Z.Arb.Gem.Öst.Ent.	63	78-80	Wien, 20. 5. 2011	ISSN 0375-5223

A contribution to the Braconidae (Hymenoptera) from Golestan National Park, northern Iran

Hassan GHAHARI & Maximilian FISCHER

Abstract

The fauna of four braconid subfamilies, Alysiinae, Aphidiinae, Braconinae, and Microgastrinae, was studied in Golestan National Park, northern Iran. In a total, 25 species from 16 genera (*Angelovia*, *Aphidius*, *Atanycolus*, *Binodoxys*, *Bracon*, *Choeras*, *Chorebus*, *Cotesia*, *Diaeretiella*, *Diolcogaster*, *Illidops*, *Lysiphlebus*, *Orthostigma*, *Praon*, *Pseudopezomachus*, *Trioxys*) were collected and identified.

Key words: Hymenoptera, Braconidae, fauna, Golestan National Park, Iran

Zusammenfassung

Die Fauna der vier Braconiden-Unterfamilien Alysiinae, Aphidiinae, Braconinae und Microgastrinae wurde im Golestan Nationalpark im Nordiran untersucht. Insgesamt wurden 25 Arten in 16 Gattungen (*Angelovia*, *Aphidius*, *Atanycolus*, *Binodoxys*, *Bracon*, *Choeras*, *Chorebus*, *Cotesia*, *Diaeretiella*, *Diolcogaster*, *Illidops*, *Lysiphlebus*, *Orthostigma*, *Praon*, *Pseudopezomachus*, *Trioxys*) gesammelt und bestimmt.

Introduction

The family Braconidae is the second largest family (after the Ichneumonidae) in the order Hymenoptera, containing more than 15,000 valid species (QUICKE & ACHTERBERG 1990), from an estimated total world fauna of at least 40,000 (ACHTERBERG 1984). Although, ACHTERBERG (1984) recognized 35 subfamilies, later this number raised to 39 (SHAW & HUDDLESTON 1991), and most recently to 44 (ACHTERBERG 1993). These parasitoids have a powerful role in biological control of various agricultural and forest pests, especially Lepidoptera, Diptera and Coleoptera (WHARTON 1993, GHAHARI et al. 2006).

Iran has several noteworthy national parks, and Golestan National Park is the largest and also the finest. Situated in the highlands of the Caspian region and the steppes of Khorasan province of northern Iran, the Golestan National Park offers a wide spectrum of flora and fauna including brown bears, jackals, Persian ibex, wolves, wild cats, leopards, deer, wild boar, gazelles, mountain goats, foxes, and cheetahs. The Golestan National Park was the first area in Iran to be designated as a national park. It is located at 37.16° to 37.36° north latitude and 55.44° to 56.17° east longitude and covers an area of about 91,000 hectares. The terrain is mountainous with an altitude varying between 380 and 2,819 meters. The park contains a rich diversity of flora and fauna, unique in many respects (HASSAN ZADEH et al. 1993). In general, the animal fauna of Golestan National Park was studied rather well, but the insects fauna was not studied so far, except for

Ichneumonidae (GHAHARI & JUSSILA 2010). Therefore, the aim of this paper is a faunistic survey of Braconidae in the Golestan National Park and its vicinity.

Materials and methods

Specimens were colleted by sweep netting and malaise trap from various habitats in different localities of Golestan National Park and its vicinity. The materials were killed with ethyl acetate, mounted on triangular labels, and examined with a stereoscopic binocular microscope. Aphid parasitoid samples on various hosts were collected at random from live and mummified aphids on different host plants. Plant samples with aphids containing parasitoids were placed in plastic boxes to obtain adult parasitoids. The emerging parasitoids were transferred with a fine brush into Eppendorf tubes containing 75% ethyl alcohol. The specimens were mounted on triangular labels and were examined with a stereoscopic binocular microscope. The sampled regions of this research were Armodlu, Cheshmeh-khan, Dasht-e-Mirzabaylu, Galikesh, Ghoosh-Cheshmeh, Ghareh-Ghashli, Kalaleh, Minoodasht, National Park, Ramyan, Sulgard, and Yaghtiklan (all in Golestan province). For the determination of the species, the key and systematic characters used follow those proposed by PAPP (1974), QUICKE (1987), BEYARSLAN & FISCHER (1990), ACHTERBERG (1993), and TOBIAS (1995). Classification and nomenclature of Braconidae suggested by YU et al. (2006) have been followed.

Results

In this research, totally 25 braconid species from 16 genera and four subfamilies were collected.

Subfamily Alysiinae

Tribe Alysiini

Angelovia elipsocubitalis ZAYKOV, 1980: National Park, 1919 m, 1♀, IX.2006.

Orthostigma laticeps (THOMSON, 1895): Yaghtiklan, 1920 m, 1♀, VIII.2007.

Pseudopezomachus cursitans (FERRIÈRE, 1930): Dasht-e-Mirzabaylu, 1575 m, 2 ♀♀, VIII.2007.

Tribe Dacnusini

Chorebus (*Phaenolexis*) *heringianus* GRIFFITHS, 1967: Minoodasht, 31 m, 1 ♀, IX.2006.

Chorebus (*Stiphrocera*) *baeticus* GRIFFITHS, 1967: National Park, 1967 m, 2 ♂♂, X.2005. Ghoosh-Cheshmeh, 1612 m, 1 ♂, IX.2006.

Chorebus (*Stiphrocera*) *pseudomisellus* GRIFFITHS, 1968: Cheshmeh-khan, 1586 m, 1 ♂, VI.2006.

Subfamily Aphidiinae

Aphidius colemani VIERECK, 1912: Ghareh-Ghashli, 1825 m, 2 ♀♀, 1♂ IX.2006.

Binodoxys angelicae (HALIDAY, 1833): Dasht-e-Mirzabaylu, 1575 m, 2 ♀♀, 1 ♂, VIII.2007.

Diaeretiella rapae (M'INTOSH, 1855): National Park, 1967 m, 2 ♀♀, X.2005. Sulgard, 1565 m, 3 ♀♀, IX.2006.

Lysiphlebus fabarum (MARSHALL, 1896): Material Minoodasht, 31 m, 2 ♀♀, 1 ♂, VI.2006.

Praon volucre (HALIDAY, 1833): Ramyan, 83 m, 2 ♀♀, VI.2006.

Trioxys pallidus (Haliday, 1833): National Park, 1881 m, 1 ♀, VI.2006. Galikesh, 26 m, 2 ♀♀, VIII.2007.

Subfamily Braconinae

Atanycolus ivanowi (Kokujev, 1898): National Park, 2157 m, 2 ♀♀, 1 ♂, ex *Sphenoptera* (*Tropeopeltis*) *tappesi* Marseul (Coleoptera: Buprestidae) on peach tree, VI.2006. National Park, 1881 m, 3 ♀♀, VI.2006. Ghareh-Ghashli, 1825 m, 1 ♀, IX.2006.

Bracon (*Bracon*) *leptus* Marshall, 1897: Ghareh-Ghashli, 1825 m, 2 ♀♀, IX.2006. Ramyan, 83 m, 4 ♀♀, VIII.2007.

Bracon (*Cyanopterobracon*) *urinator* (Fabricius, 1798): Armodlu, 1550 m, 1 ♀, VIII.2007.

Bracon (*Glabrobracon*) *chrysostigma* Grese, 1928: National Park, 1967 m, 1 ♀, X.2005.

Bracon (*Glabrobracon*) *lividus* Telenga, 1936: National Park, 1919 m, 1 ♀, IX.2006.

Bracon (*Glabrobracon*) *parvulus* Wesmael, 1838: Minoodasht, 31 m, 1 ♀, 1 ♂, VI.2006.

Bracon (*Lucobracon*) *larvicida* Wesmael, 1838: Dasht-e-Mirzabaylu, 1575 m, 2 ♂♂, VIII.2007.

Subfamily Microgastrinae

Choeras tedellae (Nixon, 1961): Yaghtiklan, 1920 m, 1 ♀, VIII.2007.

Cotesia notha (Marshall, 1885): Ghareh-Ghashli, 1825 m, 2 ♀♀, 2 ♂♂, IX.2006.

Diolcogaster claritibia (Papp, 1959): National Park, 1967 m, 2 ♀♀, X.2005.

Dolichogenidea cytherea (Nixon, 1972): Kalaleh, 150 m, 1 ♀, 1 ♂, VIII.2007.

Dolichogenidea seriphia (Nixon, 1972): Galikesh, 26 m, 2 ♂♂, VIII.2007.

Illidops suevus (Reinhard, 1880): Ramyan, 83 m, 1 ♀, VI.2006. Yaghtiklan, 1920 m, 2 ♀♀, 1 ♂, VIII.2007.

Discussion

The result of this research indicates that the Golestan National Park included a diverse and interesting fauna of Braconidae which is resulted from diverse flora elements especially several forest trees (especially the dominant plant species *Acanthophyllum* spp., *Acer* spp., *Artemesia* spp., *Berberis* spp., *Carpinus* spp., *Crateagus* spp., *Festuca* spp., *Quercus* spp., *Rhamnus* spp., *Rosa* spp., *Rubus* spp.) (Hassan Zadeh et al. 1993). With attention to several pests in various taxa especially in Lepidoptera and Coleoptera in Golestan National Park, the braconids of this region can have efficient role in biological control. As we mentioned in the introduction, Golestan National Park is a vast region incorporating various geographical regions and we expect that a large number of species (new records and probably new species) remain to be discovered (Ghahari & Jussila 2010). The braconid fauna of Iran was studied rather well (Ghahari et al. 2009a, b, c, d, 2010) and studies are still progressing. Iran is a large country with a diverse flora and therefore it is necessary to continue these faunistic surveys for completing the fauna of Iranian Braconidae and other beneficial insects.

Acknowledgements

The authors are appreciated to J. Papp (Hungarian Natural History Museum), K.J. Hedqvist (Vallentuna, Sweden), C. van Achterberg (National Natuurhistorisch Museum of the Netherlands) and V.I. Tobias (Russian Academy of Sciences) for valuable scientific helps in progress of the project. The research was supported by Shahre Rey Islamic Azad University (Iran) and Naturhistorisches Museum Wien (Austria).

REFERENCES

ACHTERBERG, C. van 1984: Essay on the phylogeny of the Braconidae (Hymenoptera: Ichneumonoidea). – Entomologisk Tidskrift 105: 41-58.

ACHTERBERG, C. van 1993: Illustrated key to the subfamilies of the Braconidae (Hymenoptera: Ichneumonoidea). – Zoologische Verhandelingen, Leiden 283: 1-189.

BEYARSLAN, A. & FISCHER, M. 1990: Bestimmungsschlüssel zur Identifikation der paläarktischen *Bracon*-Arten des Subgenus *Glabrobracon* TOBIAS (Hymenoptera, Braconidae, Braconinae). – Annalen des Naturhistorischen Museums in Wien, Serie B, 91: 137-145.

GHAHARI, H., FISCHER, M., ÇETIN ERDOGAN, O., BEYARSLAN, A. & HAVASKARY, M. 2009a: A contribution to the knowledge of the braconid-fauna (Hymenoptera, Ichneumonoidea, Braconidae) of Arasbaran, Northwestern Iran. – Entomofauna 30(20): 329-336.

GHAHARI, H., FISCHER, M., ÇETIN ERDOGAN, O., BEYARSLAN, A., HEDQVIST, K.J. & OSTOVAN, H. 2009b: Faunistic note on the Braconidae (Hymenoptera: Ichneumonoidea) in Iranian alfalfa fields and surrounding grasslands. – Entomofauna 30(24): 437-444.

GHAHARI, H., FISCHER, M. ÇETIN ERDOĐAN, O., TABARI, M., OSTOVAN, H. & BEYARSLAN, A. 2009c: A contribution to Braconidae (Hymenoptera) from rice fields and surrounding grasslands of northern Iran. – Munis Entomology & Zoology 4(2): 432-435.

GHAHARI, H., FISCHER, M., HEDQVIST, K.J., ÇETIN ERDOGAN, O. & van ACHTERBERG, C. 2010: Some new records of Braconidae (Hymenoptera) for Iran. – Linzer biologische Beiträge 42(2): 1395-1404.

GHAHARI, H., GADALLAH, N.S., CETIN ERDOGAN, O., HEDQVIST, K.J., FISCHER, M., BEYARSLAN, A. & OSTOVAN, H. 2009d: Faunistic note on the Braconidae (Hymenoptera: Ichneumonoidea) in Iranian cotton fields and surrounding grasslands. – Egyptian Journal of Biological Pest Control 19(2): 115-118.

GHAHARI, H. & JUSSILA R. 2010: A contribution to the ichneumon wasps (Hymenoptera: Ichneumonidae) from Golestan National Park and vicinity, Northeastern Iran. – Linzer biologische Beiträge 42/2: 1379-1384.

GHAHARI, H., YU, D.S. & van ACHTERBERG, C. 2006: World bibliography of the family Braconidae (Hymenoptera: Ichneumonoidea) (1964-2003). – NNM Technical Bulletin 8: 293 pp.

HASSAN ZADEH, B., ZEHZAD, B., FARHANG, B., MAJNOUNIAN, H. & GOSHTASB, H. 1993: Golestan National Park. – Department of Environment, Fardin Publication, 203 pp.

PAPP, J. 1974: Zur Kenntnis der *Bracon*-Arten Österreichs (Hymenoptera, Braconidae). – Annalen des Naturhistorischen Museums in Wien 78: 415-435.

QUICKE, D.L.J. 1987: The old world genera of braconine wasps (Hym.: Braconidae). – Journal of Natural History 21: 43-157.

QUICKE, D.L.J. & ACHTERBERG, C. van 1990: Phylogeny of the subfamilies of the family Braconidae (Hymenoptera: Ichneumonoidea). – Zoologische Verhandelingen 258: 1-95.

SHAW, M.R. & HUDDLESTON, T. 1991: Classification and biology of braconid wasps (Hymenoptera: Braconidae). – Handbook for the Identification of British Insects 7: 1-126.

TOBIAS, V.I. 1995: Keys of the insects of the European part of the USSR. Volume 3, Hymenoptera, Part 4. – Science Publishers, Lebanon, New Hampshire, USA, XVI + 883 pp.

WHARTON, R.A. 1993: Bionomics of the Braconidae. – Annual Review of Entomology 38: 121-143.

YU, D.S., van ACHTERBERG, C. & HORSTMANN, K. 2005: World Ichneumonoidea 2005. Taxonomy, biology, morphology and distribution [Braconidae]. – Taxapad 2006 (Scientific names for information management) Interactive electronical catalogue on DVD/CD-ROM. Vancouver.

Authors' adresses:

Dr. Hassan Ghahari, Department of Agriculture, Islamic Azad University, Shahre Rey Branch, Tehran, Iran. E-mail: hghahari@yahoo.com

Hofrat i.R. Univ.-Doz. Mag. Dr. Maximilian Fischer, Naturhistorisches Museum, 2. Zoologische Abteilung, A-1010 Wien, Burgring 7, Austria. E-mail: maximilian.fischer@chello.at