

Contribution to the knowledge of the Sphecidae and Crabronidae (Hymenoptera: Aculeata) fauna of Turkey

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This study is based upon material of the families Sphecidae and Crabronidae collected from different localities of Turkey between 2007 and 2010. As a result, 22 species and subspecies from 8 genera belonging to the family Sphecidae and 118 species and subspecies from 37 genera belonging to the family Crabronidae were recorded from Turkey. Separately, new localities have been found for some species and subspecies which have already been reported in Turkey.

Keywords: Hymenoptera, Sphecidae, Crabronidae, fauna, Turkey.

Cette étude est basée sur du matériel des familles Sphecidae et Crabronidae recueilli dans les différentes localités de la Turquie entre 2007 et 2010. En conséquence, 22 espèces et sous-espèces de 8 genres appartenant à la famille des Sphecidae et 118 espèces et sous-espèces de 37 genres appartenant à la famille des Crabronidae ont été répertoriés pour la Turquie. Par ailleurs, de nouvelles localités ont été trouvées pour certaines espèces et sous-espèces qui ont déjà été signalées en Turquie.

Mots clés: Hymenoptera, Sphecidae, Crabronidae, faune, Turquie.

1. INTRODUCTION

Sphecidae is a cosmopolitan family of 660 species in three subfamilies: Ammophilinae, Sceliphrinae, and Sphecinae. Adults are medium to large, some tropical specimens reaching 52 mm in length. The mud-daubers (Sceliphrinae) often build their nests from mud. Adults of other subfamilies nest in preexisting cavities or, more often, construct a nest in the ground. Within the family, a broad range of behavior exists, ranging from parasitoid-like to primitive social. Prey includes Araneae, orthopteroids, or Lepidoptera larvae. Crabronidae is the largest of the sphecoform families, with about 3400 species around the world in two subfamilies: Crabroninae and Larrinae. Nesting behaviour is variable; members of Larrinae tend to be ground nesters although Trypoxylonini (Larrinae) nest in preexisting cavities or in twigs, although many are ground nesters. Prey consists of an exceptionally wide range of insects and spiders (Araneae): 12 orders of insects are known to be preyed upon (Goulet & Huber, 1993).

Turkey is one of the most interesting countries in the West Palaearctic region, where most of the insect families including the Sphecidae and Crabronidae are known to occur. Thus, a number of faunistic studies about the families Sphecidae and Crabronidae have been conducted by foreign and native researchers in Turkey. Ljubomirov & Yıldırım (2008) prepared annotated catalogue of the Ampulicidae, Sphecidae, and Crabronidae (Insecta: Hymenoptera) of Turkey, and a total of 530 species and 19 subspecies belonging to 78 genera were recorded in this catalogue. But, Straka (2005) is not evaluated in this catalogue. Later, Hepdurgun *et al.* (2007) and Tüzün & Yüksel (2010) reported several new records from Turkey, and a total number was reached to 544 species and 19 subspecies belonging to 78 genera.

2. MATERIALS AND METHODS

The material of the Sphecidae and Crabronidae were collected from different localities of Turkey

between 2007 and 2010. 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).

3. RESULTS

SPHECIDAE

Chalybion femoratum (Fabricius 1781)

Material examined.- Iğdır: Melekli, 830 m, 25.vi.2010, ♂.

Chalybion walteri (Kohl 1889)

Material examined.- Iğdır: Suveren, 1000 m, 25.vi.2010, ♀.

Sceliphron destillatorium (Illiger 1807)

Material examined.- Erzurum: Şenkaya, Akşar, 1350 m, 2.viii.2008, ♀, ♂.

Sceliphron spirifex (Linnaeus 1758)

Material examined.- İzmir: Bayındır, Kızıloba, 450 m, 10.vii.2010, ♀.

Sphex atropilosus Kohl 1885

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♀, ♂.

Sphex flavipennis Fabricius 1793

Material examined.- Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, ♀.

Sphex funerarius Gussakovsky 1934

Material examined.- Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, 7♂; Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, 2♀, 2♂, 15.viii.2008, 2♂, Sarı saz, 1400 m, 25.vi.2007, ♂, 25.vii.2007, ♂, 20.viii.2007, 2♂.

Sphex leuconotus Bullé 1832

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, 9♂, 15.viii.2008, ♀.

Sphex pruinosus Germar 1817

Material examined.- Erzurum: Çat, 1900 m, 6.viii.2010, ♀, Oltu, Vocational Training School fields, 1345 m, 18.vi.2008, 2♀, Sarı saz, 1400 m, 20.viii.2007, ♂.

Isodontia paludosa (Rossius 1790)

Material examined.- Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, ♀.

Palmodes strigulosus (Costa 1861)

Material examined.- Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, ♂; Kars: Sarıkamış, Karakurt, TCK Çeşmesi, 1500 m, 29.vi.2010, ♀.

Podalonia affinis (Kirby sen 1798)

Material examined.- Erzurum: Güngörmez, 2000 m, 19.viii.2009, ♂, University field, 1850 m, 24.vi.2009, ♂, 20.viii.2010, 6♂, Yeşilyayla, 1950 m, 1.vi.2010, 2♂, Çat, 1900 m, 12.vii.2009, 2♂, Oltu, Vocational Training School fields, 1345 m, 18.vi.2008, ♀; Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, ♂.

Podalonia fera (Lepelletier 1845)

Material examined.- Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♀; Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, ♀; Erzurum: University field, 1850 m, 20.viii.2010, 11♀, Çat, 1900 m, 12.vii.2009, ♀.

Podalonia hirsuta (Scopoli 1763)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 18.vi.2008, ♀; Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, 2♂, ♀.

Podalonia hirsuta hirsuta (Scopoli 1763)

Material examined.- Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♂; Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, 3♂; Erzurum: İspir, İncesu, 2400 m, 20.vii.2009, ♂; Iğdır: Tuzluca, 870 m, 16.vi.2009, ♀; Kars: Sarıkamış, 2050 m, 14.viii.2008, ♂.

Prionyx kirbii (Vander Linden 1827)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 18.vi.2008, 3♀, 24.vii.2008, 3♀.

Prionyx nudatus (Kohl 1885)

Material examined.- Iğdır: Melekli, 830 m, 23.vi.2010, ♀, Tuzluca, 870 m, 16.vi.2009, ♀; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, 5♂, 2♀.

Prionyx viduatus argentatus (Mocsáry 1883)

Material examined.- Erzurum: Olur, 1600 m, 20.vii.2007, ♀.

Ammophila heydeni Dahlbom 1845

Material examined.- Adana: Karaisali, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♂, Erzurum: Yeşilyayla, 1950 m, 1.vii.2010, ♀, Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, 5♂, 30.vii.2007, ♂, Sarısaz, 1400 m, 25.vi.2007, 3♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, 5♂, 2♀.

Ammophila sabulosa (Linnaeus 1758)

Material examined.- Bayburt: 1600 m, 12.viii.2009, ♂; Erzurum: İspir, Çapans, 2150 m, 20.viii.2009, ♀; Iğdır: 850 m, 18.vi.2009, ♀, Melekli, 23.vi.2010, ♂; Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, ♂.

Ammophila terminata mocsaryi Frivaldsky 1877

Material examined.- Bayburt: Kop Mountain, 2400 m, 12.viii.2009, ♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, ♂.

Ammophila sinensis Sickmann 1894

Material examined.- Erzurum: Tortum, Derekapı, 1400 m, 15.vi.2010, ♂.

CRABRONIDAE***Astata boops*** (Schrank 1781)

Material examined.- Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, ♂, 6♂; Erzurum: İspir, Çapans, 2150 m, 20.viii.2009, ♀, Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, 2♂, Sarısaz, 1400 m, 20.viii.2007, ♂; Kars: Sarıkamış, Karakurt, 1500 m, 22.vi.2010, ♀.

Astata costae Costa 1867

Material examined.- Iğdır: Tuzluca, Menderes, 1100 m, 23.vi.2010, ♀.

Astata gallica de Beaumont 1942

Material examined.- Erzurum: Oltu, Sarısaz, 1400 m, 20.viii.2007, ♀.

Astata kashmirensis Nurse 1909

Material examined.- Erzurum: Güngörmez, 2000 m, 19.viii.2009, 4♂; Iğdır: Suveren, 1000 m, 123.vi.2010, 2♂; Kars: Kağızman, 1750 m, 22.vi.2010, ♂, Sarıkamış, Akkurt, 1525 m, 13.viii.2009, ♂.

Astata miegii scapularis Kohl 1889

Material examined.- Erzurum: İspir, Çapans, 2150 m, 20.viii.2009, 5♀, Oltu, Vocational

Training School fields, 1345 m, 24.vii.2008, 13♂, Sarısaz, 1400 m, 25.vi.2007, 3♂; Kars: Kağızman, 1750 m, 22.vi.2010, ♂, Sarıkamış, Karakurt, 1500 m, 13.viii.2009, 4♂.

Astata minor Kohl 1885

Material examined.- Artvin: Yusufeli, İshan, 600 m, 16.vi.2010, ♀; Erzurum: Güngörmez, 2000 m, 19.viii.2009, 2♀, İspir, Çapans, 2150 m, 20.viii.2009, 7♀, İncesu, 2100 m, 20.viii.2009, ♀, Madenköprübaşı, 1100 m, 20.viii.2009, ♀; Iğdır: Suveren, 1000 m, 23.vi.2010, 2♀, Karakoyunlu, Alican, 850 m, 22.vi.2010, ♀, Tuzluca, 870 m, 16.vi.2009, ♀; Kars: Sarıkamış, Akkurt, 1525 m, 22.vi.2010, ♀, Karakurt, 1500 m, 13.viii.2009, ♀.

Dryudella tricolor eurygnatha (Pulawski 1967)

Material examined.- Erzurum: İspir, Çapans, 2150 m, 20.viii.2009, ♀, 2♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, ♂.

Dryudella picticornis Gussakovskij 1927

Material examined.- Erzurum: Oltu, Sarısaz, 1400 m, 20.viii.2007, ♂.

Brachystegus scalaris (Illiger 1807)

Material examined.- Iğdır: Tuzluca, 850 m, 18.vi.2009, 4♂.

Nysson fulvipes Costa 1859

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♀.

Nysson interruptus (Fabricius 1798)

Material examined.- Erzurum: Güngörmez, 2000 m, 19.viii.2009, 2♂, İspir, Çapans, 2150 m, 20.viii.2009, ♂.

Nysson maculosus (Gmelin 1790)

Material examined.- Erzurum: Güngörmez, 2000 m, 19.viii.2009, 2♀, İspir, Çapans, 2150 m, 20.viii.2009, ♀; Iğdır: Melekli, 850 m, 23.vi.2010, ♀; Kars: Sarıkamış, Akkurt, 1525 m, 22.vi.2010, ♀.

Nysson tridens Gerstaecker 1867

Material examined.- Erzurum: University field, 1850, 20.viii.2010, ♀.

Synnevrus decemmaculatus (Spinola 1808)

Material examined.- Erzurum: Oltu, Yolboyu, 1150 m, 24.vi.2010, ♂, Tortum, Derekapı, 1400 m, 15.vi.2010, ♂, Şenkaya, Akşar, 1350 m,

2.viii.2008, 2♂; Kars: Kağızman 1750 m, 22.vi.2010, ♀.

Argogorytes fargeii (Shuckard 1837)

Material examined.- Bayburt: Aydıntepe, 1550 m, 17.vi.2010, ♀, Demirözü, 1650 m, 17.vi.2010, 2♀; Erzurum: İspir, Çapans, 2150 m, 20.viii.2009, ♂; Erzincan: Refahiye, 1500 m, 20.vi.2009, ♀, 3♂.

Gorytes albidulus (Lepelletier 1832)

Material examined.- Artvin: Yusufeli, Pamukçular, 700 m, 16.vi.2010, 3♂; Erzurum: Yeşilyayla, 1950 m, 1.vii.2010, ♂, Oltu, Sarısaz, 1400 m, 25.vi.2007, ♀, Tortum, Derekapı, 1400 m, 15.vi.2010, ♂; Iğdır: Suveren, 1000 m, 23.vi.2010, ♂.

Gorytes pleuripunctatus (Costa 1859)

Material examined.- Erzurum: Güngörmez, 2000 m, 19.viii.2009, 10♀, 2♂, İspir Çapans, 2150 m, 20.viii.2009, 2♀; Iğdır: 850 m, 18.vi.2009, 2♂, Karakoyunlu, Taşburun, 830 m, 23.vi.2010, ♀; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, ♀.

Gorytes quinquecinctus (Fabricius 1793)

Material examined.- Bayburt: Çalidere, 1700 m, 17.vi.2010, ♂; Iğdır: Melekli, 830 m, 23.vi.2010, ♂, Aralık, 830 m, 23.vi.2010, ♂, Tuzluca, 870 m, 16.vi.2009, 2♀; Kars: Sarıkamış, Karakurt, 1500 m, 22.vi.2010, ♂, 13.viii.2009, ♀.

Gorytes sulcifrons (Costa 1867)

Material examined.- Artvin: Yusufeli, Pamukçular, 700 m, 16.vi.2010, ♂; Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, 7♂; Erzurum: Pasinler, 2200 m, 10.viii.2007, ♀, Tortum, Aksu, 1300 m, 5.viii.2010, 2♀, Arılı, 1450 m, 5.viii.2010, ♀, Derekapı, 1400 m, 5.viii.2010, ♀; Iğdır: Melekli, 830 m, 23.vi.2010, 2♂.

Harpactus elegans Lepelletier 1832

Material examined.- Artvin: Yusufeli, Pamukçular, 700 m, 16.vi.2010, 2♂; Erzurum: İspir, İncesu, 2100 m, 20.viii.2009, ♀, Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♀, Sarısaz, 1400 m, 20.viii.2007, ♀. Iğdır: Aralık, 830 m, 23.vi.2010, ♂; Kars: Kağızman, 1750 m, 22.vi.2010, ♂.

Harpactus formosus Jurine 1807

Material examined.- Erzurum: University field, 1850 m, 25.vii.1994, ♀, Aşkale, 1600 m, 12.viii.2009, ♂, Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♀, 2♂, 15.viii.2008, 4♂; Kars: Kağızman, Altıngedik, 1200 m, 22.vi.2010, ♂.

Harpactus laevis laevis (Latreille 1792)

Material examined.- Kars: Sarıkamış, Karakurt, TCK Çeşmesi, 1500 m, 22.vi.2010, ♀.

Harpactus morawitzi Radoszkovsky 1884

Material examined.- Rize: Ballıköy Yaylası, 2300 m, 5.viii.1995, ♀.

Hoplisoides craverii craverii (Costa 1867)

Material examined.- Artvin: Yusufeli, Pamukçular, 700 m, 16.vi.2010, ♂.

Hoplisoides latifrons (Spinola 1808)

Material examined.- Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, ♂.

Hoplisoides punctuosus (Eversmann 1849)

Material examined.- Adıyaman: Nemrut, 1650 m, 2.vii.2008, ♂; Erzurum: Oltu, Sarısaz, 1400 m, 20.viii.2007, ♀.

Psammaecius punctulatus (Vander Linden 1829)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♂.

Ammatomus coarctatus (Spinola 1808)

Material examined.- Artvin: Yusufeli, Işhan, 600 m, 16.vi.2010, 4♂; Erzurum: Oltu, Sarısaz, 1400 m, 20.viii.2007, 4♂, Olur, 1600 m, 20.vii.2007, ♂, Şenkaya, Akşar, 2.viii.2008, 5♂, Paşalı, 1300 m, 31.vii.2010, 2♂, Tortum, Derekapı, 1400 m, 15.vi.2010, 13♂; Iğdır: Suveren, 1000 m, 23.vi.2010, 2♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, ♂.

Ammatomus rogenhoferi (Handlirsch 1888)

Material examined.- Artvin: Yusufeli, 600 m, 16.vi.2010, ♀, ♂; Bilecik: Gölpazarı, Dereli, 490 m, 25.vi.2010, ♀; Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♀, Şenkaya, Akşar, 1350 m, 2.viii.2008, ♀.

Sphecius nigricornis (Dufour 1838)

Material examined.- Kars: Sarıkamış, Çifteşhitler, 1500 m, 22.vii.2010, ♀.

Bembecinus peregrinus (Smith 1856)

Material examined.- Erzurum: University field, 1850 m, 20.viii.2010, ♀, Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, 2♀, 3♂, Sarı saz, 1400 m, 25.vii.2007, ♂; Iğdır: Tuzluca, 870 m, 16.vi.2009, ♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, 2♂.

Bembecinus tridens (Fabricius 1781)

Material examined.- Artvin: Yusufeli, Pamukçular, 700 m, 16.vi.2010, ♀; Erzurum: Oltu, Vocational Training School fields, 1345 m, 15.viii.2008, ♂, Sarı saz, 1400 m, 20.viii.2007, 2♂, Olur, 1600 m, 20.vii.2007, ♂, Torum, Aksu, 1450 m, 5.viii.2010, ♀; Iğdır: Karakoyunlu, Taşburun, 830 m, 23.vi.2010, ♀, Tuzluca, 1100 m, 23.vi.2010, ♀; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, 2♂; Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, 2♀.

Stizoides melanopterus (Dahlbom 1845)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♂, Oltu, Sarı saz, 1400 m, 20.viii.2007, ♂; Isparta: Eğirdir, 16.viii.2007, ♀.

Stizoides tridentatus (Fabricius 1775)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♂, Oltu, Sarı saz, 1400 m, 20.viii.2007, ♂.

Stizus annulatus (Klug 1845)

Material examined.- Iğdır: Tuzluca, 870 m, 16.vi.2009, ♀; Konya: Güney Sınır, Gür ağaç 1017 m, 23.vi.1999, ♂.

Stizus ruficornis (Förster 1771)

Material examined.- Erzurum: Oltu, 1600 m, 20.vii.2007, ♀; Iğdır: Tuzluca, 1100 m, 23.vi.2010, ♂.

Bembix bidentata Vander Linden 1829

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 18.vi.2008, 6♂, 24.vii.2008, 10♀, Sarı saz, 1400 m, 25.vii.2007, 2♀, Tortum, Derekapı, 1400 m, 15.vi.2010, ♀; Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, ♀.

Bembix diversipes Morawitz 1889

Material examined.- Artvin: Yusufeli, İşhan, 600 m, 16.vi.2010, ♀; Erzurum: Oltu, Vocational Training School fields, 1345 m, 15.viii.2008, ♀, Sarı saz, 1400 m, 25.vii.2007, 4♀, 20.viii.2007,

5♀; Iğdır: Karakoyunlu, Taşburun, 830 m, 23.vi.2010, ♂.

Bembix gracilis Handlirsch 1893

Material examined.- Erzurum: Oltu, Sarı saz, 1400 m, 25.vi.2007, ♀.

Bembix oculata Panzer 1801

Material examined.- Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♀; Aksaray: 8.viii.2008, ♀.

Bembix rostrata (Linnaeus 1758)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♂.

Philanthus kohlii Morawitz 1890

Material examined.- Iğdır: Karakoyunlu, Taşburun, 830 m, 23.vi.2010, ♂; Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, ♂.

Philanthus kokandicus Radoszkovsky 1877

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♀, Sarı saz, 1400 m, 25.vi.2007, 3♀.

Philanthus reinigi Bischoff 1930

Material examined.- Erzurum: Tortum, Aksu, 1400 m, 5.viii.2010, ♀.

Philanthus triangulum (Fabricius 1775)

Material examined.- Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♀, 9♂; Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, 2♀, 6♂; Erzurum: University field, 1850 m, 16-23.viii.2010, 8♀, 12♂, on *Mentha longifolia* L., Oltu, Vocational Training School fields, 1345 m, 15.viii.2008, ♀, Tortum, Derekapı, 1400 m, 15.vi.2010, ♂.

Philanthus venustus (Rossius 1790)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, 3♀, 15.viii.2008, ♀, Sarı saz, 1400 m, 25.vii.2007, ♀, ♂.

Philanthinus quattuordecimpunctatus (Morawitz 1888)

Material examined.- Bayburt: Demirözü, 20.viii.1991, ♂; Erzurum: University field, 1850 m, 17.ix.1993, 2♂, 16-23.viii.2010, 6♀, ♂, on *Mentha longifolia* L., Aşkale, 1600 m, 12.viii.2009, ♂, İspir, Madenköprübaşı, 1100 m, 7.viii.1996, 3♂, Narman, Göllü, 29.vi.1991, ♀, Oltu, Çamlıbel, 1750 m, 14.vii.1996, ♂, Pasinler,

17.vii.1996, 3♀, 3♂, 11.viii.1992, ♂, 13.viii.1992, ♀, ♂, Rabat, 2400 m, 27.viii.1996, ♂, Şenkaya, Akşar, 1350 m, 16.vii.1994, ♀, 26.vii.1994, 2♂, 1.viii.1993, ♀, 2.viii.2008, 2♀, Turnalı, 1750 m, 29.vii.1994, ♂, Tortum, Aksu, 30.ix.1993, ♂, Arılı, 24.viii.1993, 6♀, 5♂, Meydanlar, 24.viii.1993, 2♀, 6♂.

Cerceris albofasciata (Rossius 1790)

Material examined.- Iğdır: Aralık, 830 m, 23.vi.2010, ♂.

Cerceris arenaria (Linnaeus 1758)

Material examined.- Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, 5♀; Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, 6♀, 3♂, Aydıntepe, 1550 m, 21.viii.2008, ♂; Erzurum: University field, 1850 m, 24.vi.2004, 3♂, 20.viii.2010, 2♀, 2♂, Oltu, Vocational Training School fields, 1345 m, 18.vi.2008, 4♂, 24.vii.2008, 4♂, Pasinler, 1600 m, 7.vii.2009, ♂; Iğdır: Melekli, 830 m, 23.vi.2010, ♀, Aralık, 830 m, 23.vi.2010, 6♂, Karakoyunlu, Taşburun, 850 m, 23.vi.2010, 10♂, Tuzluca, 870 m, 16.vi.2009, ♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, ♀.

Cerceris bicincta Klug 1835

Material examined.- Erzurum: Oltu, Sarısaz, 1400 m, 25.v.2007, ♀.

Cerceris bracteata Eversmann 1849

Material examined.- Artvin: Yusufeli, Pamukçular, 700 m, 16.vi.2010, ♂; Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, 8♀; Erzurum: University field, 1850 m, 20.viii.2010, 10♀, Iğdır: 850 m, 18.vi.2009, ♂, Suveren, 1000 m, 23.vi.2010, ♀, Aralık, 830 m, 23.vi.2010, 2♀; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, ♀.

Cerceris bupresticida Dufour 1841

Material examined.- Erzurum: University field, 1850 m, 20.viii.2010, ♀; Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♀.

Cerceris euryanthe Kohl 1888

Material examined.- Bayburt: Çalidere, 1700 m, 17.vi.2010, ♂.

Cerceris eryngii Marquet 1875

Material examined.- Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, 2♀; Erzurum:

Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♀.

Cerceris flavicornis Brullé 1833

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, 2♀; Iğdır: 850 m, 18.vi.2009, ♂.

Cerceris flavilabris (Fabricius 1793)

Material examined.- Bayburt: 1600 m, 12.viii.2009, 3♂, Aydıntepe, 1550 m, 21.viii.2008, ♂; Erzurum: University field, 1850 m, 20.viii.2010, ♂, Ilca, 1900 m, 4.viii.2009, 2♂; Iğdır: Melekli, 830 m, 23.vi.2010, ♂, Aralık, 830 m, 23.vi.2010, ♂, Karakoyunlu, Taşburun, 830 m, 23.vi.2010, ♂; Kars: Sarıkamış, 2050 m, 14.viii.2008, ♀, Karakurt, 1500 m, 13.viii.2009, ♀, ♂.

Cerceris lunata lunata Costa 1867

Material examined.- Erzurum: University field, 1850 m, 30.vi.2010, ♂, 20.viii.2010, ♂.

Cerceris odontophora Schletterer 1887

Material examined.- Erzurum: University field, 1850 m, 20.viii.2010, ♂.

Cerceris quadrifasciata (Panzer 1799)

Material examined.- Erzincan: Refahiye, 1500 m, 20.vi.2009, ♀.

Cerceris quadricinctus (Panzer 1799)

Material examined.- Erzincan: Refahiye, 1500 m, 20.vi.2009, ♂; Erzurum: İspir, Çapans, 2150 m, 20.viii.2009, ♂, Olur, 1600 m, 20.vii.2007, ♂; Iğdır: Tuzluca, 870 m, 16.vi.2009, ♂.

Cerceris quinquefasciata (Rossius 1792)

Material examined.- Erzurum: Güzelyayla, 2000 m, 19.viii.2009, ♂, Yeşildere, 2000 m, 19.viii.2009, İspir, Çapans, 2150 m, 20.viii.2009, ♂.

Cerceris rubida rubida (Jurine 1807)

Material examined.- Erzurum: University field, 1850 m, 20.viii.2010, 5♀, 5♂, Çat, 1900 m, 6.viii.2010, ♂, Oltu, Sarısaz, 1400 m, 25.vii.2007, ♀, Pasinler, 1600 m, 24.vi.2010, 3♂, 7.vii.2009, ♀; Iğdır: Suveren 1000 m, 23.vi.2010, ♂, Aralık, 850 m, 23.vi.2010, ♀, 3♂, Tuzluca, 870 m, 16.vi.2009, ♀, ♂.

Cerceris rubida pumilio Giner Marí 1945

Material examined.- Adana: Ceyhan, Botaş, 13.vii.2007, 4♀, 6♂.

Cerceris ruficornis (Fabricius 1793)

Material examined.- Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, 2♀; Kars: Sarıkamış, 2050 m, 14.viii.2008, ♂.

Cerceris rybyensis (Linnaeus 1771)

Material examined.- Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, ♀.

Cerceris sabulosa (Panzer 1799)

Material examined.- Adana: Ceyhan, Botaş, 13.vii.2007, 3♀, 4♂, Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, 10♀, 8♂; Adıyaman: Hasancık, 650 m, 3vii.2008, 10♀, 10♂; Aksaray: 18.viii.2008, ♂; Bayburt: 1600 m, 12.viii.2009, ♀, 3♂, Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, 2♀, 4♂, Aydın-tepe, 1550 m, 21.viii.2008, 5♂; Erzurum: Güngörmez, 2000 m, 19.viii.2009, ♂, Tuzluca, 1910 m, 6.viii.2010, ♂, University field, 1850 m, 20.viii.2010, 4♀, 7♂, Horasan, 1750 m, 29.vii.2010, 4♂, Ilıca, 1900 m, 4.viii.2009, ♀, 3♂, İspir, Çapans, 2150 m, 20.viii.2009, ♂, Madenköprübaşı, 1100 m, 20.viii.2009, 2♂, Oltu, Sarısaz, 1400 m, 25.vi.2007, ♀, Pasinler, 1600 m, 24.vi.2010, ♂, 7.vii.2009, ♂, 2200 m, 10.viii.2007, ♀, 2♂, Tortum, Arılı, 1450 m, 5.viii.2010, 4♂; Iğdır: 850 m, 18.vi.2009, ♂, Melekli, 830 m, 23.vi.2010, 2♂, Aralık, 850 m, 23.vi.2010, ♂, Karakoyunlu, Taşburun, 830 m, 23.vi.2010, ♂; İstanbul: Küçükçekmece, Halkalı Ziraat Okulu, 10.viii.2009, 2♂; Kars: Sarıkamış, 2050 m, 14.viii.2008, 2♂; Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, ♀.

Cerceris specularis fergusonii de Beaumont 1958

Material examined.- Erzurum: Oltu, Sarısaz, 1400 m, 25.vii.2007, 2♂.

Cerceris specularis specularis Costa 1867

Material examined.- Erzurum: Yeşildere, 2000 m, 19.viii.2009, ♂; Iğdır: Melekli, 830 m, 23.vi.2010, ♂, Tuzluca, 870 m, 16.vi.2009, ♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, 2♀.

Cerceris stratiotes Schletterer 1887

Material examined.- Iğdır: 850 m, 18.vi.2009, ♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, 2♂.

Cerceris tuberculata (de Villers 1789)

Material examined.- Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, ♀.

Mimesa crassipes (Costa 1869)

Material examined.- Erzurum: University field, 1850 m, 13.vi.1994, ♀, 20.vi.1994, ♀, Olur, Süngübayır, 1750 m, 1.ix.1993, ♀.

Mimesa equestris (Fabricius 1804)

Material examined.- Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 9.viii.1994, ♀.

Mimesa grandii Maidl 1933

Material examined.- Erzurum: University field, 1850 m, 8.viii.1993, ♂.

Psenulus meridionalis de Beaumont 1937

Material examined.- Adıyaman: Hasancık, 650 m, 3vii.2008, 4♂; Erzincan: Refahiye, 1500 m, 20.vi.2009, 2♂; Iğdır: Tuzluca, Menderes, 1100 m, 23.vi.2010, 2♂.

Psenulus pallipes (Panzer 1798)

Material examined.- Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, ♀.

Diodontus minutus (Fabricius 1793)

Material examined.- Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, ♀.

Passaloecus singularis Dahlbom 1844

Material examined.- Erzurum: Karayazı, Söylemez, 1850 m, 28.vi.2005, ♀.

Pemphredon lethifer (Shuckard 1837)

Material examined.- Erzurum: University field, 1850 m, 20.viii.2010, ♂.

Palarus ambustus Klug 1845

Material examined Erzurum: Olur, 1600 m, 20.vii.2007, ♀.

Larra anathema (Rossius 1790)

Material examined.- Adıyaman: Hasancık, 650 m, 3vii.2008, ♀; Erzurum: Şenkaya, Akşar, 1350 m, 25.vii.2008, ♀; Iğdır: Aralık, 830 m, 23.vi.2010, ♀, ♂.

Tachysphex brullii galileus de Beaumont 1947

Material examined.- Erzurum: University field, 1850 m, 20.viii.2010, ♀.

Tachysphex fulvitaris (Costa 1867)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 25.vi.2006, ♀, 2♂, Sarısaz, 1400 m, 20.viii.2007, 2 ♀, Tortum, Derekapı, 1400 m, 15.viii.2010, ♂.

Tachysphex incertus (Radoszkovsky 1877)

Material examined.- Erzurum: University field, 1850 m, 20.viii.2010, 5♀, 2♂, Oltu, Vocational Training School fields, 1345 m, 25.vi.2006, 2♀, 24.vii.2008, ♀, 15.viii.2008, 4♂, Sarısaz, 1400 m, 25.vii.2007, 5♂, 20.viii.2007, 12♂.

Tachysphex mocsaryi Kohl 1884

Material examined.- Iğdır: Aralık, 830 m, 23.vi.2010, ♀.

Tachysphex morawitzi Puławski 1971

Material examined.- Erzurum: Oltu, Sarısaz, 1400 m, 25.vii.2007, ♀.

Tachysphex nitidissimus de Beaumont 1952

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 25.vi.2006, ♂, 24.vii.2008, ♀.

Tachysphex nitidus (Spinola 1806)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 25.vi.2006, ♂.

Tachysphex panzeri (Vander Linden 1829)

Material examined.- Erzincan: Refahiye, 1500 m, 20.vi.2009, ♂; Erzurum: University field, 1850 m, 20.viii.2010, ♂, Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, 2♂, 15.viii.2008, 5♂.

Tachysphex pompiliformis (Panzer 1805)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 25.vi.2006, ♀, ♂; Tortum, Arılı, 1450 m, 5.viii.2010, ♀, ♂; Tunceli: Mazgirt, Kalaycı, 950 m, 25.viii.2010, ♀.

Tachysphex psammobius (Kohl 1880)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 25.v.2006, 2♀.

Tachytes integer Gussakovskij 1933

Material examined.- Erzurum: Oltu, Sarısaz, 1400 m, 25.vi.2007, ♂.

Tachytes obsoletus (Rossius 1792)

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 18.vi.2008, ♂,

25.vi.2006, 3♂, 24.vii.2008, 5♂, Sarısaz, 1400 m, 25.vii.2007, 3♀, 4♂.

Tachytes panzeri (Dufour 1841)

Material examined.- Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♂; Erzurum: Oltu, Sarısaz, 1400 m, 25.vi.2007, ♂; Iğdır: Karakoyunlu, Taşburun, 830 m, 23.vi.2010, ♂.

Trypoxylon deceptorium Antropov 1991

Material examined.- Erzurum: Madenköprübaşı, 1100 m, 20.viii.2009, ♂; Kars: Sarıkamış, Karakurt, 1500 m, 22.vi.2010, ♀, 13.viii.2009, ♂.

Trypoxylon figulus (Linnaeus 1758)

Material examined.- Erzurum: Oltu, Sarısaz, 1400 m, 25.vii.2007, 3♀, 3♂, Yolboyu, 1150 m, 24.vi.2010, ♂, Tortum, Arılı, 1450 m, 5.viii.2010, ♂, Derekapı, 1400 m, 5.viii.2010, ♂.

Oxybelus latro Olivier 1812

Material examined.- Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♂; Erzurum: University field, 1850 m, 20.viii.2010, 4♀, 4♂, Oltu, Vocational Training School fields, 1345 m, 24.viii.2008, 3♂, Pasinler, 2200 m, 10.viii.2007, ♂; Iğdır: Suveren, 1000 m, 23.vi.2010, ♀.

Oxybelus lineatus (Fabricius 1787)

Material examined.- Erzurum: Aşkale, 1600 m, 12.viii.2009, ♂, Oltu, Sarısaz, 1400 m, 25.vii.2007, ♂.

Oxybelus mandibularis Dahlbom 1845

Material examined.- Adana: Ceyhan, Botaş, 13.vii.2007, 3♂, Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♀; Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, ♀; Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♀, Sarısaz, 1400 m, 20.viii.2007, ♂.

Oxybelus mucronatus (Fabricius 1793)

Material examined.- Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, 2♂; Bayburt: Aydıntepe, 1550 m, 21.viii.2008, ♂; Erzurum: Oltu, Vocational Training School fields, 1345 m, 20.viii.2007, ♂.

Oxybelus quatuordecimnotatus Jurine 1807

Material examined.- Adana: Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, 5♂; Adıyaman: Hasancık, 650 m, 3.vii.2008, 9♂; Artvin: Yusufeli, Morkaya, 600 m, 15.vi.2010, 4♂; Bayburt:

Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, ♀, Aydıntepe, 1550 m, 21.viii.2008, 5♂; Erzincan: Refahiye, 1500 m, 20.vi.2009, 2♂; Erzurum: Güngörmez, 2000 m, 19.viii.2009, 2♂, University field, 1850 m, 20.viii.2010, 5♂, Hınıs, 1750 m, 29.vi.2009, ♀, Ilıca, 1900 m, 4.viii.2009, ♂, İspir, Çapans, 2150 m, 20.viii.2009, 2♂, Pasinler, 2200 m, 10.viii.2007, 2♂, Şenkaya, Paşalı, 1350 m, 31.vii.2010, 4♂, Tortum, Arılı, 1450 m, 5.viii.2010, 4♂; Iğdır: 850 m, 18.vi.2009, ♂, Suveren, 1000 m, 23.vi.2010, ♂, Karakoyunlu, Alican, 850 m, 23.vi.2010, ♂, Tuzluca, 870 m, 16.vi.2009, ♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, ♀, ♂.

***Oxybelus subspinosus* Klug 1835**

Material examined.- Erzurum: Oltu, Vocational Training School fields, 1345 m, 15.viii.2008, ♂.

***Oxybelus variegatus* Wesmael 1852**

Material examined.- Erzurum: Şenkaya, Akşar, 1350 m, 2.viii.2008, ♂; Iğdır: Melekli, 830 m, 23.vi.2010, ♀.

***Entomognathus brevis* (Vander Linden 1829)**

Material examined.- Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, 2♀, Aydıntepe, 1550 m, 21.viii.2008, ♂; Erzincan: Refahiye, 1500 m, 20.vi.2009, 2♂; Erzurum: Pasinler, 2200 m, 7.vii.2009, ♀, ♂.

***Crabro cribrarius* (Linnaeus 1758)**

Material examined.- Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, ♀; Erzurum: İspir, İncesu, 2400 m, 20.vii.2009, ♂, Pasinler, 2200 m, 10.viii.2007, ♂.

***Crabro pugillator* Costa 1871**

Material examined.- Erzurum: Güngörmez, Dumlubaba, 2500 m, 1.vii.2010, 2♂.

***Ectemnius confinis* (Walker 1871)**

Material examined.- Adıyaman: Hasancık, 650 m, 3.vii.2008, ♀; Erzurum: Olur, 1600 m, 20.vii.2007, ♀; Iğdır: 850 m, 18.vi.2009, ♂.

***Ectemnius crassicornis* (Spinola 1808)**

Material examined.- Adana: Ceyhan, Botaş, 13.vii.2007, ♀, 6♂, Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♀; Erzurum: Oltu, Vocational Training School fields, 1345 m, 24.vii.2008, ♂, Tortum, Arılı, 1450 m, 5.viii.2010, ♀, 3♂, Derekapı, 1400 m, 5.viii.2010, 2♀, ♂;

Iğdır: Karakoyunlu, Taşburun, 830 m, 23.vi.2010, ♀.

***Ectemnius fossorius* (Linnaeus 1758)**

Material examined.- Erzurum: Tortum, Derekapı, 1400 m, 5.viii.2010, ♂.

***Ectemnius lapidarius* (Panzer 1804)**

Material examined.- Iğdır: Tuzluca, 870 m, 16.vi.2009, ♀.

***Ectemnius massiliensis* (Kohl 1883)**

Material examined.- Bayburt: 1600 m, 17.vi.2010, ♂, 12.viii.2009, ♂; Erzincan: Refahiye, 1500 m, 20.vi.2009, 4♂; Erzurum: Güngörmez, Dumlubaba, 2500 m, 1.vii.2010, ♂, 19.viii.2009, 2♂, Güzelyayla, 2000 m, 19.viii.2009, ♀, İspir Pass, 1950 m, 20.vii.2009, ♀, Çapans, 2150 m, 20.viii.2009, 2♀; Iğdır: 850 m, 18.vi.2009, ♂, Tuzluca, 870 m, 16.vi.2009, ♀; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, ♀, 2♂.

***Ectemnius rubicola* (Dufour & Perris 1840)**

Material examined.- Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, ♀.

***Ectemnius walteri* (Kohl 1889)**

Material examined.- Kars: Kağızman, 1750 m, 22.vi.2010, ♂.

***Lestica clypeata* (Schreber 1759)**

Material examined.- Adana: Ceyhan, Botaş, 13.vii.2007, 4♂, Karaisalı, Kızıldağ, Akpınar, 1650 m, 22.vii.2007, ♀; Bayburt: Kop Mountain, 2400 m, 12.viii.2009, ♀; Erzurum: İspir, Çapans, 2150 m, 20.viii.2009, ♀, 2♂, Madenköprübaşı, 1100 m, 20.viii.2009, 3♀, 4♂; Olur, 1600 m, 20.vii.2007, ♀, Şenkaya, Akşar, 2.viii.2008, ♂; Iğdır: 850 m, 18.vi.2009, 3♂, Melekli, 830 m, 23.vi.2010, 2♂; Kars: Sarıkamış, Karakurt, 1500 m, 13.viii.2009, 3♂.

***Lestica subterranea* (Fabricius 1775)**

Material examined.- Erzurum: University field, 1850 m, 25.vi.2009, ♂, Hınıs, 1750 m, 29.vi.2009, ♂, Tortum, Aksu, 1300 m, 5.viii.2010, ♀, Arılı, 1450 m, 5.viii.2010, ♀.

***Lindenius ibex* Kohl 1883**

Material examined.- Erzincan: Refahiye, 1500 m, 20.vi.2009, ♀, ♂.

***Crossocerus quadrimaculatus* (Fabricius 1793)**

Material examined.- Bayburt: Kopdağı, Şehitler Çeşmesi, 2400 m, 21.viii.2008, 3♂; Erzurum:

University field, 1850 m, 24.vi.2009, ♂, 20.viii.2010, 6♂.

Crossocerus podagricus (Vander Linden 1829)

Material examined.- Bayburt: Aydıntepe, 1550 m, 21.viii.2008, 2♀.

Rhopalum gracile Wesmäl 1852

Material examined.- Bayburt: Aydıntepe, 1550 m, 21.viii.2008, ♂.

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References

Hepdurgun B., Kaplan C., Yıldırım E. & Turanlı T. (2007). Some Hymenoptera species at the olive

orchards in Balıkesir and Çanakkale in Turkey. *Proceedings of the Second Plant Protection Congress of Turkey*, 27-29 August 2007, Isparta, p. 210.

Goulet H. & Huber J.T. (ed.) (1993). *Hymenoptera of the world: An identification guide to families*. Research Branch. Agriculture Canada. Publication 1894/E, p. 668.

Ljubomirov T. & Yıldırım E. (2008). Annotated catalogue of the Ampulicidae, Sphecidae, and Crabronidae (Insecta: Hymenoptera) of Turkey. *Pensoft Press*, p. 316.

Straka J. (2005). A review of the genus *Tachysphex* (Hymenoptera: Apoidea) of Turkey, with description of four new species. *Acta Societas Zoologicae Bohemicae* 69, p. 247-276.

Tüzün A. & Yüksel S. (2010). Hymenoptera of Niğde province: Studies on Sphecidae fauna. *African Journal of Biotechnology* 9(28), p. 4466-4477.

(5 ref.)