The Ichneumonidae (Hymenoptera) of northern Iran: a faunistic study

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GHAHARI H. & JUSSILA R. 2016: The Ichneumonidae (Hymenoptera) of northern Iran: a faunistic study. Acta Musei Moraviae, Scientiae Biologicae (Brno) 101(1): 55–62. — Ichneumonid wasps (Hymenoptera: Ichneumonidae) are important as biological control agents, many of them parasitizing the larvae and pupae of various groups of pest insects. This paper consists of a faunistic study of these beneficial insects collected from certain regions of northern Iran. In total, 17 ichneumonid species from seven subfamilies – Cryptinae, Ichneumoninae, Mesochorinae, Metopiinae, Pimplinae, Rhyssinae, and Tryphoninae – were collected and identified, among which were eight species that are new records for the fauna of Iran.

Key words. Hymenoptera, Ichneumonidae, fauna, new records, Iran

Introduction

Ichneumonidae is a large family of Hymenoptera and is considered one of the most species-rich in the order, with around 100,000 species worldwide (GAULD 2000, 2002). The ichneumonids use a wide range of other insects and arachnids as their hosts and play an essential role in the normal functioning of most ecosystems, underlining the need to inventory their diversity. Ichneumonids have been successfully used as biocontrol agents; they constitute a largely undocumented fauna with a huge potential for managed biocontrol programmes (GUPTA 1991). Unlike microhymenoptera, ichneumonoids rarely parasitize individual eggs, and a few are egg-larval parasitoids, laying an egg in the host egg but consuming the host in its larval stage (GAULD 1988, WAHL & SHARKEY 1993). The most usual host insect groups are Lepidoptera, Coleoptera and Diptera, to a lesser extent spiders and the egg sacs of spiders and pseudoscorpions (LAURENNE 2008).

The Ichneumonidae fauna of Iran has not been extensively studied in the past, but is now progressing quite well. A checklist by KOLAROV & GHAHARI (2005) mentioned 144 species from 14 subfamilies, and seven years later BARAHOEI et al. (2012) listed 502 species belonging to 189 genera and 24 subfamilies from Iran. Later, a number of authors (GHAHARI 2014; GHAHARI & JUSSILA 2014a, b, 2015; GHAHARI et al. 2014a, b; BARAHOEI et al. 2014a, b, 2015, and others) have made contributions. Since the knowledge of the fauna of these important and powerful parasitoids was relatively sparse in some regions of Iran, this paper presents the results of a preliminary faunistic survey, over three years (2011–2013), from certain regions of northern Iran including Golestan, Guilan and Mazandaran Provinces (south of Caspian Sea), to determine and investigate the ichneumonid species of this region.
Materials and Methods

Specimens were collected using Malaise traps and hand nets in the years 2011–2013 from various regions of northern Iran (Golestan, Guilan and Mazandaran Provinces). The materials were pinned or mounted on small cards, and preserved in 75% ethanol. For the most part, the taxonomical works of KASPARYAN (1973, 1981), KASPARYAN & TOLKANITZ (1999) and YU et al. (2012) were employed in determination. The distribution of Ichneumonidae suggested by YU et al. (2012) has been followed.

Results

A total of 17 ichneumonid species from seven subfamilies were collected and identified from northern Iran (including, Golestan, Guilan and Mazandaran Provinces). Eight species – *Aptesis terminata* (Gravenhorst, 1829), *Astiphromma splenium* (Curtis, 1833), *Colpotrochia cincta* (Scopoli, 1763), *Drepanoctonus tricoloratus* (Šedivý, 1971), *Endasys rubricator* (Thunberg, 1822), *Gelis zonatus* (Foerster, 1850), *Hercus fontinalis* (Holmgren, 1857) and *Latibulus argiolus* (Rossi, 1790) – are new records for the fauna of Iran. The list of species appears below with distribution data.

**Subfamily Cryptinae**

**Genus Aptesis Förster, 1850**

*Aptesis terminata* (Gravenhorst, 1829)

Material examined. Guilan Province, Rudsar, 36°42′N 50°18′E, 1 ♂, September 2013. New record for Iran.

General distribution. Austria, Azerbaijan, Belgium, British Isles, Bulgaria, Czech Republic, Finland, France, Germany, Hungary, Italy, Lithuania, Moldova, Netherlands, Poland, Slovakia, Spain, Sweden, Switzerland.

**Genus Endasys Förster, 1869**

*Endasys rubricator* (Thunberg, 1822)

≡ Endasys thunbergi Sawoniewicz & Luhman, 1992

Material examined. Guilan Province, Fuman, 37°13′N 49°19′E, 1 ♀, July 2013. New record for Iran.

General distribution. Azerbaijan, Belgium, British Isles, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Hungary, Lithuania, Moldova, Netherlands, Poland, Slovakia, Spain, Sweden, Turkey.

**Genus Gelis Thunberg, 1827**

*Gelis proximus* (Foerster, 1850)

≡ Gelis inflatipes Hellen, 1970

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Material examined. Golestan Province, Gorgan, 36°50′N 54°30′E, 1 ♀, October 2011. Mazandaran Province, Sari, 36°30′N 53°30′E, 2 ♀, April 2012.

General distribution. Armenia, Austria, Belgium, Bosnia-Herzegovina, British Isles, Bulgaria, Croatia, Czech Republic, Denmark, France, Finland, Georgia, Germany, Greece, Hungary, Iran, Italy, Latvia, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

*Gelis zonatus* (Foerster, 1850)

= *Thaumatogelis audax* (Olivier, 1792)

Material examined. Guilan Province, Lahijan, 37°14′N 50°02′E, 2 ♂, June 2013. New record for Iran.

General distribution. Austria, Azerbaijan, British Isles, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Latvia, Norway, Poland, Sweden, Switzerland.

**Genus Idiolispa** Förster, 1869

*Idiolispa analis* (Gravenhorst, 1807)

Material examined. Golestan Province, Minudasht, 37°10′N 55°30′E, 1 ♀, 1 ♂, May 2013.

General distribution. Algeria, Austria, Belgium, British Isles, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, India, Iran, Isle of Man, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Moldova, Mongolia, Netherlands, Norway, Poland, Romania, Russia, Spain, Sweden, Switzerland, Turkey, USA.

**Genus Latibulus** Gistel, 1848

*Latibulus argiolus* (Rossi, 1790)

Material examined. Mazandaran Province, Babol, 36°30′N 52°35′E, 1 ♀, April 2013. New record for Iran.

General distribution. Albania, Austria, Bulgaria, Croatia, Cyprus, Czech Republic, France, Germany, Greece, Hungary, Italy, Kazakhstan, Kyrgyzstan, Moldova, Poland, Romania, Russia, Serbia, Slovenia, Spain, Switzerland, Tajikistan, Tunisia, Turkey, Ukraine, Uzbekistan, former Yugoslavia.

**Genus Mesostenus** Gravenhorst, 1829

*Mesostenus grammicus* Gravenhorst, 1829

Material examined. Golestan Province, Azadshahr, 37°07′30″N 55°06′00″E, 2 ♂, April 2011. Mazandaran Province, Galogah, 36°43′N 53°48′E, 1 ♂, 2 ♀, July 2013.

General distribution. Afghanistan, Algeria, Austria, Azerbaijan, Bulgaria, Canary Islands, Croatia, Czech Republic, Finland, France, Germany, Greece, Hungary, Iran,
Italy, Malta, Morocco, Poland, Portugal, Romania, Russia, Slovakia, Spain, Tajikistan, Tunisia, Turkey, Turkmenistan, Uzbekistan, former Yugoslavia.

Subfamily Ichneumoninae

Genus *Cratichneumon* Thomson, 1893

*Cratichneumon fugitivus* (Gravenhorst, 1829)

Material examined. Mazandaran Province, Chalus, 36°27′N 51°10′E, 1 ♂, September 2012. **New record for Iran.**

General distribution. Austria, Belarus, Belgium, British Isles, Bulgaria, Czech Republic, France, Germany, Hungary, Netherlands, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Turkey, Ukraine.

Genus *Cyclolabus* Heinrich, 1935

*Cyclolabus pactor* (Wesmael, 1845)

Material examined. Mazandaran Province, Savadkooh, 36°05′N 52°55′E, 1 ♀, August 2013.

General distribution. Andorra, Azerbaijan, Belgium, British Isles, Czech Republic, Finland, France, Germany, Iran, Netherlands, Norway, Poland, Romania, Slovakia, Spain, Sweden, Turkey, former Yugoslavia.

Genus *Virgichneumon* Heinrich, 1977

*Virgichneumon albosignatus* (Gravenhorst, 1829)

Material examined. Golestan Province, Gorgan, 36°50′N 54°30′E, 1 ♂, 2 ♀, October 2011. Mazandaran Province, Behshahr, 36°41′N 53°44′E, 1 ♂, May 2013.

General distribution. Afghanistan, Andorra, Austria, Azerbaijan, Belarus, Belgium, British Isles, Bulgaria, China, Croatia, Czech Republic, Finland, France, Germany, Hungary, Iran, Italy, Japan, Kazakhstan, Latvia, Lithuania, Luxembourg, Moldova, Mongolia, Netherlands, Norway, Poland, Romania, Russia, Spain, Sweden, Switzerland, Turkey, Ukraine.

Subfamily Mesochorinae

Genus *Astiphromma* Förster, 1869

*Astiphromma splenium* (Curtis, 1833)

Material examined. Guilan Province, Lahiyan, 37°14′N 50°02′E, 2 ♀, June 2013. **New record for Iran.**

General distribution. Austria, Belgium, British Isles, Bulgaria, Canada, Czech Republic, Finland, France, Georgia, Germany, Hungary, Japan, Korea, Latvia, Lithuania, Moldova, Netherlands, Norway, Poland, Romania, Russia, Sweden, Switzerland, USA.
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Subfamily Metopiinae

Genus *Colpotrochia* Holmgren, 1855

*Colpotrochia cincta* (Scopoli, 1763)

Material examined. Mazandaran Province, Behshahr, 36°41′N 53°44′E, 1 ♂, 2 ♀, May 2013. New record for Iran.

General distribution. Austria, Belarus, Belgium, British Isles, Bulgaria, Croatia, Czech Republic, Finland, France, Georgia, Germany, Hungary, Italy, Japan, Kazakhstan, Korea, Macedonia, Moldova, Netherlands, Norway, Poland, Romania, Russia, Spain, Sweden, Switzerland, Turkey, Ukraine, former Yugoslavia.

Genus *Drepanoctonus* Pfankuch, 1911

*Drepanoctonus tricoloratus* (Šedivý, 1971)

Material examined. Guilan Province, Astara, 38°20′N 48°46′E, 1 ♂, 1 ♀, September 2012. New record for Iran.

General distribution. Georgia, Mongolia, Russia, Turkey, Ukraine.

Subfamily Pimplinae

Genus *Exeristes* Förster, 1869

*Exeristes roborator* (Fabricius, 1793)

Material examined. Golestan Province, Kalaleh, 37°43′N 55°49′E, 1 ♀, October 2012.

General distribution. Albania, Algeria, Austria, Azerbaijan, Belgium, Bosnia-Herzegovina, British Isles, Bulgaria, Canary Islands, China, Croatia, Cyprus, Czech Republic, Egypt, Finland, France, Georgia, Germany, Greece, Hungary, India, Iran, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Korea, Latvia, Libya, Lithuania, Macedonia, Malta, Moldova, Mongolia, Montenegro, Morocco, Norway, Pakistan, Poland, Romania, Russia, Serbia, Sri Lanka, Sweden, Switzerland, Slovakia, Slovenia, Spain, Tunisia, Turkey, Ukraine, former Yugoslavia.

Genus *Scambus* Hartig, 1838

*Scambus (Scambus) foliae* (Cushman, 1938)

Material examined. Mazandaran Province, Behshahr, 36°41′N 53°44′E, 1 ♂, May 2013.

General distribution. Austria, Belarus, British Isles, Bulgaria, Finland, Greece, Iran, Isle of Man, Italy, Montenegro, Poland, Romania, Russia, Serbia, Sweden, Turkey, former Yugoslavia.
Subfamily Rhyssinae

Genus *Rhyssa* Gravenhorst, 1829

*Rhyssa persuasoria* (Linnaeus, 1758)

**Material examined.** Mazandaran Province, Ramsar, 36°47′N 50°32′E, 1 ♀, August 2011. Guilan Province, Lahijan, 37°14′N 50°02′E, 2 ♀, June 2013.

**General distribution.** Australia, Austria, Azerbaijan, Belarus, Belgium, British Isles, Bulgaria, Canada, China, Czech Republic, Finland, France, Germany, Greece, Hungary, Iceland, India, Iran, Italy, Japan, Korea, Latvia, Lithuania, Mongolia, Morocco, Nepal, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Serbia, Montenegro, Slovakia, Spain, Sweden, Switzerland, Turkey, USA, Ukraine, former Yugoslavia.

Subfamily Tryphoninae

Genus *Hercus* Townes, 1969

*Hercus fontinalis* (Holmgren, 1857)

**Material examined.** Guilan Province, Astara, 38°20′N 48°46′E, 1 ♀, June 2012. **New record for Iran.**

**General distribution.** Armenia, Austria, British Isles, Bulgaria, Canada, Czech Republic, Finland, Germany, Hungary, Netherlands, Norway, Poland, Russia, Slovakia, Sweden, Switzerland, USA, former Yugoslavia.

Discussion

The results of this research with seven new records, together with existing research in northern Iran (e.g. GHAHARI et al. 2010; GHAHARI & JUSSILA 2010, 2011, 2012; GHAHARI & SCHWARZ 2011) indicate that the fauna of ichneumonids is very diverse in the northern regions. The area with humid climate to the south of the Caspian Sea supports a wide range of plants and also a considerable range of agricultural and forest pests. A similarly diverse fauna of parasitoids such as Ichneumonidae is therefore to be expected there. These beneficial insects have been used successfully as biocontrol agents and have huge potential for utilization in managed biocontrol programs (GUPTA 1987). Determination of parasitoid hosts is the first step in the establishment of biological control programs. However, most faunistic works on Iranian Ichneumonidae are based on the use of Malaise traps and sweep-nets and the hosts of many of these parasitoids remain unknown. Faunistic surveys that focus on the early development of parasitoids are therefore required.
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References


