

## ARTIGO / ARTÍCULO / ARTICLE

# A contribution to the study on the fauna of Braconidae (Hymenoptera, Ichneumonoidea) from the province of Semnan, Iran.

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**Abstract:** This paper deals with 18 braconid species (Hymenoptera: Braconidae) belonging to 6 subfamilies (Agathidinae, Blacinae, Braconinae, Cheloniinae, Microgastrinae, and Opiinae) collected in the province of Semnan, Iran.

**Key words:** Hymenoptera, Braconidae, faunistic study, Semnan, Iran.

**Resumen:** Contribución al estudio de la fauna de Braconidae (Hymenoptera: Ichneumonoidea) de la provincia de Semnán, Irán. Este trabajo trata sobre 18 especies de braconídeos (Hymenoptera: Braconidae) pertenecientes a 6 subfamilias (Agathidinae, Blacinae, Braconinae, Cheloniinae, Microgastrinae y Opiinae) capturadas en la provincia de Semnán, Irán.

**Palabras clave:** Hymenoptera, Braconidae, estudio faunístico, Semnán, Irán.

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## Introduction

The members of the family Braconidae (Hymenoptera) are primary parasitoids on other insects, especially the larval stages of Coleoptera, Diptera, and Lepidoptera, but also some hemimetabolous insects like aphids, Heteroptera or Embiidina (Sharkey 1993; Wharton 1993). Since these parasitoids have an important role in biological control of agricultural pests (Quicke & van Achterberg 1990; van Achterberg 1993; Ghahari et al. 2006), this research was conducted in order to determining the fauna of Braconidae in some regions of the province of Semnan. This province covers an area of 96,816 km<sup>2</sup> and stretches along the Alborz mountain range and borders to Dasht-e Kavir desert in its southern parts. The province is divided into two parts: the mountainous region and the plains at the foot of that mountains. Although the fauna of Braconidae in the province of Semnan was studied by Ghahari & Gadallah (2015), some of the specimens collected were not determined in time for that research, so this paper deals with the materials recently identified.

## Material and methods

The specimens were collected by Malaise traps in some regions of the province of Semnan, and also the materials of Garmsar Islamic Azad University were checked too. Classification, nomenclature and distribution data suggested by Yu et al. (2012) have been followed.

Upon the results of this research, 18 braconid species belonging to 8 genera (*Agathis* Latreille, 1804, *Blacus* Nees, 1818, *Bracon* Fabricius, 1804, *Chelonus* Panzer 1806, *Apanteles* Förster, 1862,

*Cotesia* Cameron, 1891, *Microgaster* Latreille, 1804, and *Opius* Wesmael, 1835) were collected and identified from the province of Semnan. All the species exception *Bracon (Bracon) mariae* Dalla Torre, 1898 are new records for the fauna of this province.

## Results

### Subfamily Agathidinae Haliday, 1833

#### Genus *Agathis* Latreille, 1804

##### *Agathis fulmeki* Fischer, 1957

**Material examined:** Province of Semnan: Damghan, 35°30'N 54°20'E, (3♀♀), August 2011.

**Distribution outside Iran:** Austria, Bulgaria, Croatia, France, Greece, Hungary, Mongolia, Morocco, Portugal, Serbia, Spain, Turkey.

### Subfamily Blacinae Förster, 1862

#### Genus *Blacus* Nees, 1818

##### *Blacus (Ganychorus) armatulus* (Ruthe, 1861)

**Material examined:** Province of Semnan: Semnan, 35°20'N 53°20'E, (2♀♀), June 2011.

**Distribution outside Iran:** Albania, Austria, Azerbaijan, Canada, Czech Republic, Denmark, Finland, France, Georgia, Germany, Hungary, Italy, Kazakhstan, Moldova, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Sweden, Switzerland, Turkey, UK, Ukraine, USA.

### Subfamily Braconinae Nees von Esenbeck, 1811

#### Genus *Bracon* Fabricius, 1804

##### *Bracon (Bracon) intercessor* (Nees von Esenbeck, 1834)

**Material examined:** Province of Semnan: Garmsar, 35°00'N 52°20'E, (2♂♂, 3♀♀), April 2011.

**Distribution outside Iran:** Afghanistan, Albania, Austria, Azerbaijan, Bosnia-Herzegovina, Bulgaria, Caucasus, China, Croatia, Cyprus, Czech Republic, France, Georgia, Germany, Greece, Hungary, Israel, Italy, Kazakhstan, Korea, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Netherlands, Norway, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Syria, Tajikistan, Turkey, Turkmenistan, UK, Ukraine, Uzbekistan.

##### *Bracon (Glabrobracon) larvicida* (Wesmael, 1838)

**Material examined:** Province of Semnan: Shahrud, 35°30'N 55°30'E, (1♂), September 2011.

**Distribution outside Iran:** Armenia, Austria, Azerbaijan, Belgium, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Kazakhstan, Moldova, Mongolia, Poland, Romania, Russia, Serbia, Slovenia, Sweden, Turkey, UK, Ukraine.

##### *Bracon (Bracon) mariae* Dalla Torre, 1898

**Material examined:** Province of Semnan: Shahmirzad, 35°42'N 53°21'E, (1♂, 2♀♀), June 2011.

**Distribution outside Iran:** Armenia, Azerbaijan, Caucasus, Central Asia, Croatia, Germany, Hungary, Israel, Italy, Kazakhstan, Moldova, North Africa, Russia, Serbia, Slovenia, Spain, Sweden, Switzerland, Tunisia, Turkey, Ukraine.

***Bracon (Habrobracon) radialis* Telenga, 1936**

**Material examined:** Province of Semnan: Shahmirzad, 35°42'N 53°21'E, (3♀♀), June 2011.

**Distribution outside Iran:** Austria, Central Asia, Hungary, Italy, Kazakhstan, Macedonia, Mongolia, Russia, Tunisia, Uzbekistan, Turkey, Turkmenistan, former Yugoslavia.

***Bracon (Lucobracon) suchorukovi* (Telenga, 1936)**

**Material examined:** Province of Semnan: Damghan, 35°30'N 54°20'E, (2♂♂, 2♀♀), August 2011.

**Distribution outside Iran:** Armenia, Austria, Azerbaijan, Kazakhstan, Lithuania, Moldova, Mongolia, Russia, Ukraine, Turkey.

***Bracon (Lucobracon) thuringiacus* (Schmideknecht, 1896)**

**Material examined:** Province of Semnan: Garmsar, 35°00'N 52°20'E, (4♀♀), April 2011.

**Distribution outside Iran:** England, Germany, Italy, Serbia, Turkey.

**Subfamily Cheloninae Förster, 1862**

**Genus *Chelonus* Panzer, 1806**

***Chelonus (Microchelonus) incisus* (Tobias, 1986)**

**Material examined:** Province of Semnan: Damghan, 35°30'N 54°20'E, (3♀♀), August 2011.

**Distribution outside Iran:** Caucasus, Hungary, Mongolia, Russia.

**Subfamily Microgastrinae Förster, 1862**

**Genus *Apanteles* Förster, 1862**

***Apanteles candidatus* (Haliday, 1834)**

**Material examined:** Province of Semnan: Damghan, 35°30'N 54°20'E, (1♂, 2♀♀), August 2011.

**Distribution outside Iran:** Azerbaijan, Belgium, Czech Republic, England, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Mongolia, Netherlands, Russia, Slovakia, Sweden, Tajikistan, Turkey, former Yugoslavia.

**Genus *Cotesia* Cameron, 1891**

***Cotesia cupreus* (Lyle, 1925)**

**Material examined:** Province of Semnan: Shahrud, 35°30'N 55°30'E, (1♀), September 2011.

**Distribution outside Iran:** Azerbaijan, Bulgaria, Czech Republic, England, Finland, France, Germany, Greece, Hungary, Lithuania, Mongolia, Netherlands, Slovakia, Spain, Poland, Romania, Switzerland, Turkey.

**Genus *Microgaster* Latreille, 1804**

***Microgaster parvistriga* Thomson, 1895**

**Material examined:** Province of Semnan: Semnan, 35°20'N 53°20'E, (1♀, 1♂), June 2011.

**Distribution outside Iran:** Armenia, Bulgaria, Czech Republic, Greece, Hungary, Finland, Germany, Korea, Mongolia, Poland, Romania, Russia, Slovakia, Sweden, Switzerland, UK.

**Subfamily Opiinae Blanchard, 1845**

**Genus *Opius* Wesmael, 1835**

***Opius (Opiothorax) abditus* Fischer, 1960**

**Material examined:** Province of Semnan: Semnan, 35°20'N 53°20'E, (1♂, 2♀♀), June 2011.

**Distribution outside Iran:** Turkey.

***Opius (Allophlebus) singularis* Wesmael, 1835**

**Material examined:** Province of Semnan: Garmsar, 35°00'N 52°20'E, (2♂♂), April 2011.

**Distribution outside Iran:** Armenia, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Georgia, Germany, Greece, Hungary, Italy, Korea, Lithuania, Mongolia, Montenegro, Netherlands, Poland, Romania, Russia, Serbia, Slovakia, Sweden, Switzerland, Spain, Tunisia, Turkey, UK.

***Opius (Opiothorax) filicornis* Thomson, 1895**

**Material examined:** Province of Semnan: Shahrud, 35°30'N 55°30'E, (2♂♂, 2♀♀), September 2011.

**Distribution outside Iran:** Austria, Bulgaria, Croatia, Czech Republic, Denmark, England, Finland, Germany, Hungary, Italy, Kazakhstan, Montenegro, Poland, Russia, Serbia, Slovakia, Spain, Sweden, Switzerland, Turkey, Uzbekistan.

***Opius (Xynobius) decoratus* (Stelfox, 1949)**

**Material examined:** Province of Semnan: Shahmirzad, 35°42'N 53°21'E, (1♂), June 2011.

**Distribution outside Iran:** Armenia, Czech Republic, England, Finland, Hungary, Ireland, Lithuania, Russia, Slovakia, Turkey.

***Opius (Phaedrotoma) diversa* (Szépligeti, 1898)**

**Material examined:** Province of Semnan: Shahrud, 35°30'N 55°30'E, (2♂♂, 1♀), September 2011.

**Distribution outside Iran:** Austria, Bulgaria, Czech Republic, Denmark, England, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Israel, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Spain, Sweden, Turkey, Uzbekistan.

***Opius (Xynobius) macrocerus* (Thomson, 1895)**

**Material examined:** Province of Semnan: Garmsar, 35°00'N 52°20'E, (3♀♀), April 2011.

**Distribution outside Iran:** Austria, Bulgaria, Italy, Netherlands, Czech Republic, Finland, France, Germany, Hungary, Japan, Montenegro, Norway, Poland, Romania, Russia, Slovakia, Switzerland, Turkey, UK, USA.

**Discussion**

This research and also the paper Ghahari & Gadallah (2015) indicate that there is a diverse fauna of Braconidae in the province of Semnan. The fauna of Iranian Braconidae was studied quite well in recent years which some families have been catalogued (e.g. Gadallah & Ghahari 2013a, b, 2015; Khajeh et al. 2014). But many provinces of Iran have not been sampled so far and thus new data on Iranian Braconidae has to be expected. Conducting the faunal surveys in different provinces is necessary for establishing the full species composition of the family. Since the braconid wasps are powerful parasitoids of agricultural pests, and on the other hand one of the best alternative methods

of insect pests control has proved to be the use of efficient parasitoids (Godfray 1994; van Driesche & Bellows 1996), we suggest to researchers to continue with these faunistic surveys on Braconidae in different regions of Iran.

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