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A contribution to the knowledge of braconids (Hymenoptera: Braconidae) from Lorestan province, Iran

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Abstract

The fauna of 7 subfamilies of Braconidae (Hymenoptera) including, Agathidinae HALIDAY, Blacinae FOERSTER, Braconinae NEES von ESENBECK, Cheloninae FOERSTER, Euphorinae FOERSTER, Microgastrinae FOERSTER and Opiinae BLANCHARD from Lorestan province (western Iran) is studied in this paper. In a total 55 species from 16 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, Braconidae, Fauna, Parasitoid, Host, Lorestan, Iran.

Zusammenfassung

Ein Beitrag zur Kenntnis der Braconiden-Fauna (Hymenoptera) der Provinz Lorestan im Iran. Die Fauna der 7 folgenden Unterfamilien der Braconidae der Provinz Lorestan im westlichen Iran wurde studiert: Agathidinae HALIDAY, Blacinae FOERSTER, Braconinae NEES von ESENBECK, Cheloninae Foerster, Euphorinae FOERSTER, Microgastrinae FOERSTER und Opiinae BLANCHARD. Es wurden insgesamt 55 Arten aus 16 Gattungen gesammelt und bestimmt. Außerdem werden im gegenwärtigen Beitrag Wirte von einigen Arten mitgeteilt.

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Introduction

The braconids (Hymenoptera: Ichneumonoidea: Braconidae) are one of the powerful parasitoids which have efficient role in biological control of several agricultural and forest pests (SHAW & HUDDLESTON 1991; VAN ACHTERBERG 1993; SHARKEY 1993; WHARTON 1993). The fauna of these beneficial insects is studied in Iran gradually and well (GHAHARI et al. 2009a, b, c, d, 2010). But however Iran is a large country with 30 provinces, and therefore it is necessary that the species diversity of these parasitoids is studied in all provinces step by step. The main aim of this research is determining of braconids fauna in Lorestan province towards to completing the fauna of Iranian braconids.

Lorestan province covers an area of 28,392 km² and comprises a historic territory of western Iran amidst the Zagros Mountains. The terrain consists chiefly of mountains, with numerous ranges, part of the Zagros chain, running northwest to southeast. The highest point of the province is a peak at 4,050 m, and the low-lying areas being in the southern most sector of the province, are approximately 500 m above sea level. The climate is generally sub-humid continental with winter precipitation, a lot of which falls as snow. Temperatures vary widely with the seasons and between day and night (12 to 32 °C in summer and -2 to 8 °C in winter).

Materials and Methods

The materials were collected by Malaise traps and sweeping net, and also rearing of hosts in optimum condition (25±2 °C, 65±5 % RH, 14: 10 L: D) in incubator from different regions of Lorestan province, western Iran in spring-fall of 2009. The sampled regions in this research were: Pol-e-Dokhtar, Sarab Doreh, Khorramabad, Borujerd, Azna, Aligoodarz, Alashtar, Chaghalvandi, Dorood, Noor Abad, Roudbar, Sefid Dasht, Darreh-Asbar, Kouhestak. The specimens were put in ethanol 75 % or mounted on triangular labels and were examined with a stereoscopic binocular microscope. Additionally the materials of insect collections from different branches of Islamic Azad University were checked too. In this paper, the information concerning specific name, author 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

In this paper, totally 55 species from 16 genera and 7 subfamilies of Braconidae were collected from different areas of Lorestan province. The list of species is given below.

Subfamily Agathidinae HALIDAY 1833

***Agathis syngenesiae* NEES VON ESENBECK 1814**

Material examined: Aligoodarz (2015 m), 3 ♀♀, 1 ♂, June 2009. Khorramabad (1126 m), 2 ♀♀, August 2009. Darreh-Asbar (1622 m), 2 ♀♀, 2 ♂♂, August 2009.

***Agathis breviseta* NEES VON ESENBECK 1814**

Material examined: Pol-e-Dokhtar (635 m), 2 ♀♀, June 2009.

***Agathis malvacearum* LATREILLE 1805**

Material examined: Roudbar (1642 m), 3 ♀♀, June 2009.

***Agathis fuscipennis* (ZETTERSTEDT 1838)**

Material examined: Aligoodarz (2084 m), 2 ♀♀, 2 ♂♂, June 2009.

***Agathis rostrata* TOBIAS 1963**

Material examined: Azna (1875 m), 1 ♀, 2 ♂♂, July 2009.

***Bassus tumidulus* (NEES 1812)**

Material examined: Roudbar (1642 m), 2 ♀♀, June 2009.

***Bassus linguarius* (NEES VON ESENBECK 1814)**

Material examined: Pol-e-Dokhtar (635 m), 1 ♀, June 2009.

***Disophrys caesa* (KLUG 1890)**

Material examined: Darreh-Asbar (1670 m), 1 ♀, 1 ♂, August 2009. Borujerd (1637 m), 2 ♀♀, October 2009.

Subfamily Blacinae FORSTER 1862

***Blacus (Blacus) errans* (NEES 1811)**

Material examined: Aligoodarz (2015 m), 2 ♀♀, 1 ♂, June 2009.

***Blacus (Blacus) hastatus* (HALIDAY 1835)**

Material examined: Kouhestak (1215 m), 1 ♀, 1 ♂, August 2009.

***Blacus (Blacus) paganus* (HALIDAY 1835)**

Material examined: Sarab Doreh (1176 m), 2 ♀♀, 1 ♂, July 2009.

***Blacus (Ganychorus) diversicornis* (NEES 1834)**

Material examined: Darreh-Asbar (1670 m), 1 ♀, August 2009.

Subfamily Braconinae NEES VON ESENBECK 1811

***Pseudovipio castrator* (FABRICIUS 1798)**

Material examined: Borujerd (1637 m), 1♀, 2♂♂, October 2009, parasitoid of *Plagionotus arcuatus* L. (Coleoptera: Cerambycidae).

***Bracon (Bracon) gusaricus* TELENGA 1936**

Material examined: Aligoodarz (2084 m), 2♂♂, June 2009.

***Bracon (Bracon) intercessor* (NEES VON ESENBECK 1834)**

Material examined: Khorramabad (1126 m), 1♀, 1♂, August 2009. Dorood (1683 m), 2♀♀, October 2009.

***Bracon (Bracon) nigratus* WESMAEL 1838**

Material examined: Khorramabad (1045 m), 1♀, August 2009, parasitoid of *Zygaena achilleae* ESP. (Lepidoptera: Zygaenidae)

***Bracon (Bracon) subglaber* SZEPLIGETI 1904**

Material examined: Sarab Doreh (1176 m), 1♀, 2♂♂, July 2009, parasitoid of *Ceutorhynchus* sp. (Coleoptera: Curculionidae).

***Bracon (Glabrobracon) ciscaucasicus* TELENGA 1936**

Material examined: Azna (1875 m), 1♀, July 2009.

***Bracon (Glabrobracon) larvicida* (WESMAEL 1838)**

Material examined: Aligoodarz (2084 m), 1♀, 2♂♂, June 2009. Kouhestak (1215 m), 2♀♀, 1♂, August 2009.

***Bracon (Glabrobracon) pineti* THOMSON 1892**

Material examined: Darreh-Asbar (1670 m), 2♀♀, August 2009.

***Bracon (Lucobracon) brevitemporalis* TOBIAS 1959**

Material examined: Roudbar (1642 m), 1♀, June 2009.

***Bracon (Lucobracon) grandiceps* (THOMSON 1892)**

Material examined: Pol-e-Dokhtar (635 m), 3♀♀, June 2009.

***Bracon (Lucobracon) nigriventris* (WESMAEL 1838)**

Material examined: Chaghalvandi (1660 m), 1♂, September 2009.

***Bracon (Lucobracon) thuringiacus* (SCHMIEDEKNECHT 1896)**

Material examined: Khorramabad (1045 m), 2♀♀, August 2009.

***Vipio intermedius* SZÉPLIGETI 1896**

Material examined: Borujerd (1588 m), 2♀♀, October 2009.

Subfamily Cheloniinae FOERSTER 1862

***Chelonus bidens* TOBIAS 1976**

Material examined: Khorramabad (1126 m), 1♀, 2♂♂, August 2009. Dorood (1683 m), 2♀♀, 3♂♂, October 2009.

***Chelonus oculator* (PANZER 1779)**

Material examined: Aligoodarz (2015 m), 3♀♀, 6♂♂, June 2009. Borujerd (1637 m), 5♀♀, 4♂♂, October 2009.

***Chelonus smirnovi* TELENGA 1953**

Material examined: Azna (1875 m), 1♀, July 2009.

***Chelonus varimaculatus* TOBIAS 1986**

Material examined: Chaghalvandi (1660 m), 5♀♀, 2♂♂, September 2009.

Subfamily Euphorinae FOERSTER 1862

***Leiophron (Euphorus) deficiens* RUTHE 1856**

Material examined: Borujerd (1637 m), 2♀♀, October 2009, parasitoid of *Campylomma diversicornis* (Reuter) (Heteroptera: Miridae).

***Perilitus (Microctonus) aethiops* NEES 1834**

Material examined: Chaghalvandi (1660 m), 1♂, September 2009.

***Syntretus idalius* (HALIDAY 1833)**

Material examined: Sarab Doreh (1176 m), 1♂, July 2009.

Subfamily Microgastrinae FOERSTER 1862

***Cotesia abjectus* (MARSHALL 1885)**

Material examined: Kouhestak (1215 m), 2♀♀, August 2009.

***Cotesia callimone* (NIXON 1974)**

Material examined: Aligoodarz (2015 m), 1♀, June 2009.

***Cotesia cupreus* (LYLE 1925)**

Material examined: Pol-e-Dokhtar (635 m), 1♂, June 2009.

***Cotesia nothus* (MARSHALL 1885)**

Material examined: Khorramabad (1045 m), 1♂, August 2009.

***Cotesia ordinarius* (RATZEBURG 1844)**

Material examined: Roudbar (1642 m), 2♀♀, June 2009.

***Cotesia tenebrosa* (WESMAEL 1837)**

Material examined: Borujerd (1588 m), 4♀ ♀, October 2009.

***Dolichogenidea candidata* (HALIDAY 1834)**

Material examined: Noor Abad (1756 m), 1♂ ♂, June 2009.

Subfamily Opiinae BLANCHARD 1845

***Biosteres (Biosteres) carbonarius* (NEES 1834)**

Material examined: Alashtar (1255 m), 2♀ ♀, 1♂ ♂, April 2009. Khorramabad (1126 m), 3♀ ♀, 4♂ ♂, August 2009.

***Biosteres (Chilotrichia) arenarius* (STELFOX 1959)**

Material examined: Sefid Dasht (1122 m), 1♀ ♀, April 2009.

***Biosteres (Chilotrichia) rusticus* (HALIDAY 1837)**

Material examined: Roudbar (1642 m), 1♂ ♂, June 2009.

***Opius (Agnopius) similis* SZÉPLIGETI 1898**

Material examined: Dorood (1683 m), 2♀ ♀, October 2009.

***Opius (Allotypus) irregularis* WESMAEL 1835**

Material examined: Noor Abad (1756 m), 2♀ ♀, 1♂ ♂, June 2009.

***Opius (Cryptonastes) pygmaeus* FISCHER 1962**

Material examined: Sarab Doreh (1176 m), 1♂ ♂, July 2009.

***Opius (Misophthora) monilicornis* FISCHER 1962**

Material examined: Alashtar (1255 m), 1♀ ♀, April 2009.

***Opius (Misophthora) wachsmanni* SZÉPLIGETI 1898**

Material examined: Darreh-Asbar (1670 m), 1♀ ♀, August 2009.

***Opius (Opiothorax) abditus* FISCHER 1960**

Material examined: Sefid Dasht (1122 m), 1♂ ♂, April 2009.

***Opius (Opius) curticornis* FISCHER 1960**

Material examined: Azna (1875 m), 1♀ ♀, July 2009.

***Opius (Pendopius) pendulus* HALIDAY 1837**

Material examined: Khorramabad (1126 m), 2♀ ♀, August 2009.

***Opius (Phaedrotoma) diversiformis* (FISCHER 1960)**

Material examined: Khorramabad (1045 m), 1♀ ♀, August 2009.

***Opius (Phaedrotoma) exiguus* (WESMAEL 1835)**

Material examined: Chaghalvandi (1660 m), 2 ♀, 1 ♂, September 2009.

***Opius (Utetes) truncatus* (WESMAEL 1835)**

Material examined: Alashtar (1255 m), 2 ♂♂, April 2009.

***Opius (Xynobius) macrocerus* (THOMSON 1895)**

Material examined: Borujerd (1588 m), 1 ♂, October 2009.

***Psytalia (Psytalia) concolor* (SZÉPLIGETI 1910)**

Material examined: Dorood (1683 m), 2 ♂♂, October 2009.

Discussion

The result of this research indicates that there are numerous braconid species in Lorestan province. This faunistic work was conducted in 18 different localities of Lorestan province, and totally 151 specimens were collected. Continuing this research in other regions of Lorestan province especially the areas being not sampled in this research, surely there will be found more diverse specimens and several more species in the future. Regarding the importance of braconid wasps in biological control of agricultural and forest pests, and on the other hand, since determining of the fauna of natural enemies is the first step in successful biological control and IPM (Integrated Pest Management) programs (MATTHEWS 1974; QUICKE & VAN ACHTERBERG 1990; SHAW 1995), we suggest to the researchers and students to continue these faunal works towards to completing the species diversity of Iranian Braconidae step by step. The use of biological control is a fundamental tactic for pest suppression within an effective IPM program (FLINT & DREISTADT 1998, BELLOWS & FISHER 1999). The braconids together with the ichneumonids are the main effective agents of biocontrol on agricultural and forest pests.

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