂, [1], 17.10.2022; 6♂, [2], 19.10.2022; 1♂, [4], 22.10.2022; 11♂, [5], 24.10.2022; 2♂, [9], 26.10.2022; 6♂, [10], 27.10.2022; 3♂, ibidem, 30.10.2022; 14♂, [1A], 23.04.2023; 11♂, ibidem, 24.04.2023; 10♂, ibidem, 26.04.2023; 5♂, [3A], 27.04.2023; 7♂, ibidem, 29.04.2023; 3♂, Dagestan, Samur forest, 41°51′00″N, 48°33′00″E, 23–28.04.2023, N. Vikhrev leg.

Neoempheria striata (Meigen, 1818)
Material examined: 1♂, Dagestan, Gergebil Dam, 42°27′00″N, 47°01′48″E, 800 m a. s. l., 24.05.2023, O. Kosterin leg.

Phronia basalis Winnertz, 1863
Material examined: 1♂, [7], 25.10.2022; 2♂, [9], 26.10.2022; 2♂, [10], 27.10.2022; 6♂, ibidem, 30.10.2022; 1♂, [1A], 23.04.2023; 1♂, ibidem, 24.04.2023; 2♂, ibidem, 26.04.2023; 19♂, [3A], 27.04.2023; 3♂, ibidem, 29.04.2023.

Phronia biarcuata (Becker, 1908)
Material examined: 1♂, [5], 24.10.2022; 1♂, [11], 28.10.2022; 1♂, [10], 30.10.2022; 1♂, Dagestan, Mikrakh, 41°22′12″N, 47°53′42″E, 1250 m a. s. l., 25.04.2023, N. Vikhrev leg.; 1♂, [3A], 29.04.2023.

Phronia conformis (Walker, 1856)
Material examined: 1♂, [10], 30.10.2022; 1♂, [1A], 24.04.2023; 1♂, [3A], 27.10.2023; 4♂, ibidem, 29.04.2023.

Phronia tenuis Winnertz, 1863
Material examined: 1♂, [2], 19.10.2022; 1♂, [5], 24.10.2022; 1♂, [1A], 23.04.2023; 2♂, [2A], 25.04.2023; 3♂, [3A], 27.04.2023; 2♂, ibidem, 29.04.2023.

Platurocypta testata (Edwards, 1925)
Material examined: 1♂, [4], 22.10.2022; 1♂, [1A], 26.04.2023.

Polylepta guttiventris (Zetterstedt, 1852)
Material examined: 1♂, [2], 19.10.2022; 1♂, [11], 28.10.2022; 1♂, [10], 30.10.2022.

Rymosia affinis Winnertz, 1863
Material examined: 3♂, [1], 17.10.2022; 8♂, [2], 19.10.2022; 11♂, [5], 24.10.2022; 1♂, [6], 25.10.2022; 2♂, [9], 26.10.2022; 7♂, [10], 27.10.2022; 3♂, [11], 28.10.2022; 4♂, [10], 30.10.2022.

Rymosia beaucournui Matile, 1963
Material examined: 1♂, [1], 17.10.2022; 1♂, [2], 19.10.2022; 4♂, [5], 24.10.2022; 2♂, [10], 27.10.2022; 2♂, ibidem, 30.10.2022.

Sceptonia humerella Edwards, 1925
Material examined: 3♂, [2], 19.10.2022; 2♂, [5], 24.10.2022; 1♂, [10], 27.10.2022; 1♂, [11], 28.10.2022; 1♂, [1A], 24.04.2023; 9♂, [3A], 27.04.2023.

Sceptonia tenuis Edwards, 1925
Material examined: 1♂, [1], 17.10.2022; 8♂, [2], 19.10.2022; 3♂, [5], 24.10.2022; 1♂, [7], 25.10.2022; 1♂, [1A], 23.04.2023; 2♂, ibidem, 24.04.2023; 4♂, ibidem, 26.04.2023; 5♂, [3A], 27.04.2023.

Sciophila quadriterga Hutson, 1979
Material examined: 8♂, [1A], 23.04.2023; 17♂, ibidem, 24.04.2023; 39♂, ibidem, 26.04.2023; 7♂, [3A], 27.04.2023; 1♂, ibidem, 29.04.2023; 1♂, Dagestan, Samur for-

est, 41°51′00″N, 48°33′00″E, 23–28.04.2023, N. Vikhrev leg.

Stigmatomeria crassicornis (Stannius, 1831)
Material examined: 4♂, [2], 19.10.2022; 1♂, [3], 20.10.2022; 4♂, [5], 24.10.2022; 2♂, [6], 25.10.2022; 1♂, [7], 25.10.2022; 5♂, [10], 27.10.2022; 5♂, ibidem, 30.10.2022; 1♂, [1A], 23.04.2023; 4♂, ibidem, 26.04.2023; 113♂, 20♀, [3A], 27.04.2023; 31♂, ibidem, 29.04.2023.

Synplasta gracilis (Winnertz, 1863)
Material examined: One ♂, [3A], 27.04.2023.

Tarnania dziedzickii (Edwards, 1941)
Material examined: 12♂, [1], 17.10.2022; 45♂, [2], 19.10.2022; 1♂, [3], 20.10.2022; 2♂, [4], 22.10.2022; 36♂, [5], 24.10.2022; 1♂, [6], 25.10.2022; 1♂, [8], 26.10.2022; 6♂, [9], 26.10.2022; 17♂, [10], 27.10.2022; 2♂, [11], 28.10.2022; 20♂, [10], 30.10.2022.

Tarnania fenestralis (Meigen, 1818)
Material examined: 3♂, [2], 19.10.2022; 9♂, [5], 24.10.2022; 2♂, [8], 26.10.2022; 5♂, [10], 27.10.2022; 1♂, ibidem, 30.10.2022; 1♂, [2A], 25.04.2023; 2♂, [3A], 27.04.2023; 5♂, ibidem, 29.04.2023.

Trichonta clavigera Lundström, 1913
Material examined: 1♂, [1], 17.10.2022; 1♂, [5], 24.10.2022; 2♂, [8], 26.10.2022; 7♂, [10], 27.10.2022; 10♂, [3A], 27.04.2023; 19♂, ibidem, 29.04.2023.

Trichonta foeda Loew, 1869
Material examined: 1♂, [5], 24.10.2022; 7♂, [10], 27.10.2022; 3♂, ibidem, 30.10.2022; 2♂, [3A], 27.04.2023.

Trichonta vitta (Meigen, 1830)
Material examined: 1♂, [3], 20.10.2022; 2♂, [5], 24.10.2022; 1♂, [10], 30.10.2022; 1♂, [1A], 23.04.2023; 2♂, ibidem, 24.04.2023; 2♂, ibidem, 26.04.2023; 15♂, [3A], 27.04.2023; 9♂, ibidem, 29.04.2023.

Results and discussion

Compared with the material examined in the previous work (Gavryushin 2022: 206), significantly larger batches of specimens were available for identification, with 858 males and 12 females from October 2022, and 1.123 males and 56 females from April 2023. This apparently explains the smaller ratio of recorded singletons which roughly amounts to one third of the species from either period (30 species, or 34.5%, in October 2022, and 29 species, or 33.7%, in April 2023), with larger numbers of more common species collected and the ratio of singletons reduced. Again, a relatively small number of species comprised the bulk of the identified material; any attempt of statistical analysis would apparently be premature and is beyond the scope of this work. Thus, it is suffice to say that the composition of the most abundant species was markedly different when each one of the three collecting periods were compared. None of the most numerous species collected in October 2021 was among the most abundant ones in October 2022 (*Tarnania dziedzickii*, 143 specimens; *Exechia bicincta*, 50 specimens; *Bolitophila pseudohybrida*, *Boletina gripha*, and *Mycomya (Mycomya) flavicollis*, 40 specimens each, the five species comprising 35.9% of the identified material). In the spring of 2023, *Stigmatomeria crassicornis* (169 identified specimens), *Brevicornu griseicolle* (156 specimens), and *Mycomya (Mycomyopsis) penicillata* (126 specimens) added up to 38.3% of the total number of the identified specimens; a significant number of Keroplatidae (*Orfelia georgica*, 47 specimens; *Pyratula zonata*, 44 specimens) as well as of *Sciophila quadriterga* (73 specimens) should be noted; apparently, all of these are the species that emerge in spring rather than hibernate.

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