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A study on Iranian Tiphidae (Hymenoptera: Vespoidea)

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Abstract: Five species of Tiphidae (Hymenoptera, Vespoidea) including, *Icronatha caucasica* (MOSCARY), *Ludita villosa* (FABRICIUS), *Methocha* (*Methocha*) *articulata* (LATREILLE), *Tiphia* (*Tiphia*) *femorata* FABRICIUS and *Tiphia* (*Sierocolpa*) *minuta* van der LINDEN are given in this paper as the fauna of Iran. Synonymies and distributional data are given for the species too.

Key words: Hymenoptera, Tiphidae, Vespoidea, Fauna, Iran.

Introduction

Tiphidae (Hymenoptera) is a family of solitary wasps which contains about 1.500 worldwide species in seven subfamilies, namely Anthoboscinae, Brachycistidinae, Diamminae, Methochinae, Myzininae, Thynninae, and Tiphinae (BROTHERS 1993). Most members of this family are fully winged in both sexes, and small to medium-sized less than 15 mm long, but sometimes they can be up to 30 mm long. However, some subfamilies including, Brachycistidinae, Diamminae, Methochinae and Thynninae show extreme sexual dimorphism: females wingless, antlike in appearance (ALLEN 1969; YAMANE 1999; HAN & KIM 2009). Tiphid adults feed on nectar (thus they are minor pollinators), and hunt ground-dwelling (fossorial) beetle larvae, or mole crickets for the young. Larvae are almost universally parasitoids of various beetle larvae, especially those in the superfamily Scarabaeoidea (RAMOUTAR & LEGRAND 2007). As some of the ground-dwelling scarab species attacked by tiphids are pests, some of these wasps are considered beneficial as biological control agents (GIVEN 1954; KROMBEIN 1979; RAMOUTAR & LEGRAND 2007).

The fauna of Iranian Tiphidae was poorly studied so far. There are major topographical, geological and climatic variations in Iran. Iran is rich in plant diversity and one of the major centers of endemism in this part of the world (ZEHZAD et al. 2002). There is a diverse fauna of insects in Iran which the faunistic surveys on different taxa are necessary step by step. The objective of this paper is preliminary study on Iranian Tiphidae as the beneficial insects in natural biological control of agricultural pests.

Materials and Methods

The specimens were collected by malaise traps and sweeping nets from some regions of

Iran. Some specimens of insect collections of different universities (Qaemshahr and Tehran Science & Research Branches) were checked too. The information concerning specific name, describer and description date, locality, altitude (in brackets) and date of collection, and number of species was given. In this paper, classification and nomenclature and also synonymies and distributional data of Tiphidae suggested by NAGY (1967), ALLEN (1972), ARBOUW (1985), BROTHERS (1993), GORBATOVSKY (1995) and YILDIRIM & BARTALUCCI (2009) have been followed.

Results

A total of five species of Tiphidae from four genera (*Icronatha*, *Ludita*, *Methocha* and *Tiphia*) are listed in this paper. The list of species together with the synonymies and distributional data are given below.

Subfamily *Methochinae*

Genus *Methocha* LATREILLE 1804

Methocha (Methocha) articulata (LATREILLE 1792)

Synonymy: *Mutilla articulata* LATREILLE, 1792: 100. *Methocha articulata* (LATREILLE): LATREILLE, 1804: 269; AGNOLI, 2005: 37, confirmed the valid name of *articulata* against accepted name of *ichneumonides*, and provide detailed synonymic lists].

Material: West Azarbayjan province: Maco (1730 m), 2 ♀♀, September 2003. Kordestan province: Bijar (1746 m), 1 ♀, 1 ♂, July 2005. Hamadan province: Hamadan (2056 m), 2 ♀♀, 1 ♂, October 2007.

Distribution outside Iran: Transpalearctic: North Africa, Europe, Russian Far East.

Subfamily *Tiphinae*

Genus *Icronatha* NAGY 1967

Icronatha caucasica (MOSCARY 1883)

Synonymy: *Tiphia caucasica* MOSCARY 1883. *Icronatha caucasica* NAGY 1975.

Material: Hamadan province: Hamadan (2056 m), 1 ♀, August 2006.

Distribution outside Iran: South Eastern Europe and Turkey.

Genus *Ludita* NAGY 1967

Ludita villosa (FABRICIUS 1793)

Synonymy: *Tiphia villosa* FABRICIUS 1793. *Ludita morio* NAGY 1969. *Ludita villosa* van ACHTERBERG 1983.

Material: Mazandaran province: Behshahr (57 m), 2 ♀♀, May 2007.

Distribution outside Iran: Western Palaearctic Region, from NW Africa and Europe to Turkey.

Genus *Tiphia* FABRICIUS 1775

Subgenus *Tiphia* FABRICIUS 1775

Tiphia (Tiphia) femorata FABRICIUS 1775

S y n o n y m y : *Tiphia ater* KLUG 1810. *T. = infima* TOURNIER 1889. *T. lativentris* TOURNIER 1889. *T. nigripes* COSTA 1858. *T. palmipes* SCHRANK 1781. *T. pilipennis* KLUG 1808. *T. rufipes* COSTA 1858. *T. rugosa* TOURNIER 1889. *T. tournieri* DALLA TORRE 1891.

M a t e r i a l : Isfahan province: Najaf-Abad (1565m), 2 ♀, 1 ♂, October 2004. Mazandaran province: Ramsar (23 m), 1 ♀, August 2005. East Azarbaijan province: Arasbaran (847 m), 3 ♀, 2 ♂, August 2007.

D i s t r i b u t i o n o u t s i d e I r a n : Europe: Albania, Armenia, Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Greece, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Spain, Sweden. Outside Europe: West and South Siberia, Kazakhstan, Kyrghyzstan, Tadjikistan, Mongolia, N. Africa.

Subgenus *Sierocolpa* NAGY 1967

Tiphia (Sierocolpa) minuta van der LINDEN 1827

S y n o n y m y : *Tiphia rufipes* DUSMET & ALONSO 1930. *T. unicubitalis* KISS 1915.

M a t e r i a l : East Azarbaijan province: Arasbaran (765 m), 1 ♀, July 2004. Ardabil province: Gerny (764 m), 1 ♀, June 2007.

D i s t r i b u t i o n o u t s i d e I r a n : Albania, Armenia, Belgium, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, N and S Russia, Slovakia, Spain, Sweden, West and South Siberia, Russian Far East.

Discussion

This is the first study on fauna of Iranian Tiphidae which contains a few samplings in some regions of Iran. Actually this work was based on a few samples collected in some small areas of Iranian territory and only five species were collected in this research, but many other tiphid species is expected to be discovered in Iran. Several regular samplings must be conducted in different regions of Iran for determining the fauna of Iranian Tiphidae perfectly. On the other hand, some of the tiphid wasps have efficient role in biological control of scarab beetles (Scarabaeidae) which conservation of these beneficial insects must be considered by the researchers especially in insecticides' application on the agricultural pests (ROGERS & POTTER 2003, 2004).

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Zusammenfassung

Die fünf Tiphidae-Arten *Icronatha caucasica* (MOSCARY), *Ludita villosa* (FABRICIUS), *Methocha* (*Methocha*) *articulata* (LATREILLE), *Tiphia* (*Tiphia*) *femorata* FABRICIUS and *Tiphia* (*Sierocolpa*) *minuta* van der LINDEN wurden für die Fauna des Irans nachgewiesen. Neben Angaben zur Synonymie wurden Hinweise zur Verbreitung gegeben.

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