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A faunistic survey on the braconid wasps (Hymenoptera: Braconidae) from Kermanshah province, Iran

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Abstract

The fauna of six subfamilies of Braconidae (Hymenoptera) including, Agathidinae HALIDAY, Blacinae FORSTER, Braconinae NEES von ESENBECK, Cheloninae FOERSTER, Microgastrinae FOERSTER and Opiinae BLANCHARD from Kermanshah province (western Iran) is studied in this paper. Totally 51 species from 13 genera were collected and identified. In addition to the faunal study on the braconid wasps, the hosts of some species are given too.

Key words: Hymenoptera, Ichneumonoidea, Braconidae, Fauna, Parasitoid, Kermanshah, Iran.

Zusammenfassung

Ein faunistischer Überblick über die Braconidenwespen (Hymenoptera: Braconidae) der Provinz Kermanshah, Iran. Die Fauna der folgenden 6 Unterfamilien der Braconidae der Provinz Kermanshah (westlicher Iran) wurde untersucht und die Ergebnisse werden hier publiziert: Agathidinae HALIDAY, Blacinae FOERSTER, Braconinae NEES von ESENBECK, Cheloninae FOERSTER, Microgastrinae FOERSTER and Opiinae BLANCHARD. Es wurden 51 Arten aus 13 Gattungen gesammelt und identifiziert. Außerdem werden die Wirte einiger Arten mitgeteilt.

Introduction

The braconids (Hymenoptera: Braconidae) are primary parasitoids on other insects, especially upon the larval stages of Coleoptera, Diptera, and Lepidoptera, but also some hemimetabolous insects like aphids, Heteroptera or Embiidina (SHARKEY 1993; WHARTON 1993). These parasitoids are very powerful and important biological control agent. Parasitism on adult insects (particularly on Hemiptera and Coleoptera) is also observed. Members of two subfamilies (Mesostoinae and Doryctinae) are known to form galls on plants (MATTHEWS 1974; SHAW 1995). Regarding to the high importance of braconid wasps in biological control of agricultural and forest pests (QUICKE & ACHTERBERG 1990; ACHTERBERG 1993), this research as a part of huge project which deals with the Iranian Braconidae, was established for determination of family Braconidae from Kermanshah province.

Kermanshah province (34°18′N 47°4′E/34.3°N 47.067°E/34.3;47.067), located in the western part of Iran with a moderate and mountainous climate. It rains most in winter and is moderately warm in summer. The annual rainfall is 500 mm. The average temperature in the hottest months is above 22 °C. It also included diverse forests in different areas.

Materials and Methods

The specimens of this research were collected by Malaise traps and sweeping net, and also rearing of hosts in optimum condition (25±2 ºC, 65±5% RH, 14: 10 L: D) in incubator from different regions of Kermanshah province, western Iran during 2008-2010. The sampled regions in this research were included: Bistoon, Eslamabadqarb, Gilanqarb, Hersin, Javanrood, Kermanshah, Paveh, Ravansar, Sahne, Sonqor and Soomar. The specimens were put in ethanol 75 % or mounted on triangular labels and were examined with a stereoscopic binocular microscope. Additionally some materials of various insect collections preserved in different universities (especially different branches of Islamic Azad University) and some museums of the world were used too. In this paper, the information concerning specific name, describer and description date, locality, altitude (in brackets), date of collection, and number of species are given. Classification, nomenclature and distributional data of Braconidae suggested by YU et al. (2006) have been followed.

Results

Totally fifty one braconid species from thirteen genera and six subfamilies were collected from different areas of Kermanshah province. The list of species is given below.

Subfamily A g a t h i d i n a e HALIDAY 1833

***Agathis umbellatarum* NEES von ESENBECK 1814**

M a t e r i a l e x a m i n e d : Bistoon (1345 m), 3♀♀, 1♂, September 2009.

***Agathis lugubris* (FOERSTER 1862)**

M a t e r i a l e x a m i n e d : Paveh (1487 m), 1♀, May 2010.

***Agathis melpomene* NIXON 1986**

M a t e r i a l e x a m i n e d : Gilanqarb (830 m), 1♀, Unknown date.

***Agathis rufipalpis* NEES von ESENBECK 1814**

M a t e r i a l e x a m i n e d : Sahne (1365 m), 3♀♀, 1♂, September 2008. Paveh (1461 m), 1♀, May 2010.

***Agathis tibialis* NEES 1812**

M a t e r i a l e x a m i n e d : Eslamabadqarb (1342 m), 1♀, May 2009.

***Baeognatha armeniaca* TELENGA 1955**

M a t e r i a l e x a m i n e d : Kermanshah (1294 m), 1♀, June 2010.

***Bassus tumidulus* (NEES von ESENBECK 1814)**

M a t e r i a l e x a m i n e d : Kermanshah (1334 m), 2♀♀, September 2009.

Subfamily B l a c i n a e FORSTER 1862

***Blacus* (*Blacus*) *bovistae* (HAESELBARTH 1973)**

M a t e r i a l e x a m i n e d : Ravansar (1406 m), 1♀, 1♂, April 2008.

***Blacus* (*Blacus*) *exilis* (NEES 1811)**

M a t e r i a l e x a m i n e d : Sonqor (1632 m), 2♀♀, 1♂, August 2008. Hersin (1559 m), 1♂, March 2010.

***Blacus* (*Blacus*) *humilis* (NEES 1811)**

M a t e r i a l e x a m i n e d : Kermanshah (1267 m), 1♀, 1♂, June 2010.

***Blacus* (*Blacus*) *stelfoxi* HAESELBARTH 1973**

M a t e r i a l e x a m i n e d : Javanrood (1340 m), 1♀, unknown date.

***Blacus* (*Ganychorus*) *maculipes* WESMAEL 1835**

M a t e r i a l e x a m i n e d : Eslamabadqarb (1342 m), 2♀♀, Unknown date.

Subfamily B r a c o n i n a e NEES von ESENBECK 1811

***Bracon* (*Bracon*) *exhilarator* (NEES von ESENBECK 1834)**

M a t e r i a l e x a m i n e d : Sonqor (1632 m), 1♀, 2♂♂, August 2008, parasitoid of *Apion* sp. (Coleoptera: Curculionidae).

***Bracon* (*Bracon*) *luteator* (SPINOLA 1808)**

M a t e r i a l e x a m i n e d : Soomar (303 m), 2♀♀, June 2009, parasitoid of *Urophora* sp. (Diptera: Tephritidae).

***Bracon* (*Bracon*) *minutator* (FABRICIUS 1798)**

M a t e r i a l e x a m i n e d : Ravansar (1359 m), 2♀♀, April 2008, parasitoid of *Anthonomus pomorum* L. (Coleoptera: Curculionidae).

***Bracon* (*Glabrobracon*) *angustiventris* TOBIAS 1957**

M a t e r i a l e x a m i n e d : Bistoon (1345 m), 1♀, September 2009.

***Bracon* (*Glabrobracon*) *dolichurus* MARSHALL 1897**

M a t e r i a l e x a m i n e d : Kermanshah (1294 m), 1♀, June 2010.

***Bracon* (*Glabrobracon*) *nigripilosus* TOBIAS 1957**

M a t e r i a l e x a m i n e d : Kermanshah (1308 m), 2♀♀, September 2009.

***Bracon* (*Glabrobracon*) *picticornis* (WESMAEL 1838)**

M a t e r i a l e x a m i n e d : Hersin (1559 m), 2♀♀, 1♂, March 2010, parasitoid of *Pontania vesicator* BREMI (Hymenoptera: Tenthredinidae)

***Bracon* (*Habrobracon*) *variegator* (SPINOLA 1808)**

M a t e r i a l e x a m i n e d : Bistoon (1345 m), 2♀♀, September 2009, parasitoid of *Anarsia lineatella* ZELL. (Lepidoptera: Gelechiidae)

***Bracon* (*Lucobracon*) *fortipes* WESMAEL 1838**

M a t e r i a l e x a m i n e d : Ravansar (1406 m), 1♀, April 2008.

***Bracon* (*Lucobracon*) *punctithorax* TOBIAS 1959**

M a t e r i a l e x a m i n e d : Gilanqarb (830 m), 1♀, March 2009.

***Bracon* (*Lucobracon*) *triangularis* (NEES von ESENBECK 1834)**

M a t e r i a l e x a m i n e d : Sahne (1365 m), 1♀, Unknown date.

***Glyptomorpha pectoralis* (BRULLÉ 1832)**

M a t e r i a l e x a m i n e d : Kermanshah (1334 m), 2♀♀, 1♂, March 2009, parasitoid of *Plagionotus arcuatus* L. (Coleoptera: Cerambycidae).

***Vipio sareptanus* (KAWALL 1865)**

M a t e r i a l e x a m i n e d : Sahne (1365 m), 2♀♀, September 2008.

***Vipio tentator* (ROSSI 1790)**

Material examined: Ravansar (1359 m), 1♀, 1♂, April 2008.

Subfamily Cheloninae FOERSTER 1862

***Chelonus asiaticus* TELENGA 1941**

Material examined: Javanrood (1367 m), 1♀, 1♂, August 2008.

***Chelonus inanitus* (LINNAEUS 1767)**

Material examined: Gilanqarb (830 m), 3♀♀, March 2009. Hersin (1559 m), 2♀♀, 2♂♂, March 2010. Paveh (1567 m), 5♀♀, 4♂♂, May 2010.

***Chelonus ocellatus* ALEXEEV 1971**

Material examined: Paveh (1487 m), 1♀, May 2010.

***Chelonus szepligetii* DALLA TORRE 1898**

Material examined: Sonqor (1632 m), 3♀♀, 4♂♂, August 2008. Soomar (303 m), 1♀, 2♂♂, June 2009.

Subfamily Microgastrinae FOERSTER 1862

***Apanteles ater* (RATZEBURG 1852)**

Material examined: Gilanqarb (830 m), 1♂, March 2009.

***Cotesia ancilla* (NIXON 1974)**

Material examined: Javanrood (1340 m), 1♀, August 2008.

***Cotesia geryonis* (MARSHALL 1885)**

Material examined: Eslamabadqarb (1342 m), 1♀, May 2009.

***Cotesia salebrosa* (MARSHALL 1885)**

Material examined: Bistoon (1345 m), 2♀♀, September 2009.

Subfamily Opiinae BLANCHARD 1845

***Atormus victus* (HALIDAY 1837)**

Material examined: Paveh (1567 m), 1♀, 1♂, July 2008.

***Biosteres* (*Biosteres*) *spinaciae* (THOMSON 1895)**

Material examined: Javanrood (1367 m), 1♀, 2♂♂, August 2008.

***Biosteres* (*Chilotrichia*) *blandus* (HALIDAY 1837)**

Material examined: Kermanshah (1267 m), 2♀♀, Unknown date.

***Biosteres* (*Chilotrichia*) *ultor* (FOERSTER) 1862**

M a t e r i a l e x a m i n e d : Ravansar (1359 m), 1♂, Unknown date.

***Opius* (*Apodesmia*) *karesuandensis* FISCHER 1964**

M a t e r i a l e x a m i n e d : Paveh (1487 m), 1♀, July 2008.

***Opius* (*Gastrosema*) *docilis* HALIDAY 1837**

M a t e r i a l e x a m i n e d : Kermanshah (1294 m), 2♀♀, June 2010.

***Opius* (*Hypocynodus*) *arundinis* FISCHER 1964**

M a t e r i a l e x a m i n e d : Ravansar (1406 m), 1♂, March 2008.

***Opius* (*Nosopoea*) *cingulatus* WESMAEL 1835**

M a t e r i a l e x a m i n e d : Kermanshah (1308 m), 2♂♂, September 2009.

***Opius* (*Opiognathus*) *propodealis* FISCHER 1958**

M a t e r i a l e x a m i n e d : Sahne (1365 m), 1♀, April 2010.

***Opius* (*Opiothorax*) *levis* WESMAEL 1835**

M a t e r i a l e x a m i n e d : Soomar (303 m), 3♀♀, June 2009.

***Opius* (*Opiothorax*) *lonicerae* FISCHER 1958**

M a t e r i a l e x a m i n e d : Sonqor (1632 m), 1♂, August 2008.

***Opius* (*Opiothorax*) *mirabilis* FISCHER 1958**

M a t e r i a l e x a m i n e d : Paveh (1567 m), 1♀, July 2008.

***Opius* (*Opius*) *lugens* HALIDAY 1837**

M a t e r i a l e x a m i n e d : Paveh (1567 m), 2♀♀, July 2008.

***Opius* (*Phaedrotoma*) *depeculator* (FOERSTER) 1862**

M a t e r i a l e x a m i n e d : Gilanqarb (830 m), 2♀♀, 3♂♂, March 2009. Hersin (1559 m), 1♂, March 2010.

***Opius* (*Snoflakopius*) *snoflaki* FISCHER 1959**

M a t e r i a l e x a m i n e d : Kermanshah (1308 m), 2♀♀, Unknown date.

***Opius* (*Xynobius*) *aciculatus* (THOMSON 1895)**

M a t e r i a l e x a m i n e d : Gilanqarb (830 m), 1♂, March 2009.

***Opius* (*Xynobius*) *rudis* (WESMAEL 1835)**

M a t e r i a l e x a m i n e d : Ravansar (1359 m), 2♀♀, 2♂♂, March 2008.

Discussion

Collecting fifty one braconid species in Kermanshah province means rich fauna of this family in the mentioned region. Determining of natural enemies in every area is the first and important stage in biological control of pests (FLINT & van den BOSCH 1981; HUFFAKER & DAHLSTEN 1999). However, the beneficial effect of parasitoids continues to be critically important. If they are correctly managed, they will help prevent some of the pest problems which farmers encounter. In IPM systems which aim to minimize dependence on pesticides, it is essential that these natural enemies are distinguished carefully and their efficiency is analyzed by the experts. Also the powerful and safe farming techniques are used for conserving and augmentation of natural enemies (HOY & HERZOG 1985; DEBACH & ROSEN 1991; VAN DRIESCHE & BELLOWS 1996; MAREDIA et al. 2003). Since there are diverse braconid wasps in Kermanshah province and on the other hand these parasitoids are very efficient in biological control of agricultural and forest pests, conservation of these beneficial insect is necessary for successful control of pests. Decreasing of pesticides' application is the main strategy in order to augmentation of natural enemies.

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