



***Embolemus ruddii* (Hymenoptera: Embolemidae) a first record from Iran**

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**Abstract**

In this faunistic paper, *Embolemus ruddii* Westwood, 1833 (Hymenoptera: Chrysoidea: Embolemidae) is recorded for the first time from Iran. This is the third Iranian species of the family.

**Introduction**

Embolemidae (Hymenoptera: Chrysoidea) is a cosmopolitan family (Achterberg and Kats, 2000) with 64 extant species worldwide (Olmí *et al.*, 2020), classified in three genera (*Ampulicomorpha* (Ashmead, 1893), *Embolemus* (Westwood, 1833), and *Trogloembolemus* (Olmí *et al.*, 2014) (Belokobylskij, 2017). The fauna of the Palaearctic Embolemidae comprises 10 species in three genera (Belokobylskij, 2017). Hosts of Embolemidae are most likely nymphs of Achilidae and Cixiidae (Hemiptera: Auchenorrhyncha: Fulgoromorpha: Fulgoroidea) (Olmí, 1996 and Varrone and Olmí, 2012).

**Materials and methods**

The specimens were collected by a Malaise trap installed north of Maku, along the bank of the Zangmar River, 39.45°N 44.42°E [West Azerbaijan, Maku (Figure 1)]. The

specimens were identified by M. Olmí (Italy).

**Results and discussion**

*Embolemus ruddii* Westwood, 1833 is newly recorded from Iran. With this new record, the fauna of Iranian Embolemidae is increased to three species: *Ampulicomorpha thauma* Rasnitsyn and Matveev (1989), *Embolemus huberi* Olmí, (1997) and *E. ruddii*.

***Embolemus ruddii* Westwood, 1833**

(Figure 2)

**Material examined:** West Azerbaijan province, Maku, Surik, 2♀, 3.viii.2016, leg. N. Samin.

**Description:** Third antennal segment 1.6-2.2 times as long as the scapus; distance between posterior rim of head and posterior ocellus 1.5-3 times POL (Diameter of posterior ocellus); hind tarsus 0.7-0.8 times as long as hind tibia; first discal cell of fore wing slightly narrowed distad; hind femur weakly convex dorso-basally;

pronotum without lateral transverse carina, in front of tegulae; head less robust in lateral view; eye small and further removed from antennal socket than from occipital carina; head and metasoma yellowish, rarely darkened; head largely smooth dorsally; pronotum without median groove, or obsolescent; pedicellus in dorsal view 1.8-2.0 times longer than wide.

**Distribution:** Olmi (1996) specifies the distribution of the species as follows: Austria, Belgium, China, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Japan, Norway, Russia, Siberia, Slovakia, Spain, Switzerland, Taiwan, and United Kingdom. Specimens have also been collected in The Netherlands (Peeters *et al.*, 2004) and Bulgaria (Ljubomirov *et al.*, 2006).

**Comments:** *E. ruddii* was recorded in Japan by Olmi (1996), and South Korea by Lee and Kim (2010), but the results of the studies of Olmi *et al.* (2014) and Kim and Lee (2016) proved misidentification and so suggested that *E. ruddii* is absent in the mentioned countries.

The presence of *E. ruddii* Iran is surprising, but given the climatic conditions of this region, with mild

winters, not questionable. The biome of temperate broadleaf and mixed forests of the western Palearctic region covers most of the countries where *E. ruddii* has been found. From Central Europe it crosses Turkey and reaches the western part of Iran (biome maps, Wikimedia.org). Although the hills north of Maku are extremely dry, the area banks of Zangmar River are green and contain wetlands that will be suitable for the hosts of *E. ruddii*. Modarres Awal (2012) and Mozaffarian and Wilson (2011) mention no Achilidae from Iran but list several Cixiidae species. These will probably have been the hosts of the collected specimens.

Records of *E. ruddii* from Turkey appear to be absent, although the forested zone along the northern border of Turkey should offer similar habitats as found in Bulgaria and West Azerbaijan province. We suspect that the species will be present in Turkey and the Caucasus region but was not recognized in malaise trap or pitfall trap material. Embolemidae are aculeate wasps, but the females have a misleading, ant-like appearance and males tend to be identified as Braconidae, due to their unusual wing venation. There are just a few Braconidae specialists in Eurasia and they probably do not identify Aculeata.

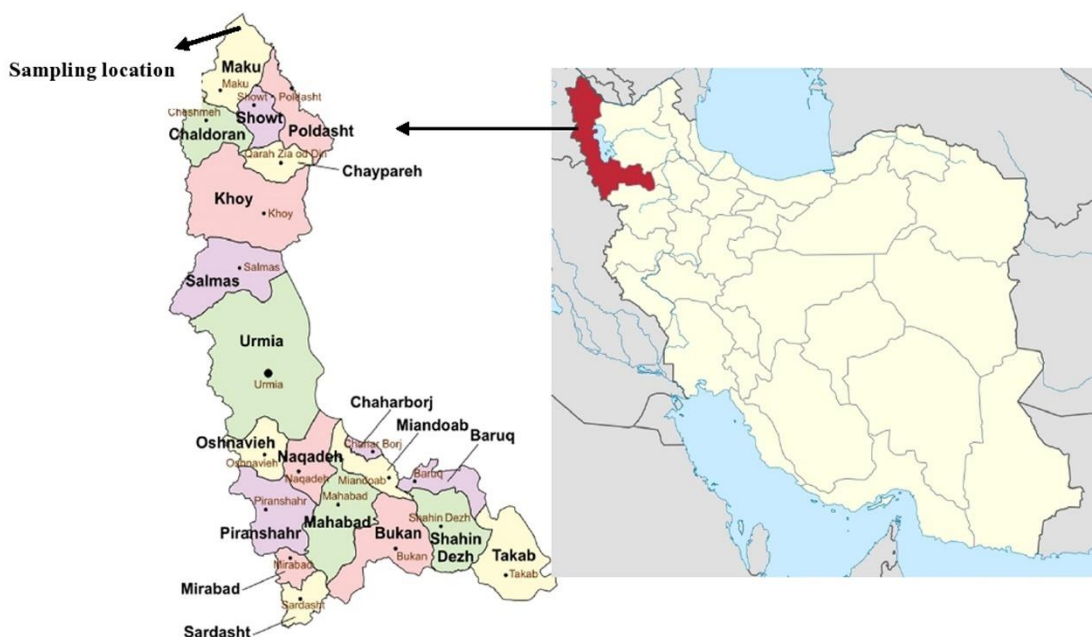


Figure (1): Map of West Azarbaijan province (Northwest of Iran) and the sampling site in Maku.

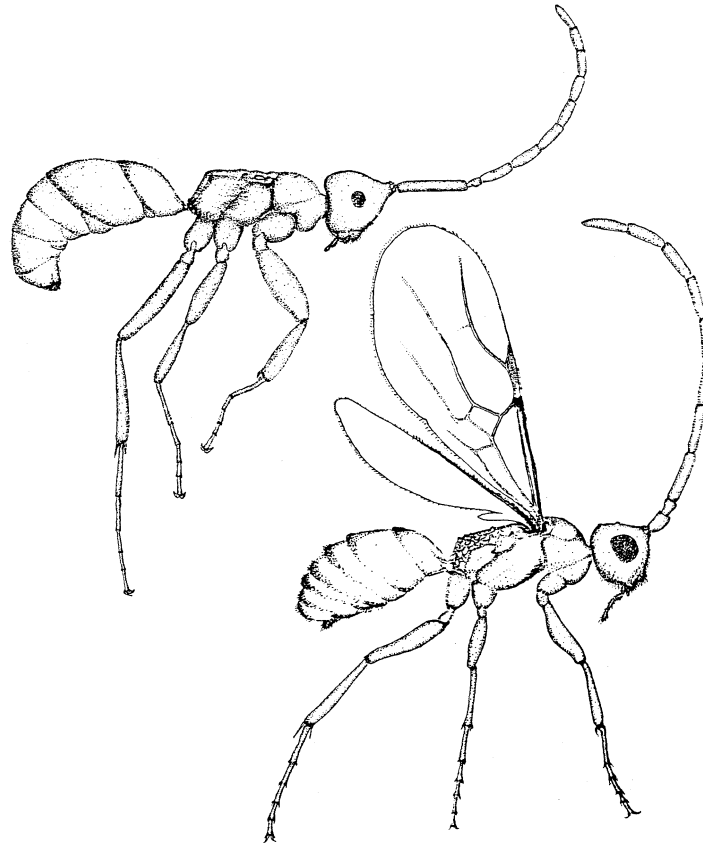


Figure (2): Female and male of *Embolemus ruddii* Westwood, 1833. Illustr. Fr. Anthony Watsham in from Achterberg and Kats (2000). Permission to use the images was received from C. van Achterberg.

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