

## SPHECID WASPS FROM EAST AZARBAIJAN PROVINCE, IRAN (HYMENOPTERA: SPHECIDAE)

**Guiti Ghazi-Soltani\***, **Ebrahim Ebrahimi\*\***,  
**Shahzad Iranipour\*** and **Reza Farshbaf Pour Abad\***

\* Faculty of Agriculture, Department of Plant Protection, Tabriz University, Tabriz 51664, IRAN. E-mail: giti\_gazisoltani@yahoo.com

\*\* Department of Insect Taxonomy, Iranian Research Institute of Plant Protection, Tehran 19395-1454, IRAN.

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ABSTRACT: Thirty eight species of sphecid wasps from East Azarbaijan Province are listed. Two genera (*Diploplectron* Fox, *Tracheliodes* Morawitz) and four species (*Psenulus pallipes* (Panzer, 1798), *Ropalum coarctatum* Scopoli 1763, *Ectemnius sexcinctus* (Fabricius, 1775) and *Cerceris rybyensis* (Linnaeus, 1771) are new records for the fauna of Iran.

KEY WORDS: Sphecidae, Iran, Fauna, East Azarbaijan.

East Azarbaijan Province is one of the 30 provinces of Iran and is located in the northwest of the country, bordering Armenia and Republic of Azerbaijan. The province covers an area of 45846.572 km<sup>2</sup> (excluding Urmia lake) (Figure 1).

Sphecidae treated as one large family is a paraphyletic entity and based on some phylogenetic analysis, was subdivided into four families: Heterogynaidae, Ampulicidae, Sphecidae and Crabronidae (Bohart & Menke, 1976; Brothers, 1999; Melo, 1999). Sphecids can be distinguished by the posterior margin of the pronotum which is a straight line and terminates laterally into a rounded lobe that does not reach the tegula (Bohart & Menke, 1976). The sphecid fauna of Iran has received relatively little attention and only Esmaili & Rastegar (1974), Ebrahimi (1993, 2004) and de Beaumont (1957) have studied this family in Iran. The fauna of sphecid wasps has not been comprehensively studied in East Azarbaijan Province, and only a few species has been listed by Esmaili & Rastegar (1974) and Ebrahimi (1993, 2004). In this study a list of sphecid wasps in East Azarbaijan Province is given including previously recorded species by mentioned authors.

### MATERIALS AND METHODS

In a faunistic survey in East Azarbaijan Province during 2003-2008, the materials were collected using sweeping nets, Malaise and Pan traps. The materials from Hayk Mizayans Insect Museum (HMIM) are also included. Terminology and classification follow Bohart & Menke (1976) and also Richards (1980). In this study sphecids are treated as one large family including 11 subfamilies. The subfamilies and genera are ordered as in Bohart & Menke (1976).

### RESULTS

The list of sphecids includes 39 species belonging to 7 subfamilies (Sphecinae, Pemphredoninae, Astataninae, Larrinae, Crabroninae, Nyssoninae, Philanthinae) of which two genera (*Diploplectron* Fox, *Tracheliodes* Morawitz) and four species

(*Psenulus pallipes* (Panzer, 1798), *Rhopalum coarctatum* Scopoli, 1763, *Ectemnius sexcinctus* (Fabricius, 1775), *Cerceris rybyensis* (Linnaeus, 1771) are new records for the fauna of Iran. All the identified species are new for the fauna of East Azarbaijan Province except *Sceliphron destillatorium* (Illiger), *Sphex flavipennis* Fabricius, *Sphex pruinosus* Germar, *Ammophila heydeni* Dahlbom, *Podalonia hirsuta* (Scopoli), *Bembix bidentata* Vander Linden and *Philanthus triangulum* (Fabricius) which were previously reported by Ebrahimi (1993, 2004).

### I-Subfamily Sphecinae

Members of this subfamily are conspicuous because of their large size and distinctive cylindrical petiole in reference to which they are called “thread waisted wasps”. They are found almost everywhere and prey on insect larvae that are real or potential enemies of man so are of economic importance. In this study nine species from this subfamily were identified.

#### ***Chalybion femoratum* (Fabricius, 1781)**

Material: Tabriz; Sardroud, 14.VII.2004. leg. Iranipour, 1♀. Marand; Yam, 1750m, 26.VI.2005, leg. Ghazi-Soltani, pan trap, 1♀. Jolfa; Siahroud, 1400m., 11.VIII.2005, leg. Gilasian and Ebrahimi, 2♂1♀. Tabriz; Khosrow-Shahr, IV-V.2008. leg. Lotfalizadeh, Malaise trap, 3♂.

This species was reported from the north of Iran by de Beaumont in 1957 (Pulawski 2007).

#### ***Sceliphron destillatorium* (Illiger, 1807)**

Material: Tabriz; Khalatpoushan, 1570m, 5.X.1994 and 1.I.1996, 2♀. Shahsavari 31.VIII.1997, 1♀. Osku; Kandovan, 8.VII.2005. 2800m, leg. Gilasian and Ebrahimi, 1♀. Tabriz; Shadbad, 18,IV.1954, 1♀.

This species was firstly reported from Iran by Radoszkowski in 1871 from Astarabad in Gorgan Province (Pulawski 2007). Recently Ebrahimi (1993) has reported it from Shadabad in East Azarbaijan Province.

#### ***Sphex flavipennis* Fabricius 1793**

Material: Maragheh; Shorsou, 26.VIII.2004, leg. Azarifam, 1♀. Ahar: 20.VII.1968, leg. Abaïi and Modjib, 1♀.

Ebrahimi (1993) reported it from Ahar. This species is distributed in Mediterranean region, United Arab Emirates, Iran and Afghanistan (Menke & Pulawski 2000).

#### ***Sphex pruinosus* Germar 1817**

Material: Tabriz; Duzal, 15.VIII.1961, leg. Damanabi, 1♀.

This material is kept in HMIM, identified by Z. Bouček in 1971 and is reported for East Azarbaijan by Ebrahimi (1993).

#### ***Prionyx songaricus* (Eversmann, 1849)**

Material: Jolfa; Siahroud, 24.VIII.2005, leg. Ghazi-Soltani, 1♀.

It occurs in Turkey, Israel, Iran, Iraq and Afghanistan according to Bohart & Menke (1976).

#### ***Prionyx* sp.**

Material: Tabriz; Khalatpoushan, VII.2005, leg. Ghazi-Soltani, Malaise trap, 1♀.

This specimen has creamy bands around gasteral segments and it may be *P. kirbii* (Vander Linden) or a related species.

#### ***Podalonia hirsuta* (Scopoli, 1763)**

Material: Aylakhli; Jegha village, VI.2005, leg. Ghazi-Soltani, 1♀. Jolfa; Daran, V.2005, leg. Ghazi-Soltani, 1♀. Dare- Livghvan, 31.VII.2004, leg. Ghazi-Soltani, 1♀. Mamaghan, 25.V.2004, leg. Ghazi-Soltani, 1♀. Varzeghan; Aghababadash, 30.VII.2004, leg. Ghazi-

Soltani, 1♀. Bonab, VII.2005, leg. Ghazi-Soltani Malaise trap, 1♀. Marand; Mishab mountains, 22.VI.2004, leg. Ghazi-Soltani, 1♀.

This species, previously reported from East Azarbaijan, Lighvan (Ebrahimi 1993) is widely distributed and occurs abundantly in the province. These specimens with entirely black body belong to subspecies *Podalonia hirsuta mervensis* Rad (de Beaumont 1967).

### ***Ammophila sabulosa* Linnaeus 1758**

Material: Beiragh village, 17.VII.2004, leg. Iranipour, 1♂. Maragheh; Khormazard, 4.VII.2004, leg. Ghazi-Soltani, 1♂. Tabriz; Bostanabad, VI.2005, leg. Ghazi-Soltani, 1♂. De Beaumont (1957) reported it from north of Iran.

### ***Ammophila heydeni* Dahlbom 1845**

Material: Tabriz; Dand mountain, 4.VIII.2004, leg. Ghazi-Soltani, 1♀. Jolfa; Siahroud, 24.VIII.2005, leg. Ghazi-Soltani, 1♀. Tabriz; Khalatpoushan, XI.2005, leg. Ghazi-Soltani, Malaise trap, 2♀. Sarab, 15.VII.1970, leg. Naiimi, 1♀. Ebrahimi (1993) reported it from East Azarbaijan, Sarab.

## **II-Subfamily Pemphredoninae**

The pemphredonines are recognized by one or more of the following characters: a stem like sternal petiol, a cuboidal head and enlarged forewing stigma. Pemphredoninae contains two tribes of nearly equal size: Psenini and Pemphredonini (Bohart & Menke, 1976). In East Azarbaijan Province three species occur (2 undetermined species) in three genera.

### ***Mimesa* sp.**

Material: Tabriz; Khalatpoushan, IX.2006, leg. Ghazi-Soltani, Malaise trap, 2♂. The genus *Mimesa* was treated as a subgenus of *Psen* Latreille (Richards 1980), but Bohart & Menke (1976) considered it as a separate genus. Based on a key to males presented by Richards (1980), this species resembles *M. bicolor* (Jurine) because of absence of flagellar segments keeled beneath, and to *M. lutarius* Fabricius in having mesopleuron less strongly and at most only rather closely punctured. The only species of *Mimesa* from Iran is *Mimesa grandii* Maidl (Pulawski 2007).

### ***Passaloecus* sp.**

Material: Tabriz; Khalatpoushan, 13.XI.2006, leg. Ghazi-Soltani, Malaise trap, 1♀. Maragheh; Alavian, 24.VI.2006 leg. Ghazi-Soltani, 1♀. These specimens are easily identified as a *Passaloecus* by the following characters: episternal sulcus well developed, extending from subalar fossa to hypersternaulus and beyond, hypersternaulus horizontal and these specimens have well-defined scrobal sulcus, parallel to hypersternaulus. Inner orbits are parallel. Two species of *Passaloecus* reported from Iran are: *P. turionum* Dahlbom and *P. gracilis* (Curtis) by de Beaumont in 1957 and Ebrahimi in 2007 respectively (Pulawski 2007).

### ***Psenulus pallipes* (Panzer, 1798)**

Material: Marand; Yam, 15.VIII.2005, leg. Ghazi-Soltani, Malaise trap, 3♀. In these female specimens, second gasteral sternite has a large well-defined, shallow depression on its basal half and gasteral sterna IV and V have pale fringes of hairs. This species is the first record for Iran.

## **III-Subfamily Astataninae**

The Astataninae is a small group which retains many characters of the archaic sphecid stock. This group has been treated variously as a subfamily or as a tribe, usually in the Larrinae (Bohart & Menke, 1976). From this subfamily three species were found in East Azarbaijan Province with a new generic record for Iran.

Members of this subfamily were abundantly captured in the Malaise traps installed in Khalatpoushan.

***Astata kashmirensis* Nurse 1909**

Material: Tabriz; Khalatpoushan, 13.VIII.2005, leg. Ghazi-Soltani, Malaise trap, 5♂. These specimens were identified by comparing them with the material in HMIM which was previously identified by W. J. Pulawski in 1974 as *Astata stecki* de Beaumont 1942. According to Bohart & Menke (1976), distributional region of it is north-west of India.

***Dryudella* sp.**

Material: Tabriz; Khalatpoushan, VII.2005, leg. Ghazi-Soltani, pan trap and Malaise trap, 2♂.

The specimens have a white bilobed spot in front of midocellus and two white spots on gastral tergum I. De Beaumont (1957) has recorded only one species from Iran as *D. tricolor*.

***Diploplectron* sp.**

Material: Tabriz; Khalatpoushan, 16.VIII.2005, leg. Ghazi-Soltani, Malaise trap, 3♀. This genus had not been reported from Iran. The genus *Diploplectron* Fox was identified by the following characters: first recurrent vein interstitial, clypeus tridentate and propodeal enclosure granulate. Its identification was postponed until more materials are collected.

**IV-Subfamily Larrinae**

This is the largest subfamily in Sphecidae, with over 2,000 species (Bohart & Menke, 1976). For the most part they are fairly compact, often dark colored wasps.

***Larra anathema* Rossi, 1790**

Material: Maragheh; Checkan, 4.VI.2004, leg. Ghazi-Soltani, 2♀. Varzeghan; Sarand, 30.VI.2004, leg. Ghazi-Soltani, 1♀.

This species was reported for Iran by Esmaili & Rastegar in 1974.

***Liris niger* (Fabricius, 1775)**

Material: Marand; Yam, III.2005, leg. Ghazi-Soltani, pan trap, 1♀.

The species was previously recorded for Iran by Ebrahimi (2004). It has been mentioned as *Liris nigra* by Bohart & Menke (1976).

***Trypoxylon scutatatum* Cheverier, 1876**

Material: Marand; Yam, 12.VII.2006, leg. Ghazi-Soltani, pan trap, 1♀. Tabriz; Khosrow-Shahr, IV-V.2008. leg. Lotfalizadeh, Malaise trap, 1♀.

It occurs in Europe (Bohart & Menke, 1976) and de Beaumont reported it from Iran in 1957 (Pulawski 2007).

***Trypoxylon clavicerum* Lepeletier & Serville, 1828**

Material: Mianeh; Gharechaman, VI.2005 leg. Ghazi-Soltani, 1♀2♂.

It occurs in the whole Palearctic Region.

***Miscophus* sp.**

Material: Tabriz; Khalatpoushan, IX.2005, leg. Ghazi-Soltani, Malaise trap, 1♀.

The characters that allow identification of this specimens as a *Miscophus* are: strong precoxal sulcus, laterally excised free clypeal margin, presence of two submarginal cells; second petiolate. Reported species from Iran are *M. bicolor* Jurine and *M. pretiosus* Kohl by de Beaumont (1957) and *M. ater* Lepeletier de Saint Fargeau by Ebrahimi (2004).

## V-Subfamily Crabroninae

The crabronins show a great variety of forms and are recognized especially by the cuboidal head and the single discrete submarginal cell of the forewing. The subfamily contains two tribes, Crabronini and Oxybelini that are separated by the fusion of the forewing submarginal cell with the first discoidal cell in the latter (Bohart & Menke, 1976). Seven genera and six species are identified from the region.

### ***Oxybelus latro* Olivier 1811**

Material: Tabriz; Khalatpoushan, 27.VIII.2005, leg. Ghazi-Soltani, Malaise trap, 1♀. Bonab, V-VI.2005, leg. Ghazi-Soltani, Malaise trap, 1♀.

De Beaumont (1957) has reported it for the first time from the north of Iran.

### ***Lindenius* sp.1**

Material: Tabriz; Khalatpoushan, 27.VIII.2005, leg. Ghazi-Soltani, Malaise trap, 1♀. Marand; Yam, 4.VII.2005, leg. Ghazi-Soltani, Malaise trap, 1♀.

Frons with a prominence between the antennal sockets, mandibles, scape, pronotal collar, scutellum, tibia and tarsi yellow. Four species of this genus have been reported from Iran: *L. anatolicus* de Beaumont, *L. armatus* (Vander Linden), *L. iraninus* Leclercq, and *L. sardashti* Leclercq. The two latter species are reported from Sardasht of Azarbaijan-e Gharbi (West Azarbaijan) Province (Pulawski 2007).

### ***Lindenius* sp.2**

Material: Maragheh; Checkan, 24.VI.2006, leg. Ghazi-Soltani, Malaise trap, 1♀.

This species can be distinguished from later by its entirely black body.

### ***Rhopalum coarctatum* Scopoli, 1763**

Material: Marand; Yam, 4.VIII.2005, leg. Ghazi-Soltani, Malaise trap, 3♀.

It has a strong prominence between the antennal sockets, the first gastral segment longer than the hind femur and the clypeus strongly pointed. It is the first record for the fauna of Iran.

### ***Crossocerus tarsatus* Shuckard 1837**

Material: Marand; Yam, VI.2005, leg. Ghazi-Soltani, pan trap, 2♂.

Dollfuss (2006) reported it for Iran in (Pulawski 2007).

### ***Crossoserus quadrimaculatus* (Fabricius, 1793)**

Material: Tabriz; Khalatpoushan, 19.VI.2005, leg. Ghazi-Soltani, pan trap, 1♂. Osku; Kandovan, 4.IX.2004, leg. Ghazi-Soltani, 2♂.

De Beaumont (1957) reported it from the north of Iran.

### ***Tracheliodes* sp.**

Material: Marand; Yam, 4.VIII.2005, leg. Ghazi-Soltani, 2♀.

Its morphological characters are as follow: Palpal formula 6-3, fore trochanter slender and elongate, clypeus with a vertical prominence. This genus has 15 species distributed worldwide without any record from Iran (Pulawski 2007).

### ***Ectemnius sexcinctus* (Fabricius, 1775)**

Material: Marand; Yam, 4.VII.2005, leg. Ghazi-Soltani, Malaise trap, 2♂.

Its central tooth beneath third antennal segment has a few curled hairs. It is a new record for Iranian fauna.

### ***Lestica clypeata* Schreber, 1759**

Material: Mianeh; Gharechaman, 2005, on Crucifera, leg. Ghazi-Soltani, 1♂. Kaleybar, 2006, on Crucifera, leg. Ghazi-Soltani, 1♂. Maragheh; Checkan, 2006, on Euphorbiaceae, leg.

Ghazi-Soltani, 1♂. Mianeh, VI.2003, leg. Abasi Yanbolagh, 1♂. Marand; Yam, VI.VIII.2005, leg. Ghazi-Soltani, Malaise trap, 2♀. Tabriz; Khalatpoushan, 1.VIII.2005, leg. Ghazi-Soltani, Malaise trap, 1♀. Tabriz; Sardroud, 15.VIII.2005, leg. Ghazi-Soltani, Malaise trap, 10♀. This species is distributed in whole Palaearctic region.

## VI-Subfamily Nyssoninae

Bohart & Menke (1976) have included seven tribes and 71 genera in the subfamily. The majority are medium-small to medium-large wasps. The variety of shapes, sizes and markings within the subfamily makes it impossible to visualize a typical nyssonine. The following species from this family are all from HMIM.

### ***Bembix bidentata* Vander Linden, 1829**

Material: Kaleibar; Vinagh, 800m, 7-8.VIII.1992, leg. Parchami and Badii, 6♀. Tabriz, Sarab, 25.VII.1970, leg. Naim, 1♀.  
It recorded from north of Iran by Handlirsch in 1895 (Pulawski 2007).

### ***Bembix oculata* Panzer, 1801**

Material: Kaleybar; Gheshlagh, 1280m, 9.VII.2005, leg. Gilasian and Ebrahimi, 1♀.  
This species is distributed in Europe, Middle East, Iran and Afghanistan (Bohart & Menke, 1976) and Morice has reported it from Bandar-e-Anzali (on the coast of Caspian Sea) in 1921 (Pulawski, 2007).

### ***Bembix bicolor* Radoszkowski, 1877**

Material: Tabriz; Vaniar, 28.VI.1975, 3♂, 15.VIII.1972, 1♂.  
Iran, Middle East to Afghanistan and Mongolia are distributional region of this species (Bohart & Menke, 1976). It was reported from Iran by de Beumont in 1957 (Pulawski 2007).

### ***Harpactus leavis* (Latreille, 1792)**

Material: Marand; Yam, 24.VI.4.VIII.2005, leg. Ghazi-Soltani, pan trap, 2♀1♂. Tabriz; Khosrow-Shahr, IV-V.2008. leg. Lotfalizadeh, Malaise trap, 1♀1♂.  
Ebrahimi (2004) reported it for Iran (Pulawski 2007).

## VII-Subfamily Philanthinae

As the subfamily name implies, the philanthines are commonly found on or about flowers. Over three-fourths of these are contained in *Cerceris*, the largest species genus. The Philanthinae contain six tribes and 11 genera. Five species in 2 genera occur in East Azarbaijan Province.

### ***Philanthus triangulum* (Fabricius, 1775)**

Material: Tabriz; Khalatpoushan, 15.VIII.2005, leg. Ghazi-Soltani, Malaise trap, 3♀. Osku; Kandovan, 4.IX.2004, leg. Ghazi-Soltani, 1♀. Marand; Yam, 4.VIII.2004, leg. Ghazi-Soltani, 1♀. Varzeghan; Abesh Ahmad- Horand, 1100m. 26.VII.2005, leg. Ghazi-Soltani, 1♀. Varzeghan; Sarand, 29.VII.2004, leg. Ghazi-Soltani, 1♀.  
This species reported for Iran by Morice in 1921 from Bandar-e Anzali.

### ***Cerceris* sp.**

Material: Tabriz; Azarshahr, 2004, leg. Vaez, 1♂.  
According to the key of Guichard (1993), this species resembles *C. eugenia* Schletterer in having lateral spines on 6<sup>th</sup> gastral sternite.

### ***Cerceris tricolorata* Mochi, 1838**

Material: Marand; Yam, VIII.2005, leg. Ghazi-Soltani, 1♀.  
It is widely distributed in the Palearctic region (Bohart & Menke, 1976).

***Cerceris rybyensis* (Linnaeus, 1771)**

Material: Marand; Zal, 19.VIII.2004, leg. Ghazi-Soltani, 4♀1♂.

This species which is the new record for Iranian fauna is widely distributed in Palearctic region (Bohart & Menke, 1976).

***Cerceris quadricincta* (Panzer, 1799)**

Material: Marand; Yam, 26.VII.2005, leg. Ghazi-Soltani, Malaise trap, 1♀. Mianeh, VI. 2003. leg. Abbasi Yanbolagh, 1♀. Jolfa; Siahroud, 1400m. 11.VIII.2005, leg. Gilasian and Ebrahimi, 1♀. Kaleybar; Geshlagh, 1280m. 9. VIII. 2005, leg. Gilasian and Ebrahimi, 1♀.

It is widely distributed in the Palearctic region (Bohart & Menke, 1976).

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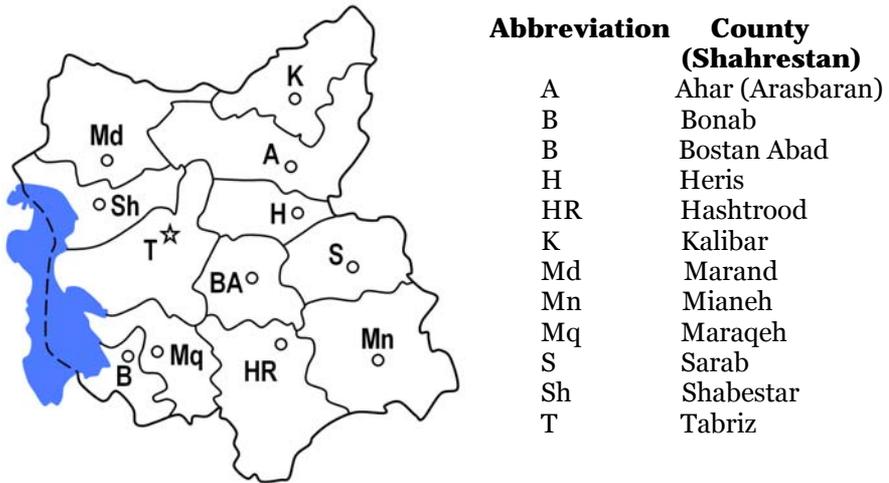


Figure 1. East Azarbaijan Province and the location of its counties (From Wikipedia, the free encyclopedia at: [http://en.wikipedia.org/wiki/East\\_Azerbaijan](http://en.wikipedia.org/wiki/East_Azerbaijan)).