



A faunistic study on Ichneumonidae (Hymenoptera) in North West of Iran

Hamid, Sakenin¹; Reijo, Jussila²; Najmeh, Samin³ and Balakrishnan, M. Manjusha⁴

¹Department of Plant Protection, Qaemshahr Branch, Islamic Azad University, Qaemshahr, Iran.

²Zoological Museum, Section of Biodiversity and Environmental Sciences, Department of Biology, FI-20014 University of Turku, Finland.

³Young Researchers and Elites Club, Science and Research Branch, Islamic Azad University, Tehran, Iran.

⁴Department of Zoology, Government College Kasaragod, Vidyanagar – 671123, Kerala, India.

ARTICLE INFO

Article History

Received: 13 / 4 / 2022

Accepted: 12 / 6 / 2022

Keywords

Ichneumonidae,
fauna, new records,
distribution, and
Iran.

Abstract:

The fauna of ichneumonid wasps (Hymenoptera: Ichneumonidae) is studied in Ardabil, East Azarbaijan and West Azarbaijan provinces (North West of Iran). In total 38 species in 32 genera and 15 subfamilies, Acaenitinae (One species), Adelogathinae (One species), Anomaloninae (Four species and four genera), Banchinae (Four species and three genera), Campopleginae (10 species and six genera), Cremastinae (One species), Cryptinae (Four species and four genera), Ichneumoninae (One species), Mesochorinae (One species), Metopiinae (Two species and two genera), Ophioninae (One species), Phygadeuontinae (Three species and two genera), Pimplinae (One species), Tryphoninae (Three species and three genera) and Xoridinae (One species).

Introduction

Ichneumonidae is a large family of Hymenoptera, including over 24,000 described (Yu *et al.*, 2016) and 100,000 estimated species worldwide (Gauld, 2000). The ichneumonid wasps are important parasitoids in different stages of several destructive agricultural pests, and in recent years they have been successfully used as biological control agents (Gupta, 1991; Wahl, 1993 and Quicke, 2015).

The purpose of this paper is to record the species of Ichneumonidae of Iran as part of ongoing faunistic studies of Ichneumonidae in Iran. In the present study, a total of 38 ichneumonid species

were collected, of which five species are recorded for the first time from Iran.

Materials and methods

The specimens of the present study were collected by Malaise traps and sweeping net from different areas of Iran. The specimens of this research are preserved in the collections of the authors. Here we follow Yu *et al.* (2016) for nomenclature, classification, and distributional data.

Results and discussion

In this faunistic survey, totally 38 species in 32 genera and 15 subfamilies were collected and identified from northwestern Iran (Ardabil, East Azarbaijan and West Azarbaijan provinces). Five species,

Adelognathus tetratinctorius (Thunberg, 1824), *Atractodes angustipennis* Förster, 1876, *Cubocephalus brevicornis* (Taschenberg, 1865), *Dusona signator* (Brauns, 1895), and *Phygadeuon ovatus* Gravenhorst, 1829 are new records for the fauna of Iran.

1. Subfamily Acaenitinae Foerster, 1869

1.1. *Coleocentrus exareolatus* Kriechbaumer, 1894

Material examined: West Azarbaijan province, Myandoab (Vali-Abad), 1♀, June 2010.

General distribution: Belarus, Bulgaria, Germany, Hungary, Latvia, Romania and Russia.

2. Subfamily Adelognathinae Thomson, 1888

2.1. *Adelognathus tetratinctorius* (Thunberg, 1824)

Material examined: East Azarbaijan province, Ahar (Zyarloo), 1♀, June 2007. New record for Iran.

General distribution: Armenia, Belgium, Canada, Finland, Japan, Kazakhstan, Poland, Russia, Sweden, USA, Ukraine and United Kingdom.

3. Subfamily Anomaloninae Viereck, 1918

3.1. *Agrypon rugifer* (Thomson, 1894)

Material examined: East Azarbaijan province, Mianeh (Khanghah), 2♀♀, August 2009.

General distribution: Bulgaria, former Czechoslovakia, Germany, Hungary, Italy, Russia and Sweden.

3.2. *Atrometus insignis* Förster, 1878

Material examined: Ardabil province, Germe, 3♀♀, 18.vi.2015.

General distribution: Bulgaria, former Czechoslovakia, France, Hungary, Israel, Morocco, Poland, Turkey, Ukraine, United Kingdom and former Yugoslavia.

3.3. *Erigorgus procerus* (Gravenhorst, 1829)

Material examined: Ardabil province, Meshginshahr, 1♂, 1♀, 17.vii.2013.

General distribution: Austria, Bulgaria, former Czechoslovakia, Finland, France, Germany, Hungary, Kazakhstan, Latvia, Moldova, Norway, Poland, Romania, Russia, Sweden, Ukraine and United Kingdom.

3.4. *Perisphincter brevicollis* (Wesmael, 1849)

Material examined: East Azarbaijan province, Mianeh (Haji-Hematloo), 1♂, 2♀♀, August 2009.

General distribution: Austria, Belgium, Bulgaria, former Czechoslovakia, Finland, France, Georgia, Germany, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Sweden and United Kingdom.

4. Subfamily Banchinae Wesmael, 1845

4.1. *Alloplasta tomentosa* (Gravenhorst, 1829)

Material examined: Ardabil province, Bilehsavar, 2♀♀, 3.vii.2017.

General distribution: Austria, Belgium, Bulgaria, China, former Czechoslovakia, France, Germany, Hungary, Italy, Moldova, Poland and Romania.

4.2. *Lemophagus pulcher* (Szépligeti, 1916)

Material examined: Ardabil province, Aslanduz, 1♀, 13.vi.2015.

General distribution: Austria, Azerbaijan, France, Germany, Hungary, Italy and Switzerland.

4.3. *Lissonota argiola* Gravenhorst, 1829

Material examined: West Azarbaijan province, Ourmieh (Seroo Road: Zeynaloo), 2♀♀, August 2010.

General distribution: Austria, Bulgaria, former Czechoslovakia, France, Germany, Hungary, Moldova, Norway, Poland, Romania, Russia, Sweden, Switzerland and United Kingdom.

4.4. *Lissonota mutator* Aubert, 1969

Material examined: West Azarbaijan province, Myandoab (Dehmansoor), 2♀♀, June 2010.

General distribution: Bulgaria, Germany, Spain, Switzerland, Turkey and United Kingdom.

5. Subfamily Campopleginae Foerster, 1869

5.1. *Bathyleptes rufiventror* Aubert, 1979

Material examined: Ardabil province, Germe, 1♀, 18.vi.2015.

General distribution: Armenia, Georgia, Russia and Turkey.

5.2. *Campoplex eudoniae* Horstmann & Yu, 1999

Material examined: Ardabil province, Namin, 1♀, 17.vi.2015.

General distribution: Belgium, Bulgaria, former Czechoslovakia, Finland, France, Germany, Hungary, Italy, Poland and United Kingdom.

5.3. *Campoplex rothii* (Holmgren, 1860)

Material examined: East Azarbaijan province, Shabestar (Alibigloo), 1♀, July 2009.

General distribution: Austria, Belgium, former Czechoslovakia, Finland, France, Germany, Hungary, Poland, Romania, Slovakia, Sweden, United Kingdom and former Yugoslavia.

5.4. *Dusona notabilis* (Förster, 1868)

Material examined: Ardabil province, Bilehsavar, 2♀♀, 3.vii.2017.

General distribution: Belgium, Finland, France, Germany, Hungary, Italy, Latvia, Netherlands, Poland, Romania, Russia, Spain, Sweden and United Kingdom.

5.5. *Dusona signator* (Brauns, 1895)

Material examined: East Azarbaijan province, Marand (Darandash), 1♀, September 2016. New record for Iran.

General distribution: Bulgaria, China, former Czechoslovakia, France, Hungary, Japan, Korea, Moldova, Romania and Russia.

5.6. *Dusona subimpressa* (Förster, 1868)

Material examined: East Azarbaijan province, Mianeh (Khanghah), 2♂♂, August 2009.

General distribution: Belarus, Belgium, Bulgaria, former Czechoslovakia, France, Germany, Hungary, Japan, Moldova, Netherlands, Poland, Romania, Russia and Spain.

5.7. *Echthronomas tricincta* (Gravenhorst, 1829)

Material examined: East Azarbaijan province, Kaleybar, 1♀, 11.viii.2014.

General distribution: Austria, Belgium, Finland, France, Germany, Hungary, Poland, Sweden, Turkey and United Kingdom.

5.8. *Eriborus dorsalis* (Gravenhorst, 1829)

Material examined: Ardabil province, Namin, 1♂, 17.vi.2015.

General distribution: Austria, Belgium, Finland, France, Germany, Hungary, Italy, Latvia, Poland, Russia, Sweden and United Kingdom.

5.9. *Eriborus perfidus* (Gravenhorst, 1829)

Material examined: East Azarbaijan province, Shabestar (Haft-Cheshmeh), 1♂, 1♀, July 2009.

General distribution: Austria, Belarus, Bulgaria, China, Finland, France, Germany, Hungary, India, Italy, Latvia, Poland, Romania, Spain and United Kingdom.

5.10. *Nemeritis elegans* (Szépligeti, 1901)

Material examined: East Azarbaijan province, Soofian (Andabil), 1♂, July 2009.

General distribution: Austria, Bulgaria, former Czechoslovakia, Hungary, Kazakhstan, Russia, Ukraine and former Yugoslavia.

6. Subfamily Cremastinae Förster, 1869

6.1. *Temelucha anatolica* (Sedivy, 1959)

Material examined: Ardabil province, Aslanduz, 3♀♀, 13.vi.2015.

General distribution: France, Georgia, Israel, Russia, Tunisia, Turkey and Turkmenistan.

7. Subfamily Cryptinae Kirby, 1837

7.1. *Aconias tarsatus* (Bridgman, 1881)

Material examined: East Azarbaijan province, Marand (Darandash), 2♀♀, September 2016.

General distribution: Austria, Belgium, former Czechoslovakia, Finland, Germany, Hungary, Latvia, Poland, Russia, Sweden, Switzerland and United Kingdom.

7.2. *Atractodes angustipennis* Förster, 1876

Material examined: East Azarbaijan province, Ahar (Dashbelagh), June 2007. 1♂, 1♀, New record for Iran.

General distribution: Austria, Belarus, Belgium, Bulgaria, Canada, Finland, France, Germany, Ireland, Italy, Norway, Poland, Russia, Spain, Sweden, Switzerland, USA and United Kingdom.

7.3. *Colocnema rufina* (Gravenhorst, 1829)

Material examined: East Azarbaijan province, Mianeh (Aghcheh-Qeshlagh), 1♂, 2♀♀, August 2009.

General distribution: Austria, Belgium, Bulgaria, former Czechoslovakia, Denmark, France, Georgia, Germany, Hungary, Luxembourg, Moldova, Norway, Poland, Romania, Russia, Sweden, Switzerland and United Kingdom.

7.4. *Cubocephalus brevicornis* (Taschenberg, 1865)

Material examined: West Azarbijan province, Ourmieh (Seroo Road: Zeynaloo), 1♀, August 2010. New record for Iran.

General distribution: Austria, Canada, former Czechoslovakia, Finland, Germany, Ireland, Poland, Russia, USA and United Kingdom.

8. Subfamily Ichneumoninae Latreille, 1802

8.1. *Ichneumon veressi* (Kiss, 1915)

Material examined: West Azarbaijan province, Myandoab (Dehmansoor), 1♀, June 2010.

General distribution: Bulgaria, Hungary, Poland, Romania, Turkey and former Yugoslavia.

9. Subfamily Mesochorinae Foerster, 1869

9.1. *Mesochorus fulgurans* Curtis, 1833

Material examined: West Azarbaijan province, Naqadeh (Damirchi), 1♂, 2♀♀, September 2013.

General distribution: Austria, Belgium, Bulgaria, Czech Republic, Finland, France, Germany, Hungary, Ireland, Japan, Latvia, Norway, Poland, Romania, Russia, Spain, Sweden and United Kingdom.

10. Subfamily Metopiinae Foerster, 1869

10.1. *Chorinaeus longicornis* Thomson, 1887

Material examined: East Azarbaijan province, Ahar (Zyarloo), 2♀♀, June 2007.

General distribution: Azerbaijan, Belgium, former Czechoslovakia, Finland, France, Germany, Hungary, Ireland, Kazakhstan, Lithuania, Moldova, Poland, Romania, Russia, Spain, Sweden, Switzerland, Ukraine and United Kingdom.

10.2. *Exochus lentipes* Gravenhorst, 1829

Material examined: East Azarbaijan province, Soofian (Andabil), 2♂♂, July 2009.

General distribution: Austria, Belgium, Bulgaria, former Czechoslovakia, Finland, France, Germany, Hungary, Italy, Moldova, Netherlands, Norway, Poland, Romania, Russia, Sweden, Ukraine and United Kingdom.

11. Subfamily Ophioninae Shuckard, 1840

11.1. *Enicospilus inflexus* (Ratzeburg, 1844)

Material examined: East Azarbaijan province, Bonab (Chopoghloo), 3♀♀, September 2016.

General distribution: Bulgaria, Canary Islands, Czech Republic, France, Germany, Hungary, Israel, Italy, Morocco, Poland, Spain, Turkey, Turkmenistan and United Kingdom.

12. Subfamily Phygadeuontinae Foerster, 1869

12.1. *Agrothereutes aterrimus* (Gravenhorst, 1829)

Material examined: West Azarbaijan province, Ourmieh (Seroo Road: Nazlu), 2♀♀, August 2010.

General distribution: Austria, Azerbaijan, former Czechoslovakia, Finland, Germany, Hungary, Italy, Latvia, Poland, Russia, United Kingdom and former Yugoslavia.

12.2. *Phygadeuon hercynicus* Gravenhorst, 1829

Material examined: West Azarbaijan province, Naqadeh (Damirchi), 1♀, September 2013.

General distribution: Austria, Azerbaijan, Belgium, former Czechoslovakia, Finland, Germany, Ireland, Norway, Poland, Russia, Sweden and United Kingdom.

12.3. *Phygadeuon ovatus* Gravenhorst, 1829

Material examined: West Azarbaijan province, Ourmieh (Band), 1♂, 1♀, August 2010. New record for Iran.

General distribution: Austria, Azerbaijan, Belgium, former Czechoslovakia, Finland, France, Germany, Hungary, Ireland, Latvia, Lithuania, Poland, Russia, Spain, Sweden, United Kingdom and former Yugoslavia.

13. Subfamily Pimplinae Wesmael, 1845

13.1. *Dolichomitus sericeus* (Hartig, 1847)

Material examined: East Azarbaijan province, Ahar (Dashbelagh), 1♂, June 2007.

General distribution: Austria, Bulgaria, Canada, former Czechoslovakia, Finland, Germany, Greece, Poland, Romania, Turkey, USA and former Yugoslavia.

14. Subfamily Tryphoninae Shuckard, 1840

14.1. *Cladeutes discedens* (Woldstedt, 1874)

Material examined: West Azarbaijan province, Myandoab (Vali-Abad), 1♀, June 2010.

General distribution: Austria, Bulgaria, Finland, Japan, Norway, Russia, Turkey and United Kingdom.

14.2. *Eridolius rufonotatus* (Holmgren, 1857)

Material examined: East Azarbaijan province, Mianeh (Aghcheh-Qeshlagh), 1♀, August 2009.

General distribution: Austria, Azerbaijan, Belgium, Bulgaria, Finland, France, Germany, Netherlands, Norway, Poland, Russia, Spain, Sweden, Switzerland, Ukraine and United Kingdom.

14.3. *Exenterus ictericus* (Gravenhorst, 1829)

Material examined: West Azarbaijan province, Ourmieh (Seroo Road: Nazlu), 3♀♀, August 2010.

General distribution: Armenia, Austria, Belgium, Bulgaria, former Czechoslovakia, Finland, France, Germany, Italy, Latvia, Norway, Poland, Russia, Spain, Sweden, Switzerland and former Yugoslavia.

15. Subfamily Xoridinae Shuckard, 1840

15.1. *Ischnoceros rusticus* (Geoffroy, 1785)

Material examined: East Azarbaijan province, Soofian (Heydar-Abad), 1♀, July 2009.

General distribution: Austria, Belarus, Belgium, Bulgaria, Czech Republic, Finland, France, Germany, Hungary, Italy, Latvia, Netherlands, Norway, Poland, Romania, Russia,

Spain, Sweden, Ukraine, United Kingdom and former Yugoslavia.

Acknowledgments

Sincere thanks to D.R. Kasparyan (Russia), M.R. Shaw (UK), A.M. Pentead-Dias (Brazil) and M.G. Fitton (UK) for scientific cooperation. The authors are grateful to Dr. S. Abd-Rabou (Egypt) and two anonymous reviewers for their insightful comments.

References

Gauld, I.D. (2000): The Ichneumonidae of Costa Rica, 3. Memoirs of the American Entomological Institute, 63: 1–453.

Gupta, V.K. (1991): The parasitic Hymenoptera and biological control and our knowledge of the African Ichneumonidae.

Insect Science and its Application, 12: 9-18.

Quicke, D. (2015): The Braconid and Ichneumonid Parasitoid Wasps: Biology, Systematics, Evolution and Ecology. Wiley-Blackwell, Oxford, UK, xv + pp.681.

Wahl, D.B. (1993): Family Ichneumonidae. *In*: Goulet, H. and Huber, J.T. (eds.), Hymenoptera of the world: An identification guide to families. Canada Communications Group, Ottawa, pp. 668.

Yu, D.S.; van Achterberg, C. and Horstmann, K. (2016): Taxapad 2016, Ichneumonoidea 2015. Database on flash-drive. www.taxapad.com, Nepean, Ontario, Canada.