

A Checklist of Dryinidae (Hymenoptera: Chrysidoidea) of the Middle East

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ABSTRACT

An updated checklist of the Middle Eastern species of Dryinidae (Hymenoptera: Chrysidoidea) is provided, with emphasis on the fauna of Iran. The data presented here are based on a review of the existing literature by the authors. The list includes 82 valid species in 11 genera and five subfamilies: Anteoninae (three genera, 21 species), Aphelopinae (one genus, eight species), Bocchinae (three genera, seven species), Dryininae (one genus, 15 species), and Gonatopodinae (three genera, 31 species). Fifteen species are endemic to the Middle Eastern region.

Keywords: Species diversity, Anteoninae, Aphelopinae, Bocchinae, Dryininae, Gonatopodinae, distribution, Middle East.

INTRODUCTION

The Dryinidae Haliday, 1833 (Hymenoptera: Chrysidoidea) commonly known as pincer wasps, is an ancient family of small-size wasps (about 2.0–13 mm). This cosmopolitan group of Aculeata are present in every continent, except for Antarctica. Anteoninae may be best represented in temperate climates, while Dryinidae more in the tropics (Olmí, 1984; 1994; 2020). The family currently comprises 1886 species, of which 76 are fossils, in 52 genera (13 fossil) and 16 subfamilies (Olmí & Xu, 2015; Tribull, 2015; Barthélémy & Olmí, 2019; Olmí, Copeland, & van Noort, 2019; Olmí et al, 2021). The family Dryinidae is considered to be the sister-group of the Embolemidae (Olmí, 1999; van Achterberg & van Kats, 2000).

Adults are usually mainly black, but often testaceous extremities and bright red, yellow or white markings. They are characterized by the following combination of characters: 10-segmented antennae inserted on a flat or concave surface below the middle of the head, toruli distant from the aboral margin of the clypeus by less than their own width; head, when seen in lateral view, concave or slightly convex anteriorly (Olmí et al, 2019); pronotum with anterior flange, thus concealing the propleuron in dorsal view; pronotum with posterolateral apex either well separated from the tegula or touching it (Goulet & Huber, 1993). Sexual dimorphism is moderate to extreme: males have wings (macropterous, rarely brachypterous or micropterous) while their protarsus is simple and unmodified; females are often wingless and quite ant-like in appearance. The protarsus is modified by an enlargement of one claw and a lateral expansion of the fifth tarsomere, except Aphelopinae; brachypterous and apterous forms lack the deep ventral constriction between the mesothorax and metathorax. The ovipositor is retractable and not visible when retracted (Goulet & Huber, 1993; Macek, 2007; Lelej & Loktionov, 2017).

Adults of Dryinidae are univoltine or bivoltine (Lelej & Loktionov, 2017), but multivoltinity is also common for Gonatopodinae (Olmí, 1984); Overwintering typically occurs in the pupal or prepupal stage (Lelej & Loktionov, 2017), but overwintering in the larval stage is also known (Olmí, 1984). In one genus (*Crovettia*), polyembryony occurs and the larvae develop entirely within the body of the host, with 40 to 60 individuals developing from a single egg (Goulet & Huber, 1993; Lelej & Loktionov, 2017). In all other genera the larvae live as ectoparasitoids. Members of Dryinidae play an important role as parasitoids and often also as predators of Auchenorrhyncha (leafhoppers (Membracoidea: Cicadellidae), planthoppers ((Fulgoroidea: Cixiidae, Delphacidae, Dictyopharidae, Issidae, Tropiduchidae)) and treehoppers (Membracoidea: Membracidae)). All of these are important pests of cultivated vegetations and forest (Guglielmino & Olmí, 1997; 2006; 2007; Guglielmino, Olmí, & Bückle, 2013; Belokobylskij & Lelej, 2017). Their name, pincer wasps, refers to the chelae (claspers) that are used for capturing their hosts in order to parasitize them or host feed on them (Olmí, 2020). On the other hand, achelate females capture their hosts using mandibles and fore legs (Olmí, 2020). Therefore, distributional records can contain crucial information to understand their biology and ecology. Adult males

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generally do not feed, although they can consume honeydew excreted by leafhoppers; they die shortly after mating. Females, on the other hand, are active predators (except for the subfamily Aphelopinae) and hunt for the same hoppers in which their larvae develop (Olmí, 1999; Macek, 2007). All dryinid females sting their hosts to paralyze them, the same sting is used for laying eggs between two overlapping sclerites of the host thorax or abdomen (Olmí, 2020). Females of Aphelopinae insert their sting more deeply to lay their eggs in the haemocoel. The larvae of all dryinids (except for the genus *Crovettia*) live in an external sac (the thylacium) formed by shedded layers of skin (Macek, 2007; Olmí, 2020). Pupation occurs in the soil or on the host food plant (Goulet & Huber, 1993).

Checklists of Iranian Dryinidae. The first report of the family was done by Olmí (1984) who recorded *Gonatopus iranicus* Olmí, 1984. Barahoei, Khajeh, Azevedo, Olmí & Rakhshani (2022) listed 17 species in eight genera. The present checklist comprises 26 species in 10 genera for the fauna of Iran, and 82 species in 11 genera for the Middle East.

MATERIAL AND METHODS

Area of study

The Middle East is a geopolitical region comprising the vast majority of the western Asia and all of Egypt. It traditionally includes the following 16 countries: Bahrain, Cyprus, Egypt, Iran, Iraq, Israel-Palestine¹, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, and Yemen (including Socotra Archipelago). Most of these countries (13 of the 16) are countries of the Arab World. Saudi Arabia, Iran and Egypt are the largest in terms of area, respectively. The Middle East region generally is characterized by its hot, arid climate especially in Arabia and Egypt, with several major rivers providing irrigation to support agriculture in some areas.

Checklist

The published data on the Dryinidae (Hymenoptera: Chrysidoidea) in the Middle East are summarized, based on a review of existing literature, as well as examination of some of dryinid species in various Iranian collections (e.g., Samin et al, 2018, and Sakenin et al, 2020) by the authors and Massimo Olmí (Tropical Entomology Research Center, Viterbo, Italy). This checklist, which emphasizes the Iranian species diversity, comprises the following data: the valid taxon name, Middle Eastern records, and extralimital distribution. Classification and nomenclature are based on Olmí & Xu (2015), and for distributional data, the related references are given.

¹ We consider Israel and Palestine as one country, "Israel-Palestine" because several taxa which had been recorded in many years ago from Palestine, while those areas are now located in Israel and/or perhaps still in Palestine. Therefore, to prevent any mistake on the exact locality, using the "Israel-Palestine" is so far more logical.

RESULTS

This checklist represents a total of 82 species of Dryinidae in 11 genera for the Middle Eastern fauna, and 26 species within 10 genera for Iran. One species, *Anteon ephippiger* (Dalman, 1818) is newly recorded from Iran, and on the other hand, *Anteon fulviventre* (Haliday, 1828) is excluded from the fauna of Iran due to misidentification.

Superfamily Chrysidoidea Latreille, 1802

Family Dryinidae Haliday, 1833

Subfamily Anteoninae R.C.L. Perkins, 1912

Genus *Anteon* Jurine, 1807

Anteon Jurine, 1807: 302. Type species: *Anteon jurineanum* Latreille, 1809, by subsequent monotypy.

Anteon abdunnouri Olmi, 1987

Anteon abdunnouri Olmi, 1987: 33.

Distribution in Iran: Northern Khorasan, Sistan & Baluchestan (Derafshan, Olmi, Ghafouri Moghaddam, Nader, & Rakhshani, 2021).

Distribution in the Middle East: Iran (see references above), Lebanon, Turkey (Olmi, 1987; 1999), Oman (Olmi & van Harten, 2000; Olmi, 2014; 2020; Olmi, Copeland, & van Noort, 2019), United Arab Emirates (Olmi, 2014; 2020; Olmi & van Harten, 2000; Olmi et al, 2019), Yemen (Olmi & van Harten, 2000; 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in the Palaearctic and Afrotropical regions, from Italy to Japan, South Africa (Olmi & Xu, 2015; Olmi et al, 2019).

Anteon achterbergi Olmi, 1991

Anteon achterbergi Olmi, 1991: 176.

Distribution in the Middle East: United Arab Emirates (Olmi, 2008; 2020; Xu, Olmi & He, 2013).

Extralimital distribution: China, Indonesia (Xu et al, 2013), India (Olmi, 1991; Olmi & Xu, 2015), Japan, Philippines, South Korea, Sri Lanka (Olmi & Xu, 2015).

Anteon arabicum Olmi, 1984

Anteon arabicum Olmi, 1984: 387.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2000; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: None.

Anteon arcuatum Kieffer in André, Kieffer & Marshall, 1905

Anteon arcuatum Kieffer in André, Kieffer & Marshall, 1905: 144.

Distribution in Iran: Golestan (Sakenin et al, 2020), Mazandaran (Samin et al, 2018 as *Anteon fulviventre* (Haliday, 1828) – misidentification).

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Distribution in the Middle East: Iran (Samin et al, 2018; Sakenin et al, 2020).

Extralimital distribution: This species is widely distributed almost throughout the Palaearctic region, from Mongolia to Spain (Olmí & Xu, 2015).

***Anteon brachycerum* (Dalman, 1823)**

Dryinus brachycerum Dalman, 1823: 12.

Distribution in Iran: Guilan (Sakenin et al, 2020).

Distribution in the Middle East: Iran (Sakenin et al, 2020).

Extralimital distribution: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Japan, Netherlands, Norway, Romania, Russia, Sweden, United Kingdom (Olmí, 1999), Nepal (Xu et al, 2013).

***Anteon canabense* (Benoit, 1951)**

Hirtanteon canabensis Benoit, 1951: 164.

Distribution in the Middle East: Yemen (Olmí & van Harten, 2006; Olmí et al, 2019; Olmí, 2020).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmí, 1984).

***Anteon ephippiger* (Dalman, 1818)**

Gonatopus ephippiger Dalman, 1818: 81.

Description: Coloured yellow-testaceous, except for the black propodeum. Surface of head and thorax smooth and polished with dispersed punctures. Chelae with long row of short lamellae on the basal extension and a few slightly longer lamellae on the distal curled section. Females can have dark spots on head, thorax or the abdomen (Fig. 1). Similar to *Anteon pinetellum* de Rond, 1998, of which the basal extension of the chela is not curled.

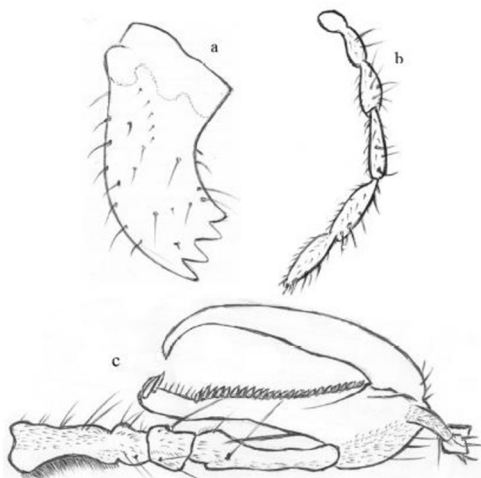


Figure 1. *Anteon ephippiger* (Dalman, 1818); a) mandible, b) maxillary palp, c) left chela (lateral aspect).

Material examined: Mazandaran province, Tonekabon, Asal-Mahalleh, 3♀♀, 14.viii.2011, det. M. Olmi and J. de Rond.

Distribution in the Middle East: Iran (new record); Lebanon, Turkey (Olmi, 1999).

Extralimital distribution: This species has a wide distribution range, from Japan to Western Europe, Morocco (Olmi & Xu, 2015), Malta (Mifsud & Olmi, 2016), Poland (Klejdzysz, Klukowski, Pruszyński, & Kubasik, 2018).

Comments: *Anteon ephippiger* is known to parasitize various species of Cicadellidae living on grass or small shrubs (Mifsud & Olmi, 2016).

***Anteon felis* Olmi & van Harten, 2006**

Anteon felis Olmi & van Harten, 2006: 319.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Democratic Republic of Congo, South Africa (Olmi et al, 2019).

***Anteon infectum* (Haliday, 1837)**

Dryinus infectus Haliday in walker, 1837: 419.

Distribution in the Middle East: Turkey (Olmi, 1999).

Extralimital distribution: Austria, Azerbaijan, Belgium, Czech Republic, Finland, France, Germany, Hungary, Ireland, Italy, Netherlands, Norway, Romania, Russia, Slovakia, Sweden, Switzerland, United Kingdom (Olmi, 1999).

***Anteon jurineanum* Latreille, 1809**

Anteon jurineanum Latreille, 1809: 35.

Distribution in the Middle East: Jordan, Turkey (Olmi, 1999).

Extralimital distribution: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, United Kingdom (Olmi, 1999), China, Japan, Kazakhstan, Mongolia, Nepal, South Korea, Turkmenistan (Olmi & Xu, 2015).

***Anteon kawadanum* Olmi, 1984**

Anteon kawadanum Olmi, 1984: 374.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmi et al, 2019).

***Anteon kivuanum* (Benoit, 1951)**

Chelogyne kivuanus Benoit, 1951: 13.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmi, 1984;

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2006; Azevedo, Madl, & Olmi, 2010; Olmi, Copeland, & Guglielmino, 2015; Olmi et al, 2016; Olmi et al, 2019).

***Anteon leleji* Speranza, Olmi, Capradossi & Contarini, 2021**

Anteon leleji Speranza, Olmi, Capradossi & Contarini, 2021: 375.

Distribution in the Middle East: Turkey (Speranza et al, 2021).

Extralimital distribution: None.

***Anteon oculatum* Olmi & van Harten, 2006**

Anteon oculatum Olmi & van Harten, 2006: 319.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: None.

***Anteon opacum* Olmi & van Harten, 2006**

Anteon opacum Olmi & van Harten, 2006: 323.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2006; Olmi et al, 2019).

Extralimital distribution: South Africa (Olmi et al, 2019).

***Anteon phoenicium* Olmi, 1987**

Anteon phoenicium Olmi, 1987: 34.

Distribution in the Middle East: Lebanon (Olmi, 1987).

Extralimital distribution: None.

***Anteon pubicorne* (Dalman, 1818)**

Gonatopus pubicornis Dalman, 1818: 87.

Distribution in Iran: Northern Khorasan (Derafshan et al, 2021).

Material examined: Golestan province, Kordkoy, Salikandeh, 2♂♂, 26.vii.2016.

Distribution in the Middle East: Iran (Derafshan et al, 2021), Turkey (Olmi & Xu, 2015).

Extralimital distribution: Albania, Armenia, Austria, Belgium, Bulgaria, China, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Kazakhstan, Korea, Moldova, Mongolia, Montenegro, Morocco, Netherlands, North Macedonia, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom (Olmi & Xu, 2015).

Comments: *Ismarus rugulosus* Förster (Hymenoptera Ismaridae) is a parasitoid of *Anteon pubicorne* in UK (Waloff, 1975). *Ismarus rugulosus* was recorded from Iran by Rahmani, Kim, Ghafouri Moghaddam, & Rakhshani (2019) and Izadizadeh et al (2021).

***Anteon scapulare* (Haliday, 1837)**

Dryinus scapularis Haliday, 1837: 419.

Distribution in the Middle East: Turkey (Olmi & Xu, 2015).

Extralimital distribution: Austria, Belgium, Bulgaria, Czech Republic, France, Germany, Hungary, Japan, Moldova, Netherlands, Poland, Russia, Switzerland, United Kingdom (Olimi & Xu, 2015).

***Anteon xericum* Olmi & van Harten, 2006**

Anteon xericum Olmi & van Harten, 2006: 315.

Distribution in Iran: Kerman (Meidani, Khyayrandish, Olmi, Masjdzadeh, & Moghaddam, 2023).

Distribution in the Middle East: Iran (Meidani et al, 2023), Yemen (Olimi & van Harten, 2006; Olmi et al, 2019).

Extralimital distribution: Kenya, Madagascar, South Africa, Tanzania (Olimi et al, 2019; Meidani et al, 2023).

Genus *Deinodryinus* R. Perkins, 1907

Deinodryinus R. Perkins, 1907: 45. Type species: *Deinodryinus paradoxus* R. Perkins, 1907, designated by Muesebeck & Walkley (1951).

***Deinodryinus sabaeus* Olmi & van Harten, 2006**

Deinodryinus sabaeus Olmi & van Harten, 2006: 314.

Distribution in the Middle East: Yemen (Olimi & van Harten, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Kenya (Olimi et al, 2019).

Genus *Lonchodryinus* Kieffer, 1905

Lonchodryinus Kieffer, 1905: 95. Type species: *Lonchodryinus tricolor* Kieffer, 1905, by monotypy.

***Lonchodryinus ruficornis* (Dalman, 1818)**

Gonatopus ruficornis Dalman, 1818: 83.

Distribution in Iran: Mazandaran (Samin et al, 2018).

Distribution in the Middle East: Iran (Samin et al, 2018).

Extralimital distribution: This species has a wide distribution range, from Japan to Western Europe (Olimi & Xu, 2015), Poland (Klejdzysz et al, 2018).

Subfamily Aphelopinae Perkins, 1912

Genus *Aphelopus* Dalman, 1823

Aphelopus Dalman, 1823: 8. Type species: *Dryinus atratus* Dalman, designated by Westwood (1840).

***Aphelopus atratus* (Dalman, 1823)**

Dryinus (Aphelopus) atratus Dalman, 1823: 15.

Distribution in the Middle East: Cyprus (Olimi, 1999).

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Extralimital distribution: Armenia, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxemburg, Norway, Poland, Portugal, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, Netherlands, United Kingdom (Olmí, 1999), Japan, Kazakhstan (Olmí & Xu, 2015).

***Aphelopus camus* Richards, 1939**

Aphelopus camus Richards, 1939: 287.

Distribution in the Middle East: Turkey (Olmí, 1999).

Extralimital distribution: Austria, Belgium, Bulgaria, Czech Republic, Finland, France, Greece, Hungary, Italy, Moldova, Norway, Poland, Slovakia, Spain, Switzerland, Netherlands, Tunisia, Ukraine (Olmí, 1999), Japan, Russia, United Kingdom (Olmí & Xu, 2015).

***Aphelopus incisus* Olmi, 1984**

Aphelopus incisus Olmi, 1984: 64.

Aphelopus himyarita Olmi & van Harten, 2006: 312.

Distribution in the Middle East: Yemen (Olmí & van Harten, 2006 as *Aphelopus himyarita*; Olmi & Copeland, 2011 as *A. himyarita*; Olmi et al, 2015 as *A. himyarita*; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmí et al, 2015; Olmi et al, 2019).

***Aphelopus mediocarinatus* (Benoit, 1951)**

Antaphelopus mediocarinatus Benoit, 1951: 23.

Distribution in the Middle East: Yemen (Olmí & van Harten, 2006; Olmi & Copeland, 2011; Olmi et al, 2015; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmí, van Noort, & Guglielmino, 2016; Olmi et al, 2019).

***Aphelopus melaleucus* (Dalman, 1818)**

Gonatopus melaleucus Dalman, 1818: 82.

Distribution in Iran: Isfahan, Razavi Khorasan (Derafshan et al, 2021), West Azarbaijan (Sakenin et al, 2020).

Distribution in the Middle East: Cyprus, Lebanon, Turkey (Olmí, 1999), Iran (Derafshan et al, 2021; Sakenin et al, 2020).

Extralimital distribution: This species is the most common European *Aphelopus* species and is widely distributed throughout the Palaearctic region, from Japan to Spain: Armenia, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Canada, China, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Japan, Montenegro, Netherlands, North Macedonia, Norway, Romania, Russia, Slovakia, South Korea, Spain, Sweden, Switzerland, United Kingdom (Olmí & Xu, 2015).

***Aphelopus orphanidesi* Olmi in Olmi & Orphanides, 1994**

Aphelopus orphanidesi Olmi in Olmi & Orphanides, 1994: 408.

Distribution in Iran: Isfahan (Derafshan et al, 2021).

Distribution in the Middle East: Cyprus (Olmi & Orphanides, 1994; Derafshan et al, 2021), Iran (Derafshan et al, 2021).

Extralimital Distribution: France, Germany, Italy, Norway, Sweden (Derafshan et al, 2021).

***Aphelopus testaceus* Olmi, 1991**

Aphelopus testaceus Olmi, 1991: 112.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2000, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmi et al, 2016; 2019).

***Aphelopus wittei* Benoit, 1951**

Aphelopus wittei Benoit, 1951: 16.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2006; Olmi & Copeland, 2011; Olmi et al, 2015; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmi et al, 2016; Olmi et al, 2019).

Subfamily Bocchinae Richards, 1939**Genus *Bocchus* Ashmead, 1893**

Bocchus Ashmead, 1893: 91. Type species: *Bocchus flavicollis* Ashmead, 1893, by original designation.

***Bocchus bini* Olmi, 1984**

Bocchus bini Olmi, 1984: 629.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmi et al, 2015; Olmi et al, 2016; Olmi et al, 2019), Madagascar (Azevedo et al, 2010).

***Bocchus confusus* Olmi & van Harten, 2006**

Bocchus confusus Olmi & van Harten, 2006: 325.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2006; Olmi et al, 2019).

Extralimital distribution: Kenya, Namibia (Olmi et al, 2019).

***Bocchus hyalinus* Olmi, 1998**

Bocchus hyalinus Olmi, 1998: 65.

Distribution in Iran: Kerman, Sistan & Baluchestan (Derafshan et al, 2021).

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Distribution in the Middle East: Iran (Derafshan et al, 2021), Oman (Oلمي, 1998b; 2014; Oلمي et al, 2019; Oلمي, 2000), United Arab Emirates (Oلمي, 2008; 2014; 2020; Oلمي et al, 2019).

Extralimital Distribution: Kenya (Oلمي et al, 2015; Oلمي et al, 2019).

***Bocchus rassitus* Oلمي & van Harten, 2006**

Bocchus rassitus Oلمي & van Harten, 2006: 324.

Distribution in the Middle East: Yemen (Oلمي & van Harten, 2006; Oلمي et al, 2019; Oلمي, 2020).

Extralimital distribution: None.

***Bocchus scobiolae* Nagy, 1967**

Bocchus scobiolae Nagy, 1967: 334.

Distribution in the Middle East: Turkey (Oلمي et al, 2021).

Extralimital distribution: Hungary, Moldova, Romania (Oلمي et al, 2021).

Genus *Mirodryinus* Ponomarenko, 1972

Mirodryinus Ponomarenko, 1972: 673. Type species: *Mirodryinus angulatus* Ponomarenko, 1972, by original designation.

***Mirodryinus atlanticus* Oلمي, 1984**

Mirodryinus atlanticus Oلمي, 1984: 672.

Distribution in Iran: Siatan & Baluchestan (Derafshan, Rakhshani, Oلمي, & Vafaei, 2017, 2021).

Distribution in the Middle East: Egypt (Oلمي, 2014; Oلمي & Xu, 2015), Iran (Derafshan et al, 2017, 2021), United Arab Emirates (Oلمي, 2008; 2014; Oلمي & Xu, 2015; Oلمي, 2020).

Extralimital distribution: Morocco, Spain, Tunisia, Turkmenistan (Oلمي, 2014; Oلمي & Xu, 2015).

Genus *Mystrophorus* Förster, 1856

Mystrophorus Förster, 1856: 91. Type species: *Mystrophorus formicaeformis* Ruthe, 1859, by original designation.

***Mystrophorus formicaeformis* Ruthe, 1859**

Mystrophorus formicaeformis Ruthe, 1859: 120.

Distribution in Iran: Ardabil (Samin et al, 2018).

Distribution in the Middle East: Iran (Samin et al, 2018).

Extralimital distribution: This species is present in Europe and Western Asia (Peeters et al, 2004), and Poland (Klejdysz et al, 2018).

Subfamily Dryininae Haliday, 1833

Genus *Dryinus* Latreille, 1804

Dryinus Latreille, 1804: 176. Type species: *Dryinus collaris* (Linneus, 1767) (= *Dryinus formicarius* Latreille, 1804, by subsequent monotypy).

***Dryinus canariensis* (Cebellos, 1927)**

Paradryinus canariensis Ceballos, 1927: 101.

Distribution in the Middle East: Egypt (Guglielmino, Olmi, Liu, & Contarini, 2019; Hendawy, Al-Azab, & Ismael, 2022).

Extralimital distribution: Greece, Spain (Guglielmino et al, 2019).

***Dryinus cariniceps* Cameron, 1906**

Dryinus cariniceps Cameron, 1906: 158.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmi et al, 2019).

***Dryinus corsicus* Marshall, 1874**

Dryinus corsicus Marshall, 1874: 207.

Distribution in the Middle East: Cyprus (Olmi, 1999; Guglielmino et al, 2019).

Extralimital distribution: France, Greece, Hungary, Italy, Kazakhstan, Spain (Olmi & Xu, 2015; Guglielmino et al, 2019).

***Dryinus delvarei* Olmi, 1998**

Dryinus delvarei Olmi, 1998: 72.

Distribution in the Middle East: Turkey (Guglielmino et al, 2019).

Extralimital distribution: Albania, Italy (Guglielmino et al, 2019).

***Dryinus gharaeii* Olmi, 2005**

Dryinus gharaeii Olmi, 2005: 207.

Distribution in Iran: Ilam (Olmi, 2005; Olmi & Xu, 2015; Derafshan, Rakhshani, & Olmi, 2016; Derafshan et al, 2021; Guglielmino et al, 2019).

Distribution in the Middle East: Iran (Olmi, 2005; Olmi & Xu, 2015; Derafshan, Rakhshani, & Olmi, 2012; Guglielmino et al, 2019).

Extralimital distribution: None.

***Dryinus gryps* (Reinhard, 1863)**

Chelothelius gryps Reinhard, 1863: 410.

Distribution in the Middle East: Turkey (Guglielmino et al, 2019).

Extralimital distribution: France, Italy, Spain (Guglielmino et al, 2019).

***Dryinus niger* Kieffer, 1904**

Dryinus niger Kieffer, 1904: 532.

Distribution in the Middle East: Cyprus (Guglielmino et al, 2019).

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Extralimital distribution: Albania, Czech Republic, Denmark, Finland, France, Germany, Greece, Italy, Norway, Slovakia, Sweden, Netherlands, United Kingdom (Guglielmino et al, 2019).

***Dryinus orophilus* (Benoit, 1950)**

Lestodryinus orophilus Benoit, 1950: 226.

Distribution in the Middle East: Oman, United Arab Emirates (Olmí, 2014; 2020; Olmí et al, 2019), Yemen (Olmí & van Harten, 2006; Olmí, 2014; 2020; Olmí et al, 2019).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmí, 2014; Olmí et al, 2019).

***Dryinus sanderi* Olmí, 1984**

Dryinus sanderi Olmí, 1984: 731.

Distribution in the Middle East: Cyprus (Guglielmino et al, 2019).

Extralimital distribution: Bulgaria, France, Italy, Russia (Guglielmino et al, 2019).

***Dryinus saussuræ* (Ceballos, 1936)**

Lestodryinus saussuræ Ceballos, 1936: 48.

Distribution in the Middle East: Yemen (Olmí et al, 2019; Olmí, 2020).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olmí et al, 2019).

***Dryinus tamaricicola* Rakhshani & Olmí in Derafshan et al, 2016**

Dryinus tamaricicola Rakhshani & Olmí in Derafshan et al, 2016: 412.

Distribution in Iran: Sistan & Baluchestan (Derafshan, Rakhshani, & Olmí, 2016; Derafshan et al, 2017; 2021; Guglielmino et al, 2019).

Distribution in the Middle East: Iran (Derafshan et al, 2016; 2017; 2021; Guglielmino et al, 2019).

Extralimital distribution: None.

Comments: Swept on *Tamarix aphylla* and *Tamarix stricta* (Tamaricaceae) (Derafshan, et al, 2016; Derafshan et al, 2017; 2021).

***Dryinus tarraconensis* Marshall, 1868**

Dryinus tarraconensis Marshall, 1868: 204.

Distribution in Iran: Kerman (Derafshan et al, 2016; 2021; Guglielmino et al, 2019), Kermanshah (Guglielmino et al, 2019).

Distribution in the Middle East: Iran (Derafshan, Rakhshani & Olmí, 2016; Derafshan et al, 2021; Guglielmino et al, 2019), Iraq, Turkey (Olmí & Xu, 2015; Guglielmino et al, 2019).

Extralimital distribution: Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Montenegro, Morocco, Poland, Romania, Russia (Far East), Slovakia, South Korea, Spain, Tajikistan (Olmí & Xu, 2015; Guglielmino et al, 2019).

Comments: Swept on *Cortaderia selloana* (Poaceae) (Derafshan et al, 2016).

***Dryinus tigarae* Olmi, 2008**

Dryinus tigarae Olmi, 2008: 365.

Distribution in the Middle East: United Arab Emirates (Olmi, 2008; 2020; Guglielmino et al, 2019).

Extralimital distribution: None.

***Dryinus turcicus* Olmi, 1991**

Dryinus turcicus Olmi, 1991: 259.

Distribution in the Middle East: Turkey (Olmi, 1991; Guglielmino et al, 2019).

Extralimital distribution: None.

***Dryinus yemenensis* Olmi & van Harten, 2006**

Dryinus yemenensis Olmi & van Harten: 327.

Distribution in the Middle East: Oman (Guglielmino et al, 2019; Olmi et al, 2019; Olmi, 2020), Yemen (Olmi & van Harten, 2006; Guglielmino et al, 2019; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: None.

Subfamily Gonatopodinae Kieffer, 1906**Genus *Echthrodelphax* R. Perkins, 1903**

Echthrodelphax R. Perkins, 1903: 36. Type species: *Echthrodelphax fairchildii* R. Perkins, 1903, by monotypy.

***Echthrodelphax italicus* Olmi, 1984**

Echthrodelphax italicus Olmi, 1984: 1150.

Distribution in the Middle East: Lebanon (Olmi, 1999).

Extralimital distribution: Algeria, France, Greece, Italy, Montenegro, Netherlands, Turkmenistan (Olmi, 1999), Bulgaria (Lapeva-Gjonova, Gjonov, Olmi, & Guglielmino, 2018), Turkmenistan (Olmi & Xu, 2015).

***Echthrodelphax migratorius* Benoit, 1954**

Echthrodelphax migratorius Benoit, 1954: 397.

Distribution in the Middle East: Egypt (Olmi, 1984; 1994; 2006; Olmi et al, 2015; Olmi et al, 2019), Oman (Olmi et al, 2015; 2019; Olmi, 2020), United Arab Emirates (Olmi et al, 2019; Olmi, 2020), Yemen (Olmi & Harten, 2000, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distribute in Sub-Saharan Africa (Olmi et al, 2016; Olmi et al, 2019).

***Echthrodelphax tauricus* Ponomarenko, 1970**

Echthrodelphax tauricus Ponomarenko, 1970: 432.

Distribution in Iran: Sistan & Baluchestan (Derafshan et al, 2020).

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Distribution in the Middle East: Iran (Derafshan et al, 2020), Oman (Olimi, 2008; 2014; 2020; Olmi et al, 2019), United Arab Emirates (Olimi, 1998 as *Echthrodelphax hortusensis*; Howarth & Gillett, 2008 as *E. hortusensis*; Olmi, 2008; 2014; 2020; Olmi et al, 2019), Yemen (Olimi & Harten, 2000; 2006 as *E. migratorius*; Olmi, 2014; 2020; Olmi et al, 2019).

Extralimital distribution: Widely distributed in Sub-Saharan Africa (Olimi et al, 2016), and Western Palaearctic region (Olimi et al, 2019).

Genus *Gonatopus* Ljungh, 1810

Gonatopus Ljungh, 1810: 161. Type species: *Gonatopus formicarius* Ljungh, 1810, by monotypy.

***Gonatopus abdunnouri* Olmi, 1987**

Gonatopus abdunnouri Olmi, 1987: 57.

Distribution in the Middle East: Lebanon (Olimi, 1987; Olmi & Xu, 2015).

Extralimital distribution: Afghanistan (Olimi & Xu, 2015).

***Gonatopus aegyptiacus* (Olimi, 1984)**

Tetrodontochelys aegyptiacus Olmi, 1984: 1446.

Distribution in the Middle East: Egypt (Olimi, 2014), United Arab Emirates (Olimi, 2014; 2020).

Extralimital distribution: Morocco (Olimi, 2014).

***Gonatopus baeticus* (Ceballos, 1927)**

Mercetia baetica Ceballos, 1927: 100.

Distribution in the Middle East: Turkey (Olimi, 1999).

Extralimital distribution: Algeria, Bulgaria, France, Italy, Morocco, Russia, Spain, Ukraine (Olimi, 1999), Turkmenistan, Uzbekistan (Olimi & Xu, 2015).

***Gonatopus brunneicollis* (Richards, 1972)**

Neogonatopus brunneicollis Richards, 1972: 539.

Distribution in the Middle East: Egypt, Israel-Palestine (Olimi, 2014; Olmi & Xu, 2015), Oman (Olimi, 1999; 2014; 2020; Olmi & Xu, 2015), United Arab Emirates (Olimi, 2014; 2020).

Extralimital distribution: Morocco, Spain, Kazakhstan, Kyrgyzstan, Uzbekistan (Olimi, 2014; Olmi & Xu, 2015).

***Gonatopus camelinus* Kieffer, 1904**

Gonatopus camelinus Kieffer, 1904: 361.

Distribution in Iran: Fars (Olimi & Xu, 2015; Guglielmino et al, 2019; Derafshan, Olmi, Ghafouri Moghaddam, & Rakhshani, 2020), Sistan & Baluchestan (Derafshan et al, 2020).

Distribution in the Middle East: Egypt, Turkey (Olmi, 1999; 2008, Olmi & Xu, 2015), Iran (Olmi & Xu, 2015; Guglielmino et al, 2019; Derafshan et al, 2020), United Arab Emirates (Olmi, 2008; 2020).

Extralimital distribution: Algeria, France, Greece, Italy, Japan, Morocco, Portugal, Siberia, Spain, Tajikistan, Turkmenistan, Uzbekistan, United Kingdom (Olmi, 2008; Olmi & Xu, 2015), Azerbaijan (Snegovaya et al, 2022), Russia (Lelej & Loktionov, 2017).

***Gonatopus clavipes* (Thunberg, 1827)**

Gelis clavipes Thunberg, 1827: 202.

Distribution in Iran: Fars (Olmi & Xu, 2015; Derafshan et al, 2020), Northern Khorasan, Razavi Khorasan (Derafshan et al, 2020), Tehran, West Azarbaijan (Olmi, 2005; Olmi & Xu, 2015; Derafshan et al, 2020).

Distribution in the Middle East: Iran (see references above, and Kochetkov, 2024), Turkey (Olmi, 1999; Olmi & Xu, 2015).

Extralimital distribution: Austria, Azerbaijan, Azores, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Kazakhstan, Mongolia, Netherlands, North Korea, North Macedonia, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tunisia, Ukraine, United Kingdom, Uzbekistan (Olmi, 1999; Olmi & Xu, 2015).

Plant associations in Iran: *Medicago sativa* L. (Fabaceae) (Derafshan et al, 2020).

Comments: *Helegonatopus dimorphus* (Hoffer) (Hymenoptera: Encyrtidae) is a parasitoid of *Gonatopus clavipes* in Italy (Olmi & Xu, 2015).

***Gonatopus distinctus* Kieffer in André, Kieffer & Marshall, 1906**

Gonatopus distinctus Kieffer in André, Kieffer & Marshall, 1906: 509.

Distribution in Iran: Golestan (Samin et al, 2018).

Distribution in the Middle East: Iran (Samin et al, 2018).

Extralimital distribution: Belgium, Czech Republic, Denmark, England, Finland, France, Germany, Georgia, Mongolia, Netherlands, Norway, Poland, Romania, European Russia, Spain, Sweden, Switzerland, Ukraine (Olmi & Xu, 2015; Klejdysz et al, 2018).

***Gonatopus distinguendus* Kieffer in André, Kieffer & Marshall, 1905**

Gonatopus distinguendus Kieffer in André, Kieffer & Marshall, 1905: 116.

Distribution in Iran: Kermanshah (Olmi, 2005; Olmi & Xu, 2015; Derafshan et al, 2020), Northern Khorasan (Derafshan et al, 2020).

Distribution in the Middle East: Iran (see references above, and Kochetkov, 2024), Turkey (Olmi, 1999; Kochetkov, 2024).

Extralimital distribution: Austria, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Morocco, Netherlands, Poland, Romania, Russia, Serbia, Slovakia, Spain, Sweden, Switzerland, Tunisia, United Kingdom (Olmi, 1999), China, Kazakhstan, Kyrgyzstan, Mongolia (Olmi & Xu, 2015; Kochetkov, 2024).

***Gonatopus dromedarius* (A. Costa, 1882)**

Dicondylus dromedarius A. Costa, 1882: 38.

Distribution in the Middle East: Egypt, Turkey (Olmi, 1999).

Extralimital distribution: Algeria, Czech Republic, France, Greece, Italy, Morocco, Netherlands, Slovakia, Spain, Sweden, Tunisia (Olmi, 1999), China, Tajikistan (Olmi & Xu, 2015).

***Gonatopus ericeti* Olmi, 1984**

Gonatopus ericeti Olmi, 1984: 1637.

Distribution in the Middle East: United Arab Emirates (Olmi, 2008; 2020; Olmi et al, 2019), Yemen (Olmi & van Harten, 2000; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in the Sub-Saharan Africa (Olmi et al, 2019).

***Gonatopus formicarius* Ljungh, 1810**

Gonatopus formicarius Ljungh, 1810: 162.

Distribution in Iran: Northern Khorasan (Samin et al, 2018).

Distribution in the Middle East: Iran (Samin et al, 2018), Turkey (Lelej & Loktionov, 2017).

Extralimital distribution: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Luxemburg, Netherlands, Poland, Russia, Slovakia, Spain Sweden, Switzerland (Olmi, 1999), Kazakhstan, Uzbekistan (Olmi & Xu, 2015).

***Gonatopus hajarensis* Olmi, 2014**

Gonatopus hajarensis Olmi, 2014: 336.

Distribution in the Middle East: United Arab Emirates (Olmi, 2014; 2020).

Extralimital distribution: None.

***Gonatopus incognitus* Olmi, 1984**

Gonatopus incognitus Olmi, 1984: 1613.

Distribution in the Middle East: Oman (Olmi & van Harten, 2000, 2006; Olmi et al, 2019; Olmi, 2020), Yemen (Olmi & van Harten, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in the Sub-Saharan Africa (Olmi et al, 2019), Madagascar (Azevedo et al, 2010).

***Gonatopus iranicus* Olmi, 1984**

Gonatopus iranicus Olmi, 1984: 1523.

Distribution in Iran: Zanzan (Olmi, 1984; 2005; Olmi & Xu, 2015; Derafshan et al, 2020).

Distribution in the Middle East: Iran (Olmi, 1984; 2005; Olmi & Xu, 2015; Derafshan et al, 2020).

Extralimital distribution: Greece (Olmi & Xu, 2015).

***Gonatopus lunatus* Klug, 1810**

Gonatopus lunatus Klug, 1810: 164.

Distribution in Iran: Kermanshah (Samin et al, 2018), Sistan & Baluchestan (Derafshan et al, 2020).

Distribution in the Middle East: Iran (Samin et al, 2018; Derafshan et al, 2020; Kochetkov, 2024), Israel-Palestine, Jordan, Lebanon, Turkey (Başpınar, Kersting, & Uygun, 1994; Olmi, 1999; Kochetkov, 2024).

Extralimital distribution: Albania, Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Luxembourg, Morocco, Netherlands, Norway, Portugal, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Ukraine, United Kingdom (Olmi, 1999), Kazakhstan, Korean Peninsula, Kyrgyzstan, Mongolia, Turkmenistan, Uzbekistan (Olmi & Xu, 2015; Kochetkov, 2024).

***Gonatopus mirus* Olmi & van Harten, 2000**

Gonatopus mirus Olmi & van Harten, 2000: 329.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2000; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: None.

***Gonatopus nearcticus* (Fenton, 1927)**

Pachygonatopus nearcticus Fenton, 1927: 6.

Distribution in the Middle East: Cyprus, Turkey (Olmi, 1999).

Extralimital distribution: Bulgaria (Lapeva-Gjonova et al, 2018), Croatia, France, Greece, Italy, Montenegro, Portugal, Spain (Olmi, 1999), Benin, Botswana, Ethiopia, Kenya, Mozambique, Namibia, South Africa, Swaziland, Uganda, USA, Zimbabwe (Olmi, 1984; 1999; 2006), China, India, Thailand, Vietnam (Xu et al, 2013).

***Gonatopus okahandjae* Olmi, 1984**

Gonatopus okahandjae Olmi, 1984: 1623.

Distribution in the Middle East: Yemen (Olmi & van Harten, 2006; Olmi et al, 2019; Olmi, 2020).

Extralimital distribution: Widely distributed in the Sub-Saharan Africa (Olmi et al, 2019).

***Gonatopus omanensis* Olmi, 1987**

Gonatopus omanensis Olmi, 1987: 56.

Distribution in the Middle East: Oman (Olmi, 1987; 2020; Olmi et al, 2019).

Extralimital distribution: None.

***Gonatopus opsiicida* Rakhshani & Olmi in Derafshan et al, 2020**

Gonatopus opsiicida Rakhshani & Olmi in Derafshan et al, 2020: 387.

Distribution in Iran: Sistan & Baluchestan (Derafshan et al, 2020).

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Distribution in the Middle East: Iran (Derafshan et al, 2020).

Extralimital distribution: None.

Plant associations in Iran: *Tamarix stricta* Boiss. (Tamaricaceae) (Derafshan et al, 2020).

***Gonatopus planiceps* Kieffer, 1904**

Gonatopus planiceps Kieffer, 1904: 355.

Distribution in the Middle East: Egypt, Turkey (Olmí, 1999; 2008), United Arab Emirates (Olmí, 1999; 2008; 2020).

Extralimital distribution: Widely distributed in the Palaeartic region from Canary Islands (Spain) to Kazakhstan (Olmí & Xu, 2015).

***Gonatopus polli* (Benoit, 1951)**

Pseudogonatopus polli Benoit, 1951: 8.

Distribution in the Middle East: Yemen (Olmí & van Harten, 2006; Olmí et al, 2019; Olmí, 2020).

Extralimital distribution: Widely distributed in the Sub-Saharan Africa (Olmí et al, 2019).

***Gonaporus pulicarius* Klug, 1810**

Gonatopus pulicarius Klug, 1810: 165.

Distribution in the Middle East: Egypt, Turkey (Olmí, 1999), United Arab Emirates (Olmí, 1999; 2008; 2020).

Extralimital distribution: Bulgaria, France, Germany, Greece, Italy, Spain (Olmí, 1999), Mongolia, Tajikistan, China, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan (Olmí & Xu, 2015).

***Gonaporus striatus* Kieffer in André, Kieffer & Marshall, 1905**

Gonatopus striatus Kieffer in André, Kieffer & Marshall, 1905: 92.

Distribution in the Middle East: Turkey (Olmí, 1999).

Extralimital distribution: Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Moldova, Netherlands, Norway, Poland, Romania, Slovakia, Spain, Sweden, Switzerland, Ukraine, United Kingdom (Olmí, 1999), Mongolia (Olmí & Xu, 2015).

***Gonatopus subtilis* Olmí, 1984**

Gonatopus subtilis Olmí, 1984: 1558.

Distribution in the Middle East: Egypt (Olmí, 1999).

Extralimital distribution: Morocco, Spain (Olmí, 1999), Kazakhstan, Turkmenistan (Olmí & Xu, 2015).

***Gonatopus yemenensis* Olmí & van Harten, 2000**

Gonatopus yemenensis Olmí & van Harten, 2000: 330.

Distribution in the Middle East: Yemen (Olmí & van Harten, 2000; Olmí et al, 2019; Olmí, 2020).

Extralimital distribution: None.

Genus *Haplogonatopus* R. Perkins, 1905

Haplogonatopus R. Perkins, 1905: 39. Type species: *Haplogonatopus apicalis* R. Perkins, 1905, by original designation.

***Haplogonatopus apicalis* R. Perkins, 1905**

Haplogonatopus apicalis R. Perkins, 1905: 39.

Distribution in Iran: Fars (Olmí & Xu, 2015; Derafshan et al, 2020).

Distribution in the Middle East: Iran (Olmí & Xu, 2015; Derafshan et al, 2020).

Extralimital distribution: Australia (Olmí & Xu, 2015), China, India, Iran, Japan, Malaysia, Philippines, Sri Lanka, Thailand (Xu et al, 2013), Vietnam (Mita et al, 2013).

***Haplogonatopus oratorius* (Westwood, 1833)**

Gonatopus oratorius Westwood, 1833: 496.

Distribution in Iran: Kuhgiloyeh & Boyerahmad (Samin et al, 2018).

Distribution in the Middle East: Iran (Samin et al, 2018, and Kochetkov, 2024), Lebanon, Turkey (Olmí, 1999; Xu et al, 2013; Kochetkov, 2024).

Extralimital distribution: Australia (Xu et al, 2013), Austria, France, Hungary, Italy, Romania, Russia, Spain, United Kingdom (Olmí, 1999), China, Japan (Mita et al, 2012; Xu et al, 2013), Germany, South Korea, Sweden (Olmí & Xu, 2015), Poland (Klejdzysz et al, 2018). *Haplogonatopus oratorius* is distributed in many countries in Europe, the Middle East and the Eastern Palaearctic, North Africa (Xu et al, 2013; Olmí & Xu, 2015; Klejdzysz et al, 2018).

Species excluded from the fauna of Iran

***Anteon fulviventre* (Haliday, 1828)**

Records from Iran: Mazandaran (Samin et al, 2018).

Comments: Re-examination of specimen by M. Olmí proved that the record of *Anteon fulviventre* in Samin et al (2018) to be a misidentification of *Anteon arcuatum* Kieffer, 1905. We therefore exclude *A. fulviventre* from the fauna of Iran and record the data under *A. arcuatum*. *Anteon fulviventre* occurs throughout Europe and in parts of Asia (Kazakhstan, the Far East of Russia) (Olmí & Xu, 2015), and North Africa (Peeters et al, 2004).

DISCUSSION

In total, 82 species of the family Dryinidae in 11 genera and five subfamilies (Anteoninae, Aphelopinae, Bocchinae, Dryininae, and Gonapodinae) have been reported from the Middle Eastern countries (4.5% of the world extant species). Among the 11 genera, *Gonatopus* with 26 species is the most species-rich genus, followed by *Anteon* (19 species), and *Dryinus* (15 species) (Fig. 2). Fifteen species have been

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reported to be endemic or subendemic to the Middle Eastern fauna, mostly from the Arabian Peninsula: *Anteon phoenicium* Olmi (from Lebanon), *Dryinus gharaeii* Olmi, *D. tamaricicola* Rakhshani & Olmi, and *Gonatopus opsicida* Rakhshani & Olmi (from Iran), *Gonatopus omanensis* Olmi (from Oman), *Dryinus yemenensis* Olmi & van Harten (from Oman and Yemen), *Anteon leleji* Speranza, Olmi, Capradossi & Contarini, and *Dryinus turcicus* Olmi (from Turkey), *Dryinus tigarae* Olmi, and *Gonatopus hajarensis* Olmi (from United Arab Emirates), and *Anteon arabicum* Olmi, *A. oculatum* Olmi & van Harten, *Bocchus rassitus* Olmi & van Harten, *Gonatopus mirus* Olmi & van Harten, and *G. yemenensis* Olmi & van Harten (from Yemen).

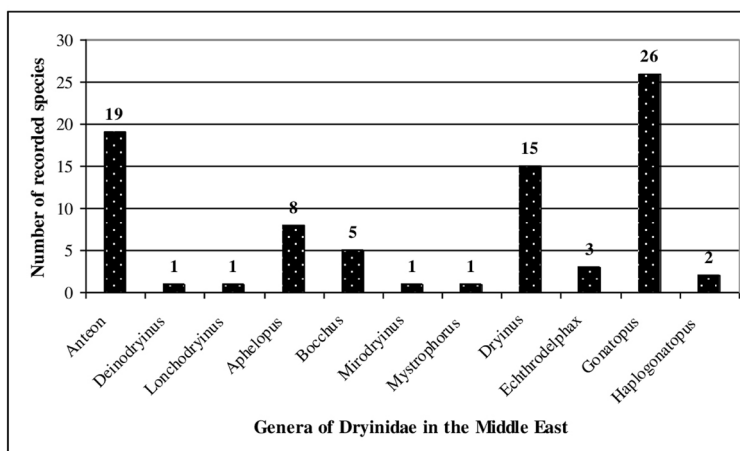


Figure 2. Species diversity of Dryinidae in the Middle East by genus.

The fauna of Iranian Dryinidae is rather diverse, although of being not well-studied. In this research, *Gonatopus ephippiger* is newly recorded for the Iranian fauna. Among the 10 genera of Iranian Dryinidae, *Gonatopus* and *Anteon* with eight and six recorded species respectively, are more diverse than the others. Iran comprises 31 provinces, and the analysis of the species recorded in each province shows that Dryinidae have been recorded in only 16 provinces, Sistan & Baluchestan (eight records), Northern Khorasan (five records), Fars, Golestan, Kerman, Kermanshah (three records), Isfahan, Mazandaran, Razavi Khorasan, West Azarbaijan (two records), and Ardabil, Guilan, Ilam, Kuhgiluyeh & Boyerahmad, Tehran, and Zanjan (one record). This result indicates that no region of Iran has been sufficiently sampled, and therefore, many more species are expected to be discovered with more faunistic surveys.

Among the 16 countries of the Middle East, Yemen with 29 species (35% of the total number in the Middle East), is the most diverse country, followed by Iran and Turkey (each with 26 species), United Arab Emirates (15 species), Egypt (10 species), Oman (nine species), Lebanon (eight species), Cyprus (seven species), Israel-Palestine and Jordan (each with two species), and Iraq (one species). On the other hand, no records were found in Bahrain, Kuwait, Qatar, Saudi Arabia, and Syria. The fauna of Russia with 63 species in eight genera (Belokobylskij & Lelej, 2017) is considerably

richer than the countries adjacent to Iran. It is tempting to conclude that it was studied better than others, but the Russian area of temperate vegetations, which is important for Anteoninae, is immensely vast compared to the non-arid areas of the Middle East. Additionally, Turkey shares the highest number of species with Iran (11 species), followed by Lebanon, United Arab Emirates (each with five species), Oman (three species), Cyprus, Egypt, Yemen (each with two species), and Iraq, Israel-Palestine, and Jordan (each with one species).

This checklist, in relation to the species diversity of Dryinidae in Palaearctic region, which comprises 24 genera and more than 257 species (Olmí & Xu, 2015), might indicate that the fauna of the Middle Eastern Dryinidae has been poorly studied (~32% of the total number of Palaearctic species). Compared with other groups of aculeate Hymenoptera, the research on Dryinidae is still at the starting point (Macek, 2007). Since the Middle East with 16 countries is a large region with various geographical regions and climates, more species are expected to occur. More extensive faunistic surveys across various areas of this region are required.

ACKNOWLEDGMENTS

This research was supported by Islamic Azad University (Yadegar-e Imam Khomeini (RAH) Shahre Rey Branch), Cairo University (Egypt), and Natural History Museum, Prague (Czech Republic). We extend our sincere gratitude to M. Olmi (Italy) for determination of some doubtful specimens, and also C.-J. Kim (South Korea), and T. Mita (Japan) for edition of the first draft of the manuscript and insightful comments.

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