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The third record of the hangingfly *Bittacus hageni* on the Balkans with notes on Bulgarian scorpionflies (Mecoptera: Bitacidae, Panorpidae)

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INTRODUCTION & AIM

The scorpionflies (Mecoptera) represent a small insect order, comprising three families in Europe: Bittacidae, Boreidae, and Panorpidae. Bittacidae contains only two rare species in Europe. The first one, *Bittacus italicus* (Müller, 1766), is considered extinct in Bulgaria, because it has not been recorded after 1980 according to the Bulgarian Red List, and only has three Balkan records after 1950 according to Devetak et al. (2022). *Bittacus hageni* Brauer, 1860 is quite rare on the territory of the Balkan Peninsula, with only two recent records, both in the northwest (Croatia and Bosnia & Herzegovina, respectively). Our record from Burgas district, Rezovo Village (SE Bulgaria) is the first one from Bulgaria and the third one for the Balkans.

Of the family Panorpidae, there are eight species so far reported from Bulgaria (one of which with two subspecies), all in the genus *Panorpa*. *Panorpa alpina* Rambur, 1842 is one of the rarer species, with only one report from Bulgaria without exact locality. The present report confirms the first exact locations for *P. alpina* in the country.

The aim of the present study is to update the knowledge on the Balkan distribution of the two aforementioned rare Mecoptera species, with newly collected material.

METHOD

Materials were collected via hand or insect nets, stored in 70-80% ethanol and examined under Bresser Advance ICD stereomicroscopes. Photos were taken either using smartphone cameras, or, in case of the dry photo of *Panorpa alpina*, using a Canon EOS 200D with a Sigma 105 mm macro lens.

RESULTS & DISCUSSION

Bittacidae Handlirsch, 1906
***Bittacus hageni* Brauer, 1860**
(Fig. 1)
Material examined. BULGARIA: 1♀, South Black Sea Coast, Rezovo Village, N 41.9852°, E 28.0282°, 03 Jul 2024, on a wall, V. Vassilev leg. (Fig. 3).

Fig. 1. *Bittacus hageni*, female individual. Top left, photo *in situ*. Top right, preserved habitus, ventral view. Bottom, wings, detail.

Panorpidae Latreille, 1802
***Panorpa alpina* Rambur, 1842**
(Fig. 2)
Material examined. BULGARIA: 1 ♂, Vitosha Mts, Momina skala Hut, N 42.6231°, E 23.2509°, 05 Jun 2022, beech forest undergrowth, S. Indzhov leg., 1 ♀, 16 May 2024, S. Indzhov leg.; 1 ♀, Vitosha Mts, Belite brezi Hut, N 42.6189°, E 23.2279°, 10 Jun 2023, beech forest undergrowth, S. Indzhov leg.; 2 ♂♂, Vitosha Mts, Zlatnite mostove Place, N 42.6055° , E 23.2427°, 29 May 2024, mixed forest undergrowth, S. Indzhov leg. (Fig. 3).

Fig. 2. *Panorpa alpina*, male individual. Top left, habitus, lateral view. Top right, habitus, dorsal view. Bottom left, wings, left-hand side. Bottom right, genital capsule, caudal view.

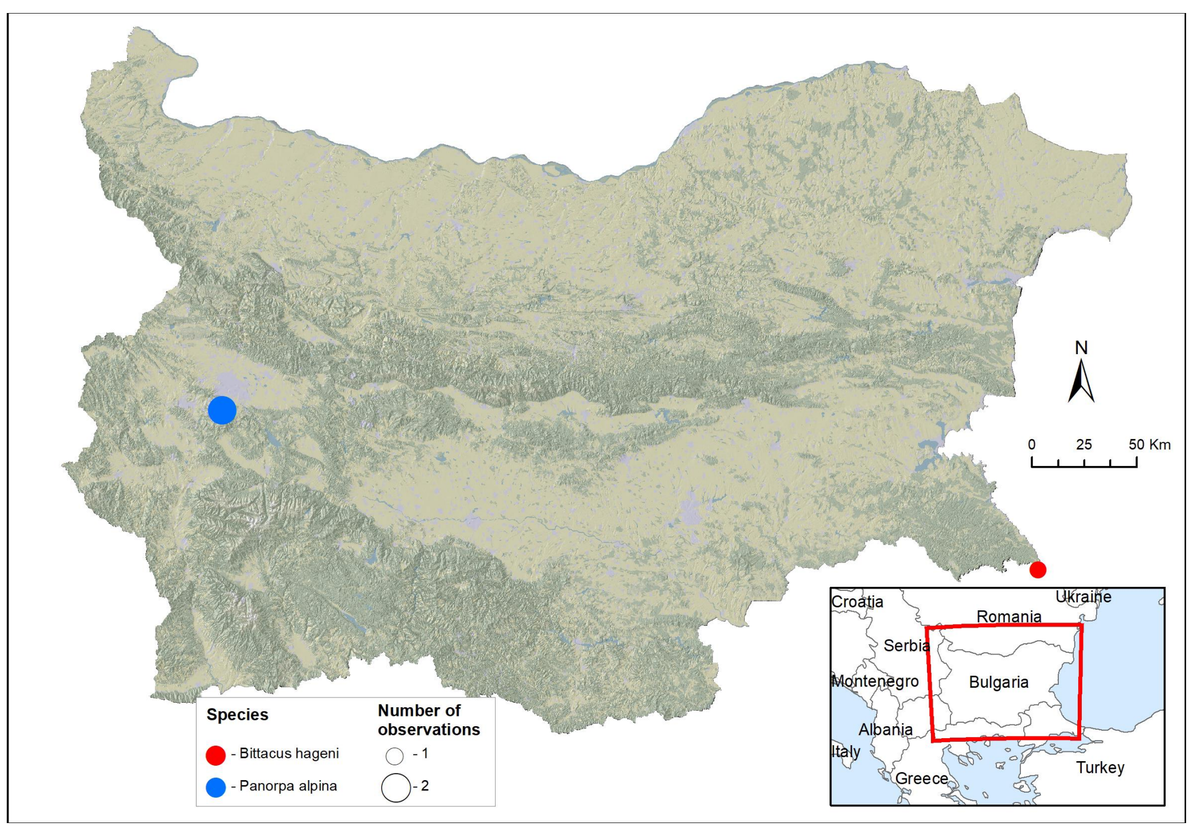

Fig. 3. Distribution of *Bittacus hageni and Panorpa alpina* in Bulgaria.

Discussion.

Our record of *Bittacus hageni* from Burgas district, Rezovo Village (SE Bulgaria) is the first one from Bulgaria, the third one for the Balkans, and the southeasternmost one. This considerably expands its known range and highlights the need for surveying this rare genus in the periphery of its range.

The family Panorpidae contains three widespread species in Bulgaria – *P. germanica* Linnaeus, 1758, *P. hybrida* MacLachlan, 1882 and *P. vulgaris* Imhoff & Labram, 1845. As for *Panorpa alpina*, the present poster reports it in several closely situated localities in Vitosha Mts (subalpine zone and beech belt). It is a notoriously variable species which made previous authors describe multiple species, most of which have been synonymized since. The structure of the Balkan populations has been poorly studied, with Lauterbach (1972) describing one „species“ under the name of *P. plitvicensis*. The Bulgarian individuals do not conform to this morphotype.

CONCLUSION

Despite their size, low species diversity, active lifestyle and abundance in certain biotopes, some Mecopterans are still poorly studied in many areas of their distributions. They still harbor uncertainty concerning their distribution, conservation status, and, occasionally, their taxonomy. For this reason, it is important to continue surveying them systematically across their respective species ranges.

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