

CHECK LIST OF TURKISH FLOWER FLIES (DIPTERA: SYRPHIDAE)

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ABSTRACT: A revised present list is the first attempt to register all modern taxa of flower flies distributed to the whole territory of Turkey. It includes 73 genera and 315 taxa. The list of used literature includes mostly contemporary publications. This list is based on studies on syrphids of Turkey and individual studies between the years 1902 and 2011.

KEY WORDS: Diptera, Syrphidae, flower flies, Turkey, checklist, review.

As in the whole world, flower flies are the most crowded insects group in Turkey as well. Syrphid flies constitute a dominant group of insects flying on day of the Diptera team within these insects. They constitute a bridge among three continents. Furthermore, Turkey has territories diversity and a wide variety of minerals, landscapes and rocks in topographic and climate structure. Therefore, it has numerous plants and insect species depending on this plant diversity. Turkey is very rich in terms of insects; however, there is little knowledge about insects because insects have not been studied sufficiently in Turkey. There are few samples and scientists and there is little accumulation of knowledge about insects in Turkey. Therefore, it will take long years to reveal insect fauna of Turkey.

The oceanic climate prevails in the sections of the East Anatolian Mountains overlooking sea, Mediterranean climate in Marmara, Aegean and Mediterranean regions and continental climate in the Middle, East and Southeast Anatolia in Turkey. Three different phytogeography regions are seen in control of different climate conditions, which are the North Anatolia (Europe-Siberia) phytogeography region, the Mediterranean (Aegean-Mediterranean) phytogeography region and the Iran-Turan phytogeography region (Şişli, 1996).

Turkey is a country which has the richest biological diversity in Europe and Middle East and ranks 9 in terms of biological diversity. Each of the 7 geographical regions of the country exhibits different flora and fauna properties and it has the most important three ecological regions in the world. Turkey houses the % 75 of plant species present in the European continent and one third of these species constitutes endemic plants. The Anatolian fauna stands out with its richness of over 8000 animal species. The % 33 of the plant species in Turkey are endemic. In its flora comprising over 9000 plant species, approximately 3000 of which are endemic, Turkey is known for bulbous plants over 500; *Galanthus* (snowdrop), *Leucojum* (snowflakes), *Cyclamens* (cyclamens), *Tulipa* (tulips), and *Colchicum* (colchicums) species in international flower bulb trade. The Turkish flora, which has high endemism, is quite rich in terms of medical and aromatic plants (Demirayak, 2002).

The adults are among the most abundant and conspicuous of Diptera. All adult Syrphinae and Eristalinae visit flowers and feed on pollen and nectar. They are therefore significant pollinators of many plants, but their role as such has been little studied (Vockeroth & Thompson, 1987).

Syrphid flies are of great economic importance as larvae of the subfamily Syrphinae, are voracious predators, and devour large number of aphids, besides attacking coccids, scale insects, psyllids, aleurodids and cicadellids. The adult are also beneficial to agriculture as pollinators. The larvae of some genera like *Microdon* and *Eumerus* are harmful as they attack and destroy bulbous plants like tulips, daffodils and narcissus. (Kohli et al., 1988).

Although syrphids of Turkey have been known for over 100 years, there is not a list including studies which have been done up to present. Studies on syrphids of Turkey are put on the page of syrphids of Turkey by making use of publications of authors who did research by going on excursion.

Many of the studies were actually performed to determine the predator of agricultural harmful insects. Meanwhile, syrphids are also recorded in predator list. The faunistic works of syrphids have been done at most in recent years.

The first record on the syrphids of Turkey was made by Bischof (1902), the researcher recorded 11 syrphid species as a result of the survey conducted in Erciyes Mountain.

The first comprehensive study on syrphids of Turkey was recorded in the written work "Syrphidae". In: Lindner, E. "Die Fliegen der paläarktischen Region" by Sack [published in fascicles between 1928 and 1932] as 56 species of syrphids of Turkey "Asia Minor". 42 syrphid species were recorded in "Syrphidae In: A. Soos & Papp (eds.) Catalogue of Palearctic Diptera. Volume 8" by Peck (1988).

In the above mentioned studies carried out by native and foreign researchers it is seen that a total of 308 species were identified in Turkey. Not a complete list of syrphids has been published up to present. The faunistic and individual studies carried out by the above mentioned researchers indicate the presence of a rich fauna of syrphids in Turkey. This list will be a useful document for other researchers. Furthermore, future studies will contribute to revelation of syrphids of Turkey and the number of species will increase. The habitats and spreading areas of the species determined will have been identified.

In this study 314 species under 73 genera belonging to syrphid family were recorded in Turkey.

As a result of the checking of the below literatures, it has been established that there are the species contained in the checklist of the syrphids of Turkey.

"Bischof (1902), Sack (1932), Gadeau De Kerville (1939), Bodenheimer (1958), Séguy (1968), Shiraki (1930, 1968), Gül-Zümreoğlu (1972), Tuatay et. al. (1967, 1972), Violovich (1974), Atak (1975), Goeldlin (1976), Soydanbay-Tunçyürek (1976), Soylu & Urel (1977), Goeldlin & Lucas (1981), Düzgüneş et. al. (1982), Kovancı & Kılınçer (1982), Erkin (1983), Zeren & Düzgüneş (1983, 1984), Zeren (1985), Özgür (1986a, 1986b, 1987), Alaoğlu & Özbek (1987), Zeren & Yabaş (1987), Hurkmans (1987, 1988), Claussen & Lucas (1988), Peck (1988), Hayat & Alaoğlu (1990a, 1990b), Hurkmans (1993), Dirickx (1994), Yumruktepe & Uygun (1994), Aktaş & Sarıbiyik (1996), Sarıbiyik & Aktaş (1996), Hurkmans et al. (1997), Hurkmans & Hayat (1997), Claussen & Hayat (1997a, 1997b), Hayat & Claussen (1997), Hayat (1997), Sarıbiyik & Hasbenli (1997), Weyer (2000), Steenis (2000), Stuke & Claussen (2000), Sarıbiyik (1998, 1999a, 1999b, 2000a, 2000b), Sarıbiyik & Özgür (2000), Sarıbiyik (2001), Aktaş & Sarıbiyik (2001), Özgür & Sarıbiyik (2002), Sarıbiyik (2003a, 2003b, 2003c, 2003d, 2003e, 2003f, 2004), Candemir & Kara (2003), Nielsen (2004), Reemer et al. (2005), Sarıbiyik & Hasbenli (2006), Şahbaz & Uysal (2006), Marcos-García et al. (2007), Reemer & Smit (2007), Speight (2008), Bayrak & Hayat (2008), Sarıbiyik (2008a, 2008b, 2009a, 2009b), Mirceni & Pârvu (2009), Vujić et.al. (2011), Özkan & Çalışkan (2010, 2011), Sarıbiyik, 2011a, b, c).

The abbreviations of the provinces of Turkey in the present text (in DIT):

Adana (AD)	Gaziantep (GA)	Niğde (NI)
Adıyaman (ADY)	Giresun (GI)	Osmaniye (OS)
Afyon (AF)	Hakkari (HA)	Rize (RI)
Ağrı (AG)	Hatay (HT)	Siirt (SI)
Aksaray (AK)	Isparta (IP)	Sinop (SN)
Ankara (AN)	İstanbul (IS)	Şırnak (SK)
Antalya (ANT)	İzmir (IZ)	Tokat (TO)
Artvin (ART)	Kahramanmaraş (KA)	Trabzon (TB)
Aydın (AY)	Karabük (KR)	Tunceli (TU)
Bartın (BR)	Karaman (KM)	Uşak (US)
Bayburt (BY)	Kars (KAR)	Van (VA)
Bingöl (BN)	Kastamonu (KS)	Yozgat (YO)
Bolu (BO)	Kayseri (KY)	Zonguldak (ZO)
Burdur (BU)	Kırklareli (KK)	Akdeniz Kıyı Şerisi (AKS)
Bursa (BS)	Konya (KN)	Asia minor (ASM)
Çanakkale (CA)	Malatya (MA)	Batı Karadeniz Bölgesi (BKB)
Çankırı (CN)	Manisa (MN)	Çukurova (CUO)
Denizli (DE)	Mersin (ME)	Doğu Akdeniz Bölgesi (DAB)
Erzurum (EZ)	Muğla (MG)	Marmara Bölgesi (MAB)
Eskişehir (ES)	Nevşehir (NE)	Türkiye (TUR)

CHECKLIST OF TURKISH FLOWER FLIES

(Genera and Species arranged alphabetically in the year 2012).

Family SYRPHIDAE**ANASIMYIA** Schiner, 1864**Anasimyia transfuga** (L., 1758) DIT: IP, KA**ARCTOPHILA** Schiner, 1860**Arctophila bequaerti** Herve-Bazin, 1913 DIT: KS**Arctophila bombiforme** (Fallén, 1810) DIT: TB, KS**BACCHA** Fabricius, 1805**Baccha elongata** (Fabricius, 1775) DIT: CN, KS, KA**BRACHYPALPOIDES** Hippe, 1978**Brachypalpoides lentus** (Meigen, 1822) DIT: IP, MG**BRACHYPALPUS** Macquart, 1834**Brachypalpus chrysites** Egger, 1859 DIT: KS**Brachypalpus laphriformis** (Fallén, 1816)**CALIPROBOLA** Rondani, 1845**Caliprobola speciosa** (Rossi, 1790) DIT: AN, KS**CALLICERA** Panzer, 1809**Callicera aurata** (Rossi, 1790) DIT: ME

Callicera fagesii Guerin-Meneville 1844 DIT: HA

Callicera macquarti Rondani, 1844 DIT: IS, KY

CERIANA Rafinesque, 1815

Ceriana conopsoides (L., 1758) DIT: AN, CN, IZ, KA, MG, NE

Ceriana vespiformis (Latreille, 1804) DIT: BS, MG

CHALCOSYRPHUS Curran, 1925

Chalcosyrphus eunotus (Loew, 1873) DIT: KS

Chalcosyrphus nemorum (Fabricius, 1805) DIT: MG, TB

Chalcosyrphus piger (Fabricius, 1794) DIT: KS

Chalcosyrphus rufipes (Loew, 1873) DIT: KA

CHAMAESYRPHUS: see under **PELEOCERA**

CHEILOSIA Meigen, 1822

Cheilosia aerea Dufour, 1848 DIT: AN, BR, KA, KS, KY, MG, NI

Cheilosia albitarsis (Meigen, 1822) DIT: AK, AN, ANT, BO, CN, EZ, IP, KS, KY, NE, ZO

Cheilosia antiqua (Meigen, 1822) DIT: HA

Cheilosia bracusi Vujic&Claussen, 1994 DIT: KS

Cheilosia brunnipennis Becker, 1894 DIT: BS

Cheilosia canicularis (Panzer, 1801) DIT: ART, BO, CN, EZ, KS, SN, TB, BKB

Cheilosia himantopus (Panzer, 1798) DIT: CN, KS, SN

Cheilosia illustrata (Harris, 1776) DIT: BO, CN, KS, BKB

Cheilosia laticornis Rondani, 1857 DIT: AN, CN, BO, BS, KN, KS

Cheilosia latifrons (Zetterstedt, 1843) DIT: TUR

Cheilosia mutabilis (Fallén, 1817) DIT: KS, ZO

Cheilosia nigripes (Meigen, 1822) DIT: BS, KS, KY

Cheilosia pagana (Meigen, 1822) DIT: BO

Cheilosia proxima (Zetterstedt, 1843) DIT: BO, BR, HT, KS, KY

Cheilosia schnabli Becker, 1894 DIT: TB

Cheilosia scutellata (Fallén, 1817) DIT: AD, AN, BO, BR, KA, KS, OS, KN

Cheilosia soror (Zetterstedt, 1843) DIT: AD, AK, AN, ANT, BO, BR, CN, KA, KS, KY, MG, ZO, BKB

Cheilosia sulcifrons Kaplan in Kaplan and Thompson, 1981 DIT: GA

Cheilosia transcaucasica Stackelberg, 1960 DIT: AN, KS

Cheilosia urbana (Meigen, 1822) DIT: AN, KS, KY

Cheilosia variabilis (Panzer, 1798) DIT: BO, CN, EZ, KS, SN, BKB

Cheilosia vernalis (Fallén, 1817) DIT: TUR

Cheilosia vicina (Zetterstedt, 1849) DIT: KS

Cheilosia vulpina (Meigen, 1822) DIT: CN, KS

CHRYSOGASTER Meigen, 1803

Chrysogaster coemiteriorum (L., 1758) DIT: AK, AN, CN, KA, KS, KY

Chrysogaster mediterraneus Vujik, 1999 DIT: MG

Chrysogaster simplex Loew, 1843 DIT: MG

Chrysogaster solstitialis (Fallén, 1817) DIT: BO, EZ, KA, KS

Chrysogaster tumescens (Loew, 1873) DIT: EZ

CHRYSOTOXUM Meigen, 1803

Chrysotoxum bicinctum (L., 1758) DIT: AK, CN, KS, KN, IP

Chrysotoxum cautum (Haris, 1776) DIT: AK, ANT, BO, BS, EZ, KM, KR, KS, KY, ME, MG, NE, TO, ZO

Chrysotoxum elegans Loew, 1841 DIT: TUR

Chrysotoxum fasciolatum (de Geer, 1776) DIT: KS

Chrysotoxum festivum (L., 1758) DIT: AK, AN, ANT, BR, BO, CN, EZ, IP, KN, KR, KS, KY, VA

Chrysotoxum impressum Becker, 1921 DIT: TUR

Chrysotoxum intermedium Meigen, 1822 DIT: AD, AK, AN, ANT, BO, ES, HT, IP, IZ, ME, MG, KA, KS, KN, KY, NI, OS, TO

***Chrysotoxum lessonae* (Giglio-Tos, 1890)** DIT: BO, CN, KS

***Chrysotoxum octomaculatum* Curtis, 1837** DIT: EZ, KY

***Chrysotoxum parmense* Rondani, 1845** DIT: AD, AK, AN, ANT, BO, EZ, IP, KN, KS, KY, ME, NI, TO

***Chrysotoxum vernale* Loew, 1841** DIT: EZ

CONOSYRPHUS Frey, 1915

***Conosyrphus volucellinus* (Portschinsky, 1881)** DIT: CN, KAR, KS, TB

CRIORHINA Meigen, 1822

***Criorhina berberina* (Fabricius, 1775)** DIT: KS

***Criorhina floccosa* (Meigen, 1822)** DIT: KS

DASYSYRPHUS Enderlein, 1838

***Dasyrphus albostratus* (Fallén, 1817)** DIT: ES, KS

***Dasyrphus pinastri* (de Geer, 1776)** DIT: BO, KS, KY, SN

***Dasyrphus tricinctus* (Fallén), 1817** DIT: KS, SN

DIDEA Macquart, 1843

***Didea fasciata* Macquart, 1843** DIT: CN, KS

***Didea intermedia* Loew, 1854** DIT: KS

DOROS Meigen, 1803

***Doros destillatorius* Mik, 1885** DIT: TUR

EPISTROPHE Walker, 1852

***Epistrophe eligans* (Haris, 1780)** DIT: AD, AN, HT, IZ, KS, ME, US

***Epistrophe grossulariae* (Meigen, 1822)** DIT: BO, KS

***Epistrophe ochrostoma* (Zetterstedt, 1849)** DIT: ME

EPISYRPHUS Matsumura & Adachi, 1917

***Episyrrhus balteatus* (de Geer, 1776)** DIT: AD, AK, AN, ANT, BO, BR, BU, CN, DE, ES, EZ, IP, IZ, HT, KA, KN, KR, KS, KY, ME, MG, OS, SN, TO, ZO, CUO, MAB

ERISTALINUS Rondani, 1845

***Eristalinus aeneus* (Scopoli, 1763)** DIT: AD, AK, AN, ANT, BO, CN, ES, HT, IP, IZ, KA, KR, KN, KS, KY, ME, MG, TO, ZO

***Eristalinus megacephalus* (Rossi, 1794)** DIT: IP, KY, MG

***Eristalinus sepulchralis* (L., 1758)** DIT: AD, AF, AK, AN, ANT, BO, CN, ES, HT, IZ, KA, KN, KR, KS, KY, MG

***Eristalinus taeniops* (Wiedemann, 1818)** DIT: AD, AN, ANT, EZ, HT, IP, IZ, KA, KY, ME, MG

ERISTALIS Latreille, 1804

***Eristalis alpina* (Panzer, 1798)** DIT: CN, KS

***Eristalis arbustorum* (L., 1758)** DIT: AD, AF, AN, AK, ANT, BR, BO, BU, CN, ES, EZ, HT, IP, IZ, KA, KN, KR, KS, KY, ME, MG, SN, TO, ZO

***Eristalis horticola* (de Geer, 1776)** DIT: AN

***Eristalis jugorum* Egger, 1858** DIT: EZ, KS, TO

***Eristalis nemorum* (L., 1758)** DIT: KS

***Eristalis pertinax* (Scopoli, 1763)** DIT: AN, BO, CN, KA, KR, KS

***Eristalis rupium* Fabricius, 1805** DIT: AN, CN, KS

***Eristalis similis* (Fallén, 1817)** DIT: AD, AN, ANT, BO, CN, ES, HT, IP, KA, KR, KS, KY, ME, MG, SN

***Eristalis tenax* (L., 1758)** DIT: AD, AF, AK, AN, ANT, CN, ES, EZ, HT, IP, IZ, KA, KN, KS, KY, MA, ME, MG, TB, TO, US

EUMERUS Meigen, 1822

***Eumerus amoenus* Loew, 1848** DIT: IZ

***Eumerus angustifrons* Loew, 1848** DIT: ANT

***Eumerus argyropus* Loew, 1848** DIT: TUR

- Eumerus barbarus* (Coquebert, 1804) DIT: IZ
Eumerus basalis Loew, 1848 DIT: IZ
Eumerus falsus Becker, 1922 DIT: TUR
Eumerus graecus Becker, 1921 DIT: TUR
Eumerus hissaricus Stackelberg, 1949 DIT: EZ
Eumerus nudus Loew, 1848 DIT: TUR
Eumerus ornatus Meigen, 1822 DIT: TUR
Eumerus pulchellus Loew, 1848 DIT: AD, ANT, ME, OS
Eumerus pusillus Loew, 1848 DIT: AD, ME, OS
Eumerus rusticus Sack, 1932 DIT: TUR
Eumerus sogdianus Stackelberg, 1952 DIT: KY
Eumerus strigatus (Fallén, 1817) DIT: AD, ANT, BO, BU, CN, HT, KS, KY, MN, ME, OS, SN, TO
Eumerus sulcutibius Rondani, 1868 DIT: HA
Eumerus tricolor (Fabricius, 1798) DIT: BU, KA, KN, KR, KS, KY
- EUPEODES** Osten Sacken, 1877
Eupeodes bucculatus (Rondani, 1857) DIT: ANT, ME
Eupeodes corollae (Fabricius, 1794) DIT: AD, AF, AK, AN, ANT, BR, BO, BU, CN, ES, EZ, HT, IP, IZ, KA, KN, KR, KS, KY, ME, MG, NE, OS, SN, ZO, CUO, DAB, MAB
Eupeodes flaviceps (Rondani, 1857) DIT: AD, AF, NE, CUO
Eupeodes latifasciatus (Macquart, 1829) DIT: AD, AN, BO, HT, IZ, KA, KS, ME, MG
Eupeodes luniger (Meigen, 1822) DIT: AD, AN, BO, CN, IZ, KR, KS, MG
Eupeodes nuba (Wiedemann, 1830) DIT: MG
- FERDINANDEA** Rondani, 1844
Ferdinanda cuprea (Scopoli, 1763) DIT: KA, KN
- HELOPHILUS** Meigen, 1822
Helophilus continuus Loew, 1854 DIT: EZ, KY, TO
Helophilus hybridus Loew, 1846 DIT: AN, BO, KR, KY
Helophilus trivittatus (Fabricius, 1805) DIT: AD, AK, AN, ANT, BR, ES, EZ, IZ, KA, KN, KR, KS, KY, MG, ZO
- HERINGIA** Rondani, 1856
Heringia brevidens (Egger, 1865) DIT: KS
Heringia heringi (Zetterstedt, 1843) DIT: AD, AK, ANT, BO, HT, KS, ME, NE, ZO
- LAPPOSYRPHUS** Dusek & Laska 1967
Lapposyrphus lapponicus (Zetterstedt, 1838) DIT: BO, CN, KN, KR, KS, SN
- LEJOGASTER** Rondani, 1857
Lejogaster metallina (Fabricius, 1776) DIT: EZ
Lejogaster tarsata (Megerle in Meigen, 1822) DIT: AD, AF, AK, AN, ANT, BO, CN, KA, KN, KR, KS, KY, MG, ZO
- LEJOPS** Rondani, 1857
Lejops vittata (Meigen, 1822) DIT: AN, ANT, KY
- LEUCOZONA** Schiner, 1860
Leucozona glaucia (L., 1758) DIT: TUR
Leucozona laternaria (Mueller, 1776) DIT: TUR
- MALLOTA** Meigen, 1822
Mallota cimbiciformis (Fallén, 1817) DIT: BO
Mallota tricolor Loew, 1871 DIT: TUR
- MELANGYNA** Verrall, 1901
Melangyna lasiophthalma (Zetterstedt, 1843) DIT: KS
Melangyna metatarsata (Becker, 1921) DIT: TUR
Melangyna umbellatarum (Fabricius, 1794) DIT: KS

MELANOGASTER Rondani, 1857***Melanogaster aerea* (Loew, 1843)** DIT: AD, AK, AN, ANT, CN, KA, KR, KS, KY***Melanogaster hirtella* Loew, 1843** DIT: EZ***Melanogaster nuda* (Macquart, 1829)** DIT: MG, OS**MELANOSTOMA** Schiner, 1860***Melanostoma mellinum* (L., 1758)** DIT: AD, AK, AN, ANT, AY, BO, CA, CN, ES, EZ, HT, IP, IZ, KA, KN, KR, KS, KY, ME, MG, SN, TO, ZO, CUO, DAB***Melanostoma scalare* (Fabricius, 1794)** DIT: AN, BO, KA, KR, KS, MG**MELIGRAMMA** Frey, 1946***Meligramma cincta* (Fallén, 1817)** DIT: TUR***Meligramma guttata* (Fallén, 1817)** DIT: CN**MELISCAEVA** Frey, 1946***Meliscaeva auricollis* (Meigen, 1822)** DIT: AD, AN, ANT, BO, CN, ES, HT, IZ, KA, KR, KS, KY, ME, OS, SN, ZN, CUO, DAB***Meliscaeva cinctella* (Zetterstedt, 1843)** DIT: AD, BO, HT, KS, SN, TO**MERODON** Meigen, 1803***Merodon aberrans* Egger, 1860** DIT: ANT, BN, BO, EZ, HA, IZ, KAR, KA, KY, RI, SI, SK***Merodon aeneus* Megerle in Meigen, 1822** DIT: MG***Merodon alagoezicus* Paramonov, 1925** DIT: ADY, AN, EZ, HA, KAR, KN, KY, MA***Merodon albifrons* Meigen, 1822** DIT: AN, IP, KN, MG, ZO***Merodon altinosus* Hurkmans, 1993** DIT: HA***Merodon armipes* Rondani 1843** DIT: CN, KS***Merodon auronites* Hurkmans 1993** DIT: KA***Merodon avidus* (Rossi, 1790)** DIT: AD, ADY, AN, ANT, BS, ES, EZ, HA, KA, KAR, KR, KN, KS, KY, MG, SK, VA, ZO***Merodon bessarabicus* Paramonov 1924** DIT: KS***Merodon biarcuatus* Curran, 1939** DIT: EZ, HA, SK, TU***Merodon caucasicus* Portschinsky, 1877** DIT: TUR***Merodon caudatus* Sack, 1913** DIT: ASM***Merodon chalybeatus* Sack 1913** DIT: IP***Merodon cinereus* (Fabricius, 1794)** DIT: TUR***Merodon clavipes* (Fabricius, 1781)** DIT: HA***Merodon chunipes* Sack, 1913** DIT: ADY, AN, ANT, BO, BS, IP, IZ***Merodon crassifemoris* Paramonow, 1925** DIT: SK***Merodon cupreus* Hurkmans, 1993** DIT: HA, KAR***Merodon dimorphus* (Szilady, 1940)** DIT: BS***Merodon distinctus* Palma, 1863** DIT: BS, VA***Merodon eques* (Fabricius, 1805)** DIT: TUR***Merodon equestris* (Fabricius), 1794** DIT: TUR***Merodon erivanicus* Paramonow, 1925** DIT: ANT, BO, EZ, HA, KAR, SK, VA***Merodon femoratooides* Paramonov, 1925** DIT: EZ, HA, KAR***Merodon femoratus* Sack, 1913** DIT: ANT, KN, SK, VA***Merodon fractipes* Paramonow, 1936** DIT: MG***Merodon fulcratus* (Becker, 1913)** DIT: TUR***Merodon funestus* (Fabricius, 1794)** DIT: TUR***Merodon geniculatus* Strobl, 1909** DIT: IZ, MG***Merodon hamifer* Sack, 1913** DIT: ANT, IP, KN***Merodon hayati* Hurkmans in Hurkmans and Hayat, 1997** DIT: EZ***Merodon hikmeti* Hurkmans in Hurkmans and Hayat, 1997** DIT: AN, CN, EZ, KS***Merodon hypochrysos* Hurkmans, 1993** DIT: ADY, HA***Merodon ilgazense* Vujić, Marcos-Garcia, Saribiyik & Ricarte, 2011** DIT: KS***Merodon italicus* Rondani 1845** DIT: AK, AN, ADY, ANT, BO, BS, EZ, IP, KA, KR, KS, MG, SK***Merodon loewi* van der Goot, 1964** DIT: AK, AN, BO, CN, ES, EZ, KA, KAR, KN, KR, KS, KY, NE, ZO

- Merodon lucasi* Hurkmans, 1993** DIT: EZ, HA, KAR, KN
***Merodon minutus* Strobl, 1893** DIT: MG
***Merodon murinus* Sack, 1913** DIT: KY
***Merodon nanus* (Sack, 1931)** DIT: AN, AK, BO, CN, ES, EZ, KA, KS, KY, ME
***Merodon nigratarsis* Rondani, 1845** DIT: ADY, AN, ANT, BO, BS, CN, EZ, HA, KAR, KN, KS, YO
***Merodon nitidifrons* Hurkmans, 1993** DIT: HA
***Merodon obscuritarsis* Strobl, 1909** DIT: TUR
***Merodon oidipous* Hurkmans, 1993** DIT: HA
***Merodon ottomanus* Hurkmans, 1993** DIT: ANT, EZ, HA
***Merodon planiceps* Loew, 1862** DIT: CN, EZ, GI, KS, TB
***Merodon pruni* (Rossi, 1790)** DIT: BO, IZ, KS, ZO
***Merodon quadrinotatus* (Sack, 1931)** DIT: HA
***Merodon ruficornis* Meigen, 1822** DIT: BS
***Merodon satdagensis* Hurkmans, 1993** DIT: HA
***Merodon schachtii* Hurkmans, 1993** DIT: HA
***Merodon serrulatus* Wiedemann in Meigen, 1822** DIT: EZ, KA, ME, MG
***Merodon spinipes* (Fabricius, 1794)** DIT: AK, AN, ANT BR, BO, BU, CN, IP, KA, KN, KR, KS, KY, NI, ZO
***Merodon spinatarsis* Paramonow, 1929** DIT: AN, BO, BU, CN, KA, KY, MG
***Merodon taniniensis* Hurkmans, 1993** DIT: HA, MA
***Merodon telmateia* Hurkmans, 1988** DIT: AG, AN, CN, EZ, KAR, MG
***Merodon testaceus* Sack, 1913** DIT: BS
***Merodon trebevicensis* Strobl, 1900** DIT: KS
***Merodon tricinctus* Sack, 1913** DIT: TUR
***Merodon vanderhooti* Hurkmans, 1993** DIT: ADY, AN, HA, IP
***Merodon velox* Loew, 1869** DIT: AD, AN, ANT, BO, BU, BS, EZ, HA, IZ, KA, KAR, KS, KY, MG, ZO
***Merodon warnckeii* Hurkmans, 1993** DIT: HA, VA
- MESEMBRIUS** Rondani, 1857
***Mesembrius peregrinus* (Loew, 1846)** DIT: AF, MG
- MICRODON**: see under Microdontidae, following the species accounts of Syrphidae.
- MILESIA** Latreille, 1804
***Milesia crabroniformis* (Fabricius, 1775)** DIT: ANT, BS, HA, KA, MG
***Milesia semiluctifera* (Villers, 1789)** DIT: ANT, IP, KA, KS, MG, ZO
- MYATHROPA** Rondani, 1845
***Myathropa florea* (L., 1758)** DIT: AD, AN, ANT, BO, BR, CN, ES, HT, KA, KN, KR, KS, KY, MG, SN, TO, ZO
- MYOLEPTA** Newmann, 1838
***Myolepta dubia* (Fabricius, 1805)** DIT: AD, BO, KA, KS, KY, ZO
***Myolepta nigratarsis* Coe, 1957** DIT: TUR
***Myolepta potens* (Harris, 1780)** DIT: TUR
***Myolepta trojana* Reemer, Hauser and Speight, 2005** DIT: ME, MG, ZO
***Myolepta vara* (Panzer, 1798)** DIT: BO
- NEOASCIA** Williston, 1886
***Neoascia annexa* (Müller, 1776)** DIT: MG
***Neoascia dispar* Meigen, 1822** DIT: TUR
***Neoascia interrupta* (Meigen, 1822)** DIT: KY
***Neoascia pavlovskii* Stackelberg, 1955** DIT: EZ
***Neoascia podagrica* (Fabricius, 1775)** DIT: AD, AK, AN, ANT, BO, BS, CN, IP, KA, KS, KY, ME, MG, NI, TO
***Neoascia subannexa* Claussen & Hayat, 1997** DIT: ART, RI
***Neoascia tenur* (Harris, 1780)** DIT: TUR
- NEOCNEMODON**: see **HERINGIA**

ORTHONEVRA Macquart, 1829*Orthonevra frontalis* (Loew, 1843) DIT: AK, AN, HT, KY, ME, MG, NI, OS*Orthonevra fumipennis* (Loew, 1843) DIT: IZ*Orthonevra nobilis* (Fallén, 1817) DIT: AK, AN, CN, IP, KN, MG**PALUMBIA** Rondani, 1865*Palumbia eristaloides* (Portschinsky, 1887) DIT: EZ**PARAGUS** Latreille, 1804*Paragus abrogans* Goeldlin, 1971 DIT: EZ, MG*Paragus absidatus* Goeldlin, 1971 DIT: EZ*Paragus albifrons* (Fallén), 1817 DIT: AN, KS, KY, TO*Paragus antoinettae* Goeldlin & Lucas, 198 DIT: EZ, IZ*Paragus azureus* Hull, 1949 DIT: ER*Paragus bicolor* (Fabricius), 1794 DIT: AK, AN, ANT, BO, CN, EZ, IP, KN, KA, KR, KS, KY, MG, NE, NI, TO, ZO, AKS*Paragus coadunatus* Rondani, 1847 DIT: EZ*Paragus compeditus* Wiedemann, 1830 DIT: AN, IZ, KY, ME, MG, AKS, CUO, DAB*Paragus constrictus* Simic, 1986 DIT: EZ*Paragus faesi* Weyer, 2000 DIT: ANT*Paragus haemorrhous* Meigen, 1822 DIT: EZ, MG*Paragus kopdagensis* Hayat & Claussen, 1997 DIT: BY*Paragus majoranae* Rondani, 1857 DIT: IZ*Paragus oltenicus* Stanescu, 1977 DIT: ADY*Paragus pecchiolii* Rondani, 1857 DIT: MG*Paragus quadrifasciatus* Meigen, 1822 DIT: AF, AN, ANT, CN, ES, IZ, KN, KY, MG, TO, DAB*Paragus romanicus* Stanescu 1992 DIT: EZ, MG*Paragus tibialis* (Fallén, 1817) DIT: AD, AK, AN, ANT, BO, CN, HT, IP, EZ, ME, KA, KN, KR, KS, KY, MG, NI, TO, ZO, CUO**PARASYRPHUS** Matsumura, 1917*Parasyrphus punctulatus* (Verrall, 1873) DIT: KS**PARHELOPHILUS** Girschner, 1897*Parhelophilus versicolor* (Fabricius, 1794) DIT: AF, MG**CHAMAESYRPHUS**: see under **PELEOCERA****PELEOCERA** Meigen, 1822*Peleocera pruinosomaculata* Strobl, 1906 DIT: AD, ANT, HT*Peleocera scaevoides* (Fallén, 1817) DIT: KS*Peleocera tricincta* Meigen, 1822 DIT: KN, SN**PIPIZA** Fallén, 1810*Pipiza festiva* Meigen, 1822 DIT: ME*Pipiza noctiluca* (L., 1758) DIT: KS**PIPIZELLA** Rondani, 1856*Pipizella annulata* (Macquart, 1829) DIT: EZ*Pipizella bayburtica* Claussen & Hayat, 1997 DIT: BY*Pipizella caucasica* Skufjin, 1976 DIT: EZ, KK, VA*Pipizella curvittibia* Stackelberg, 1960 DIT: EZ, VA*Pipizella divicoi* (Goeldlin, 1974) DIT: ART, BY, EZ*Pipizella elegantissima* Lucas, 1976 DIT: EZ*Pipizella maculipennis* (Meigen, 1822) DIT: BO, CN, EZ, KA, KS, KY*Pipizella virens* (Fabricius, 1805) DIT: AN, CN, KS**PYROPHAENA** see under **PLATYCHEIRUS****PLATYCHEIRUS** Lepeletier & Serville, 1828*Platycheirus albimanus* (Fabricius, 1781) DIT: BO, CN, KA, KS, KY, NE

Platycheirus ambiguus (Fallén, 1817) DIT: ES, KS, KN
Platycheirus angustatus (Zetterstedt, 1843) DIT: AN
Platycheirus aurolateralis Stubbs, 2002 DIT: CN, KS
Platycheirus clypeatus (Meigen, 1822) DIT: TUR
Platycheirus fulviventris (Macquart, 1829) DIT: MG
Platycheirus immaculatus Ôhara, 1980 DIT: KS
Platycheirus manicatus (Meigen, 1822) DIT: KS
Platycheirus nielseni Vockeroth, 1990 DIT: KS
Platycheirus occultus Goeldlin, Maibach and Speight, 1990 DIT: KS
Platycheirus peltatus (Meigen, 1822) DIT: KS
Platycheirus rosarum (Fabricius, 1787) DIT: KS
Platycheirus scutatus (Meigen, 1822) DIT: KS, MG
Platycheirus tarsalis (Schummel, 1836) DIT: KN

PSARUS Latreille, 1805

Psarus abdominalis (Fabricius, 1794) DIT: KY

RHINGIA Scopoli, 1763

Rhingia campestris Meigen, 1822 DIT: BO, KS

RIPONNENSIA Mainbach, Goeldlin & Speight, 1994

Ripponnensia insignis (Loew, 1843) DIT: AD, AN, HT, ME, MG

Ripponnensia longicornis (Loew, 1843) DIT: AD, AK, IZ, MG

Ripponnensia splendens (Meigen, 1822) DIT: IZ, KS

SCAEVA Fabricius, 1805

Scaeva albomaculata (Macquart, 1842) DIT: AD, AK, AN, EZ, GA, HT, IP, KA, KN, KS, KY, ME, OS, TO, CUO

Scaeva dignota (Rondani, 1857) DIT: EZ, HA, SI, TO

Scaeva pyrastris (L., 1758) DIT: AD, AK, AN, ANT, CN, ES, EZ, HT, IP, IZ, KA, KN, KS, ME, OS, TO, US, CUO, MAB

Scaeva selenitica (Meigen, 1822) DIT: AD, AN, ANT, BO, CN, ES, HT, IZ, KA, KS, ME, OS, SN, TO, DAB

SERICOMYIA Meigen, 1803

Sericomyia silentis (Haris, 1776) DIT: BO, KS

SIMOSYRPHUS Bigot, 1882

Simosyrphus aegyptius (Wiedemann, 1830) DIT: AD, CUO

Simosyrphus scutellaris (Fabricius, 1805) DIT: AD, AN, HT, KA, CUO

SPAZIGASTER Rondani, 1843

Spazigaster ambulans (Fabricius, 1798) DIT: AF, AK, AN, ANT, BO, BU, CN, ES, EZ, IP, KA, KN, KS, KY, MG

SPHAEROPHORIA Lepeletier & Serville, 1828

Sphaerophoria laurae Goeldlin, 1989 DIT: SN

Sphaerophoria loewi Zetterstedt, 1843 DIT: KY

Sphaerophoria rueppelli Wiedemann, 1830 DIT: AD, AK, AN, ANT, BO, CA, CN, HT, IP, IZ, KA, KN, KS, KY, ME, MG, OS, TO, ZO, AKS, CUO, MAB

Sphaerophoria scripta (L., 1758) DIT: AD, AF, AK, AN, ANT, ART, BO, BU, CN, ES, EZ, HT, IP, IZ, KA, KN, KR, KS, KY, ME, MG, OS, SN, TB, TO ZO, AKS, CUO, MAB

Sphaerophoria turkmenica Bańkowska, 1964 DIT: EZ, GA, KY, TO

SPHEGINA Meigen, 1822

Sphegina alaoghui Hayat, 1997 DIT: ART

Sphegina clavata (Scopoli, 1763) DIT: KS

Sphegina clunipes (Fallén, 1816) DIT: BO, ART, KA, KS, KY

Sphegina elegans Schummel, 1843 DIT: KS

Sphegina sibirica Stackelberg, 1953 DIT: KS, TB

SPIXIMORPHA Rondani, 1850***Spiximorpha euprosopa* (Loew, 1869)** DIT: IZ***Spiximorpha subsessilis* (Illiger in Rossi, 1807)** DIT: ME, MG***Spiximorpha worelli* (Brădescu, 1972)** DIT: KS**SPILOMYIA** Meigen, 1803***Spilomyia digitata* (Rondani, 1865)** DIT: AN***Spilomyia diophthalma* (L., 1758)** DIT: EZ***Spilomyia graciosa* Violovitsh, 1985** DIT: HA***Spilomyia saltuum* (Fabricius, 1794)** DIT: AN, EZ, KA***Spilomyia triangulata* van Steenis, 2000** DIT: EZ**SYRITTA** Lepeletier & Serville, 1828***Syrirta flaviventris* Macquart, 1842** DIT: ANT, KA, MG***Syrirta pipiens* (L., 1758)** DIT: AD, AF, AK, AN, ANT, AY, BR, BO, CA, CN, DE, ES, EZ, HT, IP, IZ, KA, KN, KR, KS, KY, ME, MG, OS, SN, TO, ZO**SYRPHOCHEILOSIA** Stackelberg, 1964***Syrphocheilosia claviventris* (Strobl, 1910)** DIT: TUR**SYRPHUS** Fabricius, 1775***Syrphus ribesii* (L., 1758)** DIT: AN, BO, CN, EZ, IP, IZ, ME, KA, KR, KS, KY, SN, TO***Syrphus torvus* Osten-Sacken, 1875** DIT: TUR***Syrphus vitripennis* Meigen, 1822** DIT: AD, AN, ANT, BO, CN, ES, IZ, KA, KR, KS, KY, ME, ZO**TEMNOSTOMA** Lepeletier & Serville, 1828***Temnostoma vespiforme* (L., 1758)** DIT: KS**TRICHOPSOMYIA** Williston, 1888***Trichopsomyia flavitarsis* (Meigen, 1822)** DIT: KN***Trichopsomyia lucida* (Meigen, 1822)** DIT: AN**TROPIDIA** Meigen, 1822***Tropidia scita* (Haris, 1776)** DIT: KY**VOLUCELLA** Geoffroy, 1762***Volucella bombylans* (L., 1758)** DIT: CN, KS, TB***Volucella inanis* (L., 1758)** DIT: AN, BO, KA, KS, KY, ME, SN***Volucella pellucens* (L., 1758)** DIT: AN, CN, KS, TB***Volucella zonaria* (Poda, 1761)** DIT: AD, AK, AN, ANT, BO, CN, ES, EZ, IP, KA, KN, KS, KY, ME, MG, OS, SN, US**XANTHANDRUS** Verrall, 1901***Xanthandrus comtus* (Haris, 1776)** DIT: ANT, KS, SN**XANTHOGRAMMA** Schiner, 1860***Xanthogramma citrofasciatum* (de Geer, 1776)** DIT: EZ***Xanthogramma pedissequum* (Haris, 1780)** DIT: AK, AN, BO, BU, ES, IP, KA, KS, KY, ME, MG, SN, TB**XYLOTA** Meigen, 1822***Xylota ignava* (Panzer, 1798)** DIT: ART, KS, SN***Xylota segnis* (L., 1758)** DIT: AD, BO, CN, IP, KA, KS, ME, MG***Xylota sylvarum* (L., 1758)** DIT: AN, BO, KA, KS, MG, SN***Xylota tarda* Meigen, 1822** DIT: BO, KS**MICRODON** Meigen, 1803***Microdon devius* (L., 1761)** DIT: HT, TB***Microdon major* Andries, 1912** DIT: AN***Microdon mutabilis* (L., 1758)** DIT: AN

DISCUSSION

As result of this study, a revised checklist of Turkish Syrphidae species comprising 314 taxa is compiled.

8 % of these species are endemic, and type localities 16% of these species are in Turkey. 20% of these 308 species are predators, 7% of them are phytophagous, and 18% are saprophagous. No information has been obtained about the larval life of the rest 55% of these species (Speight, 2008).

Turkey is very rich in terms of ecosystem diversity. Our country is situated among the three different continents (Europe, Asia, Africa), on a transition zone. Anatolia has various ecosystems which bear their different properties in varying degrees. There are arid and semi-arid steppes as those in Africa on the one hand, and on the other hand foliar and coniferous forests resembling those in Europe. The topographical structure of Turkey presents rare possibilities in terms of ecosystem diversity. In the west of Turkey lie large and marshy plains. The large river valleys, which were formed by Gediz, Küçük Menderes and Büyük Menderes connect these plains to the Middle Anatolia step by step. These valleys rising gradually from the Aegean coasts towards east turn to a large Anatolian plateau in the Middle Anatolia, and high uplands in the East Anatolia. These high uplands may meet with towering mountain summits exceeding 5000 meters on the one hand and deep and dim valleys on the other hand. Each of the big and small rivers rising from carstic lands right in the south of the Toros Mountains form rare habitats for various plants and animals, in springs where they rise and in the valleys and valley slopes where they flow. Turkey covers various ecosystems ranging from coasts with palm trees to mountains covered with glaciers, from deep valley bases to towering mountain summits, from fertile alluvium plains to arid and rocky slopes, from soft sand hills to steep cliff rocks. These land structures form various habitats in this land mosaic (Işık, 1996).

When the geographical position of Turkey, its consisting of many diverse ecosystems and being a region having a high endemism is taken into account, the Turkish syrphidae fauna will increase over 500 species as a result of detailed surveys.

The aim of this list is to compile the native and foreign scientists who studied the Turkish syrphidae from 1902 up to present and the identified syrphidae species in a single source of study. I hope this list will be beneficial for those who will study the Turkish syrphidae.

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LITERATURE CITED

- Aktas, M. & Sarıbiyik, S.** 1996. Contribution to the Syrphidae fauna of Turkey (Diptera: Syrphidae) (II), Milesiinae. Gazi Üniversitesi Fen Bilimleri Dergisi, 9 (1): 15-27.
- Aktas, M. & Sarıbiyik, S.** 2001. New Records of Syrphinae (Diptera: Syrphidae) from Turkey. Journal of the Entomological Research Society, 3 (1-2): 41-46.
- Alaoglu, Ö. & Özbek, H.** 1987. Predatory insects on potatoes in Erzurum Province-Turkey. Journal of Agricultural College, 15-26.
- Atak, U.** 1975. Marmara Bölgesinde lahana ve karnabaharda bulunan zararlılar ile integre savaş olanakları üzerine araştırmalar. Proje A., 3. yıl raporu, Erenköy-Istanbul 28 pp.
- Bayrak, N. & Hayat, R.** 2008. Kayseri ili Syrphidae (Diptera) türleri üzerinde faunistik çalışmalar. Bitki Koruma Bülteni, 2008, 48(4): 35-49.
- Bischof, J.** 1902. Ergebnisse einer naturwissenschaftlichen Reise zum Erdschias Dag (Kleinasien). Annales des k. naturhistorischen Hofmuseums, 20, 1-9, 1902.
- Bodenheimer, F.S.** 1958. Türkiyede Ziraat ve Ağaçlara Zararlı olan Böcekler. Bayur Matbaası, Ankara 346.

- Candemir, D. & Kara, K.** 2003. Syrphidae (Diptera) fauna in Tokat Provinces (Turkey). *Türkiye Entomoloji Dergisi*, 27 (2), 95-105.
- Claussen, C. & Lucas, Jan, A.W.** 1988. Zur Kenntnis der Schwebfliegenfauna der Insel Kreta mit der Beschreibung von *Eumerus minotaurus* sp. n. (Diptera: Syrphidae). *Zeitschrift Entomologie*, 9: 133-168.
- Claussen, C. & Hayat, R.** 1997a. A new species and new records of the genus *Pipizella* Rondani, 1856 (Diptera: Syrphidae) from Turkey. *Studia dipterologica*, 4: 447-452.
- Claussen, C. & Hayat, R.** 1997b. A new species of the genus *Neoascia* Williston, 1886 (Diptera: Syrphidae) from North-East Turkey. *Studia dipterologica*, 4: 215-218.
- Demirayak, F.** 2002. Vizyon 2023, Biyolojik Çeşitliliğin Korunması ve Sürdürülebilir Kalkınma. Tübitak.
- Dirickx, H.G.** 1994. Atlas des Diptères syrphides de la région méditerranéenne. Studiedocumenten van het Koninklijk Belgisch Instituut voor Natuurwetenschappen, 75: 1-317.
- Düzgüneş, Z., Toros, S., Kılınçer, N. & Kovancı, B.** 1982. Parasite and Predators of Aphidoidea Species in Ankara. T. C. Tarım ve Orman Bakanlığı Zirai Mücadele ve Zirai Karantina Genel Müdürlüğü, Ankara. p. 251.
- Erkin, E.** 1983. Studies on effect of important species that host, natural enemies and spread of harmful Aphididae (Homoptera) species on soft seed and stone seed fruit in İzmir. *Turkish Journal of Plant Protection*, 7: 29-49.
- Gadeau de Kerville, H.** 1939. Voyage Zoologique Liste méthodique des invertébrés et des vertébrés récoltés en Asie-Mineure (avril-mai 1912). Paul le chevalier, 1-148, Paris.
- Goeldin de Tiefenau P.** 1976. Révision du genre *Paragus* (Dipt. Syrphidae) de la région paléarctique occidentale. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft Bulletin de la Société Entomologique Suisse*, 49: 79-108.
- Goeldin de Tiefenau P. & Lucas, Jan, A.W.** 1981. *Paragus* (Dipt., Syrphidae) de Corse et Sardaigne. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft Bulletin de la Société Entomologique Suisse*, 54: 389-397.
- Gül-Zümreoğlu, S.** 1972. İzmir Bölge Zirai Mücadele Araştırma Enstitüsü Böcek ve Genel Zararlılar Kataloğu, 1928-1969, 1. Kısım, Bölge Zirai Mücadele Araştırma Enstitüsü, Bornova-İzmir. 119 pp.
- Hayat, R. & Alaoğlu, Ö.** 1990a. Fauna of Syrphidae (Diptera) in the vicinity of Erzurum (Part I) Syrphinae. *Türkiye Entomoloji Dergisi*, 14 (3): 173-182.
- Hayat, R. & Alaoğlu, Ö.** 1990b. Erzurum yöresi Syrphidae (Diptera) faunası (II). Milesiinae. *Türkiye Entomoloji Dergisi*, 14 (4): 227-234.
- Hayat, R.** 1997. *Sphegina (Sphegina) alaoglui*, a new hover-fly from north-eastern Turkey (Diptera: Syrphidae). *Zoology in the Middle East*, 14: 109-113.
- Hayat, R. & Claussen, C.** 1997. A new species and new records of the genus *Paragus* Latreille, 1804 from Turkey (Diptera: Syrphidae). *Zoology in the Middle East*, 14: 99-108.
- Hurkmans, W.** 1987. *Merodon telmateia*, a new hoverfly from Turkey (Diptera: Syrphidae). *Entomologische Berichten*, 45: 69-70.
- Hurkmans, W.** 1988. Ethology and ecology of *Merodon* in Turkey (Diptera: Syrphidae). *Entomologische Berichten*, 48: 107-114.
- Hurkmans, W.** 1993. A monograph of *Merodon* in Turkey (Diptera: Syrphidae). Part 1. *Tijdschrift voor Entomologie*, 136: 147-234.
- Hurkmans, W., Hayat, R. & Özbek, H.** 1997. Insect and plants of a marsh at Küçükgeçit, Aşkale, Erzurum, Turkey: A preview on preservation. *Türkiye Entomoloji Dergisi*, 21 (2): 95-108.
- Hurkmans, W. & Hayat, R.** 1997. Ethology and ecology of *Merodon* (Diptera: Syrphidae) in Turkey II: descriptions of new species and notes on other syrphid flies. *Dipterists Digest*, 3: 62-79.

- Işık, K.** 1996. Biyolojik Çeşitlilik ve Orman Gen kaynaklarımız (Biological Diversity and Our Forest Genetic Resources). Orman Bakanlığı Yayını, No. 13, Ankara. 120 pp.
- Kohli, V. K., Kapoor, V. C. & Gupta, S. K.** 1988. On one genus and nine species of Syrphid flies (Diptera : Syrphinae) from India. *Journal of Insect Science*, 1 (2): 113-127.
- Kovancı, B. & Kılınçer, N.** 1982. Türkiye için yeni bir Syrphid türü: *Epistrophe bifasiata* (F.) (Diptera: Syrphidae). Uludağ Üniversitesi Ziraat Fakültesi Dergisi, 1(1): 117-121.
- Marcos-García M. A., Vujić A., Mengual X.** 2007. Revision of Iberian species of the genus *Merodon* Meigen, 1803 (Diptera: Syrphidae). *European Journal of Entomology* 104: 531-572.
- Mirceni, R.P. & Pârvu, C.** 2009. Distributional Data On Some East – Mediterranean Brachycera (DIPTERA) [Results of the „Euphrates” Expedition - 2008, in Turkey and Syria] Travaux du Muséum National d’Histoire Naturelle «Grigore Antipa», 52: 429-436.
- Nielsen, T. R.** 2004. European species of the *Platycheirus ambiguus* group (Diptera: Syrphidae), with description of new species. *Volucella*, 7: 1-30.
- Özgür, A. F.** 1986a. Akdeniz bölgesi Avcı syrphidae türleri. Türkiye I. Biyolojik mücadele kongresi Adana, (13-16 Şubat, 1986). 293-303.
- Özgür, A. F.** 1986b. Akdeniz Bölgesi kıyı şeridi Syrphidae (Diptera) faunası. I. Altfamilya Eristalinae. Çukurova Üniversitesi Ziraat Fakültesi Yayınları, 1 (2): 72-85.
- Özgür, A. F.** 1987. Akdeniz Bölgesi kıyı şeridi Syrphidae (Diptera) faunası II. Altfamilya: Cheilosinae, Spheginiinae, Pelecocerinae, Milesiinae, Chysotoxinae, Volucellinae, Çukurova Üniversitesi. Ziraat Fakültesi Yayınları, 2 (3): 67-81.
- Özgür, A.F. & Sarıbiyık, S.** 2002. New Records of Microdontinae (Diptera: Syrphidae) from Turkey. *Journal of the Entomological Research Society*, 4 (1): 15-17.
- Özkan M & Çalışkan, H.** 2010. An investigation on Milesiinae Fauna in Eskişehir (Diptera: Syrphidae). *Kastamonu Üniversitesi Kastamonu Eğitim Dergisi*, 18 (3): 975-982.
- Özkan M & Çalışkan, H.** 2011. An investigation on Syrphinae Fauna in Eskişehir (Diptera: Syrphidae). *Kastamonu Üniversitesi Kastamonu Eğitim Dergisi*, 19 (2): 601-608.
- Peck, L. V.** 1988. Family Syrphidae. pp. 11-230. In, Soos, A & Papp, L. (eds). *Catalogue of Palaearctic Diptera*. Volume, 8. 1-363 pp.
- Reemer, M., Hauser M. & Speight, M.C.D.** 2004. The genus *Myolepta* Newman in the West-Palaearctic region. *Studia Dipterologica*, 11 (2): 553-580.
- Reemer, M. & Smit, J.** 2007. Some hoverfly records from Turkey (Diptera: Syrphidae). *Volucella*, 8:135-146.
- Sack, P.** 1928-1932. Syrphidae. In, Lindner, E. *Die Fliegen der paläarktischen Region IV* (6). Stuttgart, Germany. +451 pp. 18 pls.
- Sarıbiyık, S.** 1998. Ilgaz ve Işık Dağları Syrphidae Familyasının morfolojisi, ekolojisi, fauna ve sistematigi (Diptera:Syrphidae). *Doktora Tezi*. XXVII+225 p.
- Sarıbiyık, S.** 1999a. Syrphinae Fauna of the West Blacksea Region, (Diptera: Syrphidae). *Gazi Üniversitesi Kastamonu Eğitim Dergisi*, 7 (1): 185-194.
- Sarıbiyık, S.** 1999b. Milesiinae Fauna of the West Blacksea Region (Diptera: Syrphidae). *Gazi Üniversitesi Kastamonu Eğitim Dergisi*, 7 (1): 195-204.
- Sarıbiyık, S.** 2000a. Fauna of Syrphidae in Ilgaz and Işık Mountains and their vicinity (Diptera-Syrphinae). *Gazi Üniversitesi Fen Bilimleri Dergisi*, 13 (1): 55-70.
- Sarıbiyık, S.** 2000b. Two new records for the Turkish Milesiinae Fauna (Diptera: Syrphidae). *Bitki Koruma Bülteni*, 40 (3-4): 179-181.
- Sarıbiyık, S.** 2001. New Records of the Subfamily Milesiinae (Diptera: Syrphidae) from Turkey. *Journal of the Entomological Research Society*, 3 (3): 43-51.

- Sarıbiyık, S.** 2003a. *Spiximorpha worelli* (Brădescu, 1972), (Diptera: Syrphidae). New Record for the Fauna of Turkey. Journal of the Entomological Research Society, 5 (1): 13-16.
- Sarıbiyık, S.** 2003b. Fauna of Syrphinae and Milesiinae (Diptera:Syrphidae) Around Tuz Lake. Gazi Üniversitesi Kastamonu Eğitim Dergisi, 11 (2): 439-450.
- Sarıbiyık, S.** 2003c. The Evaluation of the Works on Syrphidae (Diptera) Fauna in the Western Blacksea Region. Gazi Üniversitesi Kastamonu Eğitim Dergisi, 11 (2): 461-466.
- Sarıbiyık, S.** 2003d. Syrphinae Fauna of the Kahramanmaraş's Andırın Town (Diptera: Syrphidae). Gazi Üniversitesi Kastamonu Eğitim Dergisi, 11 (1): 193-198.
- Sarıbiyık, S.** 2003e. Milesiinae Fauna of the Kahramanmaraş's Andırın Town (Diptera: Syrphidae). Gazi Üniversitesi Kastamonu Eğitim Dergisi, 11 (1): 159-164.
- Sarıbiyık, S.** 2003f. Kastamonunun Syrphid Sinekleri (Diptera:Syrphidae). II. Kastamonu Kültür Sempozyumu, (18-20 Eylül 2003), 707-719.
- Sarıbiyık, S.** 2004. Three new records for Turkish Milesiinae fauna (Diptera: Syrphidae). Journal of the Entomological Research Society, 6 (1): 19-22.
- Sarıbiyık, S.** 2008a. Contributions to the Syrphidae fauna of Turkey (Diptera: Syrphidae). Entomological News, 119 (5): 501-508.
- Sarıbiyık, S.** 2008b. *Dasysyrphus tricinctus* (Fallén, 1817) Türü ile ilgili bazı Ekolojik Notlar (Diptera: Syrphidae). Kastamonu Üniversitesi Kastamonu Eğitim Dergisi, 16 (2): 577-580.
- Sarıbiyık, S.** 2009a. Several Rarely New Records for Turkish Syrphidae Fauna (Diptera: Syrphidae). Journal of the Entomological Research Society, 11 (3): 37-40.
- Sarıbiyık, S.** 2009b. Syrphidae Fauna of Ballıdağ (Diptera). Kastamonu Üniversitesi Kastamonu Eğitim Dergisi, 17, (2): 707-714.
- Sarıbiyık, S.** 2011a. A New Record For Flower Flies Fauna Of Turkey *Chrysotoxum Lessonae* (Giglio-Tos, 1890) (Diptera: Syrphidae). Munis Entomology & Zoology, 6 (1):422-424.
- Sarıbiyık, S.** 2011b. A new record for flower flies fauna of Turkey *Myolepta vara* (Panzer), 1798 (Diptera: Syrphidae). Munis Entomology & Zoology, 6 (1):446-448.
- Sarıbiyık, S.** 2011c. An Investigation On Turkish Sphegina (Meigen, 1822) Genus (Diptera: Syrphidae). Munis Entomology & Zoology, 6 (1):433-435.
- Sarıbiyık, S.** 2011. A study of *Cheilosia* (Meigen, 1822) Genus from Turkey (Diptera: Syrphidae). (in pres).
- Sarıbiyık, S. & Aktas, M.** 1996. Contribution to the Syrphidae fauna of Turkey (Diptera: Syrphidae) (I). Gazi Üniversitesi Fen Bilimleri Dergisi, 9 (1): 1-13.
- Sarıbiyık, S. & Hasbenli, A.** 1997. New Records for fauna of Turkish Syrphidae, (Diptera). Turkish Journal of Entomology, 21 (3): 225-232.
- Sarıbiyık, S. & Özgür, A. F.** 2000. New Records of Milesiinae (Diptera: Syrphidae) from Turkey. Journal of the Entomological Research Society, 2 (3): 5-13.
- Sarıbiyık, S. & Hasbenli, A.** 2006. Fauna of Syrphinae and Milesiinae (Diptera, Syrphidae) in the Region of South-West Anatolia. Journal of the Entomological Research Society, 8 (1): 43-52.
- Séguy, E.** 1961. Diptères Syrphides de l'Europe occidentale, Mémoires du Muséum National D'Histoire Naturelle, 23, 1-248, Paris.
- Shiraki, T.** 1930. Die Syrphiden des Japonischen KaiserreichesmitBerücksichtigung benachbarter Gebierte. Taihoku Imperial University, Formosa, Japan, 446pp.
- Shiraki, T.** 1968. Fauna Japonica, Syrphidae (Insecta: Diptera). Volume: II.
- Soydanbay-Tunçyürek, M.** 1976. The list of natural enemies of some insect pests in Turkey-Part I. Plant Protection Bulletin, 16: 32-46.

- Soylu, O.Z. & Urel, N.** 1977. Güney Anadolu Bölgesi Turuncgillerinde Zararlı Böceklerin Parazit ve Predatörlerinin Tesbiti Üzerinde Araştırmalar. Bitki Koruma Bülteni, 17:77-112.
- Speight M. C. D.** 2008. Species accounts of European Syrphidae (Diptera) 2008. in: Speight M. C. D., Castella E., Sarthou J. P., Monteil, C. (eds). Syrph the Net, the database of European Syrphidae, vol. 55, 262 pp., Syrph the Net publications, Dublin.
- Steenis J. V.** 2000. The West-Palaearctic species of *Spilomyia* Meigen (Diptera: Syrphidae). Mitteilungen Der Schweizerischen Entomologischen Gesellschaft Bulletin de la Société Entomologique, 73: 143-168.
- Stuke, J.-H. & Claussen, C.** 2000. *Cheilosia canicularis* auctt.-ein Artenkomplex. Volucella, 5, 79-94.
- Şahbaz, A. & Uysal, M.** 2006. Konya ilinde kavaklarda beslenen yaprakbitlerinin (Homoptera: Aphididae) predatör ve parazitoitleri. Selçuk Üniversitesi Ziraat Fakültesi Dergisi, 20 (38): 119-125.
- Şişli, M. N.** 1996. Çevre Bilimi, Ekoloji. Yeni Fersa Matbaacılık, Ankara, 1-492.
- Tuatay, N., S. Gül, S., Demirtola, A., Kalkandelen A. & Çağatay, N.** 1967. Nebat Koruma Müzesi Böcek Kataloğu (1961-1966).- Zirai Mücadele ve Zirai Karantina Genel Müdürlüğü Yayınları, Mesleki Kitaplar Serisi, Ankara 66pp.
- Tuatay, N., Kalkandelen, A. & Aysev (Çağatay), N.** 1972. Nebat Koruma Müzesi Böcek Kataloğu (1961-1971). Zirai Mücadele ve Zirai Karantina Genel Müdürlüğü Yayınları Mesleki Kitaplar Serisi, Ankara p. 119.
- Violovich, N. A.** 1974. A review of the palearctic species of the genus *Chrysotoxum* Mg. (Diptera: Syrphidae), Entomological Review, 53 (1), 140-153.
- Vockeroth, J. R. & Thompson, F. C.** 1987. Manual of Nearctic Diptera. 52 Syrphidae, II (28):713-743.
- Vujić, A., Marcos-García M. A., Sarıbyık, S. & Ricarte A.** 2011 Ante Vujić, M^a Ángeles Marcos-García, **Süleyman Sarıbyık** & Antonio Ricarte. 2010. New data on the *Merodon* Meigen 1803 fauna (Diptera: Syrphidae) of Turkey including description of a new species and changes in the nomenclatural status of several taxa, Ann. soc. entomol. Fr. (n.s.), 2011, 47 (1-2): 78-88.
- Weyer, G. V.** 2000. A new syrphid fly species of the *Paragus serratus* complex from Turkey (Diptera, Syrphidae). Phegea, 28 (4): 149-152.
- Yumruktepe, R. & Uygun, N.** 1994. Determination of aphid species (Homoptera: Aphididae) and their natural enemies in citrus orchards in Eastern Mediterranean. Proceedings of the Third Turkish National Congress of Biological Control, İzmir pp. 1-12.
- Zeren, O.** 1985. Çukurova Bölgesinde yeni bir marul zararlısı *Uroleucon cichorii* Koch (Hom., Aphididae) üzerinde araştırmalar. Bitki Koruma Dergisi, 9 (3): 173-181.
- Zeren, O. & Düzgüneş, Z.** 1983. Çukurova Bölgesinde sebzelelerde zararlı olan Aphidoidea türlerinin doğal düşmanları üzerinde araştırmalar. Türkiye Bitki Koruma Dergisi, 7, 199-211.
- Zeren, O. & Düzgüneş, Z.** 1984. Çukurova Bölgesinde sebzelelerde zararlı olan Yaprak Bitleri (Aphidoidea) Türleri, Konukçuları, Zararları ve Doğal Düşmanları Üzerinde Araştırmalar. Ankara Üniversitesi Fen Bilimleri Enstitüsü, Yayın No: BK 4, 17 pp.
- Zeren, O. & Yabaş, C.** 1987. Akdeniz Bölgesi yemelik baklagillerinde zararlı-faydalı böcek ve akar faunası üzerinde çalışmalar. Proceedings of the first Turkish National Congress of Entomology, 13-16 October 1987, İzmir, 705-715.