

## TAXONOMIC INVESTIGATIONS ON BRACONIDAE (HYMENOPTERA) FAUNA OF BİTLİS NEMRUT CALDERA AND ITS AROUND

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**[Beyarslan, A. & Şahin, F. 2018. Taxonomic investigations on Braconidae (Hymenoptera) fauna of Bitlis Nemrut Caldera and its around. Munis Entomology & Zoology, 13 (1): 292-308]**

**ABSTRACT:** In order to determine Braconidae fauna of Turkey, adult specimens of Braconidae (Hymenoptera, Braconidae) were collected from various habitats of Bitlis Nemrut Caldera and its around using Malaise and light traps and sweeping nets among 2013 and 2016. The Nemrut volcano or the Nemrut Stratovolcan include the second largest crater lake in the world. The Bitlis Nemrut Mountain Caldera was regarded as a biodiversity center in 2002 and has been declared a natural area. Because it is hosting different plant and animal species. In this research were recorded height, coordinates and dominant plant genus as ecological information of the working area. Obtained material was prepared according modern taxonomic rules and appropriately labeled. Relevant literature and comparison material available in our collection was used for taxonomical examination of the material collected. The altitudes and coordinates of localities, collection dates are given. In total, 39 species belonging 12 genera of 9 subfamilies are reported for the studied region. *Opius (Utetes) curtipectus* (Fischer, 1958) is new to the fauna of Turkey.

**KEY WORDS:** Stratovolcano, Nemrut Caldera, Bitlis, Braconidae, Hymenoptera

Nemrut volcano or Nemrut Stratovolcano is located on south-western shore of Ahlat and Tatvan districts found in Bitlis provincial border boundaries of Lake Van. Its elliptic diameter is 7-8 km. There are a cold water lake with 155-m depth and a small hot water lake (İlksu) on the west of the Caldera. The cold water lake is the second biggest crater lake in the world. The summit of the mountain is 3050 m high. Sivritepe, the highest hill, is 2935 m high, Eastern Nemrut Hill is 2625 m high, Tursuktepe in the south is 2828 m high, and Hill of Mount Nemrut in the west is 2801 m high (Fig. 1). Mount Nemrut in Bitlis is one of the highest mountains of Eastern Anatolia region. Nemrut volcano is a dormant volcano and erupted lava in 1441 for the last time. Crater chimneys erupting hot vapor also exist sporadically in the Caldera. Caldera of Mount Nemrut, Bitlis, was considered as a center of biological diversity in 2002 in terms of its plant and animal species and announced as the nature site. Mount Nemrut, Bitlis, also formed a basis for formation of Lake Van as a result of volcanic eruptions (Kemal & Koçak, 2006).

Caldera of Nemrut is habitat for numerous species such as communities of Silver birch (*Betula pendula*), Eurasian aspen (*Populus tremula*), Norway maple (*Acer platanoides*), different species of Service tree (*Sorbus* spp.), Alder buckthorn (*Frangula alnus*), Cotoneaster Lacteus (*Cotoneaster* sp.), Mahaleb cherry (*Cerasus mahaleb*), Plum (*Prunus* sp.), Oak species (*Quercus* spp.), Juniper (*Juniperus communis*), and Crater buttercup (*Ranunculus crateris*) which is endemic to crater (Büyüksaraç et al., 2016). In addition to these plant communities, it also hosts a great number of herbaceous plants (45-500 taxa).

Fauna of Nemrut Caldera includes hedgehog (*Erinaceus concolor*), brown hare (*Lepus europaeus*), microtus pennsylvaticus (*Microtus schidlovskii*), Anatolian ground squirrel (*Spermophilus xanthophrymnus*), Anatolian lesser mole (*Nannospalax xanthodon*), red fox (*Vulpes vulpes*), beech marten (*Martes foina*), marbled polecat (*Vormela peregusna*), Brown bear (*Ursus arctos*), and wild boar (*Sus scrofa*) among mammal species (Büyüksaraç et al., 2016).

Members of the family Braconidae are distributed all across the world. It is a large family with major economic importance in agriculture, which has approximately 19652 species known under 1056 genera. 36 of 46 Braconidae subfamilies known have located in Western Palearctic Region (Yu et al., 2012). Members of Braconidae are very common and successful survivors in tropical and subtropical zones of the ancient world. However, 23 subfamilies are widespread in Turkey, 9 of them were identified in the research area. Thanks to the studies started by us in 1979 to identify Turkey's Braconidae fauna, other regions of Turkey except for Ağrı, Ardahan, Bingöl, Bitlis, Hakkari, Iğdır, Kars, Mardin, Muş, Siirt, and Şanlıurfa provinces have been studied so far. The following subfamilies of Braconidae and the number of species they represent have been recorded: Adelinae: 2, Agathidinae: 40, Blacinae: 22, Braconinae: 205, Charmontinae: 1, Cheloninae: 75, Doryctinae: 63, Euphorinae: 81, Exothecinae: 1, Helconinae: 10, Homolobinae: 3, Hormiinae: 1, Ichneutinae: 3, Macrocentrinae: 8, Microgasterinae: 167, Opiinae: 208, Orgilinae: 6, Rhyssolinae: 2, Rogadinae: 23. So a total of 920 species have been identified (Aydoğdu, 2015, 2016; Aydoğdu & Beyarslan, 2002a,b, 2006a,b, 2007, 2009, 2011; Beyarslan, 1986a,b, 1987a,b, 1988, 1991, 1992, 1995, 1996a,b, 1999, 2001a,b, 2002a,b, 2009a,b, 2010, 2011a,b,c; 2014, 2015a,b,c,d, 2016a,b; Beyarslan & Aydogdu, 2012, 2013; Beyarslan et al., 2002a,b, 2004, 2005, 2006, 2008a,b,c, 2010, 2011, 2013a,b, 2014; Beyarslan & Çetin Erdoğan, 2010, 2011a,b, 2012; Beyarslan & Çoban, 2014; Beyarslan & Fischer, 1990, 2011, 2013; Beyarslan, & Inanç, 1990a,b, 1992a,b, 1994, 1995, 1997, 2001; Bolu et al., 2009; Çetin Erdoğan, 2006, 2008, 2010, 2012; Çetin Erdoğan, & Beyarslan, 2001, 2004, 2005a,b, 2006, 2009, 2015, 2016; Çetin Erdoğan et al., 2008, 2009; Çıkman & Beyarslan, 2009; Çıkman et al., 2006; Fahringer, 1922, 1934; Fahringer & Friese, 1921; Fischer & Beyarslan, 2005a,b, 2011, 2012, 2013; Gözüaçık et al., 2008; İnanç & Beyarslan, 1990a,b, 2001a,b,c, 2002; Kohl, 1905; Koldaş et al., 2007, 2013; Özgen et al., 2012; Papp, 1989, 1990; Tomanović et al., 2008; Yılmaz & Beyarslan, 2008, 2009; Yılmaz et al., 2010; Yu et al., 2012; Zettel & Beyarslan, 1992).

Braconids are parasitoid insects and live as parasitoid on larvae and pupae of holometabolous insects (Coleoptera, Diptera, Hymenoptera, Lepidoptera, Trichoptera) except for Megaloptera and Siphonaptera, on eggs of Pseudoscorpionida and Araneae from Chelicerata, and adults of Araneae (Yu et al., 2012). These lead to death of host insect species (generally plant pest ) on which they live in the nature and conserve the natural balance in biosystem. Braconids are used in biological control due to these characteristics.

## MATERIAL AND METHOD

The present study was completed in three stages:

**a. The material collection:** Plants found on the Mount Nemrut, Bitlis and its surrounding are separated into following formations of vegetation in terms of physiognomic-ecological characteristics: Herbages (Steppes), Mountain Steppes, Large pasture (pastures of Steppe), Anthropogenic Steppes, Communities of Shrubs, and Forest Communities. Based on these regions, the materials were

collected within the scope of BEBAP (Bitlis Eren University Scientific Research Projects) 2013.05 project by going to these regions between July - October in 2013 and between April-October in 2014 and 2015. However, the region which was not visited frequently due to security was also studied within the scope of the BEBAP. 2016.06 project. In the daytime, samples were collected from weeds, cultivated plants, and trees with the aid of an atrap made of thin nylon gauze. Adult individuals were separated from other materials with suction tube and immediately exterminated in suction tubes with cigarette smoke or in extermination bottles containing ethyl-acetate. They were taken to laboratory inside material storage containers. Samples coming into Malesia traps which were established in certain locations were selected and taken into storage containers. Nocturnal species were caught with light traps established at nights. During the field studies, the date of study, coordinates, heights, and dominant plants (at least genus or family level) of localities where the study was conducted were recorded. Information on parasitoids, hosts, general distributions (in terms of zoogeographical region) and parasitoids of species are given according Belokobylskij & Tobias (2000), Tobias (1986), and Yu et al. (2012). In the text, the host plants of host species are shown in brackets.

**b. Preparation:** When returning from field study, samples were cleansed from ethyl alcohol by transferring into distilled water and dried on plain paper by revealing morphological characteristics which are crucial for identification. Then they were glued onto triangle cardboards attached on insect needles and marked with tags of locality.

**c. Taxonomic Examination:** Comparison material in our collection and related literature were utilized when evaluating the study material (van Achterberg, 1976, 1990; Belokobylskij, 1993; Belokobylskij & Tobias, 2000; Beyarslan & Çetin Erdoğan, 2011, 2012; Beyarslan & Fischer, 1990, 2011, 2013; Beyarslan & Tobias, 2008; Fischer, 1972; Fischer & Beyarslan, 2005a; Papp, 1989, 1990; Shaw & Huddleston, 1991; Telenga, 1936; Tobias, 1986). An asterisk (\*) was used within the text for the species that were recorded in Coldera.

## RESULTS

### Familiya: Braconidae

#### 1. Subfamily: Agathidinae

##### 1.1. Genus: *Agathis* Latreille, 1804

##### *Agathis malvacearum* Latreille, 1805

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°N, 42°19'17"E), 1784 m. 13.06.2015, 15♀, 30♂♂.

**Hosts:** **Lepidoptera. Coleophoridae:** *Coleophora galbulipennella*. Zeller, 1838 [*Silene* sp.]; *C. graminicolella* Heinemann, 1877. **Pterophoridae:** *Hellinsia didactylites* (Ström, 1783); *Hellinsia didactylites* (Ström, 1783). **Gelechiidae:** *Metzneria aestivella* (Zeller, 1839); *M. lappella*. (Linnaeus, 1758). [*Arctium minus*]; *Pexicopia malvella* (Hübner, 1805); *Phalaena resinella* Linnaeus 1758.

**Distribution:** Holarctic.

#### 2. Subfamily: Braconinae

##### 2.1. Genus: *Bracon* Fabricius, 1804

##### 2.1.1. Subgenus: *Bracon* (s.strs.) Fabricius, 1804

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

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 1♀.

**Hosts:** Unknown.

**Distribution:** West Palaearctic.

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

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.09.2014, 1♂; (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 2♂♂; Bitlis, Ahlat, Abdurrahman Gazi (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°45'27"N, 42°31'41"E), 1649 m. 06.09.2014, 1♂; Bitlis, Tatvan Mezra, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°45'27"N, 42°18'40"E), 1654 m. 13.09.2014, 1♂; Bitlis, Nemrut Dağı, Büyük Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°38'35"N, 42°41'15"E), 2488 m. 07.08.2015, 2♂♂; (38° 37' 10"N, 42° 14' 28"E), 2247 m. 13.09.2014, 1♂.

**Hosts:** **Chalcidoidea. Eurytomidae:** *Tetramesa hyalipennis* (Walker, 1832); *Tetramesa rossica* (Rimsky-Korsakov, 1914). **Coleoptera. Attelabidae:** *Attelabus nitens* (Scopoli, 1763). **Cerambycidae:** *Agapanthia villosoviridescens* (De Geer, 1775) [*Aster tripolium*]; *Agapanthia violacea* (Fabricius, 1775); *Phytoecia coerulescens* (Scopoli, 1763) [*Anchusa* sp.]. **Curculionidae:** *Anthonomus (Anthonomus) pedicularis* (Linnaeus, 1758); *A. (A.) pomorum* (Linnaeus, 1758); *A. sorbi* Germar, 1821; *Curculio crux* Fabricius, 1777; *Curculio salicivorus* Paykull, 1792; *Lixus (Eulixus) brevisrostris* Boheman, 1835, *L. (E.) incanescens* Boheman, 1835 [*Atriplex patula hastata*]; *L. (Compsolixus) juncii* Boheman, 1835; *Microlarinus lareynii* (Jacquelin du Val, 1852); *M. typriformis* (Wollaston, 1861); *Sibinia femoralis* Germar, 1824. **Rhynchitidae:** *Rhynchites bacchus* (Linnaeus, 1758); **Brentidae:** *Apion opeticum* Bach, 1854. **Diptera. Agromyzidae:** *Liriomyza hüidobrensis* (Blanchard, 1926). **Lepidoptera. Coleophoridae:** *Augasma atraphaxidellum* (Kuznetsov, 1957); **Gelechiidae:** *Scrobipalpa obsoletella* (Fischer von Röslerstamm, 1841). **Sesiidae:** *Chamaesphacia astatifomis* (Herrich-Schäffer, 1845), *Paranthrene tabaniformis* (Rottensburg, 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) kriebhbaumeri* Konow, 1901; *P. (P.) nigricantis* (Kopelke, 1986), [*Salix nigricans*]; *Pontania (Eupontania) pedunculi* (Hartig, 1837); *Pontania vesicator* (Bremsi-Wolf, 1849); *Pontania (Eupontania) viminalis* (Linnaeus, 1758).

**Distribution:** Palaearctic.

**\**Bracon (Bracon) longicollis* (Wesmael, 1838)**

**Material examined:** Bitlis, Nemrut Dağı, Küçük İlk Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°37'10"N, 42°14'28"E), 2485 m. 13.08.2014, 3♂♂.

**Hosts:** **Diptera. Chloropidae:** *Chlorops (Chlorops) pumilionis* (Bjerkander, 1778) [*Hordeum vulgare*].

**Distribution:** Oriental, Palaearctic.

**\**Bracon (Bracon) luteator* Spinola, 1808**

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 09.08.2014, 2♂♂; Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 1♂; Bitlis, Ahlat, Sarı Kum Village, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Hypericum* sp.) (38°37'23"N, 42°25'01"E), 1688 m. (38°37'23"N, 42°25'01"E), 1688 m. 06.07.2014, 1♀; Bitlis, Nemrut Dağı, İlk Göl, (38°37'10"N, 42°14'28"E), 2485 m. 13.08.2014, 3♂♂. *Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°37'10"N, 42°14'28"E), 2485 m. 13.09.2014, 1♀.

**Hosts:** **Lepidoptera. Gelechiidae:** *Metzneria aestivella* (Zeller, 1839). *Metzneria lappella* (Linnaeus, 1758). **Diptera. Tephritidae:** *Urophora solstitialis* (Linnaeus, 1758).

**Distribution:** Palaearctic.

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

**Material examined:** Bitlis, Tatvan Mezra (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°28'56"N, 42°18'40"E), 1654 m. 13.09.2014, 1♂.

**Hosts:** **Diptera. Tephritinae:** *Chaetostomella cylindrica* (Robineau-Desvoidy, 1830).

**Lepidoptera. Coleophoridae:** *Coleophora millefolii* Zeller, 1849. **Tortricidae:** *Cydia compositella* (Fabricius, 1775). **Zygaenidae:** *Zygaena (Mesembrynus) minos* (Denis & Schiffermüller, 1775); *Zygaena minos* ([Denis & Schiffermüller], 1775).

**Distribution:** Palaearctic.

**\**Bracon (Bracon) querceus* Tobias, 1986**

**Material examined:** Bitlis, Nemrut Dağı, İlk Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°37'10"N, 42°14'28"E), 2485 m. 13.09.2014, 1♀, 1♂; Bitlis, Tatvan Mezra (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°28'56"N, 42°18'40"E), 1654 m. 13.09.2014, 1♂; Bitlis, Nemrut Dağı, Büyük Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°38'35"N, 42°41'15"E), 2488 m. 13.09.2014, 2♂♂.

**Hosts:** Unknown.

**Distribution:** West Palaearctic.

**\**Bracon (Bracon) trucidator* Marshall, 1888**

**Material examined:** Bitlis, Nemrut Dağı, İlk Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°37'10"N, 42°14'28"E), 2485 m. 13.09.2014, 1♀, 2♂♂.

**Hosts:** **Coleoptera. Curculionidae:** *Ceutorhynchus fairmairei* Brisout, 1880.

**Diptera, Tephritidae:** *Myopites inulaedysentericae* Blot, 1827; *Urophora solstitialis* Linnaeus, 1758 [*Carduus nutans*]. **Lepidoptera. Pyralidae:** *Homoeosoma nebulella* ([Denis & Schiffermüller], 1775). **Gelechiidae:** *Metzneria lappella* (Linnaeus, 1758).

**Distribution:** Palaearctic.

**2.1.2. Subgenus: *Glabrobracon* Fahringer, 1927*****Bracon (Glabrobracon) lividus* Telenga, 1936**

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 2 E, 1♀; Bitlis, Ahlat, Sari Kum Village, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Hypericum* sp.) (38°37'23"N, 42°25'01"E), 1688 m. 06.09.2014, 1♂.

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

**Distribution:** Palaearctic.

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

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 1♀.

**Hosts:** Unknown.

**Distribution:** Palaearctic.

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

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 5.8.2014, 1♀.

**Hosts:** **Coleoptera. Anobiidae:** *Ernobius nigrinus* (Sturm, 1837). **Buprestidae:** *Coraeus florentinus* (Herbst, 1801). **Chrysomelidae:** *Bruchidius lividimanus* (Gyllenhal, 1833); *B. poupillieri* Allard, 1868; *Bruchus atomarius* (Linnaeus, 1761); *B. laticollis* Boheman, 1833; *B. lentis* Frölich, 1799; *B. victae* Olivier, 1795. **Curculionidae:** *Anthonomus pomorum* (Linnaeus, 1758); *Baris chlorizans* Germar, 1837; *B. cuprirostris* Germar, 1817; *B. laticollis* (Marshall, 1802); *Ceutorhynchus assimilis* Paykull, 1792; *C. punctiger* (Gyllenhal, 1837); *Gymnetron asellus* (Gravenhorst, 1807); *G. campanulae* (Campanula) Schoenherr, 1825; *G. tetrum* (Fabricius, 1792); *Larinus flavescens* Germar, 1824; *L. jaceae* (Fabricius, 1775); *L. planus* Germar, 1824; *L. turbinatus* (Gyllenhal, 1836); *Magdalis rufa* Germar, 1824; *Pissodes validirostris* Gyllenhal, 1835; *Sibinia viscaria* Linnaeus, 1761; *S. viscaria* (*Silene inflata*) Linnaeus, 1761; *Sitona longulus* Gyllenhal, 1834. **Diptera; Tephritidae:** *Sphenella marginata* Fallen, 1814; *Chaetostomella cylindrica* (Robineau-Desvoidy, 1830); *Noeeta pupillata* Fallen, 1814; *Tephritis*

*leontodontis* (DeGeer, 1776); *Urophora (Carduus) nutans* (Fabricius, 1775). **Anthomyiidae:** *Anthomyia albimana* Zetterstedt, 1845; *Botanophila seneciella* Meade, 1892; **Cecidomyiidae:** *Mikiola fagi* (Hartig, 1839). **Hymenoptera, Tenthredinidae:** *Hoplocampa minuta* (Christ, 1791); *H. brevis* (Klug, 1816); *H. flava* (Linnaeus, 1761); *Caliroa cerasi* (Linnaeus, 1758). **Lepidoptera. Amphipyrrinae:** *Gortyna xanthenes* (*Cynara scolymus*) Germar, 1844. **Coleophoridae:** *C. coronillae* Zeller, 1849; *C. medelichensis* Krone, 1908. **Gelechiidae:** *Mesophleps corsicella* Herrich-Schäffer, 1856; *Pexicopia malvella* (Huebner, 1805); *Platyedra subcinerea* (Haworth, 1828). **Geometridae:** *Perizoma lugdunaria* Herrich-Schäffer 1855. **Gracillariidae:** *Phyllonorycter mespilella* (Huebner, 1805). **Hadeninae:** *Hadena bicurvis* (Hufnagel, 1766). **Lycaenidae:** *Lampides boeticus* (Linnaeus 1767). **Nymphalidae:** *Vanessa cardui* Linnaeus, 1758; Carposinidae: *Carposina niponensis* Walsingham 1900. **Pyralidae:** *Etiella zinckenella* (Treitschke, 1832); *Myelois circumvoluta* (Fourcroy, 1785); *Dioryctria abietella* ([Denis & Schiffermüller], 1775). **Sesiidae:** *Synanthedon andrenaeformis* Laspeyres 1801. **Tortricidae:** *Acleris variegana* (Malus) ([Denis & Schiffermüller], 1775); *Barbara herrichiana* Obraztsov 1960; *Cydia dorsana* Fabricius, 1775; *C. funebrana* (Treitschke, 1835); *Eucosma cana* (Haworth, 1811); *Gypsonoma aceriana* (Duponchel, 1843); *Pandemis cerasana* (Huebner, 1786); *Rhopobota naevana* (Malus) (Huebner, 1817); *Rhyacionia resinella* (Linnaeus, 1758).

**Distribution:** Palaearctic.

### 2.1.3. Subgenus: *Orthobracon* Fahringer, 1927

#### \**Bracon (Orthobracon) longiantennatus* Tobias, 1957

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 19.08.2014, 1♀; Bitlis, Nemrut Dağı, İlk Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°37'10"N, 42°14'28"E), 2485 m. 13.09.2014, 2♀♀.

**Hosts:** Unknown.

**Distribution:** Eastern Palaearctic.

### 2.1.4. Subgenus: *Pigeria* van Achterberg, 1985

#### *Bracon (Pigeria) piger* (Wesmael, 1838)

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 09.08.2014, 1♂; Bitlis, Ahlat, Abdurrahman Gazı, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Hypericum* sp.) 38°45'27"N, 42°31'41"E), 1649 m. 6.9.2014, 1♂; Bitlis, Ahlat, Sari Kum Village, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Hypericum* sp.) (38°37'23"N, 42°25'01"E), 1688 m. 06.09.2014, 1♂.

**Hosts:** **Coleoptera. Curculionidae:** *Pissodes validirostris* (Sahlberg, 1834).

**Lepidoptera. Tortricidae:** *Cnephasia longana* (Haworth, 1811); *Cydia nigricana* (Fabricius, 1794). **Noctuidae:** *Heliothis peltigera* ([Denis & Schiffermüller], 1775).

**Pyralidae:** *Etiella zinckenella* (Treitschke, 1832).

**Distribution:** Holarctic.

### 2.2. Genus: *Glyptomorpha* Holmgren, 1868

#### 2.2.1. Subgenus: *Glyptomorpha* Holmgren, 1868

##### *Glyptomorpha (Glyptomorpha) pectoralis* (Brullé, 1832)

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 1♀.

**Hosts:** **Coleoptera. Buprestidae:** *Chrysobothris affinis* (Fabricius, 1794); *Sphenoptera gossypii* Kerremans, 1892; *S. laticollis* (Olivier, 1790); *S. montana* Dejean, 1833. **Cerambycidae:** *Plagionotus arcuatus* (Linné, 1758).

**Distribution:** Afrotropical, Oriental, Palaearctic.

### 2.3. Genus: *Pseudovipio* Szépligeti, 1896

#### \**Pseudovipio inscriptor* (Nees, 1834)

**Material examined:** Bitlis, Nemrut Dağı, İlk Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°37'10"N, 42°14'28"E), 2485 m. 13.09.2014, 1♀.

**Host:** **Lepidoptera. Crambidae:** *Ostrinia nubilalis* (Hübner, 1796).

**Distribution:** Palaearctic.

### 3. Subfamily: **Cheloninae**

#### 3.1. Genus: **Ascogaster Wesmael, 1835**

##### *\*Ascogaster bidentula* Wesmael, 1835

**Material examined:** Bitlis, Nemrut Dağı Krater Lake, (*Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°37'10"N, 42°14'28"E), 2485 m. 18.07.2015, 3♀♀.

**Hosts:** **Lepidoptera. Tortricidae:** *Archips rosana* Linnaeus, 1758, *Epinotia cruciana* (Linnaeus, 1761). **Geometridae:** *Eupithecia venosata* (Fabricius, 1787), *Gypsonoma sociana* (Haworth, 1811), *Notocelia roborana*, *Pandemis* sp., *Rhopobota myrtilana* (Humphreys & Westwood, 1845).

**Distribution:** Oriental, Palaearctic.

##### *\*Ascogaster excisa* (Herrich-Schäffer, 1838)

**Material examined:** Bitlis, Nemrut Dağı (*Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Pinus* sp.), (38°38'10"N, 42°15'28"E), 2485 m. Krater Lake batı kesimi, 20.07.2015, 2♀♀.

**Hosts:** Unknown.

**Distribution:** Palaearctic.

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

**Material examined:** Bitlis, Nemrut Dağı Krater Lake batı kesimi, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°37'10"N, 42°14'28"E), 2485 m. 20.06.2015, 2♀♀.

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

**Yponomeutidae:** *Yponomeuta padella*. (Linnaeus, 1758).

**Distribution:** Palaearctic.

#### 3.2. Genus: **Chelonus Panzer, 1806**

##### 3.2.1. Subgenus **Chelonus (s.str.) Panzer, 1806**

##### *Chelonus (Chelonus) corvulus* Marshall, 1885

**Material examined:** Bitlis, Ahlat, Abdurrahman Gazi, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., (38°45'37"N, 42°31'17"E), 1671 m. 16.09.2015, 1♂.

**Hosts:** **Lepidoptera. Noctuidae:** *Autographa gamma* (Linnaeus, 1758), *Eublemma pannonica* (Freyer, 1840), *E. respersa* (Hübner, 1790), *Shargacucullia verbasci* (Linnaeus, 1758), *Spodoptera exigua* (Hübner, [1808]). **Sesiidae:** *Chamaesphecia leucopsiformis* (Esper 1800). **Coleophoridae:** *Coleophora caespitiella* Zeller, 1839. **Tortricidae:** *Dichrorampha simpliciana* (Haworth, 1811), *Epiblema foenella* (Linnaeus, 1758).

**Gelechiidae:** *Scrobipalpa atriplicella* (Fischer von Röslerstamm, 1841).

**Distribution:** Palaearctic.

##### *Chelonus (Chelonus) oculator* (Fabricius, 1775)

**Material examined:** Bitlis, Tatvan, Polisevi, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Salix* sp., *Populus* sp., *Juniperus* sp.), (38°30'07"N, 42°16'19"E), 1675 m. 13.09.2014, 1♂.

**Hosts:** **Lepidoptera. Noctuidae:** *Agrotis segetum*. ([Denis & Schiffermüller], 1775), *Chortodes elymi* (Treitschke, 1825). **Coleophoridae:** *Coleophora anatipennella*. (Hübner, 1796). **Tortricidae:** *Cydia corticana* Hübner, 1825, *Zeiraphera isertana* (Fabricius, 1794). **Pyralidae:** *Ephestia kuehniella* Zeller, 1879; *Etiella zinckenella*. (Treitschke, 1832), *Homoeosoma nebulella* ([Denis & Schiffermüller], 1775). **Noctuidae:** *Noctua armigera* Hübner, [1805]; *Heliothis peltigera* ([Denis & Schiffermüller], 1775); *H. virescens* (Hufnagel, 1766); *Leucania loreyi* (Duponchel, 1827) [*Zea mays*]; *Spodoptera exigua* (Hübner, [1808]); *S. littoralis* (Boisduval, 1833). **Crambidae:** *Loxostege sticticalis* (Linnaeus, 1761); *Ostrinia nubilalis* (Hübner, 1796).

**Distribution:** Palaearctic.

##### 3.2.2. Subgenus: **Stylochelonus Hellén, 1958**

##### *Chelonus (Stylochelonus) mucronatus* Thomson, 1874

**Material examined:** Bitlis, Ahlat, Sarı Kum Village, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Hypericum* sp.) (38°37'23"N, 42°25'01"E), 1688 m. 06.10.2014, 1♀; Bitlis, Tatvan, Mezra, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Hypericum* sp.) (38°28'56"N, 42°18'40"E), 1654 m. 13.9.2014, 1♂; Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 15.08.2014, 1♂.

**Hosts:** Unknown.

**Distribution:** Palaearctic.

#### 4. Subfamily: Euphorinae

##### 4.1. Genus: *Wesmaelia* Förster, 1862

###### *Wesmaelia petiolata* (Wollaston, 1858)

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 13.07.2014, 1♀.

**Hosts:** **Hemiptera. Nabidae:** *Nabis alternatus* Parshley, 1922; *Nabis americanoferus* Carayon, 1961; *Nabis capsiformis* Germar, 1838.

**Distribution:** Holarctic, Neotropical, Oriental.

#### 5. Subfamily: Hormiinae

##### 5.1. Genus: *Hormius* Nees, 1819

###### *Hormius moniliatus* (Nees, 1811)

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 06.09.2014, 3♀♀, 10♂♂.

**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.

#### 6. Subfamily: Macrocentrinae

##### 6.1. Genus: *Macrocentrus* Curtis, 1833

###### *Macrocentrus collaris* (Spinola, 1808)

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 6♀♀, 1♂, Bitlis, Tatvan, Mezra, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°28'56"N, 42°18'40"E), 1654 m. 13.09.2014, 1♂. Bitlis, Bitlis Eren Üniversitesi Kampüsü, (*Allium* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°28'54"N, 42°09'08"E), 11823 m. 17.09.2015, 8♀♀, 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:** *Acrionicta 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 rectangularis* [Schiffermüller], 1775; *Chrysodexis chalcides* (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; *Spodoptera 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.

#### 7. Subfamily: Opiinae



**7.1. Genus: *Opius* Wesmael, 1835****7.1.1. Subgenus: *Allophlebus* Fischer, 1972*****Opius (Allophlebus) tabificus* Papp, 1979**

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 20.08.2014, 1♀.

**Hosts:** Unknown.

**Distribution:** Afrotropical, Neotropical, Oriental and Palaearctic.

**7.1.2. Subgenus: *Cryptonastes* Foerster, 1862*****Opius (Cryptonastes) pygmaeus* Fischer, 1962**

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp.), (38°26'40"N, 42°19'19"E), 1721 m. 09.08.2014, 2♀♀, 2♂♂. Bitlis, Tatvan, Mezra, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Pinus* sp.), (38°30'7"N, 42°16'52"E), 1695 m. 13.09.2014, 1♀, 2♂♂.

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

**Distribution:** Palaearctic.

**7.1.3. Subgenus: *Merotrachys* Fischer, 1972*****Opius (Merotrachys) filicornis* Fischer, 1963**

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp.), (38°26'40"N, 42°19'19"E), 1721 m. 18.08.2014, 1♀, 1♂.

**Hosts: Diptera. Agromyzidae: *Phytomyza scotina*** Hendel, 1920.

**Distribution:** Neotropical.

**7.1.4. Subgenus: *Nosopoea* Foerster, 1862*****Opius (Nosopoea) speciosus* Fischer, 1959**

**Material examined:** Bitlis, Tatvan, Mezra, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp.), (38°30'7"N, 42°16'52"E), 1695 m. 13.09.2014, 1♂.

**Hosts:** Unknown.

**Distribution:** West Palaearctic.

**7.1.5. Subgenus: *Phaedrotoma* Foerster, 1862*****Opius (Phaedrotoma) depeculator* Foerster, 1862**

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp.), (38°26'40"N, 42°19'19"E), 1721 m. 10.08.2014, 1♀.

**Hosts: Diptera. Agromyzidae: *Cerodontha denticornis*** (Panzer, 1806) [*Holcus lanatus*]; *Chromatomyia ramosa* (Hendel, 1923); *C. succisae*, (Hering, 1922); *Ophiomyia* sp. [*Medicago sativa*]; *Phytomyza griffithsi* Spencer, 1963 [*Plantago media*]; *P. plantaginis* Robineau-Desvoidy, 1851 [*Plantago lanceolata*].

**Distribution:** Palaearctic.

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

**Material examined:** Bitlis, Tatvan, Mezra, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp.), (38°30'7"N, 42°16'52"E), 1695 m. 13.08.2014, 2♀♀.

**Hosts. Diptera. Agromyzidae: *Calycomyza solidaginis*** (Kaltenbach, 1869) [*Solidago virgaurea*]; *Chromatomyia scabiosae* (Hendel, 1935) [*Scabiosa columbaria*]; *C. succisae*, (Hering, 1922); *C. syngenesiae*, Hardy 1849; *Liriomyza centaureae* Hering, 1927 [*Centaurea nigra*]; *Phytomyza gentianae* Hendel, 1920 [*Centaureum minus*]; *P. plantaginis* Robineau-Desvoidy, 1851.

**Distribution:** Palaearctic.

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

**Material examined:** Bitlis, Ahlat, Abdurrahman Gazi, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., (38°45'37"N, 42°31'17"E), 1671 m. 16.09.2014, 1♂; Bitlis, Tatvan, Küçüksu, (*Hypericum* sp., *Juniperus* sp., *Quercus*

sp., *Pinus* sp.), (38°26'40"N, 42°19'19"E), 1721 m. 19.08.2014, 5♀♀, 3♂♂. Bitlis, Tatvan, Mezra, (*Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°30'7"N, 42°16'52"E), 1695 m. 13.09.2014, 1♂.

**Hosts. Diptera. Agromyzidae:** *Agromyza nana* Meigen, 1830 [*Medicago sativa*, *Oxalis pescaprae*]; *A. rondensis* Strobl, 1900 [*Hordeum murinum*]; *Calycomyza solidaginis* (Kaltenbach, 1869) [*Solidago virgaurea*]; *Chromatomyia horticola* (Goureau, 1851); *Chromatomyia scabiosae* (Hendel, 1935); *Chromatomyia succisae* (Hering, 1922); *Chromatomyia syngenesiae* Hardy, 1849 [*Misopates orontium*]; *Liriomyza* sp. [*Artemisia vulgaris*, *Euphorbia paralias*]; *Liriomyza centaurea* Hering, 1927; *L. congesta* (Becker, 1903); *L. flaveola* (Fallén, 1823); *L. sonchi* Hendel, 1931 [*Conyza bonariensis*]; *L. strigata* (Meigen, 1830); *Phytomyza alpina* Groschke, 1957 [*Senecio jacobaea*]; *Phytomyza crassisetata* Zetterstedt, 1860; *P. gentianae* Hendel, 1920; *P. glechomae* Kaltenbach, 1862; *P. griffithsi* Spencer, 1963 [*Plantago media*]; *P. orobanchia* (Kaltenbach, 1864) [*Orobanche* sp.]; *P. plantaginis* Robineau-Desvoidy, 1851; *P. pullula* Zetterstedt, 1848 [*Achillea millefolium*]; *Scaptomyza graminu* (Fallén, 1823).

**Distribution:** West Palaearctic.

#### 7.1.6. Subgenus: *Utetes* Foerster, 1862

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

**Material examined:** Bitlis, Tatvan, Mezra, (*Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°30'7"N, 42°16'52"E), 1695 m. 23.09.2014, 1♂.

**Hosts:** Unknown.

This species is new to the fauna of Turkey.

**Distribution:** West Palaearctic.

### 8. Subfamily: Orgilinae

#### 8.1. Genus: *Orgilus* Haliday, 1833

##### \**Orgilus (Orgilus) pimpinellae* Niezabitowski, 1910

**Material examined:** Bitlis, Bitlis Nemrut Dağı, İlk Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°37'10"N, 42°14'28"E), 2485 m. 13.9.2014, 1♀, 2♂♂; 13.09.2014, 1♀, 2♂♂.

**Hosts: Lepidoptera. Elasmobranchidae:** *Agonopterix bipunctosa* (Curtis, 1850) [*Centaurea*].

**Gelechiidae:** *Anacamptis populella* (Clerck, 1759) [*Salix repens*]; *Anacamptis temerella* (Lienig & Zeller, 1846) [*Salix repens*]; *Argolamprotes micella* (Denis & Schiffermüller, 1775); *Athrips pruinosella* (Lienig & Zeller, 1846) [*Vaccinium uliginosum*]; *Caryocolum tricolorella* (Haworth, 1812); *Coleophora discordella* Zeller, 1849; *Dichomeris juniperella* (Linnaeus, 1761); *Phthorimaera operculella* (Zeller ?), *Scrobipalpa ocellatella* (Boyd ?). *Tinea nanella* Denis & Schiffermüller, 1775. **Coleophoridae:** *Coleophora spiraeella* Rebel, 1916. **Elachistidae:** *Depressaria pimpinellae* Zeller, 1839 [*Pimpinella major*]; **Acrolepiidae:** *Digitivalva arnicella* (Heyden, 1863). **Momphidae:** *Mompha miscella* ([Denis & Schiffermüller], 1775).

**Distribution:** West Palaearctic.

##### \**Orgilus (Orgilus) ponticus* Tobias, 1986

**Material examined:** Bitlis, Bitlis Nemrut Dağı, İlk Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°37'10"N, 42°14'28"E), 2485 m. 13.08.2014, 3♀♀.

**Hosts:** Unknown.

**Distribution:** Palaearctic.

### 9. Subfamily: Rogadinae

#### 9.1. Genus: *Aleiodes* Wesmael, 1838

##### \**Aleiodes (Aleiodes) bicolor* (Spinola, 1808)

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 10 ♀♀; Bitlis, Tatvan, Mezra, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°28'56"N, 42°18'40"E), 1654 m. 13.09.2014, 6 ♀♀; Bitlis, Bitlis Nemrut dağı, Büyük Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°38'35"N, 42°41'15"E), 2488 m. 13.09.2014, 5♀♀.

Bitlis, Bitlis Eren Üniversitesi Kampüsü, (*Allium* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°28'54"N, 42°09'08"E), 11823 m. 17.09.2015, 1♂.

**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* (♀, 1775); *Operophtera* sp. **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 albondentata* 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 tephrodactyla* (Hubner, 1813). **Zygaenidae:** *Jordanita chloros* (Hubner, 1813); *J. graeca* (Jordan, 1907); *Rhagades pruni* (Denis & Schiffermuller, 1775); *Zygaena filipendulae* (Linnaeus, 1758); *Z. lonicerae* (Scheven, 1777); *Z. purpuralis* (Brunnich, 1763); *Z. viciae* (Denis & Schiffermuller, 1775).

**Distribution:** Palaearctic.

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

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 2♀♀; Bitlis, Tatvan, Mezra, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°28'56"N, 42°18'40"E), 1654 m. 13.09.2014, 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); *Epirrita 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); *Lithomia solidaginis* (Hubner 1803); *Mamestra brassicae* (Linnaeus, 1758); *Noctua fimbriata* (Schreber, 1759); *N. pronuba* (Linnaeus, 1758); *Orthosia gracilis* (Denis & Schiffermuller 1775); *Orthosia 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 & 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 (Aleiodes) gastritor* (Thunberg, 1822)**

**Material examined:** Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 3♀♀.

**Hosts: Lepidoptera. Crambidae:** *Ostrinia nubilalis* (Hubner, 1796); *Phlyctaenia coronata* (Hufnagel, 1767). **Drepanidae:** *Cilix glaucata* (Scopoli, 1763). **Elachistidae:** *Depressaria absynthiella* (Herrich-Schaffer, 1865). **Geometridae:** *Alsophila pometaria* (Harris, 1841); *Apocheima cinerarius* (Erschoff, 1874); *A. Hispidaria* (Denis & Schiffermuller, 1775); *Chiasmia clathrata* (Linnaeus, 1758); *Chloroclystis v-ata* (Haworth, 1809); *Digrammia gnophosaria* (Guenee, 1857); *Epirrita autumnata* (Borkhausen, 1794); *Erannis defoliaria* (Clerck, 1759); *Eupithecia alliaris* (Staudinger, 1870); *E. miserulata* (Grote, 1863); *E. pusillata* (Denis & Schiffermuller, 1775); *Glena cribrataria* (Guenee,

1858); *Hylaea fasciaria* (Linnaeus, 1758); *Hypagyrtis unipunctata* (Haworth, 1809); *Isturgia limbaria* (Fabricius, 1775); *Lycia hirtaria* (Clerck, 1760); *Lycia pomonaria* (Hubner, 1790); *Operophtera brumata* (Linnaeus, 1758); *Phthonandria atrilineata* (Butler 1881); *Tephрина arenacearia* (Denis & Schiffermuller, 1775). **Lasiocampidae:** *Malacosoma neustria* (Linnaeus, 1758). **Lymantriidae:** *Euproctis chrysorrhoea* (Linnaeus, 1758); *E. similis* (Fuessly, 1775); *Hypena scabra* (Fabricius, 1798); *Leucoma salicis* (Linnaeus, 1758). **Noctuidae:** *Agrapha agnata* (Staudinger, 1892); *Autographa gamma* (Linnaeus, 1758); *Harpyia hermelina* (Stephens, 1829); *Helicoverpa armigera* (Hubner, 1808); *Pseudaletia unipuncta* (Haworth, 1809); *Spodoptera exigua* (Hubner, 1808); *Trichoplusia ni* (Hubner, 1803). **Notodontidae:** *Cerura vinula* (Linnaeus, 1758); *Taumatopoea processionea* (Linnaeus, 1758). **Yponomeutidae:** *Prays oleae* (Bernard, 1788). **Tortricidae:** *Archips rosana* (Linnaeus, 1758); *Lobesia botrana* (Denis & Schiffermuller, 1775).

**Distribution:** Holarctic and Oriental region.

**\*Aleiodes (Aleiodes) signatus (Nees, 1811)**

**Material examined:** Bitlis, Bitlis Nemrut dağı, Büyük Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°38'35"N, 42°41'15"E), 2488 m. 13.09.2014, 5♀♀; Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 4♀♀; Bitlis, Tatvan, Mezra, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°28'56"N, 42°18'40"E), 1654 m. 13.09.2014, 4♀♀.

**Hosts: Lepidoptera. Arctiidae:** *Arctia caja* (Linnaeus, 1758); *Coscinia cribraria* (Linnaeus, 1758); *Epicallia villica* (Linnaeus, 1758); *Ocnogyna baetica* (Rambur, 1837).

**Lymantriidae:** *Euproctis chrysorrhoea* (Linnaeus, 1758); *E. similis* (Fuessly, 1775); *Gynaephora selenitica* (Esper, 1789); *Orgyia antiqua* (Linnaeus, 1758); *O. aurolimbata* (Guenee, 1835). **Lasiocampidae:** *Euthrix potatoria* (Linnaeus, 1758). **Noctuidae:** *Acronicta psi* (Linnaeus, 1758); *A. rumicis* (Linnaeus, 1758); *Autographa gamma* (Linnaeus, 1758); *Noctua fimbriata* (Schreber, 1759); *N. pronuba* (Linnaeus, 1758). **Notodontidae:** *Taumatopoea pityocampa* (Denis & Schiffermuller, 1775); *T. processionea* (Linnaeus, 1758). **Tortricidae:** *Spilonota ocellana* (Denis & Schiffermuller, 1775).

**Distribution:** Palaearctic.

**\*Aleiodes (Tetrasphaeropyx) arcticus (Thomson, 1892)**

**Material examined:** Bitlis, Tatvan, Mezra, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°28'56"N, 42°18'40"E), 1654 m. 13. 09. 2014, 3♀♀; Bitlis, Tatvan, Küçüksu, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Hypericum* sp.) (38°26'14"N, 42°19'17"E), 1784 m. 05.08.2014, 7♀♀, 1♂; Bitlis, Bitlis Nemrut dağı, Büyük Göl, (*Allium* sp., *Anchusa* sp., *Astragalus* sp., *Cyperus* sp., *Euphorbia* sp., *Hypericum* sp., *Juniperus* sp., *Quercus* sp., *Pinus* sp.), (38°38'35"N, 42°41'15"E), 2488 m. 13.09.2014, 2♀♀.

**Hosts: Lepidoptera Arctiidae:** *Arctia caja* (Linnaeus, 1758). **Geometridae:** *Itame wanaria* (Linnaeus, 1758); *Macaria brunneata* (Thunberg, 1784); *M. fusca* (Thunberg, 1792).

**Distribution:** Palaearctic.

## DISCUSSION, CONCLUSION AND RECOMMENDATIONS

39 species from 9 subfamilies and 12 genera were identified with the taxonomic studies conducted on Braconinae (Hymenoptera, Braconidae) Fauna in Caldera of the Mount Nemrut, Bitlis and its surrounding in Bitlis. 15 of these species were determined in Caldera of the Mount Nemrut, Bitlis and 24 around the Mount Nemrut out of caldera. Species of each subfamily determined were as follows: Agathidinae 1 species, Braconinae 14 species, Cheloninae 6 species, Euphorinae 1 species, Hormiinae 1 species, Macrocentrinae 1 species, Opiinae 8 species, Orgilinae 2 species, Rogadinae 5 species.

All of these species are the first record for the study field. The species *Opius (Utetes) curtipectus* is the new record for fauna of Turkey. The study revealed

very common species distributed as follows: *Macrocentrus collaris* in Afrotropical, Neotropical, Oriental, and Palaearctic regions; *Opius (Allophlebus) tabificus* in Afrotropical, Neotropical, Oriental, and Palaearctic regions; *Glyptomorpha (Glyptomorpha) pectoralis* in Afrotropical, Oriental, and Palaearctic regions; *Wesmaelia petiolata* in Holarctic, Neotropical and Oriental regions; *Hormius moniliatus* in Holarctic and Oriental regions; *Ascogaster bidentula* and *Bracon (Bracon) longicollis* in Oriental and Palaearctic regions. Distribution of other species is limited to one region for each. 23 species distributed in Palaearctic region, 6 species in Western Palaearctic region, 1 species in Eastern Palaearctic region, 1 in Holarctic region and 1 species in Neotropical region. Hosts of 10 from these species which have parasitoid lifestyle are not known. *Bracon (Glabrobracon) variator* use 64 and *Aleiodes (Aleiodes) circumscriptus* 45 different pernicious bug larvae as host.

The pine processionary [*Thaumetopoea pityocampa* (Denis & Schiffermüller 1775)] is a moth causing important damage for our pine forests particularly in Mediterranean, Aegean, and Marmara regions. Because it is epidemic in the years when its population increases, it completely destroys pines (*Pinus brutia* (red pine), *P. nigra* (black pine), *P. sylvestris* (scots pine), *P. pinea* (stone pine), *P. haepensis* (Halep pine) and *Cedrus libani* (Anatolian cedar) in pine zone. *Aleiodes (A.) signatus* is parasitoid of this pest. It can be used for biological control of this pest which is hard to control.

Distribution area of *Bracon (Pigeria) piger* is Holarctic region. It was placed in Puerto Rico; USA.-California; USA- Oregon for biological control against species of Curculionidae (Coleoptera), Tortricidae, Pyralidae and Noctuidae (Lepidoptera). This species can be used for biological control of above-mentioned pests in Turkey, too.

## ACKNOWLEDGEMENTS

This research was supported by Bitlis Eren University Scientific Research Project Unit (BEBAP Projects 2013.05 and 2016.06). We thank to this institution for his financial support.

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Figure 1. Caldera of Bitlis Nemrut (Photo: O. Subaşı).

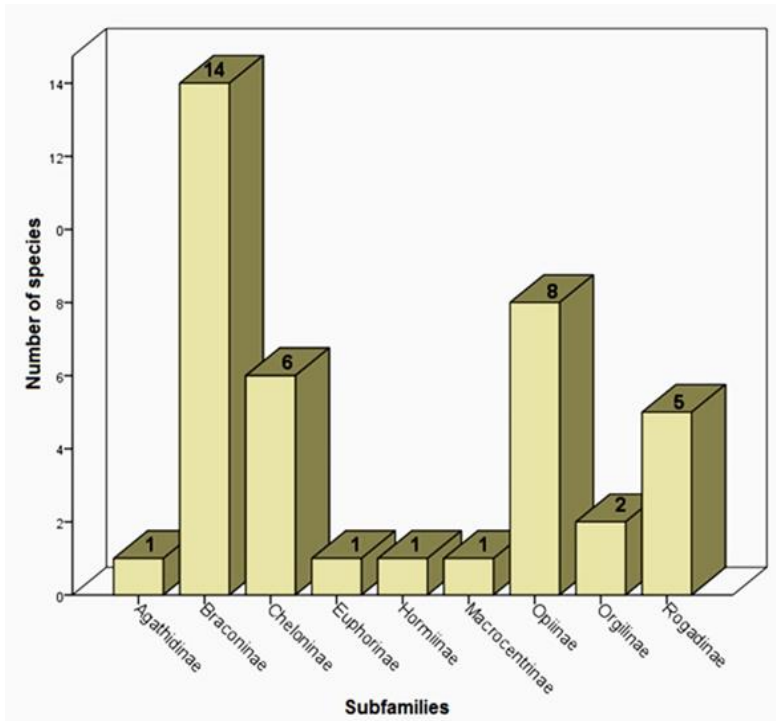


Figure 2. The number of species for each subfamily.