

First record of *Neria cibaria* (Linnaeus, 1761) (Diptera: Micropezidae) in Türkiye

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Abstract: *Neria cibaria* (Linnaeus, 1761) is a micropezid fly species distributed in the western part of the Palaearctic Region in areas where the habitat is suitable, such as moist woodlands, streams and rivers. The species was recorded, for the first time in Türkiye, from two different provinces, Bartın and Sakarya, located on the Black Sea coast of Türkiye. Originally this fly was photographed without collection and identified from the photographs taken. Afterwards, five specimens were collected in the same areas and identified under a stereo microscope using relevant literature. These records represent a new southeasternmost distribution limit of *N. cibaria* in the Palaearctic Region.

Keywords: Diptera fauna of Türkiye, faunistic records, micropezid fly, taxonomy

Introduction

Micropezidae is a Diptera family with a cosmopolitan distribution, mainly in tropical regions. It comprises nearly 700 species currently defined within 50 genera under five subfamilies, including Calobatinae, Calycopteryginae, Eurybatinae, Micropezinae and Taeniapterinae (McAlpine 1975; Marshall 2012; Nartshuk et al. 2021). Micropezid flies often live in moist habitats, especially near streams and rivers (Ozerov 2008; Hagenlund & Kvifte 2015).

Members of the family Micropezidae are characterized by their slender bodies, long and thin legs, and narrow wings (Ozerov 2008). The body length of species within this family generally ranges from 3 to 17 mm. They lack ocellar and interfrontal setae and vibrissa. Fronto-orbital setae present (1-3) but small, or absent. The dorsal surface of the third antennal segment, known as the postpedicel, bears a bare or pubescent arista, a significant feature for species identification (von Tschirnhaus 2008; Ozerov 2008). The wing structure includes an uninterrupted costal vein and a distinct subcostal vein. Additionally, the convergent R_{4+5} and M veins at the distal end of wing and the absence of setae on the R_1 vein are characteristic features of these flies (Ozerov 2008). Male abdomen of Micropezidae is often provided with one to several pairs of sternal claspers and female abdomen ends in a conspicuous ovipositor.

This paper aims to report *N. cibaria* for the first time in Türkiye and evaluate this fly's current distribution in the Palaearctic region.

Materials and Methods

Neria cibaria was observed on green herbaceous plants, shrubs, and broad-leaved woody plants in both Bartın (41°34'30.9"N, 32°19'34.7"E; 14.V.2019) and Sakarya (41°04'34.8"N, 30°38'44.0"E; 10.VI.2021) (Fig. 1). Photographs of live specimens observed during fieldwork were taken on the same dates as collection, using a digital compact camera (Powershot SX60, Canon, Tokyo, Japan) (Figs 2, 3). Sampling studies for microscopic verification were conducted in the same river ecosystems in Bartın Province in 2019 and 2020 and Sakarya Province in 2021 and 2022 (Fig. 2). All fly specimens (three males and two females) were identified under a stereo microscope (A23.3645-B2LD Zoom Stereo Microscope, Opto Edu Beijing Co Ltd, China) in light of relevant literature sources (Roháček & Barták 1990; Greve & Nielsen 1991; Li, Liu & Yang 2012). All obtained specimens are deposited in F. Eren's personal collection.

Results

Neria cibaria is a typical representative of the family Micropezidae, characterized by long, slender legs and narrow, elongated wings. The body is dark brown to black, with a body length of approximately 6 mm. The head is rounded with a wide interocular distance. The face lacks bristles, and the cheeks are bare. Antennae are yellowish brown, with a black base to the arista. The thorax is dark brown to black, and the pteropleuron is yellowish brown. Legs are mostly yellowish brown, with faint dark markings on the mid and hind tibiae. Wings are light brown without any distinct bands or spots. The abdomen is shiny and brownish black, with yellowish brown corners on some tergites; first abdominal tergite is distinguished by a small lateral polished area (see Roháček & Barták 1990: fig. 19). The female ovipositor is dark brown and dorsolaterally constricted. Male sternal claspers have a forked internal tip and are of a relatively slender form.

Material examined. TÜRKİYE: Bartın; 41°34'30.9"N, 32°19'34.7"E; 14.V.2019; 3♂; Sakarya; 41°04'34.8"N, 30°38'44.0"E; 10.VI.2021; 2♂; all F. Eren leg.; all specimens pinned and deposited in the collection of F. Eren (Sakarya, Türkiye).



Fig. 1: Distribution map of *Neria cibaria* in Türkiye. The red dots indicate the localities where the species was recorded: Bartın (41°34'30.9"N, 32°19'34.7"E) and Sakarya (41°04'34.8"N, 30°38'44.0"E).



Fig 2: *Neria cibaria* (Linnaeus, 1761), live individuals by the Sakarya River.



Fig. 3: *Neria cibaria* (Linnaeus, 1761), live individuals by the Bartın River.

Discussion

The discovery of a fossil member of the Holarctic subfamily Calobatinae, *Calobata rottensis* (Statz 1940), in Chattian lacustrine deposits places their presence at 25 to 23 million years ago (Mya) in an Oligocene hotspot of Germany's Rott region (O'Brien et al. 2020). Vicariance over the years has given rise to approximately 20 species, some remaining confined to present-day biodiversity hotspot areas such as the Caucasus and Carpathians, while others have dispersed through the western Palaearctic (Ozerov 1987, 1991), then eastward into Oriental regions (Li et al. 2012; Ichige 2018; Kim, Vander-Weele & Lee 2022), and eventually reaching the Nearctic, where further speciation occurred (Merritt & Peterson 1976). The remaining species are either too scarce to determine a clear biogeographic pattern or are more or less widespread throughout Europe.

Although they are capable of dispersal under suitable conditions, the primary factor limiting their distribution is the seasonal drying of their larval habitats. Rather than open water, they prefer decaying vegetable matter in ditches (Barnes 2015). Among the two most widespread species, *Neria cibaria* is less affected by seasonal habitat drying than *Neria commutata*, allowing it to establish colonies at considerable distances from the main metapopulations. These flies are typically observed on broad-leaved herbaceous plants along water edges and in forest clearings on shrubs and herbaceous plants. Adult individuals play a decomposer role in ecosystems, primarily feeding on the remains of small insects (Roháček 2012; Ozerov 2008; Nartshuk et al. 2021).

Neria cibaria has a broad distribution across Europe. It is found in Eastern Europe (Lithuania, Russia, and Ukraine), Central Europe (Austria, the Czech Republic, Hungary, Poland, Slovakia, Switzerland), Western Europe (Belgium, France, and the Netherlands), Northern Europe (Denmark, Sweden, Norway, Finland, and Ireland), and Southern Europe (Andorra, Spain, and Portugal) (Greve & Nielsen 1991; Hagenlund & Kvifte 2015; Roháček et al. 2016). In previous studies, *Neria cibaria* (Linnaeus, 1761) has been referred to under the following synonyms: *Calobata cibaria* (Linnaeus, 1761), *Compsobata cibaria* (Linnaeus, 1758), *Musca cibaria* (Linnaeus, 1761), *Neria cothurnata* (Panzer, 1798) and *Musca cothurnata* (Panzer, 1798). In Türkiye, apart from this study, only *Neria octoannulata* (Strobl, 1899) from the genus *Neria* has been recorded (Stuke 2010).

Neria cibaria belongs to the subfamily Calobatinae that differs from other subfamilies belonging to the Micropezidae by the absence of strong dorsal setae on the mid and hind tibiae, the presence of stronger apical tibial setae, a more even distribution of setae on the katapisternum, and wider abdominal sternites (Lonsdale 2020).

Conclusion

This study is significant as it provides the first records of the family Micropezidae in Türkiye. While previous literature has confirmed the presence of members of this family in the Turkish fauna, *N. cibaria* has been recorded for the first time thanks to this study. This record contributes to the understanding of the biological diversity in the region. Furthermore, the observation of *N. cibaria* in the Black Sea and Marmara regions offers valuable insights into its potential distribution. Considering the ecosystems to which *N. cibaria* is affiliated, it is likely to be found also in the river ecosystems of the Thrace region of Türkiye. Furthermore, based on the geographical areas where the species is distributed (Central and Eastern Europe), it can be inferred that its presence is probable in Bulgaria and neighbouring Balkan countries, where it has not yet been recorded.

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