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**Faunistic Note on the Braconidae
(Hymenoptera: Ichneumonoidea)
in Iranian Alfalfa Fields and Surrounding Grasslands**

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Abstract

A total of six braconid species (Hymenoptera: Braconidae) of five genera (*Agathis* LATREILLE, *Apanteles* FÖRSTER, *Bassus* FABRICIUS, *Bracon* FABRICIUS and *Chorebus* HALIDAY) and four subfamilies (Agathidinae, Braconinae, Microgastrinae and Alysiinae) were collected from Iranian alfalfa fields and surrounding grasslands.

Key words: Braconidae, Alfalfa fields, Fauna, New record, Iran

Zusammenfassung

Sechs Braconidenarten (Hymenoptera: Braconidae) aus fünf Gattungen (*Agathis* LATREILLE, *Apanteles* FÖRSTER, *Bassus* FABRICIUS, *Bracon* FABRICIUS and *Chorebus*

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HALIDAY) und vier Unterfamilien (Agathidinae, Braconinae, Microgastrinae und Alysiinae) wurden auf iranischen Luzernefeldern und umliegendem Grünland nachgewiesen.

Introduction

The Braconidae constitute the second largest family of Hymenoptera. This family is of cosmopolitan distribution and diverse in all areas, with no strong preference for tropical or temperate regions or for wet or dry habitats (SHARKEY & WAHL, 1992; GHAHARI et al., 2006). The most common hosts of these beneficial insect are Lepidoptera larvae, followed by Coleoptera larvae and Diptera larvae. Other hosts include Hemiptera nymphs and adults, Orthoptera and Psocoptera nymphs, adult Hymenoptera, Coleoptera, and Chrysopidae (Neuroptera), and Symphyta larvae (TOBIAS, 1967; MATTHEWS, 1974; WHARTON, 1993).

Alfalfa (*Medicago sativa*) is one of the most important legumes used in agriculture. Alfalfa is widely grown throughout the world as forage for cattle, and is most often harvested as hay, but can also be made into silage, grazed, or fed. Alfalfa has the highest feeding value of all common hay crops, being used less frequently as pasture. When grown on soils where it is well-adapted, alfalfa is the highest yielding forage plant (HANSON et al., 1988; PARKER & PARKER, 2003).

There are several insect pests in alfalfa fields which damage to this crop in different seasons. These pests are attacked by many natural enemies including predators and parasitoids. The braconid wasps are one of these beneficial insects which play an effective role in biological control programs. Despite of the importance of these efficient parasitoids in almost all agroecosystems, their diversity was not perfectly studied in alfalfa fields of the world so far. In this paper, we deal with the faunistic diversity of Braconidae in some Iranian alfalfa fields. The goal of this work is determining the efficient parasitoids in alfalfa fields for decreasing the pesticides' application.

Materials and Methods

Specimens were collected by sweep netting and malaise traps from different regions of Iran which contain alfalfa fields. These sampled regions were Ardabil (Ardabil province), Bojnord (Khorasan province), Gonbad (Golestan province), Hamadan (Hamadan province), Maragheh (East Azarbayjan province) and Ourmieh (West Azarbayjan province). The samplings were conducted between 2004 and 2007, and the collected specimens were killed with ethyl acetate and mounted on triangular labels and were examined with a stereoscopic binocular microscope.

Results

Up on the conducted faunistic survey on the Braconidae of alfalfa fields, totally 6 species from 5 genera were identified as the new records for fauna of Iran. The list of species is given below together with the general distribution data.

Subfamily *Agathidinae*

Genus *Agathis* LATREILLE, 1804

Agathis fuscipennis (ZETTERSTEDT, 1838)

Material examined: West Azarbayjan province: Ourmieh (2♂♂), 18.IX.2006.

General Distribution: Germany, Finland, Sweden (FISCHER, 1957, 1968: Early indications of distribution of *Agathis* in Palearctic region; SHENEFELT, 1970); Austria, Bulgaria, England, Ireland (NIXON, 1986); Switzerland (SIMBOLOTTI & ACHTERBERG, 1999); Turkey (ZETTEL and BEYARSLAN, 1992; CETIN & BEYARSLAN, 2001).

Genus *Bassus* FABRICIUS, 1804

Bassus armeniacus (TELENGA, 1955)

Material examined: East Azarbayjan province: Maragheh (1♂), 9.VI.2006.

General Distribution: Austria, Russia, Turkey (NIXON, 1986; CETIN & BEYARSLAN, 2001).

Subfamily *Alysiinae*

Tribe *Dacnusiini*

Genus *Chorebus* HALIDAY, 1833

Chorebus (Phaenolexis) posticus (HALIDAY, 1839)

Material examined: Hamadan province: Hamadan (1♀), 13.VII.2006.

General Distribution: Widely distributed in the Palearctic region (PAPP, 2005).

Subfamily *Braconinae*

Genus *Bracon* FABRICIUS, 1804

Bracon (Bracon) leptus MARSHALL, 1897

Material examined: Khorasan province: Bojnord (1♀), 9.X.2007.

General Distribution: Austria, Caucasus, Far East, Hungary, Kazakhstan, Siberia, Spain, Tajikistan, Turkmenistan, Ukraine, Uzbekistan (PAPP, 1968; SHENEFELT, 1978; TOBIAS, 1995), Turkey (BEYARSLAN et al., 2005; GÜLER & ÇAĞATAY, 2007).

***Bracon (Bracon) pectoralis* WESMAEL, 1838**

Material examined: Golestan province: Gonbad (2 ♀), 7.IV.2005.

General Distribution: Albania, Austria, Azerbaijan, Belgium, Bulgaria, Caucasia, England, France, Germany, Hungary, Italy, Kazakhstan, Russia, Spain, Tunisia, Turkmenistan, Ukraine, Yugoslavia (PAPP, 1968; SHENEFELT, 1978; TOBIAS, 1995), Turkey (BEYARSLAN et al., 2005; GÜLER & ÇAĞATAY, 2007).

Subfamily Microgasterinae

***Apanteles* FÖRSTER, 1862**

***Apanteles (Apanteles) emarginatus* (NEES, 1834)**

Material examined: Ardabil province: Ardabil (1 ♀), 22.VIII.2004.

General Distribution: Europe, Armenia, Azerbaidzhan (PAPP, 1978), Turkey (INANC & ERDOGAN, 2004).

Discussion

Alfalfa is a vigorous and productive crop- Like all farm crops; however, alfalfa is subject to stand injury and yield loss from disease, insect injury and nutrient deficiencies. Prompt and accurate diagnosis of a problem can allow early treatment to modify or correct the situation before yields are seriously affected or the situation stands are lost (WILLIS, 1983; JENNINGS, 1999). Although several natural enemies were determined from Iranian alfalfa fields, but pesticides are applied severely in almost fields. The main goal of pesticides' application in alfalfa fields is control of alfalfa weevil, *Hypera postica* (GYLLENHAL), which is a key pest of alfalfa in almost regions of the world. In addition to *H. postica*, there are many other important pests including, Alfalfa Weevil, *Hypera postica* (GYLLENHAL), Clover leaf weevil, *Hypera punctata* (FABRICIUS), Clover root curculio, *Sitona hispidulus* (FABR.), Alfalfa snout beetle, *Brachyrhinus ugustici* (L.), Potato leafhopper, *Empoasca fabae* (HARRIS), Pea aphid, *Acyrtosiphon pisum* (HARRIS), Spotted Alfalfa aphid, *Therioaphis maculata* (BUCKTON), Meadow Spittle bug, *Philaenus spumarius* (L.), Variegated cutworm, *Peridroma saucia* (HÜBNER), Differential grasshopper, *Melanopus differentialis* (THOMAS) and Plant bugs, *Lygus lineolaris* (PALISOT de BEAUVOIS) (DAY, 1999; PARKER & PARKER, 2003).

Insect pest management in an organic system depends on several factors including climate, beneficial organisms already present in the area, and hay-cutting schemes. Many types of insects and mites inhabit alfalfa plantings, yet only a few species threaten yields. Proper identification of alfalfa pests as well as their natural enemies is the first step in successful management of pests. Some local Extension service specialists are familiar with pests common to specific areas and can help with proper identification. After

determining of all the pests and natural enemies in an agroecosystem, start to prepare a proper IPM program and continuing it will be resulted the successful of pest control (FLINT & DREISTADT, 1998; GHAHARI et al. 2008).

In this research, although the braconids' fauna of Iranian alfalfa fields was preliminary studied, but there are several other alfalfa fields in different regions of Iran which were not sampled in this project. Continuing this research in other Iranian alfalfa fields surely will be resulted to many other new records and probably new species in the family Braconidae. Therefore, we suggest strongly that the Iranian researchers especially the top researchers of different branches of Islamic Azad University carry on these invaluable research topics for solving the crop loss problem step by step.

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