First record of Microplitis rufiventris Kokujev, 1914 (Braconidae: Microgastrinae) from Iran

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**Notes on Geographic Distribution**

ABSTRACT: Occurrence of the genus Microplitis Förster (Braconidae, Microgastrinae) was surveyed in the Northern part of Iran. The specimens were collected using Malaise traps during 2010–2011. Two species, Microplitis rufiventris Kokujev, 1914 and M. ochraceus Szepligeti, 1896 were collected and identified of which the first species is newly recorded from Iran. Diagnostic characters and geographical distribution of the species are briefly discussed.

Microgastrinae Förster, 1862 is one of the largest subfamilies of Braconidae (Hymenoptera: Ichneumonoidea) (van Achterberg 1976). All species attack and develop in larval stage of insects especially Lepidoptera and Coleoptera and exit from the host to pulate (Shaw and Huddleston 1991). Microgastrinae comprises more than 2,197 described species worldwide (Yu et al. 2012). The tribe Microplitini Mason, 1981 included four genera, i.e., Alloplitis Nixon, 1965, Microplitis Förster, 1862, Philolitis Nixon, 1965 and Slenellenius Westwood, 1882, of which only Microplitis is represented in the west Palaearctic region (Yu et al. 2012).

The genus Microplitis comprises a moderately small group, but the species have a worldwide distribution (Yu et al. 2012). This genus includes 178 described species worldwide, and approximately 77 species are found in the Palaearctic region (Yu et al. 2012). Member of the genus Microplitis are endoparasitoids of Lepidoptera, mainly Noctuidae (Wilkinson 1930; Yu et al. 2012; Gupta 2013). Janzen et al. (2003) studied the host specificity and hyperparasitism associated with Microplitis species in relation to sphingid hosts.

The genus Microplitis was formerly classified under the genus Microaster Latreille, 1804 with the type species Microaster sordipes Nees (Telenga 1955). Species of the genus Microplitis were transferred to the new genus Glabromicroplitis by Papp (1979, 1986). Nixon (1965) reclassified and reorganized the subfamily Microgastrinae. According to the subsequent studies, the genus Glabromicroplitis has been determined as a junior synonym of Microplitis (Austin and Dangerfield 1993). The genus can be recognized by the roughly sculptured propodeum, having a large areolet, shape and sculpture of the first metasomal tergite, and by the existence of a weak suture separating the second and third tergum (Mason 1981; Austin and Dangerfield 1993; Song and Chen 2008).

Nixon (1970) revised 28 European Microplitis species. The Palaearctic species of the Microplitis were revised and keyed by Papp (1984), who recorded a total 68 species with description of seven new species. Gupta (2013) revised Indian Microplitis species and described one new species.

Not much research has been done on the fauna of Microplitis in Iran. So far, six species of Microplitis have been recorded from Iran (Telenga 1955; Nixon 1968; Shenefelt 1973; Tobias 1976; Papp 1984; Fallahzadeh and Saghaei 2010; Gahari et al. 2011a,b; Rastegar et al. 2012). Here, we present the first record of Microplitis rufiventris Kokujev, 1914 from Iran.

Study material was collected from different habitats of Northern Iran during March to November of 2010 and 2011 using Malaise traps. The specimens were taken from the traps at weekly intervals. Later the dried specimens were card-mounted and labelled. Identifications were performed using keys by Papp (1984) and Tobias et al. (1986). The photographs were taken using an Olympus SZX9 stereomicroscope equipped with a Sony CCD digital camera. Morphological terminology follows van Achterberg (1993). The specimens are deposited in the insect collection of the Department of Entomology, Tarbiat Modares University, Tehran, Iran and the Naturalis Biodiversity Center, Leiden, Netherlands.

A total of 166 and 29 specimens of Microplitis rufiventris and M. ochraceus were collected from the studied area, respectively.

Microplitis ochraceus Szepligeti, 1896 (Figure 1 A-C)


Diagnosis (Female): Body length 3.5–4.0 mm, pterostigma brown with pale yellow spot basally, vein 1-SR+M of fore wing straight (Figure 1C); mesonotum and scutellum rugose (Figure 1B); first metasomal tergite strongly broadening posteriorly, as long as its width, completely rugose, second tergite rugose (Figure 1B);
body reddish yellow (Figure 1A), mesosoma sometimes with variable blackish pattern.

**Biology:** *Microplitis ochraceus* has been recorded as a parasitoid of the Lead-coloured Drab, *Orthosia populeti* (Fabricius, 1781) (Lepidoptera: Noctuidae) (Győrfi 1959).

**Distribution:** Azerbaijan, Greece, Hungary, Kazakhstan, Moldova, Mongolia, Russia, Ukraine (Yu *et al.* 2012), Iran (Telenga 1955).

*Microplitis rufiventris* Kokujev, 1914 (Figure 2 A-C)


**Diagnosis (Female):** Body length 2.8–3.5 mm; pterostigma dark brown with pale yellow spot basally, vein 1-SR+M of fore wing slightly curved (Figure 2C); mesonotum rugose, scutellum more or less shiny (Figure 2B); first metasomal tergite sub-parallel sided and rounded at apex, about twice times as long as its medial width, smooth and shiny or weakly sculptured, second tergite smooth (Figure 2B); head and mesosoma black, metasoma reddish yellow except apex black (Figure 2A).

**Biology:** This species is a solitary endoparasitoid of *Helicoverpa armigera* (Hübner, 1809), *Spodoptera cilium* (Guenée, 1852), *S. exigua* (Hübner, 1890) and *S. littoralis* (Boisd. 1833) (Yu *et al.* 2012). This species is known as a biological control agent against *Spodoptera frugiperda* (Smith, 1797) (Coulson 1994). In the field, this parasitoid shows preference towards early larval instars (late first to early fourth) (Hegazi *et al.* 2013). Some aspects of the reproductive biology of *M. rufiventris* were documented by Hegazi *et al.* (2007).

**Distribution:** Afghanistan, China, Cyprus, Egypt, Israel, Jordan, Romania, Turkey, Turkmenistan, Uzbekistan (Yu *et al.* 2012). New record form Iran.

The specimens were collected using 32 Malaise traps. The Malaise traps were placed in different habitats such as forests, pastures and orchards. Our study showed that
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Cameron, P. 1906. On the Tenthredinidae and parasitic Hymenoptera col-

Fallahzadeh, M. and N. Saghaei. 2010. Checklist of Braconidae (Insecta:


Acknowledgments: Thanks to the Department of Entomology, Tarbiat

for helping us in the trapping and collecting specimens. We are

active during the growing season.

Acrolya stroudi Gauld (Ichneumonidae) and Conura convergea Delvare (Chalcididae) have been recorded as hyperparasitoids of Microplitis from Costa Rica (Janzen et al. 2003).

Among the neighboring countries of Iran, the records of Microplitis are still restricted to M. mediator (Haliday) and M. spectabilis (Haliday) from Pakistan (Cameron 1906;

Khan 1999), M. rufiventris Kokujev, M. strenuous Reinhard and M. tadzhicus Telenga from Afghanistan (Hedwig 1961; Tobias et al. 1998), M. erythogaster Abdinbekova, M. spinolae (Nees) and M. tazhicus from Tajikistan (Telenga 1949; Tobias and Saidov 1992), while about 30 species have been recorded from Turkey (Inanç 1997, 2002; Inanç and Beyarslan 1997, 2001; Beyarslan et al. 2002) and Russia (Telenga 1955; Tobias 1971, 1976; Tobias et al. 1986; Papp 1984; Kotonen 1994). So far, seven species of this genus are known from Iran (Table 1) (M. aduncus (Ruthe, 1860), M. deprimator (Fabricius, 1798), M. ochraceus Szépligeti, 1896, M. rufiventris Kokujev, 1914, M. scrophulariae Szépligeti, 1898, M. spectabilis (Haliday, 1834) and M. viduus (Ruthe, 1860)) and comprises about 9% of the species of Palaearctic fauna. Iran is a large country, incorporating various geographical regions and climates, indicating a need for further studies.

Table 1. Updated list of Microplitis species recorded from Iran.

<table>
<thead>
<tr>
<th>Microplitis species</th>
<th>Distribution in Iran (provinces)</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. aduncus (Ruthe, 1860)</td>
<td>Province not defined</td>
<td>Papp (1984)</td>
</tr>
<tr>
<td>M. deprimator (Fabricius, 1798)</td>
<td>Province not defined</td>
<td>Nixon (1968)</td>
</tr>
<tr>
<td>M. ochraceus Szépligeti, 1896</td>
<td>Andabil province (Mugan)</td>
<td>Telenga (1955)</td>
</tr>
<tr>
<td>M. rufiventris Kokujev, 1914</td>
<td>Tehran and Alborz provinces</td>
<td>This study</td>
</tr>
<tr>
<td>M. scrophulariae Szépligeti, 1898</td>
<td>Province not defined</td>
<td>Tobias (1976)</td>
</tr>
<tr>
<td>M. spectabilis (Haliday, 1834)</td>
<td>Isfahan province (Kashan)</td>
<td>Ghahari et al. (2011b)</td>
</tr>
<tr>
<td>M. viduus (Ruthe, 1860)</td>
<td>Qazvin province</td>
<td>Ghahari et al. (2011a)</td>
</tr>
</tbody>
</table>

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