Updated Checklist of Vespidae (Hymenoptera: Vespoidea) in Iran

Zahra Rahmani¹, Ehsan Rakhshani*¹ & James Michael Carpenter²

1 Department of Plant Protection, College of Agriculture, University of Zabol, P.O. Box 98615-538, I.R. Iran.
2 Division of Invertebrate Zoology, American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024, USA.

ABSTRACT. 231 species of the family Vespidae (Hymenoptera, Vespoidea) of Iran, in 55 genera belonging to 4 subfamilies Eumeninae (45 genera, 184 species), Masarinae (5 genera, 24 species), Polistinae (2 genera, 17 species) and Vespinae (3 genera, 6 species) are listed. An overall assessment of the distribution pattern of the wasp species in Iran indicates a complex fauna of different biogeographic regions. 111 species are found in both Eastern and Western Palaearctic regions, while 67 species were found only in the Eastern Palaearctic region. Few species (14 species – 6.1%) of various genera are known as elements of central and western Asian area and their area of distribution is not known in Europe (West Palaearctic) and in the Far East. The species that were found both in the Oriental and Afrotropical Regions comprises 11.7 and 15.6% the Iranian wasp fauna, respectively. Many species (48, 20.8%) are exclusively recorded from Iran and as yet there is no record of these species from other countries. The highest percentage of the wasp species are recorded from Sistan-o Baluchestan (42 species, 18.2%), Alborz (42 species, 18.2%), Fars (39 species, 16.9%) and Tehran provinces (38 Species 16.5%), representing the fauna of the Southeastern, North- and South Central of the country.

Key words: Catalogue, Distribution, Hornets, Potter wasps, Paper wasps, Pollen wasps, Yellow jackets

Introduction

Vespidae is one of the largest and most diverse families of the order Hymenoptera with more than 5000 species worldwide in six subfamilies: Euparagiinae (single genus, 10 species), Masarinae (14 genera, 374 species), Eumeninae (204 genera, 3844 species), Stenogastrinae (7 genera, 72 species), Polistinae (25 genera, 1024 species), and Vespinae (4 genera, 69 species) (Pickett & Carpenter, 2010; Carpenter, unpubl.). Species of the family Vespidae play important roles in ecosystems, as biological control agents, since they feed their larvae with caterpillars and other insects (Ross & Matthews, 1991). They also serve as pollinators of various plants (Fateryga, 2010). Adult vespids are commonly black or brown...
in color, but often marked with yellow or white patterns. Most species are solitary, but many species are social (Goulet & Huber, 1993). The social species belong to the subfamilies Stenogastrinae, Polistinae and Vespinae, while all members of the Euparagiinae, Masarinae and Eumeninae live solitarily (Ross & Matthews, 1991). In solitary species, the larvae feed normally on larvae of other insects, especially caterpillars, within a cell constructed and provisioned by the adult female, but in the Masarinae the larva is supplied with a mixture of pollen and nectar instead. In social species the larva is progressively fed by the adult females on masticated insects (Ross & Matthews, 1991; Goulet & Huber, 1993).

Scattered data on Vespidae of Iran were partly reviewed in Farahbakhsh (1961) and Esmaili & Rastegar (1974). Subsequent faunistic or taxonomic works (Pashaei Rad et al., 2006, 2010; Abbasi et al., 2008; Ebrahimi & Carpenter, 2008, 2012; Salehi Fard et al., 2013; Khoobdel et al., 2014; Nematy et al., 2016; Hamzavi et al., 2019) contributed to increasing the knowledge on the Vespidae of Iran. The first comprehensive study of the vespid fauna of Iran was done by Blüthgen & Gusenleitner (1970), in which numerous species were recorded from various regions. Many more vespid species of Iran were treated by Gusenleitner (1972, 1973b, 1985b, 1986a, 1986b, 1992, 1995a, 1998c, 2000c, 2001, 2002, 2004, 2006a, 2010a, 2011a, 2012a, 2012b, 2014, 2016, 2018), in his long series of publications. Various papers including data on the recorded Vespidae from Iran were also published, elsewhere (e.g. Morawitz, 1885; Kostylev, 1937, 1940; Giordani Soika, 1961, 1970; Guiglia, 1976, 1977; Archer, 1981; Castro & Dvořák, 2009; Dvořák et al., 2012; Gusenleitner & Ockermüller, 2018; Selis, 2019).

In the last catalogue of Vespidae of Iran (Ebrahimi & Carpenter, 2008), 51 genera and 182 species were recorded with relevant data about distribution in various parts of the country. Since then, many other species have been recorded from Iran or their distribution in other parts of the country is documented. On the other hand, the status of some recorded species was changed from that considered in Ebrahimi & Carpenter (2008). Here we present an updated checklist of Vespidae from Iran with details based on the original references indicating the recent advances of the knowledge on the fauna of Vespidae in various parts of the country.

Material and methods

The known vespid species recorded from Iran were compiled and listed. Data about general distribution of the recorded species were compiled from the selected relevant literature. The provincial distribution of each species was also based on the locality records in the published data. Classification and nomenclature followed Carpenter (1996, 2001), Carpenter & Kojima (1997), Gusenleitner (2013, 2019) and Schmid-Egger et al. (2017). The occurrence of species in Iran as originally indicated the junior synonyms under which the species were previously recorded from Iran are ignored. The valid name of each species is presented according to the last taxonomic modification. Other taxonomic changes and occurrence of the subspecies were also highlighted as separate remarks. Within the subfamilies the species are listed and presented alphabetically.

Results

231 species of the family Vespidae in 55 genera belonging to four subfamilies recorded from Iran are listed.
Family: Vespidae
Subfamily: Eumeninae Leach, 1815

Genus: Acanthodynerus Gusenleitner, 1969
Acanthodynerus Gusenleitner, 1969: 13. Type species: Acanthodynerus giordanii Gusenleitner, 1969, by original designation.

Acanthodynerus multimaculatus Gusenleitner, 2000
Acanthodynerus multimaculatus Gusenleitner, 2000: 932, ♀. – Turkey.
Distribution in Iran: Isfahan (Gusenleitner, 2011a).
General distribution: Eastern (Iran) and Western (Israel, Turkey) Palaearctic (Gusenleitner, 2013).

Genus: Alastor Lepeletier, 1841
Alastor Lepeletier, 1841: 668. Type species: Alastor atropos Lepeletier, 1841. Designated by Ashmead, 1902.

Alastor (Alastor) darius Gusenleitner, 1986
Alastor (Alastor) darius Gusenleitner, 1986: 30, ♂♀: Holotype ♂. – Iran.
Distribution in Iran: Hormozgan, Fars (Gusenleitner, 1986b).
General distribution: Eastern Palaearctic (Iran) (Gusenleitner, 2013).

Alastor (Alastor) iranus Blüthgen, 1956
Alastor (Alastor) iranus Blüthgen, 1956: 125, ♂. – Iran.
Distribution in Iran: Sistan-o Baluchestan (Blüthgen, 1956; Blüthgen & Gusenleitner, 1970).
General distribution: Eastern Palaearctic (Iran) (Gusenleitner, 2013).

Alastor (Alastor) xerxes Gusenleitner, 1986
Alastor (Alastor) xerxes Gusenleitner, 1986b: 33, ♂. – Iran.
Distribution in Iran: Hormozgan (Gusenleitner, 1986b).
General distribution: Eastern Palaearctic (Iran) (Gusenleitner, 2013).

Alastor (Alastor) zoroaster Gusenleitner, 1986
Alastor (Alastor) zoroaster Gusenleitner, 1986: 35, ♂. – Iran.
Distribution in Iran: Hormozgan (Gusenleitner, 1986b).
General distribution: Eastern Palaearctic (Iran) (Gusenleitner, 2013).

Alastor (Megalastor) esfandiarii Giordani Soika, 1970
Alastor (Megalastor) esfandiarii Giordani Soika, 1970: 58, ♂♂. – Iran.
Distribution in Iran: Sistan-o Baluchestan (Giordani Soika, 1970).
General distribution: Eastern (Iran - Giordani Soika, 1970) and Western (Turkey - Yildirim & Kojima, 1999) Palaearctic.

Genus: Allodynerus Blüthgen, 1938
Allodynerus Blüthgen, 1938: 280. Type species: “Lionotus floricaola Sauss, 1852” [= Odynerus floricaola de Saussure, 1853].
**Allodynerus delphinalis** (Giraud, 1866)
*Odynerus (Lionotus) delphinalis* Giraud, 1866: 464, ♀. - Grenoble [Paris].

**Distribution in Iran:** East Azerbaijan ([Ebrahimi & Carpenter, 2008]).
**General distribution:** Eastern (China, Japan, Iran, Kazakhstan, Korea, Russian Far East) and Western (Lebanon, North Africa, Russia, Turkey, Europe) Palaearctic ([Fateryga, 2018]).

**Allodynerus dignotus** (Morawitz, 1895)
*Odynerus (Lionotus) dignotus* Morawitz, 1895: 457, ♀♂. - Transcaucasia: Tschemachlinskaja.

**Distribution in Iran:** Khorasan-e Razavi ([Salehi Fard et al., 2013]), Sistan-o Baluchestan ([Blüthgen & Gusenleitner, 1970]).
**General distribution:** Afrotropical (Oman), Eastern (Iran, Kazakhstan, Pakistan, Turkmenistan) and Western (Iraq, Greece, Israel, Jordan, Syria, Turkey, UAE) Palaearctic ([Rafi et al., 2017]).

**Allodynerus rossii** (Lepeletier, 1841)
*Odynerus rossii* Lepeletier, 1841: 633, ♀♂. - Environ de Paris. (destroyed).

**Distribution in Iran:** Alborz ([Giordani Soika, 1970]), East Azerbaijan ([Ebrahimi & Carpenter, 2008]).
**General distribution:** Eastern (Iran, Turkmenistan) and Western (Caucasus, Europe, Northwest Africa, Russia, Turkey) Palaearctic ([Fateryga, 2018]).

**Genus: Ancistrocerus** Wesmael, 1836

*Ancistrocerus auctus* (Fabricius, 1793)
*Vespa aucta* Fabricius, 1793: 272, ♀. - Kiliae [København].

**Distribution in Iran:** East Azerbaijan ([Ebrahimi & Carpenter, 2008]), Zanjan ([Abbasi et al., 2008; Pashaei Rad et al., 2010]).
**General distribution:** Eastern (Iran, Kazakhstan) and Western (Europe, Israel, Jordan, Russia, Syria, Turkey) Palaearctic ([Fateryga, 2018]).

*Ancistrocerus biphaleratus* (de Saussure, 1852)
*Odynerus (Ancistrocerus) biphaleratus* de Saussure, 1852: 134, ♀♂. - Egypt.

**Distribution in Iran:** Hormozgan ([Gusenleitner, 2010a]).
**General distribution:** Eastern (Iran) and Western (Europe, Northwest Africa, Turkey) Palaearctic ([Gusenleitner, 2013]).
**Remarks:** The subspecies *Ancistrocerus biphaleratus triphaleratus* (de Saussure, 1855) has been recorded from Iran ([Gusenleitner, 2010a]).

*Ancistrocerus claripennis* Thomson, 1874
*Ancistrocerus claripennis* Thomson, 1874: 76, ♀♂. - Sweden.

**Distribution in Iran:** Ardabil ([Ebrahimi & Carpenter, 2008]), Mazandaran ([Gusenleitner, 2011a]).
**General distribution:** Eastern (China, Tajikistan, Iran) and Western (Caucasus, Europe, Russia, Turkey) Palaearctic ([Antropov & Fateryga, 2017]).
**Remarks:** The subspecies *Ancistrocerus claripennis claripennis* has been recorded from Iran ([Ebrahimi & Carpenter, 2008; Gusenleitner, 2011a]).
Ancistrocerus gazella (Panzer, 1798)
Vespa gazella Panzer, 1798: 10, ♂. – Austria (destroyed).

**Distribution in Iran:** No locality cited (Gusenleitner, 1995b).

**General distribution:** Eastern Palaearctic (Afghanistan, Iran, Pakistan), Nearctic (Canada, U.S.A – exotic), Oceanic (New Zealand – exotic), Western Palaearctic (Azerbaijan, Cyprus, Europe, Israel, North Africa, Russia, Turkey) (Fateryga et al., 2019c).

Ancistrocerus nigricornis (Curtis, 1826)
Odynerus nigricornis Curtis, 1826: 137. – Great Britain.

**Distribution in Iran:** No locality cited (Gusenleitner, 1995b).

**General distribution:** Oriental (India), Eastern (China, Iran, Japan, Kazakhstan, Mongolia, Russian Far East) and Western (Europe, North Africa, Russia, Turkey) Palaearctic (Antropov & Fateryga, 2017).

Ancistrocerus parietinus (Linnaeus, 1761)
Vespa parietina Linnaeus, 1761: 418. – Sweden.

**Distribution in Iran:** No locality cited (Gusenleitner, 1995b).

**General distribution:** Eastern (Iran, Japan, Kazakhstan, Korea, Mongolia, Russia Far East) and Western (Caucasus, Europe, North Africa, Russia, Turkey) Palaearctic (Fateryga, 2018).

Ancistrocerus parietum (Linnaeus, 1758)
Vespa parietum Linnaeus, 1758: 572.

**Distribution in Iran:** Qazvin (Moric, 1921); No locality cited (Kurzenko, 1978).

**General distribution:** Eastern (Iran, Japan, Kazakhstan, Korea, Mongolia) and Western (Armenia, Azerbaijan, Europe, North Africa, Russia, Turkey) Palaearctic (Fateryga et al., 2019).

**Remarks:** This species has been recorded from Iran as Odynerus parietum (Linnaeus, 1758) (Moric, 1921).

Ancistrocerus scoticus (Curtis, 1826)
Odynerus scoticus Curtis, 1826: 137. – Scotland.

**Distribution in Iran:** No locality cited (Ebrahim & Carpenter, 2008).

**General distribution:** Eastern (China, Iran, Kazakhstan, Korea, Mongolia, Russia) and Western (Europe, Georgia, North Africa, Russia, Turkey) Palaearctic (Antropov & Fateryga, 2017).

Ancistrocerus tenebrosus Gusenleitner, 2010
Ancistrocerus tenebrosus Gusenleitner, 2010: 1349, ♀♂, Holotype ♂. – Iran.

**Distribution in Iran:** Mazandaran (Gusenleitner, 2010a).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

Genus: Anteipiona de Saussure, 1855
Anteipiona Saussure, 1855: 244. Type species: Odynerus silaos Saussure, 1853. Designated by ICZN, 1970.

Anteipiona barrei (Radoszkovski, 1893)
Odynerus barrei Radoszkovski, 1893: 76, ♀. – Turkmenistan.

**Distribution in Iran:** Tehran (Giordani Soika, 1970); No locality cited (Castro & Dvořák, 2009).
**General distribution:** Eastern (Afghanistan, Iran, Turkmenistan) and Western (Armenia) Palaearctic (Giordani Soika, 1970; Gusenleitner, 2013).

**Remarks:** The subspecies *Antepipona barrei vastifica* (Morawitz, 1895) has been recorded from Iran (Giordani Soika, 1970).

*Antepipona deflenda* (S. S. Saunders, 1853)

*Ancistrocerus deflendus* S. S. Saunders, 1853: 141, ♂♀. – Albania.

**Distribution in Iran:** East Azarbaijan, North Khorasan, Tehran (Ebrahimy & Carpenter, 2008), Kerman (Pashaei Rad et al., 2010), Khorasan-e Razavi (Giordani Soika, 1970), Sistan-o Baluchestan (Hamzavi et al., 2019), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).

**General distribution:** Eastern (China, Iran, Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan) and Western (Armenia, Azerbaijan, Cyprus, Europe, Georgia, Iraq, Israel, Jordan, Lebanon, North Africa, Russia, Turkey) Palaearctic (Fateryga et al., 2019).

**Remarks:** The subspecies *Antepipona deflenda deflenda* has been recorded from Iran (Pashaei Rad et al., 2010).

*Antepipona iconia* (Blüthgen, 1951)

*Odontodynerus iconius* Blüthgen, 1951: 169, 182, Holotype ♀. – Turkey.

**Distribution in Iran:** Mazandaran (Gusenleitner, 2012a).

**General distribution:** Eastern (Iran) and Western (Israel, Syria, Turkey) Palaearctic (Gusenleitner, 2013).

*Antepipona karadgensis* Giordani Soika, 1970

*Antepipona karadgensis* Giordani Soika, 1970: 113, ♂. – Iran.

**Distribution in Iran:** Alborz (Giordani Soika, 1970).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

*Antepipona laevigata* (Blüthgen, 1951)

*Odontodynerus laevigatus* Blüthgen, 1951: 169, 180, ♂♀. – Armenia.

**Distribution in Iran:** Alborz, Mazandaran, Semnan (Gusenleitner, 1986a).

**General distribution:** Eastern (Iran, Pakistan) and Western (Armenia, Iraq, Lebanon, Turkey) Palaearctic (Gusenleitner, 2013).

*Antepipona osmania* Gusenleitner, 1986

*Antepipona osmania* Gusenleitner, 1986: 361, ♂♀. – Turkey.

**Distribution in Iran:** East Azarbaijan (Gusenleitner, 2012a).

**General distribution:** Eastern (Iran) and Western (Turkey) Palaearctic (Gusenleitner, 2012a).

*Antepipona praeclara* Giordani Soika, 1970

*Antepipona praeclara* Giordani Soika, 1970: 117, ♂♀. – Iran.

**Distribution in Iran:** Khuzestan (Giordani Soika, 1970).

**General distribution:** Eastern Palaearctic (Iran, Pakistan) (Gusenleitner, 2013).

*Antepipona prompta* Giordani Soika, 1970

*Antepipona prompta* Giordani Soika, 1970: 123, ♂♀. – Iran.

**Distribution in Iran:** Khuzestan (Giordani Soika, 1970).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).
Antepipona specifica (Morawitz, 1895)
Odynerus (Lionotus) specificus Morawitz, 1895: 464, ♂♀. – Turkmenistan.

Distribution in Iran: Markazi (Ebrahimi & Carpenter, 2008).
General distribution: Eastern (Iran, Kyrgyzstan, Turkmenistan, Uzbekistan) and Western Palaearctic (Azerbaijan, Iraq) (Fateryga et al., 2019).

Antepipona vagabunda (Dalla Torre, 1889)
Odynerus vagabundus Dalla Torre, 1889: 125.

Distribution in Iran: Kerman (Pashaei Rad et al., 2010), Tehran (Giordani Soika, 1970), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).
General distribution: Eastern Palaearctic (Afghanistan, Iran, Turkmenistan) (Gusenleitner, 2013).

Antepipona varentzowi (Morawitz, 1895)
Odynerus varentzowi Morawitz, 1895: 474, ♂. – Iran.

Distribution in Iran: North Iran (Morawitz, 1895).
General distribution: Eastern Palaearctic (Iran - Morawitz, 1895; Kazakhstan, Uzbekistan - Gusenleitner, 1986a).
Remarks: This species has been recorded from Iran as Odynerus varentzowi Morawitz, 1895 (Morawitz, 1895).

Antepipona vescovilis Giordani Soika, 1970
Antepipona vescovilis Giordani Soika, 1970: 116, ♀. – Iran.

Distribution in Iran: Alborz, Khorasan-e Razavi (Giordani Soika, 1970).
General distribution: Eastern Palaearctic (Iran - Gusenleitner, 2013; Pakistan - Gusenleitner, 2006c).

Genus: Antodynerus de Saussure, 1855
Antodynerus Saussure, 1855: 242, 287. Type species: Vespa flavescens Fabricius, 1775 (“Odynerus punctum” Fabricius’ sensu Saussure, 1853). Designated by van der Vecht, 1959.

Antodynerus incomparabilis Giordani Soika, 1970
Antodynerus incomparabilis Giordani Soika, 1970: 138, ♀. – Iran.

Distribution in Iran: Fars (Giordani Soika, 1970).
General distribution: Eastern (Iran) and Western (Turkey) Palaearctic (Gusenleitner, 2013).

Genus: Brachyodynerus Blüthgen, 1938
Brachyodynerus Blüthgen, 1938: 450, 459. Type species: Odynerus magnificus Morawitz, 1867. Original designation.

Brachyodynerus zhelochvtzevi (Kostylev, 1929)
Odynerus (Lionotus) zhelochvtzevi Kostylev, 1929: 112, ♂. – Turkestani.

Distribution in Iran: Golestan (Gusenleitner, 2011b).
General distribution: Eastern Palaearctic (Iran, Kazakhstan) (Fateryga et al., 2017).
Genus: Brachypipona Gusenleitner, 1967

*Brachypipona* Gusenleitner, 1967: 671. Type species: *Pseudepipona schmidti* Gusenleitner, 1967, by original designation.

*Brachypipona orientalis* Gusenleitner, 2004

*Brachypipona orientalis* Gusenleitner, 2004: 1102, Paratype ♀. – Iran.

**Distribution in Iran:** Hamadan (Gusenleitner, 2004).

**General distribution:** Eastern (Iran - Gusenleitner, 2004) and Western (Turkey - Gusenleitner, 2013) Palaearctic.

Genus: Cephalochilus Blüthgen, 1939

*Cephalochilus* Blüthgen, 1939: 13. Type species: *Pterochilus grandis* Lepeletier, 1841 (= *Vespa labiata* Fabricius 1798), by original designation.

*Cephalochilus draco* Giordani Soika, 1970

*Cephalochilus draco* Giordani Soika, 1970: 40, ♀♂. – Turkey.

**Distribution in Iran:** Markazi (Ebrahimi & Carpenter, 2008).

**General distribution:** Eastern (Iran - Ebrahimi & Carpenter, 2008) and Western (Turkey, Syria - Gusenleitner, 2013) Palaearctic.

Genus: Chlorodynerus Blüthgen, 1951

*Cephalochilus* Blüthgen, 1939: 13. Type species: *Pterochilus grandis* Lepeletier, 1841 (= *Vespa labiata* Fabricius 1798), by original designation.

*Chlorodynerus araxanus* (Blüthgen, 1956)

*Euodynerus* (*Chlorodynerus*) *araxanus* Blüthgen, 1956: 281.

**Distribution in Iran:** Tehran (Giordani Soika, 1970).

**General distribution:** Eastern (Iran) and Western (Armenia) Palaearctic (Gusenleitner, 2013).

*Chlorodynerus flavoferrugineus* Giordani Soika, 1970

*Chlorodynerus flavoferrugineus* Giordani Soika, 1970: 170, ♀♂. – Iran.

**Distribution in Iran:** Khuzestan (Giordani Soika, 1970).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

*Chlorodynerus gratus* (Kostylev, 1940)

*Odynerus* (*Pareuodynerus*) *gratus* Kostylev, 1940: 31, ♂. – Iran.

**Distribution in Iran:** Kerman (Kostylev, 1940).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

**Remarks:** This species has been recorded from Iran as *Odynerus* (*Pareuodynerus*) *gratus* Kostylev, 1940 (Kostylev, 1940).

*Chlorodynerus infrenis* Giordani Soika, 1970

*Chlorodynerus infrenis* Giordani Soika, 1970: 172, ♀♂. – Iran.

**Distribution in Iran:** Khuzestan (Giordani Soika, 1970), Sistan-o Baluchestan (Ebrahimi & Carpenter, 2008).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).
**Chlorodynerus loeffleri** Giordani Soika, 1958
*Chlorodynerus loeffleri* Giordani Soika, 1958: 144, ♂. – Iran.

**Distribution in Iran:** Fars (Giordani Soika, 1958).
**General distribution:** Eastern Palaearctic (Iran, Pakistan) (Gusenleitner, 2013).

**Chlorodynerus schulthessianus** (Kostylev, 1937)
*Odynerus schulthessianus* Kostylev, 1937: 226, ♂♀. – Armenia.

**Distribution in Iran:** Khuzestan, Tehran (Giordani Soika, 1970).
**General distribution:** Easten (Iran) and Western (Armenia, Israel) Palaearctic (Gusenleitner, 2013).

**Genus: Cyphodynerus van der Vecht, 1971**
*Cyphodynerus* van der Vecht, 1971: 127. Type species: *Odynerus dimidiatus* Spinola, 1838, by original designation.
**Remarks:** It is not *Odynerus dimidiatus* Guérin, 1834; replaced by *Odynerus canaliculatus* Saussure, 1855).

**Cyphodynerus sculpturatus** (Dover, 1925)
*Odynerus sculpturatus* Dover, 1925: 300, ♂♀. – Karachi [Pakistan].

**Distribution in Iran:** Kerman (Kostylev, 1937).
**General distribution:** Eastern Palaearctic (Iran - Kostylev, 1937, Pakistan - Dover, 1925).
**Remarks:** This species has been recorded from Iran as *Odynerus canaliculatus nigroflammeus* Kostylev, 1937 (Kostylev, 1937).

**Genus: Cyrtolabulus van der Vecht, 1969**
*Cyrtolabus* van der Vecht, 1963: 11. Type species: *Cyrtolabus suavis* van der Vecht, 1963, by original designation. Replaced by *Cyrtolabulus* van der Vecht, 1969.

**Cyrtolabulus iranus** (Giordani Soika, 1968)
*Cyrtolabus iranus* Giordani Soika, 1968: 112, ♂♀. – Iran.

**Distribution in Iran:** Fars (Giordani Soika, 1968).
**General distribution:** Eastern (Iran - Giordani Soika, 1968) and Western (Turkey - Gusenleitner, 1988a; Yildirim & Kojima, 1999) Palaearctic.

**Cyrtolabulus karachiensis** Gusenleitner, 2006
*Cyrtolabus karachiensis* Gusenleitner, 2006: 1298, ♂♀. – Pakistan.

**Distribution in Iran:** Sistan-o Baluchestan (Hamzavi et al., 2019).
**General distribution:** Eastern Palaearctic (Iran - Hamzavi et al., 2019; Pakistan - Gusenleitner, 2006c).

**Cyrtolabulus syriacus** (Giordani Soika, 1968)
*Cyrtolabus syriacus* Giordani Soika, 1968: 120, ♂♀. – Syria.

**Distribution in Iran:** Sistan-o Baluchestan (Hamzavi et al., 2019).
**General distribution:** Eastern (Iran - Hamzavi et al., 2019; Pakistan) and Western (Israel, Syria) (Gusenleitner, 2006c) Palaearctic.
**Cyrtolabulus zarudnyi** (Kostylev, 1939)
*Labus zarudnyi* Kostylev, 1939: 166, 168, ♀. – Iran.

**Distribution in Iran:** Kerman (Kostylev, 1939).

**General distribution:** Eastern (Iran) and Western (Turkey) Palaearctic (Gusenleitner, 2013).

**Genus: Delta** de Saussure, 1855

*Delta* Saussure, 1855: 130, 143. Type species: *Vespa maxillosa* DeGeer, 1773 (= *Vespa emarginata* L., 1758). Designated by Bequaert, 1925.

**Delta anomalum** (Zavattari, 1909)
*Eumenes anomalala* Zavattari, 1909: 4, ♂. – Kashmir.

**Distribution in Iran:** Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970).

**General distribution:** Eastern (Iran - Blüthgen & Gusenleitner, 1970; Pakistan) and Western (Egypt - Gusenleitner, 2013) Palaearctic.

**Remarks:** This species has been recorded from Iran as *Alfiera anomalala* (Zavattari, 1909) (Blüthgen & Gusenleitner, 1970).

**Delta campaniforme** (Fabricius, 1775)
*Vespa campaniformis* Fabricius, 1775: 371, Holotype ♀. – Nova Hollandia.

**Distribution in Iran:** Fars (Giordani Soika, 1970), Hormozgan (Khoobdel et al., 2014), Khuzestan (Giordani Soika, 1970), Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970; Giordani Soika, 1979).

**General distribution:** Asutralasian (Australia), Eastern Palaearctic (China, Iran, Pakistan), Oceanic (Hawaii – exotic, Papua New Guinea), Oriental (Cambodia; India - Gusenleitner, 2006b; Indonesia; Laos - Gusenleitner, 2011c; Malaysia; Myanmar - Dover, 1929; Nepal, Philippines; Singapore - Dover & Rao, 1922; Thailand, Vietnam) (Nguyen et al., 2014).

**Remarks:** The subspecies *Delta campaniforme chloroticum* Giordani Soika, 1979 (Giordani Soika, 1979) has been recorded from Iran.

**Delta dimidiatipenne** (de Saussure, 1852)
*Eumenes dimidiatipennis* de Saussure, 1852: 51, ♀, ♂. – Djidda (Arabie), les Indes Orientales, l’Egypte”.

**Distribution in Iran:** Alborz, Fars (Giordani Soika, 1970), Ardabil, Kohgiloyeh-va Boyerahmad, Kordestan, Lorestan, Markazi (Ebrahimi & Carpenter, 2008), Hormozgan, Tehran (Blüthgen & Gusenleitner, 1970; Ebrahimi & Carpenter, 2008), Kerman (Blüthgen & Gusenleitner, 1970; Pashaei Rad et al., 2010), Khuzestan (Blüthgen & Gusenleitner, 1970; Ebrahimi & Carpenter, 2008), Sistan-o Baluchestan (Giordani Soika, 1970; Ebrahimi & Carpenter, 2008; Hamzavi et al., 2019), South Khorasan (Blüthgen & Gusenleitner, 1970), Different regions of Iran (Esmaili & Rastegar, 1974).

**General distribution:** Afrotropical (Sudan to South Africa - Carpenter et al., 2010; Saudi Arabia; Oman, Qatar – Guichard, 1986; UAE, Yemen), Oriental (India; Nepal - Gusenleitner, 1987), Eastern (Afghanistan – Blüthgen, 1961; Iran; Pakistan - Mahmood et al., 2012) and Western (Canary Islands, North Africa) Palaearctic (Gusenleitner, 2013).

**Remarks:** Two subspecies *Delta emarginatus dimidiatipennis* (de Saussure, 1852) (Blüthgen & Gusenleitner, 1970) and *Eumenes maxillosa dimidiatipennis* de Saussure (Esmaili & Rastegar, 1974) have been recorded from Iran.
**Delta esuriens** (Fabricius, 1787)
*Vespa esuriens* Fabricius 1787: 293, Syntype. – India.

**Distribution in Iran:** Hormozgan (Blüthgen & Gusenleitner, 1970), Kerman (Pashaei Rad et al., 2010), Khuzestan (Blüthgen & Gusenleitner, 1970), Markazi (Ebrahimi & Carpenter, 2008), Sistan-o Baluchestan (Ebrahimi & Carpenter, 2008; Hamzavi et al., 2019).

**General distribution:** Afrotropical (Carpenter et al., 2010; Saudi Arabia; Mauritius - Gusenleitner & Madl, 2009; Oman; Qatar - Giordani Soika, 1957; UAE - Gusenleitner 2010b), Oriental (India; Laos - Gusenleitner, 2011c; Myanmar, Sri Lanka - Wickwar, 1908; Thailand - Gusenleitner, 1988b; Vietnam - Nguyen et al., 2014), Eastern (Iran; Pakistan - Dover, 1925) and Western (Iraq - Giordani Soika, 1970; Israel - Castro & Dvořák, 2009; North Africa - Gusenleitner, 2011c) Palaeartctic (Gusenleitner, 2013).

**Remarks:** This species has been recorded from Iran as *Delta companiforme esuriens* (Fabricius, 1787) (Blüthgen & Gusenleitner, 1970; Giordani Soika, 1970). Two subspecies, *Delta esuriens esuriens* (Pashaei Rad et al., 2010) and *Delta esuriens gracile* (de Saussure, 1852) (Ebrahimi & Carpenter, 2008) have been recorded from Iran.

**Delta hottentotta** (de Saussure, 1852)
*Eumenes hottentotta* de Saussure, 1852: 63, ♀. – South Africa.

**Distribution in Iran:** East Azarbaijan, Fars, Khuzestan (Ebrahimi & Carpenter, 2008), Kerman (Pashaei Rad et al., 2010), Sistan-o Baluchestan, South Khorasan (Blüthgen & Gusenleitner, 1970).

**General distribution:** Afrotropical (Burkina Faso, Cameroon, Central African Republic, Democratic Republic of Congo, Ethiopia, Gabon, Gambia, Ivory Coast, Kenya, Mozambique, Namibia, Nigeria, Senegal, South Africa, Tanzania - Carpenter et al., 2010; Saudi Arabia, Oman, UAE, Yemen - Gusenleitner, 2013), Eastern (Iran - Ebrahimi & Carpenter, 2008) and Western (Egypt, Jordan, Israel, North Africa - Gusenleitner, 2013) Palaeartctic.

**Remarks:** The subspecies *Delta hottentotum elegans* (de Saussure, 1852) has been recorded from Iran (Blüthgen & Gusenleitner, 1970; Giordani Soika, 1970).

**Delta unguiculatum** (Villers, 1789)
*Vespa unguiculata* Villers, 1789: 282, ♂. – In Galliae Aust. [France]

**Distribution in Iran:** Guilan, Mazandaran (Giordani Soika, 1970), Sistan-o Baluchestan (Giordani Soika, 1970; Ebrahimi & Carpenter, 2008), Tehran (Blüthgen & Gusenleitner, 1970; Giordani Soika, 1970).

**General distribution:** Afrotropical (Saudi Arabia), Eastern (Iran, Turkmenistan) and Western (Caucasus, Cyprus, Europe, Israel, Lebanon, North Africa, Russia, Syria, Turkey) Palaeartctic (Fateryga, 2018).

**Genus: Discoelius** Latreille, 1809

*Discoelius* Latreille, 1809: 140. Type species: *Vespa zonalis* Panzer, 1801. Monotypic.

**Discoelius dufourii** Lepeletier, 1841
*Discoelius dufourii* Lepeletier, 1841: 605, ♀. – Saint Séver [France].

**Distribution in Iran:** North Iran (van der Vecht & Fischer, 1972).

**General distribution:** Eastern (China, Iran, Kazakhstan, Korea, Mongolia, Russian Far East) and Western Palaeartctic (Caucasus, Europe, Russia, Turkey) (Fateryga, 2018).
**Discoelius pictus** Kostylev, 1940
*Discoelius pictus* Kostylev, 1940: 140, ♀♂. – Ak-Tach, chaîne Ala-Tau de Talas, près de Tachkent [Uzbekistan].

**Distribution in Iran:** No locality cited (Kurzenko, 1978).
**General distribution:** Eastern (Afghanistan - Kurzenko, 1978; Iran, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) and Western (Russia) Palaearctic (Fateryga & Mokrousov, 2019).

**Discoelius zonalis** (Panzer, 1801)
*Discoelius zonalis* Panzer 1801: pl. 18, ♀. – Nürnberg [Germany].

**Distribution in Iran:** North Iran (Kurzenko, 1977, 1978).
**General distribution:** Eastern (China, Iran, Japan, Korea, Mongolia, Russia Far East) and Western (Caucasus, Europe, Russia, Turkey) Palaearctic (Fateryga, 2018).

**Genus: Eumenes** Latreille, 1802
*Eumenes* Latreille, 1802: 360. Type species: “*Eumenes coarctata*, Fab.” [=*Vespa coarctata* Linnaeus, 1758], by subsequent designation of Latreille, 1810: 438.

**Eumenes coarctatus** (Linnaeus, 1758)
*Vespa coarctata* Linnaeus, 1758: 573, ♀. – Linnean Society, London.

**Distribution in Iran:** Alborz, Khorasan (Gusenleitner, 1972), East Azarbaijan (Ebrahimi & Carpenter, 2008), Kermanshah (Morice, 1921), Kordestan (Ebrahimi & Carpenter, 2008), Tehran (Gusenleitner, 1972; Ebrahimi & Carpenter, 2008).
**General distribution:** Eastern (China, Iran, Japan, Kazakhstan, Mongolia, Russia Far East) and Western (Caucasus, Europe, Israel, Jordan, North Africa, Russia, Syria, Turkey) Palaearctic (Fateryga, 2018).

**Remarks:** This species has been recorded from Iran as *Eumenes lunulatus ordubadensis* Blüthgen, 1938 (Gusenleitner, 1972; Ebrahimi & Carpenter, 2008) and as *Eumenes coarctatus lunulatus* Fabricius, 1804 (Ebrahimi & Carpenter, 2008).

**Eumenes comberi** Dover, 1925
*Eumenes comberi* Dover, 1925: 293, ♀. – Karachi; Shapali, Bombay Pres.

**Distribution in Iran:** Kerman (Pashaei Rad et al., 2010), Khuzestan (Gusenleitner, 1972), Markazi (Ebrahimi & Carpenter, 2008).
**General distribution:** Eastern Palaearctic (Iran, Pakistan, Tajikistan), Oriental (India) (Kumar et al., 2017).
**Remarks:** This species has been recorded from Iran as *Eumenes mirandus* Kostylev, 1940 (Gusenleitner, 1972).

**Eumenes coronatus** (Panzer, 1799)
*Vespa coronata*, Panzer, 1799: 12, ♀. – Norimergae [Germany].

**Distribution in Iran:** Alborz (Gusenleitner, 1972); No locality cited (Kurzenko, 1977).
**General distribution:** Eastern (Central Asia, China, Iran, Japan, Kazakhstan) and Western (Azerbaijan, Caucasus, Europe, Israel, Russia, Turkey) Palaearctic (Fateryga et al., 2019).
**Remarks:** The subspecies *Eumenes coronatus detonsus* Blüthgen, 1943 has been recorded from Iran (Gusenleitner, 1972).
**Eumenes crimensis** Blüthgen, 1938

*Eumenes dubius crimensis* Blüthgen, 1938: 463, ♂♀. – Jalta [Crimea].

**Distribution in Iran:** Tehran (Gusenleitner, 1972), Zanjan (Abbasi et al., 2008; Ebrahimi & Carpenter, 2008; Pashaei Rad et al., 2010).

**General distribution:** Eastern (Iran, Kazakhstan, Turkmenistan, Uzbekistan) and Western (Russia) Palaearctic (Fateryga, 2018).

**Remarks:** The occurrence of this species in Iran was originally indicated by two subspecies including *Eumenes dubius crimensis* Blüthgen, 1938 (Abbasi et al., 2008; Ebrahimi & Carpenter, 2008; Pashaei Rad et al., 2010) and *Eumenes sareptanus scabrosus* Gusenleitner, 1972 (Gusenleitner, 1972).

**Eumenes dubius** de Saussure, 1852

*Eumenes dubia* de Saussure, 1852: 32, ♂♀. – France.

**Distribution in Iran:** Kordestan, Markazi (Ebrahimi & Carpenter, 2008); No locality cited (Gusenleitner, 1972).

**General distribution:** Eastern (Iran, Kazakhstan, Tajikistan, Turkmenistan) and Western Palaearctic (Caucasus, Cyprus, Europe, Iraq, Israel, Jordan, Lebanon, Russia, Syria, Turkey), Neotropical (Chile - exotic) (Fateryga, 2017).

**Remarks:** Two subspecies, *Eumenes dubius dubius* (Ebrahimi & Carpenter, 2008) and *Eumenes dubius palaestinensis* Blüthgen, 1938 (Gusenleitner, 1972) are recorded from Iran.

**Eumenes interpositus** Gusenleitner, 1972

*Eumenes interpositus* Gusenleitner, 1972: 103, ♂♀: Holotype ♀. – Iran.

**Distribution in Iran:** Alborz (Gusenleitner, 1972).

**General distribution:** Eastern Palaearctic (Iran, Turkmenistan) (Gusenleitner, 2013).

**Eumenes jarkandensis** Blüthgen, 1938

*Eumenes mediterraneus jarkandensis* Blüthgen, 1938: 487, ♂♀. – Uss-Lusch (1600 m) bei Jarkand (Ostturkestan) gesammelt [Turkestan].

**Distribution in Iran:** Alborz, Khorasan (Gusenleitner, 1972), East Azarbaijan, Kordestan (Ebrahimi & Carpenter, 2008).

**General distribution:** Eastern (Iran, Kyrgyzstan, Mongolia, Tajikistan, Turkmenistan) and Western (Azerbaijan, Lebanon, Turkey) Palaearctic (Fateryga et al., 2019).

**Eumenes mediterraneus** Kriechbaumer, 1879

*Eumenis mediterranea* Kriechbaumer, 1879: 85, ♂♀. – Dalmatia.

**Distribution in Iran:** Alborz, Fars, Khorasan (Gusenleitner, 1972), East Azarbaijan, Gilan, Kerman, Khorasan-e Razavi, Kordestan, Markazi, Mazandaran, Qom (Ebrahimi & Carpenter, 2008), Isfahan (Blüthgen & Gusenleitner, 1970; Ebrahimi & Carpenter, 2008), Sistan-o Baluchestan, South Khorasan (Blüthgen & Gusenleitner, 1970), Tehran (Gusenleitner, 1972; Esmaili & Rastegar, 1974; Ebrahimi & Carpenter, 2008), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).

**General distribution:** Afrotropical (Oman, Saudi Arabia, UAE, Yemen), Oceanic (Tahiti – exotic), Eastern (Afghanistan, China, Iran, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Pakistan, Uzbekistan), and Western (Caucasus, Cyprus, Europe, Iraq, Israel, Jordan, Lebanon, North Africa, Russia, Syria, Turkey) Palaearctic (Fateryga, 2018).
Remarks: Two subspecies *Eumenes mediterraneus quettaensis* Cameron, 1907 (Gusenleitner, 1972) and *Eumenes mediterraneus mediterraneus* (Ebrahimi & Carpenter, 2008; Pashaei Rad et al., 2010) have been recorded from Iran.

**Eumenes modestus** Gusenleitner, 2006

*Eumenes modestus* Gusenleitner, 2006: 1361, ♂ – Iran.

**Distribution in Iran:** Tehran (Gusenleitner, 2006a).

**General distribution:** Eastern (Iran - Gusenleitner, 2013) and Western (Turkey - Yildirim & Gusenleitner, 2009) Palaearctic.

**Eumenes papillarius** (Christ, 1791)

*Sphex papillaria* Christ, 1791: 325 (destroyed).

**Distribution in Iran:** East Azarbaijan (Ebrahimi & Carpenter, 2008), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).

**General distribution:** Eastern (Iran, Kazakhstan, Mongolia, Pakistan) and Western (Azerbaijan, Europe, Israel, Lebanon, Russia, Syria, Turkey) Palaearctic (Fateryga et al., 2019).

**Eumenes punctaticlypeus** Giordani Soika, 1943

*Eumenes* (*Eumenes*) *punctaticlypeus* Giordani Soika, 1943: 29, ♀♂ – Viterbo [Italy].

**Distribution in Iran:** North Iran (Kurzenko, 1977).

**General distribution:** Eastern (Central Asia, Iran, Kazakhstan) and Western (Europe, Russia, Turkey) Palaearctic (Antropov & Fateryga, 2017).

**Remarks:** The subspecies *Eumenes punctaticlypeus kostylevi* Kurzenko, 1976 has been recorded from Iran (Kurzenko, 1977).

**Eumenes tripunctatus** (Christ, 1791)

*Sphex tripunctata* Christ, 1791: 317 (destroyed).

**Distribution in Iran:** Markazi (Ebrahimi & Carpenter, 2008); No locality cited (Kurzenko, 1977).

**General distribution:** Eastern (China, Iran, Kazakhstan, Mongolia, Turkmenistan) and Western (Ukraine, Russia) Palaearctic (Fateryga, 2018).

**Eumenes sp.**

**Distribution in Iran:** Hormozgan (Khoobdel et al., 2014).

**Genus: Euodynerus** Dalla Torre, 1904

*Euodynerus* Dalla Torre, 1904: 38. Type species: *Vespa dantici* Rossi, 1790. Designated by Blüthgen, 1998 (1937): 277.

**Euodynerus (Euodynerus) amplus** Gusenleitner, 2011

*Euodynerus* (*Euodynerus*) *amplus* Gusenleitner, 2011: 324, ♂ – Iran.

**Distribution in Iran:** Kerman (Gusenleitner, 2011a).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

**Euodynerus (Euodynerus) annae** (Kostylev, 1937)

*Odynerus annae* Kostylev, 1937: 223, ♀ – Iran.

**Distribution in Iran:** Kerman (Kostylev, 1937).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).
Euodynerus (Euodynerus) caspicus (Morawitz, 1873)
Leionotus caspicus Morawitz, 1873: 295, ♂♀. – Krasnowodsk [Turkmenistan].

**Distribution in Iran:** No locality cited (Antropov & Fateryga, 2017).

**General distribution:** Eastern (China, Iran, Kazakhstan, Kyrgyzstan, Mongolia, Turkmenistan) and Western (Armenia, Azerbaijan, Russia) Palaeartic (Antropov & Fateryga, 2017).

Euodynerus (Euodynerus) curictensis Blüthgen, 1940
*Euodynerus curictensis* Blüthgen, 1940: 210, ♂♀. – Insel KrK in Jugoslavien [Croatia].

**Distribution in Iran:** Alborz (Giordani Soika, 1970), Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970).

**General distribution:** Eastern (Iran, Kazakhstan, Mongolia) and Western (Armenia, Jordan, Europe, Lebanon, North Africa, Russia, Syria, Turkey) Palaeartic (Fateryga & Mokrousov, 2019).

Euodynerus (Euodynerus) dantici (Rossi, 1790)
*Vespa dantici* Rossi, 1790: 89, ♂. – Italia.

**Distribution in Iran:** Kerman (Pashaei Rad et al., 2010).

**General distribution:** Oriental (Taiwan, Vietnam), Eastern (Afghanistan, China, Iran, Japan, Kazakhstan, Korea, Russia, Mongolia) and Western (Caucasus, Europe, Israel (?), Jordan, Lebanon, North Africa, Russia, Syria, Turkey) Palaeartic (Fateryga, 2018).

**Remarks:** The subspecies *Euodynerus dantici dantici* has been recorded from Iran (Pashaei Rad et al., 2010).

Euodynerus (Euodynerus) disconotatus (Lichtenstein, 1884)
*Odynerus disconotatus* Lichtenstein, 1884: L. Montpellier (? destroyed).

**Distribution in Iran:** Fars, Khorasan-e Razavi, Tehran (Giordani Soika, 1970), Hormozgan, Kerman, South Khorasan (Blüthgen & Gusenleitner, 1970), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).

**General distribution:** Afrotropical (Saudi Arabia), Eastern (Afghanistan, Iran, Kazakhstan, Pakistan) and Western (Caucasus, Cyprus, Europe, Iraq, Jordan, Russia, Turkey) Palaeartic (Fateryga, 2018).

**Remarks:** This species has been recorded from Iran as *Euodynerus sulfuripes* (Morawitz, 1885) (Giordani Soika, 1970; Blüthgen & Gusenleitner, 1970). The subspecies *Euodynerus disconotatus sulfuripes* (Morawitz, 1885) has been recorded from Iran (Abbasi et al., 2008; Pashaei Rad et al., 2010).

Euodynerus (Euodynerus) effrenatus Giordani Soika, 1970
*Euodynerus (Euodynerus) effrenatus* Giordani Soika, 1970: 157, ♂. – Iran.

**Distribution in Iran:** Fars (Giordani Soika, 1970).

**General distribution:** Eastern Palaeartic (Iran) (Gusenleitner, 2013).

Euodynerus (Euodynerus) fastidiosus (de Saussure, 1853)
*Odynerus (Leionotus) fastidiosus* de Saussure, 1853: 154, 189, ♂. – Algeria.

**Distribution in Iran:** Alborz, Fars, Khorasan-e Razavi (Giordani Soika, 1970), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).
**General distribution:** Afrotropical (Oman), Eastern (Afghanistan, China, Iran, Kazakhstan) and Western (Caucus, Europe, Lebanon, North Africa, Russia, Syria, Turkey) Palaearctic (Fateryga, 2017).

*Euodynerus (Euodynerus) khuzestanicus* Giordani Soika, 1970
*Euodynerus (Euodynerus) khuzestanicus* Giordani Soika, 1970: 155, ♂. – Iran.

**Distribution in Iran:** Khuzestan (Giordani Soika, 1970).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

*Euodynerus (Euodynerus) rufinus* Blüthgen, 1942
*Euodynerus (Euodynerus) rufinus* Blüthgen, 1942: 303, ♀. – Transcaspien [Turkmenistan].

**Distribution in Iran:** Khuzestan (Giordani Soika, 1970), Tehran (Ebrahim & Carpenter, 2008).

**General distribution:** Afrotropical (UAE), Eastern (China, Iran, Kazakhstan, Mongolia, Turkmenistan, Uzbekistan) and Western (Armenia, Israel, North Africa, Russia) Palaearctic (Fateryga & Mokrousov, 2019).

**Remarks:** Two subspecies, *Euodynerus rufinus confictus* Giordani Soika, 1970 (Giordani Soika, 1970) and *Euodynerus rufinus rufinus* (Ebrahimi & Carpenter, 2008) are recorded from Iran.

*Pseudepipona (Euodynerus) semidantici* (Giordani Soika, 1952)
*Pseudepipona (Euodynerus) semidantici* Giordani Soika, 1952: 47, ♂. – Palestina.

**Distribution in Iran:** Unclear locality cited (Gusenleitner, 2011a).

**General distribution:** Eastern (Iran) and Western (Israel, Turkey) Palaearctic (Gusenleitner, 2013).

*Odynerus semisaecularis* (Dalla Torre, 1889)
*Odynerus semisaecularis* Dalla Torre, 1889: 125.

**Distribution in Iran:** Alborz, Khorasan-e Razavi (Giordani Soika, 1970), No locality cited (Gusenleitner, 2013).

**General distribution:** Afrotropical (UAE - Gusenleitner, 2010a), Eastern (China - Castro & Dvořák, 2010; Iran - Gusenleitner, 2013; Kazakhstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan - Castro & Dvořák, 2010) and Western (Turkey - Gusenleitner, 2013) Palaearctic.

**Remarks:** Two subspecies, *Euodynerus semisaecularis macedonicus* Blüthgen, 1951 - as *Euodynerus macedonicus* (Blüthgen) (Giordani Soika, 1970) and *Euodynerus semisaecularis semisaecularis* (Dalla Torre, 1889) (Gusenleitner, 2013) have been recorded from Iran.

*Euodynerus (Euodynerus) setosus* Gusenleitner, 1970
*Euodynerus (Euodynerus) setosus* Gusenleitner, 1970: 11, ♀♂. – Iran.

**Distribution in Iran:** South Khorasan (Blüthgen & Gusenleitner, 1970).

**General distribution:** Afrotropical (Oman - Gusenleitner, 1994), Eastern Palaearctic (Afghanistan, Iran - Blüthgen & Gusenleitner, 1970).

*Euodynerus (Pareuodynerus) shirazensis* Giordani Soika, 1970
*Euodynerus shirazensis* Giordani Soika, 1970: 162, ♂. – Iran.

**Distribution in Iran:** Fars (Giordani Soika, 1970).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

*Pseudepipona (Pareuodynerus) breviventris* (Giordani Soika, 1952)
*Pseudepipona (Pareuodynerus) breviventris* Giordani Soika, 1952: 383, ♀. – Turkey.
**Distribution in Iran:** Fars (Giordani Soika, 1970).
**General distribution:** Eastern (Iran) and Western (Turkey) Palaearctic (Gusenleitner, 2013).

**Euodynerus (Pareuodynerus) enodatus (Kostylev, 1940)**
*Odynerus (Pareuodynerus) enodatus* Kostylev, 1940: 32, ♀. – Belouchistan.

**Distribution in Iran:** Sistan-o Baluchestan (Hamzavi et al., 2019), No locality cited (Kostylev, 1940).
**General distribution:** Eastern Palaearctic (Afghanistan, Iran, Pakistan) (Gusenleitner, 2013).

**Euodynerus (Pareuodynerus) notatus (Jurine, 1807)**
*VeSpa notata* Jurine, 1807: 170, ♀. – Geneve [Switzerland].

**Distribution in Iran:** Mazandaran (Castro & Dvořák, 2009).
**General distribution:** Eastern (China, Iran, Korea (Castro & Dvořák, 2009), Mongolia, Russia) and Western (Europe, Caucasus, North Africa, Russia, Turkey) Palaearctic (Antropov & Fateryga, 2017).
**Remarks:** This species has been recorded from Iran as *Euodynerus notatus notatus* (Castro & Dvořák, 2009).

**Euodynerus (Pareuodynerus) posticus (Herrich-Schäffer, 1841)**
*Odynerus posticus* Herrich-Schäffer, 1841: 176, ♀.

**Distribution in Iran:** Lorestan, Mazandaran, Sistan-o Baluchestan, Tehran (Ebrahimii & Carpenter, 2008), Guilan (Blüthgen & Gusenleitner, 1970; Ebrahimii & Carpenter, 2008), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).
**General distribution:** Eastern (Iran) and Western (Armenia, Azerbaijan, Europe, Georgia, Israel, North Africa, Russia, Turkey) Palaearctic (Fateryga et al., 2019).
**Remarks:** This species has been recorded from Iran as *Euodynerus posticus punctatissimus* (Giordani Soika, 1952) (Blüthgen & Gusenleitner, 1970).

**Genus: Eustenancistrocerus** Blüthgen, 1938

*Eustenancistrocerus* Blüthgen, 1938: 443,460. Type species: *Odynerus blanchardianus* Saussure, 1855. by original designation.

**Eustenancistrocerus askhabadensis** (Radoszkowski, 1886)
*Odynerus (Lionotus) askhabadensis* Radoszkowski, 1886: 47, ♂♀. – Askhabad.

**Distribution in Iran:** Golestan, Markazi, Sistan-o Baluchestan (Ebrahimii & Carpenter, 2008), Tehran (Giordani Soika, 1970; Ebrahimii & Carpenter, 2008).
**General distribution:** Eastern Palaearctic (Iran, Pakistan, Turkmenistan - Gusenleitner, 2013; Uzbekistan - Giordani Soika, 1943).

**Eustenancistrocerus inconstans** (de Saussure, 1863)
*Odynerus (Stenancistrocerus) inconstans* de Saussure, 1863: 217, ♀. – Abyssinie.

**Distribution in Iran:** Mazandaran (Ebrahimii & Carpenter, 2008), Tehran (Giordani Soika, 1970).
**General distribution:** Afrotropical (Ethiopia, Oman, Saudi Arabia, UAE, Yemen), Eastern (Central Asia, Iran, Pakistan) and Western (Israel, Jordan, North Africa) Palaearctic (Gusenleitner, 2006c, 2013).
**Eustenancistrocerus jerichoensis** (Von Schulthess, 1928)
Eodynerus jerichoensis von Schulthess, 1928: 73–74, ♂ ♀. – Jericho [Israel].

**Distribution in Iran:** Alborz (Giordani Soika, 1970), Sistan-o Baluchestan (Hamzavi et al., 2019).
**General distribution:** Eastern (Iran) and Western (Azerbaijan, Jordan, Israel, Syria, Russia, Turkey) Palaeartic (Fateryga & Mokrousov, 2019).

**Eustenancistrocerus malus** Giordani Soika, 1970
Eustenancistrocerus (Eustenancistrocerus) malus Giordani Soika, 1970: 96, ♂. – Iran.

**Distribution in Iran:** Fars (Giordani Soika, 1970; Ebrahimi & Carpenter, 2008), Tehran (Giordani Soika, 1970).
**General distribution:** Eastern Palaeartic (Iran) (Gusenleitner, 2013).

**Eustenancistrocerus spinosissimus** Gusenleitner, 2000
Eustenancistrocerus (Eustenancistrocerus) spinosissimus Gusenleitner, 2000: 934, ♂. – Iran.

**Distribution in Iran:** Yazd (Gusenleitner, 2000c).
**General distribution:** Eastern Palaeartic (Iran) (Gusenleitner, 2000c; Gusenleitner, 2013).

**Eustenancistrocerus sulcithorax** Giordani Soika, 1970
Eustenancistrocerus (Eustenancistrocerus) sulcithorax Giordani Soika, 1970: 93, ♂♀. – Iran.

**Distribution in Iran:** Fars, Khuzestan, Tehran (Giordani Soika, 1970).
**General distribution:** Eastern Palaeartic (Iran) (Giordani Soika, 1970; Gusenleitner, 2013).

**Eustenancistrocerus tegularis** (Morawitz, 1885)
Lionotus tegularis Morawitz, 1885: 165, ♂♀. – Trauscaucasia [Azerbaijan].

**Distribution in Iran:** Alborz (Giordani Soika, 1970), Golestan (Ebrahimi & Carpenter, 2008), Khorasan-e Razavi (Giordani Soika, 1970; Pashaei Rad et al., 2006), North Khorasan, Tehran (Pashaei Rad et al., 2006), Zanjan (Pashaei Rad et al., 2006; Abbasi et al., 2008), Khorasan (Kohl & Handlirsch, 1889).
**General distribution:** Eastern (Iran, Kazakhstan) and Western (Armenia, Azerbaijan, Europe, Israel, Syria, Russia, Turkey) Palaeartic (Fateryga et al., 2019).
**Remarks:** This species has been recorded from Iran as Eustenancistrocerus israelensis Giordani Soika, 1952 (Giordani Soika, 1970; Abbasi et al., 2008) and as Lionotus tegularis Morawitz, 1885 (Kohl & Handlirsch, 1889).

**Eustenancistrocerus (Parastenancistrocerus) amadanensis** (de Saussure, 1855)
Odynenus (Ancistrocerus) amadanensis de Saussure, 1855: 214, ♂. – Amadan, en Perse [Iran].

**Distribution in Iran:** Alborz (Giordani Soika, 1970), Bushehr (Giordani Soika, 1943), East Azarbaijan, Golestan, Markazi, Sistan-o Baluchestan (Ebrahimi & Carpenter, 2008), Fars (Giordani Soika, 1970), Khorasan-e Razavi (Giordani Soika, 1970; Ebrahimi & Carpenter, 2008), Khuzestan (de Saussure, 1855; Giordani Soika, 1970; Gusenleitner, 2000b; Ebrahimi & Carpenter, 2008), Tehran (Giordani Soika, 1970; Ebrahimi & Carpenter, 2008), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).
**General distribution:** Afrotropical (Saudi Arabia), Eastern (Central Asia, Iran, Kazakhstan, Kyrgyzstan, Pakistan) and Western (Azerbaijan, Cyprus, Europe, Iraq, Israel, North Africa, Russia, Syria, Turkey) Palaeartic (Fateryga et al., 2019).
Remarks: This species has been recorded from Iran as Ancistrocerus iranensis Giordani Soika, 1943 (Giordani Soika, 1943), as Odynerus (Ancistrocerus) amadanensis de Saussure, 1855 and as Eustenancistrocerus transitorius (Moravitz, 1867) (Giordani Soika, 1970). The subspecies Eustenancistrocerus amadanensis amadanensis is recorded from Iran (Gusenleitner, 2000b).

Eustenancistrocerus (Parastenancistrocerus) iranicus Gusenleitner, 2013

Eustenancistrocerus (Parastenancistrocerus) iranicus Gusenleitner, 2013: 110, ♂. – Iran.

Distribution in Iran: Fars (Gusenleitner et al., 2013).

Distribution: Eastern Palaearctic (Iran) (Gusenleitner et al., 2013).

Eustenancistrocerus (Parancistrocerus) khuzestanicus Giordani Soika, 1970

Eustenancistrocerus khuzestanicus Giordani Soika, 1970: 97, ♀♂. – Iran.

Distribution in Iran: Khuzestan (Giordani Soika, 1970; Ebrahimi & Carpenter, 2008).

Distribution: Eastern Palaearctic (Iran - Gusenleitner et al., 2013; Pakistan - Gusenleitner, 2006b).

Eustenancistrocerus sp.

Distribution in Iran: South Khorasan (Blüthgen & Gusenleitner, 1970).

Genus: Extraepipona Gusenleitner, 2014

Extraepipona Gusenleitner, 2014: 537. Type species: Extraepipona occulta Gusenleitner, 2014, by original designation.

Extraepipona occulta Gusenleitner, 2014

Extraepipona occulta Gusenleitner, 2014: 537, ♀♂. – Iran.

Distribution in Iran: Fars (Gusenleitner, 2014).

General distribution: Eastern Palaearctic (Iran) (Gusenleitner, 2014).

Genus: Gymnomerus Blüthgen, 1938

Gymnomerus Blüthgen, 1938 (1937): 286. Type species: Odynerus laevipes Shuckard, 1837, by original designation.

Gymnomerus laevipes (Shuckard, 1837)

Odynerus laevipes Shuckard, 1837: 495, ♀♂. – Blackwater, Hampshire [England].

Distribution in Iran: Tehran (Ebrahimi & Carpenter, 2008).

General distribution: Eastern (Iran, Kazakhstan, Mongolia, Russia (Antropov & Fateryga, 2017)) and Western (Caucasus, Europe, North Africa, Russia (Antropov & Fateryga, 2017), Turkey, Ukraine (Yildirim & Kojima, 1999) Palaearctic (Gusenleitner, 2013).

Genus: Hemipterochilus Ferton, 1909

Hemipterochilus Ferton, 1909 (1908): 572. Type species: Odynerus terricola Mocsary, 1883 (= Hemipterochilus bembeciformis terricola), by monotypy.

Hemipterochilus hohlbecki (Kostylev, 1934)

Pterochilus hohlbecki Kostylev, 1934: 120, ♂. – Transkaspien [Turkmenistan]
Distribution in Iran: Alborz (Giordani Soika, 1970).
General distribution: Eastern Palaearctic (Afghanistan, Iran, Turkmenistan) (Gusenleitner, 2013).

Hemipteroxilus punctiventris (Morawitz, 1885)
Pterochilus punctiventris Morawitz, 1885: 143, ♀. – Iran.

Distribution in Iran: Semnan (Morawitz, 1885), Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970).
General distribution: Eastern Palaearctic (Iran) (Gusenleitner, 2013).
Remarks: This species has been recorded from Iran as Pterochilus punctiventris Morawitz, 1885 (Blüthgen & Gusenleitner, 1970). The subspecies Hemipteroxilus punctiventris subquadricolor Gusenleitner, 1970 has also been recorded from Iran (Blüthgen & Gusenleitner, 1970).

Hemipteroxilus simplex Gusenleitner, 2000
Hemipteroxilus simplex Gusenleitner, 2000: 927, ♂ ♀. – Turkey.

Distribution in Iran: Hamadan (Gusenleitner, 2000c).
General distribution: Eastern (Iran) and Western (Turkey) Palaearctic (Gusenleitner, 2013).

Genus: Ischnogasteroides Magretti, 1884
Ischnogasteroides Magretti, 1884 (1883): 603. Type species: Ischnogasteroides flavus Magretti, 1884 (= Ischnogasteroides leptogaster flavus), by monotypy.

Ischnogasteroides picteti (de Saussure, 1852)
Eumenes picteti de Saussure, 1852: 67, ♂ ♀. – France.

Distribution in Iran: Sistan-o Baluchestan (Ebrahimi & Carpenter, 2008); No locality cited (Gusenleitner, 2013).
General distribution: Eastern (Iran - Ebrahimi & Carpenter, 2008; Turkmenistan, Kazakhstan - van der Vecht & Fischer, 1972; Kyrgyzstan - Gusenleitner, 2011b) and Western (Europe; Turkey - Gusenleitner, 1988a; Yildirim & Kojima, 1999) Palaearctic.
Remarks: The subspecies Ischnogasteroides picteti tenuis (Morawitz, 1888) has been recorded from Iran (Gusenleitner, 2013).

Ischnogasteroides zarudnyi (Kostylev, 1939)
Labus zarudnyi Kostylev, 1939: 166, ♂. – Iran.

Distribution in Iran: Kerman (Kostylev 1939), Markazi (Ebrahimi & Carpenter, 2008), South Khorasan (Blüthgen & Gusenleitner, 1970).
General distribution: Eastern (Afghanistan, Iran - Gusenleitner, 2013) and Western (Turkey - Gusenleitner, 1988a) Palaearctic.
Remarks: This species has been recorded from Iran as Eumenes zarudnyi Kostylev, 1939 (Kostylev, 1939).

Ischnogasteroides sp.
Distribution in Iran: Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970).

Genus: Jucancistrocerus Blüthgen, 1938
Jucancistrocerus Blüthgen, 1938: 442, 460. Type species: Odynerus jucundus Mocsary, 1883, by monotypy.
Jucancistrocerus (Eremodynerus) atrofasciatus (Morawitz, 1885)
Lionotus atrofasciatus Morawitz, 1885: 162, ♀♂. – China montibus Alaschanensibus.

**Distribution in Iran:** No locality cited (Gusenleitner, 2013).
**General distribution:** Eastern Palearctic (Central Asia, Iran - Gusenleitner, 2013; China - Tan et al., 2018).

Jucancistrocerus caspicus Giordani Soika, 1970
Jucancistrocerus caspicus Giordani Soika, 1970: 102, ♀♂. – Iran.

**Distribution in Iran:** Alborz (Giordani Soika, 1970).
**General distribution:** Eastern (Iran, Kazakhstan) and Western (Armenia, Azerbaijan, Georgia, Europe, Russia, Turkey) Palearctic (Fateryga et al., 2019).

Jucancistrocerus citreodecoratus Giordani Soika, 1970
Jucancistrocerus citreodecoratus Giordani Soika, 1970: 104, ♂. – Iran.

**Distribution in Iran:** Alborz (Giordani Soika, 1970; Gusenleitner, 2010a), Kordestan, Markazi (Ebrahimi & Carpenter, 2008), Sistan-o Baluchestan (Hamzavi et al., 2019).
**General distribution:** Eastern (Iran) and Western (Turkey, Serbia) Palearctic (Gusenleitner, 2013).

Jucancistrocerus jucundus (Mocsary, 1883)
Odyneus (Ancistrocerus) jucundus Mocsary, 1883: 49, ♀♂. – Hungária centralis (Budapestitum) et Asia minor (Brussa.).

**Distribution in Iran:** No locality cited (Ebrahimi & Carpenter, 2008).
**General distribution:** Eastern (Iran - Ebrahimi & Carpenter, 2008; Turkmenistan) and Western (Europe, Iraq, Turkey) Palearctic (Gusenleitner, 2013).
**Remarks:** This species has originally been recorded from Iran as Jucancistrocerus jucundus deceptrix (Morice, 1921) (Ebrahimi & Carpenter, 2008).

Jucancistrocerus pareumeniformis Giordani Soika, 1973
Jucancistrocerus pareumeniformis Giordani Soika, 1973: 102, ♂ – Iran.

**Distribution in Iran:** Guilan (Giordani Soika, 1973).
**General distribution:** Eastern Palearctic (Iran) (Giordani Soika, 1973).

**Genus:** Katamenes Meade-Waldo, 1910

Katamenes Meade-Waldo, 1910: 46. Type species: Katamenes watsoni Meade-Waldo, 1910, by monotypy.

Katamenes dimidiatus (Brullé, 1832)
Eumenes dimidiatus Brullé, 1832: 361, ♀. – Plaine de Modon [Greece].

**Distribution in Iran:** East Azarbaijan, Fars, Markazi (Ebrahimi & Carpenter, 2008), Tehran (Giordani Soika, 1970), Zanjan (Abbas et al., 2008; Pashaei Rad et al., 2010).
**General distribution:** Oriental (India - Kumar et al., 2019), Eastern (Afghanistan, Central Asia, Iran, Kazakhstan, Mongolia, Pakistan) and Western (Caucasus, Cyprus, Europe, Israel, Russia, Syria, Turkey) Palearctic (Fateryga, 2018).
**Remarks:** The subspecies *Katamenes dimidiatus dimidiatus* (Pashaei Rad et al., 2010) and *Katamenes dimidiatus montanus* (Nurse, 1904) (Giordani Soika, 1970) have been recorded from Iran.

*Katamenes flavigularis* (Blüthgen, 1951)
*Eumenes (Katamenes) arbustorum* flavigularis Blüthgen, 1951:176.

**Distribution in Iran:** Qazvin, Tehran (Ebrahimi & Carpenter, 2008).

**General distribution:** Oriental (India - Kumar et al., 2019), Eastern (Afghanistan, Iran, Tajikistan) and Western (Europe, Caucasus; Israel - Kumar et al., 2019; Lebanon, Russia, Syria, Turkey) Palaearctic (Antropov & Fateryga, 2017).

*Katamenes niger* (Brullé, 1839)
*Eumenes niger* Brullé, 1839: 89, ♀♂. – Canaries [Canary Islands].

**Distribution in Iran:** Unclear locality cited (Giordani Soika, 1970).

**General distribution:** Afrotropical (Saudi Arabia), Eastern (Iran - Giordani Soika, 1970) and Western (Algeria - Saunders, 1905; Canary Islands, Egypt, Jordan, Israel, Morocco) Palaearctic (Gusenleitner, 2013).

*Katamenes sichelii* (de Saussure, 1852)
*Eumenes sichelii* de Saussure, 1852: 36, ♀. – Albania.

**Distribution in Iran:** Alborz (Giordani Soika, 1949, 1970), Lorestan (Giordani Soika, 1949), Markazi (Ebrahimi & Carpenter, 2008), Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970), Tehran (Castro & Dvořák, 2009).

**General distribution:** Afrotropical (Saudi Arabia, UAE), Eastern (Afghanistan, China, Iran, Kazakhstan, Mongolia, Turkmenistan - Giordani Soika, 1966; Uzbekistan - Castro & Dvořák, 2009) and Western (Armenia, Azerbaijan, Europe, Iraq, India, Israel, Jordan, North Africa, Russia, Turkey) Palaearctic (Fateryga et al., 2019).

**Remarks:** This species has been recorded from Iran as *Eumenes sichelii* var. baeri (Radoszkowski, 1865) (Giordani Soika, 1949). Three subspecies *Katamenes sichelii baeri* (Radoszkowski, 1865) (Giordani Soika, 1970), *Katamenes sichelii fulvus* (Eversmann, 1854) as *Eumenes* (Katamenes) sichelii var. *Luristanensis* Giordani Soika, 1949 (Giordani Soika, 1949) and *Katamenes sichelii tauriae* (Giordani Soika, 1960) (Blüthgen & Gusenleitner, 1970; Castro & Dvořák, 2009) have been recorded from Iran.

*Katamenes tauricus* (de Saussure, 1855)
*Eumenes tauricus* de Saussure, 1855: 137, Crimée.

**Distribution in Iran:** Alborz (Giordani Soika, 1970), Tehran (Ebrahimi & Carpenter, 2008); No locality cited (Giordani Soika, 1949).

**General distribution:** Oriental (India), Eastern (Afghanistan, China, Iran, Kazakhstan, Kyrgyzstan, Mongolia) and Western (Russia) Palaearctic (Fateryga, 2018).

**Remarks:** The subspecies *Katamenes tauricus viratus* (Giordani Soika, 1949) has been recorded from Iran, as *Katamenes sesquicinctus viratus* (Giordani Soika, 1949) (Giordani Soika, 1970) and as *Eumenes* (Katamenes) latipes var. viratus Giordani Soika, 1949 (Giordani Soika, 1949).

**Genus: Knemodynerus** Blüthgen, 1940

*Knemodynerus* Blüthgen, 1940: 43. Type species: *Odynerus excellens* Perez, 1907, by original designation.
**Knemodynerus excellens** (Pérez, 1907)

*Odynerus (Lionotulus) excellens* Pérez, 1907: 493, ♀♂. – Dibba [Oman], ♀; Bahrein, ♂.

**Distribution in Iran:** Kerman (Pashaei Rad et al., 2010), Khuzestan (Blüthgen & Gusenleitner, 1970; Giordani Soika, 1970), Markazi (Ebrahimi & Carpenter, 2008), Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970), Zanjan (Abassi et al., 2008; Pashaei Rad et al., 2010).

**General distribution:** Afrotropical (Oman, Qatar, Saudi Arabia, UAE - Gusenleitner, 2013), Eastern Palaearctic (Iran, Turkmenistan - Gusenleitner, 2013; Pakistan - Gusenleitner, 2006c), Oriental (India) (Gusenleitner, 2013).

**Remarks:** This species has been recorded from Iran as *Euodynerus excellens* (Pérez, 1907) (Giordani Soika, 1970).

**Genus: Labochilus** Blüthgen, 1939

*Labochilus* Blüthgen, 1939: 12. Type species: *Pterochilus linguarius* Saunders, 1905, by monotypy.

**Labochilus orientalis** Gusenleitner, 2001

*Labochilus orientalis* Gusenleitner, 2001: 680, ♀♂: Holotype ♀. – Iran.

**Distribution in Iran:** Hormozgan (Gusenleitner, 2001).

**General distribution:** Eastern (Iran) and Western (Jordan) Palaearctic (Gusenleitner, 2001).

**Genus: Leptochilus de Saussure, 1853**

*Leptochilus* Saussure, 1853: 233. Type species: *Pterochilus mauritanicus* Lepeletier, 1841. Designated by Ashmead, 1902.

**Leptochilus (Lionotulus) callidus** (Kostylev, 1940)

*Odynerus (Lionotulus) callidus* Kostylev, 1940: 33, ♀♂. – Syr-Daria [Kazakhstan].

**Distribution in Iran:** Kerman (Gusenleitner, 2012a).

**General distribution:** Eastern Palaearctic (Central Asia, Iran, Mongolia) (Gusenleitner, 2013).

**Leptochilus (Lionotulus) fuscipes** Gusenleitner, 1985

*Leptochilus (Lionotulus) fuscipes* Gusenleitner, 1985: 98, ♂. – Iran.

**Distribution in Iran:** Hamadan, Qazvin (Gusenleitner, 1985b).

**General distribution:** Eastern (Iran) and Western (Turkey) Palaearctic (Gusenleitner, 1985b).

**Leptochilus (Lionotulus) lorestanicus** Gusenleitner, 1995

*Leptochilus (Lionotulus) lorestanicus* Gusenleitner, 1995: 174, ♀. – Iran.

**Distribution in Iran:** Lorestan (Gusenleitner, 1995a).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

**Leptochilus (Lionotulus) membranaceus** (Morawitz, 1867)

*Odynerus (Leionotus) membranaceus* Morawitz, 1867: 135, ♀. – Gouvernement von Saratov.

**Distribution in Iran:** Alborz (Giordani Soika, 1970).

**General distribution:** Eastern (Iran, Kazakhstan, Turkmenistan, Uzbekistan) and Western (Caucasus, Israel, Europe, Russia, Turkey) Palaearctic (Fateryga, 2018).
**Leptochilus (Lionotulus) neutralis** (Giordani Soika, 1943)
*Odynerus (Leptochilus) neutralis* Giordani Soika, 1943: 12, ♂. – Asia minore, Amasia [Turkey].

**Distribution in Iran:** Khuzestan (Giordani Soika, 1961).
**General distribution:** Eastern (Iran - Giordani Soika, 1961) and Western (Israel - Giordani Soika, 1952; Syria - Giordani Soika, 1970; Turkey - Gusenleitner, 2013) Palaearctic.

**Leptochilus (Lionotulus) ressli** Gusenleitner, 1985
*Leptochilus (Lionotulus) ressli* Gusenleitner, 1985: 88, ♂. – Iran.

**Distribution in Iran:** Lorestan (Gusenleitner, 1985b).
**General distribution:** Eastern (Iran) and Western (Turkey - Gusenleitner, 1988a) Palaearctic.

**Leptochilus (Lionotulus) simurgh** Gusenleitner, 2016
*Leptochilus (Lionotulus) simurgh* Gusenleitner, 2016: 91, ♂♀. – Iran.

**Distribution in Iran:** Alborz (Gusenleitner, 2016).
**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2016).

**Leptochilus (Neoleptochilus) regulus** (de Saussure, 1855)
*Odynerus (Odynerus div. Parodynerus) regulus* de Saussure, 1855: 247, ♂♀. – Algeria.

**Distribution in Iran:** East Azarbaijan (Ebrahimi & Carpenter, 2008).
**General distribution:** Eastern (Iran) and Western (Caucasus, Cyprus, Jordan, Europe, North Africa, Russia, Syria, Turkey) Palaearctic (Fateryga, 2017).

**Genus: Microdynerus** Thomson, 1874

*Microdynerus* Thomson, 1874: 58. Type species: *Odynerus exilis* Herrich-Schäffer, 1839. Designated by Jones, 1937.

**Microdynerus (Alastorynerus) microdynerus** (Dalla Torre, 1889)
*Odynerus microdynerus* Dalla Torre, 1889: 124.

**Distribution in Iran:** No locality cited (Gusenleitner, 1997a).
**General distribution:** Eastern (Iran, Kazakhstan, Tajikistan) and Western (Armenia, Azerbaijan, Europe, Georgia, Jordan, Russia, Turkey) Palaearctic (Fateryga et al., 2019).

**Microdynerus (Microdynerus) atriceps** Morawitz, 1895
*Microdynerus atriceps* Morawitz, 1895: 485, ♂♀. – Transcaucasia, Helendendorf [Azerbaijan].

**Distribution in Iran:** Qazvin (Gusenleitner, 1979).
**General distribution:** Eastern (Iran, Turkmenistan) and Western (Azerbaijan - Morawitz, 1895; Greece - Gusenleitner, 2008; Israel, Turkey) Palaearctic (Gusenleitner, 2013).

**Microdynerus (Pseudomicrodynerus) anatolicus** (Blüthgen, 1938)
*Pseudomicrodynerus (Pachymicrodynerus) anatolicus* Blüthgen, 1938: 456, ♂♀. – Kleinasiern [without details].

**Distribution in Iran:** No locality cited (Ebrahimi & Carpenter, 2008).
**General distribution:** Eastern (Iran - Ebrahimi & Carpenter, 2008) and Western Palaearctic (Israel, Syria, Turkey) (Gusenleitner, 2013).
Microdynerus (Pseudomicrodynerus) parvulus (Herrich-Schäffer, 1838)

*Odynerus parvulus* Herrich-Schäffer, 1838: 19, ♀♂. – bei Regensburg [Germany].

**Distribution in Iran:** No locality cited (Gusenleitner, 1979).

**General distribution:** Eastern (Iran, Kazakhstan, Uzbekistan) and Western (Caucasus, Europe, Russia, Turkey) Palaearctic (Fateryga, 2018).

*Genus: Odynerus* Latreille, 1802

*Odynerus* Latreille, 1802: 362. Type species: *Vespa spinipes* L., 1758. Designated by Shuckard, 1837.

*Odynerus* (*Odynerus*) ezechiae von Schulthess, 1924

*Odynerus* (*Hoplopus*) ezechiae von Schulthess, 1924: 290, ♂. – Constantinople [Turkey], Jerusalem [Israel].

**Distribution in Iran:** No locality cited (Gusenleitner, 1998a).

**General distribution:** Eastern (Iran, Uzbekistan) and Western (Greece, Israel, Jordan, Turkey) Palaearctic (Gusenleitner, 2013).

*Odynerus* (*Odynerus*) femoratus de Saussure, 1856

*Odynerus* (*Epipona* div. *Hoplopus*) femoratus de Saussure, 1856: 310, ♀♂. – Paris [France].

**Distribution in Iran:** Alborz (Giordani Soika, 1970). 

**General distribution:** Eastern (Iran) and Western (Caucasus, Europe, Israel, Russia, Syria, Turkey) Palaearctic (Antropov & Fateryga, 2017).

*Odynerus* (*Odynerus*) leucopus (Blüthgen, 1941)

*Hoplomerus* (*Hoplomerus*) leucopus Blüthgen, 1941: 310, 331, ♀♂. – Iran.

**Distribution in Iran:** Bushehr (Blüthgen, 1941), Ilam (Giordani Soika, 1970; Ebrahimi & Carpenter, 2008), Kermanshah, Khuzestan (Giordani Soika, 1970).

**General distribution:** Eastern (Iran) and Western (Israel, Syria) Palaearctic (Gusenleitner, 2013).

**Remarks:** This species has been recorded from Iran as *Hoplomerus leucopus* Blüthgen, 1941 (Blüthgen, 1941).

*Odynerus* (*Odynerus*) melanocephalus (Gmelin, 1790)

*Vespa melanocephalus* Gmelin, 1790: 2760. Europa (destroyed).

**Distribution in Iran:** Alborz (Giordani Soika, 1970), East Azarbaijan, Golestan (Ebrahimi & Carpenter, 2008), No locality cited (du Buysson, 1912; Kostylev, 1929).

**General distribution:** Eastern (Afghanistan, Kazakhstan, Iran, Uzbekistan) and Western (Armenia, Caucasus, Cyprus, Europe, Iraq, Israel, Jordan, Russia, Syria, Turkey) Palaearctic (Antropov & Fateryga, 2017).

**Remarks:** This species has been recorded from Iran as *Hoplomerus armeniacus* Morawitz, 1885 (Kostylev, 1929). The subspecies *Odynerus melanocephalus armeniacus* (Morawitz, 1885) has been recorded from Iran (Ebrahimi & Carpenter, 2008).

*Odynerus* (*Spinicoxa*) albopictus de Saussure, 1856

*Odynerus* (*Epipona* div. *Hoplopus*) albopictus de Saussure, 1856: 312, ♀♂. – L’ile de Rhodes [Greece].

**Distribution in Iran:** East Azarbaijan (Ebrahimi & Carpenter, 2008), Khuzestan (Blüthgen & Gusenleitner, 1970).
**General distribution:** Eastern (Iran, Kazakhstan, Turkmenistan, Uzbekistan) and Western (Caucasus, Europe, Iraq, Israel, Jordan, North Africa, Russia, Syria, Turkey) Palaearctic (Fateryga, 2018).

**Remarks:** The subspecies Odynerus albopictus calcatus (Morawitz, 1885) has been recorded from Iran (Blüthgen & Gusenleitner, 1970; Ebrahimi & Carpenter, 2008).

Odynerus (Spinica) nigrospinulosus (Morawitz, 1895)
*Hoplomerus nigrospinulosus* Morawitz, 1895: 436, ♂, ♀. - Transcaspia, Serachs [Turkmenistan].

**Distribution in Iran:** Khuzestan (Blüthgen & Gusenleitner, 1970).

**General distribution:** Eastern (Iran - Blüthgen & Gusenleitner, 1970; Turkmenistan) and Western (Armenia, Egypt, Israel, Turkey) Palaearctic (Gusenleitner, 2013).

**Genus: Onychopterocheilus Blüthgen, 1955**

*Onychopterocheilus* Blüthgen, 1955: 407. Type species: *Odynerus daw* Dusmet, 1903, by original designation.

Onychopterocheilus (Acutopterocheilus) spheciformis (Gusenleitner, 1970)
*Pterocheilus spheciformis* Gusenleitner, 1970: 9, ♂, ♀. - Iran.

**Distribution in Iran:** Khuzestan (Blüthgen & Gusenleitner, 1970).

**General distribution:** Eastern Palaeartic (Iran) (Gusenleitner, 2013).

Onychopterocheilus (Onychopterocheilus) helenium (Moravitz, 1885)
*Pterocheilus helenium* Moravitz, 1885: 137, ♂. - Greece.

**Distribution in Iran:** No locality cited (Gusenleitner, 2013).

**General distribution:** Eastern (Iran) and Western (Balkans, Lebanon, Italy, Turkey, Syria) Palaeartic (Gusenleitner, 2013).

**Remarks:** The subspecies *Onychopterocheilus helenium syriacus* (Blüthgen, 1952) has been recorded from Iran (Gusenleitner, 2013).

Onychopterocheilus mavromoustakisi (Giordani Soika, 1970)
*Pterocheilus mavromoustakisi* Giordani Soika, 1970: 46, ♂. - Iran.

**Distribution in Iran:** Alborz (Giordani Soika, 1970).

**General distribution:** Eastern (Iran) and Western (Lebanon, Turkey) Palaeartic (Gusenleitner, 2013).

**Remarks:** This species has been recorded from Iran as *Pterocheilus mavromoustakisi* Giordani Soika, 1970 (Giordani Soika, 1970).

Onychopterocheilus stiziformis (Gusenleitner, 1970)
*Pterocheilus stiziformis* Gusenleitner, 1970: 7, ♂. - Iran.

**Distribution in Iran:** Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970).

**General distribution:** Afrotropical (UAE), Eastern Palaeartic (Iran) (Gusenleitner, 2013).

**Genus: Paragymnomerus Blüthgen, 1938**

*Paragymnomerus* Blüthgen, 1938 (1937): 286. Type species: *Odynerus spiricornis* Spinola, 1808, by original designation.
Paragymnomerus amitinorum Blüthgen, 1952
*Paragymnomerus amitinorum* Blüthgen, 1952: 4, ♂♀. – Tiberias [Israel].

**Distribution in Iran:** No locality cited (Gusenleitner, 2013).

**General distribution:** Eastern (Iran) and Western (Croatia, Greece, Israel, Turkey) Palaearctic (Gusenleitner, 2013).

Paragymnomerus mammillatus (Morawitz, 1885)
*Hoplomerus mammillatus* Morawitz, 1885: 149, ♀. – Iran.

**Distribution in Iran:** Semnan (Morawitz, 1885).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

**Remarks:** This species has been recorded from Iran as *Hoplomerus mammillatus* Morawitz, 1885 (Morawitz, 1885).

Paragymnomerus spiricornis (Spinola, 1808)
*Odynerus spiricornis* Spinola, 1808: 257, ♂. – Genuam [Italy].

**Distribution in Iran** No locality cited (Gusenleitner, 2013).

**General distribution:** Eastern (Iran - Gusenleitner, 2013; Turkestan - van der Vecht & Fischer, 1972) and Western (Armenia, Europe, Turkey) Palaearctic (Gusenleitner, 2013).

**Genus:** Paraleptomenes Giordani Soika, 1970
*Paraleptomenes* Giordani Soika, 1970: 79. Type species: *Paraleptomenes nurseanus* Giordani Soika, 1970, by original designation.

Paraleptomenes miniatus (de Saussure, 1855)
*Odynerus miniatus* de Saussure, 1855: 249, ♂♀. – Les Indes orientales.

**Distribution in Iran:** Kerman (Blüthgen & Gusenleitner, 1970; Pashaei Rad et al., 2010).

**Distribution:** Afrotropical (Mauritius), Eastern Palaearctic (China - Tan et al., 2018; Iran, Pakistan), Oriental (India, Taiwan) (Rafi et al., 2017).

**Remarks:** The subspecies *Paraleptomenes miniatus miniatus* (de Saussure, 1855) has been recorded from Iran (Pashaei Rad et al., 2010).

**Genus:** Paravespa Radoszkowski, 1886
*Paravespa* Radoszkowski, 1886: 46. Type species: *Hoplomerus komarowi* Radoszkowski, 1886 (= *Hoplomerus quadricolor* Morawitz, 1885), by monotypy.

Paravespa grandis (Morawitz, 1885)
*Hoplomerus grandis* Morawitz, 1885: 159, ♂♀. – Persia boreali, Scharud [Iran].

**Distribution in Iran:** Semnan (Morawitz, 1885); Sistan-o Baluchestan (Hamzavi et al., 2019); No locality cited (Ebrahimi & Carpenter, 2008).

**General distribution:** Eastern (Afghanistan - Gusenleitner, 2013; Iran, Turkmenistan - Morawitz, 1885) and Western (Azerbaijan - Kokujev, 1912; Lebanon - Gusenleitner, 2013; Turkey - Giordani Soika, 1970) Palaearctic.

**Remarks:** This species has been recorded from Iran as two separate species including *Hoplomerus grandis* Morawitz, 1885 and *Hoplomerus persa* Morawitz, 1885 (Morawitz, 1885). The subspecies *Paravespa grandis caucasica* (Kokujev, 1912) has been recorded from Iran (Ebrahimi & Carpenter, 2008).
**Paravespa mimetica** (Von Schultess, 1924)
*Odynerus mimeticus* Von Schultess, 1924: 284, ♂♀. – Jericho [Israel].

**Distribution in Iran**: Khuzestan (Giordani Soika, 1970; Ebrahimi & Carpenter, 2008).

**General distribution**: Afrotropical (Saudi Arabia), Eastern (Iran, Turkmenistan) and Western (Armenia - Białynicki-Birula, 1926; Israel, Turkey) Palaeartic (Gusenleitner, 2013).

**Paravespa quadricolor** (Morawitz, 1885)
*Hoplomera quadricolor* Morawitz, 1885: 146, ♀. – Territorio Transcaspico, Krasnowodsk [Turkmenistan].

**Distribution in Iran**: Sistan-o Baluchestan (Białynicki-Birula, 1926; Ebrahimi & Carpenter, 2008); No locality cited (Giordani Soika, 1970).

**General distribution**: Eastern (Afghanistan, Iran, Turkmenistan) and Western (Turkey - Gusenleitner, 1988b) Palaeartic (Gusenleitner, 2013).

**Remarks**: This species has been recorded from Iran as *Hoplomerus quadricolor* Morawitz, 1885 (Białynicki-Birula, 1926).

**Paravespa rex** (von Schultess, 1924)
*Odynerus* (Hoplopus) *rex* von Schultess, 1924: 284, 285, ♂♀. – Turkestan, Kisilkum.

**Distribution in Iran**: Alborz (Giordani Soika, 1970).

**General distribution**: Eastern (Iran, Kazakhstan, Kyrgyzstan, Uzbekistan) and Western (Russia, Turkey) Palaeartic (Antropov & Fateryga, 2017).

**Genus**: *Parodontodynerus* Blüthgen, 1938

*Parodontodynerus* Blüthgen, 1938 (1937): 280. Type species: *Eumenes ephippium* Klug, 1817, by original designation.

**Parodontodynerus aramaeus** Blüthgen, 1955
*Parodontodynerus aramaeus* Blüthgen, 1955: 27, ♀. – Israel.

**Distribution in Iran**: Fars, Khuzestan (Giordani Soika, 1961).

**General distribution**: Eastern (Iran) and Western (Turkey, Syria - Giordani Soika, 1970; Israel) Palaeartic (Gusenleitner, 2013).

**Remarks**: This species has originally been recorded from Iran as *Odontodynerus ephippium eremicus* Giordani Soika, 1961 (Giordani Soika, 1961).

**Parodontodynerus ephippium** (Klug, 1817)
*Eumenes ephippium* Klug, 1817: 264. – Dalmatiae insulae [Croatia].

**Distribution in Iran**: Alborz (Giordani Soika, 1970), Zanjan (Pashaei Rad et al., 2006; Abbasi et al., 2008).

**General distribution**: Eastern (Iran, Kazakhstan, Turkmenistan, Uzbekistan) and Western (Armenia, Azerbaijan, Europe, Lebanon, Russia, Turkey) Palaeartic (Fateryga et al., 2019).

**Parodontodynerus rufinus** (Kostylev, 1940)
*Odynerus* (Parodontodynerus) *ephippium rufinus* Kostylev, 1940: 30, ♀. – Iran.

**Distribution in Iran**: Kerman (Kostylev, 1940).

**General distribution**: Eastern Palaeartic (Iran) (Gusenleitner, 2013).

**Remarks**: This species has been recorded from Iran as *Odynerus* (Parodontodynerus) *ephippium rufinus* Kostylev, 1940 (Kostylev, 1940).
**Genus: Pseudepipona de Saussure, 1856**

*Pseudepipona* de Saussure 1856: 309. Type species: *Odynerus herrichii* Saussure, 1856, by monotypy.

**Pseudepipona (Deuterepipona) tricolor Gusenleitner, 1976**

*Pseudepipona (Deuterepipona) tricolor* Gusenleitner, 1976: 115, ♂♀. – Daghestan [Russia].

**Distribution in Iran:** No locality cited (Gusenleitner, 2013).

**General distribution:** Eastern (Iran, Kazakhstan) and Western (Russia) Palaearctic (Fateryga et al., 2017).

**Pseudepipona (Pseudepipona) herrichii (de Saussure, 1856)**

*Odynerus (Eipona div. Pseudepipona) herrichi* de Saussure, 1856: 309, ♂♀. – Regensburg [Germany].

**Distribution in Iran:** No locality cited (Gusenleitner, 1998b).

**General distribution:** Eastern Palaearctic (China; Iran - Gusenleitner, 1998b; Kazakhstan, Kyrgyzstan, Mongolia, Russia, Turkmenistan, Uzbekistan), Nearctic (North America), Western Palaearctic (Armenia, Azerbaijan, Caucasus, Europe, North Africa, Russia, Syria, Turkey) (Fateryga & Mokrousov, 2019).

**Pseudepipona (Pseudepipona) lativentris (de Saussure, 1855)**

*Pseudepipona (Odynerus div. Epsilon) lativentris* de Saussure, 1855: 275, ♂. – Le Midi de la France. Montpellier [France].

**Distribution in Iran:** Tehran (Ebrahimi & Carpenter, 2008).

**General distribution:** Eastern (Central Asia; Iran - Ebrahimi & Carpenter, 2008) and Western (Armenia, Europe, Lebanon, Israel, North Africa, Turkey) Palaearctic (Gusenleitner, 2013).

**Pseudepipona (Pseudepipona) peculiaris (Morawitz, 1895)**

*Odynerus (Lionotus) peculiaris* Morawitz, 1895: 469, ♂♀. – Mons Bogdo [Russia].

**Distribution in Iran:** Semnan (Giordani Soika, 1970; Ebrahimi & Carpenter, 2008).

**General distribution:** Eastern (Iran, Kazakhstan) and Western (Russia) Palaearctic (Antropov & Fateryga, 2017).

**Pseudepipona (Pseudepipona) priesneri Gusenleitner, 1970**

*Pseudepipona priesneri* Gusenleitner, 1970: 10, ♂♀. – Saudi Arabia.

**Distribution in Iran:** Khuzestan (Blüthgen & Gusenleitner, 1970).

**General distribution:** Afrotropical (Saudi Arabia), Eastern Palaearctic (Iran) (Blüthgen & Gusenleitner, 1970).

**Pseudepipona (Pseudepipona) sellata (Morawitz, 1885)**

*Lionotus sellatus* Morawitz, 1885: 172, ♂♀. – Deserto Kirgisorum. Mons Bogdo [Russia].

**Distribution in Iran:** Southern Iran (van der Vecht & Fischer, 1972).

**General distribution:** Eastern (Iran, Kazakhstan, Turkmenistan) and Western (Azerbaijan, Russia, Turkey) Palaearctic (Fateryga, 2017).

**Genus: Pseudodontodynerus Blüthgen, 1939**

*Pseudodontodynerus* Blüthgen, 1939: 249. Type species: *Odynerus pretiosus* Dusmet, 1928, by monotypy.
**Pseudodontodynerus peculiariventris** (Giordani Soika, 1952)
*Odontodynerus peculiariventris* Giordani Soika, 1952: 50, ♀. – Tiberias [Israel].

**Distribution in Iran:** Fars (Giordani Soika, 1970), Sistan-o Baluchestan (Hamzavi et al., 2019).

**General distribution:** Eastern (Iran) and Western (Israel) Palaearctic (Gusenleitner, 2013).

**Remarks:** This species has been recorded from Iran as *Pseudodontodynerus peculiariventris salsus* (Giordani Soika, 1970) (Giordani Soika, 1970).

**Genus: Pseudosymmorus** Blüthgen, 1938

*Pseudosymmorus* Blüthgen, 1938 (1937): 293. Type species *Odynerus hindenburgi* Dusmet, 1917, by original designation.

*Pseudosymmorus angulatus* Gusenleitner & Ockermüller, 2018
*Pseudosymmorus angulatus* Gusenleitner & Ockermüller, 2018: 1092, ♂♀. – Iran.

**Distribution in Iran:** Lorestan (Gusenleitner & Ockermüller, 2018).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner & Ockermüller, 2018).

*Pseudosymmorus capillus* Gusenleitner & Ockermüller, 2018
*Pseudosymmorus capillus* Gusenleitner & Ockermüller, 2018: 1094, ♀. – Iran.

**Distribution in Iran:** Fars (Gusenleitner & Ockermüller, 2018).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner & Ockermüller, 2018).

**Genus: Psiliglossa** S. S. Saunders, 1872

*Psiliglossa* S. S Saunders, 1872: 42. New name for *Stenoglossa* de Saussure.

*Psiliglossa algeriensis* E. Saunders, 1905
*Psiliglossa algeriensis* E. Saunders, 1905: 400, ♀♂. – Biskar [Algeria].

**Distribution in Iran:** Hormozgan (Gusenleitner, 1973a, 2011a); No locality cited (Gusenleitner, 2013).

**General distribution:** Afrotropical (UAE - Gusenleitner, 2010b), Eastern (Iran) and Western (Algeria, Israel; Jordan - Gusenleitner, 2011a; Libya, Tunisia; Turkey - Gusenleitner, 2011a) Palaearctic (Castro & Dvořák, 2009).

**Remarks:** This species has been recorded from Iran as *Psiliglossa anatolica* Giordani Soika, 1979 (Gusenleitner 2013).

*Psiliglossa pulchra* Morawitz, 1895
*Psiloglossa pulchra* Morawitz, 1895: 410, ♀. Transcaspia: Serachs [Turkmenistan].

**Distribution in Iran:** Kohgiloyeh-va Boyerahmad (Gusenleitner, 2004); No locality cited (Ebrahim & Carpenter, 2008).

**General distribution:** Eastern (Iran - Ebrahim & Carpenter, 2008; Kazakhstan, Kyrgyzstan, Turkmenistan) and Western (Armenia) Palaearctic (Mokrousov & Zryanin, 2015).

**Remarks:** The subspecies *Psiliglossa pulchra zhelochovtsei* Panfilov, 1968 has been recorded from Iran (Gusenleitner, 2004).

**Genus: Pterocheilus** Klug, 1805

*Pterocheilus* Klug, 1805: 143. Type species: *Vespa phalerata* Panzer, 1797. Designated by Blanchard, 1840.
**Pterocheilus chobauti** Dusmet, 1928
*Pterocheilus chobauti* Dusmet, 1928: 109, ♀. – Algeria.

**Distribution in Iran:** Sistan-o Baluchestan ([Blüthgen & Gusenleitner, 1970](#)).

**General distribution:** Afrotropical (Oman - [Guichard, 1986](#); Saudi Arabia), Eastern (Iran) and Western (Algeria, Egypt; Israel - [Giordani Soika, 1970](#); Morocco; Syria - [Giordani Soika, 1970](#); Tunisia) Palaearctic ([Gusenleitner, 2013](#)).

**Remarks:** The subspecies *Pterocheilus chobauti chlorodyneroides* Gusenleitner, 1970 has been recorded from Iran ([Blüthgen & Gusenleitner, 1970](#)).

**Pterocheilus persicus** Gusenleitner & Fallahzadeh, 2013
*Pterocheilus persicus* Gusenleitner & Fallahzadeh, 2013: 109, ♀. – Iran.

**Distribution in Iran:** Fars ([Gusenleitner et al., 2013](#)).

**General distribution:** Eastern Palaearctic (Iran) ([Gusenleitner, 2013](#)).

**Pterocheilus tenebricosus** Gusenleitner, 1998
*Pterocheilus tenebricosus* Gusenleitner, 1998: 503, ♀. – Iran.

**Distribution in Iran:** Fars ([Gusenleitner, 1998c](#)).

**General distribution:** Eastern Palaearctic (Iran) ([Gusenleitner, 2013](#)).

**Genus: Raphiglossa** S. S. Saunders, 1850
*Raphiglossa* Saunders, 1850: 71. Type species: *Raphiglossa eumenoides* Saunders, 1850. Designated by Ashmead, 1902.

**Raphiglossa eumenoides** S. S. Saunders, 1850
*Raphiglossa eumenoides* S. S. Saunders, 1850: 17, ♂♀. – Greece.

**Distribution in Iran:** Alborz ([Gusenleitner, 2000b](#)).

**General distribution:** Eastern (Iran) and Western (Armenia, Azerbaijan, Europe, Lebanon, Russia; Turkey - [Giordani Soika, 1970](#)) Palaearctic ([Fateryga et al., 2019](#)).

**Remarks:** The subspecies *Raphiglossa eumenoides caucasica* Giordani Soika, 1970 has been recorded from Iran ([Gusenleitner, 2000b](#)).

**Raphiglossa formosa** Kostylev, 1940
*Raphiglossa formosa* Kostylev, 1940: 139, ♂. – Kabadian [Tajikistan].

**Distribution in Iran:** Fars ([Giordani Soika, 1970](#)).

**General distribution:** Eastern (Iran, Tajikistan) and Western (Syria) Palaearctic ([Gusenleitner, 2013](#)).

**Raphiglossa irana** Giordani Soika, 1970
*Raphiglossa irana* Giordani Soika, 1970: 28, ♂. – Iran.

**Distribution in Iran:** Alborz ([Giordani Soika, 1970](#)).

**General distribution:** Eastern Palaearctic (Iran) ([Gusenleitner, 2013](#)).

**Genus: Rhynchium** Spinola, 1806
*Rynchium* Spinola, 1806: 186. Type species: *Rygchium (!) europaeum* Spinola, 1806 (= *Vespa oculata* Fabricius, 1781), by monotypy.
**Rhynchium acromum** Giordani Soika, 1952

*Rhynchium acromum* Giordani Soika, 1952: 49, ♀. – Karachi [Pakistan].

**Distribution in Iran:** Kerman (Pashaei Rad et al., 2010), Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970).

**General distribution:** Eastern Palaearctic (Iran - Blüthgen & Gusenleitner, 1970; Pakistan - Giordani Soika, 1952).

**Rhynchium cyanopterum** de Saussure, 1852

*Rhynchium cyanopterum* de Saussure, 1852: 108, ♀ ♂. – Egypte.

**Distribution in Iran:** No locality cited (du Buysson, 1912)

**General distribution:** Afrotropical (Southern Sahara to West Africa; Saudi Arabia, UAE - Guichard, 1986; Oman - Gusenleitner, 2005; Yemen), Eastern (Iran - du Buysson, 1912) and Western (Egypt, Jordan, Israel) Palaearctic (Gusenleitner, 2013).

**Rhynchium oculatum** (Fabricius, 1781)

*Vespa oculata* Fabricius, 1781: 463, Italia.

**Distribution in Iran:** Bushehr (du Buysson, 1912), Hormozgan (Blüthgen & Gusenleitner, 1970; Giordani Soika, 1970; Ebrahimi & Carpenter, 2008; Khoobdel et al., 2014), Kerman (Pashaei Rad et al., 2010).

**General distribution:** Afrotropical (Saudi Arabia; UAE - Gusenleitner, 2010b; Oman, Yemen - Giordani Soika, 1957), Eastern (Afghanistan, Iran) and Western (Cyprus, Egypt, Europe, Israel, Jordan, Malta, Turkey) Palaearctic, Oriental (India) (Gusenleitner, 2013).

**Remarks:** This species has been recorded from Iran as *Rhynchium distinguendum* du Buysson, 1912 (du Buysson, 1912), which is considered as a subspecies, *Rhynchium oculatum distinguendum* du Buysson, 1913 (Blüthgen & Gusenleitner, 1970; Giordani Soika, 1970; Pashaei Rad et al., 2010).

**Genus: Stenancistrocerus** de Saussure, 1863

*Stenancistrocerus* de Saussure, 1863: 216. Type species: *Odynerus atropos* Lepeletier, 1841. Designated by Bequaert, 1925.

**Stenancistrocerus** (Paratropancistrocerus) *biblicus* (Giordani Soika, 1952)

*Tachyancistrocerus biblicus* Giordani Soika, 1952: 38, ♀♂. – Israel.

**Distribution in Iran:** Sistan-o Baluchestan (Hamzavi et al., 2019).

**General distribution:** Eastern (Iran - Hamzavi et al., 2019) and Western (Israel - Gusenleitner, 2013) Palaearctic.

**Genus: Stenodynerus** de Saussure, 1863

*Stenodynerus* de Saussure, 1863: 228. Type species: *Odynerus chinensis* Saussure, 1863. Designated, by Bohart, 1939.

**Stenodynerus bluethgeni** van der Vecht, 1971

*Stenodynerus bluethgeni* van der Vecht, 1971: 131, ♀♂. – France.

**Distribution in Iran:** No locality cited (Gusenleitner, 2000a).

**General distribution:** Eastern (China, Iran, Kazakhstan, Turkmenistan) and Western (Caucasus; Cyprus - Gusenleitner, 1981; Europe, Russia, Turkey) Palaearctic (Antropov & Fateryga, 2017).
**Stenodynerus chevrieranus (de Saussure, 1855)**
*Odynerus (Odynerus div. Epsilon) chevrieranus* de Saussure, 1855: 268, ♀♂. – Les environs de Genève [Switzerland].

**Distribution in Iran:** East Azarbaijan (Ebrahimi & Carpenter, 2008), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).

**General distribution:** Eastern (Iran, Kazakhstan) and Western (Azerbaijan, Europe, Russia, Turkey) Palaearctic (Fateryga et al., 2019).

**Stenodynerus chitgarensis Giordani Soika, 1970**
*Stenodynerus chitgarensis* Giordani Soika, 1970: 108, ♀♂. – Iran.

**Distribution in Iran:** Alborz (Giordani Soika, 1970), Tehran (Giordani Soika, 1970; Ebrahimi & Carpenter, 2008), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).

**General distribution:** Eastern (Iran, Kyrgyzstan, Uzbekistan) and Western (Azerbaijan, Turkey) Palaearctic (Fateryga et al., 2019).

**Stenodynerus cyrus Gusenleitner, 2012**
*Stenodynerus cyrus* Gusenleitner, 2012: 1131, ♀. – Iran.

**Distribution in Iran:** Kerman (Gusenleitner, 2012a).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

**Stenodynerus fastidiosissimus (de Saussure, 1855)**
*Odynerus (Odynerus div. Epsilon) fastidiosissimus* de Saussure, 1855: 265, ♀♂. – L’Algérie ou l’Europe méridionale.

**Distribution in Iran:** Kohgiloyeh-va Boyerahmad (Gusenleitner, 2012a); No locality cited (Gusenleitner, 2000a).

**General distribution:** Eastern (Central Asia, Iran) and Western (Iraq, Israel, Libya, North Africa, Mediterranean Islands, Southern Europe, Russia (Antropov & Fateryga, 2017); Turkey) Palaearctic (Castro & Dvořák, 2009).

**Remarks:** The subspecies *Stenodynerus fastidiosissimus difficilis* (Morawitz, 1867) has been recorded from Iran (Gusenleitner, 2000a).

**Stenodynerus punctifrons (Thomson, 1874)**
*Odynerus (Leionotus) Lionotuspunctifrons* Thomson, 1874: 57, ♀. – Helvetia.

**Distribution in Iran:** No locality cited (Kim & Yamane, 2004).

**General distribution:** Eastern (Kazakhstan, Kyrgyzstan, Mongolia, Russia) and Western (Caucasus, Europe, Russia, Turkey) Palaearctic (Fateryga & Mokrousov, 2019).

**Stenodynerus sapidus Giordani Soika, 1970**
*Stenodynerus sapidus* Giordani Soika, 1970: 110, ♀. – Iran.

**Distribution in Iran:** Alborz (Giordani Soika, 1970).

**General distribution:** Eastern (Iran) and Western (Russia) Palaearctic (Fateryga & Popov, 2017).

**Stenodynerus trotzinai (Morawitz, 1895)**
*Odynerus trotzinai* Morawitz, 1895: 463, ♀. – Transcaspia [Turkmenistan].

**Distribution in Iran:** Sistan-o Baluchestan (Hamzavi et al., 2019).
General distribution: Eastern (Iran - Hamzavi et al., 2019; Pakistan - Gusenleitner, 2006c; Turkmenistan - Morawitz, 1895) and Western (Turkey - Yildirim & Gusenleitner, 2012) Palaearctic.

_Stenodynerus xanthomelas_ (Herrich-Schäffer, 1839)

*Odynerus xanthomelas* Herrich-Schäffer, 1839: 13, ♂♀.

**Distribution in Iran:** No locality cited (Ebrahimi & Carpenter, 2008).

**General distribution:** Eastern (China, Iran) and Western (Caucasus, Europe, Russia, Turkey) Palaearctic (Fateryga, 2018).

Genus: _Symmorphus_ Wesmael, 1836

*Symmorphus* Wesmael, 1836: 45. Type species: _Odynerus elegans_ Wesmael, 1833. Designated by Richards, 1935.

_Symmorphus (Symmorphus) crassicornis_ (Panzer, 1798)

*Vespa crassicornis* Panzer, 1798: 53, ♀. – Austria.

**Distribution in Iran:** No locality cited (Ebrahimi & Carpenter, 2008).

**General distribution:** Oriental (India), Eastern (China, Iran, Kazakhstan; Kyrgyzstan - Cumming, 1989; Mongolia; Tajikistan- Cumming, 1989) and Western (Caucasus, Europe, Russia, Turkey) Palaearctic (Fateryga, 2018).

_Symmorphus (Symmorphus) gracilis_ (Brullé, 1832)

*Odynerus gracilis* Brullé 1832: 362, ♂. – forêt de Koubeh [Greece].

**Distribution in Iran:** No locality cited (Ebrahimi & Carpenter, 2008).

**General distribution:** Eastern (Iran, Kazakhstan, Tajikistan, Turkmenistan) and Western (Caucasus, Europe, Israel, Lebanon, Russia, Syria, Turkey) Palaearctic (Fateryga, 2018), Oriental (India - Cumming, 1989).

_Symmorphus (Symmorphus) murarius_ (Linnaeus, 1758)

*Vespa muraria* Linnaeus, 1758: 573, ♀. – Insecten von Deutschland.

**Distribution in Iran:** No locality cited (Ebrahimi & Carpenter, 2008).

**General distribution:** Eastern (Iran, Kazakhstan, Korea, Russia) and Western (Caucasus, Europe, North Africa, Russia, Turkey) Palaearctic (Fateryga, 2018).

Genus: _Syneuodynerus_ Blüthgen, 1951

*Syneuodynerus* Blüthgen, 1951: 67. Type species: _Odynerus egregius_ Herrich-Schäffer, 1839, by original designation.

_Syneuodynerus egregius_ (Herrich-Schäffer, 1839)

*Odynerus egregius* Herrich-Schäffer, 1839: 10, ♀. – Spain.

**Distribution in Iran:** Hormozgan (Gusenleitner, 1997b).

**General distribution:** Eastern (Iran, Turkmenistan) and Western (Caucasus, Cyprus, Europe, Israel, Jordan, North Africa, Russia, Syria, Turkey) Palaearctic (Fateryga, 2018).

**Remarks:** The occurrence of this species in Iran was indicated by the subspecies _Syneuodynerus egregius egregior_ Gusenleitner, 1970 (Gusenleitner, 1997b).
Genus: *Tachyancistrocerus* Giordani Soika, 1952

*Tachyancistrocerus* Soika, 1952: 37. Type species: *Odynerus rhodensis* Saussure, 1855, by original designation.

*Tachyancistrocerus komarowi* (Morawitz, 1885)

*Ancistrocerus komarowi* Morawitz, 1885: 175, ♀. – Territorio transcaspico. Asschabad [Ashkhabad, Turkmenistan].

**Distribution in Iran:** Bushehr (du Buysson, 1912; Giordani Soika, 1943), Fars, Khuzestan (Giordani Soika, 1970), Kerman (Pashaei Rad et al., 2010).

**General distribution:** Afrotropical (Oman), Eastern (Afghanistan, Iran, Kazakhst, Pakistan, Turkmenistan) and Western (Turkey) Palaearctic (Gusenleitner, 2006c).

**Remarks:** This species has been recorded from Iran as *Odynerus komarowi* Morawitz, 1885 (du Buysson, 1912) and as *Pseudonortonia bushirensis* Giordani Soika, 1943 (Giordani Soika, 1943).

*Tachyancistrocerus pallidenotatus* Giordani Soika, 1970

*Tachyancistrocerus pallidenotatus* Giordani Soika, 1970: 90, ♀. – Iran.

**Distribution in Iran:** Fars (Giordani Soika, 1970).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 2013).

*Tachyancistrocerus quabosi* Giordani Soika, 1979

*Tachyancistrocerus quabosi* Giordani Soika, 1979: 278.

**Distribution in Iran:** Sistan-o Baluchestan (Hamzavi et al., 2019).

**General distribution:** Afrotropical (Oman, UAE - Gusenleitner, 2013), Eastern Palaearctic (Iran - Hamzavi et al., 2019).

*Tachyancistrocerus schmidti* (Kokujev, 1913)

*Odynerus (Ancistrocerus) schmidti* Kokujev, 1913: 4, ♀. – Caucasus (Geok-tapa) [Azerbaijan].

**Distribution in Iran:** Alborz, Khorasan-e Razavi, Tehran (Giordani Soika, 1970).

**General distribution:** Eastern (Afghanistan, Iran, Kyrgyzstan, Turkmenistan, Uzbekistan) and Western (Armenia, Azerbaijan, Russia, Turkey) Palaearctic (Fatyryga & Mokrousov, 2019).

Subfamily: Masarinae Latreille, 1802

Genus: *Celonites* Latreille, 1802

*Celonites* Latreille, 1802: 368. Type species: *Masaris apiformis* Fabricius, 1793 (= *Vespa abbreviata* Villers, 1789), by monotypy.

*Celonites clarus* Gusenleitner, 1973

*Celonites clarus* Gusenleitner, 1973: 60, 66, ♀. – Iran.

**Distribution in Iran:** Tehran (Gusenleitner, 1973b).

**General distribution:** Eastern Palaearctic (Iran) (Gusenleitner, 1973b; Carpenter, 2001).

*Celonites crenulatus* Morawitz, 1888

*Celonites crenulatus* Morawitz, 1888: 267, ♀. – Territorio transcaspico Kiltitschin [Iran].

**Distribution in Iran:** No locality cited (Morawitz, 1888).

**General distribution:** Eastern Palaearctic (Iran, Turkmenistan) (Carpenter, 2001).
**Celonites cyprius** de Saussure, 1854  
*Celonites cyprius* de Saussure, 1854: 4, ♂. – Cyprus.  
**Distribution in Iran:** Alborz, Fars, Khorasan-e Razavi ([*Gusenleitner*, 1973b]), Tehran ([*Ebrahimii & Carpenter*, 2008]).  
**General distribution:** Eastern (Iran) and Western (Armenia, Cyprus, Greece, Israel, Lebanon, Syria, Turkey) Palaearctic ([*Carpenter*, 2001]).  
**Remarks:** The subspecies *Celonites cyprius smyrnensis* Richards, 1962 has been recorded from Iran ([*Gusenleitner*, 1973b]; *Ebrahimii & Carpenter*, 2008).  

**Celonites discretus** Gusenleitner, 1973  
*Celonites discretus* Gusenleitner, 1973: 62, ♀. – Iran.  
**Distribution in Iran:** Fars ([*Gusenleitner*, 1973b]).  
**General distribution:** Eastern Palaearctic (Iran) ([*Carpenter*, 2001]).  

**Celonites iranus** Gusenleitner, 2018  
*Celonites iranus* Gusenleitner, 2018: 306, ♀. – Iran.  
**Distribution in Iran:** Kerman ([*Gusenleitner*, 2018]).  
**General distribution:** Eastern Palaearctic (Iran) ([*Gusenleitner*, 2018]).  

**Celonites jousseaumei** du Buysson, 1906  
*Celonites jousseaumei* du Buysson, 1906: 104, ♂ ♂. – Obock [Djibouti].  
**Distribution in Iran:** Hormozgan ([*Ebrahimii & Carpenter*, 2008]).  
**General distribution:** Afrotropical (Djibouti, Mali, Oman, Qatar, Senegal, Sudan, Saudi Arabia, UAE, Yemen), Eastern (Iran - *Ebrahimii & Carpenter*, 2008) and Western (Algeria, Israel) Palaearctic ([*Carpenter*, 2001]).  

**Celonites longipilis** Gusenleitner, 1973  
*Celonites longipilis* Gusenleitner, 1973: 59, ♀. – Iran.  
**Distribution in Iran:** Fars ([*Gusenleitner*, 1973b]).  
**General distribution:** Eastern Palaearctic (Iran) ([*Gusenleitner*, 1973b]; *Carpenter*, 2001).  

**Celonites persicus** Richards, 1962  
*Celonites persicus* Richards, 1962: 241, ♀. – Iran.  
**Distribution in Iran:** Khuzestan ([*Richards*, 1962]).  
**General distribution:** Eastern Palaearctic (Iran) ([*Richards*, 1962]; *Carpenter*, 2001).  

**Celonites pictus** Richards, 1962  
*Celonites pictus* Richards, 1962: 226, ♂. – Senegal.  
**Distribution in Iran:** Hormozgan ([*Gusenleitner*, 1992]).  
**General distribution:** Afrotropical (Oman, Saudi Arabia, Senegal), Eastern (Iran) and Western (Morocco) Palaearctic ([*Carpenter*, 2001]).  
**Remarks:** The subspecies *Celonites pictus rufiventris* Gusenleitner, 1992 was described from Iran ([*Gusenleitner*, 1992]).  

**Celonites rothschildi** du Buysson, 1906  
*Celonites rothschildi* du Buysson, 1906: 105, ♂. – Afrique orientale anglaise: Lesammise, Rendile [Kenya].
Distribution in Iran: Isfahan (Gusenleitner, 1992).
General distribution: Afrotropical (Kenya), Eastern Palaearctic (Iran) (Carpenter, 2001).

*Celonites semenovi* Kostylev, 1935
*Celonites* (*Eucelonites*) *semenovi* Kostylev, 1935: 112 - Persia [Iran].
Distribution in Iran: No locality cited (Kostylev, 1935).
General distribution: Eastern Palaearctic (Iran) (Kostylev, 1935; Carpenter, 2001).

*Celonites tauricus* Kostylev, 1935
*Celonites* (*Celonites*) *abbreviatus tauricus* Kostylev, 1935: 108, ♂. – [Crimea].
Distribution in Iran: Alborz (Mauss et al., 2016).
General distribution: Eastern (Iran) and Western (Armenia, Azerbaijan, Cyprus, Europe, Russia, Syria, Turkey) Palaearctic (Fateryga, 2018).

**Genus: Ceramius** Latreille, 1810
*Ceramius* Latreille, 1810: 329,438. Type species: *Ceramius fonscolombei* Latreille, 1810, by original designation.

*Ceramius caucasicus* André, 1884
*Ceramius caucasicus* André, 1884: 820, ♂. – Caucas [Armenia].
Distribution in Iran: Alborz (Gusenleitner, 1973b), East Azarbaijan (Ebrahimi & Carpenter, 2008).
General distribution: Eastern (Iran - Gusenleitner, 1973b) and Western (Armenia, Turkey) Palaearctic (Carpenter, 2001).

**Genus: Jugurtia** de Saussure, 1854
*Jugurtia* de Saussure, July 1854: 19, 37, 42–44. Type species: *Celonites oraniensis* Lepeletier, 1841, by subsequent designation of Ashmead, 1902.

*Jugurtia escalerae* Meade-Waldo, 1910
*Jugurtia escalerae* Meade-Waldo, 1910: 33, ♂. – Iran.
Distribution in Iran: Khuzestan (Meade-Waldo 1910), Kordestan (Ebrahimi & Carpenter, 2008), Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970).
General distribution: Eastern (Iran) and Western (Turkey) Palaeartic (Carpenter, 2001).

*Jugurtia eurycura* Kostylev, 1935
*Jugurtia eurycura* Kostylev, 1935: 94, ♂♂. – Caucasus.
Distribution in Iran: Alborz (Gusenleitner, 1973b), Markazi (Ebrahimi & Carpenter, 2008).
General distribution: Eastern (Iran) and Western (Armenia, Turkey) Palaeartic (Carpenter, 2001).

*Jugurtia irana* Kostylev, 1935
*Jugurtia irana* Kostylev, 1935: 94, ♂♂. – Iran.
Distribution in Iran: Alborz (Gusenleitner, 1973b), Khorasan, Sistan-o Baluchestan (Kostylev, 1935).
General distribution: Eastern Palaeartic (Iran) (Carpenter, 2001).
Jugurtia zarudnyi Kostylev, 1935
Jugurtia zarudnyi Kostylev, 1935: 93, ♂, ♀. – Iran.
Distribution in Iran: Hormozgan (Gusenleitner, 1973b, 1992), Kerman, Khorasan (Kostylev, 1935).
General distribution: Eastern Palaearctic (Iran) (Carpenter, 2001).

Genus: Masaris Fabricius, 1793

Masaris Fabricius, 1793: 6, 283, 284. Type species: Masaris vespiformis Fabricius, 1793, by subsequent monotypy.

Masaris agnolii Selis, 2019
Masaris agnolii Selis, 2019: 395, ♂. – Iran.
Distribution in Iran: Charmahal-o Bakhtiari (Selis, 2019).
General distribution: Eastern Palaearctic (Iran) (Selis, 2019).

Masaris carli von Schulthess, 1922
Masaris carli von Schulthess, 1922: 404.
Distribution in Iran: Fars (Gusenleitner, 1992, 2002).
General distribution: Eastern Palaearctic (Iran, Kazakhstani, Uzbekistan) (Carpenter, 2001).

Genus: Quartinia André, 1884

Quartinia André, 1884: 811, 822. Type species: Quartinia diletta André, by monotypy.

Quartinia araxana Giordani Soika, 1960
Quartinia araxana Giordani Soika, 1960: 133, ♂, ♀. – Caucaso.
Distribution in Iran: Alborz (Gusenleitner, 1985a).
General distribution: Eastern (Iran) and Western (Armenia, Turkey) Palaearctic (Carpenter, 2001).

Quartinia atrata Gusenleitner, 1998
Quartinia atrata Gusenleitner, 1998: 503, ♂. – Iran.
Distribution in Iran: Fars (Gusenleitner, 1998c).
General distribution: Eastern Palaearctic (Iran) (Carpenter, 2001).

Quartinia irana Gusenleitner, 2012
Quartinia irana, Gusenleitner, 2012: 319, ♂. – Iran.
Distribution in Iran: Markazi (Gusenleitner, 2012b).
General distribution: Eastern Palaearctic (Iran) (Gusenleitner, 2012b).

Quartinia soikai Richards, 1964 [1962]
Quartinia soikai Richards, 1964 (1962): 84, ♂. – Turkey.
Distribution in Iran: Alborz (Gusenleitner, 1973b).
General distribution: Eastern (Iran) and Western (Greece, Turkey) Palaearctic (Carpenter, 2001).
Quartinia syriaca Richards, 1964 (1962)
Quartinia syriaca Richards, 1964 (1962): ♂ ♂. – Syria.

Distribution in Iran: Fars (Gusenleitner, 1973b).
General distribution: Eastern (Iran) and Western (Lebanon, Syria) Palaearctic (Carpenter, 2001).
Remarks: The subspecies Quartinia syriaca nitens Gusenleitner, 1973 was described from Iran (Gusenleitner, 1973b).

Subfamily Polistinae Latreille, 1802
Genus: Parapolybia de Saussure, 1854

Parapolybia de Saussure, 1854: 207. Type species: Polybia (Parapolybia) indica Saussure, 1854, by subsequent designation of Bingham, 1897.

Parapolybia escalerae (Meade-Waldo, 1911)
Polybia escalerae Meade-Waldo, 1911: 109, ♀. – Iran.
Distribution in Iran: Bushehr, Kerman, Lorestan (Ebrahimi & Carpenter, 2008), Khuzestan (Meade-Waldo, 1911).
General distribution: Eastern (Iran, Pakistan) and Western Palaearctic (Turkey) (Yildirim & Kojima, 1999).

Parapolybia persica (Meade-Waldo, 1911)
Polybia persica Meade-Waldo, 1911: 108, ♀. – Iran.
Distribution in Iran: Khuzestan (Meade-Waldo, 1911).
General distribution: Eastern Palaearctic (Iran) (Kojima & Carpenter, 1997).

Genus: Polistes Latreille, 1802

Polistes Latreille, 1802, 363. Type species: Vespa gallica Linnaeus, 1767, by subsequent designation of Latreille, 1810.

Polistes (Gyrostoma) olivaceus (De Geer, 1773)
Vespa olivacea De Geer, 1773: 582.
Distribution in Iran: Hormozgan (Khoobdel et al., 2014).
General distribution: Afrotropical (Madagascar, Mauritius, Oman, Réunion, Tanzania), Asutralasian (Australia - exotic), Eastern Palaearctic (Afghanistan, Iran, Japan (?), Pakistan), Neotropical (Chile - exotic), Oceanic (Fiji, French Polynesia, Hawaii - exotic, Marquesas, Marianas, New Zealand - exotic, Samoa, Tonga, Tuamotu Archipelago, New Caledonia), Oriental (Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Vietnam), Western Palaearctic (Egypt) (Carpenter, 1996).

Polistes (Gyrostoma) rothneyi Cameron, 1900
Polistes rothneyi Cameron, 1900: 410, ♂. – Barrackpore, Bengal (Rothney).
Distribution in Iran: Kerman (Nematy et al., 2016).
General distribution: Eastern Palaearctic (Iran - Nematy et al., 2016), Oriental (India, Nepal) (Carpenter, 1996).
**Polistes (Gyrostoma) wattii Cameron, 1900**
*Polistes wattii* Cameron, 1900: 416, ♀. – Bengal.

**Distribution in Iran:** Bushehr, Fars, Ilam, Kermanshah, (Ebrahimi & Carpenter, 2008), Hormozgan (Blüthgen & Gusenleitner, 1970; Guiglia, 1976; Ebrahimi & Carpenter, 2008), Kerman (Ebrahimi & Carpenter, 2008; Pashaei Rad et al., 2010), Khuzestan, Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970; Ebrahimi & Carpenter, 2008).

**General distribution:** Afrotropical (Mauritius, Oman, Saudi Arabia, UAE), Oriental (India), Eastern (Afghanistan, China, Iran, Pakistan; Tajikistan, Turkmenistan - Castro & Dvořák, 2010) and Western (Iraq) Palaearctic (Carpenter, 1996).

**Remarks:** This species has been recorded from Iran as *Polistes (Megapolistes) wattii* Cameron, 1900 (Blüthgen & Gusenleitner, 1970).

**Polistes (Polistes) associus Kohl, 1898**
*Polistes associus* Kohl, 1889: 89, ♂. – Poros [Greece].

**Distribution in Iran:** Guilan (Castro & Dvořák, 2010).

**General distribution:** Oriental (India ?), Eastern (China (?); Iran, Pakistan, Tajikistan) and Western (Azerbaijan, Europe, Israel, Russia, Turkey) Palaearctic (Antropov & Fateryga, 2017).

**Polistes (Polistes) atrimandibularis Zimmermann, 1930**
*Polistes atrimandibularis* Zimmermann, 1930: 611, ♂. – Toblach, [Italy].

**Distribution in Iran:** No locality cited (Carpenter, 1996).

**General distribution:** Eastern (Iran) and Western (Armenia, Europe, Egypt, Russia (Antropov & Fateryga, 2017), Turkey) Palaearctic (Carpenter, 1996).

**Polistes (Polistes) biglumis (Linnaeus, 1758)**
*Vespa biglumis* Linnaeus, 1758: 573, ♀. – Europe.

**Distribution in Iran:** Semnan (Blüthgen & Gusenleitner, 1970).

**General distribution:** Oriental (India), Eastern (Iran, Kazakhstan, Kyrgyzstan, Korea, Mongolia, Pakistan, Turkmenistan) and Western (Caucasus, Europe, Iraq, Israel, North Africa, Syria, Russia, Turkey) Palaearctic (Antropov & Fateryga, 2017).

**Polistes (Polistes) bischoffi Weyrauch, 1937**
*Polistes bischoffi* Weyrauch, 1937: 274, ♂♀. – Italy.

**Distribution in Iran:** No locality cited (Antropov & Fateryga, 2017).

**General distribution:** Eastern (Iran, Kazakhstan, Mongolia) and Western (Europe, North Africa, Russia, Turkey) Palaearctic (Antropov & Fateryga, 2017).

**Remarks:** According to Neumeyer et al. (2015) this species might be *P. albellus* Giordani Soika, 1976.

**Polistes (Polistes) bucharensis Erichson, 1849**
*Polistes bucharensis* Erichson, 1849: 307, ♀. – Uzbekistan.

**Distribution in Iran:** Alborz, Khorasan-e Razavi (Guiglia, 1977), Fars (Guiglia, 1976, 1977), Golestan (Weyrauch, 1939), Kordestan, Markazi (Ebrahimi & Carpenter, 2008), South Khorasan (Blüthgen & Gusenleitner, 1970), Tehran (Blüthgen & Gusenleitner, 1970; Guiglia, 1977), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).
**General distribution:** Eastern (China, Iran, Mongolia, Uzbekistan) and Western (Azerbaijan, Cyprus, Egypt, Greece, Israel, Turkey) Palaearctic (Schmid-Egger et al., 2017).

**Remarks:** This species has been recorded from Iran as *Polistes iranus* Guiglia, 1976 (Guiglia, 1976, 1977; Abbasi et al., 2008; Pashaei Rad et al., 2010), as *Polistes gallica* var. *ornata* Weyrauch, 1938, as *Polistes (Polistes) dominulus bucharensis* Erichson, 1849 (Abbasi et al., 2008; Pashaei Rad et al., 2010) and as *Polistes galicus bucharensis* Erichson, 1849 (Blüthgen & Giesenleitner, 1970).

*Polistes (Polistes) chinensis* (Fabricius, 1793)

*Vespa chinensis* Fabricius 1793: 261.

**Distribution in Iran:** No locality cited (Antropov & Fateryga, 2017).

**General distribution:** Oceania (New Zealand – exotic), Eastern (China, Iran, Japan, Kazakhstan, Korea, Mongolia, Russia) and Western (Russia, Turkey) Palaearctic (Antropov & Fateryga, 2017).

*Polistes (Polistes) dominula* (Christ, 1791)

*Vespa dominula* Christ, 1791: 229, ♀♂. – Germany.

**Distribution in Iran:** East Azarbaijan, Kordestan, Markazi (Ebrahimi & Carpenter, 2008).

**General distribution:** Afrotropical (Benin – exotic, Ethiopia, South Africa – exotic), Australasian (Australia – exotic), Nearctic (Canada – exotic, U.S.A – exotic), Neotropical (Chile – exotic), Oriental (India), Eastern (Afghanistan, Caucasus, central Asia, Iran, Mongolia, Pakistan, Russia) and Western (Europe, North Africa, Russia, Syria, Turkey) Palaearctic (Carpenter, 1996).

*Polistes (Polistes) foederata* Kohl, 1898

*Polistes foederata* Kohl, 1898: 90, ♂. – Helenendorf [Azerbaijan].

**Distribution in Iran:** Mazandaran (Guiglia, 1976).

**General distribution:** Eastern (Iran - Guiglia, 1976) and Western (Caucasus (Guiglia, 1976), Azerbaijan, Europe, Turkey) Palaearctic (Schmid-Egger et al., 2017).

**Remarks:** This species has been recorded from Iran as *Polistes (Leptopolistes) foederatus* Kohl (Guiglia, 1976).

*Polistes (Polistes) galicus* (Linnaeus, 1767)

*Vespa gallica* Linnaeus, 1767: 949, Holotype ♂. – Europa australi [S Europe].

**Distribution in Iran:** Ardabil, East Azarbaijan, Fars, Golestan, Guilan, Hamadan, Hormozgan, Ilam, Isfahan, Kerman, Khuzestan, Kohgiloyeh-va Boyerahmad, Lorestan, Markazi, North Khorasan, Qom, (Ebrahimi & Carpenter, 2008), Kermanshah, Kordestan (du Buysson, 1912; Ebrahimi & Carpenter, 2008), Khorasan-e Razavi (Blüthgen & Giesenleitner, 1970; Ebrahimi & Carpenter, 2008), Mazandaran (Guiglia, 1976, 1977; Ebrahimi & Carpenter, 2008), Sistan-o Baluchestan (Blüthgen & Giesenleitner, 1970; Ebrahimi & Carpenter, 2008), South Khorasan (Blüthgen & Giesenleitner, 1970 ), Tehran ( Ebrahimi & Carpenter, 2008 ), Zanjan (Abbasi et al., 2008), Various regions (Esmaili & Rastegar, 1974; Pashaei Rad et al., 2010): No locality cited (Morice, 1921).

**General distribution:** Afrotropical (Ethiopia), Eastern (Afghanistan, China, Iran, Mongolia) and Western (Armenia, Azerbaijan, Europe, Israel, North Africa, Russia, Turkey, Turkmenistan, Ukraine) Palaearctic (Carpenter, 1996).
Remarks: According to Schmid-Egger et al. (2017) this species might be P. mongolicus du Buysson, 1911 in part. This species was recorded from Iran as Polistes (Leptopolistes) omissus Weyr, 1939 (Blüthgen & Gusenleitner, 1970; Guiglia, 1976) and as Polistes gallica (Linnaeus, 1767) (Esmaili & Rastegar, 1974) from Iran.

Polistes (Polistes) indicus Stolfa, 1934
Polistes indicus Stolfa, 1934: 47, ♂♂. – Pakistan.

Distribution in Iran: Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970).
General distribution: Afrotropical (Oman, UAE), Eastern (Afghanistan, Iran, Pakistan), and Western (Iraq) Palaearctic (Siddiqui et al., 2015).
Remarks: This species has been recorded from Iran as Polistes (Leptopolistes) indicus Stolfa, 1934 (Blüthgen & Gusenleitner, 1970).

Polistes (Polistes) nimpha (Christ, 1791)
Vespa nimpha Christ, 1791: 232, ♂♀. – Kronberg, Taunus [Germany].

Distribution in Iran: Guilan, Tehran (Blüthgen & Gusenleitner, 1970), Mazandaran (Ebrahimi & Carpenter, 2008), Zanjan (Abbasi et al., 2008; Pashaei Rad et al., 2010).
General distribution: Oriental (India), Eastern (central Asia, China, Iran, Mongolia, Pakistan) and Western (Europe, Caucasus, Iraq, Israel, Madeiras, North Africa, Turkey) Palaearctic (Carpenter, 1996).
Remarks: The occurrence of this species in Iran was indicated by the subspecies Polistes nimpha irakensis Gusenleitner, 1976 (Abbasi et al., 2008; Pashaei Rad et al., 2010).

Polistes (Polistes) semenowi Morawitz, 1889
Polistes semenowi Morawitz, 1889: 552, syntypes ♂♀. – Turkmenistan.

Distribution in Iran: Tehran (Ebrahimi & Carpenter, 2008), Mazandaran (Guiglia, 1976; Ebrahimi & Carpenter, 2008).
General distribution: Eastern (Iran, Turkmenistan) and Western (Caucasus, Europe; Israel - Castro & Dvořák, 2009; North Africa, Russia, Turkey) Palaearctic (Carpenter, 1996).
Remarks: This species has been recorded from Iran as Sulcopolistes semenowi (Morawitz, 1889) (Guiglia, 1976) and as Polistes sulcifer Zimmermann, 1930 (Ebrahimi & Carpenter, 2008).

Polistes sp.
Distribution in Iran: No locality cited (Esmaili & Rastegar, 1974).

Subfamily: Vespinae Latreille, 1802
Genus: Dolichovespula Rohwer, 1916

Dolichovespula Rohwer, 1916: 642. Type species: Vespa maculata Linnaeus, 1763, by original designation.

Dolichovespula omissa (Bischoff, 1931)
Vespa omissa Bischoff, 1931: 6, ♂♀. – Germany.

Distribution in Iran: Tehran (Dvořák et al., 2012).
General distribution: Eastern (Iran) and Western (Europe, Russia, Turkey) Palaearctic (Carpenter & Kojima, 1997).
Dolichovespula sylvestris (Scopoli, 1763)
Vespa sylvestris Scopoli, 1763: 309 - Slovenia.

Distribution in Iran: East Azerbaijan (Ebrahimi & Carpenter, 2008), Golestan (Dvořák et al., 2012), Guilan, Khuzestan (Archer, 1981), Kohgiloyeh-va Boyerahmad (Castro & Dvořák, 2009), Mazandaran (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Tehran (Archer, 1981; Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), West Azerbaijan (Blüthgen & Gusenleitner, 1970; Archer, 1981); No locality cited (Birula, 1930).

General distribution: Oriental (India), Eastern (Afghanistan, central Asia, China, Iran, Mongolia, Pakistan) and Western (Armenia, Europe, Russia, Turkey) Palaeartic (Carpenter & Kojima, 1997).

Remarks: This species has been recorded from Iran as Dolichovespula sylvestris sumptuosa (du Buysson, 1905) (Birula 1930; Blüthgen & Gusenleitner, 1970; Archer, 1981).

Genus: Vespa Linnaeus, 1758

Vespa Linnaeus, 1758: 343, 572. Type species: “Vespa crabro, Fab.” [= Vespa crabro Linnaeus,1758], by subsequent designation of Latreille, 1810.

Vespa crabro Linnaeus, 1758
Vespa crabro Linnaeus, 1758: 572. “in Europae” (holotype ♀. – Linnaean Society, London).

Distribution in Iran: Golestan (Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), Guilan (Perez, 1910; Morice, 1921; Ebrahimi & Carpenter, 2008), Ilam (Dvořák et al., 2012), Mazandaran (Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), North of Iran (Esmaili & Rastegar, 1974).

General distribution: Eastern Palaeartic (China, Iran, Japan, Kazakhstan, Korea, Mongolia), Nearctic (North America - exotic), Neotropical (Guatemala - exotic), Oriental (Taiwan), Western Palaeartic (Caucasus, Europe, Russia, Turkey) (Carpenter & Kojima, 1997).

Remarks: This species has been recorded from Iran as Vespa crabro caspica Perez, 1910 (Perez, 1910; Esmaili & Rastegar, 1974).

Vespa orientalis Linnaeus, 1771
Vespa orientalis Linnaeus, 1771: 540. “Oriente” (holotype ♀. – Linnaean Society, London).

Distribution in Iran: Alborz (Guiglia, 1976, 1977), Ardabil (Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), Bushehr (Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), East Azerbaijan (Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012; Fars (Guiglia, 1976, 1977; Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), Golestan (Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), Guilan (Dvořák et al., 2012), Hamadan (Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), Hormozgan (Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012; Khoobdel et al., 2014), Ilam (Dvořák et al., 2012), Kerman (Blüthgen & Gusenleitner, 1970; Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), Kermanshah (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Khorasan-e Razavi (Guiglia, 1976, 1977; Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), Khuzestan (du Buysson, 1912; Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), Kohgiloyeh-va Boyerahmad (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Kordestan (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Lorestan (du Buysson, 1912; Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), Markazi (Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), Mazandaran (Dvořák et al., 2012),
North Khorasan (Blüthgen & Gusenleitner, 1970; Ebrahimi & Carpenter, 2008), Qazvin (Morie, 1921; Ebrahimi & Carpenter, 2008, 2012), Qom (Ebrahimi & Carpenter, 2008), Semnan (Dvořák et al., 2012), Sistan-o Baluchestan (Blüthgen & Gusenleitner, 1970; Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), South Khorasan (Dvořák et al., 2012), Tehran (du Buysson, 1912; Blüthgen & Gusenleitner, 1970; Ebrahimi & Carpenter, 2008, 2012; Dvořák et al., 2012), West Azerbaijan (Dvořák et al., 2012), Yazd (Dvořák et al., 2012), Zanjan (Abbasi et al., 2008; Ebrahimi & Carpenter, 2012; Dvořák et al., 2012), Different regions of Iran (Esmaili & Rastegar, 1974).

**General distribution:** Afrotropical (Bahrein, Ethiopia, Oman, Saudi Arabia, Somalia, UAE, Yemen; Madagascar – exotic), Oriental (India, Nepal), Eastern (Afghanistan, China, Iran, Pakistan, Tajikistan, Turkmenistan, Uzbekistan) and Western (Algeria, Cyprus, Egypt, Europe, Iraq, Israel, Jordan, Lebanon, Libya, Russia, Syria, Turkey) Palaearctic (Carpenter & Kojima, 1997).

**Remarks:** This species has been recorded from Iran as *Vespa orientalis aegyptiaca* André, 1884 (Morie, 1921).

**Genus: Vespula Thomson, 1869**

*Vespula* Thomson, 1869: 79. Type species: *Vespa austriaca* Panzer, 1799, by subsequent designation of Ashmead, 1902.

*Vespula germanica* (Fabricius, 1793)

*Vespa germanica* Fabricius 1793: 256. Type unknown; “Kiliae” (Germany).

**Distribution in Iran:** East Azerbaijan (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Fars (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Golestan (Dvořák et al., 2012), Guilan (Morie, 1921; Blüthgen & Gusenleitner, 1970; Dvořák et al., 2012), Hamadan (Dvořák et al., 2012), Hormozgan (Khoobdel et al., 2014), Isfahan (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Kerman (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Kermanshah (du Buysson, 1912; Morie, 1921; Dvořák et al., 2012), Khorasan-e Razavi (Guiglia, 1976, 1977; Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Khuzestan (Dvořák et al., 2012), Kohgiloyeh-va Boyerahmad (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Kordestan (du Buysson, 1912; Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Lorestan (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Markazi (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Mazandaran (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), North Khorasan (Blüthgen & Gusenleitner, 1970; Ebrahimi & Carpenter, 2008), Qazvin (Morie, 1921; Dvořák et al., 2012), Qom (Ebrahimi & Carpenter, 2008), Semnan (Dvořák et al., 2012), Sistan-o Baluchestan (Ebrahimi & Carpenter, 2008), South Khorasan (Morie, 1921; Blüthgen & Gusenleitner, 1970; Dvořák et al., 2012), Tehran (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), West Azerbaijan (Ebrahimi & Carpenter, 2008; Dvořák et al., 2012), Yazd (Dvořák et al., 2012), Zanjan (Abbasi et al., 2008; Dvořák et al., 2012), Different regions of Iran (Esmaili & Rastegar, 1974).

**General distribution:** Afrotropical (Ascension Island, South Africa – exotic), Asutralasian (Australia – exotic), Eastern Palaearctic (Afghanistan, China, Iran, Kazakhstan, Korea, Mongolia, Pakistan, Tajikistan, Turkmenistan, Uzbekistan), Nearctic (Canada and U.S.A. – exotic), Neotropical (Argentina and Chile – exotic), Oceanic (New Zealand – exotic), Oriental (India, Taiwan), Western Palaearctic (Algeria, Caucasus, Europe, Iceland – exotic, Israel, Morocco, Russia, Syria, Tunisia, Turkey) (Carpenter & Kojima, 1997).
Remarks: This species has been recorded from Iran as *Paravespula germanica* (Fabricius, 1793) (Blüthgen & Gusenleitner, 1970).

*Vespula vulgaris* (Linnaeus, 1758)
*Vespa vulgaris* Linnaeus, 1758: 572, Europa (lectotype ♀. – Linnaean Society, London).

**Distribution in Iran:** Khorasan-e Razavi (Dvořák et al., 2012), North Khorasan (Archer, 1989).

**General distribution:** Australasian (Australia - exotic), Neotropical (Argentina and Chile - exotic), Oceanic (French Polynesia and New Zealand - exotic), Oriental (India), Eastern (China, Iran, Japan, Kazakhstam, Kyrgyzstan, Korea, Mongolia) and Western (Europe, Georgia, Iceland - exotic, Russia, Turkey) Palaeartic (Carpenter & Kojima, 1997).

**Irrelevant records**
A few vespid species are recorded from Iran on the basis of specimens which have never gone through the relevant identification by the experts mentioned as co-authors. The masarine species listed by Abd-Rabou et al. (2005) are obviously elements of the Afrotropical region (Gess & Gess, 2010) or have restricted distribution areas in south-western Europe (Mauss & Castro, 2000, Mauss in litt. 2019), so that their occurrence in Iran is particularly unlikely. Considering the unreliable data that appeared in those publications, all the species records from these surveys are excluded from the fauna of Iran, until they may be found and confirmed in future reputable studies (Table 1).

**Discussion**
A total of 231 vespid species (235 species including unidentified taxa) belonging to 55 genera and 4 subfamilies are recorded from various parts of Iran. The subfamilies Eumeninae, Masarinae, Polistinae and Vespinae are represented by 184 species in 45 genera, 24 species in 5 genera, 17 species in 2 genera, and 6 species in 3 genera, respectively (Fig. 1). Two species, *Stenancistrocerus transcaspicus* (Kostylev, 1935) and *Pseudepipona tricolor* Gusenleitner, 1976 were originally described from the Transcaspien region (Farab) and from the Caucasus region (Russia: Dagestan), respectively. These species are listed in Gusenleitner (2013) as elements of the Iranian fauna. Since those areas are now separated from Iran the above mentioned species were also excluded from this checklist.

There are 48 species belonging to the following genera that are exclusively recorded from Iran. *Alastor* Lepeletier (4 species), *Ancistrocerus* Wesmael (1), *Anteipipona* de Saussure (2), *Chlorodynerus* Blüthgen (3), *Eumenes* Latreille (1), *Euodynerus* Dalla Torre (5), *Eustenancistrocerus* Blüthgen (4), *Extraepipona* Gusenleitner (1), *Hemipterochilus* Ferton (1), *Labochilus* Blüthgen (1), *Leptochilus* de Saussure (3), *Onychopterochelis* Blüthgen (1), *Paragynnomerus* Blüthgen (1), *Parodontodynerus* Blüthgen (1), *Pterocheilus* Klug (2), *Raphiglossa* S. S. Saunders (1), *Stenodynerus* de Saussure (1), *Tachyancistrocerus* Giordani Soika (1), *Pseudosymmorphus* Blüthgen (2), *Celenites* Latreille (6), *Jugurtia* de Saussure (2), *Masaris* Fabricius (1), *Quartinia* André (2) and *Parapolybia* de Saussure (1). Fifteen new species have been described during the time period 2000–2019 on the basis of the material collected from Iran, including *Eustenancistrocerus spinosissimus* Gusenleitner, 2000; *Labochilus orientalis* Gusenleitner, 2001; *Eumenes modestus* Gusenleitner, 2006; *Ancistrocerus tenebrosus* Gusenleitner, 2010; *Euodynerus amplus* Gusenleitner, 2011; *Stenodynerus cyrus* Gusenleitner, 2012; *Quartinia irana* Gusenleitner, 2012; *Pterocheilus persicus* Gusenleitner & Fallahzadeh, 2013; *Eustenancistrocerus iranicus* Gusenleitner, 2013; *Extraepipona occulta* Gusenleitner, 2014;
Leptochilus simurgh Gusenleitner, 2016; Celonites iranus Gusenleitner, 2018; Pseudosymmorphus angulatus Gusenleitner & Ockermüller, 2018; Pseudosymmorphus capillus Gusenleitner & Ockermüller, 2018 and Masaris agnolii Selis, 2019. None of these species are recorded from other countries yet.

The genera Euodynerus, Polistes and Eumenes are the most species-rich groups in the vespid fauna of Iran with 18, 15 and 12 species respectively (Fig. 2). On the other hand, some genera including Acanthodynerus Gusenleitner, Antodynerus de Saussure, Brachyodynerus Blüthgen, Brachypipona Gusenleitner, Cephalochilus Blüthgen, Cyphodynerus van der Vecht, Extraepipona Gusenleitner, Gymnomerus Blüthgen, Knemodynerus Blüthgen, Labochilus Blüthgen, Paraleptomenes Giordani Soika, Pseudodontodynerus Blüthgen, Stenancistrocerus de Saussure, Synovodynerus Blüthgen and Ceriamis Latreille are each represented by a single species in Iran. The monotypic genus, Extraepipona represented by Extraepipona occulta Gusenleitner is from Fars province in the South-central Iran. The main studies have been focused on the areas of South-east, North-central, South and North-central of the country (Blüthgen & Gusenleitner, 1970; Giordani Soika, 1970; Gusenleitner, 1973b; Ebrahim & Carpenter, 2008), represented by Sistan-o Baluchestan (26 genera, 42 species), Alborz (23 genera, 42 species), Fars (22, 39) and Tehran (16, 38) provinces, respectively. Some other provinces in the south-west (Khuzestan: 21, 34) and south-east (Kerman: 21, 31) were also explored considerably (Table 2). In his long series of taxonomic papers, Gusenleitner (1973b, 1985b, 1986b, 1995a, 1998c, 2000c, 2001, 2006a, 2010a, 2011a, 2012a, 2012b, 2014, 2016, 2018) described 20 new species from 10 provinces, mainly from south and south-eastern areas in Fars, Hormozgan and Kerman provinces, with 6, 4 and 3 new species, respectively. The provincial distribution for many species is unclear, since the locality data are not recorded properly, or local names were used. Some of these species were recovered by the subsequent studies which provide the locality data. Furthermore, there were not sufficient data to assign the (five) species (Kohl & Handlirsch, 1889; Kostylev, 1935; Gusenleitner, 1972) recorded from the former Khorasan province, until it was subdivided into three separate provinces in 2004: Khorasan-e Razavi, North Khorasan and South Khorasan.

More than 47 subspecies belonging mainly to the subfamily Eumeninae (43) (Fig. 1) are recorded from various regions of Iran (Blüthgen & Gusenleitner, 1970; Giordani Soika, 1970; Gusenleitner, 1972; Kurzenko, 1977; Gusenleitner, 2000b; 2004; Abbasi et al., 2008; Ebrahim & Carpenter, 2008; Gusenleitner, 2010a; Pashaei Rad et al., 2010; Gusenleitner, 2013). Some of these subspecies were later raised to separate species or synonymized (Kostylev, 1937, 1940; Giordani Soika, 1961; Blüthgen & Gusenleitner, 1970; Gusenleitner, 1972; Ebrahim & Carpenter, 2008). Further discussion about validity of these subspecies attributed to the knowledge about evolutionary patterns of the vespid lineages (Cumming, 1989; Carpenter, 2003). Additional investigations on both zoogeography and habitat preference, supplemented with molecular data are needed to define the taxonomic situation of these subspecies. A similar situation was also suggested for the sphecid fauna of Iran with many subspecies (Jahantigh et al., 2017). An overall analysis of the vespid fauna of Iran (Table 3) indicates the majority of species (77.1%) are distributed only in the (Eastern and Western) Palaeartic regions. The rest include the species that have a broader area of distribution, expanded into the Afrotropical Region, Oriental Region or both. A higher percentage of the species (11.3%) are found in Afrotropics compared to the Oriental Region (4.8%). There are few Palaeartic species that are found also in the Nearctic (1 species - Pseudepipona herrichii) or Neotropical region (1 species - Eumenes dubius).
**Table 1.** Irrelevant records of Vespidae species that should be excluded from the fauna of Iran.

| Excluded species                                      | References                          | General distribution*                                                   |
|--------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------|
| *Ceramius bicolor* (Thunberg, 1815)                    | Abd-Rabou et al., 2005              | Afrotropical                                                           |
| *Ceramius capicola* Brahms, 1902                       | Abd-Rabou et al., 2005              | Afrotropical                                                           |
| *Ceramius fonscolombei* Latreille, 1810                | Abd-Rabou et al., 2005              | Western Palaearctic (Atlanto-Mediterranean)                           |
| *Ceramius hispanicus* Dusmet, 1909                     | Abd-Rabou et al., 2005              | Western Palaearctic (Iberian)                                          |
| *Ceramius tuberculifer* de Saussure, 1853              | Abd-Rabou et al., 2005              | Western Palaearctic: (Atlanto-Mediterranean)                          |
| *Jugurtia braunsi* (Schulthess, 1922)                  | Abd-Rabou et al., 2005              | Afrotropical                                                           |
| *Masarina familiaris* Richards, 1962                   | Abd-Rabou et al., 2005              | Afrotropical                                                           |
| *Dolichovespula media* (Retzius, 1783)                 | Abd-Rabou et al., 2005; Sakenin et al., 2010b | Eastern and Western Palaearctic                                      |
| *Dolichovespula saxonica* (Fabricius, 1793)            | Abd-Rabou et al., 2005; Sakenin et al., 2010b | Eastern and Western Palaearctic                                      |
| *Vespula rufa* (Linnaeus, 1758)                        | Abd-Rabou et al., 2005; Sakenin et al., 2010a, 2010b | Eastern and Western Palaearctic, Oriental                             |

**Figure 1.** A comparison of the number of genera and species of four subfamilies of Vespidae in Iran.
Figure 2. Number of recorded species for the Vespidae genera in Iran. Genera with fewer than two species are excluded.

On the other hand, there are some species (*Polistes olivaceus, Polistes dominula, Vespula germanica*), that are widely distributed in various biogeographical regions both in the northern and southern Hemispheres. These species expanded their distribution through the association with human global transportation (*Liebert et al., 2006; Masciocchi & Corley, 2013; Hammer & Jensen, 2019*).
Table 2. Number of recorded genera and species of Vespidae from Iranian provinces.

| Locality (Provinces) | Area (km²) | Eumeninae | Masarinae | Polistinae | Vespinae | Total |
|----------------------|------------|-----------|-----------|------------|----------|-------|
|                      | Gen.* sp.* | Gen. sp. | Gen. sp. | Gen. sp. | Gen. sp. | Gen. sp. |
| Alborz               | 5.128      | 17 33     | 4 7       | 1 1 1     | 1 1 1    | 23 42 |
| Ardabil              | 179.02     | 2 2       | 0 0       | 1 1 1     | 1 1 1    | 4 5   |
| Bushehr              | 22.820     | 4 4       | 0 0       | 2 2 1     | 1 1 7    | 7 7   |
| Charmahal-o Bakhtiari| 16.305     | 0 0       | 1 1       | 0 0 0     | 0 0 1    | 1 1   |
| East Azerbaijan       | 45.757     | 10 17     | 1 1 1     | 1 2 3     | 3 3      | 15 24 |
| Fars                 | 122.779    | 16 27     | 3 7       | 1 3 2     | 2 2      | 22 39 |
| Golestan             | 20.206     | 3 5       | 0 0       | 1 2 3     | 4 7      | 11    |
| Guilan               | 14.086     | 4 4       | 0 0       | 1 1 3     | 1 3 4    | 8 11  |
| Hamadan              | 19.329     | 3 3       | 0 0       | 1 1 3     | 2 7      | 6     |
| Hormozgan            | 70.743     | 9 13      | 2 3       | 1 3 2     | 2 14     | 21    |
| Ilam                 | 20.023     | 1 1       | 0 0       | 1 2 1     | 2 3 5    |       |
| Isfahan              | 106.754    | 2 2       | 1 1 1     | 1 1 1     | 2 2 2     | 6 6   |
| Kerman               | 179.469    | 15 23     | 2 2       | 2 4 2     | 2 2      | 21 31 |
| Kermanshah           | 24.867     | 2 2       | 0 0       | 1 2 2     | 2 5      | 6     |
| Khorasan-e Razavi    | 127.223    | 6 10      | 1 1 1     | 1 2 3     | 3 10     | 16    |
| Khuzestan            | 63.928     | 14 25     | 2 2       | 2 4 3     | 3 21     | 34    |
| Kohgiloyeh-va Boyerahmad | 15.498 | 3 3       | 0 0       | 1 1 3     | 3 7 3    | 7     |
| Kordestan            | 29.048     | 3 6       | 1 1 1     | 1 3 2     | 2 2 7    | 12    |
| Lorestan             | 28.199     | 5 6       | 0 0       | 2 2 2     | 2 9      | 10    |
| Markazi              | 29.088     | 9 15      | 2 2       | 1 3 2     | 2 14     | 22    |
| Mazandaran           | 23.725     | 6 9       | 0 0       | 1 4 3     | 3 4      | 10    |
| North Khorasan       | 28.341     | 2 2       | 0 0       | 1 1 2     | 3 5      | 6     |
| Qazvin               | 15.559     | 4 4       | 0 0       | 0 0 2     | 2 2      | 6     |
| Qom                  | 11.514     | 1 1       | 0 0       | 1 1 2     | 2 4      | 4     |
| Semnan               | 97.193     | 5 5       | 0 0       | 1 1 2     | 2 8      | 8     |
| Sistan-o Baluchestan | 178.850    | 22 35     | 1 2       | 1 3 2     | 2 25     | 42    |
| South Khorasan       | 138.845    | 4 7       | 0 0       | 1 1 2     | 2 2 7    | 11    |
| Tehran               | 13.688     | 11 28     | 1 2       | 1 4 3     | 3 4      | 16    |
| West Azarbaijan      | 37.393     | 0 0       | 0 0       | 0 0 3     | 3 3 3    | 4     |
| Yazd                 | 73.551     | 1 1       | 0 0       | 0 0 2     | 2 3      | 3     |
| Zanjan               | 21.783     | 9 16      | 0 0       | 1 3 2     | 2 12     | 21    |

*Gen. = genus; **Sp. = species

Table 3. Biogeographical distribution of the vespid species in Iran.

| Area of distribution | No of species | Frequency (%) |
|----------------------|--------------|---------------|
| Palaeartic           | 178          | 77.1          |
| Palaeartic and Afro tropical | 26          | 11.3          |
| Palaeartic and Oriental | 11          | 4.8           |
| Palaeartic, Afro tropical and Oriental | 7          | 3             |
| Holarctic (Palaeartic and Nearctic) | 1          | 0.4           |
| Palaeartic and Neotropical | 1          | 0.4           |
While many areas remained unexplored, the known Vespidae of Iran indicate a rich fauna that needs further studies in different habitats. No comparison was done to determine the faunal similarity with the neighbouring countries, but the number of species (Turkey: 298 (species and subspecies) (Yildirim & Gusenleitner, 2012), Russia: 197 (Antropov & Fateryga, 2017), Pakistan: 79 (Rafi et al., 2017)) indicates a moderately well developed knowledge about the vespid fauna of Iran.

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Conflict of Interests
The authors declare that there is no conflict of interest regarding the publication of this paper.

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فهرست به‌روز زنبورهای خانواده (Hymenoptera) Vespidae در ایران

زهرا رحمانی، احسان رخشانی و جیمز مایکل کارپنتر

1 گروه گیاه‌پزشکی، دانشکده کشاورزی، دانشگاه زابل، زابل، ایران.
2 موزه تاریخ طبیعی، بخش جانورشناسی بی‌مهرگان، نیویورک، آمریکا.
3 پست الکترونیکی نویسنده مسئول مکاتبات: rakhshani@uoz.ac.ir

چکیده: ۱۲۳ گونه از بالغ‌شانسیان خانواده (Hymenoptera, Vespidae) Vespidae ایران متعلق به ۵۵ جنس و چهار زیرخانواده شامل Eumeninae (۴۵ جنس، ۴۵ گونه)، Vespinae (۴ جنس، ۵۴ گونه) و Polistinae (۴ جنس، ۲۴ گونه) و Masarinae (۵ جنس، ۱۴ گونه) فهرست شدند. ارزیابی کلی از الگوی پراکنش گونه‌های این خانواده در ایران، نشان دهنده تعداد مرکب مستقل از مناطق بی‌جغرافیایی مختل است. ۱۱۱ گونه در هر دو منطقه شرق و غرب پالارکتیک یافت شدند، در حالی که ۵۲ گونه تنها در منطقه شرق پالارکتیک اندازه دادند. تعداد اندازی از گونه‌ها (۱۴ گونه، ۱/۶%) متعلق به جنس‌های مختلف در نواحی مرکزی و غربی آسیا پراکنش داشته و گزارشی از حضور آنها در اروپا (غرب پالارکتیک) و خاور دور وجود ندارد. گونه‌های که در هر دو منطقه اورینتال و آفریقاییک یافت شدند، به ترتیب ۱۱/۷ و ۱۵/۶ درصد از فن زنبورهای وسیع‌تر ایران را شامل می‌شوند. گونه‌های متعددی (۴۸/۰۸، ۱/۴۸) منحصر به ایران را ارائه داده و هنوز هیچ گزارشی از پراکنش این گونه‌ها در سایر کشورها ثبت نشده است. بیشترین تعداد گونه‌ها به ترتیب از استان‌های سیستان و بلوچستان (۴۲ گونه، ۱۸/۲٪)، فارس (۳۶ گونه، ۱۶/۳٪)، البرز (۴۴ گونه، ۱۸/۲٪) و تهران (۳۸ گونه، ۱۶/۳٪) به عنوان مناطق شاخص از جنوب شرق و بخش‌های مرکزی شمال و جنوب کشور گزارش شده‌اند.

واژگان کلیدی: کاتالوگ، پراکنش، زنبورهای سرخ، زنبورهای کوزه‌گر، زنبورهای کاغذساز،
زنبورهای گره‌خوار، زنبورهای زرد
Authors' Brief Biographical Notes

Zahra Rahmani (Ph.D. Candidate)

Department of Plant Protection, College of Agriculture, University of Zabol, P.O. Box 98615-538, I.R. Iran;

E-mail: zahrarahmani@uoz.ac.ir

Senior author is a Ph.D. candidate who has started her project on Taxonomy of Vespidae, then focused on a revisional works on parasitic hymenopetra of the family Pteromalidae (Chalcidoidea). She published many papers from her Ph.D. thesis, to be continued until finalization of the project.

https://www.researchgate.net/profile/Zahra_Rahmani16

Ehsan Rakhshani (Ph.D.)

Department of Plant Protection, College of Agriculture, University of Zabol, P.O. Box 98615-538, I.R. Iran;

E-mail: rakhshani@uoz.ac.ir

Iranian entomologist, who works on Taxonomy of Hymenoptera, especially on parasitic wasps of the family Braconidae and recently on Aculeata in Eastern parts of Iran. He is the author and co-author of more than 200 journal papers, jointly published with researchers from about 30 countries.

https://www.researchgate.net/profile/Ehsan_Rakhshani

James Michael Carpenter (Ph.D.)

Division of Invertebrate Zoology, American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024, USA;

E-mail: carpente@amnh.org

He is the Peter J. Solomon Family Curator, Chair of the Division of Invertebrate Zoology and Professor in the Richard Gilder Graduate School of the American Museum of Natural History. He is the author of more than 250 scientific publications, and has been publishing on Vespidae for four decades including many joint papers with Iranian researchers.

https://www.researchgate.net/profile/James_Carpenter3