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Encyrtid fauna (Hymenoptera: Chalcidoidea: Encyrtidae) from north and northwestern Iran

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Abstract

Encyrtid wasps (Hymenoptera: Encyrtidae) are one of the powerful parasitoids which have efficient role in agricultural pests control. This paper deals with the faunistic study on these beneficial insect from north and northwestern Iran. Totally 23 species from 12 genera were collected and identified together with their hosts.

Key words: Hymenoptera, Chalcidoidea, Encyrtidae, Host insect, Iran.

Zusammenfassung

Vorliegende Arbeit beschäftigt sich mit dem Vorkommen der landwirtschaftlich bedeutenden parasitoiden Wespenfamilie Encyrtidae (Hymenoptera) im Norden und Nordwesten des Irans. 23 Arten aus 12 Gattungen konnten gemeinsam mit ihren Wirten identifiziert werden.

Introduction

Scale insects (Hemiptera: Coccoidea) are notorious pests especially on perennial, fruit and nut trees, ornamental shade trees and shrubs, forest trees, and in greenhouse and indoor plantings (KAYDAN et al. 2006). One of the potentially useful methods to control harmful scales is to use natural enemies, especially from the family Encyrtidae (Hymenoptera: Chalcidoidea). The Encyrtidae is one of the largest and most widespread families of Hymenoptera with over than 3.300 species described (NOYES et al. 1997). The encyrtid wasps are important in the biological control of plant pests and are widely used (together with Aphelinidae) for the control of scale insects (NIKOLSKAYA & YASNOSH 1966; NOYES 1985; TRJAPITZIN 1989). More than 400 encyrtid species have been used previously or are used today for biological suppression of various crop pest species particularly on the mealybugs (NOYES 1985; GREATHEAD 1986; NEUENSCHWANDER et al. 1990; GRISELL & SCHAUFF 1990), making possible to obtain ecologically clean foodstuff (JAPOSHVILI & NOYES 2006). The fauna of Iranian Encyrtidae was poorly studied so far, with 93 species representing 32 genera (FALLAHZADEH & JAPOSHVILI 2010). Iran is a large country with diverse scale insects as the main hosts of Encyrtidae. The objective of this paper is faunal study of Encyrtidae in north and northwestern Iran.

Materials and Methods

The specimens were collected by Malaise trap and rearing method. In rearing method the leaves of plants infested with scale insects (Hemiptera: Coccoidea) were collected from different regions of north and northwestern Iran. The samples were put in gelatine capsules separately and then taken in the incubator (25 ± 2 °C, $65\pm 5\%$ RH, 14: 10 L: D), and therefore the parasitoids were emerged from the parasitized hosts gradually. All the emerged parasitoids were preserved in 75 % alcohol and were examined with a stereoscopic binocular microscope. Some specimens were slide-mounted for further study using the method outlined by NOYES (1982). The wasps were then identified based on the morphological characters such as wing venation, shape and color of antennal segments using available identification keys (PRINSLOO 1984; NOYES & HAYAT 1994).

Results

In total 23 encyrtid species from 12 genera were collected from different regions of north and northwestern Iran. The list of species is given below.

Genus *Chorea* WESTWOOD 1833

***Chorea maculata* HOFFER 1954**

Material examined: East Azarbaijan province: Arasbaran, 1 ♀, 1 ♂, summer 2005, collected by Malaise trap.

Genus *Cheiloneurus* WESTWOOD 1833

***Cheiloneurus claviger* THOMSON 1876**

Material examined: West Azarbaijan province: Miandoab, 2 ♀ ♀, 1 ♂, June 2008, parasitoid of *Pulvinaria vitis* (LINNAEUS). Mazandaran province: Sari, 1 ♀, April 2010.

***Cheiloneurus paralia* (WALKER 1837)**

Material examined: East Azarbaijan province: Tabriz, 2 ♀ ♀, September 2009, parasitoid of *Saissetia oleae* (OLIVIER).

Genus *Comperiella* HOWARD 1906

***Comperiella bifasciata* HOWARD 1906**

Material examined: West Azarbaijan province: Piranshahr, 4 ♀ ♀, 3 ♂ ♂, September 2007, parasitoid of *Aonidiella aurantii* (MASKELL).

Genus *Discodes* FÖRSTER 1856

***Discodes coccophagus* (RATSEBURG 1848)**

Material examined: East Azarbaijan province: Arasbaran, 5 ♀ ♀, 3 ♂ ♂, summer 2007, parasitoid of *Sphaerolecanium* sp.

***Discodes obscuriclavus* MYARTSEVA 1981**

Material examined: West Azarbaijan province: Siah-Cheshmeh, 2 ♀ ♀, June 2003, parasitoid of *Acanthopulvinaria orientalis* (NASONOV).

Genus *Echthroplexiella* MERCET 1921

***Echthroplexiella aeneiventris* MERCET 1921**

Material examined: East Azarbaijan province: Jolfa, 2 ♀ ♀, August 2006, collected by Malaise trap.

Genus *Epitetracnemus* GIRAULT 1915

***Epitetracnemus intersectus* (FONSCOLOMBE 1832)**

Material examined: Zanjan province: Zanjan, 3 ♀ ♀, 1 ♂, September 2006, parasitoid of *Ceroplastes* sp.

Genus *Hoplopsis* DE STEFANI 1889

***Hoplopsis minuta* (FABRICIUS 1793)**

Material examined: East Azarbaijan province: Jolfa, 3 ♀ ♀, summer 2006, parasitoid of *Lecanopsis* sp.

Genus *Leptomastidea* MERCET 1916

***Leptomastidae abnormis* (GIRAULT 1915)**

Material examined: West Azarbaijan province: Salmas, 2♀♀, spring 2007, parasitoid of *Saissetia oleae* (OLIVIER).

Genus *Metaphycus* MERCET 1917

***Metaphycus flavus* (HOWARD 1881)**

Material examined: Ardabil province: Ardabil, 1♀, 1♂, summer 2004, parasitoid of *Ceroplastes floridensis* COMSTOCK.

***Metaphycus insidiosus* (MERCET 1921)**

Material examined: Zanjan province: Zanjan, 2♀♀, autumn 2006, parasitoid of *Eulecanium tiliae* (LINNAEUS).

***Metaphycus melanostomatus* (TIMBERLAKE 1916)**

Material examined: Guilan province: Roodsar, 2♀♀, July 2008, parasitoid of *Eulecanium rugulosum* (ARCHANGELSKAYA).

***Metaphycus silvestrii* SUGONJAEV 1960**

Material examined: Guilan province: Rasht, 2♀♀, June 2008, parasitoid of *Parthenolecanium corni* (BOUCHÉ).

***Metaphycus stagnarum* HOFFER 1954**

Material examined: Guilan province: Lahijan, 2♀♀, August 2008, parasitoid of *Parthenolecanium corni* (BOUCHÉ). East Azarbaijan province: Arasbaran, 3♀♀, October 2010, parasitoid of *Pulvinaria floccifera* (WESTWOOD).

Genus *Microterys* THOMSON 1876

***Microterys bellae* TRJAPITZIN 1968**

Material examined: Mazandaran province: Chalus, 5♀♀, 4♂♂, June 2009. East Azarbaijan province: Maragheh, 4♀♀, 2♂♂, September 2009, parasitoid of *Rhodococcus perornatus* (COCKERELL & PARROTT).

***Microterys cneus* TRJAPITZIN ET SUGONJAEV 1976**

Material examined: Ardabil province: Pars-Abad, 1♂, August 2002, parasitoid of *Pulvinaria vitis* (LINNAEUS).

***Microterys darevskii* TRJAPITZIN 1968**

Material examined: Ardabil province: Bilehsavar, 1♀, August 2007, collected by Malaise trap.

***Microterys hortulanus* ERDOS 1957**

Material examined: Mazandaran province: Amol, 1♀, 1♂, September 2009, parasitoid of *Didesmococcus unifasciatus* (ARCHANGELSKAYA).

***Microterys masii* SILVESTRI 1919**

M a t e r i a l e x a m i n e d : West Azarbaijan province: Mahabad, 1 ♀, July 2005, collected by Malaise trap. East Azarbaijan province: Arasbaran, 3 ♀ ♀, June 2006. Mazandaran province: Sari, 2 ♀ ♀, 1 ♂, April 2010, parasitoid of *Coccus hesperidum* (LINNAEUS).

***Microterys sylvius* (DALMAN 1820)**

M a t e r i a l e x a m i n e d : West Azarbaijan province: Ourmieh, 2 ♀ ♀, 1 ♂, April 2009, parasitoid of *Eulecanium ficiphilum* BORCHSENIUS. Mazandaran province: Ramsar, 5 ♀ ♀, 2 ♂ ♂, August 2009, parasitoid of *Didesmococcus unifasciatus* (ARCHANGELSKAYA).

Genus *Monodiscodes* HOFFER 1953

***Monodiscodes intermedius* (MAYR 1876)**

M a t e r i a l e x a m i n e d : West Azarbaijan province: Makoo, 2 ♀ ♀, 1 ♂, summer 2006, collected by Malaise trap.

Genus *Syrphophagus* ASHMEAD 1900

***Syrphophagus aeruginosus* (DALMAN 1820)**

M a t e r i a l e x a m i n e d : East Azarbaijan province: Mianeh, 2 ♀ ♀, September 2005, parasitoid of *Episyrphus balteatus* (DEGEER) (Diptera: Syrphidae).

Discussion

This work conducted here for the first time in north and northwestern Iran. The results of this research also indicate there are diverse encyrtids in north and northwestern Iran which these natural enemies have efficient role in natural biological control of scale insects as the important agricultural pests. Thus these parasitoids are particularly important in parts of the world where natural control is preferable to pesticide use for ecological, financial or political reasons (JAPOSHVILI & NOYES 2005; JAPOSHVILI & KARACA 2007). Conserving of these beneficial insects upon the decreasing of pesticides application is necessary in different agroecosystems toward to augmentation of natural enemies.

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Buchbesprechung

BELLMANN H.: **Geheimnisvolle Pflanzengallen.** Ein Bestimmungsbuch für Pflanzen- und Insektenfreunde. – Quelle & Meyer Verlag, Wiebelsheim, 2012. 312 S.

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R. Gerstmeier

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