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A faunistic study on Chrysididae, Dryinidae, Ichneumonidae and Proctutropidae (Hymenoptera) from Iran

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Abstract:

In this faunistic paper, 7 species in 4 genera of Chrysididae, 3 species in 2 genera of Dryinidae, 11 species in 9 genera of Ichneumonidae, and one species of Proctutropidae were collected and identified from different regions of Iran. *Apltelopus melaleucus* (Dalman, 1818) (Dryinidae) and *Nothoserphus mirabilis* Brues, 1940 (Proctutropidae) are new records for the fauna of Iran.

Introduction

The family Chrysididae (Cuckoo-wasps) is distributed all over the world and contains more than 3,000 species (Tyrner, 2007). They are colourful insects, which fall into categories of cleptoparasites and parasitoids. Larvae of cuckoo-wasps develop in brood cells of nesting Hymenoptera, cocoons of sawflies and Lepidoptera and eggs of Phasmatodea (O'Neill, 2001 and Orlovskyte *et al*., 2011). Chrysidids are distributed over all zoogeographical regions but mainly in subtropical and tropical zones (Tyrner, 2007).

The family Dryinidae with more than 1600 species within 12 subfamilies and 45 genera is a medium-sized cosmopolitan group of Aculeata (Olmi and Bechly, 2001 and Klejdysz *et al*., 2018). More than 230 species are represented in Palaearctic Region, mostly of them occurring also in Europe. These wasps are parasitoids of Hemiptera (including Cicadomorpha and Fulgoromorpha) (Guglielmino and Olmi, 2006 and 2007 and Turrisi and Olmi, 2009). The family Ichneumonidae is a large family of parasitic wasps comprises

more than 25,300 described species in 1,601 genera worldwide (Yu *et al.*, 2016) but the estimation is over 100,000 species (Gauld, 2000). These wasps are powerful natural enemies of agricultural and forest pests and have efficient role in biological control of insect pests (Turnock *et al.*, 1976; Gupta, 1988 and Wahl, 1993).

The family Proctotrupidae is a relatively small taxon of parasitic wasps (Proctotrupoidea) with a worldwide distribution, especially in temperate and humid climate regions. These wasps are most diverse in the Holarctic, where they occur mainly in shadowed forests. Proctotrupids are larval endoparasitoids of several Coleoptera families, as well as the dipteran families Mycetophilidae and Sciaridae, the lepidopteran family Oecophoridae, and centipedes of the family Lithobiidae. Proctotrupid fauna consists of over than 320 species in 27 genera (Johnson, 1992; Kolyada and Mostovski, 2007 and Kolyada and Perkovsky, 2011).

The aim of this paper is introducing of 22 species in 4 hymenopteran families which were collected under different faunistic investigations. The specimens of this research were collected by sweeping net and malaise traps from different regions of Iran.

Results and discussion

This paper comprises 22 species of 4 hymenopteran families, Chrysididae (7 species), Dryinidae (3 species), Ichneumonidae (11 species) and Proctutropidae (single species). The list of species is given below alphabetically with distributional data.

Family Chrysididae Latreille, 1802

Genus *Chrysis* Linnaeus, 1761

1. *Chrysis castigata* Linsenmaier, 1959

Material examined: Golestan province, Golestan National Park, 2♀, August 2010.

General distribution: Kazakhstan, Kyrgyzstan, Russia, Turkmenistan and Uzbekistan **(Rosa *et al*., 2017a).**

2.*Chrysis consanguinea* Mocsáry, 1889

Material examined: Guilan province, Talesh, Gisum Park, 2♀, September 2014.

General distribution: Southern Europe, Caucasus, North Africa and Russia **(Rosa *et al*., 2017a).**

Genus *Chrysura* Dahlbom, 1845

3. *Chrysura radians* (Harris, 1776)

Material exxamined: Qazvin province, Taleghan, 2♀, 1♂, August 2012.

General distribution: Palaearctic, Turkey **(Yildirim and Strumia, 2000).**

Genus *Cleptes* Latreille, 1802

4. *Cleptes semiauratus* (Linnaeus, 1761)

Material exxamined: Kordestan province, Kavaneh, 2♀, 2♂, September 2013.

General distribution: Palaearctic, Turkey **(Yildirim and Strumia, 2000).**

Genus *Holopyga* Dahlbom, 1845

5. *Holopyga generosa asiatica* Trautmann, 1926

Material examined: Semnan province, Shahrud (Jangal-e Abr), 1♀, June 2011.

General distribution: Russia; Trans-Palaearctic, from southern Europe and Caucasus to China **(Rosa *et al*., 2017b).**

6. *Holopyga ignicollis* Dahlbom, 1854

Material examined: Isfahan province, Chadegan, 2♀, April 2008.

General distribution: Russia; West-Palaearctic: from South Europe to Middle East, Caucasus, Kyrgyzstan and Kazakhstan **(Rosa *et al*., 2017b).**

7. *Holopyga lucida* (Lepeletier, 1806)

Material examined: Kermanshah province, Sonqor, 3♀, April 2011.

General distribution: Russia, Central and South Europe and Turkey **(Rosa *et al*., 2017b).**

Family Dryinidae Haliday, 1833

Genus *Anteon* Jurine, 1807

8. *Anteon arcuatum* Kieffer, 1905

Material examined: Golestan province, Golestan National Park, 1♀, 1♂, July 2011.

General distribution: This species is widely distributed almost throughout the Palaearctic region, from Mongolia to Spain **(Olmi and Xu, 2015).**

9. *Anteon brachycerum* (Dalrnan, 1823)

Material examined: Guilan province, Talesh, Gisum Park, 1♂, September 2014.

General distribution: This species is widely distributed almost throughout the Palaearctic region, from Japan to France, but it is rare in Western Europe **(Olmi and Xu, 2015).**

Genus *Apltelopus* Dumeril and Bibron 1841

10. *Apltelopus melaleucus* (Dalman, 1818)

Material examined: West Azarbaijan Province, Mahabad, 2♀, 1♂, 22-24 June 2012.

General distribution: This species is the most common European *Aphelopus* species and is widely distributed throughout the Palaearctic region, from Japan to Spain **(Olmi and Xu, 2015).**

Family Ichneumonidae Latreille, 1802

Genus *Absyrtus* Holmgren, 1859

11. *Absyrtus vernalis* Bauer, 1961

Material examined: Azarbaijan-e Sharghi province, Horand, 1♀, August 2013.

General distribution: Bulgaria, France, Germany, Norway, Switzerland, Turkey, Ukraine and United Kingdom **(Yu *et al.*, 2016).**

Genus *Acaenitus* Latreille, 1809

12. *Acaenitus dubitator* (Panzer, 1800)

Material examined: Semnan province, Shahrud, 4♀, 1♂, August 2015.

General distribution: Albania, Austria, Belarus, Belgium, Bulgaria, China, Czech Republic, former Czechoslovakia, France, Germany, Hungary, Italy, Latvia, Moldova, Morocco, Netherlands, Poland, Portugal, Romania, Russia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom and former Yugoslavia **(Yu *et al.*, 2016).**

Genus *Achaius* Cameron, 1903

13. *Achaius oratorius* (Fabricius, 1793)

Material examined: Kurdistan province, Bijar, 3♀, August 2015.

General distribution: Austria, Azerbaijan, Belarus, Belgium, Bulgaria, former Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Ireland, Japan, Korea, Latvia, Luxembourg, Netherlands, Norway, Poland, Romania, Russia, Spain, Switzerland, Ukraine and United Kingdom **(Yu *et al.*, 2016).**

Genus *Aclastus* Förster, 1869

14. *Aclastus gracilis* (Thomson, 1884)

Material examined: Zanjan province, Abhar, 3♀, 4♂, June 2014; Chaharmahal & Bakhtiary province, Borujen, 2♀, 1♂, May 2015.

General distribution: Austria, Azerbaijan, Belgium, Bulgaria, Canary Islands, former Czechoslovakia, Denmark, Faeroe Islands, Finland, France, Germany, Greenland, Hungary, Iceland, Ireland, Italy, Madeira Islands, Netherlands, Norway, Poland, Russia, Spain, Sweden, Switzerland, Turkey and United Kingdom **(Yu *et al*., 2016).**

Genus *Gnathochorisis* Förster, 1869

15. *Gnathochorisis crassulus* (Thomson, 1888)

Material examined: Golestan province, Kordkoy, 3♀, 28 August 2009.

General distribution: Eastern Palaearctic, Europe, Nearctic, Western Palaearctic **(Yu *et al.*, 2016).**

Genus *Medophron* Förster, 1869

16. *Medophron afflictor* (Gravenhorst, 1829)

Material examined: West Azarbaijan Province, Miandoab, 2♀, 14-16 April 2013.

General distribution: Austria, former Czechoslovakia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Norway, Poland, Romania, Russia, Sweden and United Kingdom **(Yu *et al.*, 2016).**

Genus *Oxyrrhexis* Förster, 1869

***17.Oxyrrhexis carbonator* (Gravenhorst, 1807)**

Material examined: Lorestan province, Aligoodarz, 2♀, June 2009.

General distribution: Eastern Palaearctic, Europe, Nearctic, Western Palaearctic **(Yu *et al.*, 2016).**

Genus *Phaenolobus* Förster, 1869

18. *Phaenolobus fulvicornis* (Gravenhorst, 1829)

Material examined: Lorestan province, Kamandan, 3♀, 2♂, April 2012; Kerman province, Jiroft, 2♀, October 2014.

General distribution: Albania, Algeria, Austria, Belarus, Bulgaria, former Czechoslovakia, France, Georgia, Germany, Hungary, Israel, Italy, Latvia, Lithuania, Morocco, Netherlands, Poland, Portugal, Romania, Russia, Spain, Switzerland, Turkey, United Kingdom and former Yugoslavia **(Yu *et al.*, 2016).**

19. *Phaenolobus terebrator* (Scopoli, 1763)

Material examined: West Azarbaijan province, Ourmieh, 2♀, 2♂, 3-5 August 2013.

General distribution: Albania, Austria, Belarus, Belgium, Bulgaria, former Czechoslovakia, Finland, France, Georgia, Germany, Hungary, Italy, Kazakhstan, Korea, Latvia, Moldova, Morocco, Netherlands, Norway, Poland, Romania, Russia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, Uzbekistan, and former Yugoslavia **(Yu *et al.*, 2016).**

Genus *Rhembobius* Förster, 1869

20. *Rhembobius quadrispinus* (Gravenhorst, 1829)

Material examined: Semnan province, Damghan, 2♀, May 2011.

General distribution: Austria, Belgium, Bulgaria, former Czechoslovakia, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Netherlands, Norway, Poland, Portugal, Romania, Russia, Spain, Sweden, Switzerland, Turkey, Ukraine and United Kingdom **(Yu *et al.*, 2016).**

21. *Rhembobius perscrutator* (Thunberg, 1824)

Material examined: Kordestan Province: Qorveh, 1♀, September 2012.

General distribution: Belgium, Bulgaria, former Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Japan, Latvia, Norway, Poland, Romania, Russia, Sweden and United Kingdom **(Yu *et al.*, 2016).**

Family Proctotrupidae Latreille, 1802

Genus *Nothoserphus* Brues, 1940

22. *Nothoserphus mirabilis* Brues, 1940

Material examined: Razavi Khorasan province, Chenaran (Nobahar), 3♀, 2♂, ex larvae of *Coccinella septempunctata* (Linnaeus, 1758), 15.vi.2010.

General distribution: China, India, Java, Nepal, Taiwan **(Ceryngier and Hodek ,1996)** and Pakistan **(Bodlah *et al.*, 2019).**

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