

***Isometopus mirificus*, the first representative of the subfamily Isometopinae (Hemiptera: Heteroptera: Miridae) recorded from Slovakia**

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Abstract. The first record of *Isometopus mirificus* Mulsant et Rey, 1879 (Hemiptera: Heteroptera: Miridae: Isometopinae: Isometopini) from Slovakia is presented. This record also represents the first Slovak record of a member of the subfamily Isometopinae. *I. mirificus* is a rare northern Mediterranean species living on the bark of deciduous trees, but its biology is poorly known. Our record fits into the context of other known records in neighbouring countries. It seems that *I. mirificus* is native to Slovakia, although it is overlooked and difficult to find.

Key words: plant bugs, jumping tree bug, *Isometopus mirificus*, faunistics, Beckovské Skalice.

Introduction

The subfamily Isometopinae is an autapomorphic subfamily of the family Miridae, which differs from its other subfamilies especially by the presence of paired ocelli (ocelli absent in all other known subfamilies of the Miridae) (e.g. Herczek 1993; Cassis & Schuh 2012; Namyatova & Cassis 2016; Schuh & Weirauch 2020; Tszakowski et al. 2023). The subfamily contains 266 known recent species worldwide distributed in Afro-tropical, Australasian, Indomalayan, Nearctic, Neotropical and Palearctic zoogeographical regions (Tszakowski et al. 2023). Only five recent species in two genera are known in Europe, and only two species and one genus (i.e., *Isometopus* Fieber, 1860) are known in Central Europe – *Isometopus intrusus* (Herrich-Schaeffer, 1835) and *I. mirificus* Mulsant et Rey, 1879 (see Kerzhner & Josifov 1999). The biology of most representatives of the subfamily is very poorly known, and their specimens are also relatively rare in entomological collections (e.g. Eyles 1971; Namyatova & Cassis 2016; Tszakowski et al. 2023).

Isometopus mirificus (Figs 1–2) is a northern Mediterranean species with poorly known biology. It often occurs on the bark of deciduous trees (e.g. *Juglans* spp., *Quercus pubescens*, *Pyrus* spp.) (Péricart 1965, Rietschel 2000, Simon 2002, Wachmann et al. 2004, Protić 2008). The nymphs are observed from May to July, and adults from June to August/September (females live longer) (Wachmann et al. 2004). The species is known from Austria, Bulgaria, Czech Republic (Moravia), France, Germany, Greece, Hungary, Italy, Romania, Serbia, Asian Turkey and Ukraine (Kerzhner & Josifov

1999, Rietschel 2000, Simon 2002, Wachmann et al. 2004, Kondorosy 2005, Protić 2008, Aukema et al. 2013, Kment et al. 2013, Frieß et al. 2021, Aukema 2024). In this paper, we provide the first record of *I. mirificus* and the subfamily Isometopinae from Slovakia.



Figs 1-2. *Isometopus mirificus* – an adult female (feeding on unidentified food) photographed on the bark of a deciduous tree in Beckovské Skalice Nature Reserve (photo: V. Ruček).

Material and methods

Photographs of the individual (Figs 1–2) were taken using a Nikon 105mm f/2.8G AF-S IF-ED VR Micro lens attached to a Nikon D7200 camera. The map of the nearest known records of the species (Fig. 3) was created using a QGIS 3.28.2-Firenze software and Google Terrain layer. The code of the Central European mapping grid (Ehrendorfer & Hamann 1965) follows Novák (1989).

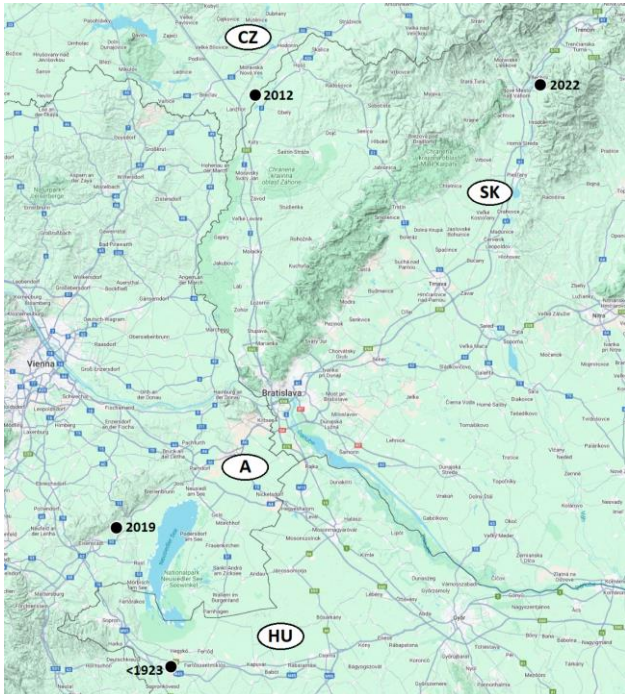


Figure 3. A map of records of *Isometopus mirificus* in Slovakia and neighbouring countries (Czech Republic, Austria, Hungary) marked with black dots supplemented by years of records (created using a QGIS software and Google Terrain layer). Abbreviations: A – Austria, CZ – Czech Republic, HU – Hungary, SK – Slovakia.

Results

***Isometopus mirificus* Mulsant et Rey, 1879** (Figs 1–2)

Material examined. SLOVAKIA: Trenčiansky kraj County: Beckov, Beckovské Skalice Nature Reserve, on the bark of an unidentified deciduous tree (7273a; 48°46'24.8"N 17°53'50.4"E), 21.VII.2022, 1 female, feeding on unidentified food, photographed by V. Ruček.

Discussion

The nearest known records of *I. mirificus* come from the Czech Republic (Rýnava near Tvrdonice in south-eastern Moravia) (Kment et al. 2013), Austria (Schützen am Gebirge in Burgenland) (Frieß et al. 2021) and from Hungary (Pinnye in Győr-Moson-Sopron county) (Horváth 1923).

The record from the Rýnava location near Tvrdonice (Moravia) lies only 0.5 km away from the Slovak border and ca. 64 km from our locality in Beckovské Skalice (see Fig. 3).

The record from Schützen am Gebirge in Austria is distanced ca. 140 km away from our locality (and ca. 38 km from the Slovak border) and the record from Pinnye in Hungary is distanced ca. 156 km (and ca. 54 km from the Slovak border) (see Fig. 3).

The records from Burgenland (Austria) and Hungary come from the vast surrounding of the Neusiedler See Lake and therefore is possible to assume that the species can be present also in further localities in this area. In Austria, the species is known also from Styria (Leutschach) (Frieß et al. 2021). Further known European records are also very scarce and distanced from each other (see Introduction).

We assume that such situations when the species is very rarely collected in only a few or single specimens at different distanced localities can be caused by the lack of knowledge about its biology and habitat requirements and/or by the survival of the species in small isolated refugia at probably low abundance.

Relatively similar cases are also presented by other species of European Heteroptera, e.g. *Dybowskyia reticulata* (Dallas, 1851) (Pentatomidae) (Hemala & Rindoš 2018, Fleury et al. 2023) or *Aradus (Aradus) serbicus* (Horváth, 1888) (Aradidae) (Heiss 2006, Morkel 2010, Aukema et al. 2013). Due to the presence of old as well as recent records of *I. mirificus* in Europe, it is possible to assume that the species is native also to Central Europe, including Slovakia, and it is only overlooked due to the lack of information about its hidden way of life.

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