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A contribution to the study of Pteromalidae (Hymenoptera: Chalcidoidea) of Khuzestan in southwestern Iran

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Received:
26 September 2017

Accepted:
13 August 2018

Published:
04 September 2018

Subject Editor:
Ali Asghar Talebi

ABSTRACT. This is a report of 11 species belonging to six genera of Pteromalidae (Hymenoptera: Chalcidoidea) from Khuzestan province of Iran. Four genera and 10 species are new for the fauna of province of which one genus (*Notoglyptus*) and five species viz. *Cyrtogaster britteni* Askew, 1965, *Halticoptera collaris* (Walker, 1836), *Notoglyptus scutellaris* (Dodd & Girault, 1915), *Pachyneuron tonyi* Narendran & Santhosh, 2007 and *Spalangia drosophilae* Ashmead, 1887 are new for Iran.

Key words: fauna, Iran, Khuzestan, new records

Citation: Moravvej, S.A., Lotfalizadeh, H. & Shishehbor, P. (2018) A contribution to the study of Pteromalidae (Hymenoptera: Chalcidoidea) of Khuzestan in southwestern Iran. *Journal of Insect Biodiversity and Systematics*, 4 (2), 91–97.

Introduction

The insect order Hymenoptera contains several superfamilies including Chalcidoidea encompassing 23 families, one of which is the cosmopolitan Pteromalidae which currently contains ca. 590 genera and ca. 3545 species (Noyes, 2017). Species of Pteromalidae can be generally distinguished by the following characters: antennae 8-13 segmented (including up to 3 annelli), fore and hind tarsi 5-segmented and fore wing in fully winged forms with marginal vein at least several times longer than broad in almost all species, with postmarginal and stigmal veins well-developed, rarely quite short and with speculum nearly always distinct (Noyes, 2017). Most pteromalids

parasitize various arthropods including pests, hencesome of which have been exploited to control pests (Bouček & Rasplus, 1991).

Currently at least 129 pteromalids are listed from Iran by Lotfalizadeh & Gharali (2008) and Abolhassanzadeh et al. (2017), however, the actual pteromalid fauna of Iran including the southwestern province Khuzestan is not recognized. Prior to this study, 11 pteromalids were known from Khuzestan consequently an investigation which was announced by Moravvej et al. (2016) was conducted to determine the chalcid fauna of this province and this note proclaims the collected pteromalid species.

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Material and methods

Specimen were collected by sweeping as described and illustrated by Moravvej et al. (2016) and are preserved in vials containing ethanol 75% at the Insect Collection of Chamran University of Ahvaz. These literatures were referred for determination of material: Askew (1965), Graham & Claridge (1965), Graham (1969), Heydon (1988), Bouček & Rasplus (1991), Mitroiu (2005), Narendran et al. (2007) and Gibson (2009).

Results

Eleven species of Pteromalidae belonging to six genera were collected and determined; four genera and 10 species are new records for the fauna of Khuzestan of which one genus and five species are new for Iran. New taxa for Khuzestan and Iran are marked with * and **, respectively.

Family Pteromalidae Dalman, 1820**Subfamily Miscogastrinae Walker, 1833****Genus *Halticoptera* Spinola, 1811******Halticoptera circulus* (Walker, 1833)***

Material examined: 1♀, Abadan, Manyouhi, May 2015, by sweeping; 1♂, Gotwand, Turkalaki, November 2015, by sweeping; 1♀, Haftgel, Foroudgah, November 2015, by sweeping; 1♀, Masjed Soleyman, fall 2014, by sweeping; 2♀, Shadegan, Bozi, May 2015, by sweeping; 1♀, Susa (Shoush), September 2014, by sweeping, leg.: S.A. Moravvej.

Distribution: Afrotropical, Nearctic, Neotropical, Palearctic (Noyes, 2017) and Iranin East Azarbaijan, Kerman (Lotfalizadeh & Gharali, 2008; Mitroiu et al., 2011) and Khuzestan (present study) provinces.

Hosts in Iran: unknown.

Halticoptera collaris* (Walker, 1836)*

Material examined: 1♂, Haftgel, Foroudgah, November 2015, by sweeping; 1♂, Hamidieh,

the Great Gamboueh, September 2015, by sweeping; 1♀, Shadegan, Bozi, May 2015, by sweeping, leg.: S.A. Moravvej.

Distribution: Europe (Noyes, 2017) and Iranin Khuzestan province (present study).

Hosts in Iran: unknown.

Halticoptera patellana* (Dalman, 1818)

Material examined: 1♀, Ramshir, Noshadi village, November 2015, by sweeping; 2♀, 1♂, Shadegan, Bozi, May 2015, by sweeping; 1♀, 1♂, Haftgel, Foroudgah, November 2015, by sweeping, leg.: S.A. Moravvej.

Distribution: Asia, Europe, Nearctic, Neotropical (Noyes, 2017) and Iranin East Azarbaijan (Lotfalizadeh & Gharali, 2008) and Khuzestan (present study) provinces.

Hosts in Iran: unknown.

Halticoptera polita* Walker, 1834

Material examined: 1♀, Dezful, Dez wood + Safiabab area, May 2015, by sweeping; 1♂, Shadegan, Bozi, May 2014, by sweeping, leg.: S.A. Moravvej.

Distribution: China, Europe, Turkey (Noyes, 2017) and Iranin West Azarbaijan (Sadeghi & Lotfalizadeh, 2013) and Khuzestan (present study) provinces.

Hosts in Iran: *Phyllonorycter populifoliella* (Treitschke) (Lepidoptera: Gracillariidae) on *Populus* spp. (Sadeghi & Lotfalizadeh, 2013).

Subfamily Pteromalinae Dalman, 1820**Genus *Chlorocytus* Graham, 1956******Chlorocytus spicatus* (Walker, 1835)***

Material examined: 1♀, Behbahan, Massourieh, November 2014, by sweeping, leg.: S.A. Moravvej.

Distribution: China, Europe (Noyes, 2017) and Iranin Ilam (Lotfalizadeh & Gharali, 2008) and Khuzestan (present study) provinces.

Hosts in Iran: unknown.

Genus *Cyrtogaster* Walker, 1833****Cyrtogaster britteni* Askew, 1965****

Material examined: 1♂, Behbahan, Massourieh, November 2014, by sweeping, leg.: S.A. Moravvej.

Distribution: Canada, Sweden, UK (Noyes, 2017) and Iranin Khuzestan province (present study).

Hosts in Iran: unknown.

Cyrtogaster vulgaris* Walker, 1833

Material examined: 1♀, Shoushtar, fields of Karoun Fish Culture, November 2015, by sweeping, leg.: S.A. Moravvej.

Distribution: Nearctic, Palaearctic (Noyes, 2017) and Iranin Ardabil, East Azarbaijan, (Lotfalizadeh & Gharali, 2008) Kordestan (Dehdar & Madjdzadeh, 2013) and Khuzestan (present study) provinces.

Hosts in Iran: *Chromatomyia horticola* (Goureau) and *Liriomyza sativae* (Blanchard) (Diptera: Agromyzidae) (Diptera: Chloropidae) (Lotfalizadeh & Gharali, 2008).

Genus *Notoglyptus* Masi, 1917*****Notoglyptus scutellaris* (Dodd & Girault, 1915)****

Material examined: 1♀, Dezful, Dez wood + Safiabad area, May 2015, by sweeping, leg.: S.A. Moravvej.

Distribution: nearly cosmopolitan (Noyes, 2017). It's report from Iran from Tehran (Ghahari et al., 2015) was not confirmed by specialists (Abolhassanzadeh et al., 2017) therefore our collection from Khuzestan province in present study can ratify its presence in Iran.

Hosts in Iran: unknown.

Genus *Pachyneuron* Walker, 1833***Pachyneuron aphidis* (Bouché, 1834)**

Material examined: 1♀, 1♂, Behbahan, Massourieh, November 2014, by sweeping, leg.: S.A. Moravvej.

Distribution: cosmopolitan (Noyes, 2017) and Iranin Ardabil (Lotfalizadeh & Gharali, 2008), Kerman (Mitroiu et al., 2011), Razavi Khorasan (Hasani & Madjdzadeh, 2012), Tehran (Haeselbarth, 1983; Rakhshani et al., 2004) and Khuzestan (Mosaddegh, 1991, 1993; Farsi, 2010; Farsi et al., 2010; present study) provinces.

Hosts in Iran: *Aphis gossypii* (Glover) and *Brevicoryne brassicae* (Linnaeus) (Hemiptera: Aphididae) (Abolhassanzadeh et al., 2017).

Pachyneuron tonyi* Narendran & Santhosh, 2007*

Material examined: 3♀, 1♂, Ahwaz, summer 2014, by sweeping, leg.: S.A. Moravvej.

Distribution: Yemen (Narendran et al., 2007) and Iranin Khuzestan province (present study).

Hosts in Iran: unknown.

Subfamily Spalanginae Haliday, 1833**Genus *Spalangia* Latreille, 1805*****Spalangia drosophilae* Ashmead, 1887****

Material examined: 1♀, Behbahan, Massourieh, November 2014, by sweeping, leg. S.A. Moravvej.

Distribution: China, Latvia, Morocco, New World, Russia (Noyes, 2017) and Iranin Khuzestan province (present study).

Hosts in Iran: unknown.

Discussion

To date, at least 21 pteromalid species belonging to 13 genera are known from Khuzestan (Table 1) which show a diminutive part of a diverse morphology, taxonomy, ecology (zoogeography and biology) and economy. Economically, known pteromalids in Khuzestan are beneficial as they attack a number of pests (see references in text and Table 1); genera like *Spalangia* contains several species which are used commercially for livestock pest control (van Lenteren, 2012).

Table 1. List of Pteromalidae known from Khuzestan.

Species	Reference
<i>Anisopteromalus</i> sp.	Habibpour et al. (2002)
<i>Cecidostiba fungosa</i> (Geoffroy, 1785)	Golestaneh et al. (2008)
<i>Chlorocyclus spicatus</i> (Walker, 1835)	this study
<i>Coelopsis thiaextenta</i> (Walker, 1835)	Farahbakhsh (1961)
<i>Cyrtogas terbritteni</i> Askew, 1965	this study
<i>Cyrtogaster vulgaris</i> Walker, 1833	this study
<i>Dinarmus basalis</i> (Rondani, 1877)	Freeman (1958)
<i>Halticoptera circulus</i> (Walker, 1833)	this study
<i>Halticoptera collaris</i> (Walker, 1836)	this study
<i>Halticoptera patellana</i> (Dalman, 1818)	this study
<i>Halticoptera polita</i> Walker, 1834	this study
<i>Hypopteromalus</i> sp.	Malekzadeh (1996)
<i>Notoglyptus scutellaris</i> (Dodd & Girault, 1915)	this study
<i>Pachyneuron aphidis</i> (Bouché, 1834)	Mossadegh (1991, 1993), Farsi (2010), Farsi et al. (2010), this study
<i>Pachyneuron muscarum</i> (Linnaeus, 1758)	Asadeh (1991), Asadeh & Mossadegh (1991, 1993), Baniamერი (1996), Novin (2000), Kazemzadeh (2003)
<i>Pachyneuron tonyi</i> Narendran & Santhosh, 2007	this study
<i>Pteromalus</i> sp.	Habibpour et al. (2002)
<i>Pteromalus puparum</i> (Linnaeus, 1758)	Shojai (1998)
<i>Spalangia cameroni</i> Perkins, 1910	Vazirianzadeh et al. (2008)
<i>Spalangia drosophilae</i> Ashmead, 1887	this study
<i>Theocolax elegans</i> (Westwood, 1874)	Habibpour et al. (2002)

Acknowledgments

We thank Research Deputy of Shahid Chamran University of Ahvaz for financial support, friends and colleagues for worthwhile assistance and reviewers for commenting manuscript.

Conflict of Interests

The authors assert that there is no conflict of interest regarding the publication of this paper.

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تلاشی برای شناسایی زنبورهای خانواده (Hymenoptera: Chalcidoidea) Pteromalidae استان خوزستان در جنوب غرب ایران

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تاریخ دریافت: ۰۴ مهر ۱۳۹۶، تاریخ پذیرش: ۲۲ مرداد ۱۳۹۷، تاریخ انتشار: ۱۳ شهریور ۱۳۹۷

چکیده: در این نوشتار ۱۱ گونه زنبور از خانواده Pteromalidae که از شش جنس هستند از استان خوزستان گزارش می‌شود. چهار جنس و ۱۰ گونه برای استان و جنس *Notoglyptus* و گونه‌های *Cyrtogaster britteni* Askew, 1965، *Notoglyptus scutellaris* (Dodd & *Halticoptera collaris* (Walker, 1836) و *Pachyneuron tonyi* Narendran & Santhosh, 2007، Girault, 1915) و *Spalangia drosophilae* Ashmead, 1887 برای ایران گزارش نوین هستند.

واژگان کلیدی: فون، ایران، خوزستان، گزارش‌های جدید