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A study on the subfamily Ichneumoninae (Hymenoptera: Ichneumonidae) from Khorasan province, Iran

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Abstract: The fauna of subfamily Ichneumoninae (Hymenoptera: Ichneumonidae) from Khorasan province is studied in this paper. In total 20 species from 10 genera (*Anisobas* WESMAEL, *Barichneumon* THOMSON, *Coelichneumon* Thomson, *Ctenichneumon* THOMSON, *Diphyus* KRIECHBAUMER, *Homotherus* FÖRSTER, *Ichneumon* Linnaeus, *Platylabops* HEINRICH, *Spilichneumon* THOMSON, *Virgichneumon* HEINRICH) were collected and identified.

Key words: Hymenoptera, Ichneumonidae, Ichneumoninae, Fauna, Khorasan, Iran.

Introduction

Family Ichneumonidae (Hymenoptera) is one of the most species-rich families of all organisms with an estimated 60,000 species in the world, and included beneficial species which parasitize several pests (TOWNES 1969; GUPTA 1987). The Ichneumonidae, along with other groups of parasitic Hymenoptera, are purported to be no more species rich in the tropics than in the Northern Hemisphere temperate regions (OWEN & OWEN 1974; JANZEN 1981). The subfamily Ichneumoninae with 373 genera and about 1700 species in Palearctic Region is the largest (after Cryptinae) in the Ichneumonidae family, and has a worldwide distribution (ÇORUH & ÖZBEK 2013). The Ichneumoninae species mainly parasitize lepidopteran larvae and pupae; the offspring always emerges from the pupa (ÇORUH et al. 2011).

The fauna of Iranian Ichneumonidae was catalogued by KOLAROV & GHAHARI (2005) with 144 species belong to 65 genera and 14 subfamilies, and the subfamily Ichneumoninae was summerized by KOLAROV & GHAHARI (2008) with 139 species. Additionally the checklist of Iranian Ichneumonidae was prepared by BARAHOEI et al. (2012) included 502 species from 189 genera and 24 subfamilies, which totally 158 species belong to the subfamily Ichneumoninae.

Khorasan (consisting of three different parts: northern, Razavi, and southern provinces) is one of the largest provinces located in East and North-eastern Iran, having boundaries with Afghanistan and Turkmenistan. Although the fauna of Iranian Ichneumonidae was studied rather well but the fauna of these beneficial insects was poorly studied in Khorasan province. The aim of this paper is studying on some specimens of the subfamily Ichneumoninae which were collected by different researchers from some regions of Khorasan.

Materials and Methods

The specimens of this research were collected by different methods especially Malaise traps and sweeping net on flowering plants from some regions of Khorasan province (Birjand: 32°32'N 58°50'E, Bojnord: 37°35'N 57°20'E, Ferdows: 34°10'N 57°40'E, Mashhad: 36°17'N 59°40'E and Neyshabur: 36°12'N 58°45'E). The collected specimens were killed by ethyl acetate, mounted on triangular labels and were examined with a stereomicroscope. Classification and nomenclature of Ichneumonidae suggested by KASPARYAN (1981), and YU et al. (2005) have been followed.

Results

Totally 20 species of Ichneumoninae from 10 genera were collected and identified from Khorasan province. Two species *Barichneumon chionomus* (WESMAEL 1845) and *Ctenichneumon funereus* (GEOFFROY 1785) are new records for the fauna of Iran. The list of species is given below alphabetically.

Subfamily I c h n e u m o n i n a e

Genus *Anisobas* WESMAEL, 1844

Anisobas cingulatellus HORSTMANN, 1997

M a t e r i a l e x a m i n e d : Razavi Khorasan province, Ferdows, 2 ♀, 2 ♂, 5-10 June 2012.

Anisobas hostilis (GRAVENHORST, 1820)

M a t e r i a l e x a m i n e d : Razavi Khorasan province, Neyshabur, 1 ♀, June 2011. Razavi Khorasan province, Ferdows, 1 ♀, 5-10 June 2012.

Anisobas rebellis WESMAEL, 1845

M a t e r i a l e x a m i n e d : Southern Khorasan province, Birjand, 1 ♀, 7-9 August 2007. Razavi Khorasan province, Mashhad, 1 ♀, 1 ♂, 22-23 April 2009.

Genus *Barichneumon* THOMSON, 1893

Barichneumon chionomus (WESMAEL, 1845)

M a t e r i a l e x a m i n e d : Razavi Khorasan province, Neyshabur, 1 ♂, June 2011. New country record.

Genus *Coelichneumon* THOMSON, 1893

Coelichneumon comitator (LINNAEUS, 1758)

M a t e r i a l e x a m i n e d : Razavi Khorasan province, Mashhad, 2 ♀, 22-23 April 2009.

Genus *Ctenichneumon* THOMSON, 1894

***Ctenichneumon castigator* (FABRICIUS, 1793)**

Material examined: Razavi Khorasan province, Ferdows, 3♂♂, 5-10 June 2012.

***Ctenichneumon funereus* (GEOFFROY, 1785)**

Material examined: Razavi Khorasan province, Mashhad, 1♂, 22-23 April 2009. New country record.

***Ctenichneumon panzeri* (WESMAEL, 1845)**

Material examined: Razavi Khorasan province, Mashhad, 2♂♂, 22-23 April 2009.

Genus *Diphyus* KRIECHBAUMER, 1890

***Diphyus palliatorius* (GRAVENHORST, 1829)**

Material examined: Razavi Khorasan province, Ferdows, 2♀♀, 5-10 June 2012.

Genus *Homotherus* FÖRSTER, 1869

***Homotherus locutor* (THUNBERG, 1824)**

Material examined: Razavi Khorasan province, Mashhad, 1♂, 22-23 April 2009.

Genus *Ichneumon* LINNAEUS, 1758

***Ichneumon balteatus* WESMAEL, 1845**

Material examined: Razavi Khorasan province, Neyshabur, 1♀, 3♂♂, June 2011.

***Ichneumon erythromerus* WESMAEL, 1857**

Material examined: Southern Khorasan province, Birjand, 2♀♀, 7-9 August 2007.

***Ichneumon languidus* WESMAEL, 1845**

Material examined: Razavi Khorasan province, Ferdows, 1♀, 5-10 June 2012.

***Ichneumon minutorius* DESVIGNES, 1856**

Material examined: Razavi Khorasan province, Mashhad, 2♀♀, 3♂♂, 10-15 June 2010.

***Ichneumon sarcitorius caucasicus* MEYER, 1926**

Material examined: Northern Khorasan province, Bojnord, 3♀♀, summer 2010.

***Ichneumon sarcitorius sarcitorius* LINNAEUS, 1758**

Material examined: Razavi Khorasan province, Neyshabur, 1♂, summer 2011.

***Ichneumon vafer meridionalis* HEINRICH, 1929**

Material examined: Razavi Khorasan province, Mashhad, 3♀♀, 10-15 June 2010.

Genus *Platylabops* HEINRICH, 1950

***Platylabops humilis* (WESMAEL, 1857)**

Material examined: Northern Khorasan province, Bojnord, 1♀, 2♂♂, summer 2010.

Genus *Spilichneumon* THOMSON, 1894

***Spilichneumon occisorius* (FABRICIUS, 1793)**

Material examined: Southern Khorasan province, Birjand, 1♂, 7-9 August 2007.
Razavi Khorasan province, Ferdows, 2♀♀, 5-10 June 2012.

Genus *Virgichneumon* HEINRICH, 1977

***Virgichneumon maculicauda* (PERKINS, 1953)**

Material examined: Razavi Khorasan province, Mashhad, 2♂♂, 10-15 June 2010.

Discussion

In this research among the 10 genera, *Ichneumon* LINNEAUS with 6 collected species is more diverse than the others. Since the species of Ichneumoninae are powerful parasitoids of lepidopteran larvae, so they can have efficient role in biological control of these destructive agricultural pests in various agroecosystems. All the species of this research were collected excluding of rearing of hosts, while host-determining of parasitoids is essential for establishment of biological control programs. We suggest to the researchers to continue the faunistic surveys on these beneficial insects together with determining of their hosts in different regions of Iran.

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Zusammenfassung

Vorliegende Arbeit behandelt die Fauna der Ichneumoninae (Hymenoptera: Ichneumonidae) in der iranischen Provinz Khorasan. Zwanzig Arten der 10 Gattungen *Anisobas* WESMAEL, *Barichneumon* THOMSON, *Coelichneumon* THOMSON, *Ctenichneumon* THOMSON, *Diphys* KRIECHBAUMER, *Homotherus* FÖRSTER, *Ichneumon* LINNEAUS, *Platylabops* HEINRICH, *Spilichneumon* THOMSON und *Virgichneumon* HEINRICH konnten nachgewiesen werden.

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