

A CONTRIBUTION TO THE STUDY OF ICHNEUMONIDAE (HYMENOPTERA) FROM IRAN

Samin N.¹, Jussila R.², Pentead-Dias A.M.³, Shojai M.⁴, Sakenin Chelav H.⁵

A contribution to the study of Ichneumonidae (Hymenoptera) from Iran. – Najmeh Samin, Reijo Jussila, Angélica Maria Pentead-Dias, Mahmood Shojai, Hamid Sakenin Chelav. – In total 51 species of Ichneumonidae (Hymenoptera) within 11 subfamilies, Anomalinae (1 species), Banchinae (3 species), Campopleginae (5 species), Cremastinae (1 species), Cryptinae (5 species), Ctenopelmatinae (2 species), Diplazontinae (3 species), Ichneumoninae (25 species), Metopiinae (1 species), Tersilochinae (2 species) and Tryphoninae (3 species) were collected from different regions of Iran. Six species are newly recorded from Iran.

Key words: Ichneumonidae, parasitoids, faunistic list, new records, Iran

Addresses: 1- Young Researchers and Elites Club, Science and Research Branch, Islamic Azad University, Tehran, Iran; e-mail: n_samin63@yahoo.com

2- University of Turku, Finland; email: reijo.jussila@utu.fi

3- Departamento de Ecologia e Biologia Evolutiva, Universidade Federal de São Carlos – UFSCar, Rodovia Washington Luís, Km 235, CP 676, CEP 13565-905, São Carlos, SP, Brasil; email: angelica@power.ufscar.br

4- Department of Entomology, Science and Research Branch, Islamic Azad University, Tehran, Iran

5- Department of Plant Protection, Qaemshahr Branch, Islamic Azad University, Mazandaran, Iran; e-mail: hchelav@yahoo.com

Внесок у вивчення Ichneumonidae (Hymenoptera) Ірану. – Наймех Самін, Реййо Юссіла, Ангеліка Марія Пентеадо-Діас, Махмуд Шойаї, Хамід Сакенін Челав. – В роботі представлені результати фауністичних досліджень представників родини Ichneumonidae (Hymenoptera) на території Ірану. Загалом 51 вид з 39 родів іздці-іхневмонід було зібрано в різних регіонах країни. Матеріал збирався з використанням пасток Малеза, а також ентомологічним сачком. Зібраний матеріал визначено і систематизовано. Систематика і номенклатура подана за Йу та ін. (2016). В зборах представлені види, що належать до 11 підродин, а саме – Anomalinae (1 вид), Banchinae (3 види), Campopleginae (5 видів), Cremastinae (1 вид), Cryptinae (5 видів), Ctenopelmatinae (2 види), Diplazontinae (3 види), Ichneumoninae (25 видів), Metopiinae (1 вид), Tersilochinae (2 види) і Tryphoninae (3 види). Шість видів з цього списку є новими знахідками для фауни Ірану (в тексті помічені *): *Lissonota folii* Thomson, 1877, *Casinarina ischnogaster* Thomson, 1887, *Dusona terebrator* (Förster, 1868), *Temelucha genalis* (Szépligeti, 1899), *Mesostenus albinotatus* Gravenhorst, 1829, *Euxyston sponsorius* (Fabricius, 1781). Список видів в межах родів в роботі наведено в алфавітному порядку. Для кожного виду наведено валіну назву, інформацію про кількість зібраних екземплярів, місце збору, географічні координати, дату збору, загальне поширення. Результати досліджень, представлені в даній роботі, свідчать про те, що видове різноманіття представників родини Ichneumonidae є дуже високим в різних екосистемах регіону. Незважаючи на те, що загальна відома кількість іранських Ichneumonidae сягає більше, ніж 550 видів, проведення подальших фауністичних досліджень, на думку авторів, призведе до фіксації нових знахідок і навіть відкриття нових видів для науки. Значення вивчення фауни даної родини полягає в тому, що іздці-іхневмоніди виконують досить ефективну роль у біологічному контролі сільськогосподарських шкідників. Важливим є той факт, що поглиблене дослідження фауни, систематики та біології цих комах може бути кроком для впровадження програм біологічного контролю над шкідниками.

Ключові слова: Ichneumonidae, паразитоїди, фауністичний список, нові знахідки, Іран.

Адреси: 1- Ісламський університет Азад, Науково-дослідний відділ, Клуб молодих дослідників та еліти, Тегеран, Іран; e-mail: n_samin63@yahoo.com

2- Університет Турку, Турку, Фінляндія; email: reijo.jussila@utu.fi

3- Федеральний університет Сан-Карлос, кафедра екології і еволюційної біології, шосе Вашингтон Луїс, 235 км, CP 676, CEP 13565-905, Сан-Карлос, Сан-Паулу, Бразилія; e-mail: angelica@power.ufscar.br

Introduction

Ichneumonidae (Hymenoptera) 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; Wahl 1993). The catalogue of Iranian Ichneumonidae has been published by Kolarov and Ghahari (2005), they recorded 144 species belonging to 65 genera and 14 subfamilies. After that Barahoei et al. (2012) published the checklist comprises 502 species belonging to 189 genera and 24 subfamilies. Latter, other authors (Mohammadi Khoramabadi et al. 2013; Ghahari & Jussila 2014a, b, 2015; Barahoei et al. 2014a, b, 2015; Riedel & Aghadokht 2017; Mohammadi Khoramabadi & Talebi 2018, etc.) have made contributions to the Iranian fauna. The aim of this paper is the faunistic study on the ichneumonids from some regions of Iran and introducing of six new country records.

Materials and methods

The materials were collected by Malaise traps and sweeping net from different regions of Iran, and killed with ethyl acetate. The parasitoids were transferred into Eppendorf tubes containing 75% ethyl alcohol. The specimens were mounted on triangular labels and were determined by a stereoscopic binocular microscope. The determined specimens were confirmed by the second author and are preserved in the collection of the author. Classification and nomenclature follows Yu et al. (2016).

Results

Totally 51 species of Ichneumonidae within 39 genera were collected and identified from different regions of Iran. Among them, six species are newly recorded: *Lissonota (Lissonota) folii* Thomson, 1877 (Banchinae), *Casinaria ischnogaster* Thomson, 1887, *Dusona terebrator* (Förster, 1868) (Campopleginae), *Temelucha genalis* (Szépligeti, 1899) (Cremastinae), *Mesostenus albinotatus* Gravenhorst, 1829 (Cryptinae) and *Exyston sponsorius* (Fabricius, 1781) (Tryphoninae). The list of species is given below

alphabetically, and the new records are shown with an asterisk (*).

Subfamily Anomaloninae Viereck, 1918

Genus *Agrypon* Förster, 1860

Agrypon varitarsum (Wesmael, 1849)

Material examined: 2♀♀, Bushehr province, Delvar, 28°76'N 51°07'E, April 2001.

General distribution: Nearctic, Oriental, Palaearctic.

Subfamily Banchinae Wesmael, 1845

Genus *Apophua* Morley, 1913

Apophua bipunctoria (Thunberg, 1822)

Material examined: 1♂♂, Kerman province, Kahnooj, 27°95'N 57°71'E, May 2005.

General distribution: Palaearctic, Nearctic.

Genus *Lissonota* Gravenhorst, 1829

* *Lissonota (Lissonota) folii* Thomson, 1877

Material examined: 1♀♀, Kuhgiloyeh & Boyerahmad province, Kakan, 30.64°N 51.81°E, September 2012.

General distribution: Nearctic, Palaearctic.

Lissonota (Loxonota) histrio (Fabricius, 1798)

Material examined: 1♂♂, Fars province, Abadeh, 31°15'N 52°30'E, April 2010.

General distribution: Nearctic, Palaearctic.

Subfamily Campopleginae Förster, 1869

Genus *Casinaria* Holmgren, 1859

* *Casinaria ischnogaster* Thomson, 1887

Material examined: 2♂♂♂, Ardabil province, Germe, 39°00'N 47°57'E, July 2011.

General distribution: Palaearctic.

Genus *Campoletis* Förster, 1869

Campoletis latrator (Gravenhorst, 1829)

Material examined: 1♀♀, West Azarbaijan province: Myandoab, 36°57'N 46°00'E, June 2007.

General distribution: Palaearctic.

Genus *Diadegma* Förster, 1869

Diadegma combinatum (Holmgren, 1860)

Material examined: 1♀♀, Khorasan-e Shomali province, Farooj, 37°21'N 58°26'E, May 2014.

General distribution: Nearctic, Palaearctic.

Genus *Dusona* Cameron, 1901

*** *Dusona terebrator* (Förster, 1868)**

Material examined: 2♂♂, Golestan province, Golestan National Park, 37°32'N 56°22'E, August 2010.

General distribution: Palaearctic.

Genus *Olesicampe* Förster, 1869

***Olesicampe patellana* (Thomson, 1887)**

Material examined: 1♀, Kordestan province, Kavaneh, 34°97'N 46°98'E, September 2013.

General distribution: Western Palaearctic.

Subfamily Cremastinae Förster, 1869

Genus *Temelucha* Förster, 1869

*** *Temelucha genalis* (Szépligeti, 1899)**

Material examined: 3♀♀, Golestan province, Golestan National Park, 37°32'N 56°22'E, August 2010.

General distribution: Palaearctic.

Subfamily Cryptinae Kirby, 1837

Genus *Aptesis* Förster, 1850

***Aptesis senicula* (Kriechbaumer, 1893)**

Material examined: 1♂, Guilan province, Lahijan, 37°14'N 50°02'E, April 2012.

General distribution: Palaearctic.

Genus *Endasys* Förster, 1869

***Endasys plagiator* (Gravenhorst, 1829)**

Material examined: 1♂, West Azarbaijan province: Shahin-Dezh, 32°86'N 51°56'E, August 2008.

General distribution: Western Palaearctic.

Genus *Glyphicnemis* Förster, 1869

***Glyphicnemis profligator* (Fabricius, 1775)**

Material examined: 2♂♂, Khuzestan province, Bagh-Malek, 31°54'N 49°87'E, April 2006.

General distribution: Palaearctic.

Genus *Mesostenus* Gravenhorst, 1829

*** *Mesostenus albinotatus* Gravenhorst, 1829**

Material examined: 1♂, Ardabil province, Aslandooz, 39°44'N 47°40'E, 26 July 2010.

General distribution: Nearctic, Palaearctic.

Genus *Rhembobius* Förster, 1869

***Rhembobius quadrispinus* (Gravenhorst, 1829)**

Material examined: 2♂♂, West Azarbaijan province: Naqadeh, 36°57'N 45°24'E, July 2007.

General distribution: Western Palaearctic.

Subfamily Ctenopelmatinae Förster, 1869

Genus *Lathrolestes* Förster, 1869

***Lathrolestes albicinctus* (Habermehl, 1922)**

Material examined: 1♀♀, Ardabil province, Germe, 39°00'N 47°57'E, July 2011.

General distribution: Western Palaearctic.

***Lathrolestes unguaris* (Thomson, 1883)**

Material examined: 1♂, Guilan province, Talesh, 37.8°N 48.91°E, June 2010.

General distribution: Western Palaearctic.

Subfamily Diplazontinae Viereck, 1918

Genus *Homotropus* Förster, 1869

***Homotropus pallipes* (Gravenhorst, 1829)**

Material examined: 2♀, Isfahan province, Chadegan, 32°77'N 50°63'E, April 2008.

General distribution: Nearctic, Neotropical, Palaearctic.

Genus *Syrphoctonus* Förster, 1869

***Syrphoctonus tarsatorius* (Panzer, 1809)**

Material examined: 1♀, Golestan province, Golestan National Park, 37°32'N 56°22'E, August 2010.

General distribution: Holarctic, Oriental.

Genus *Syrphophilus* Dasch, 1964

***Syrphophilus bizonarius* (Gravenhorst, 1829)**

Material examined: 1♀, Khorasan-e Shomali province, Farooj, 37°23'N 58°25'E, May 2011.

General distribution: Nearctic, Oriental, Palaearctic.

Subfamily Ichneumoninae Latreille, 1802

Genus *Anisobas* Wesmael, 1845

***Anisobas hostilis* (Gravenhorst, 1820)**

Material examined: 3♀♀, Razavi Khorasan province, Neyshabur, 36°12'N 58°45'E, August 2002.

General distribution: Palaearctic.

Genus *Barichneumon* Thomson, 1893

***Barichneumon chionomus* (Wesmael, 1845)**

Material examined: 2♀♀, Razavi Khorasan province, Neyshabur, 36°12'N 58°45'E, August 2002.

General distribution: Palaearctic.

***Barichneumon plagiarius* (Wesmael, 1848)**

Material examined: 1♀, Golestan province, Golestan National Park, 37°32'N 56°22'E, August 2010.

General distribution: Palaearctic.

Genus *Baranisobas* Heinrich, 1972

***Baranisobas ridibundus* (Gravenhorst, 1829)**

Material examined: 1♀, Chaharmahal & Bakhtiari province, Deh-Chenar, 31°43'N 51°14'E, September 2003.

General distribution: Palaearctic.

Genus *Cratichneumon* Thomson, 1893

***Cratichneumon viator* (Scopoli, 1763)**

Material examined: 1♂♂, Khorasan-e Jonobi province, Birjand, 32°32'N 58°50'E, May 2009.

General distribution: Nearctic, Palaearctic.

Genus *Ctenichneumon* Thomson, 1894

***Ctenichneumon funereus* (Geoffroy, 1785)**

Material examined: 3♀♀, Razavi Khorasan province, Mashhad, 36°17'N 59°40'E, June 2001.

General distribution: Oriental, Palaearctic.

***Ctenichneumon inspector* (Wesmael, 1845)**

Material examined: 1♀, Kermanshah province, Sonqor, 34°50'N 47°30'E, April 2011.

General distribution: Palaearctic.

Genus *Homotherus* Förster, 1869

***Homotherus locutor* (Thunberg, 1822)**

Material examined: 4♀♀, Guilan province, Lahijan, 37°14'N 50°02'E, April 2012.

General distribution: Palaearctic.

Genus *Ichneumon* Linnaeus, 1758

***Ichneumon confusor* Gravenhorst, 1820**

Material examined: 3♀♀, Kuhgiluyeh & Boyerahmad province, Kakan, 30.64'N 51.81'E, September 2012.

General distribution: Palaearctic.

***Ichneumon exilicornis* Wesmael, 1857**

Material examined: 1♀, West Azarbaijan province: Myandoab, 36°57'N 46°00'E, June 2007.

General distribution: Palaearctic.

***Ichneumon extensorius* Linnaeus, 1758**

Material examined: 2♀♀, Lorestan province, Nur-Abad, 34°07'N 47°97'E, 8 June 2013.

General distribution: Palaearctic.

***Ichneumon gracilicornis* Gravenhorst, 1829**

Material examined: 3♀♀, Chaharmahal and Bakhtiari province, Sarkhoon, 31°75'N 50°55'E, April 2012.

General distribution: Palaearctic.

***Ichneumon phaeostigmus* Wesmael, 1857**

Material examined: 1♀, West Azarbaijan province: Hassanloo, 37.07'N 45.56'E, June-July 2008.

General distribution: Palaearctic.

***Ichneumon stramentarius* Gravenhorst, 1820**

Material examined: 2♀♀, Qazvin province, Taleghan, 35.48'N 50.58'E, August 2012.

General distribution: Palaearctic.

***Ichneumon suspiciosus* Wesmael, 1845**

Material examined: 1♂, Khorasan Shomali province, km 6 Lujely - Shirvan, 37°19'N 57°74'E, 2♀, 4 May 2011.

General distribution: Palaearctic.

Genus *Limerodops* Heinrich, 1949

***Limerodops subsericans* (Gravenhorst, 1820)**

Material examined: 1♂, West Azarbaijan province, Mahabad, 36°46'N 45°44'E, 2♀, 9-11 August 2014.

General distribution: Palaearctic.

Genus *Listrodromus* Wesmael, 1845

***Listrodromus nyctemerus* (Gravenhorst, 1820)**

Material examined: 4♀♀, Lorestan province, Shool Abad, 33°18'N 49°19'E, April 2012.

General distribution: Palaearctic.

Genus *Platylabus* Wesmael, 1845

***Platylabus iridipennis* (Gravenhorst, 1829)**

Material examined: 2♀♀, Semnan province, Shahrud (Jangal-e Abr), 35°30'N 55°30'E, June 2011.

General distribution: Palaearctic.

***Platylabus oehlkei* Heinrich, 1972**

Material examined: 1♀, West Azarbaijan province, Mahabad, 36°46'N 45°44'E, 9-11 August 2014.

General distribution: Palaearctic.

Genus *Platylabops* Heinrich, 1950

***Platylabops humilis* (Wesmael, 1857)**

Material examined: 1♀, Mazandaran province, Behshahr, 36°41'N 53°44'E, July 2013.

General distribution: Palaearctic.

Genus *Pseudoplatylabus* Smits van Burgst, 1920

***Pseudoplatylabus violentus* (Gravenhorst, 1829)**

Material examined: 2♀♀, Kermanshah province, Sonqor, 34°50'N 47°30'E, April 2011.

General distribution: Nearctic, Palaearctic.

Genus *Rictichneumon* Heinrich, 1961

***Rictichneumon lombardi* (Berthoumieu, 1897)**

Material examined: 2♀, Qazvin province, Rostam Abad, 35°67'N 49°86'E, August 2012.

General distribution: Western Palaearctic.

Genus *Syspasis* Townes, 1965

***Syspasis carinator* (Fabricius, 1798)**

Material examined: 1♂, Mazandaran province, Tonekabon, Jangal-e 3000, 36°38'N 50°49'E, September 2009.

General distribution: Palaearctic.

***Syspasis rufinus* Gravenhorst, 1893**

Material examined: 1♀, 1♂, Qazvin province, Takestan, 36°00'N 49°33'E, July 2007.

General distribution: Western Palaearctic.

Genus *Vulgichneumon* Heinrich, 1961

***Vulgichneumon deceptor* (Scopoli, 1763)**

Material examined: 3♀, Kermanshah province, Sonqor, 34°50'N 47°30'E, April 2011.

General distribution: Palaearctic.

Subfamily Metopiinae Förster, 1869

Genus *Exochus* Gravenhorst, 1829

***Exochus suborbitalis* Schmiedeknecht, 1924**

Material examined: 1♀, Guilan province, Lahijan, 37°14'N 50°02'E, April 2012.

General distribution: Palaearctic.

Subfamily Tersilochinae Schmiedeknecht, 1910

Genus *Epistathmus* Förster, 1869

***Epistathmus crassicornis* Horstmann, 1971**

Material examined: 1♂, Golestan province, Golestan National Park, 37°32'N 56°22'E, August 2010.

General distribution: Palaearctic.

Genus *Probles* Förster, 1869

***Probles* (*Microdiaparsis*) *microcephalus* (Gravenhorst, 1829)**

Material examined: 1♀, East Azarbaijan province, Shabestar, 38°12'N 45°44'E, June 2009.

General distribution: Western Palaearctic.

Subfamily Tryphoninae Shuckard, 1840

Genus *Ctenochira* Förster, 1855

***Ctenochira angulata* (Thomson, 1883)**

Material examined: 1♂, Khorasan Shomali province, km 6 Lujely-Shirvan, 37°19'6"N 57°74'E, 4 May 2011.

General distribution: Palaearctic.

Genus *Exyston* Schiödte, 1839

*** *Exyston sponsorius* (Fabricius, 1781)**

Material examined: 1♀, 1♂, Fars province, Abadeh, 31°32'N 52°62'E, June 2008.

General distribution: Palaearctic.

Genus *Paropheltes* Cameron, 1907

***Paropheltes turanica* (Kokujev, 1899)**

Material examined: 2♀, Hamadan province, Shirinsu, 35°49'N 48°45'E, September 2010.

General distribution: Palaearctic.

Discussion

This faunistic investigation indicates that the species diversity of Ichneumonidae is very diverse in various Iranian ecosystems. Iran is a large country including diverse agroecosystems and natural ecosystems; conducting the faunistic samplings will result to collecting new records and even new species. Regarding to the new records of this paper and also other papers after Barahoei et al. (2012), the total species number of Iranian Ichneumonidae reaches to more than 550 species. Since ichneumonid wasps have effective role in biocontrol of agricultural pests, determining of these beneficial wasps can be the first step in order to establishment of biological control programs.

Acknowledgements

This research was supported by Islamic Azad University (Young Researchers and Elites Club, Science and Research Branch, and Qaemshahr Branch), and University of Turku. We are grateful to D.R. Kasparyan (Russia), V. Gupta (USA), and K.R. Sime (USA) for sending some necessary data and identification of some materials.

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Отримано: 11.05.2018
 Прийнято: 13.08.2018