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New and interesting records of Diptera (Brachycera: Empididae, Micropezidae, Rhinophoridae, Sarcophagidae) from Bulgaria.

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INTRODUCTION & AIM

The order Diptera is one of the most diverse insect orders in the world, possibly ranking second or third in terms of estimated species diversity. For this reason, it requires significant time investment by multiple specialized people in order to be studied even within one geographic area, with many new taxa being reported or described throughout the decades. This is also the case with Bulgaria, where the systematized and extensive catalog by Hubenov (2021) highlights the need for further research, creating a good baseline for future studies. The authors were able to catch or photograph multiple fly species new to the fauna of Bulgaria from multiple families, four of which are treated here.

METHOD

Materials were collected via hand or insect nets, stored in 70-80% ethanol and examined under Bresser Advance ICD stereomicroscopes. *In situ* photos of *Rainieria calceata* and *Melanophora roralis* were taken using Canon EOS 1200D with Canon EF 100mm f/2.8L Macro IS USM lens.

RESULTS & DISCUSSION

Empididae Latreille, 1804

***Rhamphomyia anfractuosa* Bezzi, 1904**

(Fig. 1)

Material examined. 1 ♂, Kyustendil distr., Shegava Gorge, N 42.3942°, E 22.7183°, 04 Nov 2024, S. Indzhov leg. (Fig. 5).

Micropezidae Loew, 1861

***Rainieria calceata* (Fallen, 1820)**

(Fig. 2)

Material examined. 1 ex., Vidin distr., Vinarovo Village, N 44.0988°, E 22.8127°, 05 Jun 2023, T. Tsvetanov leg. ((Fig. 5).

Fig. 1. *Rhamphomyia anfractuosa,* ♂. Left: habitus, lateral view; top right: wings; bottom right, terminalia, left-hand side.

Fig. 2. *Rainieria calceata*, photo Tsvetomir Tsvetanov.

Rhinophoridae Robineau-Desvoidy, 1863

***Melanophora roralis* (Linnaeus, 1758)**

Fig. 3.

Material examined. 1 ♀, Vidin distr., Vinarovo Village, N 44.0988°, E 22.8127°, 05 Jun 2023, photo T. Tsvetanov. 1 ♀, Sofia, Park of National Arts Gallery, N 42.6963°, E 23.3286°, 23 Aug 2023, S. Indzhov leg. (Fig. 5).

Sarcophagidae Macquart, 1834

***Sarcophaga belanovskyi* Verves, 1973**

(Fig. 4)

Material examined. 1 ♂, Sofia, Ruski Pametnik Square, N 42.6948°, E 23.3090°, 04 Apr 2022; 1 ♂, Sofia, Central Railway Station, N 42.7105°, E 23.3196°, 06 Sep 2022, S. Indzhov leg. (Fig. 5).

***Sarcophaga schusteri* Lehrer, 1959**

(Fig. 4)

Material examined. 1 ♂, Vitosha Mts, Momina skala Hut, N 42.6231°, E 23.2509°, 16 Jul 2022; 1 ♂, Vitosha Mts, Kumata Hut, N 42.5899°, E 23.2520°, 6 Aug 2023; 1 ♂, Chepan Mts, Petrovski krast Peak, N 42.9472°, E 22.956°, 01 May 2025, S. Indzhov leg. (Fig. 5).

Fig. 3. *Melanophora roralis,* ♀, photo Tsvetomir Tsvetanov.

Fig. 4. *Sarcophaga schusteri,* ♂ genitalia, top left. *Sarcophaga belanovskyi,* ♂ genitalia, bottom right.

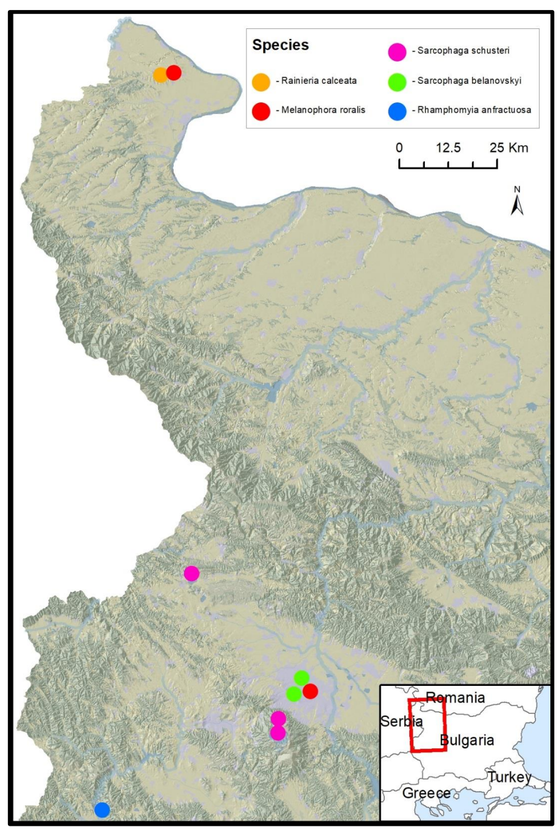

Fig. 5 Map of the observation locations (W/NW Bulgaria).

All of the herein treated species are new to the fauna of Bulgaria. From the hyper-diverse family Empididae *Rhamphomyia anfractuosa* Bezzi, 1904 is the newly recorded representative. One male was collected in November 2024 from the region of Kyustendil (SW Bulgaria). This species has very elaborate genitalia even compared to other genus members, with a coiled aedeagus. The family Micropezidae is represented by *Rainieria calceata* (Fallén, 1820), which was photographed and collected in the region of Vidin (NW Bulgaria). From Rhinophoridae, *Melanophora roralis* (Linnaeus, 1758) was observed in the region of Vidin and collected in the region of Sofia, where it is common in urban parks and green areas, possibly where its isopod hosts are also abundant. It is surprising how this widespread species was hitherto overlooked. From the family Sarcophagidae, confirmed for the fauna of Bulgaria are *Sarcophaga belanovskyi* (Verves, 1973) and *Sarcophaga schusteri* Lehrer, 1959.

The former species was collected twice in the city of Sofia in 2022. It may have been previously reported under the name *S. ancilla* Rondani, 1865, but currently Whitmore (2011) considers them to be separate species. The latter species has been collected a few times from different parts of Vitosha Mts in 2022 and 2023, in the coniferous and lower subalpine zone, in clearings, and once at the very summit of Chepan Mts., Western Bulgaria, in a steppe-like grassland. Its taxonomic situation is not fully clear, as it is similar to other montane taxa from the Alps. This species is likely not synonymous with *Sarcophaga subvicina* Rohdendorf, 1937, as compared to material of *S. subvicina* from Czechia and Slovakia. Povolny and Verves (1990) express suspicion about the older records of the latter species in Bulgaria.

CONCLUSION

The order Diptera remains understudied in Bulgaria, despite recent studies. The new contributions highlight the presence of both faunistic and even taxonomic white spots, which require extensive future studies.

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