

## Taxonomical investigations on the fauna of Opiinae (Hymenoptera: Braconidae) in Ardahan, Erzurum, Iğdır, and Kars provinces of the Turkish northeastern Anatolian region

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**Abstract:** In order to determine the Braconidae fauna of Turkey, adult specimens of Opiinae were collected from various habitats of the Turkish northeastern Anatolian region using Malaise and light traps and sweeping nets between 2012 and 2014. In total, 86 species belonging to 7 genera are reported for the studied regions, among which 22 are recorded for the first time from Turkey: *Biosteres* (*Biosteres*)  *analis* (Wesmael), *Biosteres* (*Chilotrichia*)  *clypealis* (Thomson), *B. (C.) sylvaticus* (Haliday), *Phaerotoma zomborii* (Papp), *Opius* (*Adontopius*)  *adentatus* Fischer, *O. (A.) nanosoma* Fischer, *Opius* (*Agnopius*)  *austriacus* Fischer, *O. (A.) novosimilis* Fischer, *O. (A.) similoides* Fischer, *Opius* (*Allotypus*)  *geniculatus* Thomson, *O. (A.) saevus* Haliday, *Opius* (*Ilicopius*)  *moravicus* Fischer, *Opius* (*Misophthora*)  *mischa* Fischer, *Opius* (*Nosopoea*)  *areatus* Tobias, *O. (N.) tuberculifer* Fischer, *Opius* (*Opiostomus*)  *dividus* Tobias, *O. (O.) vindex* Haliday, *Opius* (*Pendopius*)  *exiloides* Fischer, *Utetes* (*Utetes*)  *fasciatus* (Thomson), *U. (U.) rhodopensis* Zaykov, *U. (U.) ussuriensis* (Tobias), and *Xynobius* (*Xynobius*)  *discoidalis* (Fischer). The numbers of species of each genus are as follows: *Biosteres* Förster, 1862: 12; *Diachasma* Förster, 1862: 1; *Diachasmimorpha* Viereck, 1913: 1; *Phaerotoma* Förster, 1862: 8; *Opius* Wesmael, 1835: 53; *Utetes* Förster, 1862: 6; *Xynobius* Förster, 1862: 5.

**Key words:** Parasitoids, Braconidae, opiinae, Anatolian, Turkey, *Biosteres*, *Diachasma*, *Phaerotoma*, *Opius*, *Utetes*

### 1. Introduction

The Opiinae comprises a large and economically important family of hymenopteran species that occur in all zoogeographic regions, with various species introduced into 51 countries (Yu et al., 2012). Insects are small (1–3 mm) or rarely medium (up to 4.0–4.5 mm) in size, usually with a short body and relatively long forewings. The venation is complete but usually lacking the recurrent vein on the hind wing. The pterostigma is often thin and long (cuneate or linear), the radial cell usually reaches the wing apex, and the second radiomedial cell is most often long. In many species, the oral cavity is developed, the mandibles are often broadened basally, and the occipital ridge, as a rule, is somewhat developed in the temporal region and is reduced above. The first metasomal tergite usually has 2 longitudinal ridges. The ovipositor is often short, rarely somewhat long. The body is usually smooth, usually with granulose sculpture; it is usually black, rarely with a somewhat developed light-colored pattern (Tobias and Jakimavicius, 1986). Species of Opiinae are solitary koinobiont endoparasitoids of

phytophagous Muscomorpha Diptera: Tephritidae (fruit flies), Agromyzidae (leaf-miner flies), Anthomyiidae, Calliphoridae, Cecidomyiidae, Drosophilidae, Ephydriidae, Muscidae, Scathophagidae, Tachinidae, Tephritidae, Trypetinae; more rarely Hymenoptera: Cynipidae and Lepidoptera: Gelechiidae, Noctuidae, and Tortricidae.

The collected material from various localities of the Aegean, central Anatolia, Mediterranean, Black Sea, Marmara, southeastern Anatolia regions (Batman, Diyarbakir, Mardin provinces) and the eastern Anatolia region (except Ardahan, Bingöl, Bitlis, Erzurum, Kars, Iğdır, and Muş provinces) of Turkey was evaluated to determine the Opiinae fauna of Turkey. A total of 181 species from 10 genera were recorded (Fischer, 1958a, 1958b, 1958c, 1960, 1962; Beyarslan and İnanç, 1992; Fischer and Beyarslan, 2005a, 2005b, 2011, 2013; Çıkman et al., 2006; Beyarslan and Fischer, 2011, 2013).

In order to determine the Braconidae fauna of Turkey, adult specimens of Opiinae were collected from various habitats of the Turkish northeastern Anatolian region (Ardahan, Erzurum, Iğdır, and Kars) between 2012 and 2014.

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## 2. Materials and methods

Adult specimens of Opiinae were collected from various habitats of the Turkish northeastern Anatolian region using Malaise and light traps and sweeping nets. The obtained adult specimens were then pinned and properly labelled. Relevant literature was used for taxonomical examination of the material. The specimens were identified mostly using the keys by van Achterberg (1975, 1997, 2004a, 2004b), Fischer (1972, 1974, 1981a, 1981b, 1983, 1984, 1986, 1990, 1991, 1992a, 1992b, 1995, 1998, 1999, 2003), Papp (1978, 1979, 1982), Tobias (1995), Schuster and Wharton (1993), and Wharton (1997). The species newly recorded from Turkey are marked with an asterisk (\*). The general distributions of species are given by Fischer (1972), Zaykov (1983), Zaykov and Fischer (1983), Tobias and Jakimavicius (1986), Beyarslan and İnanç (1992), Fischer and Koponen (1999a, 1999b), Beyarslan and Fischer (2011, 2013), and Yu et al. (2012). The known hosts of species recorded as new for the Turkish fauna are given according to Yu et al. (2012), and hosts of other species are given with their related references (Beyarslan and Fischer, 2013; Fischer and Beyarslan, 2013).

All specimens are deposited in the collection of the Department of Entomology, Bitlis Eren University, Bitlis, Turkey. In addition, locality, elevation of locality, collection date, sex, number of individuals, and collectors of each species are given.

## 3. Results

### Opiinae

#### 3.1. Genus: *Biosteres* Förster, 1862

##### 3.1.1. Subgenus: *Biosteres* s. str. Förster, 1862

\**Biosteres (Biosteres) analis* (Wesmael, 1835) (*syn. coloratipes*)

**Material examined:** Kars, Susuz, İncesu (40°44'45"N, 43°7'30"E), 1760 m a.s.l., 17.09.2012, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Diptera. Anthomyiidae: *Hylemya (Pycnoglossa) flavipennis* (Fallen, 1823); *Syn. H. (P.) histicina* (Rondani, 1866); Scathophagidae: *Parallelomma vittatum* (Meigen, 1826); *Parallelomma vittatum* (Meigen, 1826).

*Biosteres (Biosteres) carbonarius* (Nees, 1834)

**Material examined:** Ardahan, Merkez, Taze köy (41°1'32"N, 42°52'34"E), 1930 m a.s.l., 15.09.2012, M. Yurtcan, 1♂;

Ardahan, Hanak, Kent ormanı (41°15'40"N, 42°51'10"E), 2012 m a.s.l., 14.09.2012, E. Coban, 1♂.

Erzurum, Çat, Tuzlataşı (39°27'28"N, 41°03'21"E), 2090 m a.s.l., 29.06.2013, M. Yurtcan, 1♀; Erzurum, İspir, Köprüköy (40°25'18"N, 40°57'46"E), 1710 m a.s.l., 11.09.2012, Ö. Keleş, 2♂♂;

Erzurum, İspir, Devedağı Köyü (40°32'13"N, 41°16'38"E), 2345 m a.s.l., 26.06.2013, Ö. Şahsuvaroğlu, 1♀;

Erzurum, İspir, Köprüköy yolu (39°58'01"N, 41°52'17"E), 1602 m a.s.l., 17.06.2012, E. Coban, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Diptera. Anthomyiidae: *Delia antiqua* Meigen, 1826; *D. radicum* (Linnaeus, 1758); *Pegomyia betae* (Curtis, 1847); *P. bicolor* (Wiedemann, 1817); *P. hyoscyami* (Panzer, 1809); *P. nigritarsison* Zetterstedt, 1838; *P. nigrisquama* (Stein, 1888); *P. solennis* (Meigen, 1826); *P. steini* Hendel, 1925.

*Biosteres (Biosteres) lentulus* Papp, 1979

**Material examined:** Erzurum, Tortum, Aksu Köyü (40°25'41"D, 41°36'12"E), 2302 m a.s.l., 16.06.2012, A. Beyarslan, 1♂.

Kars, Sarıkamış, Erzurum Yolu 10 km (40°15'03"N, 42°39'11"E), 2016 m a.s.l., 23.06.2013, M. Yurtcan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

*Biosteres (Biosteres) longicauda* (Thomson, 1895)

**Material examined:** Erzurum, Şenkaya, İkizpınar (40°35'31"N, 42°20'30"E), 1818 m a.s.l., 27.06.2013, M. Yurtcan, 1♀.

Kars, Sarıkamış, Asboğa (40°24'03"N, 42°43'35"E), 1900 m a.s.l., 28.06.2013, E. Coban, 4♀♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

#### 3.1.2. Subgenus: *Chilotrichia* Förster, 1862

*Biosteres (Chilotrichia) arenarius* (Stelfox, 1959)

**Material examined:** Ardahan, Posof (41°30'30"N, 42°44'3"E), 1445 m a.s.l., 14.09.2012, Ö. Şahsuvaroğlu, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

*Biosteres (Chilotrichia) blandus* (Haliday, 1837)

**Material examined:** Erzurum, İspir, Köprüköy (39°58'01"N, 41°52'17"E), 1602 m a.s.l., 17.06.2012, E. Coban, 1♂;

Erzurum, Narman (40°20'46"N, 41°54'51"E), 1567 m a.s.l., 27.06.2013, M. Yurtcan, 1♀;

Erzurum, Oltu, Güzelsu (40°36'15"N, 42°4'31"E), 1200 m a.s.l., 12.09.2012, A. Beyarslan, 1♂;

Erzurum, Oltu, İnanmış (40°27'46"N, 41°42'27"E), 1820 m a.s.l., 13.09.2012, E. Coban, 1♂.

**Distribution:** Palaearctic.

**Host:** Diptera. Agromyzidae: *Agromyza* sp. Fallen, 1810.

*Biosteres (Chilotrichia) brevipalpis* (Thomson, 1895)

**Material examined:** Ardahan, Tazeköy (41°1'32"N, 42°52'34"E), 1934 m a.s.l., 15.09.2012, A. Beyarslan, 1♂.

Erzurum, Tortum (40°18'32"N, 41°31'33"E), 140 m a.s.l., 12.09.2012, A. Beyarslan, ♀1.

**Distribution:** Western Palaearctic.

**Hosts:** Diptera. Agromyzidae: *Agromyza hendeli* Griffiths, 1963; *Delia quadripila* Stein, 1916.

\**Biosteres (Chilotrichia) clypealis* (Thomson, 1895)

**Material examined:** Erzurum, KöprükÖy (39°58'01"N, 41°52'17"E), 1602 m a.s.l., 17.06.2012, A. Beyarslan, 1♂;

Erzurum, Oltu, Güzelsu (40°36'15"N, 42°4'31"E), 1200 m a.s.l., 12.09.2012, A. Beyarslan, 1♂;

Erzurum, Tortum (40°17'57"N, 41°32'52"E), 1450 m a.s.l., 12.09.2012, A. Beyarslan, 1♂.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

*Biosteres (Chilotrichia) haemorrhoeus* (Haliday, 1837)

**Material examined:** Erzurum, KöprükÖy (39°58'1"N, 41°52'17"E), 1602 m a.s.l., 17.06.2012, Ö. Şahsuvaroğlu, 1♂;

Erzurum, Tortum (40°17'57"N, 41°32'52"E), 1450 m a.s.l., 12.09.2012, M. Yurtcan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Diptera. Anthomyiidae: *Pegomyia bicolor* (Wiedemann, 1817); *P. holosteae* (Hering, 1924); *P. solennis* (Meigen, 1826).

*Biosteres (Chilotrichia) rusticus* (Haliday, 1837)

**Material examined:** Erzurum, KöprükÖy (39°58'1"N, 41°52'17"E), 1602 m a.s.l., 17.06.2012, A. Beyarslan, 2♂♂.

**Distribution:** Palaearctic.

**Hosts:** Diptera. Anthomyiidae: *Delia echinata* (Seguy, 1923); *Pegomyia* sp.; *Phorbia* sp.

\**Biosteres (Chilotrichia) sylvaticus* (Haliday, 1837)

**Material examined:** Erzurum, İspir, Ardıçlı (40°33'4"N, 41°13'55"E), 1809 m a.s.l., 19.06.2012, Ö. Şahsuvaroğlu, 1♀, 1♂.

**Distribution:** Palaearctic.

**Hosts:** Diptera. Anthomyiidae: *Pegomyia hyoscyami* (Panzer, 1809). Lepidoptera. Noctuidae: *Hadula trifolii* Hufnagel, 1766. Gelechiidae: *Scrobipalpa atriplicella* (Fischer, Röslerstamm, 1841).

*Biosteres (Chilotrichia) wesmaelii* (Haliday, 1837)

**Material examined:** Erzurum, İspir, KöprükÖy (39°58'01"N, 41°52'17"E), 1602 m a.s.l., 11.09.2012, Ö. Keleş, 1♂;

Kars, Kağızman, Yalnızzağaç (40°13'49"N, 42°59'05"E), 1405 m a.s.l., 23.08.2013, E. Coban, 1♀;

Kars, Kağızman, Yalnızzağaç (40°13'49"N, 42°59'05"E), 1405 m a.s.l., 23.08.2013, E. Coban, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Diptera. Anthomyiidae: *Delia quadripila* (Stein, 1916); *Pegomyia betae* (Curtis, 1847), and *P. hyoscyami* (Panzer, 1809); *P. hyoscyami* Panzer, 1809; *P. nigritarsis* (Zetterst, 1838).

3.2. Genus: *Diachasma* Förster, 1862

*Diachasma graeffei* (Fischer, 1959)

**Material examined:** Erzurum, İspir, Ardıçlı (40°33'4"N, 41°13'55"E), 1809 m a.s.l., 19.06.2012, A. Beyarslan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

3.3. Genus: *Diachasmimorpha* Viereck, 1913

3.3.1. Subgenus: *Diachasmimorpha* Viereck, 1913

*Diachasmimorpha (Diachasmimorpha) paeoniae* (Tobias, 1980)

**Material examined:** Erzurum, Oltu, İnanmış (40°27'46"N, 41°42'27"E), 1820 m a.s.l., 13.09.2012, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Host:** Diptera. Trypetinae: *Macrotrypeta ortalidina* Portschinsky, 1892.

3.4. Genus: *Phaedrotoma* Förster, 1862

*Phaedrotoma benignus* (Papp, 1981)

**Material examined:** Erzurum, Tortum (40°18'32"N, 41°31'33"E), 1460 m a.s.l., 12.09.2012, E. Coban, 1♀;

Erzurum, Şenkaya, İkizpınar (40°35'31"N, 42°20'30"E), 1818 m a.s.l., 27.06.2013, Ö. Şahsuvaroğlu, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

*Phaedrotoma biroii* (Fischer, 1960)

**Material examined:** Kars, Kağızman, Morpet (40°15'16"N, 42°58'36"E), 1486 m a.s.l., 20.09.2012, M. Yurtcan, 1♂.

**Distribution:** Palaearctic and Oriental.

**Hosts:** Unknown.

*Phaedrotoma depeculator* Förster, 1862

**Material examined:** Artvin, Yusufeli, Morkaya (40°42'47"N, 41°40'50"E), 680 m a.s.l., 12.09.2012, A. Beyarslan, 1♂;

Erzurum, İspir, Çamlıkaya (40°37'49"N, 41°10'52"E), 950 m a.s.l., 16.08.2013, A. Beyarslan, 1♀, 1♂;

Erzurum, Olur (40°48'46"N, 42°9'37"E), 655 m a.s.l., 12.09.2012, A. Beyarslan, 1♂;

Erzurum, Olur (40°48'46"N, 42°9'37"E), 655 m a.s.l., 12.09.2012, E. Coban, 1♀.

İğdır, Aralık, Babacan (39°58'32"N, 44°16'45"E) 838 m a.s.l., 22.06.2013, Ö. Şahsuvaroğlu, 1♀;

İğdır, Tuzluca (40°02'51"N, 43°42'54"E), 1038 m a.s.l., 23.08.2013, E. Coban, 1♀;

İğdır, Tuzluca, Köprübaşı Köyü (40°2'35"N, 43°41'19"E), 1100 m a.s.l., 25.06.2012, M. Yurtcan, 1♂;

Kars, Kağızman (40°07'11"N, 43°09'57"E), 1670 m a.s.l., 27.06.2012, E. Coban, 1♂;

Kars, Kağızman, Kuloğlu (40°05'49"N, 42°57'49"E), 1287 m a.s.l., 23.06.2013, E. Coban, 1♀;

Kars, Sarıkamış, Karakurt (40°10'03"N, 42°36'36"E), 1475 m a.s.l., 23.06.2013, E. Coban, 1♂.

**Distribution:** Palaearctic.

**Hosts:** Diptera. Agromyzidae: *Cerodontha denticornis* (Panzer, 1806); *Chromatomyia ramosa* (Hendel, 1923);

*C. succisae* (Hering, 1922); *Ophiomyia* sp.; *Phytomyza griffithsi* Spencer, 1963; *P. plantaginis* Robineau-Desvoidy, 1851.

***Phaedrotoma diversus* (Szépligeti, 1898)**

**Material examined:** Ardahan, Posof (41°30'30"N, 42°44'3"E), 1445 m a.s.l., 14.09.2012, Ö. Şahsuvaroğlu, 1♀.

Erzurum, Horasan, Orman İşletme Müdürlüğü (40°1'47"N, 42°2'48"E), 1560 m a.s.l., 17.08.2013, A. Beyarslan, 1♀;

Erzurum, Narman (40°20'46"N, 41°54'51"E), 1567 m a.s.l., 27.06.2013, A. Beyarslan, 1♀;

Erzurum, Olur (40°48'46"N, 42°9'37"E), 655 m a.s.l., 12.09.2012, E. Coban, 1♀, 1♂;

İğdır, Tigem (39°47'10"N, 44°37'5"E), 844 m a.s.l., 26.06.2012, M. Yurtcan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Diptera. Agromyzidae: *Calycomyza solidaginis* (Kaltenbach, 1869); *Chromatomyia scabiosae* (Hendel, 1935); *C. succisae* (Hering, 1922); *C. syngenesiae* Hardy 1849; *Liriomyza centaureae* Hering, 1927; *Phytomyza gentianae* Hendel, 1920; *Phytomyza plantaginis* Robineau-Desvoidy, 1851.

***Phaedrotoma exiguus* (Wesmael, 1835)**

**Material examined:** Ardahan, Posof (41°29'8"N, 42°42'58"E), 1560 m a.s.l., 23.06.2012, Ö. Keleş, 1♀; 21.08.2013, Ö. Şahsuvaroğlu, 1♀; 14.09.2012, M. Yurtcan, 1♀;

Erzurum, İspir, Yeşilyurt Köyü (40°31'29"N, 41°4'55"E), 1570 m a.s.l., 19.06.2012, E. Coban, 1♀;

Kars, Boğazköy (40°41'19"N, 43°6'47"E), 1693 m a.s.l., 12.09.2012, M. Yurtcan, 1♀.

**Distribution:** Palaearctic, Ethiopian, and Oriental.

**Hosts:** Diptera. Agromyzidae: *Agromyza nana* Meigen, 1830; *A. rondensis* Strobl, 1900; *Calycomyza solidaginis* (Kaltenbach, 1869); *C. horticola* (Goureaux, 1851); *C. scabiosae* (Hendel, 1935); *C. succisae* (Hering, 1922); *C. syngenesiae* Hardy, 1849; *Liriomyza* sp.; *Liriomyza centaurea* Hering, 1927; *L. congesta* (Becker, 1903); *L. flaveola* (Fallén, 1823); *L. sonchi* Hendel, 1931; *L. strigata* (Meigen, 1830); *Phytomyza alpina* Groschke, 1957; *Phytomyza crassiseta* Zetterstedt, 1860; *P. gentianae* Hendel, 1920; *P. glechomae* Kaltenbach, 1862; *P. griffithsi* Spencer, 1963; *P. orobanchia* (Kaltenbach, 1864); *P. plantaginis* Robineau-Desvoidy, 1851; *P. pullula* Zetterstedt, 1848; *Scaptomyza graminu* (Fallén, 1823).

***Phaedrotoma mirabunda* (Papp, 1982)**

**Material examined:** Erzurum, Olur (40°48'46"N, 42°9'37"E), 655 m a.s.l., 12.09.2012, E. Coban, 1♀;

Erzurum, Tortum (40°18'32"N, 41°31'33"E), 1460 m a.s.l., 12.09.2012, M. Yurtcan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

***Phaedrotoma pulchriventris* (Fischer, 1958)**

**Material examined:** Aksaray, Ihlara, Yaprakhisar (38°17'41"N, 34°16'16"E), 1175 m a.s.l., 11.09.2006, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Diptera: Agromyzidae: *Amauromyza verbasci* (Bouch, 1847); *Chromatomyia horticola* (Goureaux, 1851); *Liriomyza strigata* (Meigen, 1830); *Phytoliriomyza hilarella* (Zetterstedt, 1848); *Phytomyza agromyzina* Meigen, 1830.

**\**Phaedrotoma zomborii* (Papp, 1982)**

**Material examined:** Ardahan, Merkez, Tazeköy (41°1'32"N, 42°52'34"E), 1930 m a.s.l., 15.09.2012, E. Coban, 1♀.

**Distribution:** Eastern Palaearctic.

**Hosts:** Unknown.

**3.5. Genus: *Opius* Wesmael, 1835**

**3.5.1. Subgenus: *Adontopius* Fischer, 1984**

**\**Opius* (*Adontopius*) *adentatus* Fischer, 1981**

**Material examined:** Ardahan, Merkez, Çamlıçatak (41°7'18"N, 42°50'19"E), 1817 m a.s.l., 23.06.2012, Ö. Şahsuvaroğlu, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

**\**Opius* (*Adontopius*) *nanosoma* Fischer, 1989**

**Material examined:** Erzurum, Tekman, Hacıömer (39°35'01"N, 41°44'39"E), 1840 m a.s.l., 20.06.2013, A. Beyarslan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

**3.5.2. Subgenus: *Agnopius* Fischer, 1982**

**\**Opius* (*Agnopius*) *austriacus* Fischer, 1958**

**Material examined:** Ardahan, Merkez, Tazeköy (41°1'32"N, 42°52'34"E), 1930 m a.s.l., 15.09.2012, Ö. Şahsuvaroğlu, 1♀;

Çıldır, Eskibeyrehatun Köyü (41°7'47"N, 42°54'32"E), 1950 m a.s.l., 24.06.2012, Ö. Keleş, 1♀;

Merkez, Çamlıçatak (41°7'18"N, 42°50'19"E), 1850 m a.s.l., 15.09.2012. Ö. Keleş, 1♀; Merkez, Sugözeköyü (41°4'55"N, 42°38'58"E), 1839 m a.s.l., 22.06.2012, Ö. Şahsuvaroğlu, 5♀♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

**\**Opius* (*Agnopius*) *novosimilis* Fischer, 1989**

**Material examined:** Ardahan, Posof (41°30'30"N, 42°44'03"E), 1445 m a.s.l., 23.06.2012, S. Morkoç, 2♂♂.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

***Opius* (*Agnopius*) *selimbassai* Fischer, 1992**

**Material examined:** Erzurum, Şenkaya, İkizpınar (40°35'31"N, 42°20'30"E), 1818 m a.s.l., 27.06.2013, Ö. Şahsuvaroğlu, 1♂.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

*Opius (Agnopius) similis* Szépligeti, 1898 (Syn.: *basirufus*)

**Material examined:** Ardahan, Çamlıçatak (41°07'18"N, 42°50'19"E), 1850 m a.s.l., 23.06.2012, E. Coban, 1♂;

Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, E. Coban, 2♀♀;

Kars, Selim, Benliahmet (40°29'40"N, 42°54'39"E), 1820 m a.s.l., 12.06.2012, Ö. Keleş, 1♀.

**Distribution:** Palaearctic.

**Hosts: Diptera. Agromyzidae:** *Agromyza anthracina* Meigen, 1830; *A. potentillae* Kaltenbach, 1864; *A. pulla* Meigen, 1830; *Amauromyza gyrans* (Fallen, 1823); *A. labiatarum* (Hendel, 1920); *Aulagromyza buhri* (de Meijere, 1938); *Calycomyza solidaginis* (Kaltenbach, 1869); *Cerodontha (Dizygomyza) bimaculata* (Meigen, 1830); *C.(D.) caricicola* (Hering, 1926) (= *soenderupi* (Hering)); *C. (D.) chaixiana* (Hering, 1956); *C. morosa* (Meigen, 1830); *C. silvatica* (Groschke, 1957); *Liriomyza amoena* (Meigen, 1830); *L. centaureae* Hering, 1927; *Ophiomyia maura* (Meigen, 1838); *Phytomyza alpina* Groschke, 1957; *P. angelicae* Kaltenbach, 1872; *P. aprilina* (Goureau 1851) (= *lonicerella* (Hendel)); *P. astraintiae* Hendel, 1924; *P. atricornis* Meigen, 1838; *P. bellidina* Hendel, 1934; *P. campanulae* Hendel, 1920; *P. lappae* Goureau, 1851 (= *lapina* Robineau-Desvoidy); *P. loniceriae* (Robineau-Desvoidy, 1851); *P. marginella* Fallen, 1823 (= *sonchi* Robineau-Desvoidy); *P. obscurella* Fallen, 1823; *P. ramosa* (Hendel, 1923); *P. sedicella* Hering, 1924; *P. solidaginis* Hendel, 1920; *P. tanaceti* Hendel, 1923; *P. tussilaginis* Hendel, 1925; *P. periclymenii* de Meijere, 1924.

\**Opius (Agnopius) similoides* Fischer, 1962

**Material examined:** Kars, Sarıkamış, Büyükkumru (40°25'05"N, 42°28'13"E), 2400 m a.s.l., 16.09.2012, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

### 3.5.3. Subgenus: *Allophlebus* Fischer, 1972

*Opius (Allophlebus) fuscipennis* Wesmael, 1835

**Material examined:** Erzurum, Narman, Yanıktaş (40°17'31"N, 41°52'26"E), 1602 m a.s.l., 20.06.2012, A. Beyarslan, 1♀;

Erzurum, Tortum, Serdarlı (40°28'58"N, 41°16'33"E), 1722 m a.s.l., 19.06.2012, A. Beyarslan, 1♀;

Kars, Sarıkamış (40°19'47"N, 42°35'24"E), 1668 m a.s.l., 27.06.2012, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Hosts: Diptera. Tephritidae:** *Agromyza nigriciliata* Hendel, 1931; *Ensina sonchi* (Linnaeus, 1767).

*Opius (Allophlebus) staryi* Fischer, 1958

**Material examined:** Erzurum, Şenkaya, Değirmendere (40°43'52"N, 42°31'9"E), 1800 m a.s.l., M. Yurtcan, 1♂.

Erzurum, İspir, Devedağı Köyü (40°32'13"N, 41°16'38"E), 2345 m a.s.l., 26.06.2013, E. Coban, 2♀♀.

**Distribution:** Palaearctic.

**Hosts: Diptera. Agromyzidae:** *Aulagromyza tremulae* (Hering, 1957); *Phytomyza aquilegiae* Hardy, 1849; *Phytomyza minuscula* Goureau, 1851.

*Opius (Allophlebus) tabificus* Papp, 1979

**Material examined:** Ardahan, Hanak, Kent ormanı (41°15'40"N, 42°51'10"E), 2012 m a.s.l., 14.09.2012, M. Yurtcan, 2♀♀;

Ardahan, Posof (41°30'30"N, 42°44'3"E), 1445 m a.s.l., 21.08.2013, Ö. Şahsuvaroğlu, 1♂;

Erzincan, Refahiye, Salur (39°55'34"N, 38°31'34"E), 1655 m a.s.l., 22.08.2008, A. Beyarslan, 1♂;

Erzurum, İspir, Çamlıkaya (40°37'49"N, 41°10'52"E), 950 m a.s.l., 16.08.2013, A. Beyarslan, 1♀;

Erzurum, İspir, Çamlıkaya, Başyurt Ormanları (40°41'41"N, 41°08'27"E), 2200 m a.s.l., 16.08.2013, M. Yurtcan, 1♂;

Erzurum, İspir, Devedağı Köyü (40°32'13"N, 41°16'38"E), 2345 m a.s.l., 26.06.2013, E. Coban, 4♀♀; Ö. Şahsuvaroğlu, 1♀, 1♂;

Erzurum, İspir, Köprüköy (40°25'18"N, 40°57'46"E), 1710 m a.s.l., 11.09.2012 M. Yurtcan, 1♂;

Erzurum, İspir, Yeşilyurt Köyü (40°31'29"N, 41°4'55"E), 1570 m a.s.l., 19.06.2012, Ö. Şahsuvaroğlu, 1♂;

Erzurum, Narman (40°20'46"N, 41°54'51"E), 1567 m a.s.l., 27.06.2013, A. Beyarslan, 1♀;

Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, A. Beyarslan, 4♀♀, 3♂♂;

Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, A. Beyarslan, 1♀;

Erzurum, Olur (40°48'46"N, 42°9'37"E), 655 m a.s.l., 12.09.2012, Ö. Şahsuvaroğlu, 1♀;

Erzurum, Pasinler, Övenler (39°59'16"N, 41°34'38"E), 1740 m a.s.l., 17.08.2013, E. Coban, 1♀;

Erzurum, Şenkaya, İkizpınar (40°35'31"N, 42°20'30"E), 1818 m a.s.l., 27.06.2013, Ö. Şahsuvaroğlu, 2♀♀;

Erzurum, Tortum (40°18'32"N, 41°31'33"E), 1460 m a.s.l., 12.09.2012, A. Beyarslan, 1♀;

Erzurum, Tortum, Serdarlı Köyü (40°28'58"N, 41°16'33"E), 1722 m a.s.l., 19.06.2012, A. Beyarslan, 1♀;

İğdır, Tuzluca, Gaziler (40°06'36"N, 43°25'31"E), 1035 m a.s.l., 20.09.2012, A. Beyarslan, 2♀♀;

Kars, Kağızman, Aydıncavak (40°9'11"N, 43°19'14"E), 1115 m a.s.l., 20.09.2012, Ö. Keleş, 2♀♀;

Kars, Sarıkamış, Horasan Yolu (40°16'49"N, 42°38'59"E), 2040 m a.s.l., 21.09.2012, A. Beyarslan, 1♀;

Kars, Sarıkamış, Karakurt (40°10'03"N, 42°36'36"E), 1475 m a.s.l., 23.06.2013, E. Coban, 1♂;

Kars, Sarıkamış, Söğütlüçeşme Mevkii (40°16'58"N, 42°34'18"E), 2350 m a.s.l., 24.06.2013, Ö. Şahsuvaroğlu, 1♀;

Kars, Sarıkamış, Taşocakları girişi (40°17'23"N, 42°29'50"E), 2323 m a.s.l., 19.09.2012, M. Yurtcan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

### 3.5.4. Subgenus: *Allotypus* Förster, 1862

#### *Opius (Allotypus) arenaceus* Jakimavicius, 1986

**Material examined:** Erzurum, Tortum (40°18'32"N, 41°31'33"E), 1460 m a.s.l., 12.09.2012, E. Coban, 1♂;

Ardahan, Hanak, Kent ormanı (41°15'40"N, 42°51'10"E), 2012 m a.s.l., 14.09.2012, Ö. Şahsuvaroğlu, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

#### \**Opius (Allotypus) geniculatus* Thomson, 1895

**Material examined:** Erzurum, Narman, Yanıktaş (40°17'31"N, 41°52'26"E), 1602 m a.s.l., 20.06.2012, Ö. Keleş, 1♀; A. Beyarslan, 4♀♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

#### *Opius (Allotypus) irregularis* Wesmael, 1835

**Material examined:** Erzurum, Olur (40°48'46"N, 42°9'37"E), 655 m a.s.l., 12.09.2012, E. Coban, 2♂♂;

Erzurum, Şenkaya, Gözalan (40°39'33"N, 42°16'33"E), 1168 m a.s.l., 13.09.2012, A. Beyarslan, 1♀; E. Coban, 2♀♀.

**Distribution:** Holarctic.

**Hosts:** **Lepidoptera.** **Tortricidae:** *Ancylis mitterbacheriana* (Denis and Schiffermüller, 1775).

**Diptera. Cecidomyiidae:** *Asphondylia verbasci* (Vallot, 1827). **Agromyzidae:** *Chromatomyia primulae* (Robineau-Desvoidy, 1851). **Ephydriidae:** *Hydrellia griseola* (Fallen, 1813); **Anthomyiidae:** *Pegomyia solennis* (Meigen, 1826). **Tephritidae:** *Tephritis leontodontis* (De Geer, 1776).

#### \**Opius (Allotypus) saevus* Haliday, 1837

**Material examined:** Ardahan, Çıldır, Eskibeyrehatun Köyü (41°7'47"N, 42°54'32"E), 1950 m a.s.l., 24.06.2012, Ö. Keleş, 1♀;

Ardahan, Posof (41°30'30"N, 42°44'3"E), 1445 m a.s.l., 14.09.2012, E. Coban, 1♂; M. Yurtcan, 1♀;

Ardahan, Değirmenköy (41°10'5"N, 42°35'46"E), 1848 m a.s.l., 22.06.2012, Ö. Şahsuvaroğlu, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

### 3.5.5. Subgenus: *Apodesmia* Förster, 1862

#### *Opius (Apodesmia) nitidulator* (Nees, 1834)

**Material examined:** Erzurum, İspir, Petekli (40°25'38"N, 40°54'48"E), 1400 m a.s.l., 11.09.2012, M. Yurtcan, 1♂.

**Distribution:** Holarctic.

**Hosts:** **Diptera. Anthomyiidae:** *Pegomyia betae* (Curtis, 1847); *P. esuriens*-group (Fallen, 1825); *P. hyoscyami* (Panzer, 1809); *P. nigritarsis* (Zetterstedt, 1838); *P. setaria* (Meigen, 1826); **Calliphoridae:** *Calliphora vomitoria* (Linnaeus, 1758); *Lucilia caesar* (Linnaeus,

1758). **Muscidae:** *Musca domestica* Linnaeus, 1758. **Tachinidae:** *Tachina* sp.

### 3.5.6. Subgenus: *Cryptognathopius* Fischer, 1984

#### *Opius (Cryptognathopius) uttoisimilis* Fischer, 1999

**Material examined:** Erzurum, İspir, Köprüküy (39°58'01"N, 41°52'17"E), 1602 m a.s.l., 11.09.2012, A. Beyarslan, 1♀, 1♂.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

### 3.5.7. Subgenus: *Cryptonastes* Förster, 1862

#### *Opius (Cryptonastes) gracilis* Fischer, 1957

**Material examined:** Artvin, Yusufeli, Morkaya (40°42'47"N, 41°40'50"E), 680 m a.s.l., 12.09.2012, A. Beyarslan, 1♀;

Erzurum, Olur (40°48'46"N, 42°9'37"E), 655 m a.s.l., 12.09.2012, E. Coban, 1♀;

Kars, Kağızman (40°9'53"N, 43°5'49"E), 1214 m. 24.09.2012, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** **Diptera. Agromyzidae:** *Agromyza bicophaga* Hering, 1925; *A. pulla* Meigen, 1830; *A. rondensis* Strobl, 1900; *Amauromyza gyrans* (Fallen, 1823); *Chromatomyia loniceriae* (Robineau-Desvoidy, 1851); *C. syngenesiae* Hardy, 1849; *Liriomyza* sp.; *L. sonchi* Hendel, 1931; *L. strigata* (Meigen, 1830); *L. trifolii* (Burgess in Comstock, 1880); *Napomyza xylostei* Robineau-Desvoidy, 1851; *Phytomyza anemones pulsatilla* Hering, 1925; *P. dauci* Hering, 1927; *P. ferulae* Hering, 1927; *P. obscura* Hendel, 1920; *P. origani* Hering, 1931; *P. silai* Hering, 1935; *P. spondylii* Robineau-Desvoidy, 1851.

#### *Opius (Cryptonastes) pygmaeus* Fischer, 1962

**Material examined:** Erzurum, Olur (40°48'46"N, 42°9'37"E), 655 m a.s.l., 12.09.2012, E. Coban, 2♀♀, 3♂♂;

Erzurum, Şenkaya, Gözalan (40°39'33"N, 42°16'33"E), 1168 m a.s.l., 13.09.2012, E. Coban, 1♀.

**Distribution:** Palaearctic.

**Hosts:** **Diptera. Agromyzidae:** *Liriomyza cicerinae* (Rondani, 1874); *Phytomyza adjuncta* Hering, 1928.

#### *Opius (Cryptonastes) radialis* Fischer, 1957

**Material examined:** Erzurum, İspir, Köprüküy (39°58'01"N, 41°52'17"E), 1602 m a.s.l., 11.09.2012, A. Beyarslan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

### 3.5.8. Subgenus: *Gastrosema* Fischer, 1972

#### *Opius (Gastrosema) caucasi* Tobias, 1986

**Material examined:** Ardahan, Kent ormanı (41°15'40"N, 42°51'10"E), 2012 m a.s.l., 15.09.2012, E. Coban, 1♀;

Ardahan, Posof (41°30'30"N, 42°44'3"E), 1445 m a.s.l., 14.09.2012, A. Beyarslan, 2♀♀, 1♂;

Erzurum, Tortum (40°18'32"N, 41°31'33"E), 1460 m a.s.l., 12.09.2012, E. Coban, 1♂, M. Yurtcan, 1♀;

Erzurum, İspir, Köprüköy (39°58'01"N, 41°52'17"E), 1602 m a.s.l., 11.09.2012, A. Beyarslan, 1♀;

Kars, Arpaçay, Çanaksu (41°59'32"N, 43°18'04"E), 1990 m a.s.l., 16.09.2012, Ö. Şahsuvaroğlu, 1♀;

Kars, Kağızman, Akdam (40°10'25"N, 43°16'34"E), 1321 m a.s.l., 27.06.2012 M. Yurtcan, 1♂;

Kars, Kağızman, Morpet (40°15'16"N, 42°58'36"E), 1486 m a.s.l., 20.09.2012, M. Yurtcan, 1♀;

Kars, Merkez, Boğazköy (40°41'19"N, 43°6'47"E), 1693 m a.s.l., 17.09.2012, Ö. Şahsuvaroğlu, 1♀;

Kars, Sarıkamış, Horasan Yolu (40°16'49"N, 42°38'59"E), 2040 m a.s.l., 21.09.2012, E. Coban, 1♂.

**Distribution:** Palaearctic.

**Host:** Diptera. Agromyzidae: *Chromatomyia horticola* (Goureau, 1851).

### 3.5.9. Subgenus: *Hypocynodus* Förster, 1862

#### *Opius (Hypocynodus) bouceki* Fischer, 1958

**Material examined:** Erzurum, Hınıs, Elmadalı (39°12'15"N, 41°39'01"E), 1775 m a.s.l., 20.06.2013, A. Beyarslan, 1♂;

Erzurum, İspir, Devedağı Köyü (40°32'13"N, 41°16'38"E), 2345 m a.s.l., 26.06.2013, A. Beyarslan, 1♀;

Erzurum, Şenkaya, İkişipınar (40°35'31"N, 42°20'30"E), 1818 m a.s.l., 27.06.2013, Ö. Şahsuvaroğlu, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

#### *Opius (Hypocynodus) coloraticeps* Fischer, 1996

**Material examined:** Erzurum, Uzundere, Balıklı Köyü (40°38'19"N, 41°36'40"E), 1466 m a.s.l., 18.06.2012, M. Yurtcan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

#### *Opius (Hypocynodus) crassipes* Wesmael, 1835

**Material examined:** Erzurum, İspir, Ardıçlı (40°33'4"N, 41°13'55"E), 1809 m a.s.l., 19.06.2012, Ö. Şahsuvaroğlu, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

#### *Opius (Hypocynodus) larissa* Fischer, 1968

**Material examined:** Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, E. Coban, 1♀;

Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, E. Coban, 1♀;

İğdır, Tigem (39°47'10"N, 44°37'5"E), 844 m a.s.l., 26.09.2012, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

#### *Opius (Hypocynodus) ponticus* Fischer, 1958

**Material examined:** Erzurum, İspir, Yeşilyurt Köyü (40°31'29"N, 41°4'55"E), 1570 m a.s.l., 26.06.2013, E. Coban, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

### 3.5.10. Subgenus: *Ilicopius* Fischer, 1992

#### *Opius (Ilicopius) bajariae* Fischer, 1989

**Material examined:** Ardahan, Posof (41°30'30"N, 42°44'3"E), 1445 m a.s.l., 14.09.2012, M. Yurtcan, 1♀;

Erzurum, İspir, Devedağı Köyü (40°32'13"N, 41°16'38"E), 2345 m a.s.l., 26.06.2013, E. Coban, 1♀; A. Beyarslan, 1♂.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

#### \**Opius (Ilicopius) moravicus* Fischer, 1960

**Material examined:** İğdır, Karakoyunlu, Taşburun (39°58'55"N, 44°12'03"E), 839 m a.s.l., 22.06.2013, E. Coban, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

### 3.5.11. Subgenus: *Misophthora* Förster, 1862

#### *Opius (Misophthora) bulgaricus* Fischer, 1959

**Material examined:** Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, E. Coban, 2♀♀.

**Distribution:** Western Palaearctic.

**Host:** Diptera. Agromyzidae: *Chromatomyia horticola* (Goureau, 1851).

#### *Opius (Misophthora) corfuensis* Fischer, 1996

**Material examined:** Erzurum, Şenkaya, İkişipınar (40°35'31"N, 42°20'30"E), 1818 m a.s.l., 27.06.2013, Ö. Şahsuvaroğlu, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

#### \**Opius (Misophthora) mischa* Fischer, 1968

**Material examined:** Erzurum, Tortum (40°17'57"N, 41°32'52"E), 1450 m a.s.l., 12.09.2012, M. Yurtcan, 2♀♀;

Kars, Kağızman, Kuloğlu (40°05'49"N, 42°57'49"E), 1287 m a.s.l., 23.06.2013, M. Yurtcan, 1♂.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

### 3.5.12. Subgenus: *Nosopoea* Förster, 1862

#### \**Opius (Nosopoea) areatus* Tobias, 1986

**Material examined:** Ardahan, Çıldır, Eskibeyrehatun (41°7'47"N, 42°54'32"E), 1950 m a.s.l., 24.06.2012, A. Beyarslan, 1♀.

**Distribution:** Eastern Palaearctic.

**Hosts:** Unknown.

#### *Opius (Nosopoea) cingulatus* Wesmael, 1835

**Material examined:** Erzurum, İspir, Köprüköy (39°58'01"N, 41°52'17"E), 1602 m a.s.l., 11.09.2012, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Diptera. Agromyzidae: *Agromyza albitarsis* Meigen, 1830; *A. nigrella* Hampson 1903; *A. potentillae* (Kaltenbach, 1864); *A. prespana* Spencer, 1957; *A. pseudoreptans* Nowakowski, 1967; *Amauromyza labiatarum* Hendel, 1920; *Cerodontha incisa* Meigen, 1830; *Chromatomyia*

*periclymeni* De Meijere, 1924; *Euleia heraclei* Linnaeus, 1758; *Galiomyza morio* (Brischke, 1880); *Ophiomyia maura* Meigen, 1838; *Phytomyza evanescens* (Hendel, 1920); *Trypeta immaculata* (Macquart, 1835).

***Opius (Nosopoea) sigmodus* Papp, 1981**

**Material examined:** Erzurum, İspir, Köprüküyü (40°25'18"N, 40°57'46"E), 1710 m a.s.l., 11.09.2012, M. Yurtcan, 1♀;

Erzurum, İspir, Yeşilyurt Köyü (40°31'29"N, 41°4'55"E), 1570 m a.s.l., 19.06.2012, Ö. Şahsuvaroğlu, 1♀; Erzurum, Narman, Demirdağ (40°20'40"N, 41°38'30"E), 1500 m a.s.l., 27.06.2013, M. Yurtcan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

***Opius (Nosopoea) speciosus* Fischer, 1959**

**Material examined:** Ardahan, Çamlıçatak (41°07'18"N, 42°50'19"E), 1850 m a.s.l., 23.06.2012, A. Beyarslan, 12♀♀, 8♂♂;

Ardahan, Çıldır, Eskibeyrehatun (41°7'47"N, 42°54'32"E), 1950 m a.s.l., 24.06.2012, A. Beyarslan, 3♀♀, 1♂;

Ardahan, Değirmenköy (41°10'5"N, 42°35'46"E), 1848 m a.s.l., 22.06.2012, M. Yurtcan, 1♂;

Ardahan, Posof (41°30'30"N, 42°44'03"E), 1445 m a.s.l., 14.09.2012, E. Coban, 1♀;

Ardahan, Sugöze (41°4'55"N, 42°38'58"E), 1839 m a.s.l., 23.06.2012, M. Yurtcan, 5♀♀, 4♂♂;

Ardahan, Tazeköy (41°1'32"N, 42°52'34"E), 1934 m a.s.l., 24.06.2012, A. Beyarslan, 4♀♀, 4♂♂;

Ardahan, Tepeköy (41°2'54"N, 42°35'10"E), 1934 m a.s.l., 24.06.2012, E. Coban, 2♂♂.

Erzurum, Şenkaya, Değirmenlidere (40°43'53"N, 42°31'09"E), 1820 m a.s.l., 21.06.2012, A. Beyarslan, 1♀;

Erzurum, Tortum, Aksu (40°25'41"N, 41°36'12"E), 2302 m a.s.l., 16.06.2012, M. Yurtcan, 1♀, 1♂;

Kars, Kağızman, Pahlı (40°16'36"N, 42°57'22"E), 1785 m a.s.l., 21.09.2012, E. Coban, 1♂;

Kars, Sarıkamış, Tekçam (40°23'10"N, 42°30'09"E), 2460 m a.s.l., 26.06.2013, Ö.Şahsuvaroğlu, 1♂.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

**\**Opius (Nosopoea) tuberculifer* Fischer, 1958**

**Material examined:** Kars, Susuz, Kırkpınar (40°53'11"N, 43°00'20"E), 2155 m a.s.l., 28.06.2013, E. Coban, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

**3.5.13. Subgenus: *Nosopaeopius* Fischer, 1972**

***Opius (Nosopaeopius) ochrogaster* Wesmael, 1835**

**Material examined:** Erzurum, İspir, Köprüküyü (39°58'01"N, 41°52'17"E), 1602 m a.s.l., 11.09.2012, M. Yurtcan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Diptera. Agromyzidae: *Agromyza phragmitidis* Hendel, 1922; *Amauromyza (Trilobomyza) flavifrons* (Meigen, 1830); *A. (Trilobomyza) gyrans* (Fallén, 1823); *A. labiatarum* (Hendel, 1920); *A. verbasci* (Bouch, 1847); *Campanulomyza gyrans* (Fallen, 1823); *Liriomyza* sp.; *Melandryum album* (Miller) (Garcke, 1858); *Phyllonorycter geniculella* (Ragonot, 1874); *Trilobomyza labiatarum* (Hendel, 1920); *T. verbasci* (Bouche, 1847).

**3.5.14. Subgenus: *Opiognathus* Fischer, 1972**

***Opius (Opiognathus) propepactum* Fischer, 1984**

**Material examined:** Erzurum, İspir, Devedağı Köyü (40°32'13"N, 41°16'38"E), 2345 m a.s.l., 26.06.2013, Ö. Şahsuvaroğlu, 1♂.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

**3.5.15. Subgenus: *Opiostomus* Fischer, 1972**

**\**Opius (Opiostomus) dividus* Tobias, 1998**

**Material examined:** Iğdır, Tigem (39°47'10"N, 44°37'5"E), 844 m a.s.l., 26.06.2012, A. Beyarslan, 1♀.

**Distribution:** Eastern Palaearctic.

**Hosts:** Unknown.

**3.5.16. Subgenus: *Opiothorax* Fischer, 1972**

***Opius (Opiostomus) griffithsi* Fischer, 1962**

**Material examined:** Erzurum, İspir, Köprüküyü (39°58'01"N, 41°52'17"E), 1602 m a.s.l., 11.09.2012, E. Coban, 1♂.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

***Opius (Opiothorax) latistigma* Fischer, 1960**

**Material examined:** Erzurum, Narman, Yanıktaş (40°17'31"N, 41°52'26"E), 1602 m a.s.l., 20.06.2012, E. Coban, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

***Opius (Opiothorax) levis* Wesmael, 1835**

**Material examined:** Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 12.09.2012, M. Yurtcan, 1♂.

**Distribution:** Palaearctic and Afrotropical.

**Hosts:** Diptera. Agromyzidae: *Liriomyza congesta* Becker, 1903; *L. flaveola* Fallen, 1823; *L. strigata* Meigen, 1830; *Phytomyza crassiseta* Zetterstedt, 1860; *Phytomyza crassiseta* Zetterstedt, 1860; *P. glechomae* Kaltenbach, 1862. Drosophilidae: *Scaptomyza (Scaptomyza) graminum* (Fallen, 1823). Ephydriidae: *Hydrellia griseola* (Fallen, 1813).

***Opius (Opiothorax) loniceræ* Fischer, 1958**

**Material examined:** Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, E. Coban, 2♀♀;

Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, E. Coban, 2♀♀;



Kars, Sarıkamış, Horasan Yolu (40°16'49"N, 42°38'59"E), 21.09.2012, M. Yurtcan, 1♀.

**Distribution:** Holarctic.

**Hosts:** **Diptera. Agromyzidae:** *Amauromyza (Amauromyza) morionella* (Zetterstedt, 1848); *Chromatomyia lonicerae* (Robineau-Desvoidy, 1851); *Phytomyza aprilina* Goureau, 1851.

**Opius (Opiothorax) minusculae** Fischer, 1967

**Material examined:** Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, E. Coban, 1♀;

Erzurum, Şenkaya, İkizpınar (40°35'31"N, 42°20'30"E), 1818 m a.s.l., 27.06.2013, M. Yurtcan, 1♀;

Kars, Sarıkamış, Karakurt (40°10'03"N, 42°36'36"E), 1475 m a.s.l., 23.06.2013, Ö. Şahsuvaroğlu, 1♀.

**Distribution:** Western Palaearctic.

**Host:** **Diptera. Agromyzidae:** *Phytomyza minuscula* Goureau, 1851.

**Opius (Opiothorax) mirabilis** Fischer, 1958

**Material examined:** Erzurum, Oltu, İnanmış (40°27'46"N, 41°42'27"E), 1820 m a.s.l., 13.09.2012, M. Yurtcan, 1♀.

**Distribution:** Palaearctic and Oriental.

**Hosts:** **Diptera. Agromyzidae:** *Chromatomyia horticola* (Goureau 1851); *Liriomyza* sp.; *L. balcanica* Strobl, 1900; *L. sativae* Blanchard, 1938.

**Opius (Opiothorax) nigricolor** Fischer, 1960

**Material examined:** Ardahan, Çamlıçatak (41°07'18"N, 42°50'19"E), 1850 m a.s.l., 15.09.2012, A. Beyarslan, 2♀♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

**Opius (Opiothorax) turcicus** Fischer, 1960

**Material examined:** Erzurum, Aziziye (39°56'10"N, 41°08'20"E), 1770 m a.s.l., 19.07.1990, A. Beyarslan, 1♀.

**Distribution:** Palaearctic and Oriental.

**Hosts:** **Diptera. Agromyzidae:** *Agromyza lathyri* Hendel, 1923; *Agromyza rondensis* Strobl, 1900; *Chromatomyia horticola* Goureau, 1851.

**\*Opius (Opiothorax) vindex** Haliday, 1837

**Material examined:** Ardahan, Çamlıçatak (41°07'18"N, 42°50'19"E), 1850 m a.s.l., 23.06.2012, M. Yurtcan, 1♂.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

### 3.5.17. Subgenus: *Opius* s. str. Wesmael, 1835

***Opius (Opius) mendus*** Papp, 1982

**Material examined:** Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

***Opius (Opius) orbicularis*** (Nees, 1811)

**Material examined:** Erzurum, Olur (40°48'46"N, 42°9'37"E), 655 m a.s.l., 12.09.2012, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

***Opius (Opius) pallipes*** Wesmael, 1835

**Material examined:** Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, A. Beyarslan, 1♀;

Erzurum, Oltu, Orçuk (40°29'47"N, 41°49'4"E), 1560 m a.s.l., 13.09.2012, A. Beyarslan, 1♀;

Erzurum, Olur (40°48'46"N, 42°9'37"E), 655 m a.s.l., 12.09.2012, M. Yurtcan, 1♂.

**Distribution:** Holarctic and Oriental.

**Hosts:** **Diptera. Agromyzidae:** *Agromyza potentillae* Kaltenbach, 1864; *Amauromyza labiatarum* (Hendel, 1920); *A. verbasci* (Bouche, 1847); *Aulagromyza hendeliana* (Hering, 1926); *A. tremulae* (Hering, 1957); *Cerodontha angulata* (Loew, 1869); *Chromatomyia horticola* (Goureau, 1851); *C. periclymeni* Hendel, 1922; *Liriomyza* sp.; *L. amarellae* Hering, 1963; *L. bryoniae* (Kaltenbach, 1858); *L. centaureae* Hering, 1927; *L. eupatoriana* Spencer, 1954; *L. huidobrensis* (Blanchard, 1926); *L. pusio* (Meigen, 1830); *L. strigata* (Meigen, 1830); *L. taraxaci* Hering, 1927; *L. wachtli* Hendel, 1920; *Ophiomyia maura* (Meigen, 1838); *Phytomyza* sp.; *P. angelicae* Kaltenbach, 1872; *P. fallaciosa* Brischke, 1880; *P. ferulae* Hering, 1927; *P. kyffhusana* Hering, 1928; *P. leucanthemi* Hering 1935; *P. minuscula* Goureau, 1851; *P. obscura* Hendel, 1920; *P. pauliloewii* Hendel, 1920; *P. pullula* Zetterstedt, 1848; *P. ranunculi* (Schrank, 1803); *P. spondylii* Robineau-Desvoidy, 1851; *P. thysselini* Hendel, 1923. **Anthomyiidae:** *Anthomyia rumicis* Hardy, 1854; *Delia echinata* (Seguy, 1923); *Pegomyia bicolor* (Wiedemann, 1817); *Pegomyia solennis* (Meigen, 1826). **Cynipidae:** *Andricus curvator* Hartig, 1840. **Drosophilidae:** *Scaptomyza* sp.; *S. flava* (Fallen, 1823); *S. graminum* (Fallen, 1823); **Scathophagidae:** *Scathophaga* sp. **Tephritidae:** *Euleia heraclei* (Linnaeus, 1758); *Philophylla caesio* (Harris, 1780); *Sphenella marginata* (Fallen, 1814); *Vidalia spinifrons* (Schroeder, 1913). **Tortricidae:** *Archips rosana* (Linnaeus, 1758).

***Opius (Opius) pygmaeator*** (Nees, 1811) (Syn. *meracus*)

**Material examined:** Erzurum, Şenkaya, Değirmendere (40°43'52"N, 42°31'9"E), 1800 m a.s.l., 21.06.2012, M. Yurtcan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

### 3.5.18. Subgenus: *Pendopius* Fischer, 1972

**\**Opius (Pendopius) exiloides*** Fischer, 1989

**Material examined:** Erzurum, Narman (40°20'46"N, 41°54'51"E), 1567 m a.s.l., 27.06.2013, A. Beyarslan, 2♀♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

### 3.5.19. Subgenus: *Tolbia* Cameron, 1907

***Opius (Tolbia) rudiformis*** Fischer, 1958

**Material examined:** Erzurum, Aşkale, Çayköy (39°56'43"N, 40°48'21"E), 1715 m a.s.l., 18.08.2013, E. Coban, 2♀♀.

**Distribution:** Holarctic.

**Hosts:** Unknown.

### 3.6. Genus: *Utetes* Förster, 1862

#### 3.6.1. Subgenus: *Utetes* s. str. Haliday, 1837

*Utetes (Utetes) aemulus* (Haliday, 1837)

**Material examined:** Kars, Sarıkamış, Taş ocakları, Turna gölü (40°13'1"N, 42°32'4"E), 2200 m a.s.l., 19.09.2012, A. Beyarslan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

*Utetes (Utetes) coracinus* (Thomson, 1895)

**Material examined:** Erzurum, İspir, Kırıkköy (40°20'13"N, 40°57'3"E), 2030 m a.s.l., 19.06.2012, E. Coban, 1♀;

Erzurum, Tortum, Aksu (40°25'41"N, 41°36'12"E), 2302 m a.s.l., 16.06.2012, A. Beyarslan, 1♀; 18.06.2012, E. Coban, 1♂;

Erzurum, Uzundere, Azort Yaylası (40°28'40"N, 41°36'43"E), 1677 m a.s.l., 18.06.2012, Ö. Keleş, 1♂.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

\**Utetes (Utetes) fasciatus* (Thomson, 1895)

**Material examined:** Erzurum, İspir, İDOS Tesisleri (40°27'25"N, 40°57'41"E), 1185 m a.s.l., 11.09.2012, E. Coban, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

*Utetes (Utetes) rotundiventris* (Thomson, 1895)

**Material examined:** Erzurum, Aşkale (39°55'17"N, 40°42'24"E), 1670 m a.s.l., 23.06.2000, E. Coban, 1♀;

Erzurum, İspir, Yeşilyurt Köyü (40°31'29"N, 41°4'55"E), 1570 m a.s.l., 19.06.2012, M. Yurtcan, 2♂♂;

Kars, Arpaçay, Çanaksu (41°59'32"N, 43°18'04"E), 1990 m a.s.l., 22.08.2013, Ö. Şahsuvaroğlu, 1♂.

**Distribution:** Palaearctic.

**Hosts:** **Diptera. Agromyzidae:** *Agromyza albitarsis* Meigen, 1830; *Agromyza rufipes* Meigen, 1830; *Phytomyza diversicornis* Hendel, 1927; *Phytomyza sedicola* Hering, 1924.

\**Utetes (Utetes) rhodopensis* Zaykov, 1983

**Material examined:** Iğdır, Tigem (39°47'10"N, 44°37'5"E), 844 m a.s.l., 16.06.2012, Ö. Şahsuvaroğlu, 1♂.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

\**Utetes (Utetes) ussuriensis* (Tobias, 1997)

**Material examined:** Ardahan, Posof (41°30'30"N, 42°44'3"E), 1445 m a.s.l., 23.06.2012, A. Beyarslan, 1♀;

Ardahan, Hanak, Kent ormanı (41°15'40"N, 42°51'10"E), 2012 m a.s.l., 23.06.2012, M. Yurtcan, 1♂.

**Distribution:** Eastern Palaearctic.

**Hosts:** Unknown.

### 3.7. Genus: *Xynobius* Förster, 1862

#### 3.7.1. Subgenus: *Xynobius* (*Xynobius*) Förster, 1862

*Xynobius (Xynobius) aciculatus* (Thomson, 1895)

**Material examined:** Ardahan, Tazeköy (41°1'32"N, 42°52'34"E), 1934 m a.s.l., 15.09.2012, A. Beyarslan, 1♀.

**Distribution:** Palaearctic.

**Hosts:** Unknown.

*Xynobius (Xynobius) curtifemur* (Fischer, 1961)

**Material examined:** Ardahan, Çamlıçatak (41°07'18"N, 42°50'19"E), 1850 m a.s.l., 23.06.2012, Ö. Şahsuvaroğlu, 1♀.

**Distribution:** Western Palaearctic.

**Host:** **Diptera. Agromyzidae:** *Agromyza nana* Meigen, 1830.

\**Xynobius (Xynobius) discoidalis* (Fischer, 1957)

**Material examined:** Ardahan, Merkez, Çamlıçatak (41°7'18"N, 42°50'19"E), 1850 m a.s.l., 15.09.2012, E. Coban, 1♀;

Erzurum, Tortum, Aksu Köyü (40°25'41"N, 41°36'12"E), 2302 m a.s.l., 16.06.2012, M. Yurtcan, 3♀♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

*Xynobius (Xynobius) notabilis* (Fischer, 1958)

**Material examined:** Ardahan, Posof (41°30'30"N, 42°44'03"E), 1445 m a.s.l., 23.06.2012, M. Yurtcan, 1♀.

**Distribution:** Western Palaearctic.

**Hosts:** Unknown.

*Xynobius (Xynobius) rudis* (Wesmael, 1835)

**Material examined:** Kars, Selim, Karahamza (40°25'36"N, 42°44'47"E), 1890 m a.s.l., 19.08.2013, E. Coban, 1♀.

**Distribution:** Holarctic.

**Host:** **Diptera. Agromyzidae:** *Agromyza nigripes* Meigen, 1830.

## 4. Discussion

In total, 86 species belonging to 7 genera are reported for the studied regions, among which 22 are recorded for the first time from Turkey. The study area includes Ardahan, Erzurum, Iğdır, and Kars provinces in the eastern Anatolia region. One of the most important gates that let living creatures enter Anatolia is located in this region, i.e. the gate for Caucasian fauna consisting of Siberian and cold steppe elements in the northeast known as the Kars-Erzurum Plateau.

Most of the plant communities in this region are of Irano-Turanian origin. Members of the Opiinae family are dependent on certain plant formations. As in other regions of Turkey where we conducted field surveys, chemicals were applied in agricultural areas in this region; therefore, populations of beneficial fauna were found to be very low. Samples have therefore been collected from areas such as

forests and pastures that have kept their natural state, and to which generally no poison has been applied. The status of the beneficial fauna was ascertained.

The numbers of species of each genus are as follows: *Biosteres* Förster: 12; *Diachasma* Förster: 1; *Diachasmimorpha* Viereck: 1; *Phaeditoma* Förster: 9; *Opius* Wesm.: 53; *Utetes* Förster: 5; *Xynobius* Förster: 5 (Figure). Therefore, the number of Opiinae species in Turkey has increased from 182 to 201 (Beyarslan, 2013).

Of the species determined in the northeastern Anatolia region, 47% were also recorded from Russia, followed by Bulgaria and Iran with 23% and 11%, respectively, showing that the fauna of the region shows a 55% similarity to that of Russia.

Distributions of the species according to zoogeographical regions are as follows: 40 species Western Palaearctic; 2 species Eastern Palaearctic; 37 species Palaearctic; 3 species Holarctic; 1 species Ethiopian, Oriental, Palaearctic; 3 species Oriental, Palaearctic; 1 species Holarctic and Oriental.

At the end of the study, *Opius* (*Allophlebus*) *tabificus* Papp was collected from 22 localities, *Opius* (*Nosopoea*) *speciosus* Fischer from 11 localities, *Phaeditoma* *depeculator* Förster from 10 localities, and *Opius* (*Gastrosema*) *caucasi* Tobias from 9 localities; they were recorded as the most common species.

Some species of the genus *Opius* have great potential in biological control of agromyzid leaf miners (Diptera:

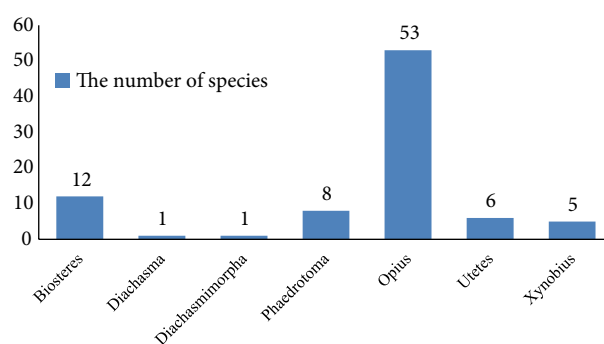


Figure. The numbers of species of Opiinae genera.

Agromyzidae). Therefore, 51 species have been introduced into various countries.

Hosts of 34 species of 86 species recorded from the northeastern Anatolian region are known. The known hosts of species recorded as new for the Turkish fauna were given according to Yu et al. (2012), and hosts of other species were given with their related references (Beyarslan and Fischer, 2013; Fischer and Beyarslan, 2013).

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