

A preliminary review of the Megachilidae of Turkey Part I. Osmiini (Hymenoptera : Apoidea)

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Summary

The results of the study on the Turkish insect fauna reported here deal with the tribe Osmiini of the family Megachilidae. 42 species of *Anthocopa*, 36 species of *Hoplitis*, 1 species of *Metallinella*, 66 species of *Osmia*, and 11 species of *Protosmia* were recorded. Host plant associations of most of the species were given.

Anthocopa bipartita (Friese), *A. dalmatica* (Mor.), *A. olgae* Tkalcu, *A. serrilabris* (Mor.), *A. singularis* (Mor.), *A. spinigera* (Latr.), *A. villosa* (Schenck), *Hoplitis acanthophora* (Mor.), *H. bischoffi* (Atanassov), *H. campanularis* (Mor.), *H. melanura* (Mor.), *H. stichi* (Alfken), *Osmia caelestina* Benoist, *O. cyonoxantha* Pérez, *O. kuznetzovi* Cockerell, *O. saxicola* Ducke, *O. submicans* Mor., *O. viridana* Mor., *Protosmia humeralis* (Pérez), *P. mirabilis* (Fr.), *P. tauricola* Popov and *P. tiflensis* Mor. were the new records from Turkey.

Introduction

Megachilidae is a large family of specialized, morphologically rather uniform bees found throughout the world. The front wings without exception have but two marginal cells, and the stigma is small. The pollen-collecting scopa of all nonparasitic females is located on the abdominal sterna (Stephen et al., 1969).

The members of megachilid bees are typical long-tongued bees, so are very good pollinators of wide variety of cultivated and wild plants, especially legume crops. Several species of genera *Megachile*, *Osmia*, and *Anthidium* are growing in artificial domiciles for pollination of certain crops. *Megachile rotundata* F. is one of the world's most important pollinators of alfalfa and has been introduced to many countries and using successfully in pollination of that crop (Free, 1970; Klostermeyer, 1982).

This study is based on the years of extensive collecting by the first author which included a study of the flowers as visited by the bees. It also incorporates study of the

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material in various private and museum-collections by the second author. These provide possibility to give a preliminary list of the species of the Megachilidae collected in Turkey. Part I, the Osmiini treats the genera *Osmia*, *Anthocopa*, *Hoplitis*, *Metallinella*, and *Protosmia*. Part II deals with the tribe Heriadini that includes the genera *Chelostoma*, *Chelostomopsis*, *Heriades*, *Hofferia* and *Pseudoheriades*, and Part III (maybe Part IV) treats remaining groups, comprising the genera *Megachile*, *Chalicodoma*, *Anthidium* (s.l.), *Lithurgus*, and *Creightonella*.

This list gives the species in alphabetical order, with indication of the subgenus. After consultation with some European and American specialists, the decision was made to retain the systematic subdivision as followed in the list of the Palearctic species by van der Zanden (1988). For every species data are given, but for the more common ones the choice has been restricted. Also some relevant data, given by well-known earlier authors Alfken (1935), Benoist (1929), Fahringer (1913, 1922) Fahringer and Friese (1921), Friese (1899a, 1899b, 1921, 1922) were reviewed.

The bee-fauna of Turkey (the country in itself offers a variety of geographic and climatological conditions) consists for the greater part of species which can be found in the European part of the Palearctic Region or in N.Africa. But also Western Palearctic elements, stemming from the Caucasus or from Middle-Asia are present.

It is our firm conviction that in the near future from Turkey still many new species will be described, more especially from the eastern (Anatolia) part of the country. For some species for which up till now only one sex had been described, there will now be added the description of the missing partner.

For the present survey we have employed a series of abbreviations, indicating the location of the material studied, followed by the names of all private collectors and museum-curators who have supplied material and to whom we want to express our sincere thanks. The same symbols are used in the text, placed in parenthesis behind all data recorded.

These symbols are :

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I.T.Z.	Inst.f.Taxon.Zoolog., Amsterdam (W.Hogenes)
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C.E.	Pf.A.W.Ebmer, Puchenau bei Linz
C.O.	Hikmet Özbek, Erzurum
C.R.	S.Risch, Köln
C.S.	M.Schwarz, Ansfelden
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Results

Following is the account of the tribe Osmiini of Megachilidae so far found in Turkey.

1. Genus *Anthocopa* Lepelletier et Serville, 1825

A. (s.str.) *agis* (Benoist, 1929)

Type-location : Taurus Mountains

Since then specimens were also collected in Greece and Iran (van der Zanden, 1985). In the collection of Mavromoustakis (at Nicosia) there is a female from Djiftlik, Palestine, 19.IV.1942, labelled as "*tiberias*" (no description).

A. (Erythrosmia) andrenoides (Spinola, 1808)

1 female, 1 male, 22.IV.1981, Milet (Aydın) (C.Z.); 1 female, 18.IV.1982, Yeşildere, Erzurum (C.O.).

Literature cited : Jaribaschi (Friese, 1921).

A. (s.str.) anipuncta (Alfken, 1935)

2 females, 29.VII.1978, Gevaş (Van), on *Centaurea solstitialis*; 1 female, 30.VII.1978, Tatvan (Bitlis), on *Onopordum* sp.; 1 female, 31.VII.1978, Hınıs (Erzurum) on *Centaurea iberica*; 1 female, 15.VII.1984, Çemişgezek (Tunceli), on *Onopordum* sp.; 1 female, 1.IX.1988, Karaçuha, Horasan (Erzurum) 1500 m; 1 female, 30.VII.1989, Pülümür (Tunceli); 1 female, 17.VII.1990, Oltu (Erzurum) (C.O.).

Literature cited : Madenşehir (Konya) (van der Zanden, 1989).

A. (Tergosmia) avosetta (Warncke, 1988)

47 females, 17 males VI-VII, 1972-1974, Erzurum, all on *Onobrychis viciifolia*; 3 females, 5.VII.1983, Pasinler (Erzurum); 1 female, 14.VII.1990, Umudum Yaylası, Erzurum, 2200 m (C.O.); 1 female, 25.V.1990, Antalya, Taurus Mountains 1200 m (C.R.); 1 female, 7.VI.1980, İspir Pass (Erzurum) (C.O.).

Literature cited : Erciş (Van) (Warncke, 1988) is the type-location. Also Warncke (1988) and Özbek (1979 b) gave a list of other locations. Özbek then used the name "ozbeki Tkalcu", which was not followed by a description.

A. (Odontanthocopa) bidentata bidentata (Morawitz, 1979)

1 female, 27.VII.1982, Silivri (İstanbul); 2 females, 19.VIII.1985, Burhaniye (Balıkesir); 1 female, 2 males, 19.VII.1986, Sivas (C.Z.); 1 female, 2 males, 4.VII.1984, Zeloc, south of Avanos (Nevşehir), 1050 m; 1 male, 10.VII.1984, Tatvan Pass (Bitlis) west site 1900 m; 1 female, 5.VII.1984, west of Topuzdağı-Pass east of Ürgüp (Nevşehir), 1300 m (C.E.); 1 male, 18.VII.1990, Ödemiş (İzmir) (C.O.); 4 males, 13.VII.1987, Van, 1800 m (M.L.); 1 male, 19.VII.1990, Karaçuha, Horasan (Erzurum) (C.O.).

Literature cited : Ereğli, İstanbul, Bulgar Dağı, (Fahringer, 1922), Ereğli, Jaribaschi (Friese, 1921), Erciyas Mountain (Kohl, 1905).

A. (Odontanthocopa) bidentata pallens Tkalcu, 1979

The female has the scopa white instead of red in the nominate form, 1 female, 17.VI.1987, Side (Antalya) (M.L.); 2 females, 4.VII.1990, Çine (Aydın); 1 female, 26.IV.1989, Karakurt Sakıkamış (Kars) on *Cirsium* sp.; 1 female, 26.VII.1978, Patnos (Ağrı); 7 females, 7 males, Tafta Erzurum, 26.VII.1981; 8 females, 26.VII.1978, Erciş (Van), on *Carduus* sp. and *Centaurea glastifolia*; 5 females, 4 males, 27.VII.1978, Kokarsu Bitlis, on *Eryngium billardieri*; 15 females, 5 males, 29.VII.1978 Çakırbey Erciş (Van) on *C.iberica*, *C.solstitialis*, *Cirsium* sp. and *Onopordum* sp.; 1 female, 3 males, 2.VIII.1977, Ardahan (Kars), on *Cirsium* sp.; 6 females, 13.VIII.1977 and 26.VIII.1979, Başaklı Oltu (Erzurum) on *Arctium lappa* and *Echium vulgare* (C.O.).

The type location : Erzurum.

Literature cited : Yeşildere, Ardahan, Serçeme, Erzurum, Bayburt, Başaklı, Oltu (Tkalcu, 1979).

A. (s.str.) bipartita (Friese, 1899)

1 male, 1.VIII.1979, Erzurum (C.O.); 1 female 25.VII.1980, Erzurum; 1 male, 20.VII.1986, 15 km east of Yüksekova (Hakkari) 2150 m (C.Z.). New for Turkey.

A. (s.str.) bisulca (Gerstäcker, 1969)

1 female, 18.VI.1982, Yeşildere Erzurum; 1 female, 8.VI.1978, Balcalı Adana (C.O.); 1 male, 12.VI.1977, Aras Valley Karakurt (Kars), (C.Z.); 1 female, 8.VIII.1979, Kars; 2 females, 2.VIII.1985, Silifke (İçel), 400 m (M.L.); 1 male, 17.VII.1984, west of Topuzdağı-Pass east of Ürgüp (Nevşehir) 1300 m (C.E.).

Literature cited : Klein Asien (Alfken, 1935), Urfa (Van der Zanden, 1980).

A. (Pseudosmia) cristatula van der Zanden, 1990

Synonym : *A. cristata* (Fonscolombe, 1846)

Literature cited : Hasankale (Erzurum) (Özbek, 1976 b; Van der Zanden 1990).

A. (Glossosmia) cypriaca bayburtensis (Tkalcu, 1980)

Type location : Bayburt, on *Carduus* sp., only one specimen collected. Scopa hell orange (White in the nominate form).

Literature cited : Bayburt (Tkalcu, 1980).

A. (s.str.) dalmatica (Morawitz, 1871)

1 female 1.IX.1978, Başaklı Oltu (Erzurum), on *Cirsium* sp. New for Turkey.

A. (Odontanthocopa) distinguenda Tkalcu, 1974

1 female, 9.VII.1989, Akdağ Erzurum, on *Onopordum*; 1 male, 30.VII.1978, Varto (Muş) (C.O.); 8 males, 2 females, 13-19 VI.1966, Beyşehir (O.L.); 3 males, 7 females, 4.VI.1984, 40 km west of Kızıltepe (Mardin) 550 m (I.T.Z.); 2 females, 4.VII.1984 east of Bakırdağı Pass 1700 m; 1 male 7.VII.1984, 60 km west of Malatya, Karahan-Pass, 1800 m; 2 males, 22.VII.1986, Suvani-Halil Pass, west of Kaval (Hakkari), 2300 m (C.E.); 2 females, 11.V.1988, Kızkalesi Silifke (İçel) (C.R.); 1 female, 13.VII.1990, Suzul Pass north west of Gürün (Sivas) 1400 m (C.Z.).

Literature cited : Yeşildere, Tafta, Erzurum (Tkalcu, 1979).

A. (s.str.) duckeana (Kohl, 1905)

Type location : Erciyas Mountain.

4 females, 4 males, 16.VII.1990 road of Ürgüp-Yeşilhisar, south of Güzelova (Kayseri) 1300 m (C.E., C.Z.).

Literature cited : Urfa (Van der Zanden, 1980).

A. (Erythrosmia) erythrogastra (Ferton, 1905)

1 female, 1 male, 23.IV-5.V.1988, Beldibi (Antalya) (C.Z.); 1 male, 21.IV.1974, Efes (İzmir) (M.L.).

Literature cited : Milet (Aydın) (Van der Zanden, 1980).

A. (s.str.) furcula (Morawitz, 1975)

1 male, 5.VII.1977, Amasya (C.Z.).

Literature cited : Klein Asien (Stanek, 1969).

- A. (Tergosmia) glareola* (Warncke, 1988)
Type location : Erciş (Van).
Warncke (1988) cited 11 other specimens.
- A. (Arctosmia) grumi* (Morawitz, 1894)
1 female, 15.VII.1989, Oltu (Erzurum); 1 female, 1.VI.1983; 2 females, 1.VIII.1979, Erzurum on *O. viciifolia*.
Literature cited : Gürün (Sivas), Ürgüp (Nevşehir) (Van der Zanden, 1980).
- A. (s.str.) idealia* (Mavromoustakis, 1948)
1 male, 28.VII.1978, Kuzgunkıran (Van); 2 females, 31.VII.1978, Hınıs (Erzurum), on *C.iberica* (C.O.).
Literature cited : Efes (İzmir) (Van der Zanden, 1980).
- A. (Pseudosmia) jakovlevi* (Rodoszkovski, 1874)
1 male, 8.VII.1974, Erzurum, on *Carduus* sp.; 1 female, 25.VIII.1977, Pasinler (Erzurum), on *Cirsium* sp. (C.O.).
Literature cited. : Hasankale (Erzurum) (Özbek, 1979 b).
- A. (Odontanthocopa) ligurica* (Morawitz, 1868)
1 female, 15.VII.1984, 8 km north of Refahiye (Erzincan) 1700 m (C.E.); 1 male, 18.VI.1987, Beyşehir (Konya), 1150 m (M.L.).
Literature cited : Bağtschi, Jaribaschi (Friese, 1921), Namrun Tarsus (İçel) (Van der Zanden, 1980).
- A. (Arctosmia) mocsaryi* (Friese, 1895)
Literature cited : Jaribaschi (Friese, 1921), Erciyas (Kohl, 1905).
- A. (Arctosmia) obtusa* (Friese, 1899)
Literature cited : Beyşehir (Konya) (Van der Zanden, 1987).
Type location : Gülek Taurus Mountains.
- A. (Odontanthocopa) olgae* Tkalcu, 1978
1 female, 20.VII.1983, Ürgüp (Nevşehir) 1150 m (C.Z.). New for Turkey.
- A. (s.str.) papaveris* (Latreille, 1799)
1 male, 1.VIII.1979, Erzurum (C.O.).
Literature cited : Klein Asien (Alfken, 1935).
- A. (s.str.) perezi* (Ferton, 1895)
2 females, 23.VI.1977, Gürün (Sivas) (C.Z.).
Literature cited : Erzurum, Iğdır (Kars) (Özbek, 1979 b); Ürgüp (Nevşehir) (Van der Zanden, 1980).
- A. (Tergosmia) pratincola* (Warncke, 1988)
Type location : Patnos (Ağrı). Warncke mentioned 4 more specimens.
- A. (Thergosmia) rhodoensis rhodoensis* Van der Zanden, 1983
1 male, 16.V.1978, Kağızman (Kars); 1 male, 6.VIII.1990 Tunceli; 1 female, 3.VI.1989, Şenkaya (Erzurum) (C.O.); 1 female, 26.V.1988, Gaziantep (C.Z.).

Literature cited : Sertavul Uzuncaburç Mut (İçel) (Van der Zanden, 1989). Also Warncke (1988) gave a list of locations.

A. (Tergosmia) rhodoensis arquata (Warncke, 1988)

Type location : Rize.

The punctuation is somewhat different from the nominate form. We doubt the validity of this subspecies.

A. (s.str.) saundersi (Vachal, 1891)

Literature cited : Klein Asien (Alfken, 1935). No recent collecting data reported.

A. (Odontanthocopa) scutellaris (Morawitz, 1868)

3 females, 14.V.1990, Anamur (İçel) (C.R.).

Literature cited : Klein Asien (Alfken, 1935).

A. (s.str.) serrilabris (Morawitz, 1875)

1 male, 20.VII.1988, 1 male, 19.VII.1990, Karaçuha, Horasan (Erzurum) (C.O.).
New for Turkey

A. (Glossosmia) singularis (Morawitz, 1875)

1 female, 7.VI.1972, Konya (C.Z.). New for Turkey.

A. (Hoplosmia) spinigera (Latreille, 1811)

1 female, 13.V.1981, Kemaliye (Erzincan) (C.O.). New for Turkey.

A. (Hoplosmia) spinulosa (Kirby, 1802)

1 female, 21.VIII.1983, Diyardin, Ağrı; 1 male, 24.VII.1985, Kuşadası (Aydın) (C.Z.).

Literature cited : Klein Asien (Alfken, 1935), Jaribaschi, Chanzik (Friese, 1921), Oltu (Erzurum) (Özbek, 1979 b).

A. (Tergosmia) tergestensis remota Tkalcu, 1979

Type location : Erzurum, Mostly on *O.viciifolia*.

1 male, 8.VII.1980, Palandöken (Erzurum), 2500 m on *C.solstitialis*; 2 females, 15.VIII.1978, Palandöken, 2400 m on *Astragalus* sp.; 3 males, 22.VII.1990, Erzurum (C.O.); 1 male, 18.VII.1986 Güzeldere-Pass, 2700 m (C.Z.).

Literature cited : Ankara, Sille, Madenşehir (Konya), (Warncke, 1988).

A. (s.str.) uncaticornis (Stanek, 1969)

Type location : Mut (İçel).

2 males, 27.VI.1976, Sille near Konya; 1 male, 18.VI.1976, Ürgüp (Nevşehir) (C.Z.).

Literature cited : Gürün (Sivas) (Van der Zanden, 1980).

A. (s.str.) urfensis Van der Zanden, 1984

Type location : Ceylanpınarı (Şanlıurfa). No further material known.

A. (Haetosmia) vechti (Peters, 1974)

1 male, 19.VI.1967, Efes (İzmir); 1 male, 16.VII.1990 south of Yeşilhisar, Araplı Pass (Kayseri), 1400 m (C.Z.).

Literature cited : Mut (İçel) (Peters, 1974).

A. (Arctosmia) villosa (Schenck, 1853)

1 female, 20.VII.1989, Kargapazarı mountains, Radar Yolu, Erzurum, 3100 m (C.O.). New for Turkey.

A. (s.str.) yermasoyiae yermasoyiae (Mavromoustakis, 1938)

1 female, 27.VI.1976, Meram (Konya) 1 female, 16.VI.1977, Şanlıurfa; 1 female, 2.VI.1977 Gürün (Sivas) (C.Z.).

A. (s.str.) yermasoyiae asiae Tkalcu, 1979

Type location : Erzurum.

3 males, 5.V.1988, Beldibi (Antalya) (C.Z.); 1 female, 20.VII.1989, Kargapazarı mountains, Radar Yolu, Erzurum 2700 m; 1 female, 30.VII.1990, İspir (Erzurum) (C.O.).

2. Genus *Hoplitis* Klug, 1807

H. (Alcidamea) acanthophora (Morawitz, 1875)

3 females, 7.VII.1984, Karahan-Pass, (Malatya), 1800 m; 6 males Yüksekova (Hakkari) 2150 m (C.E., C.Z.); 2 females, 12.VII.1990 east of Darende (Malatya), Karahan-Pass west site 1800 m (C.E.). New for Turkey.

H. (Alcidamea) acuticornis (Dufour et Parris, 1840)

1 female, 20.V.1988, Eğridir (Isparta) (C.R.); 1 female 14.VII.1990, Umudum Yaylası (Erzurum), 2200 m (C.O.).

Literature cited : Klein Asien (Alfken, 1935), Jaribaschi (Fahringer and Friese, 1921), Erzurum, on *O.viciifolia* (Özbek, 1979b).

H. (s.str.) adunca (Panzer, 1798)

Literature cited : Ereğli, İstanbul (Friese, 1922).

H. (Allosmia) bischoffi (Atanassov, 1938)

1 female, 28.VI.1990, Kopdağı (Bayburt) (C.O.). New for Turkey.

H. (s.str.) bombiformis Van der Zanden, 1991

Literature cited : Yüksekova (Hakkari) Van der Zanden (1991). Apart from the four females, mentioned in the description, no further material collected so far.

H. (Acanthosmia) brachypogon (Pérez, 1879)

Literature cited : Klein Asien (Alfken, 1935) as *Osmia carsophila* Ducke, male.

H. (Acanthosmia) campanularis (Morawitz, 1877)

1 male, 2.VI.1978, Gürün (Sivas) (C.Z.). New for Turkey.

H. (s.str.) carinata (Stanek, 1969)

Type location, Beyşehir (Konya).

4 males, 13 females, V-VII.1970-1972, Erzurum, 1990 m on *O.viciifolia*, *Melilotus officinalis*, *Medicago sativa*, *Astragalus* sp., *Ajuga* sp. (C.O.); 1 male, 2.VI.1972, 1 male, 22.VI.1977, Gürün (Sivas); 1 male, 27.VI.1977, Ürgüp

(Nevşehir); 1 male, 9.VI.1966, Sertavul-Pass Mut (İçel) 1600 m; 1 female, 7.VII.1984, Karahan-Pass Malatya, 1800 m (C.Z.).

H. (Megalosmia) caucasica (Friese, 1920)

Literature cited : Erzurum (Özbek, 1979b), Gümtüşhane (Van der Zanden, 1989).

H. (s.str.) crenulata (Morawitz, 1887)

2 females, 22.VI.1978, Silifke (İçel); 1 female, 25.VII.1977, Sinop on *Eryngium* sp.; 2 females, 25.VII.1989, Hozat (Tunceli), 1700 m on *Centaurea* sp (C.O.); 1 male, 18.VI.1958, Eskişehir; 1 female, 18.VI.1971, Beyşehir (Konya) 1150 m; 1 female, 4.VI.1976, Şanlıurfa; 1 female, 8.VI.1983, Halfeti (Şanlıurfa); 1 male, 2 females, 17.VII.1986, Van, 1700 m; 14 males, 6 females, 2.VI.1988, Alanya, Antalya (C.Z.).

Literature cited : Klein Asien (Alfken, 1935).

H. (Tridentosmia) curvipes (Morawitz, 1871)

1 male, 20.VII.1988, Karaçuha Horasan (Erzurum) (C.O.).

Literature cited : Konya (Van der Zanden, 1983)

H. (s.str.) fertoni (Pérez, 1891)

Alfken (1935) mentioned one specimen from "Klein Asien". Probably this determination was incorrect as no further collection was made in Turkey.

H. (Megalosmia) fulva (Eversmann, 1852)

1 female, 3.VIII.1979, Erciyas Mountain 2400 m; 1 male, 12.VIII.1982 and 1 female, 3.VIII.1979; Kayseri; 1 female, 1 male 3.VIII.1984, Koçaş, 20 km west of Aksaray, 900 m (C.Z.); 1 male, 17.VII.1984, Dörtüol (Antakya); 1 female, 2 males, Koçaş 10 km south of İncesu (Kayseri) 1100 m (C.E.).

Literature cited. : Klein Asien (Alfken, 1935).

H. (s.str.) grossepunctata (Kohl, 1905).

Type location : Erciyas Mountain.

Literature cited : Zelve Van, Topuzdağı-Pass Ürgüp (Nevşehir) (Van der Zanden, 1989).

H. (s.str.) heinrichi Van der Zanden, 1980

Type location : Şanlıurfa.

6 females, 5.VI.1976, Şanlıurfa (C.Z.).

H. Tridentosmia laevifrons (Morawitz, 1872)

1 male, 26.VII.1966, Abant Bolu, 1500 m; 1 male, 11.VI.1978, Karaman; 1 male, 14.VII.1990 Umudum Yaylası Erzurum, 2200 m; 1 male, 11.VII.1990, Ocak Erzurum; 1 male, 19.VII.1990, Karaçuha Horasan (Erzurum) (C.O.).

Literature cited : Klein Asien (Stanek, 1969), Tafta, Narman (Erzurum) (Özbek, 1979 b), Ürgüp (Nevşehir), Şanlıurfa, Meram Sille (Konya) (Van der Zanden, 1980).

H. (Tridentosmia) laeviscutum (Alfken, 1935).

1 female, 22.VI.1976, Silifke (Mersin) (C.O.); 1 female, 2.VI.1968, Şanlıurfa; 1

female, 27.VI.1976, Sille (Konya); 2 females, 5.VII.1976, Şanlıurfa; 1 female, 19.VI.1977, Elazığ; 2 females, 27.VI.1977, Ürgüp (Nevşehir); 1 male, 3.VI.1977, 1 male, 2 females, 18.VI.1981, Ceylanpınar (Şanlıurfa) 500 m; 1 male, 25.VII.1980, Erzurum (C.Z.).

H. (Micreriades) lebanoticum (Mavromoustakis, 1955)

1 female, 28.VI.1969, Konya; 1 male, 26.V.1970, Antakya; 1 female, 12.VI.1983, Eskil (Aksaray) (C.Z.).

Literature cited : Şanlıurfa (Van der Zanden, 1989).

H. (Alcidamea) leucomelana (Kirby, 1802)

1 female, 23.VII.1978, Serçeme Ilıca (Erzurum), on *Convolvulus* sp.; 1 female, 25.VII.1977, Pasinler (Erzurum); 1 female, 26.V.1971, Tuzluca (Kars), on *M. officinalis* (C.O.); 1 male, 19.VII.1984, 2 km south of Nevşehir, 1250 m (C.E.); 3 males, 18.VI.1987, Beyşehir (Konya), 1150 m (M.L.); 1 female, 30.VI.1985 Yüksekova Varegöz (Hakkari) 1650 m; 1 male, 5.VII.1985, Sarıkamış (Kars), 2100 m (C.Z.).

Literature cited : Erzurum, Iğdır, Oltu (Özbek, 1979 b).

H. (s.str.) linguaria (Morawitz, 1876)

Literature cited : Klein Asien (Alfken, 1935), Kayabaşı (Friese, 1921), Zelve south of Avanos and Nevşehir (Van der Zanden, 1987).

H. (s.str.) lysholmi (Friese, 1899)

1 male, 16.VII.1984, Çamlıbel-Pass south of Yıldızeli (Sivas) 1650 m; 1 male, 5.VI.1985, Antalya (C.Z.).

Literature cited : Mersin (Friese, 1899 b).

H. (s.str.) manicata (Morice, 1901)

3 males, 1 female, 15-25.V.1988, Eğridir (Isparta) (C.R.).

Literature cited : Amasya (Van der Zanden, 1980).

H. (Allosmia) melanura (Morawitz, 1871)

1 male, 23.IV.1988, 1 male, 5.V.1988, Beldibi, Antalya (C.Z.). New for Turkey.

H. (Allosmia) nuda (Friese, 1899)

Type location : Bursa.

Warncke (1988) gave *nuda* as a synonym for *Chelostoma ventrale* Schletterer. This is completely wrong. The type of *nuda* is a *Hoplitis*.

H. (s.str.) pallicornis (Friese, 1895)

1 female, 17.VI.1987, Side (Antalya) (M.L.); 1 male, 10.VI.1970, Ürgüp (Nevşehir); 2 males, 3.VII.1984, Sivrihisar-Pass (Eskişehir) 40 km south east of Aksaray, 1800 m; 1 male, 26.V.1988, Göksun (Kahramanmaraş) (C.Z.).

Literature cited : Klein Asien (Alfken, 1935), Chanzik (Friese, 1921), Sihli Sertavul (İçel) (Van der Zanden, 1987).

H. (Alcidamea) pici (Friese, 1899)

Type location : Bursa.

H. (Liosmia) praestans (Morawitz, 1894)

1 female, 18.VII.1986, Güzeldere-Pass south of Hosop Başkale (Van) 2600 m

(C.E.); 1 female, 28.VII.1986, Palandöken (Erzurum) 2300 m (C.O.); 1 female 4.VII.1990, Beğ Dağları, Antalya, 1700 m (C.Z.).

Literature cited : Namrun (İçel) (Van der Zanden, 1980).

H. (Platosmia) recticauda (Stanek, 1969).

Type location : Mut (İçel).

1 male, 9.VI.1968, Sertavul-Pass Mut (İçel) (C.Z.).

Literature cited : Erzurum (Özbek, 1979b).

H. (Allosmia) rufohirta (Latreille, 1811)

1 female, 19.IV.1974, Kuşadası (Aydın); 1 female, 20.IV.1974, Pamukkale (Denizli) (M.L.); 3 females, 1 male, 14.IV.1981, Side Antalya; 1 female, 19.VI.1985, Karaman, 1100 m (C.Z.).

Literature cited : Klein Asien (Alfken, 1935), Ahır Dağı, Jaribashi (Friese, 1921). Friese here gave the name as *H. rufiventris* Latr.

H. (s.str.) stichi (Alfken, 1936)

1 female, 11.VI.1977, Sertavul Mut (İçel); 2 females, 22.VI.1977, Gürün (Sivas) (C.Z.). New for Turkey.

H. (Allosmia) subarita (Smith, 1853)

1 female, 7.VI.1972, Konya; 2 females, 14.IV.1981, Side Antalya; 3 males, 23.IV. and 5.V.1988, Beldibi (Antalya) (C.Z.); 2 females, 23.V.1990, Kalecik (Ankara) (C.R.).

Literature cited : Elazığ (Van der Zanden, 1980).

H. (Micreriades) tenuispina (Alfken, 1937)

Literature cited : Konya (Van der Zanden, 1989).

H. (Tridentosmia) tigrina (Morawitz, 1871)

1 male, 5 females, 29.VII.1976, Çakırbey Erciş (Van); 1 male, 28.VII.1976, Kuzgunkıran (Van); 1 male, 29.VII.1978, Gaziler Erzurum (C.O.).

Literature cited : Klein Asien (Alfken, 1935), Jaribaschi (Friese, 1921), Hazar Gölü Elazığ (Van der Zanden, 1987).

H. (Tridentosmia) tridentata (Dufour et Perris, 1840)

1 female, 10.VII.1984, 20 km east of Tatvan (Bitlis) 1750 m; 1 female, 19.VII.1984, 5 km west of Nevşehir, 1300 m (C.E.); 1 female, 24.VI.1989, Karakurt Sarıkamış (Kars); 1 female, 14.VII.1984, Karaoğlan Ovacık (Tunceli), on *Cirsium* sp.; 1 female, 27.VIII.1990, Kireçli Dağı, Narman (Erzurum) 2400 m (C.O.); 1 male, 5.VI.1964, Beyşehir (Konya); 1 female, 19.VII.1971, Rahva (Bitlis) 1950 m (C.Z.).

Literature cited : Erzurum (Özbek, 1979 b), Amasya (Van der Zanden, 1980).

H. (Alcidamea) turcestanica (Dalla Torre, 1896)

3 females, 22.VI.1986, Yüksekova (Hakkari), 2200 m (C.Z.); 2 females, 10.VII.1990, south of Göksun (Kahramanmaraş) 1600 m (C.E.).

Literature cited : Erzurum (Van der Zanden, 1989).

H. (Alcidamea) verruciventris (Morawitz, 1886)

Literature cited : Sille (Van der Zanden, 1980).

Özbek (1979b) also gave data for *H. erzurumensis* and *H. mollis*. Both labelled by Tkalcu as paratypes, but since then this author has refrained from describing these two, so for the moment these were omitted.

3. Genus *Metallinella* Tkalcu, 1966

M. brevicornis leucogastra (Morawitz, 1875)

1 female, 11.VI.1960, Kayseri; 1 male, 15.VI.1971, İspir (Erzurum) (C.Z.); 3 females, 18.VI.1987, Beyşehir (Konya) 1150 m (M.L.); 41 females, 6 males, 4.V.1978, Kınılıçam Yusufeli (Artvin), on *Sinapis arvensis*; 1 male, 9.V.1982 and 1 female, 9.VII.1978, Erzincan (C.O.).

Literature cited : Klein Asien (Alfken, 1935), Amanos Mts. (Friese, 1921).

4. Genus *Osmia* Panzer, 1806

O. (Chalcosmia) aeruginosa Warncke, 1988

Type location : Varegöz, Hakkari.

O. (Caerulosmia) amathusica Mavromoustakis, 1937

1 male, 18.VI.1987, Beyşehir, 1150 m (M.L.); 1 male, 1. V.1967, Antalya (C.Z.).

Literature cited : Erzurum (Özbek, 1979 a).

O. (Monosmia) apicata Smith, 1853

1 female, 5.VI.1964, Beyşehir (Konya); 1 male, 25.VI.1971, Oltu (Erzurum); 3 males, 19.IV.1981, Kuşadası (Aydın) (C.Z.); 1 male, 4.VI.1990, Cevizli Erzincan; 1 female, 29.VI.1990, Pehlivanlı Tortum (Erzurum) (C.O.).

Literature cited : Kajabaschi, Chanzik, Jadikardash (Friese, 1921), Mut (İçel) (Özbek, 1979 a).

O. (Chalcosmia) aquila Warncke, 1988

Type location : Madenşehir, Konya

Also 15 more specimens in the same paper.

O. (Helicosmia) aurulenta (Panzer, 1799)

1 male, 4.V.1978, Kınılıçam Yusufeli (Artvin) 900 m on *S. arvensis*; 2 females, 13.V.1981, Kemaliye (Erzincan); 3 females, 27.V.1989, Bitlis; 4 females, 2 males, 4.VI.1990, Cevizli Erzincan; 1 female, 18.VI.1982, Yeşildere Erzurum (C.O.).

Literature cited : Dörtyol (Friese, 1921), Şenkaya (Erzurum), Pülümür (Tunceli) (Özbek, 1979 a). Also Warncke (1988) gave a list of localities. This species was common in Turkey.

O. (Chalcosmia) breviata Warncke, 1988

Type location : Madenşehir, Konya.

1 female, 18.VII.1984, Çamlıbel-Pass south of Yıldızeli (Sivas 1650 m; 1 female 7.VII.1984, Karahan-Pass west of Malatya, 1800 m; 1 female, 25.VII.1986, Hanak (Kars) 2100 m; 1 female, 11.VI.1977, Sertavul-Mut (İçel) 1300 m (C.Z.).

O. (Caerulosmia) caelestina Benoist, 1934

1 female, 6.VII.1984, Bakırdağı Pass (Kayseri) 1700 m (C.Z.). New for Turkey.

O. (Chalcosmia) caerulescens caerulescens (Linneaus, 1758)

1 female, 5.V.1978, Ormanağzı Olur (Erzurum), on *Prunus* sp.; 1 female, 13.V.1981, Kemaliye (Erzincan), 1400 m; 1 male, 16.V.1970, Kağızman (Kars), on *Malus* sp.; 1 female, 22.VI.1979, Tortum (Erzurum), 1400 m.; 1 female, 29.VI.1979, Tortum (Erzurum), 1400 m; 1 female, 4.VI.1990, Cevizli Erzincan, 1300 m; 2 females, 11.VI.1974, Erzurum, 1850 m on *O.viciifolia*; 1 female, 16.VI.1989, Sivas, 1600 m on *C.solstitialis*; 1 male, 20.VI.1981, Iğdır; 1 female, 25.VI.1971, Oltu (Erzurum); 2 females, 20.VII.1977, Sinop, on *Carduus* sp.; 1 male, 25.VII.1983, Erzurum on *O.viciifolia*; 2 females, 27.VII.1990, Ayvalı Oltu (Erzurum); 1 male, 24.VII.1990, Kaleboğazı, Oltu; 2 females, 4.VI.1990, Cevizli, Erzincan (C.O.); 1 female, 18.VI.1987, Beyşehir (Konya) 1150 m (M.L.); 2 females, 22.V.1970, Sultanhan (Konya); 1 female, 24.VII.1985, Kuşadası (Aydın); 2 females, 28.VII.1986 Armutlu (Bursa); 1 male, 8.V.1963, Ankara (C.Z.). It was very common species.

Literature cited : İstanbul (Fahringer, 1922), Maraş Bağdaş (Friese, 1921), Erzurum, Iğdır, Kağızman (Kars) (Özbek, 1979a).

Warncke (1988) gave some data for the subspecies, *O.caerulescens cyanea* (Fabricius). Remarkably we have not found this form, though some specimens showed traces of its specific coloration.

O. (Caerulosmia) cephalotes longiceps Morawitz, 1876

1 male, 12.VI.1983, Eğil (Diyarbakır) (C.E.); 1 female, 10.V.1988, Eğridir (Isparta) (C.R.).

Literature cited : Kajabaschi (Friese, 1921).

O. (s.str.)cerinthidis Morawitz, 1876

1 male, 22.V.1971, Susuz (Kars); 1 male, 6.VII.1990, Turnalı Şenkaya (Erzurum); 1 female, 4.VI.1990, Cevizli Erzincan; 1 male, 19.VII.1990, Oltu (Erzurum) (C.O.); 2 females, 4.VI.1964, Beyşehir, Konya; (C.Z.).

Literature cited : Bursa, Gürün, Şavşat, Amasya, Konya, Sivrihisar, Beyşehir, Ankara (Peters, 1978). Erzurum (Özbek, 1979a).

This species was very common in eastren Anatolia and visited the flowers of *Sinapis arvensis*, *Prunus communis*, *Prunus* spp., *Malus communis* and *Salix* sp.

O. (Chalcosmia) chrysaetos Warncke, 1988

Type location : South of Varegöz Hakkari.

Warncke (1988) mentioned 7 more specimens other locations.

O. (Chalcosmia) cinerea Warncke, 1988

Type location : Yüksekova (Hakkari). Also 9 more specimens from other locations.

O. (Chalcosmia) clypearis acuta Warncke, 1988

Type location : Sarıkamış (Kars), also 6 more specimens.

O. (s.str.) cornuta cornuta (Latreille, 1805)

Literature cited : Üsküp, Tekirdağ (Peters, 1978).

O. (s.str.) cornuta quasirufa Peters, 1978

7 females, 18.VI.1972, Oltu (Erzurum) on *Prunus* sp.; 1 female, 1 male, 26.IV.1989, Bellitaş Hımıs (Erzurum); 2 females, 9.V. and 15.V.1989, Tokat; 1 female, 25.IV.1990, Alpakut Sarıcakaya (Eskişehir) (C.O.); 1 female, 9.IV.1963, Ankara; 2 females, 17.VI.1976, Şanlıurfa (C.Z.); 10 females, 15.IV.1953, Konya (E.T.H., C.Z.).

Literature cited : Smyrna, Eskişehir, Karadağı, Bursa, Ankara, Akşehir (Peters, 1978).

O. (Caerulosmia) cyanoxantha Pérez, 1879

1 female, 9.VI.1970, 1 female, 20.VI.1974, 1 male, 13.VII.1972, Erzurum, 1850 m on *O.viciifolia*; 2 females, 2 males, 15.VI.1976, Gürün (Sivas); 1 male, 9.VI.1976, Elazığ; 1 female, 9.VI.1968, Sertavul Mut (İçel) 1600 m (C.Z.) New for Turkey.

O. (Caerulosmia) cypricola Mavromoustakis, 1937

1 male, 18.V.1976, Tunceli, on *Salix* sp.; 1 male, 29.VI.1972, Erzurum, 1850 m on *O.viciifolia*; 2 females, 10.VII.1970, Erzurum on *Carduus* sp.; 1 female, 17.VII.1990, Oltu (C.O.); 1 female, 5.VII.1984, Zelve (C.E.).

Literature cited : Erzurum (Özbek, 1979a), Gürün (Sivas), Ürgüp (Nevşehir), Sille (Konya) (Van der Zanden, 1980).

O. (Exosmia) difficilis Morawitz, 1875

2 males, 22.VI.1987, Çat (Erzurum), 2200 m on *Cirsium* sp.; 1 male, 9 females, 22.IV-23.VII.1972-1978, Serçeme Erzurum on *O.viciifolia*, *Medicago sativa* and *C.solstitialis* (C.O.).

Literature cited : Klein Asien (Alfken, 1935) as *Osmia alborufa*, Erzurum (Tkalcu, 1979), Ankara, Gürün, Erdek, İçel (Van der Zanden, 1987). Also Warncke (1988) indicated many locations.

O. (Caerulosmia) dilaticornis Morawitz, 1875

Literature cited : Bardakçı Gezbell-Pass Gürün (Sivas) (Van der Zanden, 1989).

O. (Chalcosmia) dimidiata rossica Friese, 1899

Literature cited : Van (Van der Zanden, 1980).

O. (Chalcosmia) diomedia Warncke, 1988

Type location : Beytüşşebap Hakkari.

O. (Chalcosmia) dives Mocsary, 1877

1 male, 2 females, 13.VI.1966, Beyşehir (Konya) (C.Z.); 1 male, 25.VI.1979, Erzurum; 1 female, 31.VI.1980, Karaçuha Horasan (Erzurum) 1700 m; 1 female, 8.IX.1987, Salur Refahiye (Erzincan), On *Carduus* sp. (C.O.). In the list of, Warncke (1988) probably some localities are hidden under the citations of *O. sogdiana*.

Literature cited : Klein Asien (Alfken, 1935).

O. (Caerulosmia) dlabolae Tkalcu, 1978

Type location : Darende (Malatya).

Literature cited : Gürün (Van der Zanden 1989).

O. (Caerulosmia) forticornis Van der Zanden, 1989

1 female, 18.VI.1987, Beyşehir (Konya), 1150 m (M.L.).

Literature cited : Gürün (Sivas), Sertavul-Pass Mut (İçel), Ürgüp (Nevşehir), Sivrihisar (Eskişehir) (Van der Zanden, 1989).

O. (Chalcosmia) frieseana, Ducke, 1899

Literature cited : Karaman (Van der Zanden, 1980).

O. (Chalcosmia) fulviventris (Panzer, 1798)

1 female, 22.V.1990, Serdarlı Uzundere (Erzurum); 2 males, 7.VI.1980, İspir (Erzurum), 2100 m, on *Salvia* sp.

O. (Caerulosmia) gallarum Spinola, 1808

Literature cited : Muş (Özbek, 1979 a).

O. (Chalcosmia) gutturalis Warncke, 1988

Type location : Vargöz Hakkari, Also 18 more specimens from various locations.

O. (Chalcosmia) heliaca Warncke, 1988

Type location : Vargöz Hakkari.

O. (Caerulosmia) hellados Van der Zanden, 1984

1 female, 1.VI.1981, Bucak (Burdur) (C.E.).

Literature cited : Anatsın Konya (Van der Zanden, 1984).

O. (Chalcosmia) kuznetzovi (Cockerell, 1930)

1 female, 15.VIII.1970, Bayburt; 1 female, 13.VII.1974, Tortum (Erzurum), 1600 m on *Salvia* sp. (C.O.). New for Turkey.

O. (Caerulosmia) laticauda Stanek, 1969

1 female, 16.VI.1984, Hakkari (C.Z.).

Type location : Sertavul Mut (İçel).

O. (Chalcosmia) latreillei iberoafricana Peters, 1975

1 male, 14.IV.1974, Kuşadası (Aydın) (C.Z.). A specimen of 16 mm twice as big as usual.

Literature cited : Milet, Kuşadası (Aydın) (Warncke, 1988).

***O. (Chalcosmia) leaiana* (Kirby, 1802)**

2 males, 22.V.1990, Serdarlı Uzundere (Erzurum) 1300 m, on *Salvia* sp.; 1 male, 25.VI.1971 Oltu (Erzurum); 4 females, 12.VII.1979, Oltu; 3 females, 14.VII.1984, Gözeler Ovacık (Tunceli), on *Cirsium* sp.; 1 female, 26.VII.1981, Tafta Erzurum, On *Carduus* sp.; 1 female, 31. VIII.1983, Çıldır (Kars), 2100 m; 2 females, 20.IX.1977, Bağbaşı Tortuın (Erzurum).

Literature cited : Jedikardasch (Friese, 1921), Erzurum, Ardahan (Kars) (Özbek 1979a). Warncke (1988) gave 13 more specimens, but still used the obsolete name *ventralis* Pnz. which had been discarded long ago.

***O. (Chalcosmia) livida* Tkalcu, 1978**

Type location : Bayburt.

8 females, 3 males, 4.VII.-12.VII.1970-1974, Erzurum on *O.viciifolia* and *C. solstitialis* (C.O.). Warncke (1988) mentioned 9 more specimens.

***O. (Orientosmia) maxillaris scheherazade* Peters, 1978**

Type locality : Gürün (Sivas).

3 females, 10 males, 25.VI.1971, Oltu (Erzurum), 1400 m, on *M.sativa*.

Literature cited : Sertavul İçel, Oltu (Peters, 1978; Özbek, 1979 a).

***O. (Chalcosmia) medanae* Magrettin, 1890**

1 male, 6.VII.1982, Uçhisar (Nevşehir) 1200 m (I.T.Z.).

Literature cited : Ankara, Karakurt Kars, Suvvari-Halil Pass Hakkari (Van der Zanden, 1983).

***O. (Chalcosmia) melanogaster melanogaster* Spinola, 1806**

2 females, 10.VI.1988, Sivrihisar (Eskişehir) on *Cirsium arvense*; 1 male, 18.VI.1983, Yeşildere Erzurum, 1900 m; 1 female, 17.VII.1982, Cevizli Erzincan, on *A.lappa*; 1 female, 28.VII.1978, Kuzgunkıran Van, 2300 m, on *C.glastifolia*; 1 male, 23.VI.1988, Şanlıurfa (C.O.); 2 females, 16-19.VI.1966, Beyşehir (Konya) (O.L.); 4 females, 18.VI.1987, Beyşehir, Konya 1150 m (M.L.); 2 females, 17.VII.1986, Akdamar, Van 1700 m (C.Z.).

Literature cited : Klein Asien (Alfen, 1935), as *O. notata* var. *aterrima*.

***O. (Chalcosmia) melanogaster carniolica* Morawitz, 1872**

1 female, 10.VI.1978, Sertavul, İçel 1400 m (C.S.); 2 females, 13.VI.1966, Beyşehir (O.L.).

Literature cited : Zonguldak (Van der Zanden, 1980).

***O. (Caerulosmia) moreensis* Van der Zanden, 1984**

Literature cited : Efes-Aydın, Milet-Aydın, Side (Van der Zanden, 1984).

***O. (s.str.) mustelina mustelina* Gerstäcker, 1869**

1 female, 3.VII.1984, Sivrihisar-Pass (Eskişehir), 40 km south east of Aksaray 1800 m (C.E.).

Literature cited : Klein Asien (Alfken, 1935), as *O. emarginata*, Uludağ, Barkark, Bursa, Kaplıca near Bolu, Beyşehir (Peters, 1978), Aladjari (Friese, 1921), as *O. emarginata*.

O. (s.str.) mustelina griseohirta Alfken, 1935

1 female, 14.VII.1990, Zigana Torul (Gümüşhane) 1800 m (C.O.).

Literature cited : Klein Asien (Alfken, 1935), Sertavul Mut (İçel) (Peters, 1978), Sarıkamış (Kars) (Özbek, 1979 a), Sertavul Mut Çatak (Van der Zanden, 1989).

O. (s.str.) mutensis Peters, 1978

Type location : Sertavul Mut (İçel).

O. (Caerulosmia) nana Morawitz, 1874

1 male, 9.V.1982, Erzincan (C.O.); 1 male, 2.VI.1978, Gürün (Sivas) (C.Z.); 1 female 15.IV.1981, Perge (Antalya) (M.L.); 3 females, 9-13.V.1988, Kızkalesi (İçel); 1 female, 25.V.1990, Süleymaniye (Antalya) Taurus Mts., 1200 m (C.R.).

Literature cited : Klein Asien (Stanek, 1969).

O. (s.str.) nigrohirta Friese, 1899

1 female, 1.VI.1966, Honaz Mountain (Denizli) (O.L.); 1 female, 5.VII.1984, Erciyas Mountain near of Develi (Kayseri), 1800 m; 1 female, 7.VII.1984, 10 km west of Gürün (Sivas) 1650 m; 1 female, 14.VII.1984, Azort 1250 m; 1 female, 16.VII.1984, Çamlıbel-Pass south of Yıldızeli (Sivas) 1650 m (C.E.); 1 female, Akşehir (Konya) 10.VI.1967, 1100 m; 1 female, 5.VII.1984, Erciyas Mountain 1800 m (C.Z.); 1 female, 4.VII.1985, Karakurt (Kars), on *Centaurea* sp. 1400 m (C.O.).

Literature cited : Jedikardasch (Friese, 1921), Klein Asien (Alfken, 1935), Aksu Kapı, Tortum (Özbek, 1979 a), Madenşehir, Sertavul, Beyşehir, Sille, Konya, Sultan Dağı, Ankara (Peters, 1978).

O. (Chalcosmia) ocularis Warncke, 1988

Type location : Altın Dağları (Hakkari), Warncke (1988) cited 16 more specimens.

O. (Chalcosmia) onocrotala Warncke, 1988

Type location : Sarıkamış (Kars). The author gave 8 more specimens.

O. (Chalcosmia) pennata Warncke, 1988

Type location : Sertavul İçel.

O. (Chalcosmia) peregrina Warncke, 1988

Type location : Birecik (Şanlıurfa).

O. (Chalcosmia) prasina Morawitz, 1875

Literature cited : Güzeldere-Pass Esil Başkale (Van) (Van der Zanden, 1989).

O. (s.str.) rufa cornigera (Rossi, 1790)

1 male, 20.IV.1975, Tortum (Erzurum), on *Prunus* sp.; 2 males, 24.VI.1990 Zorkum Yaylası, Osmaniye (Adana) (C.O.); 1 female, İspir (Erzurum) 17.VI.1973; 2 females, 5.IV.1981, Termassos Antalya (C.Z.).

Literature cited : Bursa, Ayvalık, Ilgaz-Pass (Peters, 1978), Erzurum (Özbek, 1979a).

O. (Chalcosmia) saxatilis Warncke, 1988

Type location : Karakurt (Kars). Warncke gave 16 more specimens.

O. (Caerulosmia) saxicola Ducke, 1899

1 male, 2.VI.1978, Gürün (Sivas) (C.Z.). New for Turkey.

O. (Chalcosmia) sieversi Morawitz, 1886

4 males, 18.VI.1987, Beyşehir, Konya, 1150 m (C.Z.).

Literature cited : Samsun (Van der Zanden, 1980).

O. (Chalcosmia) signata Erichson, 1835

5 males, 31.V.1980, Karaçuha Horasan (Erzurum); 2 females, 1 male, 2.VI.1972, Muş; 1 female, 10.VI.1988, Sivrihisar (Eskişehir) on *Salvia* sp.; 1 male, 1.VII.1982, Erzurum (C.O.); 1 female, 18.VI.1969, Ankara, 800 m (M.L.); 1 female, 5.VII.1966, Yalova (Bursa) (C.Z.).

Literature cited : Kajaşashi, Jedikardasch (Friese, 1921), as *O.vidua*, Karaman, Gemlik (Van der Zanden, 1980). Also a list of captures (Warncke, 1988).

O. (Chalcosmia) sita Nurse, 1904

Literature cited : Gürün (Sivas) (Van der Zanden, 1980).

O. (Chalcosmia) sogdiana Morawitz, 1875

Literature cited : Gürün (Sivas) (Van der Zanden, 1980).

O. (Chalcosmia) subaenea Pérez, 1886

Literature cited : Warncke (1988) cited this true species as a subspecies of *O.melanogaster* Spin.

O. (Chalcosmia) subcornuta Morawitz, 1875

1 female, 20.V.1988, Eğirdir (Isparta) (C.Z.). Warncke (1988) gave a list of 39 specimens.

O.(Caerulosmia) submicans Morawitz, 1870

1 male, 3 females, 15.IV.1981, Side Antalya (C.Z.). New for Turkey.

O. (Caerulosmia) teunissenii (Van der Zanden, 1981)

1 male, 8.V.1982, Yayla Dağı, Hatay, 600 m (I.T.Z.); 1 male, 4.IV.1972, Side (Antalya); 6 males, 15.IV.1981, Perge Antalya (C.Z.).

Literature cited : Antakya (Van der Zanden, 1981).

O. (Melanosmia) thoracica Rodoszkovski, 1874

1 female, 12.VI.1980, Palandöken, Erzurum, 2400 m, On *Taraxacum* sp.; 3 females, 25.VI.1980, Dumlubaba Dağı, Erzurum, 2800 m; 2 females, 20.VII.1989, Karapazarı Dağı, Erzurum, 2600 m, on *Astragalus* sp. (C.O.).

Literature cited : Erciyas (Kohl, 1905), as *O.pentheri*, Uludağ (Van der Zanden, 1983).

O. (Chalcosmia) torquata Warncke, 1988

Type location : Suvari Halil-Pass, Hakkari.

O. (Caerulosmia) versicolor Latreille, 1811

1 male, 6.VI.1983, Sivrihisar (Eskişehir) (C.E.); 2 females, 15-25.V.1990, Eğridir (Isparta); 1 female, 20.V.1990, Tokat; 1 female, 13.V.1990, Silifke (İçel) (C.R.).

Literature cited : İstanbul (Friese, 1922), Sivas, Efes, Kuşadası, Aydın (Van der Zanden, 1984).

O. (Caerulosmia) viridana viridana Morawitz, 1874

1 male, 3.V.1984, near Maraş, 700 m (I.T.Z.). New for Turkey.

O. (Caerulosmia) viridana mulleolus Van der Zanden 1984

1 female, 5.VII.1984, Topuzdağı-Pass, Ürgüp (Nevşehir), 1300 m (C.E.); 1 female, 2.VI.1978, Başaklı Oltu (Erzurum), 1700 m on *O. vicifolia*, 1 female, 20.VI.1970, Tafta, Erzurum; 1 female, 25.VI.1971, Oltu (C.O.).

Literature cited : Adalia, Kuşadası (Van der Zanden, 1984).

5. Genus *Protosmia* Ducke, 1900

P. (Rhodosmia) exenterata (Pérez, 1895)

1 male, 4.VII.1990, Bey Dağları, cedar forest 1700 m (C.Z.).

Literature cited : Anatolia (Stanek, 1969).

P. (s.str.) glutinosa (Giraud, 1871)

1 female, 28.VII.1990, Ayvalık Oltu (Erzurum) (C.O.).

Literature cited : Erciyas (Kohl, 1905).

P. (Rhodosmia) humeralis (Pérez, 1896)

1 female, 1 male, Şanlıurfa, 550 m (C.S.). New for Turkey.

P. (s.str.) limbata (Benoist, 1935)

Literature cited : Suvari Halil Pass, west of Kaval (Hakkari) (Van der Zanden, 1989).

P. (s.str.) magnicapitus (Stanek, 1969)

Type location : Birecik, Şanlıurfa.

P. (Rhodosmia) mirabilis (Friese, 1899)

1 male, 20.V.1988, Eğridir (Isparta) (C.R.); 1 male, 13.IV.1974, Kuşadası (Aydın) (M.L.). New for Turkey.

P. (Rhodosmia) paradoxa (Friese 1899)

Literature cited : Sille, Mut (Van der Zanden, 1980).

P. (Phodosmia) sideritis Tkalcu, 1978

Literature cited : Gürün (Sivas) (Van der Zanden, 1989).

P. (Rhodosmia) stigmatica (Pérez, 1896)

Literature cited : Klein Asien (Stanek, 1969).

P. (Rhodosmia) tauricola Popov, 1961

1 female, 20.VII.1986, 15 km east of Yüksekova (Hakkari), 2150 m (C.Z.). New for Turkey.

P. (Rhodosmia) tiflensis (Morawitz, 1876)

1 female, Beldibi Antalya, I.V.1988; 1 female, 13.VII.1990 north west of Gürün, Sugal-Valley (Sivas) 1400 m; 1 male, 10.VII.1990, south of Göksun, Pürin-Pass south site (Kahramanmaraş), 600 m (C.Z.); 4 females, 3 males, 4.VII.1990, Bey Dağları, 24 km south of Elmalı, cedar forest (Antalya) (C.E., C.Z.). New for Turkey.

Özet

Türkiye'nin Megachilidae türleri I : Osmiini (Hymenoptera : Apoidea)

Bu çalışmadaki materyalin çok büyük bir kısmı birinci yazarın 1970'li yıllardan bu yana Türkiye'nin çeşitli yörelerinden topladığı örnekler ile ikinci yazarın Avrupa'daki değişik müzelerde ve kimi bilim adamlarının özel koleksiyonlarında incelediği materyallerin esasına dayanmaktadır. Üç veya daha fazla bölümler halinde yürütülecek olan bu çalışmalardan birincisinde; Osmiini tribus'ü ele alınmıştır. Osmiini'de *Anthocopa* cinsine ait 42, *Hoplitis*'de 36, *Metallinella*'da 1, *Osmia*'da 66 ve *Protosmia*'da ise 11 olmak üzere toplam 156 türün varlığı tesbit edilmiştir. Bunlardan *Anthocopa bipartita* (Friese), *A. dalmatica* (Mor.), *A. olgae* Tkalcu, *A. serrilabris* (Mor.), *A. singularis* (Mor.), *A. spinigera* (Latr.), *A. villosa* (Schenck) *Hoplitis acanthophora* (Mor.), *H. bischoffi* (Atanassov), *H. campanularis* (Mor.), *H. melanura* (Mor.), *H. stichi* (Alfken), *Osmia caelestina* Benoist, *O. cyanoxantha* Pr., *O. kuznetzovi* Cockerell, *O. saxicola* Ducke, *O. submicans* (Mor.), *O. viridana* (Mor.), *Protosmia humeralis*, *P. mirabilis* (Fr.) *P. tiflensis* (Mor.) ve *P. tauricola* Popov Türkiye faunası için yeni türlerdir. Ayrıca bu çalışmada dünya literatürü için yeni olan bazı türler tesbit edilmiştir. Bunların tanımları ayrı bir çalışmada yapılacak ve yayınlanacaktır.

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