



## New records of hoverflies (Diptera, Syrphidae) from the Republic of Georgia based on materials collected by the Polish expedition in the fall of 1963

Robert ŻÓRALSKI

Norwida 9, 84-240 Reda, Poland; e-mail: robert@insects.pl; <https://orcid.org/0000-0001-6017-2144>

**Abstract:** The paper lists 44 syrphid species (Diptera, Syrphidae) collected by R. Bańkowska during her expedition to western Georgia in the fall of 1963, with remarks on taxonomy and distribution. Two species, *Riponnensia morini* Vujić, 1999 and *Eumerus consimilis* Šimić et Vujić, 1996 are reported from the Republic of Georgia for the first time. Two species endemic to the eastern shores of the Black Sea were found among the examined material: *Merodon caucasicus* Portschinsky, 1877 and *Neoascia subannexa* Claussen et Hayat, 1997. Notes on seasonal dynamic, sex and trophic structures of the autumn Georgian Syrphidae are provided.

**Key words:** Flower flies, Bańkowska, Tbilisi, Batumi, faunistics

### INTRODUCTION

The Republic of Georgia is one of the few countries with a well-developed checklist of Syrphidae (Diptera) species. It was created on the basis of intensive field research carried out in 2001 and 2018 during the summer months, and a critical analysis of all previous literature by Mengual et al. (2020). As concluded in that publication, the flower fly fauna of the Republic of Georgia is characterised by high biodiversity and similarity to the fauna of Central Europe, with an admixture of species endemic to Transcaucasia and a few occurring also in Turkey and Iran. Also, a study of Syrphidae conducted in early spring 2018 (Żóralski & Bystrowski 2021), in which 42 species were found, including 3 new ones for that country, emphasised the high similarity of the fauna of the Republic of Georgia and Poland. However, the state of knowledge of hoverflies of that country is still incomplete. Firstly, many species known from the old Soviet literature have not been confirmed with new records, and secondly, there are no results of studies carried out in the fall.

In order to contribute to a better knowledge of the Georgian hoverflies, previously undetermined and unpublished materials from the Museum and Institute of Zoology of the Polish Academy of Sciences in Warsaw, Poland (MIZ collection), caught by R. Bańkowska during an expedition in the fall of 1963, have been examined. Professor Regina Bańkowska-Pisarska (1930–2017) was a Polish dipterologist, who worked on systematics, faunistics and zoology of a few Diptera families, namely: Syrphidae, Conopidae, Stratiomyidae, Pipunculidae, Pyrgotidae and Dolichopodidae. In addition to a high interest on the dipteran fauna of Poland, resulting in many faunistic publications, she worked also on flies collected during foreign scientific expeditions of other Polish entomologists of the MIZ PAS in Warsaw and of the Institute of Systematics and Evolution of Animals of the Polish Academy of Sciences in Cracow, performed during the 20th century. As a result of her studies, multiple publications contributed to the knowledge of Diptera of Romania (Bańkowska 1961, 1965), Bulgaria (Bańkowska 1967a, b), Afghanistan (Bańkowska 1968a), Mongolia (Bańkowska 1968b, 1968c, 1968d, 2000a), Belarus (Bańkowska 1995), North Korea (Bańkowska 1997, 1998, 1999b), China (Bańkowska 1999a),

Vietnam (Bańkowska 2000b) and Japan (Bańkowska 2000c). This publication is also a continuation of her efforts.

#### MATERIAL AND METHODS

The Diptera material from the western part of the Republic of Georgia, examined in this study, was collected in 1963 and deposited in the MIZ collection (one drawer), without doing identification of specimens by genre, nor was it organized within the drawer. Under each specimen pinned on an entomological pin, two labels were present: “leg” with the collector's name, R. Bańkowska in each case, date and place of capture; “tech” with the number and year of receipt of a whole collection by the Museum. Such preparation of the material enabled future research.

In 2021, the mentioned material was studied and specimens of the Syrphidae family carefully identified, with using the private comparative collection of hoverflies of author. Individual determination labels were attached, and data from “leg” labels wrote down and are included in the present paper.

More difficult species were verified with literature and analysed in the context of the current state of knowledge about them in the Palaearctic. In the case of the genera *Chrysotoxum*, *Eumerus*, *Merodon*, *Neoascia* and *Riponnensia*, respective descriptive works and identification keys were used. Remarks in the results section of this paper were prepared, with citing used literature, for all species that are currently the subject of taxonomic discussions, species endemic to Transcaucasia, and species whose known distribution range changes as a result of the present study. In the results, species are listed by subfamilies and in subfamilies alphabetically by species name. Division of Syrphidae into subfamilies follows Mengual et al. (2015).

Figures 1–8 of the species *Eumerus consimilis* Šimić et Vujić, 1996 were made by hand by redrawing individual parts of the body from photos taken with a photo camera and a binocular microscope. All photos were taken on dry structures and in reflected light. Terms “anterior surstyle lobe” and “posterior surstyle lobe” describing parts of male genitalia characteristic of the genera *Merodon* and *Eumerus* follow those employed by Hurkmans (1993).

#### RESULTS

The examined material of Syrphidae from the Republic of Georgia comprises 475 specimens belonging to 44 species. According to specimen labels, sampling happened between 27 September and 23 November of 1963 in the botanical gardens of Tbilisi and Batumi, and also in some parts of the Georgian Lesser Caucasus.

Family: Syrphidae Latreille, 1802

Subfamily: Syrphinae Leach, 1815

Genus: *Baccha* Fabricius, 1805

#### *Baccha elongata* (Fabricius, 1775)

**Material.** Borjomi, 3 Oct 1963, 1 ♀; Batumi, 30 Oct 1963, 10 ♂♂, 1 ♀, 2 intersex specimens; Batumi, Botanical Garden, 4 Nov 1963, 3 ♂♂, 1 ♀, 5 Nov 1963, 2 ♂♂, 3 ♀♀, 6 Nov 1963, 1 ♂; Suchumi, 12 Nov 1963, 1 ♀; Nowy Aton, 19 Nov 1963, 1 ♀.

**Remarks.** The material included two intersex specimens of *Baccha elongata*, with a characteristic atypical narrowing of the forehead, an intermediate between the male and female

shape of the abdomen and a dark colour of the body. Both have vestigial, slightly sclerotized, but differently deformed terminals. Such specimens are rarely found and are known to the author in a few genera of flower flies, e.g.: *Platycheirus*, *Xanthandrus*, *Melangyna*, *Dasysyrphus*, *Neosascia*. The first time they were found in the genus *Baccha*.

Genus: *Chrysotoxum* Meigen, 1803

### *Chrysotoxum elegans* Loew, 1841

**Material.** Tbilisi, Botanical Garden, 1 Oct 1963, 1 ♀, 10 Oct 1963, 1 ♀.

**Remarks.** *Chrysotoxum* is a genus of hoverflies which, due to the large number of morphologically similar species has always caused great taxonomic difficulties. Based on the current state of knowledge, the species *Chrysotoxum elegans* is distinguished from the most similar species on the basis of how the yellow bands on its abdomen reach the lateral margin of the tergites – in typical *Chrysotoxum elegans* specimens, both the yellow bands and the black background of the abdomen reach the edges of the abdomen, causing the side edge line of successive tergites be part black and part yellow. For comparison, in a pair of species *C. festivum* Linnaeus, 1758 and *C. tomentosum* Giglio-Tos, 1890, yellow bands on their abdomen never reach the lateral margin of tergites (Nedeljković et al. 2013), and in another pair, *C. octomaculatum* Curtis, 1837 and *C. persicum* Vujić, Nedeljković et Hayat, 2017, they are so intense that the lateral edge of the tergite forms a continuous yellow stripe (Vujić et al. 2017). A species that has almost the same shape of the bands near the lateral margins of the abdomen as *C. elegans* is *C. verralli* Collin, 1940, however, they cannot be confused with each other due to the different shape and curvature of the yellow bands on the second abdominal tergite: in *C. verralli* anterior margin of that yellow band is almost flat, in *C. elegans* is bent from the middle towards lateral margin of the tergite.

A noticeable variation in the intensity of the yellow colours on the abdomen occurs in the species *C. elegans*, i.e. the form "latilimbatum" is known (Coe 1953, Peck 1988), in which the yellow hind margins of tergites 3 and 4 are intensely and broadly yellow, at least as broad as yellow bands. The analysed specimens belong to this colour form of *C. elegans*.

### *Chrysotoxum intermedium* Meigen, 1822

**Material.** Tbilisi, Botanical Garden, 1 Oct 1963, 1 ♀, 10 Oct 1963, 1 ♀; Tbilisi, David Mountain, 27 Oct 1963, 2 ♀♀.

**Remarks.** Since the revision of the typical material of Giglio-Tos (Sommaggio 2001), the authors recognise the existence of two similar species, for which the name "intermedium" has been used so far. In the mentioned work it was proposed that the larger species with the arista protruding beyond the third segment of antennae and having the very long hairs on the mesonotum and scutellum to be called *Chrysotoxum lessonae* Giglio-Tos, 1890, and the smaller species, having a proportionally narrower third segment of antennae, with the arista not protruding above its tip, and shorter (sometimes very short) mesonotal and scutellar hairs, to be named *Chrysotoxum intermedium*. The legitimacy of using the name "intermedium" in relation to a smaller species must still be confirmed by the revision of the material typical of *Chrysotoxum intermedium* of Meigen, and until the existing taxonomic problem is solved, it is advisable that the authors of new articles mention which of these two species they use the name "intermedium" for.

The specimens from the Republic of Georgia analysed in this study and also those from the eastern part of the country previously published by the author (Żóralski & Bystrowski 2021) refer to the smaller species *Chrysotoxum intermedium* sensu Sommaggio (2001), a species with Mediterranean range of occurrence, and currently no better name.

Genus: *Dasysyrphus* Enderlein, 1838

***Dasysyrphus albostriatus* (Fallén, 1817)**

**Material.** Batumi, 30 Oct 1963, 1 ♀; Batumi, Botanical Garden, 5 Nov 1963, 1 ♀.

***Dasysyrphus tricinctus* (Fallén, 1817)**

**Material.** Batumi, Botanical Garden, 5 Nov 1963, 1 ♀.

Genus: *Epistrophe* Walker, 1852

***Epistrophe grossulariae* (Meigen, 1822)**

**Material.** Suchumi, 11 Nov 1963, 1 ♀.

Genus: *Episyrphus* Matsumura et Adachi, 1917

***Episyrphus balteatus* (De Geer, 1776)**

**Material.** Bakuriani, 4 Oct 1963, 1 ♂; Batumi, 30 Oct 1963, 1 ♂; Batumi, Botanical Garden, 4 Nov 1963, 1 ♂, 1 ♀, 5 Nov 1963, 1 ♂; Suchumi, 12 Nov 1963, 2 ♂♂, 19-23 Nov 1963, 1 ♂.

Genus: *Eupeodes* Osten Sacken, 1877

***Eupeodes corollae* (Fabricius, 1794)**

**Material.** Tbilisi, Botanical Garden, 1 Oct 1963, 1 ♂, 1 ♀; Borjomi, 3 Oct 1963, 1 ♀; Tbilisi, David Mountain, 27 Oct 1963, 1 ♂, 1 ♀; Batumi, Botanical Garden, 4 Nov 1963, 1 ♂, 5 Nov 1963, 1 ♀; Suchumi, 11 Nov 1963, 1 ♀, 18 Nov 1963, 1 ♀.

***Eupeodes luniger* (Meigen, 1822)**

**Material.** Tbilisi, 28 Sep 1963, 1 ♀; Tbilisi, Botanical Garden, 1 Oct 1963, 5 ♀♀; Tbilisi, David Mountain, 27 Oct 1963, 1 ♂, 2 ♀♀; Batumi, Botanical Garden, 5 Nov 1963, 1 ♀.

Genus: *Lapposyrphus* Dušek & Láska, 1967

***Lapposyrphus lapponicus* (Zetterstedt, 1838)**

**Material.** Bakuriani, 4 Oct 1963, 1 ♀.

Genus: *Melanostoma* Schiner, 1860

***Melanostoma mellinum* (Linnaeus, 1758)**

**Material.** Tbilisi, 28 Sep 1963, 3 ♀♀; Bakuriani, 4 Oct 1963, 1 ♂, 4 ♀♀. Tbilisi, Botanical Garden, 10 Oct 1963, 1 ♀; Batumi, Botanical Garden, 6 Nov 1963, 1 ♀.

***Melanostoma scalare* (Fabricius, 1794)**

**Material.** Batumi, Botanical Garden, 4 Nov 1963, 5 ♀♀, 5 Nov 1963, 1 ♀, 6 Nov 1963, 3 ♀♀; Suchumi, 12 Nov 1963, 3 ♀♀.

Genus: *Meliscaeva* Frey, 1946

***Meliscaeva auricollis* (Meigen, 1822)**

**Material.** Tbilisi, David Mountain, 27 Oct 1963, 1 ♂; Batumi, Botanical Garden, 4 Nov 1963, 2 ♀♀, 5 Nov 1963, 1 ♂, 5 ♀♀; Suchumi, 12 Nov 1963, 1 ♀.

***Meliscaeva cinctella* (Zetterstedt, 1843)**

**Material.** Batumi, 30 Oct 1963, 1 ♀.

Genus: *Platycheirus* Le Peletier et Serville, 1828

***Platycheirus albimanus* (Fabricius, 1781)**

**Material.** Bakuriani, 4 Oct 1963, 1 ♀; Batumi, Botanical Garden, 4 Nov 1963, 2 ♀♀, 6 Nov 1963, 1 ♀; Suchumi, 18 Nov 1963, 1 ♀, 19-23 Nov 1963, 1 ♀.

Genus: *Scaeva* Fabricius, 1805

***Scaeva pyrastris* (Linnaeus, 1758)**

**Material.** Bakuriani, 4 Oct 1963, 1 ♀.

***Scaeva selenitica* (Meigen, 1822)**

**Material.** Tbilisi, David Mountain, 27 Oct 1963, 1 ♀.

Genus: *Sphaerophoria* Le Peletier et Serville, 1828

***Sphaerophoria scripta* (Linnaeus, 1758)**

**Material.** Tbilisi, 28 Sep 1963, 1 ♀; Tbilisi, Botanical Garden, 10 Oct 1963, 1 ♀; Batumi, Botanical Garden, 5 Nov 1963, 1 ♂, 2 ♀♀, 6 Nov 1963, 1 ♀.

Genus: *Syrphus* Fabricius, 1775

***Syrphus ribesii* (Linnaeus, 1758)**

**Material.** Botjomi, 3 Oct 1963, 1 ♀; Batumi, Botanical Garden, 4 Nov 1963, 2 ♀♀, 5 Nov 1963, 1 ♀; Suchumi, 19-23 Nov 1963, 1 ♀.

***Syrphus torvus* Osten Sacken, 1875**

**Material.** Suchumi, 11 Nov 1963, 1 ♀, 12 Nov 1963, 1 ♀, 19-23 Nov 1963, 3 ♀♀.

***Syrphus vitripennis* Meigen, 1822**

**Material.** Tbilisi, Botanical Garden, 1 Oct 1963, 1 ♀, 10 Oct 1963, 1 ♀.

Genus: *Xanthandrus* Verrall, 1901

***Xanthandrus comtus* (Harris, 1780)**

**Material.** Suchumi, 11 Nov 1963, 1 ♀, 12 Nov 1963, 1 ♂.

Subfamily: *Eristalinae* Newman, 1834

Genus: *Cheilosia* Meigen, 1822

***Cheilosia canicularis* (Panzer, 1801)**

**Material.** Batumi, Botanical Garden, 4 Nov 1963, 2 ♀♀, 5 Nov 1963, 1 ♀, 6 Nov 1963, 3 ♀♀.

***Cheilosia vernalis* (Fallén, 1817)**

**Material.** Batumi, 30 Oct 1963, 1 ♀; Batumi, Botanical Garden, 5 Nov 2021, 1 ♂, 6 Nov 1963, 1 ♂, 1 ♀.

Genus: *Eristalinus* Rondani, 1845

***Eristalinus aeneus* (Scopoli, 1763)**

**Material.** Tbilisi, 27 Sep 1963, 1 ♀, 28 Sep 1963, 2 ♀♀; Tbilisi, Botanical Garden, 1 Oct 1963, 3 ♀♀; Tbilisi, David Mountain, 27 Oct 1963, 1 ♀.

***Eristalinus megacephalus* (Rossi, 1794)**

**Material.** Batumi, Botanical Garden, 6 Nov 1963, 1 ♂, 1 ♀.

***Eristalinus sepulchralis* (Linnaeus, 1758)**

**Material.** Tbilisi, Botanical Garden, 1 Oct 1963, 1 ♂, 1 ♀.

Genus: *Eristalis* Latreille, 1804

***Eristalis arbustorum* (Linnaeus, 1758)**

**Material.** Tbilisi, 28 Sep 1963, 2 ♂♂, 7 ♀♀; Tbilisi, Botanical Garden, 1 Oct 1963, 5 ♂♂, 19 ♀♀, 10 Oct 1963, 1 ♀; Borjomi, 3 Oct 1963, 1 ♂; Bakuriani, 4 Oct 1963, 6 ♂♂, 1 ♀; Sioni, 8 Oct 1963, 2 ♀♀; Tbilisi, David Mountain, 27 Oct 1963, 1 ♂, 2 ♀♀; Batumi, 30 Oct 1963, 1 ♀; Batumi, Botanical Garden, 4 Nov 1963, 4 ♂♂, 3 ♀♀, 5 Nov 1963, 5 ♂♂, 3 ♀♀, 6 Nov 1963, 9 ♂♂, 25 ♀♀; Suchumi, 12 Nov 1963, 1 ♂.

***Eristalis pertinax* (Scopoli, 1763)**

**Material.** Borjomi, 3 Oct 1963, 1 ♀; Bakuriani, 4 Oct 1963, 4 ♀♀; Batumi, Botanical Garden, 5 Nov 1963, 1 ♀; Suchumi, 11 Nov 1963, 1 ♂, 5 ♀♀, 19-23 Nov 1963, 8 ♀♀.

*Eristalis similis* (Fallén, 1817)

**Material.** Bakuriani, 4 Oct 1963, 1 ♀.

*Eristalis tenax* (Linnaeus, 1758)

**Material.** Tbilisi, 28 Sep 1963, 3 ♂♂, 2 ♀♀; Tbilisi, Botanical Garden, 1 Oct 1963, 4 ♂♂, 3 ♀♀, 10 Oct 1963, 1 ♂; Borjomi, 3 Oct 1963, 6 ♂♂, 1 ♀; Bakuriani, 4 Oct 1963, 4 ♂♂, 2 ♀♀; Tbilisi, David Mountain, 27 Oct 1963, 2 ♂♂, 2 ♀♀; Batumi, 30 Oct 1963, 3 ♂♂, 3 ♀♀; Batumi, Botanical Garden, 4 Nov 1963, 5 ♂♂, 1 ♀, 5 Nov 1963, 12 ♂♂, 12 ♀♀, 6 Nov 1963, 7 ♂♂, 6 ♀♀; Suchumi, 11 Nov 1963, 1 ♀, 12 Nov 1963, 3 ♀♀, 19-23 Nov 1963, 1 ♂, 1 ♀.

Genus: *Eumerus* Meigen, 1822

*Eumerus consimilis* Šimić et Vujić, 1996

(Figs 1–8)

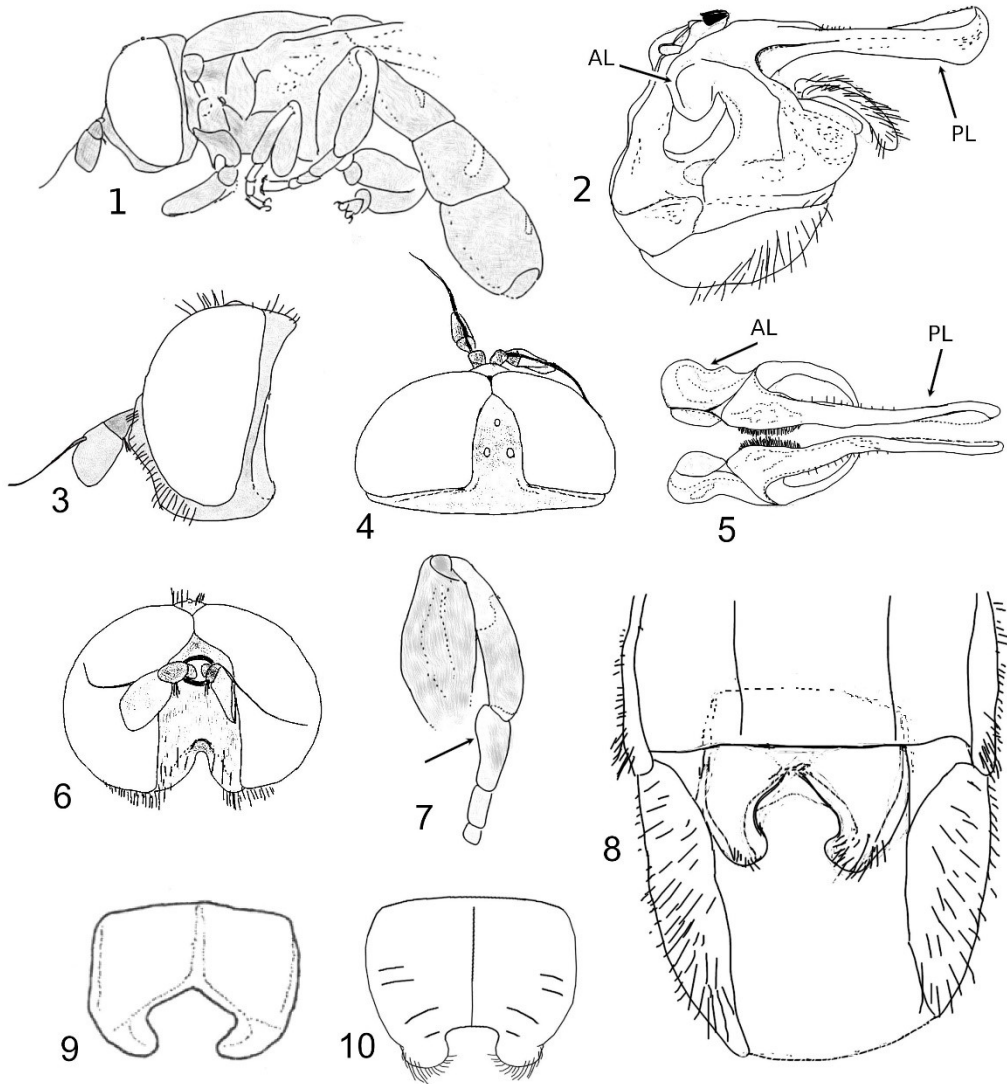
**Material.** Tbilisi, Botanical Garden, 1 Oct 1963, 1 ♂.

**Remarks.** A very rare species, so far found in the southern regions of Europe. Known from Croatia (Šimić & Vujić 1996), France (Speight & Sarthou 2006), Italy: Sardinia (Birtele 2011), Portugal (Eck 2011), Spain (Ricarte et al. 2013), Greece (Grković et al. 2015) and Serbia (Vujić et al. 2018).

The male specimen collected in Tbilisi belongs to the *strigatus*-group (sensu Speight et al. 2013) and its external features match to the descriptive features of *E. consimilis* by Šimić & Vujić (1996), including: eyes covered with sparse short white hairs; pregenital segments with white hairs only; a pair of greyish dusted lunulate maculae on the tergite 4 being exceptionally less visible than those on the tergites 2 and 3 (Fig. 1). It also has hind basitarsus with much pronounced “heel”, when observed from the side of the basitarsus (Fig. 7), a feature supplemented for *E. consimilis* by Speight et al. (2021). Most informative feature in *strigatus*-group of *Eumerus*, however, is the shape and proportions of incision of the abdominal sternite 4 of males, in which the posterior surstyle lobes partially hide. These are related parts of the body, so naturally, the longer the posterior surstyle lobe (depending on the species), the deeper the incision. In the case of *E. consimilis*, the incision has a “diamond-like” shape and the entire abdominal 4th sternite is wider than it is longer (Fig. 9, after Šimić & Vujić (1996)). Shape of the sternite 4 of the analysed specimen from the Republic of Georgia is identical (Fig. 8), with a note that large part of it is hidden under the sternite 3. To increase the certainty, it was additionally compared with the respective structure (Fig. 10, after Grković et al. 2017) of the paratype of the most similar species *Eumerus montanum* Grković, Radenković et Vujić, 2017 (also with the colour photos of that structure provided by A. Grković) and when it was confirmed that they are much different, any potential association of the analysed specimen with *E. montanum* was excluded.

Genitalia of the studied specimen (Figs 2 & 5) show high similarity, but are not identical comparing to the original, lower quality figure of *E. consimilis* by Šimić & Vujić (1996). It is known, that in the *strigatus*-group, the posterior surstyle lobes, tend to be poorly sclerotized, what lend themselves to some inconsistency of representation in figures among authors (Speight et al. 2021). Indeed, when trying to map such delicate three-dimensional structures into one drawing, one needs to be especially careful, because each time figures are made from a slightly different angle or with body parts differently positioned along the main axis of the microscope, additional distortion in the size and relative proportions has a chance to appear. A compilation of figures done by various authors for several species in this group of *Eumerus* (Fig. 43 in Speight

et al. 2021) reflects the mentioned challenges. A potential revision of the taxonomic status of species in the *strigatus*-group is beyond the scope of the present faunistic work.



Figs 1–8. *Eumerus consimilis* from the Republic of Georgia, male: 1 – habitus, side view, 2 – genitalia, side view, 3 – head, side view, 4 – head, dorsal view, 5 – epandrium, dorsal view, 6 – head, frontal view, 7 – hind leg with “heel”, side view, 8 – abdomen, ventral view on 4th sternite. Fig. 9. *Eumerus consimilis* from Croatia (after Šimić & Vujić 1996), male, 4th abdominal sternite. Fig. 10. *Eumerus montanum* (after Grković et al. 2017), male, 4th abdominal sternite. Abbreviations: AL – anterior surstyle lobe, PL – posterior surstyle lobe.

***Eumerus flavitarsis* Zetterstedt, 1843**

**Material.** Batumi, Botanical Garden, 6 Nov 1963, 1 ♂.



Genus: *Helophilus* Meigen, 1822

***Helophilus pendulus* (Linnaeus, 1758)**

**Material.** Tbilisi, Botanical Garden, 1 Oct 1963, 1 ♀.

***Helophilus trivittatus* (Fabricius, 1805)**

**Material.** Batumi, Botanical Garden, 5 Nov 1963, 1 ♂, 1 ♀, 6 Nov 1963, 1 ♂, 1 ♀.

Genus: *Merodon* Meigen, 1803

***Merodon caucasicus* Portschnsky, 1877**

*Merodon batumicus* Paramonov, 1926

**Material.** Batumi, Botanical Garden, 5 Nov 1963, 1 ♀.

**Remarks.** A species endemic to western Georgia, found till now only on the eastern coast of the Black Sea and southern slopes of the Caucasus. The specimen of the *constans*-group, found in Batumi was determined to the species level as *M. caucasicus* using the key by Vujić et al. (2020).

Genus: *Myathropa* Rondani, 1845

***Myathropa florea* (Linnaeus, 1758)**

**Material.** Tbilisi, 28 Sep 1963, 1 ♀; Tbilisi, Botanical Garden, 1 Oct 1963, 1 ♀; Tbilisi, David Mountain, 27 Oct 1963, 1 ♀; Batumi, Botanical Garden, 4 Nov 1963, 1 ♀, 5 Nov 1963, 2 ♂♂, 3 ♀♀; Suchumi, 11 Nov 1963, 1 ♀, 19-23 Nov 1963, 1 ♀.

Genus: *Neoascia* Williston, 1886

***Neoascia podagrica* (Fabricius, 1775)**

**Material.** Batumi, Botanical Garden, 4 Nov 1963, 1 ♀, 5 Nov 1963, 1 ♂, 1 ♀.

***Neoascia subannexa* Claussen et Hayat, 1997**

**Material.** Batumi, 30 Oct 1963, 1 ♀; Batumi, Botanical Garden, 4 Nov 1963, 1 ♀, 5 Nov 1963, 12 ♂♂, 1 ♀, 6 Nov 1963, 2 ♂♂.

**Remarks.** A species endemic to areas located on the south-eastern shores of the Black Sea. Found so far in Turkey (Claussen & Hayat 1997) and the Republic of Georgia (Mengual et al. 2020) only. Seems to be not rare in the western part of the country.

Genus: *Riponnensia* Maibach, Goeldlin et Speight, 1994

***Riponnensia morini* Vujić, 1999**

**Material.** Bakuriani, 4 Oct 1963, 1 ♂; Batumi, Botanical Garden, 6 Nov 1963, 2 ♀♀.

**Remarks.** A rare species, known only from Serbia, Montenegro (Vujić 1999), Greece (Standfuss & Claussen 2007) and Macedonia (Krpac et al. 2011), recently discovered also locally (in a large number) in Cyprus (Steenis et al. 2019). The distribution range of this species, believed originally to be endemic to Balkan Peninsula, is now known to reach much further east.

Three specimens collected in the Republic of Georgia were identified using a key of Vujić (1999). Male specimen has superior lobes of hypandrium asymmetric and branched, bearing two branches (as in Figs 46, 48 in Vujić 1999).

Genus: *Rhingia* Scopoli, 1763

***Rhingia rostrata* (Linnaeus, 1758)**

**Material.** Borjomi, 3 Oct 1963, 1 ♂; Batumi, 30 Oct 1963, 1 ♂, 3 ♀♀; Batumi, Botanical Garden, 4 Nov 1963, 1 ♂, 2 ♀♀, 5 Nov 1963, 1 ♀, 6 Nov 1963, 2 ♂♂, 3 ♀♀; Suchumi, 11 Nov 1963, 1 ♀, 12 Nov 1963, 3 ♀♀, 19-23 Nov 1963, 1 ♂.

Genus: *Syritta* Le Peletier et Serville, 1828

***Syritta pipiens* (Linnaeus, 1758)**

**Material.** Tbilisi, 28 Sep 1963, 13 ♂♂, 3 ♀♀, 15 Oct 1963, 1 ♂; Tbilisi, Botanical Garden, 1 Oct 1963, 6 ♂♂, 4 ♀♀, 10 Oct 1963, 2 ♂♂, 1 ♀; Borjomi, 3 Oct 1963, 1 ♂; Bakuriani, 4 Oct 1963, 2 ♂♂; Batumi, 30 Oct 1963, 1 ♂, 1 ♀; Batumi, Botanical Garden, 4 Nov 1963, 1 ♂, 5 Nov 1963, 2 ♂♂, 3 ♀♀, 6 Nov 1963, 1 ♂, 5 ♀♀; Suchumi, 11 Nov 1963, 1 ♂.

Genus: *Volucella* Geoffroy, 1762

***Volucella zonaria* (Poda, 1761)**

**Material.** Batumi, Botanical Garden, 5 Nov 1963, 1 ♀.

Genus: *Xylota* Meigen, 1822

***Xylota segnis* (Linnaeus, 1758)**

**Material.** Tbilisi, 28 Sep 1963, 1 ♂; Batumi, 30 Oct 1963, 1 ♂, 1 ♀; Batumi, Botanical Garden, 4 Nov 1963, 1 ♂, 5 Nov 1963, 4 ♂♂, 1 ♀, 6 Nov 1963, 3 ♂♂, 1 ♀; Suchumi, 11 Nov 1963, 1 ♂.

DISCUSSION

The studied material includes 44 Syrphidae species belonging to two subfamilies: Syrphinae (22 species), and Eristalinae (22 species). Species of the Pipizinae and Microdontinae subfamilies have not been shown so late in autumn. The most abundant turned out to be such species: *Eristalis arbustorum* – 98 specimens, *Eristalis tenax* – 85, *Syritta pipiens* – 48, *Baccha elongata* – 26, *Eristalis pertinax* – 20, *Rhingia rostrata* – 19 and *Neoascia subannexa* – 18.

Two species have not been recorded in the Republic of Georgia previously: *Riponnensia morini* and *Eumerus consimilis*. In both cases, these new records extend range of these species much further eastward than previously known. Species analysed in this study generally have a wide range of occurrence in the Palaearctic, with the exception of the mentioned *R. morini* and two species endemic to the eastern shores of the Black Sea: *Merodon caucasicus* and *Neoascia subannexa*.

The seasonal dynamics of hoverflies in the analysed autumn period is interesting. 32 species were found in October and 32 species in November, which in each of these months constitutes approx. 8% of the known fauna of Syrphidae in that country and, probably, the vast majority of

species that can be found at this time of the year. For comparison, two intensive year-round studies of hoverflies in northern Poland revealed the presence of 71–109 species (18–27% of Polish fauna) in each of May–August, 41–51 species (10–13%) in September, 10–18 species (2.5–4.5%) in October, and only 0–8 species (below 2%) in November (Żóralski & Kowalczyk 2017). The number of species occurring in both countries is similar (approx. 400), while the growing season in the Republic of Georgia, compared to Poland, is significantly extended in time due to the different latitude. This situation favors the emergence of convenient additional niches in the second half of the year for the flight of some species known in Europe for their spring–summer phenology, i.e. *Eumerus*, *Merodon*, *Neoascia* and *Riponnensia*.

The sex structure of the examined hoverflies in this study shows a significant advantage of females (283 individuals, 59.6%) over males (190 individuals, 40%). The material included two intersex specimens of *Baccha elongata*.

The trophic structure of larvae of the identified species is as follows: zoophages (50%, 22 species), aquatic saprophages (30%, 13 species), phytophages (11%, 5 species), terrestrial saprophages, coprophages and commensals of Aculeata (9%, 4 species). It is a structure characteristic of the autumn period, i.e. with a reduced share of broadly understood terrestrial saprophages and phytophages as the imago flight of most species from these trophic groups takes place in spring and summer.

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#### STRESZCZENIE

### [Nowe stwierdzenia bzygowatych (Diptera, Syrphidae) z Gruzji na podstawie materiałów zebranych podczas polskiej ekspedycji jesienią 1963 roku]

Gruzja jest jednym z nielicznych krajów, które posiadają dobrze opracowaną listę gatunków bzygowatych (Diptera, Syrphidae), choć stan poznania tych muchówek jest wciąż niepełny. Część gatunków znanych z dawnej literatury nie udało się wspólnie w Gruzji potwierdzić oraz brak jest wyników badań z okresu jesiennego. Aby wypełnić tę lukę, opracowano niepublikowane materiały z Gruzji zebrane przez R. Bańkowską jesienią 1963 roku i zdeponowane w Muzeum i Instytucie Zoologii Polskiej Akademii Nauk (MIZ). Na podstawie informacji z etykiet, zbiór materiału miał miejsce pomiędzy 27 września a 23 listopada w ogrodach botanicznych w Tbilisi i Batumi, a także w niektórych częściach gruzińskiego Małego Kaukazu.

Prof. Regina Bańkowska-Pisarska (1930–2017) zajmowała się systematyką, faunistyką i zoologią kilku rodzin muchówek: Syrphidae, Conopidae, Stratiomyidae, Pipunculidae, Pyrgotidae i Dolichopodidae. W trakcie pracy naukowej prowadziła badania własne na terenie Polski, jak również oznaczała muchówki zebrane podczas zagranicznych wypraw naukowych polskich entomologów, głównie z Instytutu Zoologii PAN w Warszawie. W konsekwencji przyczyniła się do lepszego poznania muchówek Polski, Rumunii, Bułgarii, Afganistanu, Mongolii, Białorusi, Korei Północnej, Chin, Wietnamu i Japonii.

Opracowany w 2021 roku materiał, obejmujący 475 okazów, pozwolił na potwierdzenie obecności 44 gatunków bzygowatych, w tym dwóch gatunków w Gruzji dotąd nienotowanych: *Riponnensia morini* Vujić, 1999 i *Eumerus consimilis* Šimić et Vujić, 1996. Gatunki stwierdzone w trakcie badania mają szeroki zasięg występowania w Palearktyce, z wyjątkiem wymienionego *R. morini* oraz dwóch gatunków endemicznych dla wschodnich wybrzeży Morza Czarnego: *Merodon caucasicus* Portschinsky, 1877 oraz *Neoascia subannexa* Claussen et Hayat, 1997.

W wyniku analizy materiału, zaprezentowano uwagi na temat dynamiki sezonowej bzygowatych w Gruzji, strukturę płci imagines oraz strukturę troficzną larw stwierdzonych gatunków. Gatunki będące obecnie obiektem dyskusji taksonomicznych, gatunki endemiczne oraz te, których znany zasięg występowania zmienia się wyniku publikacji niniejszej pracy zostały opatrzone w wynikach indywidualnym komentarzem.

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