

Records of some Braconidae species (Hymenoptera, Ichneumonoidea) from Gürün (Sivas) and Ilgaz Mountain (Kastamonu)

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Abstract: In order to determine Braconidae fauna of Turkey, adult specimens of Braconidae (Hymenoptera, Ichneumonoidea) were collected from some habitats of Gürün and Ilgaz Mountain using Malaise and light traps and sweeping nets among 2015, 2017 and 2018. Obtained material was prepared and according modern taxonomic rules and appropriately labeled. Relevant literature and comparison material available in our collection were used for taxonomical examination of the material collected. The altitudes and coordinates of localities, collection dates were given. In total, 35 species belonging 10 subfamilies were determined. The species *Aleiodes (Neorhogas) fortipes* (Reinhard, 1863), *Macrocentrus nidulator* (Nees, 1834), *Microchelonus (Microchelonus) eximius* (McComb, 1968) and *Opius (Ilicopius) solymosae* Fischer, 1989 are new to the fauna of Turkey.

Keywords: Neorhogas, fortipes, nidulator, fauna, Microchelonus, Yu.

Introduction

The Braconidae family is a large family that has the members spread all over the world, has a great economic importance in agriculture, and has approximately 19652 species identified under 1056 genera. 36 of known 46 Braconidae subfamilies have inhabited in the Western Palearctic Region (Yu et al., 2016). The members of Braconidae are successful survivors and very common in the tropical and the subtropical regions of the Old World (Quicke, 1987). It is very important to reveal the natural biological riches of Turkey, determine the endangered species, identify the hopeful species for biological control. The fact that the agricultural lands are limited in the world and the population increases rapidly each passing day require the use of many inputs like biotechnology, fertilizer, and chemical drugs inevitably. However, the human health is more important. For this reason, the required precautions should be taken in order to prevent its own species to get harmed and provide that it is affected by these inputs at the minimum level.

The study area covers Gürün town (Sivas) and Ilgaz Mountain (Kastamonu). Gürün is a district located in the

Sivas province's part in Eastern Anatolia Region. The "Gürün Tohma (Stream)", located in the Şuğul, Mağarabaşı, and Kuşkayası localities, originates from the Gövdeli Mountain. Tohma Stream flows through a narrow valley surrounded by steep rocks. The vegetation of the valley is composed of willow trees in the riparian area and wild almond, rosehip, and sumac trees on the slopes. Rarely, juniper trees are also observed on the rocks. The valley was formed during the Cretaceous period of the Second Era (Mesozoic) and its bedrock is sedimentary rock.

The Ilgaz Mountains are located in the Western Black Sea region. The north border of the Ilgaz Mountains is formed by Araç River and the valleys formed by the Gökırmak River, its eastern border is formed by the valley of the Kızılırmak River, its southern border is formed by valleys of the Devrez and Ulusu Rivers, and its western border is formed by Büyüksu stream. The highest point of Ilgaz is Büyükhacat Hill and its altitude is 2587 m. It is 35 km far away from Kastamonu. The plant genera forming its forest formation are *Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp. and *Robinia pseudoacacia*.

The first studies of Turkish Braconinae fauna were by Kohl (1905), Fahringer and Friese (1921) and Fahringer (1922). The first studies aimed at revealing the Braconinae fauna of Turkey started in 1979 with specimens collected from Mediterranean region. After this, the many regions of Turkey (except Agri, Hakkari, Mardin, Siirt and Sanliurfa provinces) evaluated. (Aydođdu 2008, 2016, 2017; Aydođdu and Beyarslan 2002, 2006a, 2006b, 2006c, 2009, 2011; Beyarslan, 1986a, 1986b, 1987a, 1987b, 1988, 1990, 1991, 1992, 1995, 1996a, 1996b, 1999, 2001a., 2001b, 2002a, 2002b, 2011a, 2011b, 2011c, 2014, 2015a, 2015b, 2015c; 2016a, 2016b; 2017a, 2017b; Beyarslan, 2018; Beyarslan and Aydogdu 2013; Beyarslan et al., 2002a, 2002b, 2004, 2005, 2006a, 2006b, 2008a, 2008b, 2008c, 2008d, 2013a, 2013b, 2014; Beyarslan and Çetin Erdoğan 2012; Beyarslan and Çoban 2014; Beyarslan and Fischer 1990, 2013; Beyarslan and İnanç, 1990a, 1990b, 1992a, 1992b, 1994, 1995, 1997, 2001; Beyarslan and Tobias 2008; Bolu et al. 2009; Civelek et al., 2002; Çetin Erdoğan and Beyarslan 2001, 2004, 2005a, 2005b, 2006, 2009, 2015; Çetin Erdoğan et al., 2008, 2009; Çıkman et al., 2006; Fahringer 1922, Fahringer 2008; Güçlü and Özbek, 2002, 2011a, 2011b; Guler and Friese 1921; Fischer and Beyarslan 2005a, 2005b, 2011, 2012, , 2013; Gözüaçık et al., 2008; Çagatay 2001, 2007; İnanç and Beyarslan 1990a, 1990b, 2001a, 2001b, 2001c, 2002; Kohl 1905; Koldaş et al., 2007, 2013; Okyar et al., 2012; Özgen et al., 2012; Papp, 1990; Tomanovic et al., 2008; Yılmaz and Beyarslan, 2008, 2009; Yılmaz et al., 2010; Zettel and Beyarslan 1992). Thus, 925 Braconidae species were recorded in these investigations. 52 of these species have been described as new to the science World.

Material and Methods

Adult specimens of Braconidae were collected from vegetation under the fruit trees in Gürün (Sivas) and *Pinus* sp. forest of Ilgaz mountain (Kastamonu), Turkey. Malaise and light traps and sweeping nets were used to obtain samples on grassy plants. Collected samples were then pinned and labeled according to taxonomic rules and regulations. The specimens are deposited in the collection of the Zoological Museum of Department of Biology, Bitlis Eren University.

Taxonomic Examination: Comparison material in our collection and related literature (Achterberg van, 1976, 1990, 1993; Achterberg van and Shaw, 2016;

Belokobylskij, 1993, 2001; Belokobylskij and Maeto, 2006; Beyarslan and Fischer, 1990, 2011, 2013; Beyarslan and Tobias, 2008; Fischer, 1972; Fischer and Beyarslan, 2005a; Papp, 1990; Shaw and Huddleston, 1991; Telenga, 1936; Tobias, 1986; Huddleston, 1984) were utilized when evaluating the study materials. Information on parasitoids, hosts, general distributions (in terms of zoogeographical region) and parasitoids of species are given according Tobias (1986), Yu et al. (2012). In the text, the host plants of host species are shown in brackets. The genera and species are tabulated alphabetically therein. Material collectors:

Results

From some habitats of Gürün town and Ilgaz Mountain were collected in total, 175 specimens of Braconidae (Hymenoptera, Ichneumonida) and 35 species belong to ten subfamilies of Braconidae. However, the subfamilies that can be found only in this study area are: Agathidinae 3 species, Braconinae 10 species, Cheloninae 6 species, Doryctinae species 1, Euphorinae 1 species, Helconinae 1 species, Hormiinae 1 species, Macrocentrinae 2 species, Opiinae 7 species and Rogadinae 3 species. Four of these species are the first records for the Turkey fauna. So, the total number of Turkish Braconidae species has reached from 925 to 929 (Beyarslan, 2015).

1. Family: BRACONIDAE

1.1. Subfamily: Agathidinae

1.1.1. Genus: *Agathis* Latreille, 1804

Agathis nigra Nees, 1812

Material examined: Kastamonu, Ilgaz Dađı, Dorukhotel, Eksik Köyü (*Rosa canina*, *Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp., *Robinia pseudoacacia*) (41°00'35.21"N, 33°40'39.37"E), 1286 m, 20.07.2015, 2♂♂.

Hosts: Lepidoptera: Coleophoridae: *Coleophora argentula* (Stephens, 1834); *C. laripennella* Toll, 1953; *C. meridionella* Rebel, 1912; *C. vestianella* (Linnaeus, 1758). **Crambidae:** *Phlyctaenia coronata* (Hufnagel, 1767) [*Ligustrum vulgare*]; *Pyrausta aurata* (Scopoli 1763). **Gelechiidae:** *Apodia bifractella* (Duponchel, [1843]); *Isophriectis striatella* (Denis & Schiffermuller, 1775) [*Tanacetum vulgare*]; *Metzneria lappella* (Linnaeus, 1758); *Metzneria metzneriella* (Stainton, 1851); *Scrobipalpa atriplicella* (Fischer von Röslerstamm, 1841). **Phycitinae:** *Ortholepis betulae* (Goeze, 1778). **Tortricidae:**

Acleris quercinana (Zeller, 1849); *Ptycholoma lecheana* (Linnaeus, 1758).

Distribution: Palaearctic

***Agathis varipes* Thomson, 1895**

Material examined: Kastamonu, Ilgaz Dağı, Dorukhotel, Eksik Köyü (*Rosa canina*, *Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp., *Robinia pseudoacacia*) (41°00'35.21"N, 33° 40'39. 37" E), 1286m, 20.07.2015, 1♀, 1♂. Kastamonu, Ilgaz Dağı 35 km. (*Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp., *Robinia pseudoacacia*), (42°08'35.21"N, 33°42'39.37"E), 1180 m, 21.07.2015, 4♀♀, 2♂♂.

Hosts: **Lepidoptera. Gelechiidae:** *Apodia bifractella* (Duponchel, [1843]) [*Pulicaria dysenterica*]; *Metzneria lappella* (Linnaeus, 1758). [*Arctium majus*]. **Pyralidae:** *Myelois millierella* Ragonot, 1893.

Distribution: Palaearctic

Genus: *Therophilus* Wesmael, 1837

***Therophilus tumidulus* (Nees, 1812)**

Material examined: Sivas, Gürün Suçatımahlesi, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.), (38°43'09.43"N, 37°20'22.89"E), 1289m, 20.7.2017, 2♀♀.

Hosts: **Lepidoptera, Depressariidae:** *Agonopterix atomella* ([Denis & Schiffermüller], 1775). **Erebidae:** *Utetheisa jacobaeae* (Waterhouse, 1858). **Glechiidae:** *Ptocheuusa inopella* (Zeller, 1839). **Momphidae:** *Mompha epilobiella* ([Denis & Schiffermüller], 1775). **Tortricidae:** *Cydia compositella* (Fabricius, 1775); *C. pallifrontana* (Karsholt & Rozowski 1996); *C. splendana* (Hübner, 1799); *C. tenebrosana* (Duponhel, 1843); *Dichrorampha acuminatana* (Lienig & Zeller, 1846) [*Chrysanthemum leucanthemum*]; *Epiblema cirsiana* (Zeller, 1843); *E. scutulana* ([Denis & Schiffermüller], 1775); *Grapholita (Grapholita) delineana* (Walker, 1863); *Gypsonoma aceriana* (Meyrick, 1895) [*Populus alba*, *Populus tremula*, *Populus canadensis*]; *G. minutana* (L.Gregory, 10.07.2003); *Lathronympha strigana* (Fabricius, 1775); *Lobesia botrana* (Denis & Schiffermüller, 1775); *L. euphorbianus* (Freyer, [1840]); *Rhopobota ustomaculana* (Curtis, 1831); *Sparganothis pilleriana* ([Denis & Schiffermüller], 1775).

Distribution: Oriental and Palaearctic.

1.2. Subfamily: Braconinae

1.2.1: *Bracon* Fabricius, 1804

1.2.1.1 Subgenus *Bracon* (s. str.) 1804

***Bracon (Bracon) chagrnicus* Beyarslan, 2002**

Material examined: Sivas, Gürün Suçatımahlesi, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.), (38°43'09.43"N, 37°20'22.89"E), 1289m, 20.7.2017, 1♀. Sularbaşı Köyü, (*Centaurea aspera*, *Galium murale*, *Medicago minima*, *Marrubium parviflorum*), (38°46'54.87"N, 37°18'48.56"E), 1415 m. 15.08.2017, 2♀♀.

Hosts: Unknown.

Distribution: Western Palaearctic (Türkiye).

***Bracon (Bracon) intercessor* Nees, 1834**

Material examined: Sivas, Gürün Sularbaşı Köyü, (*Centaurea aspera*, *Galium murale*, *Medicago minima*, *Marrubium parviflorum*), (38°46'54.87"N, 37°18'48.56"E), 1415 m. 15.08.2017, 2♀♀.

Hosts: **Chalcidoidea. Eurytomidae:** *Tetramesa hyalipennis* (Walker 1832); *T. rossica* (Rimsky-Korsakov 1914). **Coleoptera, Attelabidae:** *Attelabus nitens* (Scopoli, 1763). **Cerambycidae:** *Agapanthia villosoviridescens* (De Geer, 1775) [*Aster tripolium*]; *A. violacea* (Fabricius, 1775); *Phytoecia coerulea* (Scopoli, 1763) [*Anchusa* sp.]. **Curculionidae:** *Anthonomus (Anthonomus) pedicularius* (Linnaeus, 1758); *A.(A.) pomorum* (Linnaeus 1758); *A. sorbi* Germar, 1821, *Curculio crux* Fabricius, 1777; *Curculio salicivorus* Paykull, 1792; *Lixus (Eulixus) brevirrostris* Boheman 1835; *L. (E.) incanescens* Boheman 1835 [*Atriplex patula hastata*]; *L. (Compsolixus) juncii* Boheman 1835; *Microlarinus lareynii* (Jacquelin du Val 1852); *M. lypriformis* (Wollaston 1861); *Sibinia femoralis* Germar, 1824. **Rhynchitidae:** *Rhynchites bacchus* (Linnaeus, 1758). **Brentidae:** *Apion opeticum* Bach, 1854. **Diptera. Agromyzidae:** *Liriomyza huidobrensis* (Blanchard, 1926). **Lepidopera. Coleophoridae:** *Augasma atraphaxidellum* (Kuznetsov, 1957). **Gelechiidae:** *Scrobipalpa obsoletella* (Fischer von Röslerstamm, 1841). **Sesiidae:** *Chamaesphacia astatiformis* (Herrich-Schäffer, 1845); *Paranthrene tabaniformis* (Rottemburg, 1775) [*Populus* sp.]; *Synanthedon culiciformis* (Linnaeus, 1758). **Tortricidae:** *Sparganothis pilleriana* (Voukassovitch 1924). **Yponomeutidae:** *Argyresthia conjugella* Zeller 1839. **Hymenoptera. Tenthredinidae:**

Pontania (Eupontania) acutifoliae Zinovjev, 1985; *P. bella* (Zaddach, 1876); *P. (Eupontania) kriechebaumeri* Konow 1901; *P. (P.) nigricantis* (Kopelke, 1986) [*Salix nigricans*]; *Pontania (Eupontania) pedunculi* (Hartig, 1837); *Pontania vesicator* (Bremi-Wolf 1849); *Pontania (Eupontania) viminalis* (Linnaeus, 1758).

Distribution: Palaearctic.

***Bracon (Bracon) nigratus* (Wesmael, 1838)**

Material examined: Sivas, Gürün Eskihamal Köyü, (*Stipalagas parviflora*, *S. barbata*, *Alyssum minus*, *A. desertorum*), 38°52'49.86"N, 37°28'30.79"E, 1536 m, 14.05.2018, 1♀.

Hosts: **Diptera. Tephritinae:** *Chaetostomella cylindrica* (Robineau-Desvoidy, 1830). **Lepidoptera. Coleophoridae:** *Coleophora millefolii* Zeller, 1849. **Tortricidae:** *Cydia compositella* (Fabricius, 1775). **Zygaenidae:** *Zygaena (Mesembrynus) minus* (Denis & Schiffermüller, 1775); *Zygaena minus* ([Denis & Schiffermüller], 1775).

Distribution: Palaearctic.

1.2.1.2. Subgenus: *Glabrobracon* Fahringer, 1927

***Bracon (Glabrobracon) ahngeri* Telenga, 1936**

Material examined Examples examined: Kastamonu, Ilgaz Dağı, Dorukhotel, Eksik Köyü (*Rosa canina*, *Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp., *Robinia pseudoacacia*) (41°00'35.21"N, 33°40'39.37"E), 1286 m, 20.07.2015, 2♀♀.

Hosts: Unknown.

Distribution: Palaearctic.

***Bracon (Glabrobracon) lividus* Telenga, 1936**

Material examined: Kastamonu, Ilgaz Dağı 35 km. (*Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp., *Robinia pseudoacacia*), (42°08'35.21"N, 33°42'39.37"E), 1180 m, 21.07.2015, 2♀♀. Sivas, Gürün, Şuğul Vadisi (Şuğul Mahallesi), (*Prunus armeniaca*, *Prunus* sp., *Amygdalus communis*, *Rosa* sp., *Astragalus* sp., *Allium* sp., *Anchusa* sp.) (38°44'18.43"N, 37°14'24.10"E), 1345m, 38°44'18.43"N, 37°14'24.10"E, 1345 m, 06.08.2017, 1♂; Sularbaşı Köyü, (*Centaurea aspera*, *Galium murale*, *Medicago minima*, *Marrubium parviflorum*), (38°46'54.87"N, 37°18'48.56"E), 1415 m, 15.08.2017, 2♀♀.

Hosts: **Hymenoptera. Tenthredinidae:** *Pontania vesicator* (Bremi, 1849).

Distribution: Palaearctic.

***Bracon (Bracon) minutator* (Fabricius, 1798)**

Material examined: Sivas, Gürün, Şuğul Vadisi (*Prunus armeniaca*, *Prunus* sp., *Amygdalus communis*, *Rosa* sp., *Astragalus* sp., *Allium* sp., *Anchusa* sp.) (38°44'18.43"N, 37°14'24.10"E), 1345 m, 06.08.2017, 2♀♀.

Hosts: **Coleoptera, Curculionidae:** *Anthonomus pomorum* (Linnaeus, 1758). **Diptera. Choloropidae:** *Lipara lucens* (Meigen, 1830). **Tephritidae:** *Noeeta pupillata* (Fallen, 1814); *Tephritis leontodontis* (De Geer, 1776); *Xyphosia miliaria* (Schrank, 1781); *Terellia serratulae* (Linnaeus, 1758); *Urophora quadrifasciata* (Meigen, 1826); *U. solstitialis* (Linnaeus, 1758); *Terellia colon* (Meigen, 1826). **Hymenoptera. Cephidae:** *Cephus pygmeus* (Linnaeus, 1767). **Lepidoptera. Gelechiidae:** *Metzneria lappella* (Linnaeus 1758). **Gracillariidae:** *Gracillaria syringella* (Haworth, 1828). **Noctuidae:** *Oria musculosa* (Hübner, [1808]); *Mesapamea secalis* (Linnaeus 1758); *Sesamia nonagrioides* (Lefebvre, 1827). **Psycidae:** *Epichnopterix sieboldi* (Mabuchi & Nakabo, 1997). **Sesiidae:** *Paranthrene tabaniformis* (Rottemburg, 1775) [*Populus marilandica*]; *Pennisetia Hylaeiformis* (Laspeyres, 1801). **Tortricidae:** *Archips oporana* (Linnaeus, 1758); *A. rosana* (Linnaeus, 1758); *A. xylosteanana* (Linnaeus, 1758); *Cochylis posterana* (Zeller, 1847); *Eugnosta zephyrana* (Treitscke, 1830); *Leguminivora glycinivorella* (Matsumura, 1898); *Rhyacionia buoliana* ([Denis & Schiffermüller], 1775).

Distribution: Palaearctic.

***Bracon (Glabrobracon) obscurator* Nees, 1811**

Material examined: Sivas, Gürün, Göbekören Köyü, *Prunus armeniaca*, *Prunus* sp., *Amygdalus communis*, *Fagus* sp., *Rosa* sp., *Salix* sp. *Amygdalus* sp., *Rosa canina*, *Rhus* sp., *Juniperus* sp.), (38°44'26.65"N, 36°55'25.79"E), 1792 m. 14.05.2018, 2♀♀.

Hosts: **Coleoptera, Curculionidae:** *Hylesinus fraxini* (Panzer, 1779); *Onthotomicus suturalis* (Gyllenhal, 1827). **Buprestidae:** *Trachys pumila* Illiger, 1803; *T. troglodytes* Kiesenwetter, 1857. **Scolytidae:** *Ips typographus* (Linnaeus, 1758). **Diptera, Phasiinae:** *Alophora costalis* (Malloch, 1929) [*Centaurea* sp.]. **Tephritidae:** *Cheilisia albipila* Meigen, 1838 (Syrphidae); *Hartigia xanthostoma* (Eversmann, 1847) [*Filipendula ulmaria*]; (Sarcophagidae) *Tephritis neesii* Meigen, 1830 [*Leucanthemum vulgare*]. **Lepidoptera, Coleophoridae:**

Coleophora caespitiella Zeller, 1839; *C. vulpecula* Zeller, 1849 [*Astragalus* sp.]. **Epermeniidae:** *Phaulernis fulviguttella* (Zeller, 1839). **Pyalidae:** *Phycitodes maritima* (Tengström, 1848); *Homoeosoma sinuellum* (Fabricius, 1794) [*Plantago lanceolata*]. **Tineidae:** *Agnathosia mendicella* ([Denis & Schiffermüller], 1775 [*Antrodia serialis*]); **Tortricidae:** *Dichrorampha sedatana* Busck, 1906; *Spilonota ocellana* (Denis & Schiffermüller, 1775).

Distribution: Palaearctic.

***Bracon (Glabrobracon) parvicornis* Thomson, 1892**

Material examined: Sivas, Gürün, Şuğul vadisi, (*Prunus armeniaca*, *Prunus* sp., *Amygdalus communis*, *Rosa* sp., *Astragalus* sp., *Allium* sp., *Anchusa* sp.) (38°44'18.43"N, 37°14'24.10"E), 1345 m. 06.08.2017, 2♂♂; Sularbaşı Köyü, (*Centaurea aspera*, *Galium murale*, *Medicago minima*, *Marrubium parviflorum*), (38°46'54.87"N, 37°18'48.56"E), 1415 m. 15.08.2017, 1♀; Göbekören Köyü, *Prunus armeniaca*, *Prunus* sp., *Amygdalus communis*, *Fagus* sp., *Rosa* sp., *Salix* sp. *Amygdalus* sp., *Rosa canina*, *Rhus* sp., *Juniperus* sp.), (38°44'26.65"N, 36°55'25.79"E), 1792 m. 14.05.2018, 2♀♀, 3♂♂; Eskihamal Köyü, (*Stipalagas parviflora*, *S. barbata*, *Alyssum minus*, *A. desertorum*), 38°52'49.86"N, 37°28'30.79"E, 1536 m. 14.05.2018, 4♀♀, 3♂♂.

Hosts: Unknown.

Distribution: Oriental and Palaearctic.

1.2.1.3. Subgenus: *Lucobracon* Fahringer, 1927

***Bracon (Lucobracon) erraticus* (Wesmael, 1838)**

Material examined: Sivas, Gürün, Işıtan Mezrası, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.), (38°43'09.43"N, 37°20'22.89"E), 1289 m, 15.09.2017, 2♀♀, 2♂♂; Göbekören Köyü, (*Prunus armeniaca*, *Prunus* sp., *Amygdalus communis*, *Fagus* sp., *Rosa* sp., *Salix* sp. *Amygdalus* sp., *Rosa canina*, *Rhus* sp., *Juniperus* sp.), (38°44'26.65"N, 36°55'25.79"E), 1792 m, 14.05.2018, 4♀♀, 8♂♂.

Hosts: Coleoptera. Chrysomelidae: *Gastrophysa viridula* (Degeer, 1775). **Diptera, Tephritidae:** *Chaetostomella cylindrica* Robineau-Desvoidy, 1830; *Orellia ruficauda* (Fabricius, 1794); *Terellia serratulae* (Linnaeus, 1758).

Hymenoptera. Sesiidae: *Pennisetia hylaeiformis* (Laspeyres, 1801). **Eurytomidae:** *Tetramesa* sp. [*Elytrigia repens*]; *Tetramesa hordei* (Harris, 1830); *Tetramesa hyalipennis* (Walker, 1832) [*Agropyron* sp., *Ammophila*

arenaria]; *T. linearis* (Walker, 1832) [*Elytrigia repens*]; *Urophora eriolepidis* Walker, 1832. **Lepidoptera. Tortricidae:** *Acleris rhombana* ([Denis & Schiffermüller], 1775); *Eupoecilia ciliana* Huebner, 1799; **Gelechiidae:** *Metzneria lappella* (Linnaeus, 1758).

Distribution: Afrotropical and Palaearctic.

1.2.1.4. Subgenus: *Osculobracon* Pap, 2012

***Bracon (Osculobracon) cingulator* Szépligeti, 1901**

Material examined: Sivas, Gürün Sularbaşı Köyü, (*Centaurea aspera*, *Galium murale*, *Medicago minima*, *Marrubium parviflorum*), (38°46'54.87"N, 37°18'48.56"E), 1415 m, 15.08.2017, 2♀♀.

Hosts: Unknown.

Distribution: Palaearctic.

1.3. Subfamily: Cheloninae

1.3.1. Genus: *Ascogaster* Wesmael, 1835

***Ascogaster (Ascogaster) similis* (Nees, 1816)**

Material examined: Kastamonu, Ilgaz Dağı 35 km. (*Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp., *Robinia pseudoacacia*), (42°08'35.21"N, 33°42'39.37"E), 1180 m, 21.07.2015, 3♀♀. Sivas, Gürün Eskihamal Köyü, (*Stipalagas parviflora*, *S. barbata*, *Alyssum minus*, *A. desertorum*) (38°52'49.86"N, 37°28'30.79"E), 1536 m, 14.05.2018, 3♂♂.

Hosts: Lepidoptera. Tortricidae: *Cydia splendana* (Hübner, 1799); *Spilonota ocellana*. ([Denis & Schiffermüller], 1775); **Gelechiidae:** *Teleiodes saltuum* (Zeller, 1839). **Yponomeutidae:** *Yponomeuta padella*. (Linnaeus, 1758).

Distribution: Palaearctic.

1.3.2. Genus: *Chelonus* Panzer, 1806

***Chelonus (Chelonus) caradrinae* Kokujev, 1914**

Material examined: Sivas, Gürün, Şuğul Vadisi (Şuğul Mahallesi), (*Prunus armeniaca*, *Prunus* sp., *Amygdalus communis*, *Rosa* sp., *Astragalus* sp., *Allium* sp., *Anchusa* sp.) (38°44'18.43"N, 37°14'24.10"E), 1345 m. 06.08.2017, 1♀; Yazyurdu Township (*Amygdalus* sp., *Rosa canina*, *Rhus* sp., *Juniperus* sp., *Salix* sp., *Populus* sp., *Astragalus*) (38°48'11.27"N, 36°55'40.89"E), 1798 m. 15.09.2017, 2♀♀.

Host: Lepidoptera: Noctuidae: *Spodoptera exigua* (Huebner, 1808).

Distribution: Palaearctic.

***Chelonus (Chelonus) processiventris* Tobias, 1964**

Material examined: Sivas, Gürün, Yazyurdu Township (*Amygdalus sp.*, *Rosa canina*, *Rhus sp.*, *Juniperus sp.*, *Salix sp.*, *Populus sp.*, *Astragalus*) (38°48'11.27"N, 36°55'40.89"E), 1798 m. 15.09.2017, 1♀, 2♂♂.

Hosts: Unknown.

Distribution: Palaearctic.

1.3.3. Genus: *Microchelonus* Szépligeti, 1908

***Microchelonus (Microchelonus) kopetdagicus* (Tobias, 1966)**

Material examined: Sivas, Gürün, Işıtan Mezrası, (*Allium sp.*, *Anchusa sp.*, *Astragalus sp.*, *Cyperus sp.*, *Hypericum sp.*), (38°43'09.43"N, 37°20'22.89"E), 1289 m. 15.9.2017, 4♀♀.

Hosts: Unknown.

Distribution: Palaearctic.

***Microchelonus (Microchelonus) eximius* (McComb, 1968)**

Material examined: Kastamonu, Ilgaz Dağı 35 km. (*Juniperus sp.*, *Quercus sp.*, *Abies sp.*, *Picea sp.*, *Carpinus sp.*, *Robinia pseudoacacia*), (42°08'35.21"N, 33°42'39.37"E), 1180 m. 21.07.2015, 1♀, 2♂♂.

Hosts: **Lepidoptera. Tortricidae:** *Aethes rutilana* (Hübner, [1817]). **Gelechiidae:** *Coleotechnites piceaella* (Kearfott, 1903).

Distribution: Holarctic. New to Turkey.

***Chelonus (Microchelonus) exilis* Marshall, 1885**

Material examined: Sivas, Gürün, Yazyurdu Township (*Amygdalus sp.*, *Rosa canina*, *Rhus sp.*, *Juniperus sp.*, *Salix sp.*, *Populus sp.*, *Astragalus*) (38°48'11.27"N, 36°55'40.89"E), 1798 m. 15.09.2017, 2♀♀.

Hosts: **Lepidoptera. Cosmopterigidae:** *Cosmopterix scribaiella* (Zeller, 1850) [*Phragmites communis*].

Elashictidae: *Elachista gangabella* (Zeller, 1850) [*Brachypodium pinnatum*]. **Momphidae:** *Lienigia lienigiella* (Liening & Zeller, 1846). **Pyralidae:** *Myelois circumvoluta* (Fourcroy, 1785).

Distribution: Palaearctic.

1.4. Subfamily: Doryctinae

1.4.1. Genus: *Rhaconotus* (Ruthe, 1854)

***Rhaconotus (Rhaconotus) aciculatus* Ruthe, 1854**

Material examined: Sivas, Gürün Eskihamal Köyü, (*Stipalagas parviflora*, *S. barbata*, *Alyssum minus*, *A.*

desertorum), (38°52'49.86"N, 37°28'30.79"E), 1536 m.14.05.2018, 1♀.

Hosts: **Coleoptera, Buprestidae:** *Agrius viridis* (Linnaeus, 1758); *Anthaxia Igcockii* Obenberger, 1917; *Caryedon sp.*

Chrysomelidae: *Caryedon serratus* (Olivier, 1790); *Lixus Glaucopterum lukjanovitschi* Putschkov, 1975.

Distribution: Oriental and Palearctic.

1.5. Subfamily: Euphorinae

1.5.1 Genus: *Meteorus* Haliday, 1835

***Meteorus rubens* (Nees, 1811)**

Material examined: Sivas, Gürün, Yazyurdu Köyü, Yazyurdu Bucağı (*Amygdalus sp.*, *Rosa canina*, *Rhus sp.*, *Juniperus sp.*, *Salix sp.*, *Populus sp.*, *Astragalus*) (38°48'11.27"N, 36°55'40.89"E), 1798 m. 15.09.2017, 2♀♀, 3♂♂.

Hosts: **Diptera. Chloropidae:** *Meromyza americana* (Fitch, 1856) [*Triticum aestivum*]; **Lepidoptera.**

Coleophoridae: *Coleophora malivorella* (Riley, 1878).

Gelechiidae: *Pexicopia malvella*; (Common, 1958);

Phthorimaea operculella (Zeller, 1873). **Geometridae:**

Idaea muricata; (Hufnagel, 1767). **Lasiocampidae:**

Eriogaster lanestrus; (Linnaeus, 1758). **Lymantriidae:**

Orgyia antiqua (Linnaeus, 1758). **Noctuidae:** *Agrotis*

exclamationis (Linnaeus, 1758); *A. gladiatoria* (Morrison,

1875); *A. ipsilon* (Hufnagel, 1766); *A. malefida* (Guenée,

1852); *A. obesa* (Boisduval, 1829); *A. orthogonia*

(Morrison, 1876); *A. segetum* (Denis & Schiffermüller,

1775); *A. subterranea* (Fabricius, 1794); *A. tokionis*

(Butler, 1881); *A. vestigialis* (Hufnagel, 1766);

Anticarsia gemmatalis (Hübner, 1818); *Apamea*

devastator (Brace, 1819); *Apamea lateritia* (Hufnagel,

1766); *Apamea zeta* (Treitschke, 1825); *Autographa*

californica; (Speyer, 1875); *Autographa gamma*

(Linnaeus, 1758); *Autoplusia egena* (Guenée, 1852);

Celaena leucostigma (Hübner, 1808); *Cerapteryx*

graminis (Linnaeus, 1758); *Discestra trifolii* (Hufnagel,

1766); *Euxoa auxiliaris* (Grote, 1873); *E. messoria*

(Harris, 1841); *E. ochrogaster* (Guenée, 1852); *E.*

perexcellens (Grote, 1875); *E. temera* (Hübner, 1808); *E.*

tristicula (Morrison, 1875); *E. tritici* (Linnaeus, 1761);

Feltia jaculifera (Guenée, 1852); *F. subgothica* (Haworth,

1809); *Helicoverpa armigera* (Hübner, 1809); *Lacanobia*

oleracea (Linnaeus, 1758), *Lithophane antennata* (Walker,

1858); *Mamestra brassicae* (Linnaeus, 1758); *Mesapamea*

stipata (Morrison, 1875); *Noctua pronuba* (Linnaeus,

1758); *Ochrolepura fennica* (Tauscher, 1806)

(Syn. *Actebia fennica*); *Peridroma saucia* (Hübner, 1808); *Spodoptera exigua* (Hübner, 1808) (*Zea mays*); *S. frugiperda* (J.E. Smith, 1797); *S. littoralis* (Boisduval, 1833); *S. praefica* (Grote, 1875); *Syngrapha epigaea* (Grote, 1874); *Xestia c-nigrum*; (Linnaeus, 1758).

Nymphalidae: *Vanessa cardui* (Linnaeus, 1758). **Pieridae:** *Colias eurytheme* (Boisduval, 1852); *Achyra bifidalis* (Fabricius, 1794); *Hellula undalis* (Fabricius, 1794); *Nomophila noctuella* (Denis ve Schiffermüller, 1775); *Omphalocera cariosa* (Lederer, 1863); *Pococera militella* (Zeller, 1848). **Thaumetopoeidae:** *Thaumetopoea wilkinsoni* (Tams, 1926). **Tortricidae:** *Acleris maccana* (Treitschke, 1835); *Eupoecilia ambiguella* (Hübner, 1796); *Lobesia botrana* (Denis & Schiffermüller, 1775); *Pandemis heparana* (Denis & Schiffermüller, 1775); *Tortrix viridana* (Linnaeus, 1758). **Yponomeutidae:** *Yponomeuta malinella* (Zeller, 1838).

Distribution: Nearctic, Neotropic, Oriental and Palaearctic.

1.6. Subfamily: Helconinae

1.6.1 Genus: *Diospilus* Haliday, 1833

Diospilus (Diospilus) inflexus Reinhard, 1862

Examples examined: Sivas, Gürün, Hüyükliuyurt Köyü, *Salix* sp., *Populus* sp., *Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp (38°46'11.65"N, 37°00'44.41"E), 1783 m. 15.05.2018, 14♀♀, 13♂♂.

Hosts: Unknown.

Distribution: Western Palaearctic.

1.7. Subfamily: Hormiinae

1.7.1. Genus: *Hormius* Nees, 1819

Hormius moniliatus (Nees, 1811)

Material examined: Sivas, Gürün, Sularbaşı Köyü (*Centaurea aspera*, *Galium murale*, *Medicago minima*, *Marrubium parviflorum*), (38°46'54.87"N, 37°18'48.56"E), 1415 m. 15.08.2017, 5♀♀, 6♂♂.

Hosts: **Lepidoptera. Coleophoridae:** *Coleophora trifariella* Zeller, 1849. **Crambidae:** *Achyra nudalis* (Hübner, 1796); *Hellula undalis* (Fabricius, 1781); *Paratalanta hyalinalis* (Hübner 1796); *Pyrausta aurata* (Scopoli, 1763 [*Mentha piperita*]; *Pyrausta purpuralis* (Linnaeus, 1758); *Pyrausta sanguinalis* (Linnaeus, 1767).

Elachistidae: *Agonopterix assimilella* (Treitschke, 1832).

Gelechiidae: *Dichomeris marginella* (Fabricius, 1781); *Pexicopia malvella* (Hübner, 1805). **Oecophoridae:**

Agonopterix adpersella (Kollar, 1832); *Depressaria pulcherrimella* Stainton, 1849. **Tortricidae:** *Archips crataegana* (Hübner, 1799); *Pandemis corylana* (Fabricius, 1794). **Scythrididae:** *Scythris inspersella* (Hübner 1817).

Distribution: Holarctic and Oriental.

1.8. Subfamily: Macrocentrinae

1.8.1 Genus: *Macrocentrus* Curtis, 1833

Macrocentrus collaris (Spinola, 1808)

Material examined: Sivas, Gürün, Suçatımahlesi, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.), (38°43'09.43"N, 37°20'22.89"E), 1289 m. 20.07.2017, 3♀♀, Şuğul vadisi, (*Prunus armeniaca*, *Prunus* sp., *Amygdalus communis*, *Rosa* sp., *Astragalus* sp., *Allium* sp., *Anchusa* sp.) (38°44'18.43"N, 37°14'24.10"E), 1345 m. 06.08.2017, 2♀♀; Sularbaşı Köyü, (*Centaurea aspera*, *Galium murale*, *Medicago minima*, *Marrubium parviflorum*), (38°46'54.87"N, 37°18'48.56"E), 1415 m. 15.08.2017, 3♀♀; Göbekören Köyü, *Prunus armeniaca*, *Prunus* sp., *Amygdalus communis*, *Fagus* sp., *Rosa* sp., *Salix* sp. *Amygdalus* sp., *Rosa canina*, *Rhus* sp., *Juniperus* sp.), (38°44'26.65"N, 36°55'25.79"E), 1792 m. 14.05.2018, 5♂♂.

Hosts: **Coleoptera. Anobiidae:** *Anobium punctatum* De Geer, 1774. **Elateridae:** *Agriotes lineatus* Linnaeus, 1758.

Lepidoptera. Geometridae: *Lycia hirtaria* (Clerck, 1759).

Lymantriidae: *Lymantria monacha* (Linnaeus, 1758).

Noctuidae: *Acronicta tridens* Schiffermüller, 1776; *Agrotis clavis clavis* (Hufnagel 166); *A. exclamationis* (Linnaeus, 1758); *A. ipsilon* (Hufnagel, 1766) [*Zea mays*]; *A. segetum* Denis & Schiffermüller, 1775; *Apamea sordens* Hufnagel, 1766; *Chalciope mygdon* (Cramer, 1777); *Chersotis rectangula* [Schiffermüller], 1775; *Chrysodeixis chalcites* (Esper, 1789); *Diloba caeruleocephala* (Linnaeus, 1758); *Euxoa cursoria* Hufnagel, 1766; *Helicoverpa armigera* (Hübner, [1809]); *Mamestra brassicae* (Linnaeus, 1758); *Noctua pronuba* (Linnaeus, 1758); *Polymixis xanthomista* (Hübner, 1819) [*Anthyllis vulneraria*]; *Spodoptera littoralis* Boisduval, 1833; *S. litura* (Fabricius, 1775);

Nymphalidae: *Polygonia c-album* (Linnaeus, 1758).

Tortricidae: *Eupoecilia ambiguella* (Hübner, 1796); *Notocelia roborana* (Denis & Schiffermüller, 1775).

Yponomeutidae: *Yponomeuta malinellus* (Zeller, 1838).

Distribution: Afrotropical, Neotropical, Oriental and Palaearctic.

***Macrocentrus nidulator* (Nees, 1834)**

Examples examined: Kastamonu, Ilgaz Dağı 35 km. (*Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp., *Robinia pseudoacacia*), (42°08'35.21"N, 33°42'39.37"E), 1180 m. 21.07.2015, 3♀♀.

Hosts: **Lepidoptera. Gelechiidae:** *Metzneria metzneriella* (Stainton, 1851). **Tortricidae:** *Eucosma hohenwartiana* ([Denis & Schiffermüller], 1775). **Yponomeutidae:** *Yponomeuta malinella* (Zeller, 1838). **Oecophoridae:** *Batia lambdella* (Donovan, 1793).

Distribution: Palaearctic. New to Turkey.

1.9. Subfamily: Opiinae

1.9.1. Genus: *Opius* Wesmael, 1835

1.9.1.1. Subgenus: *Agnopius* Fischer, 1982

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

Material examined: Sivas, Gürün Eskihamal Köyü (*Stipalagas parviflora*, *S. barbata*, *Alyssum minus*, *A. desertorum*), 38°52'49.86"N, 37°28'30.79"E, 1536 m. 14.05.2018, 2♂♂.

Hosts: Unknown.

Distribution: Palaearctic.

1.9.1.2. Subgenus: *Allotypus* Förster, 1862

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

Material examined: Sivas, Gürün Suçatımahlesi, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.), (38°43'09.43"N, 37°20'22.89"E), 1289 m. 20.07.2017, 2♀♀.

Hosts: **Lepidoptera. Tortricidae:** *Ancylis mitterbacheriana* (Denis & Schiffermüller, 1775). **Diptera. Cecidomyiidae:** *Asphondylia verbasci* (Vallot, 1827). **Agromyzidae:** *Chromatomyia primulae* (Robineau-Desvoidy, 1851). **Ephydriidae:** *Hydrellia griseola* (Fallen, 1813). **Anthomyiidae:** *Pegomya solennis* (Meigen, 1826). **Tephritidae:** *Tephritis leontodontis* (De Geer, 1776).

Distribution: Holarctic.

1.9.1.3. Subgenus: *Ilicopius* Fischer, 1992

***Opius (Ilicopius) solymosae* Fischer, 1989**

Material examined: Sivas, Gürün Işıtan Mezrası, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.), (38°43'09.43"N, 37°20'22.89"E), 1289 m. 2♀♀.

Hosts: Unknown

Distribution: Western Palaearctic (Hungary).

1.9.1.4. Subgenus: *Misophthora* Förster, 1862

***Opius (Misophthora) pulicariae* Fischer, 1969**

Material examined: Sivas, Gürün, Eskihamal Köyü, (*Stipalagas parviflora*, *S. barbata*, *Alyssum minus*, *A. desertorum*), 38°52'49.86"N, 37°28'30.79"E, 1536 m. 14.05.2018, 3♀♀.

Hosts: **Diptera. Agromyzidae:** *Chromatomyia syngenesiae* Hardy 1849 [*Picris hieracioides*]; *Ophiomyia pulicaria* (Meigen 1830) [*Picris hieracioides*, *Taraxacum officinale*]; *Phytomyza ranunculi* (Schrank 1803) [*Ranunculus acer*]; *Phytomyza virgaureae* Hering, 1826.

Distribution: Palaearctic.

1.9.1.5. Subgenus: *Opiognathus* Fischer, 1972

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

Material examined: Kastamonu, Ilgaz Dağı 35 km. (*Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp., *Robinia pseudoacacia*), (42°08'35.21"N, 33°42'39.37"E), 1180 m. 21.07.2015, 4♀♀.

Hosts: Unknown.

Distribution: Western Palaearctic.

4.1.9.6. Subgenus: *Utetes* Förster, 1862

***Opius (Utetes) testaceus* Wesmael, 1838**

Material examined: Kastamonu, Ilgaz Dağı 35 m. (*Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp., *Robinia pseudoacacia*), (42°08'35.21"N, 33°42'39.37"E), 1180 m. 21.07.2015, 3♀♀.

Hosts: **Diptera. Anthomyiidae:** *Pegomya hyoscyami* (Panzer, 1809) [*Beta vulgaris*]; *Pegomya solennis* (Meigen, 1826). **Tephritidae:** *Euphranta connexa* (Fabricius 1794); *Goniglossum wiedemanni* (Meigen, 1826); *Rhagoletis cerasi* (Linnaeus, 1758) [*Prunus avium*].

Distribution: Palaearctic.

***Opius (Utetes) curtipectus* Fischer, 1958**

Material examined: Kastamonu, Ilgaz Dağı 35km. (*Juniperus* sp., *Quercus* sp., *Abies* sp., *Picea* sp., *Carpinus* sp., *Robinia pseudoacacia*), (42°08'35.21"N, 33°42'39.37"E), 1180 m. 21.07.2015, 2♂♂.

Host: **Diptera. Agromyzidae:** *Aulagromyza populi* (Kaltenbach, 1864) [*Populus alba*].

Distribution: Western Palaearctic.

1.10. Subfamily: Rogadinae

1.10.1. Genus: *Aleiodes* Wesmael, 1838

***Aleiodes (Aleiodes) bicolor* (Spinol, 1808)**

Material examined: Sivas, Gürün, Yazyurdu Township (*Amygdalus* sp., *Rosa canina*, *Rhus* sp., *Juniperus* sp., *Salix* sp., *Populus* sp., *Astragalus*) (38°48'11.27"N, 36°55'40.89"E), 1798 m. 15.09.2017, 2♀♀.

Hosts: **Lepidoptera.** **Crambidae:** *Loxostege sticticalis* (Linnaeus, 1761); *Pyrausta purpuralis* (Linnaeus, 1758); *P. sanguinalis* (Linnaeus, 1767). **Geometridae:**

Apocheima cinerarius (Erschoff, 1874); *Archiearis parthenias* (Linnaeus, 1761); *Eupithecia linariata* (Denis & Schiffermuller, 1775); Operophtera (Hubner, 1825).

Lycaenidae: *Aricia agestis* (Denis & Schiffermuller, 1775); *A. artaxerxes* (Fabricius, 1793); *Cupido alcetas* (Hoffmannsegg, 1804); *C. minimus* (Fuessly 1775); *Lysandra coridon* (Poda, 1761); *Plebejus idas* (Linnaeus, 1761); *Polyommatus albicans* (Gerhard, 1851); *P. damon* (Denis & Schiffermuller, 1775); *P. eros* (Ochsenheimer, 1808); *P. icarus* (Rottemburg, 1775). **Lymantriidae:** *Dasychira albodentata* Bremer, 1864; *Leucoma salicis* (Linnaeus, 1758). **Noctuidae:** *Apamea sordens* (Hufnagel, 1766). **Nymphalidae:** *Maniola jurtina* (Linnaeus, 1758); *Aglais urticae* (Linnaeus, 1758).

Pterophoridae: *Emmelina monodactyla* (Linnaeus, 1758); *Hellinsia tephradactyla* (Hubner, 1813). **Zygaenidae:** *Jordanita chloros* (Hubner, 1813); *J. graeca* (Jordan, 1907); *Rhagades pruni* (Denis & Schiffermuller, 1775); *Zygaena filipendulae* (Linnaeus, 1758); *Z. ioniceræ* (Scheven, 1777); *Z. purpuralis* (Brunnich, 1763); *Z. viciae* (Denis & Schiffermuller, 1775).

Distribution: Palaearctic.

***Aleiodes (Aleiodes) circumscriptus* (Nees, 1834)**

Material examined: Sivas, Gürün Suçatımahlesi, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.), (38°43'09.43"N, 37°20'22.89"E), 1289 m. 20.07.2017, 5♀♀; İncesuyu Köyü, *Salix* sp., *Populus* sp., *Allium* sp., *Anchusa* sp., *Astragalus* sp., (38°45'56.96"N, 37°06'23.83"E), 1615 m. 15.09.2017, 1♀.

Hosts: **Lepidoptera,** **Arctiidae:** *Atolmis rubricollis* (Linnaeus, 1758). **Lymantriidae:** *Leucoma salicis* (Linnaeus, 1758). **Gelechiidae:** *Caryocolum amaurella* (Hering, 1924). **Geometridae:** *Thera variata* (Denis & Schiffermuller, 1775); *Abraxas grossulariata* Linnaeus, 1758; *Bupalus piniarius* Linnaeus, 1758; *Cyclophora ruficiliaria* (Herrich-Schaffer, 1855); *Epirrhoe galiata* (Denis & Schiffermuller 1775); *E. autumnata* (Borkhausen, 1794); *Eupithecia alliaris* (Staudinger,

1870); *E. linariata* (Denis & Schiffermuller, 1775); *E. subfuscata* (Haworth, 1809); *Gymnoscelis rufifasciata* (Haworth, 1809); *Hylaea fasciaria* (Linnaeus, 1758); *Lycia isabellae* (Harrison, 1914). **Noctuidae:** *Apamea crenata* (Hufnagel, 1766); *Autographa gamma* (Linnaeus, 1758); *Diarsia rubi* (Vieweg, 1790); *Helicoverpa armigera* (Hubner, 1808); *Hoplodrina octogenaria* (Goeze, 1781); *Lithomoia solidaginis* (Hubner 1803); *Mamestra brassicae* (Linnaeus, 1758); *Noctua fimbriata* (Schreber, 1759); *N.pronuba* (Linnaeus, 1758); *Orthosia gracilis* (Denis & Schiffermuller 1775); *O. incerta* (Hufnagel, 1766); *O. stabilis* (Denis & Schiffermuller, 1775); *Penicillaria jocosatrix* Guenee, 1852; *Pseudaletia unipuncta* (Haworth, 1809); *Spodoptera exigua* (Hubner, 1808); *Xestia agathina* (Duponchel, 1827); *X. baja* (Denis & Schiffermuller, 1775); *X.xanthographa* (Denis and Schiffermuller, 1775). **Pterophoridae:** *Pterophorus pentadactyla* (Linnaeus 1758). **Pyralidae:** *Dioryctria abietella* (Denis & Schiffermuller 1775); *Ebulea crocealis* (Denis & Schiffermuller, 1775). **Tortricidae:** *Archips rosana* (Linnaeus, 1758); *Croesia bergmanniana* Linnaeus, 1758; *C. holmiana* Linnaeus, 1758; *Cydia conicolana* (Heylaerts, 1874); *C. strobilella* (Linnaeus, 1758); *Pammene amygdalana* (Duponchel, 1842); *P. gallicolana* (Lienig & Zeller, 1846); *Tortrix viridana* (Linnaeus, 1758); *Zeiraphera griseana* (Hubner, 1799).

Distribution: Palaearctic.

***Aleiodes (Neorhogas) fortipes* (Reinhard, 1863)**

Examples examined: Sivas, Gürün, Eskihamal Köyü, (*Stipalagas parviflora*, *S. barbata*, *Alyssum minus*, *A. desertorum*), 38°52'49.86"N, 37°28'30.79"E, 1536 m. 14.05.2018, 3♂♂.

Hosts: Unknown.

Distribution: Western Palaearctic. New record for fauna of Turkey.

Discussion, Conclusion and Recommendations

Thirty-five species from 10 subfamilies were identified with the taxonomic studies conducted on Braconidae (Braconinae (Hymenoptera, Ichneumonoidea) Fauna in Gürün (Sivas) and Ilgaz mountain (Kastamonu). Hosts of 10 from these species which have parasitoid lifestyle are not known. Species of each subfamily determined were as follows: Agathidinae (3 species), Braconinae (10), Cheloninae (6), Doryctinae (1), Euphorinae (1), Helconinae (1), Hormiinae (1), Macrocentrinae (2), Opiinae (7) and Rogadinae (3). The most common

subfamilies of the research area are Braconinae, Opiinae and Cheloninae, respectively. From the other subfamilies

Doryctinae, Euphorinae, Helconinae and Hormiinae are represented by one species (Fig.1).

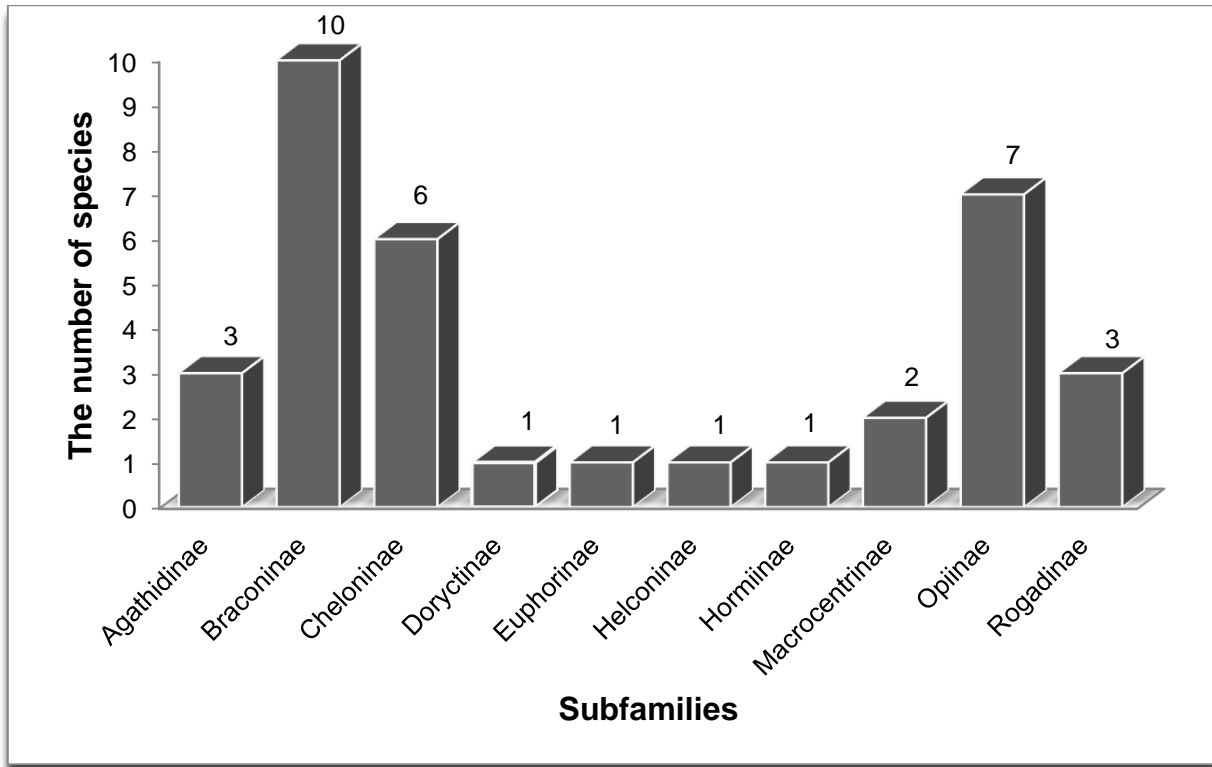


Figure 1. Studied subfamilies and their species number.

All species are the first record for the study field. The species *Aleiodes (Neorhogas) fortipes*, *Macrocentrus nidulator*, *Microchelonus (Microchelonus) eximius*, *Opius (Ilicopius) solymosae* are the new record for fauna of Turkey. The study revealed very common species distributed as follows: *Macrocentrus collaris* Afrotropical, Neotropical, Oceanic, Oriental and Palaearctic, *Hormius moniliatus* Holarctic, Oceanic and Oriental regions.

The species *Macrocentrus collaris*, *Meteorus rubens* and *Bracon (Glabrobracon) osculator* are promising species for biological control. *Macrocentrus collaris* has also been placed in the New Zealand for biological control against species of Anobiidae and Elateridae (Coleoptera), Geometridae, Lymantriidae, Noctuidae, Nymphalidae, Tortricidae and Yponomeutidae (Lepidoptera). It is distributed in following provinces of Turkey: Adana, Adapazarı, Adıyaman, Aksaray, Ankara, Antalya, Balıkesir, Bursa Çanakkale, Çankırı, Edirne, Elazığ, Erzurum, Gaziantep, Hatay, İçel, Kahramanmaraş, Karabük, Kastamonu, Kayseri, Kırklareli, Kırşehir, Malatya, Nevşehir, Niğde, Sivas, Şanlıurfa, Yozgat

(Beyarslan and Aydogdu, 2012). Therefore this species proposed for biological control against insect pests in Turkey.

Meteorus rubens is distributed in Neartic, Neotropical, Oriental and Palaearctic regions. In addition, it uses 65 different harmful insect's larvae of Chloropidae (Diptera), Coleophoridae, Gelechiidae, Geometridae, Lasiocampidae, Lymantriidae, Noctuidae, Nymphalidae, Thaumetopoeidae, Tortricidae and Yponomeutidae (Lepidoptera) as host. *Meteorus rubens* is a parasitoid of *Thaumetopoea pityocampa*, a pine moth, which causes significant damage in our pine forests, especially in the Mediterranean, Aegean and Marmara regions.

Also *B.(G.) osculator* is parasitoid of 30 species of following families: Coleophoridae, Cosmopterigidae, Tortricidae, Nepticulidae, Elachistidae, Elachistidae, Elachistidae, Momphidae, Tortricidae (Lepidoptera). It was introduced into New Zealand for biological control. This species can be used for biological control of above-mentioned pests in Turkey, too. The distributions of the remaining species are as follows: 20 species in

Palaeartic, 5 species in Western Palaeartic, 3 species in Oriental and Palaeartic, 1 species in Afrotropical and Palaeartic, 2 species in Holarctic and 1 species in Holarctic and Oriental regions. *Bracon chagrnicus* is distributed in Turkey which may be endemic to Turkey. *Opius (Ilicopius) solymosae* has been identified in Hungary (Fischer, 1989) and it recorded with this study in Turkey (Gürün, Sivas).

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