A CHECKLIST OF IRANIAN VESPINAE (HYMENOPTERA: VESPOIDEA: VESPIDAE)

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Abstract – A checklist of Iranian Vespinae (Hymenoptera: Vespidae) is presented. The list is based on a detailed study of all available published data. Nine vespine species from three genera (Vespa Linnaeus, Vespula Thomson, Dolichovespula Rohwer) are currently recognized as occurring in Iran.

Key words: Hymenoptera, Vespidae, Vespinae, checklist, Iran

INTRODUCTION

Vespine wasps (Hymenoptera: Vespoidae: Vespidae) are the largest and best-known eusocial wasps (Wilson, 1971). The subfamily includes true hornets (the genus Vespa), and the “yellowjackets” (genera Dolichovespula and Vespula). The remaining genus, Provespa, is a small, poorly-known group of nocturnal wasps from southeast Asia (Carpenter, 1987; Dubatolov and Milko, 2004).

The first work on Iranian vespine was carried out in 1905 by Buysson (1905). Several other studies were done including those by Pérez (1910), du Buysson (1912), Morice (1921), Birula (1925a, b, 1930), Bequaert (1931), Blüthgen and Gusenleitner (1970), Guiglia (1977), Archer (1981, 1992), Dubatolov et al. (2003), Abd-Rabou et al. (2005), Abbasi et al. (2008), Sakenin et al. (2010). In addition to the mentioned original papers on Iranian Vespidae, two checklists have been prepared on this taxon so far (Modarres Awal, 1997; Ebrahimi and Carpenter 2008).

Iran covers an area of about 1,648,000 km². Attitudinally, it ranges from 28 m below sea-level on the shores of the Caspian Sea to the 5770 m of Mt. Damavand. Climatically, there is the contrast between the humid, almost jungle-like forests of the south Caspian and the arid, in places lifeless deserts of Dasht-e Lut; the temperature ranges from a winter low of -35°C in the north-west to a summer high of 50°C on the Persian Gulf. As a result of these major topographical, geological and climatic variations, Iran is rich in animal and plant diversity (Fig. 1). The objective of this paper to summarize all the data on Iranian Vespinae.

MATERIALS AND METHODS

The published data on the Vespinae subfamily in Iran was summarized. The checklist comprises the following data: the valid taxa name, published records with provincial distribution and general distribution. Iranian provinces are given in alphabetical order in the lists.

RESULTS

The present work includes 9 vespine species from 3 genera. The list of species is given below in alphabetical order.
Subfamily Vespinae Laicharting

Genus Dolichovespula Rohwer, 1916

Syn.: Pseudovespula Bischoff, 1931; Boreovespula Blüthgen, 1943; Metavespula Blüthgen, 1943.

Dolichovespula media (Retzius, 1783)

Syn.: Vespa geerii Lepeletier, 1836; Vespa crassa Herrich-Schäffer, 1841; Vespa similis Schenck, 1853; Vespa rufoscutellata Schenck, 1853; Vespa flavicincta Schenck, 1853; Vespa media var. lineolata Pérez, 1910; Vespa media media var. lugubris Birula, 1927; Dolichovespula media var. conjugens Paul, 1943; Dolichovespula media sugare Ishikawa, 1969; Dolichovespula borealis Lee, 1986.

Distribution in Iran: East Azerbaijan (Sakenin et al., 2010), Hamadan (Abd-Rabou et al., 2005).

General distribution: Europe except the extreme south; Asia, south and east to Southern Siberia, Mongolia, China, Korea, and Japan (Carpenter and Kojima, 1997).

Dolichovespula omissa (Bischoff, 1931)

Syn.: Vespa tripunctata Schenk, 1861; Vespa norvegica saxonica morpha ingrica Birula, 1930; Vespa omissa Bischoff, 1931; Vespa ingrica '(Birula) Bequaert, 1932.

Distribution in Iran: Iran: No locality cited (Pekkarinen and Huldén, 1995).


Dolichovespula sylvestris (Scopoli, 1763)

Syn.: Vespa parietum Harris, 1776; Vespa holsatica Fabricius, 1793; Vespa frontalis Latreille, 1802; Vespa campanaria Fowler, 1833; Vespa pilosella Costa, 1858; Vespa anglica Smith, 1843; Vespa silvestris [!] var. sumptuosa du Buysson, 1905; Dolichovespula xinjiangensis Lee, 1986.

Distribution in Iran: East Azerbaijan (Ebrahimi and Carpenter, 2008), Guilan, Khuzestan (Archer, 1981), Kohguiluyeh and Boyer-Ahmad (Castro and Dvořák, 2009), Mazandaran (Abd-Rabou et al., 2005; Ebrahimi and Carpenter, 2008), Tehran (Archer, 1981; Ebrahimi and Carpenter, 2008), West Azerbaijan (Birula, 1930; Archer, 1981; Blüthgen and Gusenleitner, 1970).

Genus *Vespa* Linnaeus, 1758

Syn.: *Macrovespa* Dalla Torre, 1904; *Nyctovespa* van der Vecht, 1959

*Vespa crabro* Linnaeus, 1758

Syn.: *Vespa vexator* Harris, 1776; *Vespa crabro major* Retzius, 1783; *Vespa crabro germana* Christ, 1791; *Vespa crabroniformis* Smith, 1852; *Vespa crabro var. borealis* Radoszkowski, 1863; *Vespa crabro var. anglica* Gribodo, 1892; *Vespa oberthuri* du Buysson, 1902; *Vespa flavo-fasciata* Cameron, 1903; *Vespa crabro var. tartarea* du Buysson, 1905; *Vespa crabro var. altaica* Pérez, 1910; *Vespa crabro var. caspica* Pérez, 1910; *Vespa crabro nigra* Birula, 1925a; *Vespa crabro vulgaris* Birula, 1925a; *Vespa crabro meridionalis* Birula, 1925a; *Vespa crabro chinensis* Birula, 1925a; *Vespa crabro var. birulaei* Bequaert, 1931; *Vespa crabro var. gribodoi* Bequaert, 1931.

Distribution in Iran: East Azerbaijan (Sakenin et al., 2010), Guilan (Pérez, 1910; Morice, 1921; Ebrahimi and Carpenter 2008), Golestan (Ebrahimi and Carpenter, 2008), Khuzestan (Abd-Rabou et al., 2005), Mazandaran (Ebrahimi and Carpenter, 2008), Khuzestan (Buysson 1912; Ebrahimi and Carpenter, 2008), Kohgiluyeh and Boyer-Ahmad (Ebrahimi and Carpenter, 2008), Khordestan (Ebrahimi and Carpenter, 2008), Lorestan (du Buysson, 1912; Ebrahimi and Carpenter, 2008), Markazi (Ebrahimi and Carpenter, 2008), Mazandaran (Guiglia, 1977), Qom (Ebrahimi and Carpenter, 2008), Sistan and Baluchestan (Blüthgen and Gusenleitner, 1970; Ebrahimi and Carpenter, 2008), Tehran (du Buysson, 1912; Blüthgen and Gusenleitner, 1970; Ebrahimi and Carpenter, 2008), Zanjan (Abbasi et al., 2008).

General distribution: Arabian Peninsula; Northern Africa; Southeast of Europe; Asia east to India, Nepal and China (Xinjiang); introduced into Madagascar and Mexico (Carpenter and Kojima, 1997).

Genus *Vespula* Thomson, 1869

Syn.: *Pseudovespa* Schmiedeknecht, 1881; *Paravespula* Blüthgen, 1938; *Allovespula* Blüthgen, 1943; *Rugovespula* Archer, 1982.

*Vespula germanica* (Fabricius, 1793)

Syn.: *Vespa maculata* Scopoli, 1763; *Vespa macularis* Olivier, 1792.

Distribution in Iran: Ardabil, Bushehr (Ebrahimi and Carpenter, 2008), East Azerbaijan (Ebrahimi and Carpenter, 2008; Sakenin et al., 2010), Fars (Guiglia, 1977; Ebrahimi and Carpenter, 2008), Ghazvin (Morice, 1921; Ebrahimi and Carpenter, 2008), Golestan, Hamadan, Hormozgan (Ebrahimi and Carpenter, 2008), Isfahan (Blüthgen and Gusenleitner, 1970), Kerman (Blüthgen and Gusenleitner, 1970; Ebrahimi and Carpenter, 2008), Kermanshah (Ebrahimi and Carpenter, 2008), Khorasan (Blüthgen and Gusenleitner, 1970; Guiglia, 1977; Ebrahimi and Carpenter, 2008), Kohgiluyeh and Boyer-Ahmad, Kordestan, Lorestan, Markazi, Mazandaran, Qom, Sistan and Baluchestan,
Tehran, West Azerbaijan (Ebrahimi and Carpenter, 2008), Zanjan (Abbasi et al., 2008).

**General distribution:** Asia east to Korea and south to northern India; Europe; Northern Africa; introduced into many regions of the world: Iceland, New Zealand, Australia, Ascension island, South Africa, Canada, Chile, Argentina, USA (Carpenter and Kojima, 1997).

*Vespula rufa* (Linnaeus, 1758)


**Distribution in Iran:** East Azerbaijan (Sakenin et al., 2010), Kordestan (Abd-Rabou et al., 2005).

**General distribution:** Europe except extreme south; Turkey, Georgia, through Siberia to Nepal, Russian Far East, Korea, and Japan (Carpenter and Kojima, 1997).

*Vespula vulgaris* (Linnaeus, 1758)

Syn.: *Vespa sexcincta* Panzer, 1799; *Vespa communis* de Saussure, 1857; *Vespa alascensis* Packard, 1870; *Vespa westwoodii* Shipp, 1893; *Vespa vulgaris* var. *pseudogermanica* Stolfa, 1932.

**Distribution in Iran:** Kermanshah (Abd-Rabou et al., 2005).
General distribution: Europe except extreme south; Asia south to Kazakhstan, Mongolia, Kashmir, Northern China, east to Korea and Japan; introduced into Iceland, New Zealand, and Australia (Carpenter and Kojima, 1997).

DISCUSSION

In total, nine vespine species are listed in this paper as fauna of Iran. As we mentioned in the introduction, Iran is a large country with various geographical regions so that diverse fauna of Vespinae is expected. Although several faunistic surveys were done in different regions of Iran by many researchers, it is possible that a few other new vespine will be discovered in the future. Therefore, continuing faunal samplings is necessary in Iran, especially in un-sampled regions. Also, application of new taxonomic methods (e.g. behavioral characters, electrophoresis, DNA sequencing and etc.) for an even more precise identification of Iranian specimens is suggested. The understanding of the evolutionary history of the Vespinae has changed greatly as new techniques and trends have developed. Many studies have only looked at behavioral characters (Greene, 1979) or a combination of behavioral and morphological characters in estimating phylogeny (Carpenter, 1987). The evolutionary history of the Vespinae has also been examined using techniques that do not rely on morphological or behavioral characters: protein electrophoresis (Varvio-Aho et al., 1984) and DNA sequencing (Schmitz and Moritz, 1990). The above-mentioned taxonomic studies, together with research into the biology and behavior of Iranian vespine specimens will result in new and interesting data for science.

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