

## A Contribution to the Knowledge of Euphorinae (Hymenoptera: Braconidae) from Turkey

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### ABSTRACT

Present study was conducted in the Northeast Anatolian Region of Turkey during 1998-2006. Totally 19 species were determined in five genera of Euphorinae, (Hymenoptera: Braconidae). Of which, 6 species were newly recorded for the Turkish fauna. New distribution areas were added for the known species. Additionally, new host, *Hypocassida subferruginea* (Schrank) (Coleoptera, Chrysomelidae) was recorded for *Perilitus (Microctonus) brevicollis* Haliday, 1835.

*Key Words:* Euphorinae, Braconidae, Hymenoptera, new record, new host, fauna, Turkey

### INTRODUCTION

The Braconidae is one of the largest families in the Hymenoptera; it has been estimated that there are at least 40.000 braconid species in the world, but only a half of this number has yet been described, and the biology and taxonomy of very few of these species have been adequately worked out (Achterberg, 1984). The family is divided in to about 47 subfamilies (Yu *et al.* 2005). Nearly all species are primary parasitoids of other insect species in various orders and families (Gauld & Bolton 1988, van Achterberg, 1984).

The subfamily Euphorinae is medium-sized with regard to members of species it is represented with 375 species in the Palaeartic, and with 1113 species in world (Yu *et al.*, 2005). This subfamily is a cosmopolitan lineage of small parasitoid wasps that use the adult, nymphal, and larval stages of various insects as their hosts. They are solitary, rarely gregarious, and are koinobiont endoparasitoids of several different orders of insects including the following: Coleoptera, Hymenoptera, Lepidoptera, Neuroptera, Hemiptera, Psocoptera, and Orthoptera. Some species are potential biological control agents against harmful insects (Shaw, 2004; Yu *et al.*, 2005). Several Euphorinae parasitoids of Sitona weevils (Coleoptera, Curculionidae) have been introduced from Europe into Canada in an attempt the sweet clover weevil, *Sitona cylindricollis* Fahraeus a major economic pest of sweet clover in Canada and USA (Loan, 1963).

The Euphorinae comprises 30 genera in Palaeartic region (Tobias *et al.* 1995; Yu *et al.*, 2005) *Neoneurus* Haliday 1848, *Elasmosoma* Ruthe 1858, *Euneoneurus* Tobias

and Yuldashev 1979, *Elasmosoma* Ruthe 1858, *Parelasmosoma* Tobias and Yuldashev 1979, *Kollasmosoma* van Achterberg & Argaman 1993, *Cosmophorus* Ratzeburg 1849, *Chrysopophthorus* Goidanich 1948, *Wesmaelia* Förster 1862, *Aridelus* Marshall 1887, *Ussuraidelus* Tobias and Belokobylskij 1981, *Proclithrophorus* Tobias and Belokobylskij 1981, *Dinocampus* Förster 1862, *Rilipertus* Haeselbarth 1996, *Perilitus* Nees von Essenbeck 1835, *Zele* Curtis 1832, *Meteorus* Haliday 1835, *Ropalophorus* Förster 1862, *Ecclitura* Kokujev 1902, *Streblocera* Westwood 1833, *Cryptoxilos* Viereck 1911, *Marshiella* Shaw 1985, *Leiophron* Nees von Essenbeck 1818, *Syntretus* Förster 1862, *Myiocephalus* Marshall 1898, *Spathicopsis* van Achterberg 1977, *Pygostolus* Ratzeburg 1852, *Centistes* Haliday 1835, *Allurus* Förster 1862 and *Syrrhizus* Förster 1862.

There are some different opinions on how to classify the genera; Shaw (1985) has given an excellent review of the genera and recognized nine tribes and recognition of the subfamily Meteorinae Cresson for the genera *Meteorus* Haliday and *Zele* Curtis. Only four tribes, Euphorini, Cosmophorini, Centistini, Meteorini, are recognised by van Achterberg (1994) while Yu *et al.* (2005) listed 14 tribes (Centistini, Cosmophorini, Cryptoxilonini, Dinocampini, Euphorini, Helorimorphini, Meteorini, Myiocephalini, Neoneurini, Oncometeorini, Perilitini, Proclithrophorini, Syntretini, and Tainitermini).

Earlier contributions to the taxonomy of European Euphorinae are those Nees von Esenbeck (1818), Wesmael (1835), Haliday (1835) and Förster (1862). The more recent, notable taxonomic revisions on Palaearctic Euphorinae are those of Haeselbarth (1999) concentrating on the genus *Perilitus* revisions. Belokobylskij (1992) revised genus *Centistes* and eleven species recognized in Russian Far East. Van Achterberg (1994) revised genus *Chrysopophthorus* in Palearctic region and van Achterberg & Haeselbarth (2003) revised the genus *Syntretus*. Yu *et al.* (2005) in the West Palaearctic region occur 231 species and 360 in the East Palaearctic.

The knowledge of Euphorinae from Turkey is limited, particularly for eastern part of the country, the first information on the Euphorinae fauna of Turkey was given by Fahringer (1934). Until the present study, 63 species had been recorded from Turkey (Shenefelt, 1969; Papp, 1974, 1994; Kolarov, 1989; Achterberg & Haeselbarth 2003; Beyarslan *et al.*, 2004; Koldas *et al.* 2007 Yılmaz *et al.*, 2010).

## MATERIAL AND METHODS

Specimens were collected by sweeping with insect net from various habitats in different localities of Erzurum, Artvin, Erzincan, Kars, Iğdır and Ardahan provinces during the period from May to September during the years of 1998-2006. Collected specimens were pinned and labeled according to current taxonomic rules and regulations. To obtain parasitoids larval stages of various insects in different families and orders were collected in the field and reared in laboratory conditions (at room temperature with natural light) in culture cups (35x18x15cm). All braconid specimens were identified by Prof. Dr. V. I. Tobias and Dr. S. A. Belokobylskij (Zoological Institute, Russian Academy of Science, St. Petersburg, 199034, Russia). *Hypocassida subferruginea* (Schrank) (Coleoptera, Chrysomelidae) was identified by Prof. Dr.

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İrfan Aslan (Atatürk University, Faculty of Agriculture, Department of Plant Protection, 25240 Erzurum, Turkey) All specimens distribution was checked from Taxapad (Yu *et. al.* 2005). The material was deposited in the collection of Entomology Museum, Erzurum, Turkey (EMET).

## RESULTS

Totally 19 Euphorinae species were defined in five genera.

### List of the genera and species

#### **Allurus Förster 1862**

##### **Allurus lituratus (Haliday 1835)**

*Leiophron (Ancylus) lituratus* Haliday 1835 Ent. Mag. 2 461; *Ancylus lituratus* Curtis 1837 Guide Br. Insects 117.; *Leiophron lituratus* Reinhard 1862 Berl. ent. 6 335.; *Centistes excrucians* Loan 1964 Proc. ent. Soc. Ont. 94 56.; *Liophron lituratus* Kirchner 1867 Cat. Hym. Eur. 130.; *Centistes (Allurus) lituratus* Hellen 1958 Soc. Fauna Flora Fennica 4 25.; *Centistes lituratus* Loan 1963 Ann. ent. Soc. Am. 56 600.; *Allurus lituratus* Tobias 1965 Ent. Obozr. 44 858.; *Leiophron armatus* Wesmael 1835 Nouv. Mem. Acad. Bruxelles 9 105.

Female: Body 3,46 ± 0,51 mm, (3,40-3,50, n=6) Forewing 2,84 ± 0,08 mm (2,83-285, n=6).

Material examined: Erzincan, Sansaderesi, 1350 m, 25.V.2001, 1♀, leg. C. Güçlü; Tercan, Yaylacık, 1690 m, 25.V.2005, 2 ♀♀, 1 ♂, leg. C. Güçlü. Erzurum: Aşkale, Kop Mountain, 1900 m, 29.V.2001, 1♀, 2 ♂♂, leg. Ş. Güçlü; Köprüköy, Yağan, 1600 m, 20.V.I.2003, 1♀, leg. C. Güçlü. Kars, Kağızman, 1150 m, 15.V.2005, 1♀ leg. C. Güçlü.

Distribution: Armenia, Azerbaijan, Belgium, Bulgaria, Croatia, Czechoslovakia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Moldova, Poland, Spain, Sweden, Switzerland, United Kingdom, Former Yugoslavia.

Known from Turkey: Afyon, Amasya, Bilecik, Bursa, Çankırı, Çorum, Osmaniye, Erzurum, Elazığ, Denizli, Isparta, Malatya, Ordu, and Tokat (Yılmaz *et al.* 2010).

Hosts: *Sitona hispidula*, *S. lineata*, *S. crinitus*, *S. inops*, and *S. scissifrons* *S. humeralis*, *S. lineata*, *S. regensteiniensis*, *S. sulcifrons*, *Stigmella aceris*, *Stigmella obliquella*, *Stigmella torminalis* (Coleoptera, Curculionidae).

##### **Allurus muricatus (Haliday, 1833)**

*Ancylus muricatus* Haliday 1833 Ent. Mag. 1-261.; *Leiophron (Ancylus) muricatus* Haliday 1835 Ent. Mag. 2 460.; *Leiophron muricatus* Reinhard 1862 Berl. ent. Z. 6 335.; *Liophron muricatus* Marshall 1872 Cat. Br. Hym. 118.; *Centistes muricatus* Rudow 1918 Ent. Z. Frankf. M. 8-32.; *Centistes (Allurus) muricatus* Hellen 1958 Soc. Fauna Flora Fennica 4-25.; *Allurus muricatus* Förster 1862 Verh. naturh. Ver. preuss. Rheinl. 19 255.; *Leiophron armatus* Wesmael 1835 Nouv. Mem. Acad. Brux. 9-105.

Female: Body 3,90 ± 0,17 mm, (3,70-4,00 n=3) Forewing 3,61 ± 0,28 mm (3,60-3,65, n=3)

Material: Ardahan, Posof, Ilgar Mountain, 2200 m, 18.VII.2004, 1 ♀, leg. C. Güçlü. Erzurum: Oltu, Çamlıbel, 1600 m, 17.V.2003, 1 ♀; Oltu, Sarısaz, 1400 m, 17.V.2003, 1 ♀, leg. C. Güçlü.

Distribution: Nearctic and Palearctic

Known from Turkey: Afyon, Amasya, Bilecik, Bursa, Çankırı, Çorum, Osmaniye, Edirne, Elazığ, Denizli, Isparta, Malatya, Ordu, and Tokat, (Yılmaz *et. al.*, 2010).

Hosts: *Sitona lineata* L., *S. regensteinensis* Herbst, *S. hispidula* Fabricius, and *S. sulcifrons* (Coleoptera: Curculionidae)

### **Dinocampus Förster 1862**

#### ***Dinocampus coccinellae* (Schrank, 1802)**

*Ichneumon coccinellae* Schrank 1802 Fauna Boica 2: 310; *Dinocampus coccinellae* Cushman 1922 Proc. ent. Soc. Wash. 24: 241; *Perilitus coccinellae* Muesebeck 1936 Misc. Publs U.S. Dep. Agric. 241: 12; Centistes americana Riley 1888 Insect Life 1: 103; *Perilitus americanus* Riley 1889 Insect Life 1: 338, *Dinocampus americanus* Timberlake 1916 Can. Ent. 48: 89.; *Euphorus sculptus* Cresson 1872 Can. Ent. 4: 227; *Dinocampus sculptus* Ashmead (1899) 1900 in Insects New Jers. 1: 588. *Bracon terminatus* Nees von Esenbeck (1811) 1812 Mag. Ges. nat. Fr. Berl. 5: 26.; *Perilitus terminatus* Nees von Esenbeck 1834 Hym. Ichn. affin. Mon. 1: 30.; *Microctonus terminatus* Wesmael 1835 Nouv. Mem. Acad. Brux. 9: 63.; *Dinocampus terminatus* Förster 1862 Verh. naturh. Ver. preuss. Rheinl. 19: 252.; *Microctonus lerminalis* Westwood 1840 Introd. mod. Class. Insects 2: 142.

Female: Body 3,40 mm, Forewing 2,90 mm.

Material: Erzurum, Tortum, Tortumkale, 1250 m 08.VII.2000, 2 ♀♀, leg C. Güçlü.

Distribution: Australasian, Eastern Palaearctic, Europe, Nearctic, Neotropical, Oceanic, Oriental and Western Palaearctic.

Known from Turkey: Edirne, Kirklareli and Tekirdağ (Yılmaz *et. al.*, 2010)

Hosts: Chrysomelidae Chrysomelinae, *Adalia bipunctata*, *A. decempunctata*, *A. deficiens*, *Anatis labiculata*, *A. ocellata*, *Brachiacantha ursina*, *Calvia quatuordecimguttata*, *Coccinella arcuata*, *C. californica*, *C. divaricata*, *C. hieroglyphica*, *C. magnifica*, *C. novemnotata*, *C. octodecimguttata*, *C. quatuordecimpustulata*, *C. quinquepunctata*, *C. repanda*, *C. septempunctata*, *C. transversalis*, *C. transversoguttata*, *C. trifasciata*, *C. undecimpunctata*, *Coelophora biplagiata*, *C. inaequalis*, *C. maculata*, *Cycloneda munda*, *C. sanguinea*, *Halyzia quatuordecimguttata*, *Harmonia axyridis*, *H. conglobata*, *H. dimidiata*, *H. octomaculata*, *H. quadripunctata*, *Hippodamia convergens*, *H. glacialis*, *H. parenthesis* and *Hippodamia quinquesignata* (Coccinellidae, Coleoptera).

### **Leiophron Nees von Esenbeck 1818**

#### ***Leiophron (Euphorus) deficiens* (Ruthe, 1856)**

*Microctonus deficiens* Ruthe 1856 Stettin, ent. Ztg 17: 301; *Euphorus deficiens* Reinhard 1862 Berl ent. Z. 6: 329; *Leiophron deficiens* Richards 1967 Trans. R. ent. Soc. Lond. 119: 179.

Female: Body 1,97 ± 0,26 mm (1,95-2,00, n= 8), Forewing 1,97 ± 0,1 mm (1,95-2,00, n=8).

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Material: Iğdır, Aralık, 1000 m, 25.VI.2003, 8♀♀, leg. C. Güçlü.

Distribution: France, Germany, Italy, Kazakhstan and Yakutia.

Known from Turkey: Diyarbakır (Efil *et al.* 2009).

Hosts: *Campyloma diversicornis* (Miridae, Hemiptera) (Efil *et al.* 2009).

***Perilitus* Nees von Esenbeck 1818**

***Perilitus (Microctonus) aethiopoulos* (Loan, 1975)**

***Microctonus aethiopoulos* (Loan, 1975)** Entom. 20(1): 31-41.

Female: Body 3,40 ± 0,14 mm (3,10-3,50, n=10), Forewing 3,1 ± 0,10 mm (3,00-3,20, n=10).

Material: Erzurum, Umudum Yaylası, 1900 m, 26.VI.2003, 1♀, 2♂♂, leg. C. Güçlü; Atatürk University research field, 1850 m, 13.V.2003, 5♀♀, 2♂♂, 22.V.2003, 2♀♀, 21.VI.2000, 2♂♂, 22.VII.2003, 2♀♀, 2♂♂, leg. C. Güçlü; Aşkale, 1850 m, 23.V.2000, 1♂, leg. C. Güçlü; Horasan, Aras Valley, 1550 m, 04.VII.2005, 1♀, 19.VII.2005, 1♀, leg. C. Güçlü; Köprüköy, Örentaş, 1750 m, 09.VIII.2004, 1♀, 1♂, Yağan, 1200 m, 20.VII.2003, 1♀, 1♂, leg. C. Güçlü; Oltu, Başaklı, 2050 m, 24.VI.2005, 1♂, leg. C. Güçlü; Şenkaya, Soğanlıdağı, 2450 m, 23.VII.2005, 2♂♂, leg. C. Güçlü; Uzundere, Yaylageçidi, 2070 m, 13.VII.2004, 1♀, 1♂, leg. C. Güçlü. Iğdır: Gaziler, 1020 m, 16.V.2005, 1♀, leg. C. Güçlü. Kars: Sarıkamış, Karakurt, Aras Valley, 1550 m, 15.VIII.2002, 1♂, leg. C. Güçlü.

Distribution: Australasian, Eastern Palaearctic, Europe, Nearctic, Oceanic and Western Palaearctic New record for Turkey.

Hosts: *Hypera meles*, *H. nigrirostris*, *H. postica*, *H. postica*, *H. rumicis*, *Irenimus aemulator*, *I. aequalis*, *Listronotus bonariensis*, *Pantomorus cervinus*, *Rhinocyllus conicus*, *Sitona crinita*, *S. discoideus*, *S. discoideus*, *S. flavescens*, *S. hispidula*, *S. humeralis*, *S. lineata*, *S. puncticollis*, *S. sulcifrons*, *S. tenuis* (Curculionidae, Coleoptera).

***Perilitus (Microctonus) brevicollis* Haliday, 1835**

*Perilitus brevicollis* Haliday 1835 Ent. Mag. 3: 35; *Microctonus brevicollis* Nagasawa 1942 Botany Zool., Tokyo 10: 996; *Microctonus retusus* Ruthe 1856 Stettin, ent. Ztg 17: 298.

Female: Body 3,27 ± 0,95 mm (3,20-3,40, n=4) Forewing 2,77 ± 0,86 mm (2,70-2,85, n=4).

Material: Erzurum, Tortum, 1400 m, 17.V.2003, 1♀, leg. C. Güçlü; Uzundere, Dikyar, 1950 m, 16.V.2003, 1♀, leg. C. Güçlü. Erzincan, Refahiye, Sakaltutan, 2000 m, 28.VI.2002, 1♀, leg. C. Güçlü. Kars: Sarıkamış, Karakurt, Aras Valley, 1550 m, 15.VII.2002, 1♀, leg. C. Güçlü.

Distribution: Ireland, England, Germany, France, Poland Algeria, Kazakhstan and Armenia.

Known from Turkey: Ankara, Edirne, Elazığ and Giresun (Yılmaz *et al.*, 2010)

Hosts: Shenefelt (1970) gave as host of *P. (M.) brevicollis*: *Haltica ampelophaga* Cuerin; *Psylliodes napi* Fabricius, and *P. chrysocephala* Linnaeus (Coleoptera, Chrysomelidae). We obtained this parasitoid from *Hypocassida subferruginea* (Schrank) (Coleoptera, Chrysomelidae), which is a new host for *P. (M.) brevicollis*.

***Perilitus (Microctonus) melanopus* (Ruthe, 1856)**

*Microctonus melanopus* Ruthe 1956 Stettin. ent. Ztg 17: 293; *Perilitus melanopus* Reinhard 1862 Berl. ent. Z. 6: 324.

Female: Body 3,40 mm, Forewing 3,00 mm.

Material: Erzurum, İspir, Kırklardağı, 3400 m, 07.VII.2000, 1♀, leg. C. Güçlü; Oltu, Başaklıdağı, 2000 m, 02.VII.2000, 1♂, leg. C. Güçlü; Uzundere, Dikyar, 1950 m, 16.V.2003, 2♂♂, Yaylageçidi, 2100 m, 14.VI.2004, 1♀, leg. C. Güçlü.

Distribution: Azerbaijan, Canada, Canada-Alberta, Canada-British Columbia, Czechoslovakia, France, Germany, Hungary, Kazakhstan, Lithuania, Moldova, Mongolia, Poland, U.S.A. New record for Turkey.

Hosts: *Ceuthorrhynchus quadridens* C. *assimilis*, *C. pleurostigma* C. *ruebsaameni* (Coleoptera, Curculionidae)

***Perilitus (Perilitus) kokujevi* Tobias, 1986**

*Perilitus kokujevi* Tobias, 1986, Opr. Faune SSSR 145: 229; V.

Female: Body 3,50 mm, Forewing 3,10 mm

Material: Ardahan, Posof, Ilgar Mountain, 2200 m, 18.VII.2004, 1♀, leg. C. Güçlü.

Distribution: China, Norway, Russia, . New record for Turkey.

Hosts: Unknown.

***Perilitus (Perilitus) marci* Haeselbarth, 1999**

Female: Body 2,50 mm, Forewing 2,20 mm.

Material: Erzurum, İlica, Ortabahçe, 1965 m 14.VII.2005, 1♀, leg. C. Güçlü.

Distribution: England New record for Turkey as well as Asia Continent.

Hosts: *Phylan gibbus* (Tenebrionidae Coleoptera).

***Perilitus (Perilitus) regius* Haeselbarth, 1999**

Female: Body 3,6 mm, Forewing 3,30 mm.

Material: Erzurum, Uzundere, Yayla geçidi, 2050 m 14.VII.2004, 1♀, leg. C. Güçlü.

Distribution: Austria, Bulgaria, Croatia, France, Germany, Italy, Moldova, Romania, Slovakia New record for Turkey as well as Asia Continent

Hosts: Unknown.

***Perilitus (Townesilitus) aemulus* (Ruthe 1856)**

*Microctonus aemulus* Ruthe, 1856, Stettin. Ent. Ztg. 17: 293.

Female: Body 3,60, Forewing 3,20 mm.

Material: Erzincan, Tercan, Yaylacık, 1169 m 25.V.2005, 1♀, leg. C. Güçlü.

Distribution: Austria, Former Czechoslovakia, Germany, Hungary, Ireland, Italy, Japan, Macedonia, Netherlands, Slovenia, Spain, Switzerland, United Kingdom, Yugoslavia New record for Turkey.

Hosts: *Psylliodes punctifrons* (Chrysomelidae, Coleoptera).

***Perilitus (Townesilitus) deceptor* (Wesmael, 1835)**

*Microctonus deceptor* Wesmael, 1835, Nouv. Mem. Acad. Brux. 9:66.

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Female: Body  $3,13 \pm 0,11$  mm (3,00-3,20, n=3), Forewing  $2,53 \pm 0,11$  (2,40-2,60, n=3)mm.

Material: Erzurum, Aşkale, Kop Mountain, 2650 m 13.VII.2005, 1♀, leg. C. Güçlü; Uzundere, Yaylageçidi, 2070 m, 13.VI.2004, 2♀♀, leg. C. Güçlü.

Distribution: Belgium, China, China-Zhejiang, Hungary, Ireland, Italy, Japan, Korea, Moldova, Netherlands, Poland, Sweden, Switzerland, United Kingdom. New record for Turkey.

Hosts: Unknown

***Peristenus Förster, 1862***

***Peristenus grandiceps Thomson, 1852***

Female: Body 2,20 mm; Forewing 1,90 mm.

Material: Erzurum, Tekman, 2450 m, 19.VII.2005, 1♀, leg. C. Güçlü.

Distribution: Germany, Greece, Greece-Crete, Hungary, Ireland, Kazakhstan, Moldova, Netherlands, Norway, Poland, Sweden, Switzerland and United Kingdom

Known from Turkey: Edirne, Gümüşhane, Kırklareli and Tokat (Yılmaz *et. al.*, 2010)

Hosts: Unknown.

***Peristenus accinctus (Haliday, 1835)***

*Microctonus laeviventris* Ruthe 1856 Stettin, ent. Ztg 17: 305; *Euphorus laeviventris* Reinhard 1862 Berl. ent. Z. 6: 328; *Leiophron laeviventris* Richards 1967 Trans. R. ent. Soc. Lond. 119: 176.

Female: Body 2,30 mm; Forewing 1,90 mm.

Material: Erzurum, Ilıca, Atlıkonak, 1760 m, 14.VII.2005, 2♀♀, leg. C. Güçlü.

Distribution: Bosnia Hercegovina, France, Germany, Hungary, Korea, Moldova, Poland, and Yugoslavia New record for Turkey.

Hosts: *Lygocoris pabulinus* (Miridae, Hemiptera) and *Meligethes aenus* . (Coleoptera, Nitidulidae).

***Peristenus nitidus (Curtis, 1833)***

*Leiophron nitidus* Curtis 1833 Br. Ent. 10: 476; *Euphorus nitidus* Reinhard 1862 Berl. ent. Z. 6: 328.; *Peristenus nitidus* Marshall 1872 Cat. Brit. Hym.:114.

Female: Body  $2,20 \pm 0,25$  mm (2,18-2,23, n=3), Forewing  $1,93 \pm 0,28$  mm (1,90-1,95, n=3).

Material: Artvin, Genya Mountain, 1760 m, 10.VI.2005, 1♀, leg. C. Güçlü. Erzurum, Uzundere, Yaylageçidi, 2100 m, 14.VII.2004 1♀, leg. C. Güçlü; Ilıca, Atlıkonak, 1760 m, 14.VII.2005, 1♀, leg. C. Güçlü.

Distribution: Germany, Hungary, Mongolia, Norway and United Kingdom

Known from Turkey: Kırklareli (Yılmaz *et. al.*, 2010)

Hosts: Unknown.

***Peristenus facialis* (Thomson, 1891)**

*Euphorus facialis* Thomson 1891 Opusc. ent. 16: 1747, *Leiophron facialis* Richards 1967, Trans. R. ent. Soc. Lond. 119: 174.

Female: Body  $2,66 \pm 0,54$  mm (2,66-2,70, n=5), Forewing  $2,40 \pm 0,90$  (2,30-2,50, n=5)mm.

Material: Erzincan, Sansaderesi, 1350 m, 25.V.2001, 1♀ leg. C. Güçlü. Erzurum, Oltu, Başaklıdağı, 1800 m, 02.VII.2000, 1♀, leg. C. Güçlü; Tortum, 1400 m, 17.V.2003, 2♀♀, leg. C. Güçlü; Uzundere, 1000 m, 16.V.2003, 1♀, leg. C. Güçlü.

Distribution: Finland, Hungary, Korea, Lithuania, Mongolia, Poland, Russia, Russia-Krasnodar Kray, Sweden, United Kingdom, Yugoslavia and Yugoslavia-Serbia

Known from Turkey: Tekirdağ (Yılmaz *et. al.*, 2010)

Hosts: *Orthotylus marginalis* and *Psallus varians* (Miridae, Hemiptera).

***Peristenus pallipes* (Curtis, 1833)**

*Leiophron pallipes* Curtis 1833 Br. Ent. 10 476.; *Euphorus pallipes* Curtis 1837 Guide Br. Insects 118.; *Euphorus pallidipes* Marshall 1887 Trans. K. ent. Soc. Lond. 1887 56.; *Perililus pallipes* Herrich-Schäffer 1838 Faunae Insect. Germ. 154.; *Peristenus pallidipes* Marshall 1872 Cat. Br. Hym. 113.; *Microctonus barbiger* Wesmael 1835 Nouv. Mem. Acad. Brux. 9 69 *Peristenus mellipes* Ashmead (1899) 1900 in Smith Insects New Jers. 88-94.; *Brachistes nocturnus* Viereck 1905 Trans. Kaiis. Acad. Sci. 19 276.; *Microctonus punctatus* Provancher 1883 Naturaliste can. 14 17., *Euphorus punctatus* Provancher 1888 Addit. Faune Can. 379.

Female: Body  $2,77 \pm 0,10$  mm (2,60-2,90, n=9), Forewing  $2,36 \pm 0,86$  mm (2,30-2,50, n=9).

Material: Artvin, Genya Mountain, 1760 m, 10.VI.2005, 1♀, leg. C. Güçlü. Erzincan: Sansaderesi, 1350 m, 25.V.2001, 2♀♀, leg. C. Güçlü. Erzurum, Atatürk University research field, 1850 m, 12.VI.2003, 1♀, 11.VIII.1999, 1♀, leg. C. Güçlü; leg. C. Güçlü; Köprüköy, Yağan, 1600 m, 20.VI.2003, 1♀, leg. C. Güçlü; Pasinler, 1850 m, 16.VII.2001, 2♀♀, leg. C. Güçlü. Iğdır: Gaziler, 1100 m, 17.V.2005, 1♀, leg. C. Güçlü.

Distribution: Azerbaijan, China, China-Nei Menggu, China-Xinjiang, Czechoslovakia, Finland, Germany, Hungary, Ireland, Italy (country), Italy-main, Kazakhstan, Lithuania, Moldova, Norway, Norway-main, Poland, Russia, Russia-Dagestanskaya Respublika, Russia-Stavropolskiy Kray, Sweden, Switzerland, United Kingdom, Yugoslavia and Yugoslavia-Serbia.

Known from Turkey: Edirne, Kırklareli, Artvin, Isparta, Rize, Trabzon (Yılmaz *et. al.*, 2010).

Hosts: *Adelphocoris lineolatus*, *A. rapidus*, *Calocoris norvegicus*, *Eustrophus dermestoides*, *Labops hirtus* Knight; *Leptorum dolobrata*, *Liocoris lineolaris* Orchesia *micans*, *O. minor*, *Orchesia* sp. *Plagiognathus medicagus*, *Timarcha tenebricosa*, (Hemiptera, Miridae)

***Peristenus rubricollis* (Thomson, 1891)**

*Euphorus rubricollis* (Thomson) (1891) 1892 Opusc. Ent. 16: 1749.

Female: Body  $1,93 \pm 0,11$  mm (1,80-2,00, n=3), Forewing  $1,83 \pm 0,57$  mm (1,80-1,90, n=3).



### *A Contribution to the Knowledge of Euphorinae*

Material: Erzurum, Aşkale, Kop Mountain, 2000 m, 21.VI.2001, 1 ♂, leg. C. Güçlü. Kars, Kağızman, 750 m, 23.VII.2002, 2 ♀♀, leg. C. Güçlü; Sarıkamış, Karakurt, Aras Valley, 1550 m, 18.V.2005, 1 ♀, leg. C. Güçlü.

Distribution: Finland, Germany, Hungary, Kazakhstan, Moldova, Poland, Sweden, Switzerland and Ukraine.

Known from Turkey: Amasya, Edirne and Tekirdağ (Yılmaz *et. al.*, 2010)

Hosts: *Adelphocoris lineolatus*, *Lygus rugulipennis*, *Lygus rugulipennis*, *Lygus rugulipennis* (Lygaeidae Hemiptera)

### **Wesmaelia Förster, 1862**

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

*Wesmaelia pendula* Förster 1862 Verh. naturh. Vcr. preuss. Rhcinl. 19: 251.; *Wesmaelia americana* Myers 1917 Proc. U.S. natn. Mus. 53: 293; *Wesmaelia asiatica* Shestakov 1932 Zool. Anz. 99: 261.; *Wesmaelia cremasta* Marshall 1872 Entomologist's mon. Mag. 8: 257.

Female: Body 3,70 mm, Forewing 3,30 mm.

Material: Erzurum, Oltu, Sarısaz, 1250 m, 14.VI.2000, 1 ♀, leg. C. Güçlü; Oltu, Subatık, 1250 m, 22.VI.2001, 1 ♀, leg. C. Güçlü.

Distribution: Afghanistan, Azerbaijan, Bulgaria, Canada, Canada-Ontario, Canada-Yukon Territory, China, Czech Republic, Former Czechoslovakia, France, Germany, Hungary, Iran, Israel, Italy, Madeira Islands, Moldova, Peru, Poland, Russia, Spain, Switzerland, Turkmenistan.

Known from Turkey: Adıyaman, Elazığ, Kahramanmaraş, Malatya and Kırklareli (Yılmaz *et. al.*, 2010).

Hosts: *Nabis alternatus*, *N. americanoferus*, *N. americanoferus*, *N. capsiformis* (Nabidae, Hemiptera).

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### **REFERENCES**

- Achterberg, C. van, 1984, Essay on The Phylogeny of The Braconidae (Hym., Ichneumonoidea). *Entomol. Tidskr.*, 105:41-58.
- Achterberg, C. van, 1994, The Palaearctic species of the genus *Chrysopophthorus* Goidanich (Hymenoptera: Braconidae, Euphorinae). *Zoologische Mededelingen Leiden*, 68: 301-307.
- Achterberg, C. van, Haeselbarth, E., 2003, Revision of the genus *Syntretus* Foerster (Hymenoptera: Braconidae, Euphorinae) from Europe. *Zoologische Mededelingen Leiden*, 77: 9-78.
- Belokobylskij, S. A., 1992, Revision of The Genus *Centistes* Haliday (Hymenoptera, Braconidae, Euphorinae) of The USSR. *Zoologische Mededelingen Leiden*, 66(11): 199-237.
- Bayarlan, A., Aydođdu, M., İnanç F., 2004, A survey of *Meteorus* Haliday 1835 of Turkey (Hymenoptera, Braconidae, Euphorinae). *Entomofauna*, 1: 1-20.

- Efil L., Güçlü C., Belekobylskij S. A., 2009, *Leiophron (Euphorus) deficiens* Ruthe (Hymenoptera, Braconidae, Euphorinae), a parasitoid of *Campylomma diversicornis* (Reuter) (Heteroptera, Miridae) in Turkey. *Journal of The Entomological Research Society Entomology* 11(3): 65-73.
- Fahringer, J., 1934, Cheloninae (Hymenoptera, Braconidae) im Palearktische region. verlag Von Fritz Wagner, Wien, Band II: 408-434, 470-504.
- Gauld, I. D. Bolton, B., 1988, *The Hymenoptera*. Oxford University Press, Oxford, 5th ed., 33.
- Haeselbarth, E., 1988, Zur Braconidengattung *Townesilitus* Haeselbarth & Loan, *Entomofauna* 9: 429-460.
- Haeselbarth, E., 1999, Zur braconiden-Gattung *Perilitus* Nees, 1818 2. Beitrag: Die *Perilitus falciger* Gruppe (Hymenoptera, Braconidae). *Entomofauna*, 89:11-46
- Holiday, A. H., 1835, Essay on parasitic Hymenoptera of the Ichneumonones Adsciti. *Entomological Magazine*, 3: 20-45.
- Koldaş, T., Aydoğdu, M. Beyarslan, A., 2007, Euphorinae (Hymenoptera: Braconidae) Fauna from the Thrace Region of Turkey. *Linzer Biologische Beiträge*, 39: 441-450.
- Loan, C. C., 1963, The Bionomics of *Sitona scissifrons* (Coleoptera, Curculionidae) and its Parasite *Microctonus sitonae* (Hymenoptera, Braconidae) *Annals of the Entomological Society of America*, 56: (13) 600-612.
- Nees von Esenbeck, C. G., 1818, Ichneumonides adsciti, in genera et familias divisi. *Gesellschaft Naturforschender Freunde Berlin*, 6: 243-277.
- Papp, J., 1974, *Arideloides niger* gen. and sp.n. from New Guinea (Hymenoptera, Euphorinae, Braconidae). *Proceedings of the Hawaiian Entomological Society*, 21: 443-446.
- Papp, J., 1994, The dispersion of braconid wasps in an oak forest of Hungary (Hymenoptera, Braconidae). *Folia Entomologica Hungarica*, 55: 305-320.
- Papp, J., 2003a, Braconidae (Hymenoptera) from Greece. *Notes Fauniques Gembloux*, 53: 21-54.
- Papp, J., 2003b, Braconidae (Hymenoptera) from Korea XXI species of fifteen subfamilies. *Acta Zoologica Academiae scientiarum Hungaricae*, 49: 115-152.
- Shaw, S. R., 1985, A phylogenetic study of the subfamilies Meteorinae and Euphorinae (Hymenoptera, Braconidae). *Entomography* 3: 277-370.
- Shaw, S. R., 2004, Essay on the evolution of adult-parasitism in the subfamily Euphorinae (Hymenoptera, Braconidae). *Proceedings of the Russian Entomological Society*, 75(1): 82-95.
- Shenefelt, R. D., 1969, Braconidae 1. Hybroninae, Euphorinae, Cosmophorinae, Neoneurinae, Macrocentrinae. *Hymenopterorum Catalogus* (nova editio). Part 4. Dr. W. Junk N.V. 's-Gravenhage. 176.
- Shenefelt, R. D., 1970, Braconidae 11. Introduction. *Guide to Host Names Index to Braconid Name*. In *Hymenopterum Catalogus*, 16: 1-384.
- Tobias, V. I., Belokobylskij, S. A., Kotenka, A. G., 1995, *Keys to the Insects of the European Part of the USSR: Volume III Hymenoptera Part IV*. 883pp.
- Förster, A. 1862, Verhandlungen des Naturhistorischen Vereines der Preussischen Rheinlande und Westphalens 287.
- Wesmael, C, 1835, Monographic des Braconides de Belgique. *Annual Review of Ecology and Systematics*, 9: 1-252.
- Yılmaz, T., Aydoğdu M., Beyarslan, A., 2010, The distribution of Euphorinae wasps (Hymenoptera, Braconidae) in Turkey, with phytogeographical notes. *Turkish Journal of Zoology*, 34:181-194.
- Yu, D. S., Achterberg, C. van., Horstmann, K., 2005, World Ichneumonoidea 2004. Taxonomy, biology, Morphology and distribution [Braconidae]. Taxapad 2005 (Scientific names for information management) Interactive catalogue on DVD/CDROM. Vancouver.