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## **A study of the Ichneumonidae (Hymenoptera: Ichneumonoidea) from the Qazvin province, Iran**

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**A b s t r a c t :** In this paper the species and their collecting data of Ichneumonidae collected in 2007 - 2009 in the Qazvin province are listed. The material belongs to the following 10 subfamilies: Anomaloninae, Campopleginae, Cryptinae, Ctenopelmatinae, Diplazontinae, Ichneumoninae, Metopiinae, Ophioninae, Pimplinae and Tryphoninae. Totally 63 species from 49 genera were collected.

**K e y w o r d s :** Hymenoptera, Ichneumonidae, Fauna, Qazvin, Iran.

### **Introduction**

The Ichneumonidae (Hymenoptera) is one of the largest families of all organisms with an estimated 60.000 species in the world (TOWNES 1969; GAULD 1991). Ichneumonids use a diverse assemblage of holometabolous 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 used successfully as biocontrol agents and given the largely undocumented fauna there is a huge potential for their utilization in managed biocontrol programs (GUPTA 1991; WAHL & SHARKEY 1993; AUSTIN & DOWTON 2001).

The objective of this paper is studying the fauna of Ichneumonidae from the Qazvin province. The province Qazvin is in the north-west of Iran and covers 15.821 km<sup>2</sup> between 48°45' to 50°50' E and 35°37' to 36°45' N. The province is bounded in the north by Mazandaran and Guilan, in the west by Hamadan and Zanjan, in the south by Markazi and in the east by Tehran provinces. The mountains Siälän and Shäh Alborz with heights of 4175 m and 4056 m respectively are the highest peaks, and the lowest point of the province is in Tärom-e Soflä. The climate of the province in the northern parts is cold and snowy in winters and temperate in summers. In the southern parts the climate is mild with comparatively cold winters and warm summers. Regarding to the agriculture, 13.000 km<sup>2</sup> are under cultivation in the province, covering 12% of the cultivable land of the country. The agricultural products of this region are grape, hazelnut, pistachio, almond, walnut, olive, apple, wheat, barely, sugar-beet, pomegranate, fig, and cereals.

## Materials and Methods

The materials were collected by Malaise traps and sweeping nets from different regions of the Qazvin province, especially in the forests ecosystems during 2007-2009. In addition some of the material deposited in private and university collections were also checked. The sampled regions of this research were Abgarm, Abyek, Alvand, Avaj, Boeen Zahra, Danesfahan, Khoram Dasht, Kouhin, Moallem Kelāyeh, Nikooeyeh, Qazvin, Razmiyan, Rostam Abad, Shal, Sirdan, Takestan, Zavarak, Zia Abad. Below the species including their collecting data (localities, altitudes (in brackets) and dates) and number of specimens are listed. The specimens were determined by J. Šedivý, R. Jussila and the first author. The nomenclature follows KASPARYAN (1981), YU & HORSTMANN (1997) and YU et al. (2005).

## Results

Sixty-three ichneumonid species belonging to forty-nine genera and ten subfamilies were collected from different regions of the Qazvin province 2007 - 2009. The species and their collecting data are listed below.

### Subfamily Anomaloniinae

#### *Anomalon cruentatum* (GEOFFROY 1785)

Material examined: Moallem-Kelāyeh (1528 m), 1♀, 21 August 2009. Sirdan (1216 m), 1♂, 1♀, 14 September 2009.

#### *Anomalon kozłovi* (KOKUJEV 1915)

Material examined: Qazvin (1226 m), 1♀, 3 August 2009.

#### *Barylypa amabilis* (TOSQUINET 1900)

Material examined: Khoram-Dasht (1084 m), 1♀, 5 October 2008.

### Subfamily Campopleginae

#### *Diadegma armillatum* (GRAVENHORST 1829)

Material examined: Abyek (1444 m), 1♀, 30 June 2008.

#### *Diadegma semiclausum* (HELLÉN 1949)

Material examined: Kouhin (1121 m), 1♀, 20 September 2008.

#### *Venturia canescens* (GRAVENHORST 1829)

Material examined: Qazvin (1237 m), 2♂♂, 15 August 2009. Sirdan (1207 m), 1♂, 2♀, 14 September 2009.

### Subfamily Cryptinae

#### *Blapsidotes vicinus* (GRAVENHORST 1829)

Material examined: Khoram-Dasht (1071 m), 1♂, 4 October 2008.

***Chirotica decorator* (VILLERS 1789)**

Material examined: Nikooyeh (1536 m), 1 ♀, 1 October 2007.

***Gelis agilis* (FABRICIUS 1775)**

Material examined: Rostam Abad (1392 m), 2 ♀ ♀, 11 August 2009.

***Gelis formicarius* (LINNAEUS 1758)**

Material examined: Khoram-Dasht (1084 m), 3 ♂ ♂, 5 October 2008.

***Gelis fallax* (FÖRSTER 1850)**

Material examined: Abyek (1455 m), 2 ♀ ♀, 30 June 2008.

***Gelis proximus* (FÖRSTER 1850)**

Material examined: Razmiyan (905 m), 2 ♂ ♂, 19 August 2008.

***Glyphicnemis vagabunda* (GRAVENHORST 1829)**

Material examined: Zia-Abad (1368 m), 2 ♂ ♂, 16 August 2008.

***Lysibia nana* (GRAVENHORST 1829)**

Material examined: Rostam Abad (1366 m), 1 ♂, 5 ♀ ♀, 11 August 2009. Nikooyeh (1515 m), 2 ♂ ♂, 4 ♀ ♀, 8 October 2009.

***Mesostenus transfuga* GRAVENHORST 1829**

Material examined: Zavarak (1453 m), 2 ♀ ♀, 4 July 2009.

***Polytribax perspicillator* (GRAVENHORST 1807)**

Material examined: Kouhin (1126 m), 2 ♂ ♂, 22 September 2008.

***Trychosis legator* (THUNBERG 1824)**

Material examined: Khoram-Dasht (1080 m), 3 ♂ ♂, 4 October 2008.

**Subfamily Ctenopelmatinae**

***Trematopygus triangulator* AUBERT 1981**

Material examined: Zia-Abad (1381 m), 1 ♀, 14 August 2008.

**Subfamily Diplazoninae**

***Diplazon laetatorius* (FABRICIUS 1781)**

Material examined: Moallem-Kelāyeh (1517 m), 1 ♂, 1 ♀, 21 August 2009. Nikooyeh (1528 m), 2 ♂ ♂, 2 ♀ ♀, 8 October 2009.

***Syrphophilus bizonarius* (GRAVENHORST 1829)**

Material examined: Shal (1044 m), 1 ♂, 2 ♀ ♀, 29 June 2008.

**Subfamily Ichneumoninae**

***Amblyjoppa fuscipennis* (WESMAEL 1845)**

Material examined: Takestan (1237 m), 1 ♂, 6 June 2009. Moallem-Keläyeh (1517 m), 1 ♂, 2 ♀ ♀, 21 August 2009.

***Baranisobas ridibundus* (GRAVENHORST 1829)**

Material examined: Danesfahan (1335 m), 1 ♂, 12 September 2008.

***Barichneumon plagiarius* (WESMAEL 1848)**

Material examined: Razmiyan (909 m), 1 ♀, 11 August 2007.

***Ctenichneumon divisorius* (GRAVENHORST 1820)**

Material examined: Zavarak (1452 m), 1 ♀, 1 ♂, 3 July 2009. Sirdan (1207 m), 1 ♂, 14 September 2009.

***Diphyus mercatorius* (FABRICIUS 1793)**

Material examined: Moallem-Keläyeh (1505 m), 1 ♀, 21 August 2009.

***Eutanyacra glaucatoria* (FABRICIUS 1793)**

Material examined: Qazvin (1237 m), 1 ♂, 3 August 2009.

***Hoplismenus bidentatus* (GMELIN 1790)**

Material examined: Danesfahan (1335 m), 1 ♀, 13 September 2008.

***Ichneumon confusor* GRAVENHORST 1820**

Material examined: Danesfahan (1342 m), 1 ♀, 14 September 2008.

***Ichneumon exilicornis* WESMAEL 1857**

Material examined: Razmiyan (923 m), 1 ♂, 2 ♀ ♀, 18 August 2008.

***Ichneumon gracilicornis* GRAVENHORST 1829**

Material examined: Khoram-Dasht (1084 m), 4 ♀ ♀, 5 October 2008.

***Ichneumon proletarius* WESMAEL 1848**

Material examined: Danesfahan (1321 m), 3 ♂ ♂, 2 ♀, 13 September 2008. Nikooeyeh (1535 m), 1 ♀, 1 ♂, 7 October 2009.

***Ichneumon stramentarius* GRAVENHORST 1820**

Material examined: Qazvin (1262 m), 2 ♂ ♂, 25 June 2009.

***Ichneumon tuberculipes* WESMAEL 1848**

Material examined: Kouhin (1116 m), 2 ♀ ♀, 22 September 2008.

***Listrodromus nyctemerus* (GRAVENHORST 1820)**

Material examined: Alvand (1142 m), 2 ♀ ♀, 19 July 2008.

***Obtusodonta equitatoria* (PANZER 1786)**

**M a t e r i a l e x a m i n e d :** Takestan (1247 m), 2 ♀ ♀, 1 ♂, 6 June 2009.

***Platylabus iridipennis* (GRAVENHORST 1829)**

**M a t e r i a l e x a m i n e d :** Shal (1052 m), 3 ♂ ♂, 30 June 2008.

***Protichneumon fusorius* (LINNAEUS 1761)**

**M a t e r i a l e x a m i n e d :** Kouhin (1116 m), 2 ♀ ♀, 1 ♂, 20 September 2008.

***Pseudoplatylabus violentus* (GRAVENHORST 1829)**

**M a t e r i a l e x a m i n e d :** Kouhin (1116 m), 1 ♀, 22 September 2008.

***Rictichneumon lombardi* (BERTHOUMIEU 1897)**

**M a t e r i a l e x a m i n e d :** Shal (1052 m), 1 ♀, 1 ♂, 29 June 2008. Qazvin (1262 m), 2 ♀ ♀, 26 June 2009.

***Syspasis scutellator* (GRAVENHORST 1829)**

**M a t e r i a l e x a m i n e d :** Avaj (2023 m), 1 ♀, 6 July 2008. Abgarm (1629 m), 3 ♀ ♀, 2 ♂ ♂, 24 April 2009. Rostam Abad (1381 m), 2 ♀ ♀, 1 ♂, 11 August 2009.

***Spilothyrateles nuptatorius* (FABRICIUS 1793)**

**M a t e r i a l e x a m i n e d :** Abgarm (1629 m), 3 ♂ ♂, 4 ♀ ♀, 22 April 2009.

***Virgichneumon callicerus* (GRAVENHORST 1820)**

**M a t e r i a l e x a m i n e d :** Shal (1052 m), 1 ♂, 2 ♀ ♀, 30 June 2008. Qazvin (1226 m), 2 ♂ ♂, 2 ♀ ♀, 15 August 2009.

***Vulgichneumon deceptor* (SCOPOLI 1763)**

**M a t e r i a l e x a m i n e d :** Takestan (1228 m), 1 ♂, 7 June 2009.

**Subfamily M e t o p i i n a e**

***Exochus castaniventris* BRAUNS 1826**

**M a t e r i a l e x a m i n e d :** Boeen-Zahra (1246 m), 1 ♀, 27 May 2009.

**Subfamily O p h i o n i n a e**

***Enicospilus tournieri* (VOLLENHOVEN 1879)**

**M a t e r i a l e x a m i n e d :** Kouhin (1135 m), 1 ♂, 2 ♀ ♀, 21 September 2008.

***Ophion obscuratus* FABRICIUS 1798**

**M a t e r i a l e x a m i n e d :** Boeen-Zahra (1246 m), 2 ♀ ♀, 27 May 2009.

**Subfamily P i m p l i n a e**

***Apechthis rufata* (GMELIN 1790)**

**M a t e r i a l e x a m i n e d :** Boeen-Zahra (1246 m), 1 ♀, 28 May 2009.

***Dolichomitus imperator* (KRIECHBAUMER 1854)**

M a t e r i a l e x a m i n e d : Abyek (1452 m), 1 ♀, 27 June 2008.

***Endromopoda detrita* (HOLMGREN 1860)**

M a t e r i a l e x a m i n e d : Alvand (1153 m), 1 ♀, 20 July 2008.

***Itoplectis melanocephala* (GRAVENHORST 1829)**

M a t e r i a l e x a m i n e d : Razmiyan (909 m), 1 ♀, 12 August 2007. Danesfahan (1335 m), 3 ♀ ♀, 12 September 2008. Khoram-Dasht (1103 m), 2 ♀ ♀, 4 October 2008.

***Itoplectis tunetana* (SCHMIEDEKNECHT 1914)**

M a t e r i a l e x a m i n e d : Abyek (1452 m), 2 ♀ ♀, 27 June 2008.

***Perithous (Perithous) divinator* (ROSSI 1790)**

M a t e r i a l e x a m i n e d : Qazvin (1208 m), 1 ♀, 4 August 2009.

***Pimpla contemplator* (MÜLLER 1776)**

M a t e r i a l e x a m i n e d : Avaj (2065 m), 1 ♂, 10 July 2008.

***Pimpla turionellae* (LINNAEUS 1758)**

M a t e r i a l e x a m i n e d : Khoram-Dasht (1084 m), 3 ♀ ♀, 6 October 2008.

***Scambus brevicornis* (GRAVENHORST 1829)**

M a t e r i a l e x a m i n e d : Abgarm (1629 m), 2 ♀ ♀, 24 April 2009.

***Tromatobia lineatoria* (VILLERS 1789)**

M a t e r i a l e x a m i n e d : Khoram-Dasht (1069 m), 1 ♀, 6 October 2008.

**Subfamily T r y p h o n i n a e**

***Erromenus zonarius* (GRAVENHORST 1820)**

M a t e r i a l e x a m i n e d : Danesfahan (1362 m), 1 ♀, 14 September 2008.

***Netelia (Netelia) fuscicornis* HOLMGREN 1860**

M a t e r i a l e x a m i n e d : Alvand (1153 m), 2 ♂ ♂, 2 ♀ ♀, 19 July 2008.

***Netelia (Netelia) testacea* (GRAVENHORST 1829)**

M a t e r i a l e x a m i n e d : Qazvin (1296 m), 1 ♀, 26 June 2009.

***Netelia (Bessobates) virgata* (GEOFFROY 1785)**

M a t e r i a l e x a m i n e d : Avaj (2037 m), 2 ♂ ♂, 3 July 2007.

***Smicroplectrus erosus* (HOLMGREN 1857)**

M a t e r i a l e x a m i n e d : Takestan (1212 m), 2 ♀ ♀, 7 June 2009.

***Thymaris contaminatus* (GRAVENHORST 1829)**

M a t e r i a l e x a m i n e d : Zia-Abad (1406 m), 1 ♂, 14 August 2008.

***Tryphon (Tryphon) zavreli* GREGOR 1939**

**M a t e r i a l e x a m i n e d :** Qazvin (1205 m), 2♂♂, 14 August 2009.

**Discussion**

Although there have been 63 species recorded from the province of Qazvin it is only a portion of the species which we expect occurring here. More field work is needed to record all of the species from this province. Rearing ichneumonids from their hosts, which should be done more intensively in Iran, will increase the host-parasitoid relationships and will provide a good base for using ichneumonids for biological control of agricultural pests in Iran. Ichneumonid wasps have an efficient role in the biological control of agricultural pests in almost all agricultural and forest ecosystems. Protecting these natural enemies in integrated pest management programs will result in an increase of their efficiency (GODFRAY 1994, MAREDIA et al. 2003, RABB et al. 1976).

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**Zusammenfassung**

In dieser Arbeit werden alle Schlupfwespen (Ichneumonidae), die von 2007 bis 2009 in der Qazvin-Provinz (Iran) gesammelt wurden, mit deren Sammeldaten aufgelistet. Das Material gehört zu den folgenden 10 Unterfamilien: Anomaloninae, Campopleginae, Cryptinae, Ctenopelmatinae, Diplazontinae, Ichneumoninae, Metopiinae, Ophioninae, Pimplinae und Tryphoninae. Insgesamt sind es 63 Arten, die zu 49 Gattungen gehören.

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