Additional evidence and new records of the subfamily Braconinae (Hymenoptera: Braconidae) in Western Iran

Alireza Rajabi Mazhar1, Konstantin Samartsev2*, Shila Goldasteh3 and Samira Farahani4*

1 Research and Education of Agriculture and Natural Resources Center, Agricultural Research Education and Extension Organization (AREEO), Hamadan, Iran.
2 Zoological Institute of the Russian Academy of Sciences, Saint Petersburg, Russia.
3 Department of Entomology, Agricultural faculty, Islamic Azad University, Arak, Iran.
4 Research Institute of Forests and Rangelands, Agricultural Research Education and Extension Organization (AREEO), Tehran, Iran.

ABSTRACT. A survey of Braconinae wasps was conducted at five sites, represented by various agroecosystems, rangelands and forests in Western Iran (Hamadan province) during 2015–2016 with a series of light and Malaise traps. Fifteen species belonging to three genera (Bracon Fabricius, Glyptomorpha Holmgren and Pseudovipio Szépligeti) were identified, among them five species, viz. Bracon concavus Tobias, B. fumigidus Szépligeti, B. iskilipus Beyarslan & Tobias, B. moczari Papp and B. novus Szépligeti, were recorded for the first time from Iran. 15 species are new provincial records for Hamadan.

Key words: Bracon, new records, Hamadan, Iran, fauna

Introduction

The Braconinae Nees is a large subfamily of moderately small to large wasps with more than 3000 species described worldwide (Yu et al., 2016). Most braconines are idiobiont ectoparasitoids of concealed Lepidoptera, Coleoptera, symphytan Hymenoptera and Diptera (Shaw & Huddleston, 1991).

In recent years, the fauna of some subfamilies of Iranian Braconidae is catalogued (Farahani et al., 2014a, 2014b, 2014c, 2015, 2016; Rajabi Mazhar et al., 2018; Abdoli et al., 2018) but Braconinae are poorly studied (Ameri et al., 2014; Rahmani et al., 2017). Faunistic and taxonomic literature was summarized in the recent Iranian checklist (Farahani et al., 2016), which lists 11 genera and 115 species of Braconinae. Rahmani et al. (2017) have recorded eight new records of this subfamily from Iran.

The purpose of this study as a part of our ongoing research on braconid fauna of Iran is to contribute to the knowledge of the subfamily Braconinae in Western Iran.

Corresponding authors: Konstantin Samartsev and Samira Farahani, E-mail: konstantin.samartsev@zin.ru; s.farahani@rifr-ac.ir
Copyright © 2019, Rajabi Mazhar et al. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
**Material and methods**

Material for this study was collected by the first author from different habitats of Hamadan province in Western Iran during 2015–2016 using Malaise and light traps.

The material was collected in five locations (Fig. 1):
- Asadabad, Galehbor, 34°50'13.2" N, 48°10'14.0" E, 2150m a.s.l.
- Hamadan, Botanical Garden, 34°46'19.3" N, 48°30'55.6" E, 1950m a.s.l.
- Gonbad, 34°41'42.7" N, 48°42'05.2" E, 2220m a.s.l.
- Nahavand, Gian Forest, 34°09'53.3" N, 48°13'58.0" E, 1650m a.s.l.
- Toiserkan, Korzan, 34°35'22.4" N, 48°30'37.1" E, 1825m a.s.l.

Collected specimens were temporarily stored in 75% ethanol and afterwards cleaned according to the AXA method (van Achterberg, 2009) and mounted on triangular cards. The collected specimens were partly identified by comparison with type material by the second author (marked as "KS" in the list) and using the keys provided by Quicke (1987) and Tobias (1995) and by comparison with the first part of the material (by the first author; marked as "AM" in the list). Specimens are deposited in the collection of the Research Department of Forests and Rangelands in Hamadan Research Center (FRHR) and in the Zoological Institute of the Russian Academy of Sciences, Saint Petersburg, Russia (ZISP).

**Results**

In the current study, 179 specimens of Braconinae were captured, of which 118 and 61 individuals were found in Malaise and light traps, respectively. Ten species have been collected by both traps. A total of 15 species have been identified, of which five species are new for the fauna of Iran: *Bracon concavus* Tobias, *B. fumigidus* Szépligeti, *B. iskilipus* Beyarslan & Tobias, *B. moczari* Papp and *B. novus* Szépligeti. New records are marked with an asterisk in the list.

![Figure 1](image_url)

**Figure 1.** Location of the Hamadan province in Iran and the sampling sites used in the current study.
Bracon (Glabrobracon) bipartitus Wesmael, 1838


Distribution in Iran: Tehran, Qazvin (Zargar et al., 2015), North Khorasan, Kerman, Kermanshah (Rahmani et al., 2017), Hamadan (current study).

General distribution: Widely in Palaearctic (Yu et al., 2016).

Bracon (Glabrobracon) chrysostigma Greese, 1928


Distribution in Iran: Golestan (Ghahari & Fischer, 2011c), Hamadan (current study).

General distribution: Western Palaearctic (including Turkey, Israel and Iran) (Yu et al., 2016).

Bracon (Lucobracon) concavus Tobias, 1957 *


Distribution in Iran: Hamadan (current study).

General distribution: Western Palaearctic, Mongolia (Yu et al., 2016), new record from Iran.

Bracon (Bracon) intercessor Nees, 1834

Subfamily Braconinae in Hamadan province


General distribution: Common in Palaeartic (Yu et al., 2016).

Bracon (Osculobracon) minutus Szépligeti, 1901


Distribution in Iran: Kermanshah (Rahmani et al., 2017), Hamadan (current study).

General distribution: Switzerland, Hungary, Turkey, Iran (Yu et al., 2016).

Bracon (Lucobracon) moczari Papp, 1969 *


Distribution in Iran: Hamadan (current study).

General distribution: Turkey (Yu et al., 2016), new record from Iran.

Bracon (Bracon) longicollis Wesmael, 1838


Distribution in Iran: No specific locality cited (Tobias, 1995).

General distribution: Common in Palaeartic (Yu et al., 2016).

Bracon (Glabrobracon) novus Szépligeti, 1901 *

Material examined: Nahavand, Gian Forest, Malaise trap (FRHR), leg.: A. Rajabi Mazhar: Malaise trap: 22.VI.2015, 1♀; 29.VI.2015, 1♀; 15.VII.2015, 3♀♀; 29.VI.2015, 1♀; 07.IX.2015, 1♂; 25.VI.2016, 2♀♀; 20.IX.2015, 1♀; 27.IX.2015, 1♀; 25.VIII.2015, 2♀♀; 20.IX.2016, 1♂; 27.IX.2015, 1♀; 06.VII.2015, 2♀♀; 17.VIII.2015, 1♀; 23.VIII.2015, 1♂; 20.IX.2016, 1♀; 19.VII.2015, 1♀; Malaise trap: 10.VIII.2016, 2♀♀.

Distribution in Iran: Hamadan (current study).

General distribution: Greece, Hungary, Russia (Astrakhan Oblast), Turkey (Yu et al., 2016), new record from Iran.

Bracon (Glabrobracon) novus Szépligeti, 1901 *
09.VIII.2015, 1♀, KS; AM: 27.IX.2015, 1♀; 10.VIII.2016, 1♀; 10.IX.2016, 1♀.

Distribution in Iran: Hamadan (current study).

General distribution: Widely in Europe (Yu et al., 2016), new record from Iran.

*Bracon* (*Habrobracon*) *stabilis* Wesmael, 1838


Distribution in Iran: Qazvin (Ghahari et al., 2011b), Hamadan (current study).

General distribution: Common in Palaearctic (Yu et al., 2016).

*Bracon* (*Glabrobracon*) *tschitscherini* Kokujev, 1904


Distribution in Iran: West Azarbaijan (Ghahari & Fischer, 2011a), Golestan (Ghahari & Fischer, 2011b), Kordestan (Samin, 2015), Hamadan (current study).

General distribution: Western Palaearctic (including Kazakhstan and Central Asia) (Yu et al., 2016).

*Bracon* (*Glabrobracon*) *variator* Nees, 1811


Distribution in Iran: Guilan (Ghahari & Fischer, 2011b), Hormozgan (Ameri et al., 2014), West Azarbaijan (Samin et al., 2014), Alborz, Qazvin, Tehran (Zargar et al., 2015), Hamadan (current study).

General distribution: Common in Palaearctic (Yu et al., 2016).

*Glyptomorpha pectoralis* (Brullé, 1832)

Material examined: Toiserkan, Korzan, Malaise trap (FRHR), leg.: A. Rajabi Mazhar: 15.VIII.2015, 1♀, 1♂, KS; 10.VIII.2016, 1♀, AM.

Distribution in Iran: Kermanshah (Ghahari & Fischer, 2012), Guilan, Qazvin, Hormozgan (Zargar et al., 2014), Kerman, North Khorasan (Rahmani et al., 2017), Hamadan (current study).

General distribution: Common in Palaearctic and Oriental (Yu et al., 2016).

*Pseudovipio inscriptor* (Nees, 1834)


Distribution in Iran: Ilam (Ghahari et al., 2011a), Guilan (Ghahari et al., 2012b), Hormozgan, Qazvin (Zargar et al., 2014), Hamadan (current study).

General distribution: Common in Palaearctic (Yu et al., 2016).

Discussion

The majority of previous studies were conducted in the northwestern, northern, north-central, eastern and southern parts of
Iran (Zargar et al., 2014, 2015; Farahani et al., 2016; Rahmani et al., 2017). Few researches have been done on the fauna of Braconinae of the western part of Iran (Kermanshah, Ilam, Kordestan, Hamadan and Lorestan provinces), where about 47 species have been identified (Farahani et al., 2016; Rahmani et al., 2017), of which only 2 species (B. trucidator Marshall and B. guttiger Wesmael) have been previously found in Hamadan province.

It seems the both traps are necessary for collection of this group. Bracon fumigidus and B. iskilipus with 24.0% and 17.3%, respectively, had the highest abundance among the species.

The number of species of the subfamily Braconinae in the adjacent countries of Iran indicates the necessity of further investigations to get the true understanding about the diversity of this group.

Acknowledgments
We would like to the Research Institute of Forests and Rangelands for financial support. The contribution by K. Samartsev was performed in the frames of the state research project AAAA-A19-119020690101-6 and partly supported by the Russian Foundation for Basic Research (grant no. 19-04-00027).

Conflict of Interests
The authors declare that there is no conflict of interest regarding the publication of this paper.

References
https://doi.org/10.11646/zootaxa.4545.1.4

https://dx.doi.org/10.11646/zootaxa.3754.4.2

https://dx.doi.org/10.1080/09397140.2014.892341

https://dx.doi.org/10.2478/s11756-013-0295-y

https://dx.doi.org/10.3161/000345414X685956

https://dx.doi.org/10.11646/zootaxa.3973.2.2.


اطلاعات جدید از زیرخانواده Braconinae (Hymenoptera: Braconidae) در غرب ایران

علیرضا رجبی مظهر، کنستانتین سامارتسف، شیلا گلدسته و سمیرا فراهانی

چکیده: این تحقیق با استفاده از تله‌های نوری و مالیز در پنج سایت مختلف شامل اکوسیستم‌های کشاورزی، مرتع و جنگل‌ها در غرب ایران (استان همدان) در سال‌های 1384-1382 اجرا شد. گونه متعلق به سه جنس Bracon Fabricius، Glyptomorpha Holmgren و Pseudovipio Szépligeti شناسایی شد که بین آنها پنج گونه شامل B. fumigatus، B. concavus Tobias، B. fumigidus Szépligeti، B. moczari Papp، B. iskilipus Beyarslan & Tobias Szépligeti و B. novus Szépligeti برجای ماند. این گونه‌ها برای اولین بار از ایران گزارش می‌شوند. همه 15 گونه برای Bracon concavus Tobias در استان همدان گزارش جدید محصول ایران محسوب می‌شوند.

واژگان کلیدی: Bracon، گزارش‌های جدید، همدان، ایران، فون.