

A preliminary review of the Megachilidae of Turkey Part III. The Anthidiini (Hymenoptera: Apoidea)

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Summary

This part of the studies on the bees of the family Megachilidae of Turkey comprises the tribe Anthidiini. Twenty nine *Anthidium*, nine *Anthidiellum*, four *Archianthidium*, nine *Icteranthidium*, six *Pseudoanthidium*, eight *Rhodanthidium*, one *Trachusa*, nine *Stelis* and nine *Dioxys* have been reported. Host plant associations of most of the species and subspecies were given.

Some of the species are very common all over the country and good pollinators of sainfoin, *Onobrychis viciifolia*, and alfalfa, *Medicago sativa* which are very important fodder crops and have large growing area.

Three species are new for Turkish fauna.

Introduction

In the study of the bees of the Megachilidae of Turkey Part I and II treated the tribes Osmiini (Özbek and van der Zanden 1992 a) and Heriadini (Özbek and van der Zanden 1992 b) respectively.

The information related to material and methods, symbols and other particulars was given in the Parts I and II.

For the species of Anthidiini present in Turkey many recordings may be found in the publication by Warncke (1980). However, in that paper the author comprised all the species of the Anthidiini into the genus *Anthidium*, degrading all other genera to sub-

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genera. As we strongly disapprove of this approach we have decided to stick to the systematic subdivisions as handled by well-known authors like a.o. Michener (1948), Mavromastakis (1937, 1939, 1947, 1954), Pasteels (1969), and Popov (1950). Different nesting habits are for some genera correlating with structural characters, which fact is one more reason for a scientifically justified subdivision into different genera.

Results

Following is the account of the tribe Anthidiini of the Megachilidae thus far found in Turkey. Presentation of the species were given in alphabetical order.

I. Genus *Anthidium* Fabricius, 1804

A. (*Oxyanthidium*) *aculeatum* Klug, 1882

Literature cited: Bursa (Mocsary, 1887 as *A. uncatum*), Anatolia (Pasteels, 1969).

A. (*Gulanthidium*) *anguliventre* Morawitz, 1888

Literature cited: Şanlıurfa (Warncke, 1980).

A. (*Mesanthidium*) *carduele* Morawitz, 1876

1 male, 1.VIII.1922, Aydıntepe (Bayburt) 1900 m; 1 male, 19.VIII.1992, Tokat 1500 m (C.O.).

Literature cited: Pozantı (Adana) (van der Zanden, 1980 as *A. zonulum*), 13 locations in Warncke (1980).

A. (*Mesanthidium*) *carduele malacopygum* Gribodo, 1894

Literature cited: Bursa (Friese, 1897, as *A. konowii*), Erzurum (Özbek, 1979).

A. (*s.str.*) *caspicum* Morawitz, 1880

Literature cited: Dikmen (Ankara) (Pasteels, 1969 as *A. labrosum*), Hakkari (Warncke, 1980).

A. (*s.str.*) *cingulatum* Latreille, 1809

This is a common and high populated species, especially in eastern Anatolia, recorded from all coastal areas to the high mountainous regions (2500 m) of the country. It is active from May till the middle of October in Erzurum and a good pollinator of *Onobrychis viciifolia* which is an important fodder crop in Turkey and has a large growing area. Other plant species visited by *A.cingulatum*: *Medicago sativa*, *Melilotus alba*, *M. officinalis*, *Onobrychis cornuta*, *Trifolium repens*, *Vicia cracca*, *Astragalus* spp., *Cephalaria* sp., *Centaurea solstitialis*, *C. glastifolia*, *Cirsium* spp.

Literature cited: Common species (Özbek, 1979).

A. (*s.str.*) *dalmaticum* Mocsary, 1884

1 male, 14.VI.1984, Gözeler, Ovacık (Tunceli); 1 male, 12.VII.1992, Pehlivanlı, Tortum (Erzurum) (O.C.); 1 male, 27.VII.1980, Dinar (Afyon) (C.Z.).

Literature cited: Ankara (Alfken, 1935); Kan-İspir (Erzurum) (Özbek, 1979); Kuşadası (Aydın) (Warncke, 1980).

A. (s.str.) diadema Latreille, 1809

2 females, 28.V.1991, Reyhanlı (Hatay); 1 female, 16.VI.1992, Şanlıurfa; 1 male, 8.VII.1974, Erzurum; 1 female, 11.VII.1990, Alaybey (Erzurum), 2000 m; 1 male, 12.VII.1992, Demirözü (Bayburt); 1 male, 20.VII.1970, Oltu (Erzurum) 1400 m; 1 female, 24.VII.1978, Erzurum 1900 m, *M. sativa*; 1 male, 1 female, 28.VII.1978, Kuzgunkıran (Van), *Salvia* sp.; 2 males, 28.VII.1972, Erzurum 1900 m, *O. viciifolia*; 1 female, 29.VII.1992, Erzurum; 3 males, 1 female, 30.VII.1977, Bayburt, *Carduus* sp.; 2 males, 30.VII.1978, Muş, *Eryngium campestris*; 1 female, 30.VII.1978, Hamur (Ağrı); 1 male, 1 female, 31.VII.1992, Bayrampaşa, Demirözü (Bayburt), *O. viciifolia*; 1 female, 1.VII.1979, Erzurum 1900 m; 2 males, 5 females, 1.VIII.1992, Aydıntepe (Bayburt); 3 males, 1 female, 3.VIII.1992, Akseki (Antalya), 1400 m, *C. solstitialis*; 1 female, 8.VIII.1974, Erzurum, 1900 m, *O. viciifolia*; 1 male, 1 female, 10.VIII.1975, Erzurum 1900 m, *C. solstitialis*; 1 female, 10.VIII.1992, Üniversite, Erzurum; 1 male, 12.VIII.1991, Süngübayır, Olur (Erzurum); 1 male, 13.VIII.1987, Sivas, *C. solstitialis*, 1 female, 15.VIII.1978, Erzurum; 1 female, 17.VIII.1992, Üniversite, Erzurum, *M. officinalis*; 1 male, 23.VIII.1991, Pazaryolu (Erzurum); 3 males, 26.VIII.1991, Köprüküy (Erzurum), *C. solstitialis*, *Trifolium* sp. (O.C.); 1 female, 5.VII.1977, Amasya; 1 female, 8.VIII.1984, Erzurum (C.Z.).

Literature cited: Beledik (Fahringer, 1922), Karaman, Nevşehir (Stanek, 1968), Erzurum (Özbek, 1979), various locations in Warncke (1980). Also Obruk, Acıgöl, Dinar (Afyon) (Stanek, 1968, as *A. dimidiata* spp. *caucasicum* Friese). The taxon ssp. *caucasicum* Friese, 1897 is probably no real subspecies. If so the name *caucasicum* is a homonym of *A. caucasicum* Radoszkowsky, 1862, and should be changed.

A. (Paraanthidium) dumerlei Warncke, 1980

2 females, 5.VII.1991 Topçam, Antalya; 3 females, 9.VII.1991, Termessos, Antalya *C. solstitialis*; 1 female, 10.VII.1991, Beydağ. Alim Pınarı, Antalya 1200 m, *Onopordum* sp.; 1 male, 4.VIII.1992 Termessos, Antalya, *Cephalaria alpina*; 1 male, 18.VIII.1984 Ilıc (Erzincan) (O.C.).

Literature cited: Anamur, Aydınçık (Mersin), Oramar, Sille (Konya) (Warncke, 1980).

A. (Exanthidium) eximium Giraud, 1863

1 male, 3.VII.1992, Üniversite, Erzurum *O. viciifolia*; 1 male, 26.VIII.1991, Köprüküy (Erzurum) *C. solstitialis*; 1 female, 17.IX.1977, Erzurum; 2 males, 18.IX.1977, Oltu (Erzurum) (C.O.).

Literature cited: Oltu (Erzurum) (Özbek, 1979); Sarıkamış (Kars) (Warncke, 1980).

A (s.str.) florentinum (Fabricius, 1775)

1 female, 27.VI.1992, Alpagut, Mihalgazi (Eskişehir); 2 females, 29.VI.1992, Antalya; 4 males, 7 females, 30.VI.1992, Milli park, Davutlar (İzmir), *Vitex agnus-castus*; 1 female, 1.VII.1990, Sütçüler (Isparta); 1 female, 12.VII.1990, İskenderun

(Hatay); 1 male, 18.VII.1991, Akyumak, Iğdır; 1 male 19.VII.1985, Çumra (Konya); 1 male, 27.VII.1990, Ayvalı Oltu (Erzurum); 2 males, 27.VII.1983, Muğla; 1 female, 30.VII.1990, İspir (Erzurum); 1 male, 2.VIII.1992, Çamdüzü, Antalya *C. solstitialis*; 1 male, 14.VIII.1991, Demirkent, Yusufeli (Artvin); 1 male, Sebzeciler, Yusufeli; 2 males, 1 female, 19.VIII.1985, Çumra (Konya); 1 female, 24.VIII.1992, Üniversite, Erzurum; 1 female, 27.VIII.1991, Iğdır (C.O.); 1 female, 11.VII.1922, Ankara; 2 males, 2 females, 24.VII.1985, Kuşadası (Aydın); 1 male, 18.VIII.1983, Belen, İskenderun (Hatay); 2 females, 30.VIII.1983, Alanya (Antalya) (C.Z.).

Literature cited: Çiftlik, Amanus Mts. (Alfken, 1935), Tuzluca, Mut, Pamukkale, Tarsus, Bursa, Karakurt (Warncke, 1980). Alfken (1935) also mentioned *A. florentinum* ssp. *caucasicum* Radoszkovsky, 1862 from Ankara, but this is probably no real subspecies.

A. (Paraathidium) interruptum (Fabricius, 1781)

1 female, 22.V.1988, Eğridir (Isparta) (C.R.); 1 female, 19.VII.1985, Burhaniye (Balıkesir) (C.Z.); 10 males, 4 females, 9.VII.1991, Termessos, Antalya, *C. solstitialis*, *Cirsium* spp., *Onopordum* sp., *M. officinalis*; 1 male, 1 female, 9.VII.1991, Beydağları, Ali Pınarı, Antalya; 1 female, 23.VII.1991, Kızıldağ eteği, Erzincan, 1800 m, *Chephalaria alpina*; 2 females, 25.VII.1991, Turnalı, Şenkaya (Erzurum); 1 female, 30.VII.1990, İspir (Erzurum); 1 male, 2 females, 3.VIII.1992, Akseki (Antalya), 1500 m, *C. solstitialis*; 1 female, 2.VIII, 1992, Çamdüzü, Antalya, *Vitex agnus-castus*; 1 female, 4.VIII.1992, Termessos, Antalya; 1 female, 18.VIII.1991, Eğridir (Isparta); 2 females, 26.VIII.1991, Sarıkamış (Kars) (C.O.).

Literature cited: Bursa (Friese, 1897), Intepe (Çanakkale) (Stanek 1968); Akşehir, Ürgüp, Urfa, Pozantı, Namrun, Makni, Kahramanmaraş, Mut, Ankara, Altındağları (Warncke, 1980).

A. (Mesanthidium) lebanense Mavromoustakis, 1955

Literature cited: Reşadiye (Tokat) (Warncke, 1980).

A. (s.str.) loti Perris, 1852

1 female, 1.VII.1986, Pamukkale (Denizli), 1000 m; 1 male, 4.VII.1985, Kuşadası (Aydın) (C.Z.); 1 male, 23.VI.1978 Silifke (İçel); 4 males, 1 female, 2.VII.1992, Tarımsal Araştırma, Menemen (İzmir), *V. agnus-castus*; 1 male, 1 female, 27.VIII.1990 Ayvalı, Oltu (Erzurum); 1 female, 23.VIII.1991, Pazaryolu (Erzurum); 1 female, 24. VIII. 1980 Kan, İspir (Erzurum) (C. O.).

Literature cited: Amasya (Friese, 1897, as *A. variegatum*); Kan İspir (Erzurum) (Özbek, 1979); Amanus Mts., Ankara, Madenşehir, Sarıkaya (Konya), Avanos (Nevşehir), Mut, Tarsus (İçel), Şanlıurfa (Warncke, 1980). Stanek (1968) mentioned the subspecies *meridionalis* Giraud 1863 from Kuşadası, Friese (1897) created the ssp. *incisum* from Anatolia.

Both subspecies are probably not valid, but just colour variations of the nominate form.

A. (s. str.) manicatum (Linnaeus, 1758)

1 male, 20.VI.1990, Amasya; 1 female, 5.VII.1990, Süngübayır, Olur (Erzurum); 1 female, 9.VII.1991, Süngübayır, Olur; 1 female, 13.VII.1983, Erdemli (İçel); 1 male, 14.VII.1984, Gözeler, Ovacık (Tunceli), *Cirsium* sp.; 1 male, 30.VII.1990 İspir (Erzurum); 1 female, 5.VIII.1977, Ardahan; 1 male, 9.VIII.1990, Çatalarmut (Erzincan), *Salvia* sp.; 2 males, 1 female, 13.VIII.1991, Çamlıyamaç, Uzundere (Erzurum), 1700m, *Cirsium* sp.; 1 male, 14.VIII.1991, Demirkent, Yusufeli (Artvin); 1 female, 26.VIII.1991, Sarıkamış (Kars), 2000 m; 1 male, 2.IX.1987, Silifke (İçel), 1400 m, *Onopordum* sp.; 2 females, Bağbaşı, Tortum (Erzurum), *Arctium lappa*, *Salvia* sp. (C.O.); 1 female, 27.VII.1983, Silivri (İstanbul); 1 male, 21.VIII.1985, Armutlu (Bursa) (C.Z.).

Literature cited: Aid Dagh, Smyrna, Bursa (Fahringer, 1922); Amanus Mts. (Fahringer and Friese, 1921); Ardahan, Tortum (Erzurum) (Özbek, 1979); Ardanuç (Artvin), Akşehir, Oltu, Horasan, Erzurum, Sertavul (İçel), Babaeski (Edime) (Warncke, 1980).

A. (s. str.) neosyriacum Mavromoustakis, 1956

Literature cited: Harran, Ceylanpınar (Şanlıurfa) (Warncke 1980).

A. (Proanthidium) oblongatum (Illinger, 1806)

A common and high populated species especially in eastern Anatolia. It is active from the beginning of June till the end of September in Erzurum and a good pollinator of *Onobrychis viciifolia* and *Medicago sativa*. Other plants that *A. oblongatum* visits: *Centaurea carduiiformis*, *C. glastifolia*, *C. iberica*, *C. solstitialis*, *Cichorium intybus*, *Cephalaria alpina*, *C. sparsipilosa*, *Astragalus christianus*, *A. lineatus*, *Coronilla orientalis*, *C. varia*, *Melilotus alba*, *M. officinalis*, *Trifolium repens*, *Cirsium* sp., *Carduus* sp.

Literature cited: İspir, Horasan (Erzurum), Sille (Konya) (Warncke, 1980); "common in Turkey" (Özbek, 1979).

A. (s. str.) punctatum Latreille, 1809

1 male, 2.VI.1970, Erzurum; 3 males, 4.VI.1970, Erzurum; 1 male, 9.VI.1970, Erzurum; 5 males, 12.VI.1970 Erzurum; 2 males, 1 female, 15.VI.1970, Erzurum; 4 males, 1 female, 17.VI.1970, Erzurum; 1 female, 25.VI.1991, Turnalı, Şenkaya (Erzurum); 1 male, 28.VI.1990, Bayburt; 1 male, 2.VII.1970, Erzurum 1900 m; 1 female, 11.VII.1990, Alaybey, Erzurum; 2 males, 22.VII.1990, Palandöken, Erzurum, 2400 m; 1 female, 27.VII.1990, Ayvalı, Oltu (Erzurum) (C.O.).

It is a good pollinator of *O. viciifolia*.

Literature cited: Sille (Konya), Gürün, Şarkışla (Sivas), Ürgüp (Nevşehir), Güzelsu (Van), Erzurum (Warncke, 1980), "common species" (Özbek, 1979).

The subspecies *fulvipes* Friese, 1897 is a variation of the nominate form.

A. (Mesanthidium) pusillum, 1895

Literature cited: Yüksekova (Hakkari) (Warncke, 1980)

A. (Gulanthidium) rotundum Warncke, 1980

Literature cited: Yüksekova (Hakkari) (Warncke, 1980).

A. (Mesanthidium) schultessii (Friese, 1897)

1 female, 1.VIII.1983, Pasinler (Erzurum) (C.O.).

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A. (s.str.) septemspinusum Lepeletier, 1841

1 male, 27.VI.1975, Kayseri; 1 male, 27.VII.1990, Ayvalı, Oltu (Erzurum) 1100 m. (C.O.).

Literature cited: Erzurum (Özbek, 1979).

A. (s.str.) spiniventre malacopygum Friese, 1917

Type location: Taurus Mts.

1 female, 10.VII.1974, Göreme, Kayseri (C.Z.); 2 males, 25.VII.1983 and 20.VIII.1966, Erzurum (C.O.).

Literature cited: Madenşehir, Sille, Konya, Şereflikoçhisar, Ankara (Warncke, 1980).

A. (s. str.) syriacum Pérez, 1911

Literature cited: Mut (İçel), Halfeti (Şanlıurfa), Amanus Mts. (Warncke, 1980).

A. (s. str.) taeniatum Latreille, 1809

Literature cited: Narman, Kan-İspir (Erzurum) Özbek (1979); various locations in Warncke (1980).

A. (s. str.) trispinosum Friese, 1917

Literature cited: Alemdağı, Kopdağı, Madenşehir, Sille (Konya), Ürgüp (Nevşehir) (Warncke, 1980).

A. (Ardanthidium) undulatiforme Friese, 1917

Type location: Anatolia.

Literature cited: Ürgüp, Sille, Şanlıurfa, Halfeti (Şanlıurfa), Denizli, Beyşehir (Konya) (Warncke, 1980).

A. (Proanthidium) undulatum holozonicum Mavromoustakis, 1939

1 male, 19.VII.1985, Burhaniye (Aydın), Ören (Muğla); 1 female, 1.IX.1983, Alanya (Antalya) 1 m (C.Z.).

Literature cited: Diyarbakır (van der Zanden, 1980), Elazığ, Ürgüp (Nevşehir), Gellindere, Sertavul (İçel), Beyşehir, Tarsus, Nizip, Halfeti (Şanlıurfa) (Warncke, 1980).

A. (s.str.) wuestneii Mocsary, 1887

1 female, 12.VI.1987, Köyceğiz (Muğla); 1 female, 17.VI.1987, Side (Antalya);

1 male, 26.VII.1985, Pamukkale (Denizli), 1000 m (C.Z.); 1 female 4.VII.1991, Meydanlar, Tortum (Erzurum); 1 female, 10.VIII.1992, Bayırbağ, Üzümlü (Erzincan) (C.O.).

Literature cited: Antalya (van der Zanden, 1989).

II. Genus: *Anthidiellum* Cockerell, 1904

An. (s.str.) brevisculum troodicum Mavromoustakis, 1948

1 male, 11.V.1988, Kızkalesi (İçel); 1 female, 2.VII.1987, Mardin, 1000 m; 2 females, 1.VIII.1985, Ölüdeniz, Fethiye (Muğla) 50 m (C.Z.); 1 male, 29.VI.1992 Antalya, *Vitex agnus-castus*; 5 males, 30.VI.1992, Millipark, Davutlar (İzmir), *V. agnus-castus*; 1 male, 2 females, 2.VII.1992, Menemen (İzmir); 1 female, 1.VII.1990, Sütçüler (Isparta); 1 female, 9.VII.1991, Termessos, Antalya; 6 females, 10.VII.1992, Beydağları, Yazır Gözesi (Antalya) 1200 m; 1 female, 5 males, 15.VII.1992, Yusufeli (Artvin) 900 m; 1 male, 1.VIII.1992, Atatürk Parkı, Antalya; 2 females, 15.VII.1991, Taşlıköy Oltu (Erzurum), *C. solstitialis*, *A. lappa* (C.O.).

Literature cited: Kuşadası (Aydın), Truva (Çanakkale), Ürgüp, Sille (Konya), Mut (İçel), Halfeti (Şanlıurfa) (Warncke, 1980).

An. (Eoanthidium) clypeare (Morawitz, 1874)

Literature cited: Ürgüp (Nevşehir), Mut (İçel) (Warncke, 1980)

An. (Eoanthidium) insulare (Morawitz, 1874)

1 male, 1.VII.1990, Sütçüler (Isparta); 1 male, 2.VII.1992, Çamdüzü, Antalya; 1 male, 30.VII.1991, Erzincan (C.O.); 1 male.24.VII.1985, Kuşadası (Aydın), 50 m; 1 female, 7.VIII.1985 Alanya (Antalya) 50 m (C.Z.).

Literature cited: Aydın (Stanek, 1968); Ürgüp (Nevşehir), Mut (İçel), Antalya, Pamukkale (Denizli), Şanlıurfa (Warncke, 1980).

An. (Eoanthidium) judaeense (Mavromoustakis, 1945)

Literature cited: Alanya (Antalya) (van der Zanden, 1989).

An. (Eoanthidium) judaeense pasteelsi (Warncke, 1980)

Type location: Mut, Kuşadası, Pamukkale (Pasteels, 1969 as *A. anale*).

2 males, 11.V.1988, Silifke (İçel) (C.R. and C.Z.); 2 males, 1 female, 5.VII.1991, Topçam (Antalya) *V. agnus-castus* (C.O.).

Literature cited: Ürgüp, Karaman (Warncke, 1980).

An. (Eoanthidium) nasicum (Friese, 1917)

Type location: Anatolia.

Literature cited: Şanlıurfa (Warncke, 1980).

An. (Eoanthidium) nasicum nasiculum (Pasteels, 1969)

Type location: Mut (İçel).

1 female, 1.VII.1990, Sütçüler (Isparta); 1 male, 6 females, 5.VII.1991, Topçam (Antalya) 5m, *C. solstitialis*, *V. agnus-castus* (C.O.); 2 males, 28.VI.1987, Halfeti (Şanlıurfa); 1 female, 16.VI.1987, Kemer (Antalya), 2 males, 28.VII.1985, Alanya (Antalya), 50 m; 1 female, 4.VIII.1985, Silifke (İçel), 200 m (C.Z.)

Literature cited: Ürgüp (Nevşehir), Horasan (Erzurum), Mersin (Warncke, 1980).

An. (s.str.) strigatum luteum (Friese, 1897)

1 female, 11.V.1988, Silifke (İçel) (C.R.); 7 males, 1 female, 30.VII.1985 Fethiye, Ölüdeniz (Muğla) 50 m; 1 female, 28.VIII.1983, Belen İskenderun (Hatay); 1 male, 1.IX.1983, Alanya (Antalya) (C.Z.); 22 males, 2 females, 30.VI.1992, Millipark, Davutlar (Aydın) 20 m; 8 males, 1 female, 1.VII.1990, Sütçüler (Isparta); 4 males, 5.VII.1991, Topçam, Antalya 5 m, *C. solstitialis*, *V. agnus-castus*; 1 male, 1 female, 9.VII.1991, Beydağları, Yazır Gözesi, Antalya 1200 m, *C. solstitialis*; 1 female, 8.VII.1991, Termessos, Antalya, *Melilotus officinalis*; 1 male, 12.VII.1992, Pehlivanlı, Tortum (Erzurum); 1 female, 17.VII.1992, İspir (Erzurum); 3 males, 27.VII.1990, Ayvalı, Oltu (Erzurum); 1 male, 15.VIII.1991, Işhan, Yusufeli (Artvin) 800 m; 2 females, 15.VIII.1991, Taşlıköy, Olur (Erzurum) 900 m; 1 male, 22.VIII.1992, Karaköy, Samsun; 1 male, 2.IX.1990, Yeşilbağlar, Yatağan (Muğla) (C.O.).

Literature cited: Amanus Mts. (Friese, 1922), Truva (Çanakkale) (Stanek, 1968), various locations (Warncke, 1980).

III. Genus *Archianthidium* Mavromoustakis, 1939

Ar. forcipatum (Morawitz, 1875)

1 male, 10.VI.1978, Akarca (Hatay); 1 male, 26.VII.1990, Tortum (Erzurum) (C.O.).

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Ar. latigeps (Morawitz, 1874)

1 male, 5.VII.1991, Topçam, Antalya *V. agnus-castus*; 3 females, 9.VII.1991, Termessos, Antalya, *C. solstitialis*; 2 females, 8.VIII.1991, Umudum Yaylası, Erzurum, *Cephalaria alpina*, (C.O.); 2 males, 8-10.VI.1985, Side (Antalya) (C.Z.).

Literature cited: Taurus cilic (Friese, 1917, as *fasciatellum* Friese), Amanus Mts. (Mavromoustakis, 1939, as *Laticeps* ssp. *anatolicum* Mavr.), Ankara (Friese, 1898).

Ar. maximum (Friese, 1931)

Type location: Taurus Mts.

Ar. pubescens (Morawitz, 1872)

1 female, 18.VII.1980, Sultan Dağları, Akşehir (Konya), 1500 m (C.Z.); 1 female, 4.VII.1990, Çine (Aydın); 1 male, 1 female, 18.VII.1992, Başaklı, Oltu (Erzurum) 1800 m, *O. viciifolia*; 1 female, 20.VII.1991, Egridir (Isparta); 1 male, 5.VIII.1990, Güngörmez, Erzurum (C.O.).

Literature cited: Amanus Mts. (Fahringer and Friese, 1921), Ankara (Alfken, 1935), Akşehir, Sille (Konya), Antalya (Warncke, 1980).

IV. Genus: **Icteranthidium** Michener, 1948

I. aequabile (Morawitz, 1896)

Literature cited: Harran, Şanlıurfa (Warncke, 1980).

I. cimbiciforme (Smith, 1854)

3 females, 13.VI.1977, Adana; 1 female, 25.VII.1989, Hozat (Tunceli); 13 females, 10.VIII.1992, Bayırbağ, Üzümlü (Erzincan); 1 female, 1.IX.1992, Şimal Mezra, Midyat, Harput (Elazığ) (C.O.); 1 male, 1 female, 27.VII.1980, Isparta, near Dinar (Afyon), 800 m; 1 male, 31.VIII.1983, Alanya (Antalya) (C.Z.).

Literature cited: Beledik (Adana), Ereğli (Konya) (Fahringer, 1922), Malatya, Amanus Mts, Erdemli (İçel) (Friese, 1898 and 1921), Milet (Aydın), Truva (Çanakkale), Ankara, Mersin, Ahlat (Bitlis), Tanyeri, Patnos (Ağrı), Erçek (Van), Oramar, Yüksekova (Hakkari) (Warncke, 1980).

I. ferrugineum discoidale (Latreille, 1809)

1 male, 5.VII.1986, Erdemli (İçel), 100 m (C.Z.).

Literature cited: Erenköy, Binbirkilise, Yeşilhisar (Kayseri) (Warncke, 1980).

I. ferrugineum subhyalinum Mavromoustakis, 1947

1 male, 20.VI.1991, Halfeti (Şanlıurfa); 1 male, 17.VII.1991, Iğdır (C.O.).

I. grohmanni (Spinola, 1838)

1 male, 22.VI.1971, Silifke (İçel); 2 males, 27.VI.1978, Silifke; 1 male, 30.VII.1991, Erzincan; 1 male, 2.VII.1992, Çamdüzü, Antalya; 1 female, 18.VIII.1990, Bor (Niğde); 1 male, 19.VIII.1992, Tokat, 1500 m; 1 female, 28.VIII.1977, Erzurum, *O. viciifolia* (C.O.); 4 males, 7.VII.1985, İncekum; 1 female, 20.VIII.1983, Doğubeyazıt (Ağrı) (C.Z.); 1 male, 16.VII.1966, Pozantı (Adana F.A.G., as spp. *rubiginosum* Lep.).

Literature cited: Erzurum (Özbek, 1979), 12 locations in Warncke (1980).

I. laterale (Latreille, 1809)

1 male, 1 female, 21.VIII.1983, Diyadin (Ağrı) (C.Z.); 1 male, 5 females, 7.VIII.1980, Aşkale (Erzurum); 1 female, 8.VIII.1985, Akdağ, Erzurum; 5 males, 2 females, 8.VIII.1991, Umudum Yaylası, Erzurum 2200 m, *Cirsium* sp.; 2 males, 9.VIII.1989, Akdağ, Erzurum; 1 male, 14.VIII.1992, Demirözü (Bayburt), *O. viciifolia*; 1 male, 12.VIII.1979, Başaklı, Oltu (Erzurum); 1 female, 17.VIII.1966, Erzurum, *C. solstitialis*; 1 male, 22.VIII.1992, Bayburt; 1 male, 26.VIII.1991, Köprüköy (Erzurum); 1 male, 2 females, 26.VIII.1979, Başaklı, Oltu (Erzurum) 1700 m, *A. lappa*, *Cirsium* sp.; 1 female, 26.VIII.1991, Sarıkamış (Kars); 3 males, 29.VIII.1991,

Çimenli, Narman (Erzurum), *Onopordum* sp.; 1 male, 29.VIII.1991, Güllü, Narman; 4 males, 1 female, 1.IX.1971, Başaklı Oltu, 1600 m, *Cirsium* sp.; 1 male, 5.IX.1991, Turnalı, Şenkaya (Erzurum), 1 male, 2 females, 12.IX.1981, Başaklı, Oltu, *Cirsium* sp.; 2 females, 15.IX.1981, Palandöken, Erzurum, 2100 m (C.O.).

Literature cited: Kuşcular, Belededik (Adana) (Fahringier, 1922); Erzurum, Patnos (Ağrı), Sivas (Warncke, 1980).

I. limbiferum (Morawitz, 1875)

1 male, 2.VII.1987, Mardin 1000 m; 1 female, 20.VII.1977, Diyarbakır; 1 female, 8.VIII.1985, Kâhta (Adıyaman); 700 m; 1 female, 17.VII.1966, Erzurum (C.Z.); 2 females, 6.VIII.1992 Üniversite, Erzurum, 1900 m; 2 females, 10.VIII.1992, Erzurum, 1900 m; 2 females, 20.VIII.1966, Erzurum; 1 female, 26.VIII.1991, Köprükoy (Erzurum) *Trifolium repense*; 1 female, Boğsak, Silifke (İçel), *C. solstitialis*, 3 m; 2 females, 26.IX.1979, Muti Köprüsü, Erzincan 1300 m (C.O.).

Literature cited: Birecik, Şanlıurfa, Erzurum, Malatya (Warncke, 1980).

I. ovasi (Warncke, 1980)

Type location: Yeşilhisar (Kayseri), Erçek (Van)

1 male, 15.VIII.1991, Demirözü (Bayburt) (C.O.).

I. urfanum (Warncke, 1980)

Type location: Şanlıurfa.

V. Genus: *Pseudoanthidium* Friese, 1898

P. (s.str.) alpinum (Morawitz, 1874)

Literature cited: Ürgüp (Nevşehir), Obruk (Aksaray) (Warncke 1980).

P. (Paranthidiellum) cribratum (Morawitz, 1875)

1 male, 29.VIII.1992, Üniversite, Erzurum 1900 m, *O. viciifolia*; 1 female, 22.VII.1992, Karaköy, Samsun, 30 m, *Centaurea iberica*.

Literature cited: Various locations in Warncke (1980).

P. (Paranthidiellum) lituratum (Panzer, 1801)

1 male, 10.VI.1988, Sivrihisar (Eskişehir), *Cirsium* sp.; 1 male, 4.VII.1991, Isısu, Sarıkamış (Kars) 2000 m; 1 male, 19.VII.1990 Karaçuha, Horasan (Erzurum); 1 female, 8.VIII.1977, Başaklı, Oltu (Erzurum); 1 female, 13.VIII.1991, Gölbaşı, Uzun-dere (Erzurum), 1000m; 1 female, 15.VIII.1978, Palandöken, Erzurum, 2200 m; 1 female, 1.IX.1978, Başaklı, Oltu; 1 female, 5.IX.1983 Muğla (C.O.); 1 female, 7.VIII.1985, Alanya (Antalya); 1 male, 21.VIII.1985, Armutlu (İzmir); 1 female, Ölüdeniz, Fethiye (Muğla) 50 m (C.Z.).

Literature cited: Burdur (Stanek, 1968, as spp. *scapulare*, Başaklı, Oltu (Erzurum) (Özbek, 1979), Tutak (Ağrı) (Warncke, 1980).

P. (Royanthidium) melanurum (Klug, 1832)

3 males, 1 female, 3.VIII.1992, Akseki (Antalya) *C. solstitialis*; 1 male, 2 females, 13.VIII.1991, Çamlıyamaç, Uzundere (Erzurum), 1800 m, *Cirsium* sp., *Trifolium* sp.; 4 males, 26.VIII.1991, Sarıkamış (Kars) *C. solstitialis*, *Cirsium*, sp., *Melilotus officinalis*, 2000 m; 3 males, 7 females, 28.VIII.1992, Demirbilek, İspir (Erzurum) (C.O.)

Literature cited: İspir (Erzurum) (Warncke, 1980)

P. (Reanthidium) reticulatum (Mocsary, 1884)

1 female, 26.VI.1985, Beytüşşebap (Hakkari), 1200 m (C.Z.); 1 female, 6.VII.1992, Üniversite, Erzurum, *O.viciifolia*; 1 female, 26.VIII.1991, Köprüköy (Erzurum), 1800 m, *C. solstitialis*, *Trifolium repense* (C.O.).

Literature cited: Ankara, Konya, Şanlıurfa (Warncke, 1980), Taurus Mts. (Friese, 1917, as *A. mocsaryi*).

P. (s.str.) rhombiferum (Friese, 1917)

Literature cited: Şanlıurfa (Warncke, 1980)

VI. Genus *Rhodanthidium* Isensée, 1927

R. acuminatum (Mocsary, 1884)

Type location: Bursa

Literature cited: Sille (Konya), Karaman (Warncke, 1980)

R. buteum (Warncke, 1980).

Type location: Şırnak, Siirt.

R. caturigense Giraud, 1863

1 female, 27.VIII.1990, Tortum (Erzurum) 1400 m; 1 female, 10.VIII.1992, Üniversite, Erzurum, 1900 m (C.O.)

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R. ducale (Morawitz, 1876)

1 male, 20.VII.1983, Ürgüp (Nevşehir) 1150 m (I.T.Z.)

Literature cited: Anatolia (Pasteels, 1969 as *Trianthidium moreense*), Ürgüp, Sille (Konya), Sertavul, Mut (Içel), Karaman, Obruk (Aksaray), Karakurt, Sarıkamış (Kars) (Warncke, 1980).

R. exsectum Pasteels, 1969

Type location: Refahiye (Erzincan) as *Bellanthidium exsectum*

Literature cited: Gürün (Sivas), Sille (Konya), Tanin Geçidi, Altın Dağları (Warncke, 1980).

R. septemdentatum (Latreille, 1809)

1 female, 16.VIII.1967, Çamlık (Denizli), 450 m (C.Z.); 1 female, 13.V.1981, Kemaliye (Erzincan); 1 female, 22.VI.1992 Olur (Erzurum) (C.O.).

Literature cited: Anatolia (Pasteels, 1969), Ankara (Alfken, 1935), Kuşçular (İstanbul) (Fahringer, 1922), Eceabat, Nara, Truva (Çanakkale) (Stanek, 1968, as *A nigrosetesum*) Ürgüp (Nevşehir), Sille (Konya), Kuşadası (Aydın) (Warncke, 1980).

R. septemdentatum faciale (Friese, 1917)

Type location: Anatolia

1 female, 1 male, 24.VI.1987, Ürgüp (Nevşehir) 1200 m (C.Z.); 2 males, 30.VI.1992, Millipark, Davutlar, (Aydın), *V. agnus-castus*; 2 males, 5.VII.1991, Termessos, Antalya, *C. solstitialis*, 1 male, 5.VII.1991, Topçam, Antalya, *V. agnus-castus*; 1 male, 9.VII.1991, Beydağları Ali Pınarı, Antalya; 1 male, 3.VIII.1992. Akseki (Antalya); *C. solstitialis* (C.O.).

Literature cited: Many locations in Warncke (1980)

R. superbum (Radoszkovsky, 1876)

Type location: Amasya

1 female, 29.V.1983, Çubuk Barajı (Ankara); 1 male, 1 female, 3.VI.1964, Taurus Mts, 900 m; 1 male, 4.VII.1985, Karakurt (Kars), 1400 m (C.Z.); 2 males, 3.V.1990, Cevizli, Tortum (Erzurum); 1 female, 17.VII.1992, Maden Köprübaşı, İspir (Erzurum); 1 female, 28.VII.1978, Kuzgunkıran, Van, *Cirsium* sp. (C.O.).

Literature cited: Belemelik (Adana) (Fahringer, 1922), Ankara (Alfken, 1935, as *A. cristophi*), Çiftehan (Niğde), Baraj, Bulgamaden, Başkale (Van), Reşadiye (Tokat) (Warncke, 1980).

VII. Genus *Trachusa* Panzer, 1804

Tr. (s.str.) byssina (Panzer, 1798)

1 female, 24.VII.1984, Uludağ, Bursa, 1450 m (C.Z.); 1 female, 15.VIII.1990, Karagöl, Şavşat (Artvin) 1600 m (C.O.)

Literature cited: Ankara (Fahringer, 1922), Sarıkamış (Warncke, 1980).

VIII. Genus *Stelis* Panzer, 1806

Stelis is a parasitic genus on other Megachilinae bees.

S. aculeata Morawitz, 1880

1 female, 10.VII.1984, Başkale (Van), 2200 m (G.Z.)

S. cognata Kohl

1 male, 30.VII.1978, Tatvan (Bitlis) (C.O.)

S. minuta Lepeletier et Serville, 1825

1 female, 26.VII.1981, Tafta, Erzurum, 1800 m (C.O.)

S. nasuta (Latreille, 1809)

1 female, 7.VII.1991, Olur (Erzurum); 1 female, 6.VIII.1988, Turnalı, Şenkaya (Erzurum), 2000 m; 1 female, 12.VIII.1991, Süngübayır, Olur; 1 female, 20.VIII.1992, Süngübayır, Olur (C.O.).

S. ornatula (Klug, 1862)

4 females, 29.VI.1985, Voregöz (Hakkari), 1650 m (C.Z.).

S. phaeoptera (Kirby, 1802)

1 female, 24.VII.1985, Kuşadası (Aydın) (C.Z.); 2 males, 26.VII.1981, Tafta, Erzurum, 1800 m (C.O.).

S. punctulatissima (Kirby, 1802)

1 male, 26.VII.1981, Tafta, Erzurum, 1800 m (C.O.).

S. ruficornis Morawitz, 1872

Literature cited: Amasya (Friese, 1895)

S. signata flavescens Friese, 1925

1 female, 10.VII.1987, Başkale (Van), 2200 m; 1 male, 27.VII.1986, Ölüdeniz, Fethiye (Muğla), 50 m; 1 female, 31.VIII.1983, Alanya (Antalya) (C.Z.); 3 males, 5 females, 30.VI.1992, Milipark, Davutlar (Aydın) *V. agnus-castus*; 1 male, 9.VII.1991, Termessos, Antalya; 1 male, 23.VII.1992, Üniversite, Erzurum, 1850 m, *O. vicifolia* (C.O.).

IX. Genus *Dioxys* Lepelletier et Sèrville, 1825

Dioxys is a small Holarctic parasitic anthidiine genus on other megachilid bees.

D. bidentata anatolica Heinrich, 1977

Type locality: Konya

1 female, 31.VII.1978, Hınıs (Erzurum) 1700 m; 1 female, 28.VII.1971, Patnos (Ağrı), 1800 m; 1 female, 17.VIII.1992, Üniversite, Erzurum (C.O.).

Literature cited: Ürgüp (Nevşehir) (Heinrich, 1977).

D. cincta (Jurine, 1807)

1 female, 7.VII.1991, Süngübayır, Olur (Erzurum) (C.O.)

Literature cited: Beyşehir Gölü (Konya), Sertavul Geçidi (İçel), Meram, Şanlıurfa, Elazığ, Gürün (Sivas), Erciyes (Kayseri) (Heinrich, 1977).

D. graeca (Mavromoustakis, 1963)

Literature cited: Beyşehir Gölü, Meram (Konya) (Heinrich, 1977).

D. moesta (Costa, 1883)

Literature cited: Birecik, Şanlıurfa, Antakya, Elazığ, Mut (İçel) (Heinrich, 1977).

D. montana Heinrich, 1977

Type locality: Sertavul Geçidi, İçel

Literature cited: Sille (Konya), Ankara (Heinrich, 1977).

D. pannonica (Mocsary, 1877)

Literature cited: Adana, Şanlıurfa (Heinrich, 1977).

D. pumila (Gersteacker, 1869)

Literature cited: Beyşehir, Sille (Konya), Pamukkale (Denizli), Birecik, Şanlıurfa, Gürün (Sivas), Ürgüp (Nevşehir), Mut (İçel) (Heinrich, 1977).

D. schulthessi (Popov, 1936)

Literature cited: Şanlıurfa (Heinrich, 1977)

D. tridentata (Nylander, 1848)

1 male, 2.VII.1984, Aksaray, 1800 m; 1 female, 15.VIII.1991, Demirözü (Bayburt)(C.Z.); 1 male, 21.VII.1991, Isparta-Konya, *Onopordum* sp.; 1 female, 27.VIII.1992, Pazaryolu (Erzurum) (C.O.).

Özet

Türkiye'nin Megachilidae Türleri III: Anthidiini (Hymenoptera: Apoidea)

Türkiye'nin Megachilidae familyasına giren yabancı türlerinin tesbiti amacıyla sürdürülen seri haldeki çalışmaların bu bölümünde, Anthidiini tribusu ele alınmış ve sonuçta 29 *Anthidium*, 9 *Anthidiellum*, 4 *Archianthidium*, 9 *Icteranthidium*, 6 *Pseudoanthidium*, 8 *Rhodanthidium*, 1 *Trachusa*, 9 *Stelis* ve 9 *Dioxys* olmak üzere toplam 84 tür ve alttür tesbit edilmiştir. Bunlardan *Anthidium schultessii* (Friese), *Archianthidium forcipatum* (Mor.) ve *Rhodanthidium caturigense* Giraud Türkiye faunası için yeni kayıttır.

Anthidium cingulatum Latreille, *A. diadema* Latreille, *A. oblongatum* Illinger, *A. punctatum* Latreille ve *Icteranthidium laterale* Latreille yaygın, yonca ve korunganın tozlamasında önem taşıyan türlerdir.

Türlerin çoğunun ziyaret ettikleri kültür ve yabancı bitkilerin bazıları da tesbit edilmiştir.

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