РОССИЙСКАЯ АКАДЕМИЯ НАУК
Южный научный центр

RUSSIAN ACADEMY OF SCIENCES
Southern Scientific Centre

Кавказский Энтомологический Бюллетень

CAUCASIAN ENTOMOLOGICAL BULLETIN

Том 20. Вып. 2
Vol. 20. Iss. 2

Ростов-на-Дону
2024

New records and a checklist of the Muscidae (Diptera) of Georgia

© A.C. Pont[1], M. Parchami-Araghi[2]

[1]Oxford University Museum of Natural History, Parks Road, Oxford OX1 3PW United Kingdom. E-mail: muscidman2@gmail.com
[2]Canadian National Collection of Insects, K.W. Neatby Bldg., Central Experimental Farm, 960 Carling Avenue, Ottawa, Ontario K1A 0C6 Canada. E-mail: mehrdad.parchami-araghi@agr.gc.ca

Abstract. A report is given on two collections of Muscidae (Diptera) from Georgia, made around the village of Kazbegi (now Stepantsminda) in 1983 and on Mount Kudigora (Lagodekhi Reserve) in 2014. A total of 66 species are newly recorded from Georgia, and a checklist of the 156 species now known from Georgia is given.

Key words: Muscidae, new records, checklist, Georgia, Kazbegi, Mount Kudigora, Caucasus.

Новые указания и список Muscidae (Diptera) Грузии

© А.Ч. Понт[1], М. Парчами-Араги[2]

[1]Музей естественной истории Оксфордского университета, Паркс-роуд, Оксфорд OX1 3PW Великобритания. E-mail: muscidman2@gmail.com
[2]Канадская национальная коллекция насекомых, Нитби-билдинг, Центральная экспериментальная ферма, Карлинг-авеню, 960, Оттава K1A 0C6 Канада. E-mail: mehrdad.parchami-araghi@agr.gc.ca

Резюме. Представлен отчет о сборах Muscidae (Diptera) в Грузии, проведенных в районе села Казбеги (ныне Степанцминда) в 1983 году и на Кудигоре (Лагодехский заповедник) в 2014 году. Приведен список 156 видов мусцид, известных в настоящее время в Грузии, в том числе 66 видов впервые указаны для страны.

Ключевые слова: Muscidae, новые указания, список, Грузия, Казбеги, Кудигора, Кавказ.

Introduction

Flies of the dipterous family Muscidae are found in most environments but are most speciose and abundant in moist and forest environments and in biotopes above the tree line (alpine and arctic zones) where they form the dominant Diptera group. The family includes a number of species of medical and veterinary importance, such as the House fly *Musca domestica* Linnaeus, 1758 and the biting Stable fly *Stomoxys calcitrans* (Linnaeus, 1758). Adults feed mainly on nectar and pollen, but some species feed on mammalian sweat and blood and are involved in the mechanical transmission of pathogens whilst others are predaceous on small insects and invertebrates. Larval habitats are varied, in both terrestrial and aquatic habitats, and muscid larvae may be coprophages, saprophages, phytophages, or predators on other small insects.

Records of Muscidae from Georgia are extremely sparse. There were a few older records from the "Caucasus" published by Bigot [1880] and Stein [in Bezzi et Stein, 1907, 25 species] which may refer to either Georgia or Armenia but, in many cases, the specimens on which these records were based have been lost. Thirteen species of synanthropic Muscidae in Georgia were listed by Kalandadze and Chilingarova [1940]. Three species of *Musca* Linnaeus, 1758 were discussed in connection with the transmission of *Thelazia* Bosc, 1819 eye-worms in Georgian ruminants by Kurashvili and Kvavadze [1997]. A small number of Muscidae from Georgia were identified and recorded by Hennig [1957, 1958, 1959, 1962b, d, 1963a, b, c, 1964a] in his monograph of the Palaearctic Muscidae, and these were summarised in the Catalogue of Palaearctic Diptera [Pont, 1986] where 16 species of Muscidae were listed from Georgia. Since the Catalogue of Palaearctic Diptera, a number of additional species have been recorded or described from Georgia by Zinovjev [1980, 1994] (genera *Phaonia* Robineau-Desvoidy, 1830 and *Lophosceles* Ringdahl, 1922), Savage [2003] (genus *Thricops* Rondani, 1856), Pont et al. [2005] (26 species), Pont et al. [2012] (genus *Limnophora* Robineau-Desvoidy, 1830), Pont [2012] (genus *Helina* Robineau-Desvoidy, 1830), Pont [2022] (genus *Drymeia* Meigen, 1826), Pont [2013, 2023] (genus *Spilogona* Schnabl, 1911), Vikhrev [2012, 2015b] (genus *Lispe* Latreille, 1796), Vikhrev [2015a] (genus *Azelia* Robineau-Desvoidy, 1830), Vikhrev [2023] (genus *Hydrotaea* Robineau-Desvoidy, 1830) and Vikhrev and Erofeeva [2018, 2023] (genus *Phaonia*).

The present paper reports on two collections of Muscidae from Georgia. One was made by Adrian Pont in 1983 around Kazbegi (Mtskheta-Mtianeti Region), whilst the second collection was made in 2014 on Mount Kudigora in the Lagodekhi Reserve (Kakheti Region) by Dr George Japoshvili through funding provided by the Shota Rustaveli National Science Foundation of Georgia (Ref: FR/221/7-110/13).

There are still species remaining to be described, but 40 years after the first collection was made by the first author it is now appropriate to publish the results that are available. In addition to the species recorded below, there remain a number of undescribed new species in the genera *Myospila* Rondani, 1856 (1 species), *Limnophora* (3 species), *Spilogona* (9 species) and *Coenosia* Meigen, 1826 (6 species). These are not described here as more thorough revision is needed.

Research Article / Научная статья
DOI: https://doi.org/10.5281/zenodo.13904517

Material and methods

The collection made by Adrian Pont was formed during a two-week field trip, 28 June to 14 July 1983, based at Kazbegi (now Stepantsminda, 1740 m, 42°39′27″N / 44°38′43″E), a village in the Mtskheta-Mtianeti Region, at the foot of Mount Kazbek on the Georgian Military Highway. He was fortunate to have been a guest at what was then the Botanical Field Station of the Botanical Institute of Tbilisi University and the Georgian Academy of Sciences, director Professor Georg Nakhutsrishvili. He was invited to accompany the botanists into the field in the mountains of Kazbegi and the surrounding district (Truso, Sno, Devdoraki) and was also able to make unaccompanied excursions. Diptera were collected with a hand net, and a Malaise trap was also used, placed in the vicinity of the Field Station. Some 4700 Diptera were collected, mainly of the families Muscidae, Fanniidae and Anthomyiidae. The Fanniidae were identified and reported by Pont [2015]. Identification of the Muscidae was made using Hennig [1956, 1957, 1959, 1960, 1961a, b, 1962a, c, 1963a, c, 1964a, b], Gregor et al. [2016] and other relevant papers. An Olympus SZIII stereo microscope was used for identifications and dissections.

The collection made by George Japoshvili was formed during the year 2014 on Mount Kudigora (41°56′48″N / 45°46′12″E) in the Lagodekhi Reserve, Kakheti Region. Collections were made throughout the summer, from 12 April to 6 October, at various altitudes and in different ecological zones on the mountain, from 670 m up to 2560 m above sea level. Both net and Malaise trap collections were made. Identifications have been made by the second author.

Most of the material collected by Adrian Pont is in the Natural History Museum (London, United Kingdom). Over the years, some duplicates have been placed in the Oxford University Museum of Natural History (Oxford, United Kingdom), Zoological Institute of the Russian Academy of Sciences (St Petersburg, Russia), Zoological Museum of Moscow University (Moscow, Russia), Institute of Systematics and Ecology of Animals of the Siberian Branch of the Russian Academy of Sciences (Novosibirsk, Russia). The material collected by George Japoshvili is in the Canadian National Collection of Insects (Ottawa, Canada). The following acronyms are used for institutes where some of the material discussed in the text is deposited:

BMNH – the Natural History Museum;

CNC – Canadian National Collection of Insects;

ZISP – Zoological Institute of the Russian Academy of Sciences;

ZMHU – Museum für Naturkunde, Leibniz-Institut für Evolutions- und Biodiversitätsforschung (Berlin, Germany).

Species first recorded from Georgia are marked with an asterisk.

Results

The taxonomic arrangement is a conservative one and is based on the principles of Hennigian phylogenetic systematics. Ongoing molecular work [Grzywacz et al., 2021] is revealing that a number of changes will be needed to this classification, but to date the molecular results are partial and preliminary.

The localities around Kazbegi where the first author collected were arranged according to the three ecological zones of forest, heaths above the tree line, and an alpine zone of boulders and scree:

Forest zone:
meadows E of Kazbegi, 1900 m;
forest E of Kazbegi, 1950–2000 m;
forest E of Kazbegi, 2000 m, Malaise trap;
forest SE of Kazbegi, c. 1950 m;
SE of Kazbegi, meadow/scree, 1900–1950 m;
Mt Sameba, forest, 2100–2200 m;
Sameba, N, river, c. 1800 m;
near Sno, meadows, 1750–1810 m;
near Sno, forest, 1810 m;
Devdoraki, forest, 1750–2100 m;
Dzhuta, river, 2200 m.

Heath zone:
scree SE of Kazbegi, 1900–1950 m;
Mt Kuro, heath, 2120–2330 m;
Mt Kuro, heath, 2450–2500 m;
Mt Koltesh, meadow, 2000–2100 m;
Mt Koltesh, meadow/heath, 2300 m;
Mt Koltesh, heath, 2500 m;
Mt Sameba, pasture, 2250–2300 m;
Sameba, S, river, 2150–2250 m;
Mt Bash, heath, 2240 m;
near Sno, river, 2110 m;
Truso, mineral springs, 2150 m;
Truso, Terek River, 2210 m;
Devdoraki, meadows, c 2100 m;
Gergeti, upper heath, 2300–3000 m.

Alpine zone:
Devdoraki, lower moraines, c. 2100 m;
Devdoraki, upper moraines, c. 2150 m;
Gergeti, river, 2950 m;
Gergeti, scree and river, 2950–3200 m;
Gergeti, scree (1) and (2), 2950–3000 m;
Gergeti, glacier, 3200 m.

Family Muscidae
Subfamily Atherigoninae
Atherigona varia (Meigen, 1826)

Material. 2♂ (ZMHU), Mamison Pass, 2500 m, 1.09.1903 (Becker); 1♀ (ZISP), Tbilisi Region, 18.08.1913 (Mlokosevich).

Distribution. Listed from Georgia by Pont [1986: 114] and Pont et al. [2005: 75]; also known from Armenia and Azerbaijan. A widespread Palaearctic species, restricted to warmer parts of the region.

Subfamily Reinwardtiinae
Eginia ocypterata (Meigen, 1826)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 1♂, 5–15.05.2014, 1♂, 1♀, 25.06–5.07.2014, 4♂, 4♀, 15–25.08.2014, 2♂, 5–14.09.2014, 1♀, 27.09–6.10.2014; 850 m, 1♂, 25.06–5.07.2014, 1♂, 27.09–6.10.2014.

Distribution. Listed from Georgia by Pont [1986: 111]; also known from Armenia. An uncommon European species. The larvae are parasitoids of millipedes (Diplopoda).

Muscina levida (Harris, 1780)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 5–14.09.2014; 670 m, 2♂, 23.04–3.05.2014, 1♀, 5–15.05.2014, 2♂, 15–25.05.2014, 1♂, 25.05–4.06.2014, 2♀, 15–25.06.2014; 850 m, 1♀, 4–14.06.2014, 1♀, 25.06–5.07.2014, 1♀, 15–25.07.2014, 1♀, 15–27.09.2014.

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 518, as *Muscina assimilis* (Fallén, 1823)]; also known from Armenia and Azerbaijan. A widespread and abundant Holarctic species, common especially around human settlements. Adults often congregate on leaves in the sun.

Muscina minor (Portschinsky, 1881)

Distribution. Described by Portschinsky [1881: 143] from Mtskheta, synonymised with *Muscina stabulans* (Fallén, 1817) by Hennig [1962d: 767], and re-instated as a good species by Pont [1986: 60] as an older name for *Muscina krivosheinae* Lobanov, 1977. Known from Georgia, Ukraine, Turkmenistan, Uzbekistan, Kyrgyzstan and Tajikistan.

**Muscina pascuorum* (Meigen, 1826)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 850 m, 1♀, 15–27.09.2014; 1400 m, 1♀, no date.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. A Holarctic species, also reaching North India and Pakistan. An upland species in Europe.

Muscina prolapsa (Harris, 1780)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 2♀, 15–25.08.2014, 1♀, 5–14.09.2014.

Distribution. Listed from Georgia by Pont [2018: 12]. Known also from Armenia and Azerbaijan. A widespread and abundant Holarctic species in forested areas.

Muscina stabulans (Fallén, 1817)

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 518]; also known from Armenia and Azerbaijan. Cosmopolitan, and closely associated with human settlements and activities.

Subfamily Azeliinae

Azelia cilipes (Haliday, 1838)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, Mt Sameba, forest, 2100–2200 m, 12.07.1983.

Distribution. Recorded from Georgia by Vikhrev [2015a: 35], from Kintrishi and Kharagauli national parks; also known from Armenia and Azerbaijan. A widespread Holarctic species in the broad-leaved forest zone.

**Azelia gibbera* (Meigen, 1826)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, Mt Sameba, forest, 2100–2200 m, 7.07.1983.

Distribution. New for Georgia. A widespread Holarctic species in the broad-leaved forest zone.

Azelia nebulosa Robineau-Desvoidy, 1830

Distribution. Recorded as "common" in Georgia by Vikhrev [2015a: 36]; also known from Armenia and Azerbaijan. Throughout the Palaearctic Region, and Vietnam; a forest species.

**Azelia zetterstedtii* Rondani, 1866

Material. Mtskheta-Mtianeti Region, Kazbegi: meadows E of Kazbegi, 1900 m, 1♂, 28.06.1983, 1♂, 9.07.1983, 1♂, 13.07.1983; 1♂, Mt Sameba, pasture, 2250–2300 m, 2.07.1983; Mt Sameba, forest, 2100–2200 m, 1♂, 7.07.1983, 1♂, 12.07.1983.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. Widespread in the Palaearctic Region, also Alaska and China (Sichuan). A forest species.

Drymeia caucasica
(Schnabl in Schnabl et Dziedzicki, 1911)

Distribution. Kazbegi localities for this species were listed by Pont [2022: 357] who also discussed the identification of this species. This species was described by Schnabl [in Schnabl et Dziedzicki, 1911: 296] from a single male from Kobi. Known only from Georgia, and sister-species of the Alpine *Drymeia cinerea* (Meigen, 1826).

Drymeia fasciculata (Stein, 1916)

Material. 2♂ (CNC), Samtskhe-Javakheti, road from Sakire to Tsikhisjvari, hilltop and surroundings, 9.06.2019 (J.H. Skevington).

Distribution. It was listed from Georgia by Pont et al. [2005: 75], and Kazbegi localities for this species were listed by Pont [2022: 360]. A montane species, found mostly above the tree line in the Alps (France, ? Austria, Italy), Bulgaria, Georgia, Armenia, Turkey, Russia (Altai and Tuva Republics) and China (Shanxi).

Drymeia fratercula Pont, 2022

Material. 1♂ (CNC), Samtskhe-Javakheti, road from Sakire to Tsikhisjvari, hilltop and surroundings, 9.06.2019 (J.H. Skevington).

Distribution. The holotype and several paratypes of this species were collected around Kazbegi [Pont, 2022: 365]. A high-altitude species, known only from Georgia, Armenia and Russia (Caucasus Reserve).

Drymeia setibasis (Huckett, 1965)

Distribution. Kazbegi localities for this species were listed by Pont [2022: 372]. This is another high-altitude species, found only well above the tree line where it occurs abundantly. A Holarctic species, known in the Palaearctic Region only from Armenia, Georgia, Kyrgyzstan, Russia (Siberia, Far East (including Wrangel Island)).

Remarks. The females were assigned only by locality as at present no differences can be found between females of this species and those of *D. vicana* (Harris, 1780).

Drymeia sororcula Pont, 2022

Distribution. The holotype and several paratypes of this species were collected around Kazbegi [Pont, 2022:

375–376]. This is an uncommon species and is known only from Georgia. It ranges from the forest zone to the upper alpine heaths.

Drymeia vicana (Harris, 1780)

Distribution. Kazbegi localities for this species were listed by Pont [2022: 380]; also known from Armenia. A lowland species, widespread in the Palaearctic Region in forests and open meadows. Females can be persistent sweat-flies.

**Huckettomyia secunda* Pont et Vikhrev, 2010

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 4♂, 3.05.2014; 850 m, 3♂, 5–15.05.2014.

Distribution. New for Georgia. Described from the Sochi region of Russia, and since then found in Turkey (N.E. Vikhrev, personal communication). A forest species.

Hydrotaea albipuncta (Zetterstedt, 1845)

Material. Mtskheta-Mtianeti Region, Kazbegi: 11♀, Mt Kuro, heath, 2120–2330 m, 29.06.1983.

Distribution. It was listed from Georgia by Pont et al. [2005: 75]; also known from Armenia. A widespread Palaearctic species, in forests and open country. Females attracted to sweat.

Hydrotaea armipes (Fallén, 1825)

Material. Mtskheta-Mtianeti Region, Kazbegi: forest E of Kazbegi, 1950–2000 m, 1♂, 1.07.1983, 3♂, 9.07.1983; 16♂, near Sno, forest, 1810 m, 3.07.1983; Mt Sameba, forest, 2100–2200 m, 11♂, 4.07.1983, 7♂, 12.07.1983.

Distribution. It was listed from Georgia by Pont et al. [2005: 75]; also known from Armenia. Common and widespread throughout the Holarctic Region, also in the western Oriental Region (Pakistan, China, India, Myanmar, Taiwan).

Hydrotaea borussica Stein, 1899

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 2♂, near Sno, meadows, 1750–1810 m, 3.07.1983; 2♂, near Sno, forest, 1810 m, 3.07.1983; Mt Sameba, forest, 2100–2200 m, 2♂, 4.07.1983, 5♂, 7.07.1983, 1♂, 12.07.1983; 1♂, Mt Koltesh, meadow/heath, 2300 m, 8.07.1983; 2♂, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1400 m, 1♂, no date, 1♀, 27.09–6.10.2014; 670 m, 1♂, 25.06–5.07.2014, 1♂, 5–15.08.2014; 1840 m, 2♀, 5–15.07.2014, 1♀, 25.08–4.09.2014.

Distribution. Listed from Georgia by Pont [2018: 16]. Also known from Armenia. Widespread in the West Palaearctic Region, mainly in forests. Females attracted to sweat.

Hydrotaea dentipes (Fabricius, 1805)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, near Sno, forest, 1810 m, 3.07.1983; Mt Sameba, forest, 2100–2200 m, 8♀, 7.07.1983, 2♂, 12.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 1♂, 12–23.04.2014.

Distribution. Listed from Georgia by Pont et al. [2005: 76]; also known from Armenia and Azerbaijan. A very common Holarctic species, extending into the Neotropical and Oriental Regions. Adults commonly found on excrement and carrion.

Hydrotaea ignava (Harris, 1780)

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 519, as *Ophyra leucostoma* (Wiedemann, 1817)], and it was listed from Georgia by Pont et al. [2005: 76]; also known from Armenia and Azerbaijan. A common and widespread Holarctic species, also in many parts of the Oriental Region. Usually found around carrion.

Hydrotaea irritans (Fallén, 1823)

Material. Mtskheta-Mtianeti Region, Kazbegi: forest E of Kazbegi, 1950–2000 m, 2♂, 3♀, 1.07.1983, 2♂, 1♀, 5.07.1983; 1♂, forest E of Kazbegi, 2000 m, Malaise trap, 2–3.07.1983; 1♂, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 2♂, near Sno, forest, 1810 m, 3.07.1983; Mt Sameba, forest, 2100–2200 m, 3♂, 1♀, 4.07.1983, 4♂, 7.07.1983; 1♂, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983; 1♀, Devdoraki, lower moraines, c. 2100 m, 10.07.1983; 1♂, Gergeti, upper heaths, 2300–3000 m, 11.07.1983; 3♂, Gergeti, upper heaths, 3000 m, 14.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 3.05.2014; 670 m, 1♂, 25.05–4.06.2014; 850 m, 3♂, 5–15.05.2014; 1350 m, 1♂, 25.05–4.06.2014; 2230 m, 2♂, 25.05–4.06.2014; 2560 m, 3♂, 23.05–13.06.2014, 1♂, 25.06–5.07.2014.

Distribution. Listed from Georgia by Pont et al. [2005: 76]; also known from Armenia. A Palaearctic species, and the most abundant and persistent sweat-fly in temperate areas, both in forests and in open country, causing significant irritation to cattle and wildlife.

**Hydrotaea meridionalis* Portschinsky, 1882

Material. Mtskheta-Mtianeti Region, Kazbegi: forest E of Kazbegi, 1950–2000 m, 5♀, 1.07.1983, 1♀, 5.07.1983, 2♀, 9.07.1983; 3♀, near Sno, forest, 1810 m, 3.07.1983; Mt Sameba, forest, 2100–2200 m, 6♀, 4.07.1983, 7♀, 7.07.1983, 1♀, 12.07.1983; 1♂, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983; 1♀, Devdoraki, forest, 1750–2100 m, 10.07.1983; 1♀, Gergeti, upper heaths, 3000 m, 14.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 1♂, 12–23.04.2014, 2♂, 23.04–3.05.2014; 1400 m, 1♂, no date; 1840 m, 1♂, 5–15.07.2014; 2560 m, 2♂, 5–15.07.2014.

Distribution. New for Georgia; also known from Armenia. A European species, mainly in the south. A common sweat-fly in forested areas.

Hydrotaea meteorica (Linnaeus, 1758)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, meadows E of Kazbegi, 1900 m, 28.06.1983; forest E of Kazbegi, 1950–2000 m, 1♂, 14♀, 1.07.1983, 1♂, 13.07.1983; 1♀, SE of Kazbegi, meadow/scree, 1900–1950 m, 5.07.1983; 1♀, Mt Bash, heath, 2240 m, 2.07.1983; 2♀, near Sno, forest, 1810 m, 3.07.1983; 1♂, Mt Sameba, forest, 2100–2200 m, 12.07.1983.

Distribution. Listed from Georgia by Pont et al. [2005: 76] and recorded from Tbilisi by Vikhrev [2023: 841]; also known from Armenia. A Holarctic species, extending into the Oriental Region (India, Pakistan, Vietnam).

**Hydrotaea militaris* (Meigen, 1826)

Material. 1♂, 1♀, Mtskheta-Mtianeti Region, Kazbegi, forest E of Kazbegi, 1950–2000 m, 1.07.1983.

Distribution. New for Georgia; also known from Armenia. A Holarctic species. The adults are often attracted to trampled grass.

**Hydrotaea pilitibia* Stein, 1916

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, meadows E of Kazbegi, 1900 m, 28.06.1983; 1♀, scree SE of Kazbegi, 1900–1950 m, 28.06.1983; 1♂, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 1♀, forest E of Kazbegi, 1950–2000 m, 9.07.1983; 8♀, Mt Kuro, heath,

2120–2330 m, 29.06.1983; 2♀, Mt Kuro, heath, 2330 m, 29.06.1983; Mt Koltesh, meadow/heath, 2300 m, 2♀, 30.06.1983, 1♀, 8.07.1983; 1♀, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983; 1♂, 1♀, near Sno, meadows, 1750–1810 m, 3.07.1983; 1♂, 1♀, near Sno, forest, 1810 m, 3.07.1983; 1♀, Gergeti, scree and river, 2950–3200 m, 11.07.1983; 1♀, Gergeti, upper heaths, 3000 m, 14.07.1983.

Distribution. New for Georgia. A Holarctic species, with a more northern or montane distribution in the Palaearctic Region.

Notes. The Caucasus males are slightly smaller and less abundantly haired than those from the European Alps.

**Hydrotaea velutina* Robineau-Desvoidy, 1830

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, 2♀, forest E of Kazbegi, 1950–2000 m, 1.07.1983; 1♂, 3♀, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 1♀, Mt Sameba, pasture, 2250–2300 m, 2.07.1983; Mt Sameba, forest, 2100–2200 m, 1♂, 4.07.1983, 2♀, 12.07.1983; 1♀, Sameba, N, river, c. 1800 m, 13.07.1983; 1♂, 4♀, near Sno, meadows, 1750–1810 m, 3.07.1983; 2♀, near Sno, forest, 1810 m, 3.07.1983; 1♂, 2♀, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983.

Distribution. New for Georgia; also known from Armenia. A widespread Palaearctic species. Adults often form aerial swarms of hovering males.

Thricops bukowskii (Ringdahl, 1934)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 2♂, SE of Kazbegi, meadow/scree, 1900–1950 m, 5.07.1983; 6♂, 1♀, Mt Koltesh, meadows, 2100 m, 30.06.1983; 2♀, 2000–2100 m, 8.07.1983; Mt Koltesh, meadow/heath, 2300 m, 9♂, 1♀, 30.06.1983, 5♂, 1♀, 8.07.1983; 3♂, Mt Koltesh, heath, 2500 m, 30.06.1983; Mt Sameba, forest, 2100–2200 m, 2♂, 7.07.1983, 5♂, 12.07.1983.

Distribution. The Kazbegi localities of Mt Sameba and Mt Koltesh were recorded by Savage [2003: 34]. A localised South European species, known from upland areas of Albania, Bulgaria, Ukraine, Russia (Europe), Georgia, Armenia, Turkey and Iran.

Thricops calcaratus (Portschinsky, 1881)

Distribution. Described from Lagodekhi [Portschinsky, 1881: 144] and known only from Corsica and Georgia.

**Thricops cunctans* (Meigen, 1826)

Material. Mtskheta-Mtianeti Region, Kazbegi: forest E of Kazbegi, 1950–2000 m, 1♂, 1.07.1983, 1♂, 5.07.1983; 2♂, Mt Sameba, forest, 2100–2200 m, 12.07.1983; 1♂, near Sno, meadows, 1750–1810 m, 3.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1400 m, 1♂, no date; 2560 m, 3♂, 25.06–5.07.2014.

Distribution. New for Georgia. A widespread Palaearctic species, occurring abundantly in northern and upland forests.

**Thricops diaphanus* (Wiedemann, 1817)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 1♀, 670 m, 15–25.05.2014.

Distribution. New for Georgia. A widespread Holarctic species. A forest species.

**Thricops foveolatus* (Zetterstedt, 1845)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, near Sno, forest, 1810 m, 3.07.1983; 1♂, Mt Sameba, forest, 2100–2200 m, 7.07.1983.

Distribution. New for Georgia. Widespread but uncommon throughout the Palaearctic Region. A forest species.

**Thricops genarum* (Zetterstedt, 1838)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 670 m, 26.07–5.08.2014.

Distribution. New for Georgia. A West Palaearctic species of upland and northern areas.

**Thricops innocuus* (Zetterstedt, 1838)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 7♂, 2♀, Mt Sameba, forest, 2100–2200 m, 4.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 2560 m, 1♂, 25.06–5.07.2014.

Distribution. New for Georgia. A Holarctic species, common in northern and upland forests.

Thricops longipes (Zetterstedt, 1845)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 1♀, Mt Bash, heath, 2240 m, 2.07.1983; 4♂, 6♀, Sameba, S, river, 2150–2260 m, 2.07.1983; Mt Sameba, forest, 2100–2200 m, 4♂, 7.07.1983, 1♂, 12.07.1983; 4♂, 1♀, Devdoraki, forest, 1750–2100 m, 10.07.1983; 5♂, Devdoraki, meadows, c. 2100 m, 10.07.1983; 1♂, 1♀, Dzhuta, river, 2200 m, 12.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 1400 m, 5–15.07.2014.

Distribution. Recorded by Hennig [1962b: 643] from a nature reserve "Lager Cholodnyj" [Holodniy]; also known from Armenia. An abundant species in forests of the western Palaearctic Region.

Thricops nigrifrons (Robineau-Desvoidy, 1830)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 2560 m, 25.06–5.07.2014.

Distribution. Listed from Georgia by Pont [2018: 20], but see below under *T. tomkovichi*; also known from Armenia. Throughout temperate areas of the Palaearctic Region.

Thricops nigritellus (Zetterstedt, 1838)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, forest SE of Kazbegi, c. 1950 m, 5.07.1983; Mt Koltesh, meadow/heath, 2300 m, 1♂, 30.06.1983, 2♂, 8.07.1983; Mt Sameba, forest, 2100–2200 m, 6♂, 4.07.1983, 1♂, 7.07.1983, 1♀, 12.07.1983; 1♂, 1♀, Devdoraki, forest, 1750–2100 m, 10.07.1983; 3♂, 1♀, Devdoraki, meadows, c. 2100 m, 10.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 2230 m, 4♂, 4–14.06.2014; 2560 m, 9♂, 23.05–13.06.2014, 38♂, 4♀, 25.06–5.07.2014.

Distribution. Recorded by Hennig [1962b: 646] from a nature reserve "Lager Cholodnyj" [Holodniy]; also known from Armenia. A widespread and common species in temperate and northern areas of the Palaearctic Region.

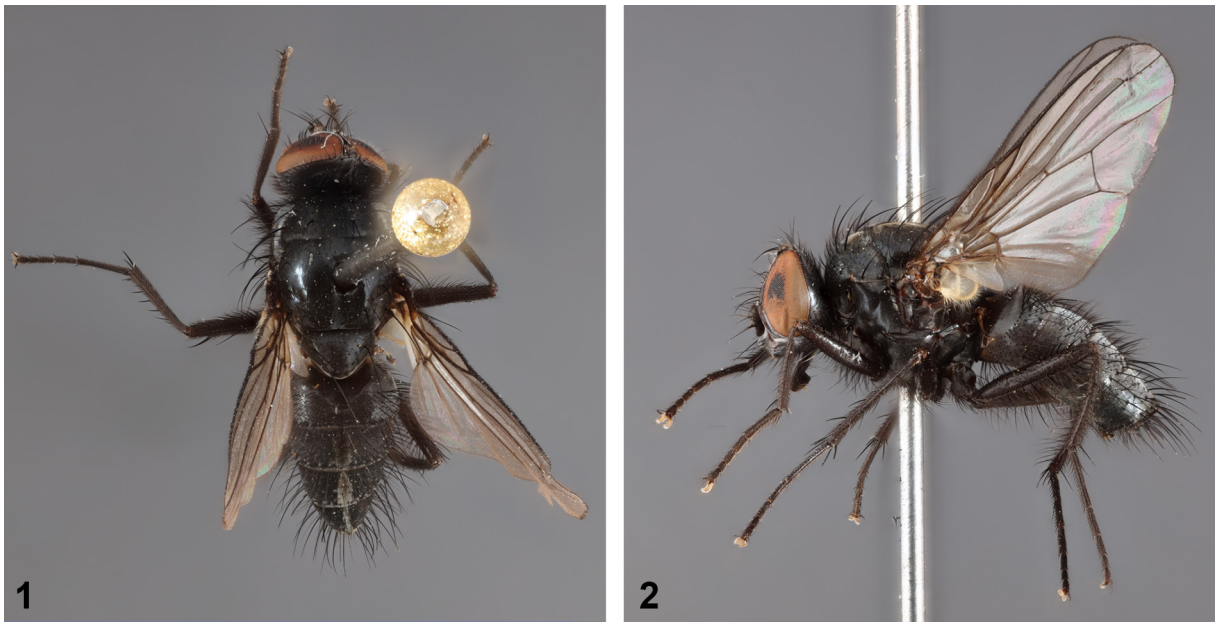
**Thricops rostratus* (Meade, 1882)

Material. Mtskheta-Mtianeti Region, Kazbegi: 2♀, Devdoraki, upper moraine, c. 2150 m, 10.07.1983; 1♂, Gergeti, river, 2950 m, 14.07.1983.

Distribution. New for Georgia; also known from Armenia. In upland and northern areas of the West Palaearctic Region. Adults often found resting on stones and boulders, especially alongside rivers and streams.

Thricops semicinereus (Wiedemann, 1817)

Material. Mtskheta-Mtianeti Region, Kazbegi: forest E of Kazbegi, 1950–2000 m, 1♂, 1.07.1983, 1♂, 9.07.1983; forest E of Kazbegi, 2000 m, Malaise trap, 1♂, 4–5.07.1983, 1♂, 8–9.07.1983; 1♂, 1♀, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 13♂, near Sno, forest, 1810 m, 3.07.1983; Mt Sameba, forest, 2100–2200 m, 3♂, 4.07.1983, 5♂, 1♀, 7.07.1983, 1♂, 12.07.1983;



Figs 1–2. *Thricops vaderi*, male, paratype (Mtskheta-Mtianeti Region, Kazbegi, Gergeti, upper heath, 2300–3000 m, 11.07.1983 (A.C. Pont)). Photographs by O. Sivell.

1 – dorsal view; 2 – lateral view.

Рис. 1–2. *Thricops vaderi*, самец, паратип (Мцхета-Мтианети, Казбеги, Гергети, верховья пустоши, 2300–3000 м, 11.07.1983 (А.Ч. Понт)). Фотографии О. Сивелл.

1 – вид сверху; 2 – вид сбоку.

1♂, Devdoraki, forest, 1750–2100 m, 10.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1840 m, 1♂, 25.05–4.06.2014, 2♂, 25.06–5.07.2014; 2560 m, 1♂, 2♀, 25.06–5.07.2014.

Distribution. Listed from Georgia by Pont [2018: 21]. Also known from Armenia. A common and abundant species of the western Palaearctic lowlands, in forests and meadows.

Notes. These specimens are provisionally identified as this species as they appear to be intermediate between *T. semicinereus* and *T. nigriabdominalis* Savage, 2003 according to the characters of these two species given by Vikhrev and Sorokina [2009: 344–345]. Our males have the colour characters of *T. semicinereus* but the structural characters of *T. nigriabdominalis*. Characters of *T. semicinereus*: disc of the scutum in strictly posterior view densely grey or brownish-grey dusted; basal four segments of the abdomen yellow, contrasting with the black segment 5. Characters of *T. nigriabdominalis*: tibiae obscurely yellow, especially hind tibia; hind femur with only 2–4 strong anteroventral setae, restricted to apical part, and 1–2 of the 3–4 posteroventral preapical setae scale-like, thicker but shorter than the anteroventral preapicals; hind tibia with the anteroventral setae 1.5–2 times as long as the anterodorsal setae.

**Thricops tomkovichi*
Vikhrev in Vikhrev et Sorokina, 2009

Material. Mtskheta-Mtianeti Region, Kazbegi: 3♂, 1♀, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 5♂, 3♀, near Sno, forest, 1810 m, 3.07.1983; Mt Sameba, forest, 2100–2200 m, 2♂, 1♀, 4.07.1983, 3♂, 7.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1400 m, 5♂, 05.2014; 2230 m, 2♂, 25.06–5.07.2014; 2560 m, 2♂, 5–15.07.2014.

Distribution. New for Georgia. Described from the Krasnodar Region of Russia and known only from Russia, Georgia and Armenia. Listed (as *Thricops nigrifrons* (Robineau-Desvoidy, 1830), misidentification) by Pont et al. [2005: 76].

Thricops vaderi Savage, 2003
(Figs 1, 2)

Distribution. The type-series of this species was collected in the forest, heath and alpine zones around Kazbegi [Savage, 2003: 130] and this is an abundant "Charakterart" of the heath zone. It is known only from Georgia, Armenia and Turkey.

Thricops sp. indet.

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, Sameba, S, river, 2150–2250 m, 2.07.1983.

Note. Resembling *T. sudeticus* (Schnabl, 1888) but with 3 postsutural dorsocentrals and probably not *T. sudeticus* since there are other small differences as well as the number of dorsocentrals.

Subfamily Muscinae
Dasyphora albofasciata
(Macquart in Webb et Berthelot, 1839)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1840 m, 1♂, 1♀, 5–15.07.2014; 2560 m, 1♀, 25.06–5.07.2014.

Distribution. Recorded from Tbilisi and Lagodekhi by Hennig [1963c: 949], and listed from Georgia by Pont et al. [2005: 76]; also known from Armenia and Azerbaijan. A West Palaearctic species, common in southern Europe and around the Mediterranean.

Dasyphora pratorum (Meigen, 1826)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, SE of Kazbegi, meadow/scree, 1900–1950 m, 5.07.1983; 1♂, Mt Kuro, heath, 2120–2330 m, 29.06.1983; 1♂, Sameba, N, river, c. 1800 m, 13.07.1983.

Distribution. Listed from Georgia by Pont et al. [2005: 77]; also known from Armenia and Azerbaijan. A West Palaearctic species, also from Pakistan. A lowland species, commonly found on cow dung and human faeces.

Eudasyphora zimini (Hennig, 1963)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, meadows E of Kazbegi, 1900 m, 28.06.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 1350 m, 12–23.04.2014.

Distribution. Recorded from Bakuriani by Hennig [1964a: 962] and listed from Georgia by Pont et al. [2005: 77]; also known from Armenia. Known only from Europe. Adults on the dung of ruminants.

Mesembrina meridiana (Linnaeus, 1758)

Material. Mtskheta-Mtianeti Region, Kazbegi: 2♂, 11♀, Mt Sameba, forest, 2100–2200 m, 7.07.1983; 2♀, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983. Samtskhe-Javakheti: Borjomi-Kharagauli National Park, hilltop west of highway SH14, 1♂, 9.06.2019, 4♂, 11.06.2019 (J.H. Skevington) (CNC).

Distribution. Recorded from Tbilisi by Hennig [1963c: 920]; also known from Armenia. A widespread Palaearctic species, closely associated with cattle and their excrement.

Mesembrina mystacea (Linnaeus, 1758)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 1350 m, 25.05–4.06.2014.

Distribution. Recorded from Sukhumi by Hennig [1963c: 923]; also known from Armenia. A widespread Palaearctic species, mainly in forests.

**Morellia aenescens* Robineau-Desvoidy, 1830

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, SE of Kazbegi, meadow/scree, 1900–1950 m, 5.07.1983; 1♀, meadows E of Kazbegi, 1900 m, 13.07.1983.

Distribution. New for Georgia. Throughout the Palaearctic Region, in woodlands and meadows of the forest zone.

Morellia hortorum (Fallén, 1817)

Material. Mtskheta-Mtianeti Region, Kazbegi: 3♂, 5♀, forest E of Kazbegi, 1950–2000 m, 1.07, 5.07 and 9.07.1983; 1♂, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 1♂, SE of Kazbegi, meadow/scree, 1900–1950 m, 5.07.1983; 1♀, Mt Koltesh, meadow/heath, 2300 m, 30.06.1983; 1♂, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983; 3♀, near Sno, meadows, 1750–1810 m, 3.07.1983; 3♀, near Sno, forest, 1810 m, 3.07.1983; 1♂, 11♀, Mt Sameba, forest, 2100–2200 m, 7.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 670 m, 15–25.06.2014.

Distribution. Listed from Georgia by Pont et al. [2005: 77]; also known from Armenia. Throughout the Palaearctic Region, and also in China and Pakistan. In woodlands and meadows of the forest zone.

**Morellia podagrica* (Loew, 1857)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, near Sno, forest, 1810 m, 3.07.1983; Mt Sameba, forest, 2100–2200 m, 3♂, 1♀, 7.07.1983, 1♀, 12.07.1983; 1♂, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983.

Distribution. New for Georgia. A Holarctic species, found in upland and northern parts of the region.

Musca autumnalis De Geer, 1776

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, SE of Kazbegi, meadow/scree, 1900–1950 m, 5.07.1983; 2♂, 2♀, Mt Sameba, forest, 2100–2200 m, 7.07 and 12.07.1983; 1♂, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 5–14.09.2014; 670 m, 1♂, 5–15.08.2014; 850 m, 2♂, 15–27.09.2014; 1360 m, 2♂, 25.08–4.09.2014; 1840 m, 1♂, 25.08–4.09.2014.

Distribution. Listed from Georgia by Pont et al. [2005: 77]; also known from Armenia and Azerbaijan. A Holarctic species, but also reaching parts of the Oriental, Afrotropical and Neotropical Regions. The common "Face fly", a persistent pest of cattle and horses.

Note. Its association in Georgia with the eye-worm, *Thelazia rhodesi* Desmarest, 1828, has been documented by Kurashvili and Kvavadze [1997].

Musca domestica Linnaeus, 1758

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 518, as *Musca vicina* Macquart, 1851]. The cosmopolitan House fly.

Note. Its association in Georgia with the eye-worm, *Thelazia rhodesi*, has been documented by Kurashvili and Kvavadze [1997].

Musca larvipara Portschinsky, 1910

Material. 1♀ (BMNH), Tbilisi, Mt Mtatsminda, 730 m, 27.06.1983 (A.C. Pont).

Distribution. Listed from Georgia by Pont [2018: 26]. Also known from Armenia and Azerbaijan. Widespread in the southern parts of the Palaearctic Region.

Note. Its association in Georgia with the eye-worm, *Thelazia rhodesi*, has been documented by Kurashvili and Kvavadze [1997].

Musca osiris Wiedemann, 1830

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, forest E of Kazbegi, 2000 m, Malaise trap, 2–3.07.1983.

Distribution. Listed from Georgia by Pont et al. [2005: 77]; also known from Armenia and Azerbaijan. A common Palaearctic species, often as a sweat-fly on humans and cattle.

**Musca tempestiva* Fallén, 1817

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, near Sno, forest, 1810 m, 3.07.1983.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. Throughout the Palaearctic Region and also reaching parts of the Oriental (India, China) and Afrotropical Regions.

Neomyia cornicina (Fabricius, 1781)

Material. Mtskheta-Mtianeti Region, Kazbegi: 2♀, SE of Kazbegi, meadow/scree, 1900–1950 m, 5.07.1983; 1♂, 1♀, Mt Sameba, pasture, 2250–2300 m, 2.07.1983; 1♂, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 1840 m, 4–14.09.2014. Samtskhe-Javakheti: 1♂ (CNC), road from Sakire to Tsikhisjvari, hilltop and surroundings, 9.06.2019 (J.H. Skevington).

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 519, as *Cryptolucilia caesarion* (Meigen, 1826)], and it was listed from Georgia by Pont et al. [2005: 77]; also known from Armenia and Azerbaijan. Widespread throughout the Holarctic Region and extending into the Oriental and Afrotropical Regions. A lowland species, associated with cow dung.

Neomyia viridescens (Robineau-Desvoidy, 1830)

Material. Mtskheta-Mtianeti Region, Kazbegi: 2♂, 1♀, meadows E of Kazbegi, 1900 m, 28.06, 13.07.1983; 4♂, 1♀, SE of Kazbegi, meadow/scree, 1900–1950 m, 5.07.1983; 3♀, Sameba, S, river, 2150–2250 m, 2.07.1983; 1♂, Mt Sameba, forest, 2100–2200 m, 7.07.1983; 1♂, 1♀, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983; 2♀, Devdoraki, forest, 1750–2100 m, 10.07.1983.

Distribution. Listed from Georgia by Pont [2018: 28]. Also known from Armenia. Throughout the Palaearctic Region. A lowland species, associated with cow dung.

**Polietes domitor* (Harris, 1780)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, meadows E of Kazbegi, 1900 m, 28.06.1983; 1♂, 4♀, Mt Sameba, forest, 2100–2200 m, 7.07.1983.

Distribution. New for Georgia; also known from Armenia. Widespread throughout the Palaearctic Region. In lowland forests and meadows.

Polietes lardarius (Fabricius, 1781)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 2♀, 3.05.2014; 670 m, 3♂, 4♀, 12–23.04.2014; 1840 m, 1♂, 25.08–4.09.2014.

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 519]. Also known from Armenia and Azerbaijan, and widespread throughout the Palaearctic Region. In lowland forests and meadows; commonly found on cow dung.

Pyrellia vivida Robineau-Desvoidy, 1830

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 518, as *P. cadaverina* (Linnaeus, 1758)]. Also known from Armenia and Azerbaijan, widespread throughout the Palaearctic Region and into the Oriental Region (India, Pakistan, Vietnam).

**Ziminellia asetosa* (Baranoff, 1925)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 5–14.09.2014; 670 m, 1♀, 15–24.05.2014, 2♀, 15–25.06.2014.

Distribution. New for Georgia. Mainly an East Palaearctic species that has spread into the more temperate parts of Europe and western Asia.

**Ziminellia simplex* (Loew, 1857)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 1♂, 23.04–3.05.2014, 1♀, 25.05–4.06.2014, 1♂, 4–14.06.2014, 1♂, 15–25.06.2014.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. Throughout the Palaearctic Region and reaching as far as Pakistan. A lowland pasture species and a sweat fly around cattle and horses.

Subfamily Stomoxyinae

Haematobia irritans (Linnaeus, 1758)

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 518, as *Lyperosia irritans*]. Also known from Armenia and Azerbaijan. Common throughout the Palaearctic Region and has been introduced into the Nearctic and Neotropical Regions where it has become widespread. This is the Horn fly, a blood-sucking pest of cattle.

Haematobosca stimulans (Meigen, 1824)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, 1♀, meadows E of Kazbegi, 1900 m, 28.06.1983; 2♀, forest E of Kazbegi, 1950–2000 m, 1.07.1983; 1♀, forest SE of Kazbegi, 1950 m, 5.07.1983; 1♀, Mt Koltesh, meadows, 2100 m, 30.06.1983; 1♀, Mt Koltesh, meadow/heath, 2300 m, 30.06.1983; 2♀, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983; 5♂, Mt Bash, heath, 2240 m, 2.07.1983; 1♂, 1♀, Sameba, S, river, 2150–2250 m, 2.07.1983; Mt Sameba, forest, 2100–2200 m, 3♂, 1♀, 4.07.1983, 1♀, 7.07.1983; 1♂, near Sno, forest, 1810 m, 3.07.1983; Gergeti, upper heaths, 2300–3000 m, 2♀, 11.07.1983, and 3000 m, 1♂, 1♀, 14.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 2560 m, 23.05–13.06.2014.

Distribution. Listed from Georgia by Pont et al. [2005: 78]; also known from Armenia. A biting, blood sucking fly found throughout the Palaearctic Region and also reaching India and Nepal. Associated with cattle.

Stomoxys calcitrans (Linnaeus, 1758)

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 518]. Also known from Armenia and Azerbaijan. This is the cosmopolitan biting Stable fly, a pest of cattle and horses.

Subfamily Phaoniinae

**Helina abdominalis* (Zetterstedt, 1846)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 850 m, 15–25.05.2014.

Distribution. New for Georgia. A European species, found in lowland forests.

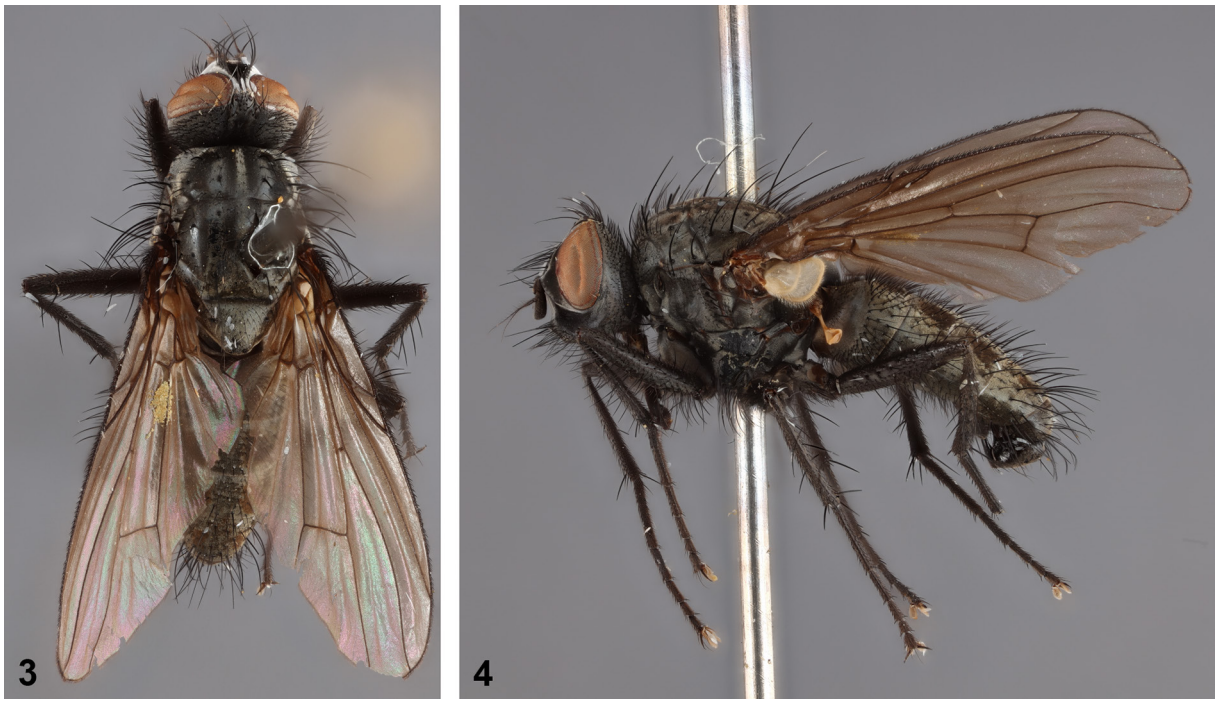
Helina annosa (Zetterstedt, 1838)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 4♀, 3.05.2014; 670 m, 1♂, 12–23.04.2014, 1♂, 2♀, 26.07–5.08.2014; 850 m, 1♂, 15–25.05.2014, 1♂, 5–15.07.2014; 1260 m, 1♂, 2♀, 23.05–13.06.2014; 1350 m, 2♀, 12–23.04.2014, 3♂, 15–25.08.2014; 1840 m, 1♂, 15–25.06.2014, 7♂, 5♀, 5–15.07.2014, 10♂, 4♀, 25.08–4.09.2014; 2230 m, 1♀, 25.05–4.06.2014, 1♀, 27.09–6.10.2014; 2560 m, 1♂, 25.06–5.07.2014, 5♂, 5♀, 25.08–4.09.2014.

Distribution. A Kazbegi locality for this species was listed by Pont [2012: 31]. A Holarctic species, confined to northern or upland habitats.

Helina cinerella (Wulp, 1867)

Distribution. Kazbegi localities for this species were listed by Pont [2012: 31–32]; also known from Armenia. A Holarctic species ranging from lowland forests to the alpine zone.



Figs 3–4. *Helina edita*, male, paratype (Mtskheta-Mtianeti Region, Kazbegi, Mt Koltesh, meadow/heath, 2300 m, 30.06.1983 (A.C. Pont)). Photographs by O. Sivell.

3 – dorsal view; 4 – lateral view.

Рис. 3–4. *Helina edita*, самец, паратип (Мцхета-Мтианети, Казбеги, гора Колтеш, луг/пустошь, 2300 м, 30.06.1983 (А.Ч. Понт)). Фотографии О. Сивелл.

3 – вид сверху; 4 – вид сбоку.

**Helina concolor* (Czerny, 1900)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 1840 m, 5–15.07.2014.

Distribution. New for Georgia. Known from only a few countries of central and eastern Europe; a forest species.

**Helina cothurnata* (Rondani, 1866)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 2♂, 1♀, 12–23.04.2014, 1♂, 3.05.2014, 1♀, 25.05–4.06.2014; 850 m, 2♀, 12–23.04.2014; 1350 m, 1♀, 12–13.04.2014.

Distribution. New for Georgia; also known from Armenia. A Holarctic species, in the forest zone.

Helina edita Pont, 2012
(Figs 3, 4)

Distribution. The holotype and paratypes of this species were collected around Kazbegi [Pont, 2012: 32]. A high-altitude species, abundant in the heath zone where it is a "Charakterart". It is known only from Georgia, Armenia, Russia (Caucasus Reserve) and Turkey.

Helina evecta (Harris, 1780)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 3.05.2014; 670 m, 1♂, 12–13.04.2014; 1840 m, 1♂, 5–15.07.2014; 2230 m, 1♂, 25.07–5.08.2014; 2560 m, 1♂, 5–15.07.2014.

Distribution. Listed from Georgia by Pont et al. [2005: 78]. Kazbegi localities for this species were listed by Pont [2012: 35]; also known from Armenia. A common, widespread and euryoecious Holarctic species, also extending into the Neotropical (Mexico, Venezuela) and Oriental (India, Pakistan, Sri Lanka) Regions. Common in lowland forests and above the tree line.

Helina fratercula (Zetterstedt, 1845)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 670 m, 15–25.05.2014.

Distribution. Kazbegi localities for this species were listed by Pont [2012: 35]. Widespread through the Palaearctic Region, mainly in northern or upland habitats.

**Helina impuncta* (Fallén, 1824)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 2230 m, 1♂, 1♀, 25.06–5.07.2014; 2560 m, 3♀, 25.08–4.09.2014.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. A Palaearctic species, in the forest zone.

Helina lasiophthalma (Macquart, 1835)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 3.05.2014.

Distribution. Recorded from Tbilisi by Hennig [1957: 191]; also known from Armenia. A Palaearctic species, in the forest zone.

Helina obscurata (Meigen, 1826)

Distribution. Kazbegi localities for this species were listed by Pont [2012: 44]; also known from Armenia. Throughout the Palaearctic Region, mainly in forest habitats.

Helina reversio (Harris, 1780)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 2♂, 12–23.04.2014, 1♀, 23.04–3.05.2014, 1♂, 15–25.06.2014; 850 m, 1♀, 25.06–5.07.2014.

Distribution. A single female from Kazbegi was listed by Pont [2012: 45]; also known from Armenia and Azerbaijan. A common and widespread Holarctic species, also reaching China and Taiwan.

Note. The Kazbegi female is an aberrant specimen with only 3 postsutural dorsocentral setae.

Helina sexmaculata (Preyssler, 1791)

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 519, as *Helina uliginosa* (Fallén, 1825)], and Hennig [1958: 213, as *H. punctata* (Robineau-Desvoidy, 1830)] also recorded it from Tbilisi. A widespread Holarctic species, also found in Pakistan, China, India, Nepal, Myanmar, Taiwan and New Zealand (introduced).

Helina subvittata (Séguy, 1923)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 2♂, 2230 m, 25.06–5.07.2014.

Distribution. Kazbegi localities for this species were listed by Pont [2012: 45]; also known from Armenia. A Holarctic species ranging from lowland forests to the alpine zone.

**Helina tetrastigma* (Meigen, 1826)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 850 m, 25.06–5.07.2014.

Distribution. New for Georgia; also known from Armenia. Widespread in the West Palaearctic Region; a forest species.

Helina trivittata (Zetterstedt, 1860)

Distribution. Kazbegi localities for this species were listed by Pont [2012: 45]; also known from Armenia. Throughout temperate areas of the Palaearctic Region, mainly in forest habitats.

Lophosceles cinereiventris (Zetterstedt, 1845)

Distribution. A Kazbegi locality for this species was listed by Zinovjev [1994: 81]. Throughout temperate areas of the Palaearctic Region, mainly in forest habitats.

Phaonia adriani Zinovjev, 1994

Distribution. The holotype and paratypes of this species were collected around Kazbegi [Zinovjev, 1994: 82]. Found only in the alpine zone (2950–3200 m). Known only from Georgia and from Armenia at 3190–3580 m [Pont, 2018: 36].

Phaonia angelicae (Scopoli, 1763)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 1400 m, 25.05–4.06.2014.

Distribution. Kazbegi localities for this species were listed by Zinovjev [1994: 81]; also known from Armenia. A common and widespread lowland Palaearctic species, commonly found on flowers where it feeds on nectar and pollen.

Note. A var. *caucasica* was described from Utsera by Schnabl [in Schnabl et Dziedzicki, 1911: 305] but this is not recognised as a valid taxon.

**Phaonia errans* (Meigen, 1826)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 3.05.2014; 670 m, 2♂, 2♀, 12–23.04.2014; 1840 m, 2♂, 25.06–5.07.2014, 3♂, 5–15.07.2014, 2♂, 1♀, 25.08–4.09.2014; 1900 m, 1♀, 25.06–5.07.2014.

Distribution. New for Georgia; also known from Armenia. A Holarctic species, widespread in forested areas where adults are commonly found resting on tree trunks.

Phaonia gergetica Zinovjev, 1994

Distribution. The holotype and paratypes of this species were collected around Kazbegi [Zinovjev, 1994: 83]. Known only from Georgia, from the alpine zone at 2150–3200 m.

Phaonia gobertii (Mik, 1881)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 27.09–6.10.2014.

Distribution. Recorded from Georgia by Zinovjev [1980: 440]; also known from Azerbaijan. Widespread through temperate areas of the Palaearctic Region. Adults usually resting on tree trunks, and the larvae predaceous on bark beetle larvae.

Phaonia hybrida (Schnabl, 1888)

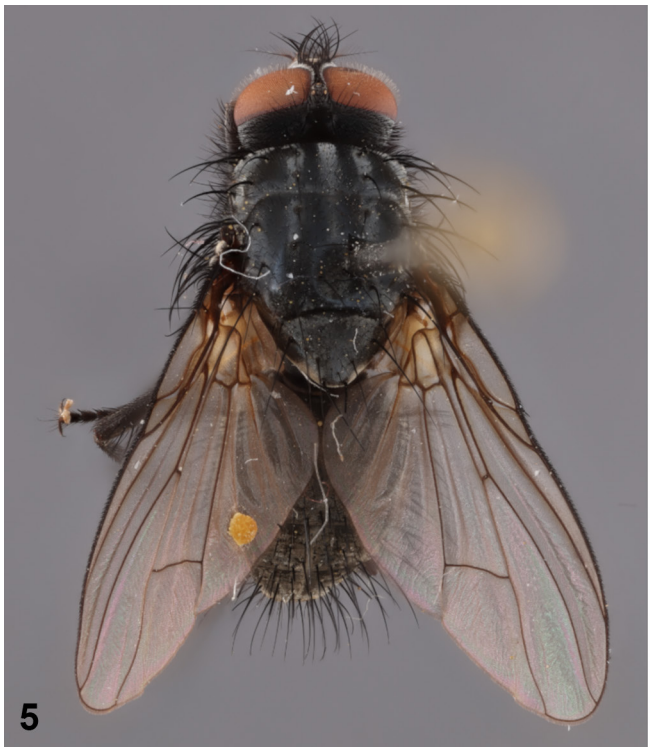
Distribution. A Kazbegi locality for this species was listed by Zinovjev [1994: 81]. Widespread in upland and northern parts of the Palaearctic Region, reaching Northwestern America (Alaska, Yukon, Northwest Territories).

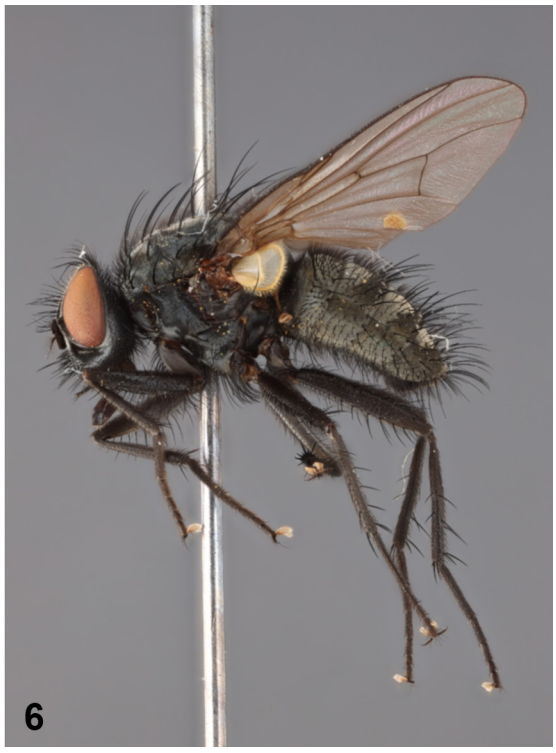
Phaonia incana (Wiedemann, 1817)

Distribution. Kazbegi localities for this species were listed by Zinovjev [1994: 81]. A widespread lowland species, throughout the Palaearctic Region and reaching China.

Phaonia kobica Schnabl in Schnabl et Dziedzicki, 1911
(Figs 5, 6)

Distribution. Kazbegi localities for this species were listed by Zinovjev [1994: 81], and it was listed from Georgia by Pont et al. [2005: 79]; also known from Armenia. The





Figs 5–6. *Phaonia kobica*, male (Mtskheta-Mtianeti Region, Kazbegi, Gergeti, scree (1), 2950–3000 m, 14.07.1983 (A.C. Pont) (det. A. Zinovjev)). Photographs by O. Sivell.

5 – dorsal view; 6 – lateral view.

Рис. 5–6. *Phaonia kobica*, самец (Мцхета-Мтианети, Казбеги, Гергети, осыпь (1), 2950–3000 м, 14.07.1983 (А.Ч. Понт) (det. А. Зиновьев)). Фотографии О. Сивелл.

5 – вид сверху; 6 – вид сбоку.

species was described by Schnabl [Schnabl, Dziedzicki, 1911: 320] from both sexes from Kobi and Gudauri, just north and south of the Krestoviy Pass. Known only from Georgia, Armenia and Turkey, and a common species in forests where it replaces the Holarctic *Phaonia serva* (Meigen, 1826). It is commonly found on flowers where it feeds on nectar.

**Phaonia laeta* (Fallén, 1823)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 1♀, 670 m, 12–13.04.2014.

Distribution. New for Georgia. A West Palaearctic species, found in forested areas.

Phaonia magnicornis (Zetterstedt, 1845)

Distribution. Kazbegi localities for this species were listed by Zinovjev [1994: 81]. In temperate and northern areas of the Palaearctic Region, also found in Northwestern America (Alaska, Yukon). Adults are found near water.

**Phaonia mediterranea* Hennig, 1963

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 1♀, 1840 m, 25.08–4.09.2014.

Distribution. New for Georgia. South Europe and North Africa; a forest species.

**Phaonia mystica* (Meigen, 1826)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 2♀, 3.05.2014; 670 m, 1♂, 12–23.04.2014.

Distribution. New for Georgia. Throughout central and northern parts of the Palaearctic Region; a forest species.

**Phaonia pallida* (Fabricius, 1787)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, no date; 1♀, 5–14.09.2014; 670 m, 1♂, 15–25.05.2014, 1♂, 4–14.06.2014, 3♀, 27.09–6.10.2014.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. A widespread West Palaearctic species, in damp shaded forested areas.

**Phaonia palpata* (Stein, 1897)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 2♂, 15–25.08.2014.

Distribution. New for Georgia; also known from Armenia. Throughout the Palaearctic Region, in damp broad-leaf forests.

Phaonia regalis (Stein, 1900)

Distribution. Described by Stein [1900: 306] from Tbilisi. Recorded from several localities in Georgia by Vikhrev and Erofeeva [2018: 317], from Kojori (Tbilisi

district), Abastumani and Manglisi. An uncommon species, known only from Austria, Bulgaria, Greece, Cyclades Islands, Georgia, Turkey, Russia (West Siberia).

**Phaonia rufiventris* (Scopoli, 1763)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 1♀, 12–13.04.2014, 1♂, 23.04–3.05.2014; 1840 m, 1♀, 5–15.07.2014.

Distribution. New for Georgia. West Palaearctic Region, eastwards to Siberia; in damp broad-leaved forests.

**Phaonia signata* (Meigen, 1826)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 25.06–5.07.2014.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. A common forest species in the West Palaearctic Region.

**Phaonia subventa* (Harris, 1780)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 2♂, 1♀, 12–13.04.2014, 4♂, 12–23.04.2014.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. A West Palaearctic species, widespread and common in most landscapes and even in city gardens.

**Phaonia tiefii* (Schnabl, 1888)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 3♂, 12–23.04.2014, 1♂, 23.04–3.05.2014; 1840 m, 1♂, 5–15.07.2014.

Distribution. New for Georgia. An uncommon European species, in forests in temperate areas.

**Phaonia trimaculata* (Bouché, 1834)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 5–14.09.2014, 1♂, 27.09–6.10.2014; 670 m, 1♀, 12–23.04.2014; 2560 m, 1♀, 23.05–13.06.2014, 1♀, 25.06–5.07.2014.

Distribution. New for Georgia. Common throughout the Palaearctic Region, as far east as the Central Asian republics, especially in warm areas.

**Phaonia wahlbergi* Ringdahl, 1930

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 3♂, 12–23.04.2014, 1♀, 23.04–3.05.2014.

Distribution. New for Georgia. A widespread but little-known Palaearctic species, found only in the colder areas of Europe (Norway, Sweden, Finland, Lithuania, Germany, Czech Republic, Slovakia, Russia).

Phaonia zugmayeriae (Schnabl, 1888)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1400 m, 1♂, 05.2014; 2560 m, 1♀, 25.06–5.07.2014.

Distribution. Kazbegi localities for this species were listed by Zinovjev [1994: 81] and it was also recorded from Kazbegi by Vikhrev and Erofeeva [2023: 163]. A species of the temperate West Palaearctic Region, found in forests.

Subfamily Mydaeinae

Graphomya maculata (Scopoli, 1763)

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 519]; also known from Armenia and Azerbaijan. Common and widespread throughout the Palaearctic Region, and also present in all other regions except for the Nearctic.

**Hebecnema umbratica* (Meigen, 1826)

Material. Mtskheta-Mtianeti Region, Kazbegi: 2♀, meadows E of Kazbegi, 1900 m, 28.06.1983; forest E of Kazbegi, 1950–2000 m, 2♂, 1.07.1983, 3♂, 9.07.1983; 2♀, SE of Kazbegi, meadow/scree, 1900–1950 m, 5.07.1983; 1♂, 1♀, Sameba, S, river, 2150–2250 m, 2.07.1983; 9♂, near Sno, forest, 1810 m, 3.07.1983; 2♀, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. A common and widespread lowland Holarctic species also reaching the Oriental Region (Pakistan, China, India, Myanmar). Abundant in forests and around farms.

**Hebecnema vespertina* (Fallén, 1823)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, near Sno, forest, 1810 m, 3.07.1983.

Distribution. New for Georgia; also known from Armenia. Another common and widespread lowland Holarctic species. Abundant in forests and around farms.

**Mydaea affinis* Meade, 1891

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 670 m, 15–25.06.2014.

Distribution. New for Georgia. A Holarctic species, widespread in temperate forests.

**Mydaea ancilla* (Meigen, 1826)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 7♂, 1♀, 12–23.04.2014.

Distribution. New for Georgia; also known from Armenia. A widespread Palaearctic species, in lowland forests.

**Mydaea corni* (Scopoli, 1763)

Material. Mtskheta-Mtianeti Region, Kazbegi: 2♂, Mt Sameba, forest, 2100–2200 m, 7.07 and 12.07.1983.

Distribution. New for Georgia. A lowland forest species, widespread throughout the Palaearctic Region.

**Mydaea detrita* (Zetterstedt, 1845)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, forest E of Kazbegi, 1950–2000 m, 9.07.1983; 2♂, near Sno, forest, 1810 m, 3.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 2230 m, 25.06–5.07.2014.

Distribution. New for Georgia; also known from Armenia. A lowland forest species, widespread throughout temperate areas of the Palaearctic Region.

**Mydaea humeralis* Robineau-Desvoidy, 1830

Material. Mtskheta-Mtianeti Region, Kazbegi: Mt Sameba, forest, 2100–2200 m, 2♂, 4.07.1983, 2♀, 7.07.1983. Kakheti Region, Lagodekhi

Reserve, Mt Kudigora: 670 m, 3♀, 12–23.04.2014, 8♀, 23.04–3.05.2014, 2♂, 3♀, 15–25.05.2014; 850 m, 1♂, 15–25.05.2014; 1840 m, 2♀, 5–15.07.2014.

Distribution. New for Georgia; also known from Armenia. A lowland forest species, widespread throughout the Palaearctic Region.

Mydaea urbana (Meigen, 1826)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, Mt Sameba, forest, 2100–2200 m, 7.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 670 m, 25.05–4.06.2014.

Distribution. Listed from Georgia by Pont et al. [2005: 79]; also known from Armenia and Azerbaijan. A lowland forest species, widespread throughout the Holarctic Region and reaching China. Commonly found near cattle and their excrement.

**Myospila alpina* Hendel, 1901

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, Gergeti, scree and river, 2950–3200 m, 11.07.1983.

Distribution. New for Georgia. A high-mountain species, known only from countries of the European Alps and Poland, Slovakia, Italy, Montenegro.

Myospila meditabunda (Fabricius, 1781)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, 7♀, meadows E of Kazbegi, 1900 m, 28.06.1983; 2♂, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 1♀, SE of Kazbegi, meadow/scree, 1900–1950 m, 5.07.1983; 1♂, 1♀, Sameba, S, river, 2150–2250 m, 2.07.1983; 4♂, 1♀, near Sno, forest, 1810 m, 3.07.1983; 1♂, 4♀, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983; 1♂, Devdoraki, forest, 1750–2100 m, 10.07.1983.

1♀ (BMNH), Tbilisi, Mt Mtatsminda, 730 m, 27.06.1983 (A.C. Pont).

Distribution. Tbilisi and other Georgian localities were given by Kalandadze and Chilingarova [1940: 518], and it was listed from Georgia by Pont et al. [2005: 79]; also known from Armenia and Azerbaijan. An abundant and widespread Holarctic species, also reaching into the Oriental and Neotropical Regions. A lowland species, commonly associated with cattle and their excrement.

Subfamily Coenosiinae
Tribe Limnophorini

**Limnophora caesia* (Villeneuve, 1936)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, near Sno, river, 2110 m, 6.07.1983.

Distribution. New for Georgia. Southern Europe. An uncommon species, closely associated with rapidly-flowing streams and small rivers.

**Limnophora mediterranea* Pont in Pont, Harutyunova, Harutyunova et Werner, 2012

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, Devdoraki, forest, 1750–2100 m, 10.07.1983.

Distribution. New for Georgia; also known from Armenia. A circum-Mediterranean species, reaching Georgia and Armenia in the east. Found only in aquatic environments.

Limnophora pandellei Séguy, 1923

Material. Mtskheta-Mtianeti Region, Kazbegi: 9♂, 9♀, Truso, R. Terek, 2210 m, 9.07.1983.

Distribution. Listed from Georgia by Pont et al. [2005: 80]; also known from Armenia. A West Palaearctic species, found close to water.

Limnophora pulchriceps (Loew, 1860)

Distribution. Recorded from Georgia by Pont et al. [2012: 133], from Mamison Pass; also known from Armenia. Confined to South Europe and the Middle East; close to flowing water.

**Limnophora tigrina* (Am Stein, 1860)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, near Sno, meadows, 1750–1810 m, 3.07.1983; 1♂, Devdoraki, forest, 1750–2100 m, 10.07.1983; 1♀, Dzhuta, river, 2200 m, 12.07.1983; 1♂, Mt Sameba, forest, 2100–2200 m, 12.07.1983; 2♂, 1♀, Sameba, N, river, c. 1800 m, 13.07.1983.

Distribution. New for Georgia; also known from Armenia. A common West Palaearctic species, found close to water.

Limnophora triangula (Fallén, 1825)

Distribution. Recorded from Georgia by Pont et al. [2012: 135], from Mamison Pass; also known from Armenia and Azerbaijan. Widespread through temperate areas of the Palaearctic Region. Replaced in the Mediterranean area by *L. mediterranea*.

Lispe flavicincta Loew, 1847

Distribution. Recorded from Georgia by Vikhrev [2015b: 231], from Svaneti; also known from Armenia. Confined to the southern parts of Europe, and also Tajikistan.

**Lispe nana* Macquart, 1835

Material. 1♂ (CNC), Racha-Lechkhumi and Kvemo Svaneti, hilltop NE of Tsana, edge of forest, 19.06.2019 (J.H. Skevington).

Distribution. New for Georgia; also known from Armenia and Azerbaijan. Widespread through warm areas of the Palaearctic Region. A predaceous species, usually found close to water.

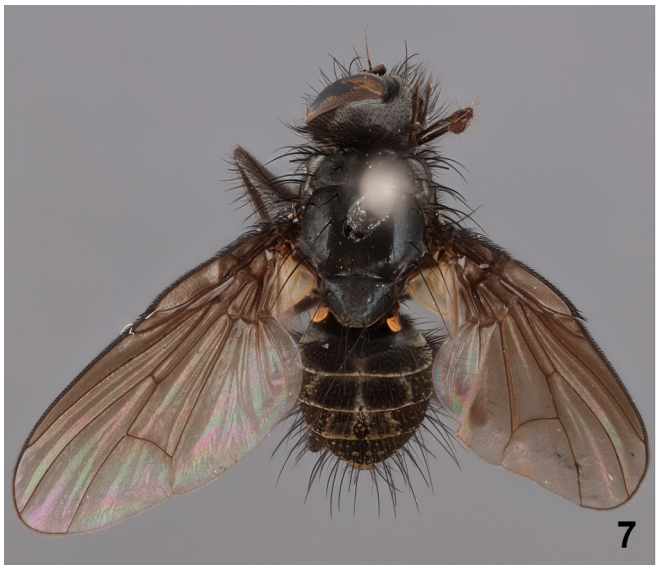
Lispe pygmaea Fallén, 1825

Distribution. Listed from Georgia by Vikhrev [2012: 109]; also known from Armenia and Azerbaijan. A widespread and common species throughout the Palaearctic Region, also extending into the Oriental Region, Africa (Cape Verde Islands, Sudan, Ethiopia) and the Hawaiian Islands.

**Lispe tentaculata* (De Geer, 1776)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, near Sno, river, 2110 m, 6.07.1983; 2♀, Sameba, N, river, c. 1800 m, 13.07.1983.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. A common and widespread Holarctic species and extending into the Neotropical (Guatemala, Guadeloupe, Peru), Afrotropical (Ethiopia) and Oriental (Kashmir, Pakistan) Regions. It is found



Figs 7–8. *Spilogona paradispar*, male, paratype (Mtskheta-Mtianeti Region, Kazbegi, Truso, mineral springs, 2150 m, 9.07.1983 (A.C. Pont)). Photographs by O. Sivell.

7 – dorsal view; 8 – lateral view.

Рис. 7–8. *Spilogona paradispar*, самец, паратип (Мцхета-Мтианети, Казбеги, Трусо, минеральные источники, 2150 м, 9.07.1983 (А.Ч. Понт)). Фотографии О. Сивелл.

7 – вид сверху; 8 – вид сбоку.

almost everywhere where there are pools of standing water. It is a voracious predator of mosquito larvae and adults.

Spilogona nora Pont, 2013

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, forest E of Kazbegi, 1950–2000 m, 5.07.1983; 1♂, Mt Kuro, heath, 2450–2500 m, 29.06.1983; 1♂, 1♀, Devdoraki, lower moraines, c. 2100 m, 10.07.1983; Gergeti, upper heaths, 2300–3000 m, 2♂, 1♀, 11.07.1983, and 3000 m, 6♂, 15♀, 14.07.1983; 8♂, 16♀, Gergeti, scree and river, 2950–3200 m, 11.07.1983; 4♂, 1♀, Gergeti, glacier, 3200 m, 11.07.1983; 1♂, 3♀, Gergeti, river, 2950 m, 14.07.1983; 5♀, Gergeti, scree (1), 2950–3000 m, 14.07.1983; 1♂, 2♀, Gergeti, scree (2), 2950–3000 m, 14.07.1983; 1♀, Dzhuta, river, 2200 m, 12.07.1983.

Distribution. This was described from Armenia and is found mainly alongside streams in alpine habitats. Also listed from Georgia by Pont [2018: 48].

Notes. These specimens were originally identified as *S. brunneisquama* (Zetterstedt, 1845) with which they share most characters, even fore tibia with posterior + posteroventral setae and abdominal tergites 3 and 4 with a narrow dark vitta on the dusted area separating the large black spots. However, compared with *S. brunneisquama*, *S. nora* has paler yellow calypters and a less darkened wing-base; the abdominal dust is grey rather than yellowish-grey. There are also slight differences in the male terminalia.

Spilogona paradispar Pont, 2023
(Figs 7, 8)

Distribution. Several paratypes of this species were collected around Kazbegi [Pont, 2023: 412]. Known only from Armenia and Georgia.

Spilogona taeniata (Stein, 1916)

Distribution. Described by Stein [1916: 93] from a single male collected at the Mamison Pass. Kazbegi localities for this species were listed by Pont [2023: 417]. In Armenia it is only found above 3200 m and in Georgia from 1900 to 3200 m. It is known from Georgia, Armenia and Turkey.

Tribe Coenosiini

**Coenosia agromyzina* (Fallén, 1825)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 5♂, 12–13.04.2014, 3♂, 1♀, 12–23.04.2014, 31♂, 3♀, 23.04–3.05.2014, 6♂, 5–15.05.2014, 1♂, 15–25.05.2014, 1♂, 1♀, 25.05–4.06.2014, 3♂, 4–14.06.2014, 2♂, 15–25.06.2014, 2♂, 26.07–5.08.2014, 2♂, 1♀, 5–15.08.2014, 1♂, 1♀, 15–25.08.2014, 1♂, 1♀, 5–14.09.2014, 1♂, 15–27.09.2014, 1♀, 27.09–6.10.2014; 850 m, 1♂, 5–15.05.2014, 1♂, 25.05–4.06.2014, 2♀, 27.09–6.10.2014; 1350 m, 2♂, 3.05.2014, 2♂, 15–25.08.2014; 1360 m, 3♂, 4–14.09.2014; 1840 m, 1♂, 5–15.05.2014, 1♂, 3♀, 25.08–4.09.2014, 1♂, 4–14.09.2014, 1♀, 15–27.09.2014.

Distribution. New for Georgia; also known from Armenia and Azerbaijan. A West Palaearctic species. It occurs abundantly in damp lowland woodlands, usually resting on leaves.

**Coenosia albicornis* Meigen, 1826

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 3♂, 12–13.04.2014, 3♂, 2♀, 23.04–3.05.2014, 1♂, 15–25.05.2014, 1♂, 25.05–4.06.2014.

Distribution. New for Georgia. North and Central Europe; a forest species.

**Coenosia emiliae* Lukasheva, 1986

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 1♀, 1840 m, 5–15.07.2014.

Distribution. New for Georgia. Described from the Teberda National Park in south-west Russia, and otherwise known only from Belgium, Germany, Czech Republic and Slovakia.

**Coenosia femoralis* (Robineau-Desvoidy, 1830)

Material. Mtskheta-Mtianeti Region, Kazbegi: 2♀, meadows E of Kazbegi, 1900 m, 28.06.1983; 1♀, forest E of Kazbegi, 1950–2000 m, 5.07.1983; Mt Kuro, heath, 2120–2330 m, 2♂, 5♀, 29.06.1983, 2330 m, 34♂, 31♀, 29.06.1983, and 2450–2500 m, 4♂, 1♀, 29.06.1983; Mt Koltesh, meadows, 2100 m, 6♂, 8♀, 30.06.1983, and 2000–2100 m, 1♀, 8.07.1983; Mt Koltesh, heath, 2500 m, 3♂, 7♀, 30.06.1983; Mt Koltesh, meadow/heath, 2300 m, 6♂, 1♀, 30.06.1983, 1♀, 8.07.1983; 2♀, Mt Sameba, pasture, 2250–2300 m, 2.07.1983; 1♂, Sameba, S, river, 2150–2250 m, 2.07.1983; 1♂, Truso, mineral springs, 2150 m, 9.07.1983; 1♂, Devdoraki, meadows, c. 2100 m, 10.07.1983; Gergeti, upper heaths, 2300–3000 m, 4♂, 5♀, 11.07.1983, and 3000 m, 11♂, 4♀, 14.07.1983; 2♂, Gergeti, scree and river, 2950–3200 m, 11.07.1983; 7♂, 3♀, Gergeti, scree (2), 2950–3000 m, 14.07.1983; 1♂, 2♀, Dzhuta, river, 2200 m, 12.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 2560 m, 25.06–5.07.2014.

Distribution. New for Georgia; also known from Armenia. Widespread and abundant in the West Palaearctic Region. In meadows and damp habitats.

Notes. This series differs from European *C. femoralis* by having fore tibia clear yellow and the dark abdominal spots more or less absent. But the fore tibia of European *C. femoralis* is also described as clear yellow by Hennig [1961b: 551]. The male terminalia agree with the illustrations of *C. femoralis* given by Hennig [1961b: fig. 511; 1962a: fig. 607].

**Coenosia infantula* Rondani, 1866

Material. Mtskheta-Mtianeti Region, Kazbegi: forest E of Kazbegi, 2000 m, Malaise trap, 1♀, 29.06–1.07.1983, 2♀, 2–3.07.1983, 1♀, 4–5.07.1983, 1♀, 10–11.07.1983, 1♂, 12–13.07.1983; 3♀, Mt Koltesh, meadows, 2100 m, 30.06.1983; 1♀, near Sno, forest, 1810 m, 3.07.1983; 1♀, Devdoraki, forest, 1750–2100 m, 10.07.1983; 1♀, Sameba, N, river, c. 1800 m, 13.07.1983.

2♂, 3♀ (BMNH), Tbilisi, Mt Mtatsminda, 27.06.1983 (A.C. Pont).

Distribution. New for Georgia; also known from Armenia. A mainly South European species, common in damp woodlands.

**Coenosia mollicula* (Fallén, 1825)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, 2♀, forest E of Kazbegi, 1950–2000 m, 5.07.1983; forest E of Kazbegi, 2000 m, Malaise trap, 1♀, 29.06–1.07.1983, 7♂, 4♀, 2–3.07.1983, 6♂, 4♀, 4–5.07.1983, 1♀, 6–7.07.1983, 3♂, 8–9.07.1983, 5♂, 1♀, 10–11.07.1983, 5♂, 2♀, 12–13.07.1983; 1♂, 1♀, forest SE of Kazbegi, c. 1950 m, 5.07.1983; 1♀, near Sno, meadows, 1750–1810 m, 3.07.1983; Mt Sameba, forest, 2100–2200 m, 1♀, 4.07.1983, 1♂, 2♀, 7.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 670 m, 1♂, 4–14.06.2014; 850 m, 2♂, 5–15.07.2014; 2230 m, 4♂, 25.06–5.07.2014, 1♂, 5–15.07.2014, 2♂, 25.07–5.08.2014; 2560 m, 2♂, 25.06–5.07.2014, 4♂, 5–15.07.2014.

Distribution. New for Georgia; also known from Armenia. Widespread throughout the Holarctic Region and also in China (Sichuan). A lowland species, common in meadows and woodlands.

**Coenosia nigridigita* Rondani, 1866

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 3♂, 3.05.2014; 670 m, 2♂, 12–23.04.2014; 850 m, 1♂, 12–23.04.2014, 1♂, 5–14.09.2014, 1♂, 15–27.09.2014, 4♂, 27.09–6.10.2014; 1840 m, 3♂, 25.08–4.09.2014; 2230 m, 2♂, 25.05–4.06.2014, 1♂, 3–14.06.2014; 2560 m, 1♂, 23.05–13.06.2014, 1♂, 25.08–4.09.2014.

Distribution. New for Georgia; also known from Armenia. A West Palaearctic species, in warm areas. A mainly forest species.

**Coenosia oligochaeta* Hennig, 1961

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, near Sno, meadows, 1750–1810 m, 3.07.1983; 2♂, Mt Koltesh, meadows, 2000–2100 m, 8.07.1983; 1♂, Mt Koltesh, meadow/heath, 2300 m, 8.07.1983.

Distribution. New for Georgia. Known only from Georgia, Armenia, Kazakhstan and China.

Notes. These specimens agree with Hennig's description of the unique (but battered) male holotype except for the leg bristling: the males listed above have fore tibia with 1 posterior seta, mid tibia with 1 anterodorsal and 1 posterodorsal setae, hind tibia with 1 anterodorsal, 1 anteroventral and 1 short posterodorsal setae. Hennig [1962a: 584] stated in his description that there is 1 proepisternal seta, but in the keys to *Allognota* Pokorny, 1893 and *Coenosia* he says that there are 2 proepisternals [Hennig, 1961a: 510, 525]. Georgian specimens have 2 proepisternals.

**Coenosia ozerovi* Vikhrev, 2009

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, Sameba, S, river, 2150–2250 m, 2.07.1983; 1♂, Mt Sameba, forest, 2100–2200 m, 7.07.1983; 1♂, Sameba, N, river, c. 1800 m, 13.07.1983.

Distribution. New for Georgia. Described from North Ossetia-Alania (Russia) and known only from the type-series and the specimens listed here from Georgia.

**Coenosia pulicaria* (Zetterstedt, 1845)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, near Sno, meadows, 1750–1810 m, 3.07.1983; 7♂, 24♀, Truso, mineral springs, 2150 m, 9.07.1983; 1♀, Dzhuta, river, 2200 m, 12.07.1983.

Distribution. New for Georgia; also known from Armenia. A Holarctic species, widespread but uncommon in central and northern areas of the region.

Note. The male terminalia agree with Hennig's [1961a: fig. 497; 1962a: fig. 578] illustrations for *C. pulicaria*, but the male has a small anterodorsal seta on mid tibia.

Coenosia ? *pumila* (Fallén, 1825)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♀, Sameba, N, river, c. 1800 m, 13.07.1983.

Distribution. A Holarctic species, widespread but uncommon, in central and northern areas of the region.

Note. A female that resembles *C. femoralis* but may be different: mid femur with 1 anterior and 1 posterior preapical setae, but all tibiae yellow.

**Coenosia rufipalpis* Meigen, 1826

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♂, 670 m, 5–15.05.2014.

Distribution. New for Georgia. A Palaearctic species, widespread in temperate regions.

**Coenosia verralli* Collin, 1953

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, 1♀, meadows E of Kazbegi, 1900 m, 28.06.1983; 1♂, forest E of Kazbegi, 1950–2000 m, 5.07.1983; 1♀, Mt Sameba, pasture, 2250–2300 m, 2.07.1983.

Distribution. New for Georgia; also known from Armenia. A Holarctic species, widespread but uncommon in central and northern parts of the region.

**Lispocephala brachialis* (Rondani, 1877)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 5♂, 2♀, 3.05.2014; 670 m, 4♂, 1♀, 2–12.04.2014, 1♂, 3♀, 12–13.04.2014, 4♂, 12–23.04.2014, 1♀, 23.04–3.05.2014; 1350 m, 1♂, 3.05.2014; 2560 m, 1♂, 23.05–13.06.2014.

Distribution. New for Georgia. A South European species, usually found close to streams and rivers.

**Lispocephala erythrocera* (Robineau-Desvoidy, 1830)

Material. Mtskheta-Mtianeti Region, Kazbegi: 1♂, Mt Koltesh, meadows, 2100 m, 30.06.1983.

Distribution. New for Georgia; also known from Armenia. A widespread Holarctic species, usually found in damp or marshy habitats.

**Lispocephala pallipalpis* (Zetterstedt, 1845)

Material. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1350 m, 1♀, 12–23.05.2014.

Distribution. New for Georgia. A little-known species recorded from temperate and northern areas of the Palaearctic Region; also in the USA (New Hampshire).

Macrorchis meditata (Fallén, 1825)

Material. Mtskheta-Mtianeti Region, Kazbegi: 16♂, 13♀, meadows E of Kazbegi, 1900 m, 28.06.1983; forest E of Kazbegi, 2000 m, Malaise trap, 11♂, 1♀, 2–3.07.1983, 5♂, 2♀, 4–5.07.1983, 2♂, 1♀, 8–9.07.1983; Mt Sameba, forest, 2100–2200 m, 1♂, 1♀, 4.07.1983, 2♂, 7.07.1983, 2♀, 12.07.1983; Mt Koltesh, meadows, 2100 m, 4♂, 5♀, 30.06.1983, and 2000–2100 m, 8♂, 2♀, 8.07.1983; 1♀, Mt Sameba, pasture, 2250–2300 m, 2.07.1983.

Distribution. Listed from Georgia by Pont et al. [2005: 81]; also known from Armenia. A West Palaearctic forest species.

Notes. Note the variation in the colour of mid and hind femora in males. One male has these femora wholly dark except for a narrow apical ring. Several have mid femur darkened on up to basal third and hind femur on up to basal two-thirds. Most have mid and hind femora mostly yellow, sometimes only narrowly darkened at base.

Schoenomyza litorella (Fallén, 1823)

Material. Mtskheta-Mtianeti Region, Kazbegi: 2♀, Sameba, S, river, 2150–2250 m, 2.07.1983; 1♀, Mt Sameba, forest, 2100–2200 m, 7.07.1983; 1♀, Mt Koltesh, meadow/heath, 2300 m, 8.07.1983; 4♂, 6♀, Truso, mineral springs, 2150 m, 9.07.1983; 2♂, 4♀, Devdoraki, forest, 1750–2100 m, 10.07.1983; 1♂, Dzhuta, river, 2200 m, 12.07.1983. Kakheti Region, Lagodekhi Reserve, Mt Kudigora: 1♀, 1840 m, 15–25.06.2014.

Distribution. Listed from Georgia by Pont et al. [2005: 81]; also known from Armenia. Widespread in the Holarctic Region; also in the Oriental (Pakistan, Nepal) and Afrotropical (Ethiopia, Kenya, South Africa) Regions. In wet and marshy habitats.

Discussion

According to present knowledge, the Muscidae of the three countries of the Caucasus (Armenia, Georgia, Azerbaijan) have been most thoroughly investigated in Armenia [Pont, 2018]. According to ongoing research results by A.C. Pont, 204 species are now known from Armenia, and there are still several unidentified species to be determined and new species to be described. This compares with 156 species known from Georgia, which figure excludes 19 new species of *Myospila*, *Limnophora*, *Coenosia* and *Spilogona* that await description; and only 69 species known from Azerbaijan. Further fieldwork in all three countries will undoubtedly increase these numbers.

Whilst Armenia is essentially a country of forests and relatively low mountains, Georgia is a country of forests and high mountains, many of which are permanently snow-covered. Georgia also has a much wetter climate than Armenia. An unexpectedly large number of the described and undescribed Muscidae from Georgia have been found above the tree line, either in the heath zone or even in the alpine (nival) zone. Excluding the 19 diagnosed but undescribed species, 23 species or 15% of the known Georgian muscid species are known from the heath zone, and 17 species or 11% from the alpine zone. This mirrors the abundance of species found above the tree line in the European Alps [e.g. Pont, 1995, 2009] and also the abundance of Muscidae in the northern taiga of Sweden, in Abisko National Park (latitude 68.21′N), 200 km north of the arctic circle, where almost 50% of the recorded Swedish species of Muscidae are known to occur (personal results of A.C. Pont).

There is a high level of endemism among species from above the tree line, and some of those from the highest environments appear to be sister-species of species known from the European Alps. For example, *Phaonia adriani* and the Alpine *P. tenuiseta* (Pokorny, 1893), *Phaonia kobica* and *P. serva*, *Drymeia fratercula* and *D. glacialis* (Rondani, 1866), *Drymeia caucasica* and *D. cinerea*, and *Spilogona nora* and *S. brunneisquama*.

There are also clear connections between the alpine zones in Georgia and Armenia, with a number of species common to both, such as *Phaonia adriani*, *P. kobica*, *Drymeia fasciculata*, *D. fratercula*, *Spilogona nora*, *S. taeniata*. It is quite possible that there may be faunistic connections with the mountain ranges of Russia, especially with the Altai Mountains where the muscid fauna is relatively well known [Sorokina, 2012, 2018, 2022, 2023] but any speculation at the moment is premature.

Acknowledgements

First and foremost, Adrian Pont thanks Professor Georg Nakhutsrishvili and his colleagues at the former Botanical Field Station in Kazbegi for providing accommodation and all possible support during his weeks in Kazbegi. For him, as an entomologist from the "west" in 1983, it was a privilege to have spent this time in Georgia in such a friendly, hospitable and supportive environment. The first author is also grateful to his erstwhile employer, the British Museum (Natural History) (now: The Natural History Museum, London, United Kingdom) for the opportunity to make this trip and for financial support. Mehrdad Parchami-Araghi is grateful to Scott Brooks, Michelle Locke, Owen Lonsdale, James O'Hara and Bradley Sinclair (CNC, Ottawa, Canada) for their support of this research. Several colleagues have assisted or advised

with the identification of Georgian Muscidae, especially Dr Alexey Zinovjev (now: Randolph, Massachusetts, USA) and Dr Vera Sorokina (Institute of Systematics and Ecology of Animals of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia), and they are thanked for their support. Finally, we warmly thank Dr Olga Sivell (BMNH) for the images in Figures 1–8 and Robert Douglas (Oxford University Museum of Natural History, Oxford, United Kingdom) for preparing the plates.

Supplementary material: APPENDIX. A checklist of the Muscidae (Diptera) of Georgia: https://doi.org/10.5281/zenodo.13904443

References

Bezzi M., Stein P. 1907. Katalog der paläarktischen Dipteren. Band III. Cyclorrapha Aschiza. Cyclorrapha Schizophora: Schizometopa. Budapest: Dugonics Nyomda. 828 p.

Bigot J.-M.-F. 1880. Diptères nouveaux ou peu connus. 13e partie. XX. Quelques Diptères de Perse et du Caucase. *Annales de la Société entomologique de France*. 5e Série, 10: 139–154.

Gregor F., Rozkošný R., Barták M., Vaňhara J. 2016. Zoologica. Volume 162. Manual of Central European Muscidae (Diptera). Morphology, taxonomy, identification and distribution. Stuttgart: Schweizerbart Science Publishers. 219 p.

Grzywacz A., Trzeciak P., Wiegmann B.M., Cassel B.K., Pape T., Walczak K., Bystrowski C., Nelson L., Piwczyński M. 2021. Towards a new classification of Muscidae (Diptera): a comparison of hypotheses based on multiple molecular phylogenetic approaches. *Systematic Entomology*. 46(3): 508–525. DOI: 10.1111/syen.12473

Hennig W. 1956. Muscidae. [Part, Lieferung 194.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 97–144.

Hennig W. 1957. Muscidae. [Part, Lieferung 197.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 145–192.

Hennig W. 1958. Muscidae. [Part, Lieferung 199.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 193–232.

Hennig W. 1959. Muscidae. [Part, Lieferung 207.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 337–384.

Hennig W. 1960. Muscidae. [Part, Lieferung 209.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 385–432.

Hennig W. 1961a. Muscidae. [Part, Lieferung 215.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 481–528.

Hennig W. 1961b. Muscidae. [Part, Lieferung 217.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 529–576.

Hennig W. 1962a. Muscidae. [Part, Lieferung 223.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 577–624.

Hennig W. 1962b. Muscidae. [Part, Lieferung 225.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 625–672.

Hennig W. 1962c. Muscidae. [Part, Lieferung 227.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 673–720.

Hennig W. 1962d. Muscidae. [Part, Lieferung 229.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 721–768.

Hennig W. 1963a. Muscidae. [Part, Lieferung 233.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 769–816.

Hennig W. 1963b. Muscidae. [Part, Lieferung 234.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 817–864.

Hennig W. 1963c. Muscidae. [Part, Lieferung 242.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 913–960.

Hennig W. 1964a. Muscidae. [Part, Lieferung 248.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 961–1008.

Hennig W. 1964b. Muscidae. [Part, Lieferung 249.] *In*: Die Fliegen der palaearktischen Region. Familie 63b. Stuttgart: Schweizerbart: 1009–1056.

Kalandadze L.P., Chilingarova S.V. 1940. Contribution to the study of the flies of Georgia (mainly synanthropic). *Meditsinskaya parazitologiya i parazitarnye bolezni*. 9(5): 518–520 (in Russian).

Kurashvili B., Kvavadze E. 1997. Distribution of *Thelazia rodhesi* [sic] (Desmarest, 1827) in Georgia and study results received by SEM. *Bulletin of the Georgian Academy of Sciences*. 156(2): 304–307.

Pont A.C. 1986. Family Muscidae. *In*: Catalogue of Palaearctic Diptera. Vol. 11. Scathophagidae – Hypodermatidae. Budapest: Akadémiai Kiadó: 57–215.

Pont A.C. 1995. Muscidae from above the tree-line in the Upper Ötz Valley (Tyrol, Austria) (Insecta, Diptera). *Berichte des naturwissenschaftlichen-medizinischen Vereins Innsbruck*. 82: 311–318.

Pont A.C. 2009. 4.3.16. Muscidae. *In*: Diptera Stelviana. A dipterological perspective on a changing alpine landscape. Results from a survey of the biodiversity of Diptera (Insecta) in the Stilfserjoch National Park (Italy). *Studia dipterologica*. Supplement 16: 185–197.

Pont A.C. 2012. Distribution records of *Helina* Robineau-Desvoidy, 1830 (Diptera: Muscidae) from the Caucasus Mountains, with the descriptions of three new species. *Zootaxa*. 3409(1): 30–46. DOI: 10.11646/zootaxa.3409.1.2

Pont A.C. 2013. The first records of the genus *Spilogona* Schnabl (Diptera: Muscidae) from Armenia, with the description of a new species. *Studia dipterologica*. 2011. 18(1/2): 3–9.

Pont A.C. 2015. Description of a new species of *Fannia* Robineau-Desvoidy, 1830 (Diptera: Fanniidae) and distribution records of the genus from the Caucasus Mountains. *Zootaxa*. 3956(1): 140–148. DOI: 10.11646/zootaxa.3956.1.9

Pont A.C. 2018. The Muscidae (Diptera) of Armenia. *Zootaxa*. 4465(1): 1–69. DOI: 10.11646/zootaxa.4465.1.1

Pont A.C. 2022. The genus *Drymeia* in the Caucasus Mountains, with a note on the identity of *Aspilia glacialis* Rondani, 1866 (Diptera: Muscidae). *Zootaxa*. 5134(3): 355–382. DOI: 10.11646/zootaxa.5134.3.2

Pont A.C. 2023. *Spilogona dispar* (Fallén, 1823) and its Palaearctic relatives (Diptera: Muscidae). *Zootaxa*. 5361(3): 409–418. DOI: 10.11646/zootaxa.5361.3.6

Pont A.C., Harutyunova K., Harutyunova M., Werner D. 2012. The hunter-flies of Armenia. III. New records of the genus *Limnophora* Robineau-Desvoidy, 1830, with the description of a new species (Insecta: Diptera: Muscidae). *Zoology in the Middle East*. 57: 127–136.

Pont A.C., Werner D., Kachvoryan E.A. 2005. A preliminary list of the Fanniidae and Muscidae (Diptera) of Armenia. *Zoology in the Middle East*. 36: 73–86.

Portschinsky J. 1881. Diptera europaea et asiatica nova aut minus cognita. Pars Ima. *Horae Societatis Entomologicae Rossicae*. 16: 136–145.

Savage J. 2003. Revision of the genus *Thricops* Rondani (Diptera: Muscidae). *Insect Systematics and Evolution*. Supplement 61: 3–143.

Schnabl J., Dziedzicki H. 1911. Die Anthomyiden. *Nova Acta Academiae Caesareae Leopolino-Carolinae Germanicae Naturae Curiosorum.* 95: 55–358.

Sorokina V.S. 2012. Fauna of Muscidae (Diptera) of the Altai Mountains. *In*: Trudy Russkogo entomologicheskogo obshchestva. Tom 83(1). Entomologicheskie issledovaniya v Zapadnoy Sibiri [Proceedings of the Russian Entomological Society. Volume 83(1). Entomological studies in Western Siberia]. St Petersburg: Zoological Institute of the Russian Academy of Sciences: 193–222 (in Russian).

Sorokina V.S. 2018. Eleven new species of *Spilogona* Schnabl, 1911 (Diptera, Muscidae) from the Altai Mountains of Russia, with key to species. *Zootaxa*. 4410(2): 201–250. DOI: 10.11646/zootaxa.4410.2.1

Sorokina V.S. 2022. New taxonomic notes on the genus *Coenosia* Meigen (Diptera: Muscidae), with the description of four new species from North-East Russia and the Altai Mountains. *Annales de la Société entomologique de France (N.S.).* 58(1): 43–62. DOI: 10.1080/00379271.2022.2027270

Sorokina V.S. 2023. A key to the Russian species of the genus *Coenosia* Meigen (Diptera, Muscidae), with the description of one new species and new synonymies. *Zootaxa*. 5389(1): 79–107. DOI: 10.11646/zootaxa.5389.1.4

Stein P. 1900. Einige neue Anthomyiden. *Entomologische Nachrichten Berlin.* 26: 305–324.

Stein P. 1916. Die Anthomyiden Europas. Tabellen zur Bestimmung der Gattungen und aller mir bekannten Arten, nebst mehr oder weniger ausführlichen Beschreibungen. *Archiv für Naturgeschichte. Abteilung A.* 1915. 81(10): 1–224.

Vikhrev N.E. 2012. Notes on taxonomy of *Lispe* Latreille (Diptera: Muscidae). *Russian Entomological Journal*. 21(1): 107–112.

Vikhrev N.E. 2015a. Review of the world fauna of the genus *Azelia* (Diptera, Muscidae). *Amurian Zoological Journal*. 7(1): 33–42. DOI: 10.33910/1999-4079-2015-7-1-33-42

Vikhrev N.E. 2015b. Taxonomic notes on *Lispe* (Diptera, Muscidae), parts 10–12. *Amurian Zoological Journal*. 7(3): 228–247. DOI: 10.33910/1999-4079-2015-7-3-228-247

Vikhrev N.E. 2023. Review of the *Hydrotaea meteorica* group (Diptera, Muscidae). *Amurian Zoological Journal*. 15(4): 838–846. DOI: 10.33910/2686-9519-2023-15-4-838-846

Vikhrev N.E., Erofeeva E.A. 2018. Review of the *Phaonia pallida* group (Diptera: Muscidae). *Russian Entomological Journal*. 27(3): 315–322. DOI: 10.15298/rusentj.27.3.14

Vikhrev N.E., Erofeeva E.A. 2023. *Phaonia latipalpis* species group (Diptera, Muscidae): review of fauna of Russia and short notes on faunas of adjacent territories. *Proceedings of the Mordovia State Nature Reserve*. 32: 159–180. DOI: 10.24412/cl-31646-2686-7117-2023-32-159-180

Vikhrev N.E., Sorokina V.S. 2009. Faunistic records of *Thricops* Rondani (Diptera, Muscidae) from Russia with description of two new species. *Euroasian Entomological Journal*. 8: 341–350.

Zinovjev A.G. 1980. On the fauna of Phaonini (Diptera, Muscidae) of Mongolia, I. *In:* Nasekomye Mongolii. Vypusk 7 [Insects of Mongolia. Number 7]. Leningrad: Nauka: 437–444 (in Russian).

Zinovjev A.G. 1994. The genera *Phaonia* Robineau-Desvoidy and *Lophosceles* Ringdahl (Diptera, Muscidae) from the Caucasus Mountains. *Dipterological Research*. 5(1): 79–84.

Received / Поступила: 6.03.2024
Accepted / Принята: 5.09.2024
Published online / Опубликована онлайн: 9.10.2024