

The Current Knowledge of the Pompilidae and Mutillidae (Hymenoptera: Aculeata) Fauna of Turkey

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ABSTRACT

This study is based on the material of the families Pompilidae and Mutillidae collected from different localities of Turkey in 1990-2014. In this study, 70 species and subspecies in 21 genera of the family Pompilidae and 38 species and subspecies in 18 genera of the family Mutillidae are listed. Among them: *Deuteragenia variegata erythroa* (Kohl, 1888); *Priocnemis (Priocnemis) pellipleurus* Wahis, 2006; *Agenioideus (Agenioideus) gentilis* (Klug, 1834); *Arachnospila (Ammosphex) wesmaeli* (Thomson, 1870) and *Arachnotheutes turgidus* (Tournier, 1890) from Pompilidae and subfamily Kudakrumiinae Krombein, 1979; genus *Pseudomyrmosa* Suárez, 1980 and *Pseudomyrmosa minuta* (Morawitz, 1894); *Pseudophotopsis armeniaca* (Skorikov, 1935); *Physetopoda rameli* Pagliano, 2009; *Physetopoda deserta* (Lelej, 1984) and *Smicromyrme (Astomyrme) asiaticus* Lelej, 1985 from Mutillidae are newly recorded from Turkey. New generic names are used in Pompilidae: *Deuteragenia* Šuster, 1912 for *Dipogon* sensu auct. and *Parabatozonus* Yasumatsu, 1936 for *Batozonellus* Arnold, 1937. In addition, new localities have been found for many species and subspecies, which have already been reported from Turkey.

Key words: Hymenoptera, Pompilidae, Mutillidae, fauna, new records, Turkey.

INTRODUCTION

Turkey occupies Asia Minor between the Mediterranean Sea and the Black Sea and stretches into continental Europe. The variable topography of Turkey with isolated highlands formed along the border with Georgia, Armenia and Iran after the Pliocene, has contributed to neoendemism in this area (Ljubomirov and Yildirim, 2008).

The family Pompilidae or spider wasps currently include 4855 species in 125 genera (Aguiar *et al.*, 2013). These wasps are distributed throughout the World, but mostly in the tropical regions (Pitts *et al.*, 2006). The spider wasps are solitary. Females usually nest in the ground, use a cavity in dry trees or grass, make clay nests on the stones, branches and trunks of the trees, as well as, on lower surface of the leaves. The females use the spiders as a prey, provisioning each cell with a single paralyzed spider. There are several cleptoparasitic genera, with the modes of cleptoparasitism differing among them (Shimizu *et al.*, 2012). In the Palaearctic Region 650 species are reported (Lelej and Loktionov, 2012a). A total of 200 species and six subspecies

from 35 genera belonging to the subfamilies Ceropalinae, Pepsinae and Pompilinae were recorded from Turkey. The type localities of 23 species and one subspecies from Pompilidae are located in Turkey, moreover, 19 species are endemic to this region (Yildirim and Wahis, 2010, 2011). Also, *Priocnemis pogonioides* (Costa, 1883) from Isparta recorded from Turkey also (Japoshvili *et al.*, 2011).

The family Mutillidae or velvet ants currently includes 212 genera and about 4300 described species (Lelej and Brothers, 2008; Aguiar *et al.*, 2013, updated). Most velvet ants are solitary ectoparasitoids of the enclosed immatures of other insects: Hymenoptera, Diptera, Lepidoptera, Coleoptera and Blattodea (Brothers *et al.*, 2000; Amini *et al.*, 2014). In the Palaearctic Region 525 species in 59 genera are reported (Lelej, 2002, updated). The velvet ant fauna of Turkey includes 70 species (including data below) in 22 genera (Lelej and Yildirim, 2009, Yildirim and Lelej, 2012, updated). Mutillidae inhabit mostly dry, sandy areas. Such arid places, frequently seen in the territory of modern Turkey, form a virtual melting plot, where the faunas of Middle and Central Asia meet these of Mediterranean. A total of 65 species and three subspecies from 21 genera belonging to the subfamilies Myrmosinae, Pseudophotopsidinae, Myrmillinae, Mutillinae and Dasylabrinae from Mutillidae were recorded from Turkey. The type localities of nine species from Mutillidae are located in Turkey. Moreover, five species are endemic (Lelej and Yildirim, 2009; Yildirim and Lelej, 2012).

In this study, the current knowledge of Pompilidae and Mutillidae species and subspecies of Turkey are investigated. The current number of taxa, including the identification below, increase to 205 species and 6 subspecies in 35 genera of Pompilidae and 70 species and 3 subspecies in 22 genera and six subfamilies of Mutillidae. The distribution of some species in Turkey is enlarged.

MATERIALS AND METHODS

The material of Pompilidae and Mutillidae was collected from different localities of Turkey in 1990-2014. The insect samples for this study were collected by sweeping plants with an insect net. Provinces of the collected specimens are given in alphabetical order in the following list. The material is deposited in the Entomology Museum, Erzurum, Turkey (EMET).

Faunal similarities between biogeographical regions of Turkey were evaluated by using Sorensen's coefficient of similarity (see Legendre and Legendre, 1998). The similarity matrix resulting from pair-wise calculations was then subjected to unweighted arithmetic average clustering (UPGMA; PAST program, version 1.57, Hammer *et al.*, 2006).

RESULTS

The following list presents 108 species in 39 genera of Pompilidae and Mutillidae from some provinces of Turkey.

*The Current Knowledge of the Pompilidae and Mutillidae Fauna of Turkey***Family: Pompilidae Latreille, 1804****Subfamily: Ceropalinae Radoszkowski, 1888*****Ceropales (Ceropales) albicincta (Rossius, 1790)***

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 08.07.2005, 2♀♀.

Ceropales (Hemiceropales) cribrata A. Costa, 1881

Material examined: Erzurum: Narman, 1583 m, 30.VII.2011, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 08.07.2005, 10♂♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♂, Pertek, Mercimek, 1437 m, 30.08.2012, 2♂♂.

Ceropales (Ceropales) maculata (Fabricius, 1775)

Material examined: Ardahan: Edegül, 1800 m, 11.08.2012, 1♀; Erzurum: Oltu, Sarısaz, 1421 m, 30.08.2012, 3♂♂, Pazaryolu, Kumaşkaya, 1800 m, 20.07.2011, 1♀, 2♂♂, Şenkaya, Paşalı, 1300 m, 31.07.2010, 1♀, Tortum, Arılı, 1650 m, 30.08.2012, 2♂♂; Kars: Sarıkamış, Karakurt, 1500 m, 08.07.2005, 1♀, 2♂♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 05.06.2011, 1♀, Meşelik, 900 m, 12.08.2011, 3♀♀.

Subfamily: Pepsinae Lepeletier de Saint Fargeau, 1845***Caliadurgus fasciatellus (Spinola, 1808)***

Material examined: Ağrı: Patnos, 23.07.2003, 1♀; Artvin: Yusufeli, Altıparmak, 1300 m, 25.07.2005, 3♀♀; Erzincan: Tercan, Topdağı, 1655 m, 04.08.2003, 1♀; Erzurum: Kargapazarı Mountains, 31.08.2005, 1♀; Giresun: Keşap, Güneyköy, 315 m, 03.07.2012, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 17.08.2005, 1♀.

Cryptocheilus (Cryptocheilus) alternatus alternatus (Lepeletier de Saint Fargeau, 1845)

Material examined: Iğdır: Suveren, 1000 m, 23.06.2010, 1♂.

Cryptocheilus (Cryptocheilus) alternatus caspius (Gussakovskij, 1952)

Material examined: Ankara: Kalecik, Kızılırmak, 625 m, 17.09.2011, 1♀; Manisa: Kırkağaç, Öbeçli, 190 m, 30.09.2011, 1♀.

Cryptocheilus (Cryptocheilus) discolor (Fabricius, 1793)

Material examined: Çanakkale: Biga, Bozlar, 20 m, 10.07.2011, 1♀; Malatya: Reşadiye Pass, 1510 m, 06.07.1990, 2♂♂.

Cryptocheilus (Adonta) egregius (Lepeletier de Saint Fargeau, 1845)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 14.07.2004, ♀.

Cryptocheilus (Adonta) fabricii (Vander Linden, 1827)

Material examined: Erzurum: Atatürk University field, 1850 m, 28.07.2010, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 29.06.2010, ♀, 23.07.2005, 25♀♀, 5♂♂; Ordu: Perşembe, Alınca, 23.07.2014, 1♂.

***Cryptocheilus (Adonta) fischeri* (Spinola, 1838)**

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 14.07.2004, ♀.

***Cryptocheilus (Adonta) guttulatus* (A. Costa, 1887)**

Material examined: Kars: Kağızman, 1750 m, 22.06.2010, 1♀.

***Cryptocheilus (Adonta) notatus* (Rossius, 1792)**

Material examined: Artvin: Ardanuç, 13.06.2008, 1♂; Kars: Sarıkamış, Karakurt, 1500 m, 14.07.2004, 2♀♀, 4♂♂.

***Cryptocheilus (Adonta) variabilis* (Rossius, 1790)**

Material examined: Erzurum: Yeşilyayla, 1950 m, 01.07.2010, 1♂, Aşkale, Küçükgeçit, 1751 m, 09.08.2011, 1♂; Kars: Sarıkamış, Karakurt, 1500 m, 19.07.2004, 3♀♀, 2♂♂; Tunceli: Mazgirt, Meşelik, 900 m, 22.08.2011, 2♀♀, 1♂, Pülümür, Akdik, 1608 m, 23.08.2011, 2♀♀, Sağlamtaş, 1757 m, 05.08.2012, 4♀♀, 2♂♂.

***Cryptocheilus (Adonta) variipennis* Šustera, 1924**

Material examined: Tunceli: Pülümür, Akdik, 1608 m, 23.08.2011, ♂.

***Cryptocheilus (Adonta) versicolor* (Scopoli, 1763)**

Material examined: Artvin: Yusufeli, Darıcan, 670 m, 16.06.2010, 1♂; Erzurum: Horasan, Muratbağı, 1860 m, 24.08.2011, 2♀♀, Şenkaya, Paşalı, 1300 m, 31.07.2010, 1♂; Ordu: Perşembe, Çaytepe, 23.VII.2014, 3♂♂.

***Deuteragenia variegata erythroa* (Kohl, 1888)**

Material examined: Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, ♀.

This subspecies is newly recorded from Turkey.

***Deuteragenia variegata variegata* (Linnaeus, 1758)**

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 01.07.2004, 2♂♂.

***Priocnemis (Umbripennis) coriacea* Dahlbom, 1843**

Material examined: Erzurum: Oltu, 12.07.2004, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 16.09.2004, 1♀; Tunceli: Mazgirt, Kalaycı, 950 m, 28.04.2010, 1♀, 10.05.2011, 2♂♂, 02.06.2012, 1♀, 1200 m, 30.06.2011, 1♀.

***Priocnemis (Umbripennis) fallax* Verhoeff, 1922**

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 27.08.2004, 6♀♀.

***Priocnemis (Priocnemis) fastigiata* Haupt, 1934**

Material examined: Ordu: Perşembe, Çaytepe, 23.07.2014, 2♂♂.

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Priocnemis (Priocnemis) hyalinata (Fabricius, 1793)

Material examined: Iğdır: Çalpala, 950 m, 23.06.2010, 1♂.

Priocnemis (Priocnemis) minuta (Vander Linden, 1827)

Material examined: Kars: Sankamış, Karakurt, 1500 m, 14.07.2004, 1♀; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, ♂.

Priocnemis (Priocnemis) parvula Dahlbom, 1845

Material examined: Kars: Sankamış, Karakurt, 1500 m, 29.08.2003, 4♀♀, 1♂.

Priocnemis (Priocnemis) pellipleuris Wahis, 1998

Material examined: Tunceli: Mazgirt, Kalaycı, 950 m, 10.05.2011, 2♀♀, 1200 m, 30.06.2011, 1♀, 14.07.2011, 1♀, 12.08.2011, 1♀, 20.08.2011, 2♀♀, 22.08.2011, 1♀, Pülümür, Akdik, 1608 m, 13.06.2011, 1♀.

This species is newly recorded from Turkey.

Priocnemis (Priocnemis) propinqua (Lepelletier de Saint Fargeau, 1845)

Material examined: Tunceli: Mazgirt, Kalaycı, 1200 m, 05.08.2011, 1♀.

Priocnemis (Priocnemis) schioedtei Haupt, 1927

Material examined: Artvin: Yusufeli, İshan, 700 m, 29.06.2003, 1♀; Erzurum: Oltu, 1300 m, 12.06.2004, 1♀.

Priocnemis (Umbripennis) sulci Balthasar, 1943

Material examined: Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 17.06.2010, 1♀; Osmaniye: Nur Mountains, 24.05.1992, 1♀; Tunceli: Mazgirt, Kalaycı, 950 m, 10.05.2011, 5♀♀, 24♂♂, 24.05.2011, 10♂♂, 20.08.2011, 5♂♂, Pülümür, Akdik, 1608 m, 18.06.2011, 2♀♀.

Priocnemis (Umbripennis) vulgaris (Dufour, 1841)

Material examined: Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 05.09.2012, 1♀; Erzurum: Atatürk University field, 1850 m, 29.07.2003, 1♂, Oltu, 1275 m, 20.08.2011, 1♀, Pazaryolu, Kumaşkaya, 1800 m, 20.07.2011, 1♀, Tekman, 8.07.2004, 1♂; Tunceli: Mazgirt, Kalaycı, 950 m, 10.05.2011, 2♀♀, 6♂♂, 24.05.2011, 4♀♀, 28♂♂, 3.06.2011, 1♀, Pülümür, Balpayan, 1954 m, 19.09.2011, 2♂♂.

Auplopus (Auplopus) albifrons (Dalman, 1823)

Material examined: Erzurum: Oltu, Çamlıbel, 1750 m, 02.07.1997, 1♀, Tekman, 1900 m, 08.08.2004, 1♀; Kars: Sankamış, Karakurt, 1500 m, 08.07.2005, 2♀♀, 5♂♂; Ordu: Perşembe, 23.06.2014, 3♀♀.

Auplopus (Auplopus) carbonarius (Scopoli, 1763)

Material examined: Artvin: Yusufeli, Pamukçular, 700 m, 16.06.2010, 1♀; Erzurum: Palandöken, 2400 m, 01.VIII.2010, 1♀, Oltu, 1275 m, 20.08.2011, 1♂, Tortum, Aksu, 1300 m, 05.08.2010, 1♂, Arılı, 1650 m, 30.08.2012, 1♀, Uzundere, Balıklı, 1040 m, 29.06.2003, 1♀; Iğdır: Bayraktutan, 890 m, 17.08.2004,

1♀; Kars: Sarıkamış, Karakurt, 1500 m, 17.07.2005, 14♀♀, 4♂♂, 25.08.2002, 1♂; Ordu: Perşembe, 23.06.2014, 2♀♀; Tunceli: Mazgirt, Kalaycı, 1200 m, 02.06.2012, 1♀, 20.08.2011, 1♀.

Auplopus (Auplopus) rectus (Haupt, 1927)

Material examined: Erzurum: Şenkaya, Akşar, 1275 m, 20.08.2011, 1♀, Tortum, Aksu, 1400 m, 05.08.2010, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 07.08.2003, 25♀♀, 4♂♂.

Subfamily: Pompilinae Latreille, 1804

Agenioideus (Agenioideus) apicalis (Vander Linden, 1827)

Material examined: İstanbul: Üsküdar, 12.07.2012, 1♀; Iğdır: Suveren, 1000 m, 23.06.2010, 1♂.

Agenioideus (Schizanoplius) ciliatus (Lepelletier de Saint Fargeau, 1845)

Material examined: Erzurum: Şenkaya, Akşar, 1275 m, 20.08.2011, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 19.08.2003, 4♀♀.

Agenioideus (Schizanoplius) excisus (F. Morawitz, 1890)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 07.08.2013, 4♀♀, 10♂♂.

Agenioideus (Agenioideus) gentilis (Klug, 1834)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 23.07.2002, 3♀♀; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♀.

This species is newly recorded from Turkey.

Agenioideus (Agenioideus) nubecula (A. Costa, 1874)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 14.09.2003, 10♀♀; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 2♂♂.

Agenioideus (Schizanoplius) ruficeps (Eversmann, 1849)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 20.08.2003, 2♀♀, 4♂♂.

Agenioideus (Agenioideus) sericeus (Vander Linden, 1827)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 7.08.2013, 18♂♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 2♂♂, Pülümür, Balpayan, 1954 m, 19.08.2011, 1♀.

Agenioideus (Agenioideus) usurarius (Tournier, 1889)

Material examined: Tunceli: Mazgirt, Meşelik, 900 m, 28.08.2011, 1♀.

Anoplius (Anoplius) concinnus (Dahlbom, 1843)

Material examined: Erzurum: Pazaryolu, Kumaşkaya, 1800 m, 20.VII.2011, 3♀♀.

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Anoplius (Arachnoproctonus) infuscatus (Vander Linden, 1827)

Material examined: Erzincan: 1000 m, 15.08.2012, 1♂; Erzurum: Oltu, 1275 m, 18.06.2011, 1♂, Pazaryolu, Kumaşkaya, 1800 m, 20.07.2011, 1♂; Giresun: Görele, Çavuşlu, 22.06.2014, 1♀, Haydari, 22.06.2014, 1♂; Iğdır: Çalpala, 950 m, 23.06.2010, 1♂, Melekli, 830 m, 23.06.2010, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 19.06.2003, 2♀♀, 18♂♂; Ordu: Perşembe, Çaytepe, 23.06.2014, 1♂.

Anoplius (Anoplius) nigerrimus (Scopoli, 1763)

Material examined: Erzurum: Pazaryolu, Kumaşkaya, 1800 m, 15.08.2011, 2♀♀; Ordu: Perşembe, Kaleyaka, 23.06.2014, 1♂; Rize: İkizdere, Tulumpınar, 19.06.2014, 1♂.

Anoplius (Anoplius) schlettereri (Radoszkowski, 1888)

Material examined: Tunceli: Mazgirt, Kalaycı, 1200 m, 28.04.2010, 2♀♀.

Anoplius (Arachnoproctonus) viaticus (Linnaeus, 1758)

Material examined: Artvin: Yusufeli, Darıca, 670 m, 16.06.2010, 1♂; Erzurum: Oltu, 1275 m, 18.06.2011, 2♀♀, Tortum, Arılı, 1650 m, 05.08.2010, 1♀; Kars: Sarıkamış, Akkurt, 1525 m, 22.06.2010, 1♀, Karakurt, 1500 m, 27.08.2004, 4♀♀, 5♂♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 05.06.2011, 1♀, 5♂♂, 20.08.2011, 1♂, Meşelik, 900 m, 12.08.2011, 3♀♀, 2♂♂.

Anospilus (Anospilus) orbitalis (A. Costa, 1863)

Material examined: Mersin: Ayvagediği, 28.08.2014, 2♀♀.

Aporinellus (Aporinellus) moestus (Klug, 1834)

Material examined: Erzurum: Atatürk University field, 1850 m, 05.05.2010, 1♀; Kayseri: Kuşçu, 1124 m, 25.08.2013, 1♀; Tunceli: Mazgirt, Meşelik, 900 m, 12.08.2011, 1♂, 14.08.2011, 2♂♂.

Aporus (Aporus) pollux (Kohl, 1888)

Material examined: Erzurum: Tortum, Kınalı, 1350 m, 03.08.2004, 1♀.

Arachnospila (Ammosphex) anceps (Wesmael, 1851)

Material examined: Tunceli: Mazgirt, Kalaycı, 1200 m, 05.06.2011, 2♂♂, 14.06.2011, 1♂, 18.06.2011, 1♂, 23.06.2011, 1♀, 12.07.2011, 1♀, 19.07.2011, 1♀, 20.08.2011, 2♂♂.

Arachnospila (Arachnospila) clericalis (F. Morawitz, 1889)

Material examined: Iğdır: Aralık, 830 m, 23.06.2010, 1♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 05.06.2011, 1♀.

Arachnospila (Ammosphex) colpostoma (Kohl, 1886)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 19.06.2007, 20♀♀, 25♂♂.

Arachnospila (Anoplochaes) fuscomarginata (Thomson, 1870)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 29.08.2003, 6♀♀, 2♂♂.

Arachnospila (Anoplochaes) minutula (Dahlbom, 1842)

Material examined: Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 05.09.2012, 1♀; Erzurum: Güngörmez, Dumlubaba, 2500 m, 01.07.2010, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 09.09.2003, 7♂♂.

Arachnospila (Ammosphex) trivialis (Dahlbom, 1843)

Material examined: Erzurum: Pazaryolu, Kumaşkaya, 1800 m, 20.07.2011, 1♂; Tunceli: Mazgirt, Meşelik, 900 m, 28.08.2011, 1♀.

Arachnospila (Ammosphex) wesmaeli (Thomson, 1870)

Material examined: Erzurum: Şenkaya, Akşar, 1275 m, 20.08.2011, 1♀.

This species is newly recorded from Turkey.

Arachnotheutes turgidus (Tournier, 1890)

Material examined: Tunceli: Mazgirt, Meşelik, 900 m, 14.08.2011, 1♀.

This species is newly recorded from Turkey.

Parabatozonus lacerticida (Pallas, 1771)

Material examined: Adana: Balcalı, 12.07.2011, 1♀; Balıkesir: İvrindi, Korucu, 196 m, 02.08.2010, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 19.06.2003, 3♀♀, 10♂♂; Tunceli: Pülümür, Akdik, 1608 m, 12.06.2011, 2♀♀, 2♂♂.

Dicyrtomellus tingitanus argenteus Wahis, 1982

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 23.08.2002, 8♂♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♂, Pülümür, Akdik, 1608 m, 19.06.2011, 1♂.

Eoferreola anatolica Priesner, 1973

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 07.05.2003, 3♀♀.

Eoferreola manticata (Pallas, 1771)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 19.08.2005, 3♀♀; Tunceli: Ovacık, Gözeler, 1352 m, 28.07.2012, 1♂.

Eoferreola rhombica (Christ, 1791)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 19.06.2004, 1♀; Tunceli: Pülümür, Akdik, 1608 m, 12.06.2011, 2♂♂.

Episyron albonotatum (Vander Linden, 1827)

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 16.08.2002, 5♀♀, 15♂♂.

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***Episyron candiotum* Wahis, 1966**

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 19.07.2013, 15♂♂.

***Episyron gallicum* (Tournier, 1889)**

Material examined: Bayburt: Demirözü, 1650 m, 17.06.2010, ♀; Erzurum: Horasan, Muratbağı, 1860 m, 24.08.2011, 1♂, İspir, 1236 m, 23.06.2011, 1♀, Tortum, Arılı, 1450 m, 05.08.2010, 1♂, Derekapı, 1300 m, 05.08.2010, 2♂♂; Kars: Sarıkamış, Karakurt, 1500 m, 29.06.2010, 1♀, 23.08.2005, 25♀♀, 40♂♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♂, Meşelik, 900 m, 12.08.2011, 1♂.

***Episyron rufipes* (Linnaeus, 1758)**

Material examined: Artvin: Yusufeli, Işhan, 600 m, 16.06.2010, 1♂, Pamukçular, 700 m, 16.06.2010, 1♂; Erzurum: Atatürk University field, 1850 m, 20.08.2010, 1♂; Iğdır: Aralık, 830 m, 23.06.2010, 1♂.

***Evagetes dubius* (Vander Linden, 1827)**

Material examined: Erzurum: Tortum, Arılı, 1450 m, 05.08.2010, 2♀♀; Kars: Sarıkamış, Karakurt, 1500 m, 14.09.2004, 2♂♂.

***Evagetes pectinipes* (Linnaeus, 1758)**

Material examined: Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♂.

***Evagetes tumidosus* (Tournier, 1890)**

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 16.07.2005, 2♀♀, 4♂♂.

***Homonotus sanguinolentus* (Fabricius, 1793)**

Material examined: Kars: Kağızman, 1750 m, 22.06.2010, 1♀.

***Tachyagetes filicornis* (Tournier, 1889)**

Material examined: Erzurum: Oltu, Sarısaz, 1400 m, 25.05.2007, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 22.08.2004, 2♀♀, 4♂♂.

***Telostegus inermis* (Brullé, 1832)**

Material examined: Artvin: Yusufeli, Pamukçular, 700 m, 16.06.2010, 1♀; Erzurum: Şenkaya, Akşar, 1275 m, 20.08.2011, 1♀, Tortum, Arılı, 1450 m, 05.07.2010, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 29.08.2003, 15♀♀, 25♂♂; Tunceli: Mazgirt, Meşelik, 900 m, 20.08.2011, 1♂.

Family: Mutillidae Latreille, 1802

Subfamily: Myrmosinae Fox, 1894

***Krombeinella aramaea* (Suárez, 1963)**

Material examined: Diyarbakır: Dicle University Field, 700 m, 08.05.2000, 1♂, Piriçlik, 700 m,

07.05.2002, 1♂.

***Krombeinella beaumonti* (Invrea, 1953)**

Material examined: Tunceli: Ovacık, Havuzlu, 39°24'17"N;39°15'29"E, 1392 m, 20.07.2014, 1♂, Pülümür, Akdiken, 1608 m, 06.07.2011, 1♂.

***Myrmosa atra* Panzer, 1801**

Material examined: Bayburt: Kopdağı, 2400 m, 12.08.2009, 1♂; Kars: Sarıkamış, Karakurt, 1500 m, 16.07.2005, 1♂.

***Paramyrmosa radoszkowskyi* (de Saussure, 1880)**

Material examined: Tunceli: Mazgirt, Kalaycı, 950 m, 24.06.2009, 1♂, Pülümür, Akdiken, 1608 m, 06.07.2011, 1♂.

Subfamily: Kudakrumiinae Krombein, 1979

Diagnosis

Male: The male of this subfamily similar with that of subfamily Myrmosinae by having metasomal segment 2 without lateral felt line on tergum or sternum, by eye with short setae visible under large magnification, by veins of fore wing touch the wing apex but differs by having hypopygium (sternum 8) without lateral lobe or processes (with two or four lateral ones in Myrmosinae), by metasomal terga basally not constricted (constricted basally in Myrmosinae).

Female: The female of this subfamily similar with that of subfamily Myrmosinae by having movable pronotum which distinctly separated from other parts of mesosoma but differs by lacking ocelli (developed in Myrmosinae), by clypeus basally without any median tubercle or carina (with median tubercle or longitudinal carina in Myrmosinae).

In the Palearctic fauna there are five species of genus *Pseudomyrmosa* Suárez, 1980.

This subfamily, genus and species are newly recorded from Turkey.

Genus: *Pseudomyrmosa* Suárez, 1980

***Pseudomyrmosa minuta* (Morawitz, 1894)**

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 17.07.2005, 1♂.

Subfamily: Pseudophotopsidinae Bischoff, 1920

***Pseudophotopsis armeniaca* (Skorikov, 1935)**

Material examined: Erzurum: Şenkaya, Akşar, 1275 m, 20.08.2011, 1♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1200 m, 1♂.

This species is newly recorded from Turkey.

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***Pseudophotopsis syriaca* (André, 1900)**

Material examined: Denizli: Civril, Çakallar, 960 m, 05.07.2013, 1♀.

Subfamily Myrmillinae Bischoff, 1920

***Myrmilla* (*Myrmilla*) *calva* (de Villers, 1789)**

Material examined: Kars: Sarıkamış, Karakurt, TCK Çeşmesi, 1500 m, 04.08.2006, 1♂.

***Myrmilla* (*Myrmilla*) *caucasica* (Kolenati, 1846)**

Material examined: Aydın: Cine, 700 m, 18.08.2010, 1♀; Tunceli: Mazgirt, Kalaycı, 1000 m, 20.08.2012, 2 ♂♂.

Subfamily Mutillinae Latreille, 1802

***Ctenotilla caeca* (Radoszkowski, 1879)**

Material examined: Erzurum: Oltu, 1275 m, 20.08.2011, 1♂, Şenkaya, Akşar, 1275 m, 20.07.2011, 1♂, Tortum, Suyatağı, 21.07.2012, 1♂; Iğdır: Aralık, 830 m, 23.09.2010, 1♂; Kars: Sarıkamış, Karakurt, 1500 m, 27.09.2006, 1♂; Tunceli: Mazgirt, Meşelik, 900 m, 12.08.2011, 1♂, Pülümür, Akdiken, 1608 m, 06.08.2011, 1♂.

***Mutilla europaea* Linnaeus, 1758**

Material examined: Erzurum: Çatyolu, 1250 m, 12.08.2010, 1♂, Güngörmez, 2000 m, 19.08.2009, 1♂; Iğdır: Suveren, 1000 m, 23.06.2010, 1♀; Kars: Sarıkamış, Karakurt, 1500 m, 13.08.2009, 1♂.

***Mutilla quniquemaculata* Cyrillo, 1787**

Material examined: Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♀.

***Tropidotilla litoralis* (Petagna, 1787)**

Material examined: Tunceli: Mazgirt, Meşelik, 900 m, 02.06.2012, 1♀, 12.08.2011, 1♀, 1♂, Ovacık, Ovacık Valley, 1476 m, 05.08.2012, 1♂.

***Ronisia brutia brutia* (Petagna, 1787)**

Material examined: Aydın: Atça, 80 m, 28.07.2013, 1♀.

***Ronisia brutia duplex* (Radoszkowski, 1885)**

Material examined: Erzurum: Pazaryolu, Kumaşkaya, 40°31'51"N;40°45'17"E, 1825 m, 25.06.2014, 1♂.

***Dentilla curtiventris* (André, 1901)**

Material examined: Bayburt: 1600 m, 12.08.2009, 1♂; Erzurum: Güngörmez, 2000 m, 19.08.2009, 3 ♂♂, Aziziye, Özbek, 2000 m, 05.08.2011, 1♂, Rizekent, 2100 m, 25.08.2012, 1♂; Kars: Sarıkamış, Akkurt, 1525 m, 22.07.2010, 1♂, Karakurt, 1500 m, 23.06.2005, 1♂, 13.08.2009, 2♂♂; Tunceli: Mazgirt, 900 m, 28.08.2011, 1♂.

***Dentilla erronea* (André, 1902)**

Material examined: Erzurum: Oltu, 1275 m, 20.08.2011, 1♂, Şenkaya, Akşar, 1275 m, 20.07.2011, 1♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, ♂.

***Nemka viduata viduata* (Pallas, 1773)**

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 13.08.2009, 1♂; Tunceli: Pülümür, Pülümür Valley, 39°12'30"N;39°44'56"E, 1015 m, 19.07.2014, 2♂♂.

***Physetopoda rameli* Pagliano, 2009**

Material examined: Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♂.

This species is newly recorded from Turkey.

***Physetopoda daghestanica* (Radoszkowski, 1885)**

Material examined: Bayburt: Kopdağı, 2400 m, 05.09.2012, 1♂; Erzurum: Güngörmez, 2000 m, 19.08.2009, 5♂♂, İspir, Çapans, 2150 m, 20.08.2009, 1♂, Şenkaya, Akşar, 1275 m, 20.07.2011, 1♂; İğdir: Aralık, 830 m, 23.06.2010, 1♂.

***Physetopoda deserta* (Lelej, 1984)**

Material examined: Aydın: Cine, 700 m, 18.08.2010, 1♂; Bayburt: Kopdağı, 2400 m, 05.09.2012, 1♂.

This species is newly recorded from Turkey.

***Physetopoda punctata* (Latreille, 1792)**

Material examined: Erzurum: İspir, Çapans, 2150 m, 20.08.2009, ♂.

***Physetopoda scutellaris* (Latreille, 1792)**

Material examined: Erzurum: Güngörmez, 2000 m, 19.08.2009, 3♂♂, Güzelyayla, 2000 m, 19.08.2009, 1♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♂.

***Physetopoda similis* (Lelej, 1984)**

Material examined: Erzurum: Oltu, Subatık, 1250 m, 27.08.2002, 1♂; Tunceli: Mazgirt, Kalaycı, 1000 m, 20.08.2012, 4♂♂, Meşelik, 900 m, 12.08.2011, 1♂.

***Smicromyrme (Astomyrme) asiaticus* Lelej, 1985**

Material examined: Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♂.

This species is newly recorded from Turkey.

***Smicromyrme (Astomyrme) ausonius* Invrea, 1950**

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 23.08.2002, 1♂; Tunceli: Nazımiye, Dereova, 1871m, 09.08.2012, 1♂, Pülümür, Pülümür Valley, 39°12'30"N;39°44'56"E, 1015 m, 19.07.2014, 1♂.

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***Smicromyrme (Erimyrme) azerbaijanicus* Lelej, 1985**

Material examined: Tunceli: Çiçekli, 39°03'35"N;39°25'30"E, 1104 m, 25.07.2014, 1♂.

***Smicromyrme (Erimyrme) pulawskii* Suárez, 1975**

Material examined: Erzurum: Güngörmez, 2000 m, 19.08.2009, 1♂, Oltu, 1275 m, 20.08.2011, 1♂; İğdır: Bayraktutan, 17.08.2005, 1♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.08.2009, 1♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 2♂♂.

***Smicromyrme (Smicromyrme) rufipes* (Fabricius, 1787)**

Material examined: Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♂.

***Smicromyrme (Eremotilla) schwarzi* Suárez, 1975**

Material examined: Erzurum: Oltu, 1275 m, 20.08.2011, 1♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 1♂.

***Smicromyrme (Erimyrme) sicanus* (De Stefani, 1887)**

Material examined: Tunceli: Mazgirt, Meşelik, 900 m, 12.08.2011, 1♂.

***Smicromyrme (Smicromyrme) turanicus* (Morawitz, 1893)**

Material examined: Tunceli: Mazgirt, Kalaycı, 1000 m, 20.08.2012, 1♂.

***Artiotilla biguttata* (A. Costa, 1858)**

Material examined: Erzincan: Refahiye, 1500 m, 20.VI.2009, 1♂; Erzurum: Şenkaya, Akşar, 1275 m, 20.VIII.2011, 1♂.

***Trogaspidia catanensis* (Rossi, 1794)**

Material examined: Burdur: Bucak, Gündoğdu, 830 m, 20.08.2012, 1♂.

Subfamily Dasylabrinae Invrea, 1964

***Dasylabris (Craspedopyga) manderstiernii cypria* (Sichel and Radoszkowski, 1870)**

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 13.08.2009, 1♂.

***Dasylabris (Craspedopyga) manderstiernii manderstiernii* (Radoszkowski, 1865)**

Material examined: Tunceli: Mazgirt, Meşelik, 900 m, 14.08.2011, 1♂.

***Dasylabris (Inbaltilla) scutila* Skorikov, 1935**

Material examined: Kars: Sarıkamış, Karakurt, 1500 m, 16.07.2005, 1♂; Tunceli: Mazgirt, Meşelik, 900 m, 12.08.2011, 1♂; İğdır: Tuzluca, 870 m, 16.06.2009, 1♂.

***Stenomutilla bizonata* (F. Smith, 1856)**

Material examined: Erzurum: Ilica, Rizekent, 2100 m, 25.08.2012, 1♂; Tunceli: Mazgirt, Kalaycı, 1200 m, 20.08.2011, 2♂♂.

DISCUSSION

The Turkish pompilid and mutillid fauna is very rich and contains a large number of species in comparison with some other countries (Yıldırım and Wahis, 2010; Yıldırım and Lelej, 2012), which are well known for their high biodiversity. The mutillid fauna numbers 70 species (including new records above) in Turkey, 57 are recorded from Greece, 23 from Georgia, 41 from Armenia, 45 from Azerbaijan, 92 from Iran (Lelej, 2002). The spider wasps fauna numbers 205 species (including new records above) in Turkey while 284 species are recorded from Europe, 64 from Bulgaria, 91 from Greece (Wahis, 2013). Within the seven biogeographical regions of Turkey most species are known from Eastern Anatolia: Pompilidae - 149, Mutillidae - 54 (Figs. 1, 3). Cluster analysis of faunal similarities among seven biogeographical regions of Turkey for 205 species of Pompilidae produce two major clusters (Fig. 1): Black Sea, Central Anatolia, East Anatolia and Mediterranean (bootstrap probability 68 %) and Aegean and Marmara (bootstrap probability 45 %). The ordination (Fig. 2) shows the same result. Such analysis for 70 species of Mutillidae (Figs. 3, 4) produce one main cluster: Black Sea, Central Anatolia, Marmara and East Anatolia (bootstrap probability 69 %) and three separate branches. The fauna of Southeast Anatolia (Pompilidae - 58 species, Mutillidae - 5) (Figs. 1, 3) demonstrates minimal similarity (0.45 and 0.2 correspondently) with other Turkish fauna and belongs to Sumerian Province of Mediterranean Subregion of Palaearctic (after Semenev Tian-Shanskij, 1935) or Syrian plane Province of Saharo-Arabian Subregion of Sethian desert Region (after Emeljanov, 1974).

In this study, of the 70 species of Pompilidae listed in current paper four species and one subspecies are newly recorded from Turkey, and 25 species are provided by collected material (absent in the previous list - Yıldırım and Wahis, 2011); for 39 species the distribution within the provinces of Turkey is enlarged. The current number of taxa of Pompilidae, including new records above, increase to 205 species and 6 subspecies in 35 genera. The current knowledge of Pompilidae species and subspecies of Turkey according to current changes in the classification of this family (Lelej and Loktionov, 2012b; Loktionov and Lelej, 2014) are investigated. New generic names are used: *Deuteragenia* Šuster, 1912 for *Dipogon* sensu auct. and *Parabatozonus* Yasumatsu, 1936 for *Batozonellus* Arnold, 1937. More valuable results are found for Mutillidae. The subfamily Kudakrumiinae Krombein, 1979, genus *Pseudomyrmosa* Suárez, 1980 and five species are newly recorded from Turkey. The current number of taxa of Mutillidae, including new records above, increase to 70 species and 3 subspecies in 22 genera and six subfamilies. The aim of this paper is update the list of the taxa according to current changes in classification, provide new biological data on Pompilidae and Mutillidae as enlarge the distribution of species within Turkey.

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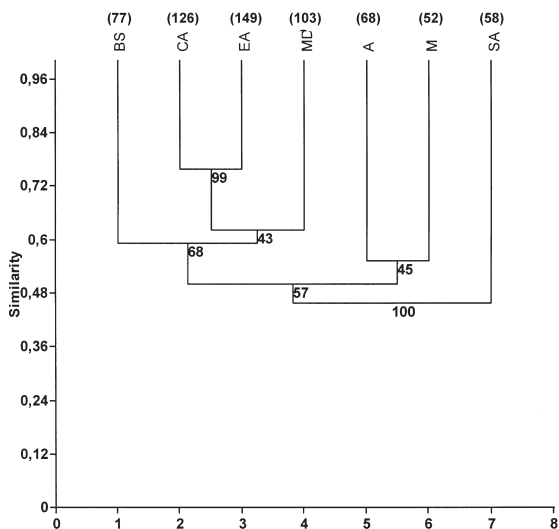


Fig. 1. Similarity of 205 species of Pompilidae from seven biogeographical regions of Turkey. Bootstrap probabilities (expressed in percentages) are indicated at the node of each cluster. (Dice, $r=0.8712$). The number of species is given above the region name. Names of regions: A - Aegean, BS - Black Sea, CA - Central Anatolia, EA - Eastern Anatolia, M - Marmara, MD - Mediterranean, SA - Southeastern Anatolia. (Data from Yildirim and Wahis, 2011 and current paper).

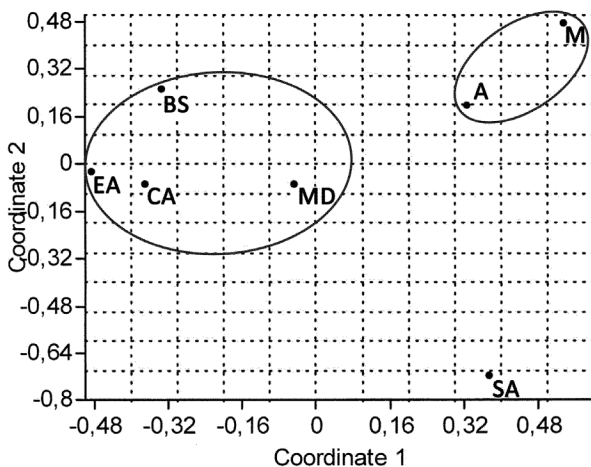


Fig. 2. Ordination of the seven biogeographical regions of Turkey in the reduced space of the first two principal coordinates for 205 species of Pompilidae. (Dice, $r=0.8712$). The names of regions see Fig. 1. (Data from Yildirim and Wahis, 2011 and current paper).

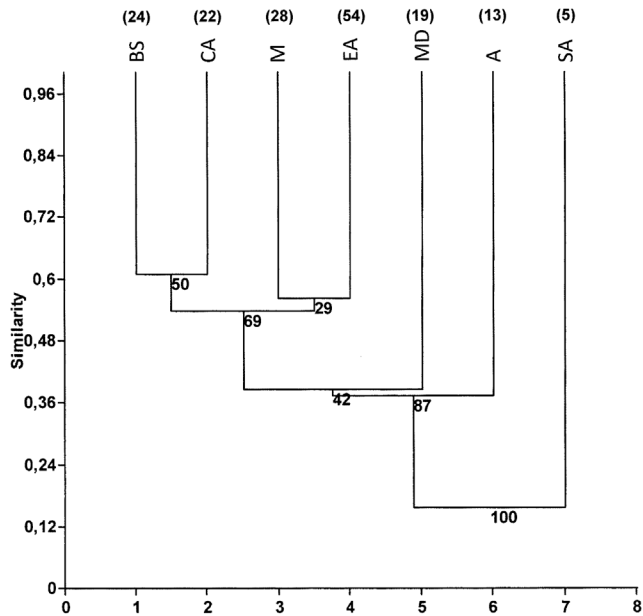


Fig. 3. Similarity of 70 species of Mutillidae from seven biogeographical regions of Turkey. (Dice, $r=0.954$). Bootstrap probabilities (expressed in percentages) are indicated at node of each cluster. The number of species is given above the region name. The names of regions see Figure 1. (Data from Yildirim and Lelej, 2012 and current paper).

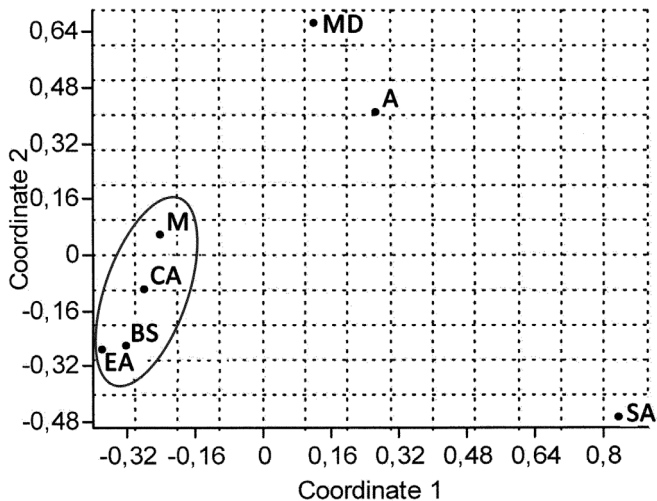


Fig. 4. Ordination of the seven biogeographical regions of Turkey in the reduced space of the first two principal coordinates for 70 species of Mutillidae (Dice, $r=0.954$). The names of regions see Figure 1. (Data from Yildirim and Lelej, 2012 and current paper).

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