

Contributions to the distribution of European Bittacidae (Mecoptera): New records of *Bittacus italicus* and *B. hageni* in Central and South- eastern Europe

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ABSTRACT: New distributional data are presented for the two European hangingfly species *Bittacus italicus* and *B. hageni*, based on examined specimens from Albania, Austria, Hungary, North Macedonia, and Romania. *B. hageni* is reported from North Macedonia for the first time. In addition, we provide an updated distribution map incorporating verified observations from the citizen-science platforms iNaturalist.org and izeltlabuak.hu.

Introduction

Only two hangingfly species of *Bittacus* Latreille, 1805 (Mecoptera: Bittacidae) are known from Europe: *Bittacus italicus* (Müller, 1766) and *Bittacus hageni* Brauer, 1860. Although both are large and conspicuous species, they have very few records. *Bittacus italicus* is considered rare, while *B. hageni* is a very rare throughout their wide distribution range (TILLIER 2008, DEVETAK *et al.* 2022, SAVITSKY & TIMOKHOV 2021). The rarer *Bittacus hageni* has recently been rediscovered in Austria, including its type locality (DOSTAL 2023), and in Saxony, Germany (HAHN *et al.* 2021) and it has also been first recorded from the Netherlands (DRUKKER *et al.* 2022), Croatia (DEVETAK *et al.* 2022), Bosnia and Herzegovina (KULIJER & WILLMANN 2024), and Bulgaria (NAUMOVA *et al.* 2025). *Bittacus italicus* have been reported from several European countries, including the Balkans (DEVETAK *et al.* 2022).

In this study, we present several new records of the two *Bittacus* species from Albania, Austria, Hungary, North Macedonia, and Romania, based on examined material. Additionally, we generated a distribution map incorporating observations from the online platforms iNaturalist.org and izeltlabuak.hu, covering the Balkan region as well as Austria, Hungary, and Romania (Fig. 1).

Material and methods

The preserved specimens have been stored in 70% ethanol, and are deposited in the Private Collection of L.-P. Kolcsár, Ditrău, Romania (CKLP), in the Mátra Museum of the Hungarian Natural History Museum, Gyöngyös, Hungary (MM) and in the Mecoptera Collection of the Babeş-Bolyai University, Cluj-Napoca, Romania (UBBMC). Observations of *Bittacus* species from the citizen-science platforms iNaturalist.org and izeltlabuak.hu were compiled and verified as of 02.12.2025, and duplicate records uploaded to both platforms were filtered out for the map.

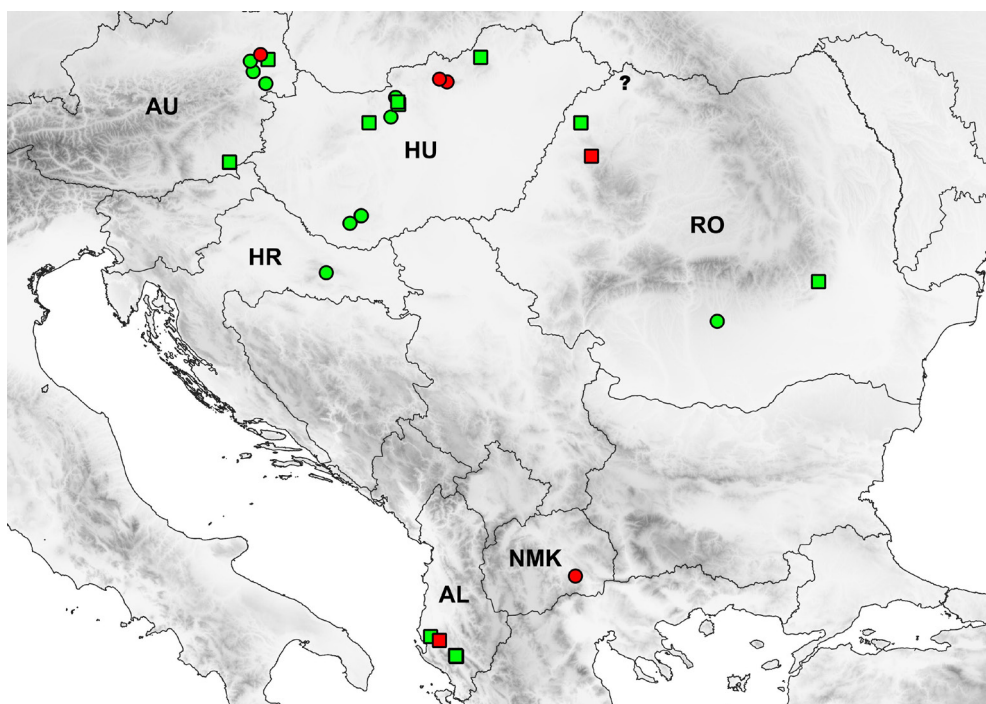


Fig. 1. Collecting sites and observations from iNaturalist.org and izeltlabuak.hu. Circles = *Bittacus hageni* Brauer, 1860; squares = *B. italicus* (Müller, 1766) (red = studied specimens; green = iNATURALIST.ORG (2025a, b), IZELTLABUAK.HU (2025) and personal observations); ? = observation of an unidentified *Bittacus* sp. Country codes: AL = Albania, AU = Austria, HR = Croatia, HU = Hungary, NMK = North Macedonia, RO = Romania

Results

Bittacus hageni Brauer, 1860

Material studied. **Austria**, Vienna, Danube Island, Tritonwasser, 160 m, 48.21396°N, 16.42984°E, 07.08.2014, leg. W. Graf, 1♂, 1♀ (CKLP). – **Hungary**, Mátra, Károlytáró, Toka-patak, 460 m, 47.877381°N, 19.86508°E, 11.08.2023, leg. M. Kárpáti, 1♂, 1♀ (UBBMC); Mátra, Pásztó, Péter-völgy, 200 m, 47.911389°N, 19.727011°E, 14.07.2024, leg. M. Kárpáti, 1♂, 1♀ (UBBMC). – **North Macedonia**, Vardar, Demir Kapija, along the Bošava River and its softwood gallery southwest of the city, 125 m, 41.4023°N, 22.232217°E, 25.06.2014, leg. P. Juhász, T. Kovács, D. Murányi, 1♂, 1♀ (CKLP) 2♂ (MM).

Observations.

iNATURALIST.ORG (2025a): **Austria**, Vienna, Kalksburg, 48.13312°N, 16.24136°E, 22.07.2022, L. Timaeus; Burgenland, Eisenstadt, Hartl Lucke, 47.85606°N, 16.52646°E, 03.08.2024, “ottowf” (no real name given); Baden, Traiskirchen, Wienersdorf, Schwechat River, 48.00389°N, 16.29424°E, 06.07.2025, M. A. Prinz. – **Croatia**, Velika, Radovanci,

45.46318°N, 17.64046°E, 01.08.2025, M. Doboš. – **Hungary**, Pest county, Pilisborosjenő, Téglagyár, 47.59764°N, 18.97447°E, 10.07.2023, G. Keresztes; Baranya county, Mecsek, Komló, 46.19439°N, 18.28516°E, 12.07.2024, N. Rahmé; Pest county, Csobánka, Dera-szurdok, 47.68465°N, 18.91921°E, 19.07.2024, G. Keresztes. – **Romania**, Argeş, Hînteşti, Mo-soaia, 44.83111°N, 24.84508°E, 19.07.2025, R. Teodoreanu.

IZELTLABUAK.HU (2025): **Hungary**, Baranya county, Mecsek, Komló, 46.19425°N, 18.28058°E, 11.07.2020, B. Horváth, Z. Nagy; 02.08.2020, B. Horváth, R. Futó, 4 specimens; Pest county, Pilisborosjenő, Téglagyár, 47.59778°N, 18.97456°E, 13.08.2020, G. Keresztes; Pest county, Biatorbágy, Ürgehegy, 47.44093°N, 18.83122°E, 26.08.2023, Á. Horváth; Baranya county, Mecsek, Bakonya, Bakonya forester's lodge, 46.09820°N, 18.07696°E, 25.06.2025, T. Zvedovics.

Comments: First record from North Macedonia, the specimens were collected from bushes along the Bošava River (Fig. 2a). Only a few records are known from the Balkan region and most of them are recent (DEVETAK *et al.* 2022, KULIJER & WILLMANN 2024, NAUMOVA *et al.* 2025).

In Austria, DOSTAL (2023) recently reported the species from its type locality, “Niederösterreich: Waschberg bei Stockerau”, and from the Lobau Floodplain, Vienna. The male and female specimens reported here were collected in 2014 in the central part of Danube Island (Donauinsel), Vienna – named “Tritonwasser” area. Danube Island was constructed between 1972 and 1988, and the Tritonwasser wetland was created between 1989 and 1990 (CHOVANEC 1994). The presence of the species in this artificial habitat suggests that it may have colonized the area from the nearby Lobau Floodplain, relative recently.

In the Hungarian literature this species was only mentioned from the Transdanubia area (Western Hungary), our locations seemingly represent previously undiscovered populations (ÁBRAHÁM 2000). The specimens (Fig. 3) near Károlytáró, where collected from a young hornbeam forest with dense grass (*Melica* sp.) undergrowth, growing on a recultivated mine dumpsite next to the Toka-patak. The location near Pásztó is a narrow, humid brook valley, with willow trees (*Salix alba*) and a more diverse undergrowth dominated by stinging nettle (*Urtica dioica*) and umbellifer species (Fig. 2b).

Bittacus italicus (Müller, 1766)

Material studied. **Albania**, Poçem, Vjosa River, 40 m, 40.50672°N, 19.72575°E, 14.06.2014, leg. W. Graf, 1♂ (CKLP). – **Romania**, Şuncuiuş, Crişul Repede, 290 m, 46.950442°N, 22.526946°E, 05.07.2023, leg. M. Kárpáti, 1♂ (UBBMC).

Observations.

iNATURALIST.ORG (2025b): **Albania**, Gjirokaštër, Tepelenë, Vjosa River, 40.28162°N, 20.03982°E, 18.06.2019, G. Kunz; 02.06.2021, L. Zangl; 17.06.2025, A. Jordan; Vlorë, Vjosa River, 40.56017°N, 19.56278°E, 31.05.2021, L. Zangl. – **Austria**, Feldbach municipality, Poppendorf, 46.87356°N, 15.85594°E, 04.09.2017, J. Schmid; 17.07.2018, J. Schmid; 18.07.2018, J. Schmid; 22.08.2019, J. Schmid; 22.07.2020, J. Schmid; 10.08.2020, J. Schmid; 16.08.2020, J. Schmid; 22.08.2020, J. Schmid; 29.08.2020, J. Schmid; 13.08.2021, J. Schmid; 16.07.2025, J. Schmid, 2 specimens; 17.08.2025, J. Schmid, 2 specimens; Vienna, Lobau, 48.15427°N, 16.56610°E, 03.07.2023, “drosophila” (no real name given). – **Hungary**, Borsod-Abaúj-Zemplén county, Bükk, Dédestapolcsány, 48.18045°N, 20.48501°E,

21.07.2010, G. Keresztes; Pest county, Csobánka, 47.62889°N, 18.95907°E, 26.09.2023, G. Keresztes; Pest county, Pilisborosjenő, Téglagyár, 47.59764°N, 18.97454°E, 30.06.2024, G. Keresztes; 08.07.2024, G. Keresztes, 3 specimens; Fejér county, Csákvár, 47.36995°N, 18.42919°E, 16.07.2024, A. Ambrus, L. Pribéli. – **Romania**, Buzău, Scortoasa, tourist center, 45.34713°N, 26.71043°E, 29.06.2025, “sipajz” (no real name given).



Fig. 2. Habitat of the collecting sites of *Bittacus hageni* Brauer, 1860. a = near Demir Kapija, North Macedonia (photo: D. Murányi); b = near Pásztó, Hungary (photo: M. Kárpáti)



Fig. 3. *Bittacus hageni* Brauer, 1860 male from Károlytáró, Hungary (photo: M. Kárpáti)

Comments: The species is reported from most of the Balkan countries, except Montenegro (DEVETAK *et al.* 2022). In Albania the species is reported from Shkodër (DEVETAK 1991), Tepelenë and Beshisht based on iNaturalist observations (DEVETAK *et al.* 2022). The studied specimen and the iNaturalist observations are both along the Vjosa River, together with other iNaturalist observations published by DEVETAK *et al.* (2022).

An additional record is published here from Șuncuiuș (Romania), where one specimen was collected on a campground's lawn on the bank of the Crișul Repede River. The species was also observed by the second author in a young dry oak forest near Marghita (47.3686°N, 22.3325°E), Romania, in July 2012; however, no voucher specimens were preserved. This observation supports earlier claims in literature, that as opposed to *B. hageni*, *B. italicus* can occur in less humid habitats as well (AUBIN 2025).

A *Bittacus* species was also observed in several places near Turulung Vii (47.914°N, 23.144°E) in early July 2012, but it remains uncertain whether these individuals were *B. italicus* or *B. hageni*. Nevertheless, given the rarity of both species, this observation is considered noteworthy.

Conclusions

We present previously unpublished faunistic records of the two European hangingfly species, *B. hageni* and *B. italicus* from six countries, based on 12 examined specimens and observations obtained from two online citizen science platforms. A distribution map is provided and notes on the habitats of the respective collection sites are given. *B. hageni* is reported from North Macedonia for the first time. In total, 10 specimens of *B. hageni* and two male specimens of *B. italicus* were examined. The Albanian and Romanian *B. italicus* specimens were both collected from open areas near rivers, and additional individuals were observed in a dry oak forest. In contrast, all examined specimens of *B. hageni* are from dense riparian vegetation, in humid areas adjacent to flowing waters. These findings are consistent with previous literature data regarding their ecology, placing *B. hageni* primarily near bodies of water and *B. italicus* in forests and open habitats (DEVETAK 2022, AUBIN 2025). There are still many unanswered questions about these species, however the last two decades' research efforts have substantially improved our understanding of their distribution and ecological preferences (DEVETAK 2022, DRUKKER *et al.* 2022, AUBIN 2025).

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