

Additional Notes on *Chelonus* Panzer, 1806 Fauna of Turkey with New Records (Hymenoptera, Braconidae, Cheloninae)

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ABSTRACT

New faunistic and distributional data are presented on *Chelonus* Panzer, 1806 (Hymenoptera: Braconidae: Cheloninae) of Turkey. Thirteen *Chelonus* species were identified, and five of them are new records for the Turkish fauna: *Chelonus (Chelonus) bimaculatus* Szépligeti, 1896; *C. (C.) capsa* Tobias, 1972; *C. (C.) lissogaster* Tobias, 1972; *C. (C.) submuticus* Wesmael, 1835 and *C. (C.) wesmaelii* Curtis, 1837. Nevertheless the other *eight species* are new records for East Black Sea Region.

Keywords: *Chelonus*, East Black Sea Region, new record, Turkey

INTRODUCTION

The chelonine wasps are one of the largest subfamilies of parasitic Hymenoptera, probably including about 1350 species and approximately 865 *Chelonus* species in the worldwide. Only about a quarter of these species have been described and the biology of very few is known in detail. Indeed, many of the species are so poorly characterized that it is not possible to recognize them without examining their type-material. The Cheloninae is characterized by the possession of a complete unarticulated gastral carapace (formed by the fusion of the first three tergites) and a complete postpectal carina (the posterior transverse carina of the mesosternum, just in front of the mid coxae). The forewing always has three submarginal cells although the first of these, in *Chelonus*, is fused with the first discal cell (Yu *et al.*, 2005; Walker & Huddleston, 1987).

The *Chelonus* includes cosmopolitan species that are solitary koinobiont egg-larval endoparasitoids of Lepidoptera (especially Tortricoidea and Pyraloidea) and Coleoptera, and oviposit in the egg of the Lepidopterous host and complete their larval development when the host larva is nearly mature. Parasitoids are free-living as adults and parasitic as larvae; the larvae feed on their hosts, which are mostly insects of various developmental stages. Hosts do not survive and thus parasitoids play an important role as the regulatory agents for phytophagous insect populations dynamic, particularly the economically important insects pests (Kaeslin *et al.*, 2005; Shaw & Huddleston, 1991; Yu *et al.*, 2005).

The goal of this study was to increase the number of localities in Turkey with identified *Chelonus* fauna, especially where little or no sampling was previously

conducted. Very little work has been done on the *Chelonus* fauna of Turkey, in Turkish fauna of this genus not well-known. Important contributions to Turkish *Chelonus* fauna were made in the past (Aydogdu, 2008; Aydogdu & Beyarslan 2002, 2007; Beyarslan, 1985; Beyarslan *et al.*, 2002a, 2002b, 2006; Kohl, 1905; Lozan, 2005; Papp, 1997; Tobias *et al.*, 1986). The paper presents data on thirteen species from Anatolian regions of Turkey and five species are new records for Turkish fauna.

MATERIAL AND METHODS

The material which were collected from various localities of Turkey have been studied taxonomically. Sweeping nets and light traps were used to obtain samples on grass-type plants. The specimens 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, Trakya University.

Pertinent literature was used for determination of species (Abdinbekova, 1975; Aydogdu, 2008; Fahringer, 1934; Papp, 1995, 2003; Tobias *et al.*, 1986). The host records and general distribution each of the *Chelonus* are used in this paper (Aydogdu & Beyarslan, 2007; Lozan, 2005; Yu *et al.*, 2005).

RESULTS

Thirteen species within genus *Chelonus* were identified, and five of them new records for fauna of Turkey. The taxa are presented alphabetically.

CHELONINAE

Tribus: Chelonini

Genus: *Chelonus* Panzer, 1806

Chelonus (Chelonus) annulatus (Nees, 1816)

Distribution: Belarus, Bulgaria, former Czechoslovakia, Finland, France, Georgia, Germany, Hungary, Iran, Italy, Kazakhstan, Kyrgyzstan, Lithuania, Moldova, Mongolia, Poland, Russia, Slovakia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom (Yu *et al.*, 2005), Turkey: Amasya, Balıkesir, Bilecik, Bursa, Çorum, Kastamonu, Ordu, Sinop, Tokat (Aydogdu & Beyarslan, 2007).

Material examined: Artvin, Saçinka, 1331 m, 03.IX.2004, *Anemon* sp., *Picea orientalis* L., Umbelliferae, 1♀; Şavşat, Meşeli, Karagöl, 1620 m, 30.VI.2005, *Picea orientalis* L., Umbelliferae, 2♀♀, 1♂; Yaylalar, 1905 m, 02.07.2004, pasture, 2♀♀; Giresun, Duruoğlu, 86 m, 05.VII.2004, *Corylus avellana* L., 1♀, 2♂♂; Şebinkarahisar, Dereli, 1431 m, 02.VIII.2005, mixed forests, 1♀, 1♂; Gümüşhane, Arzular, 1304 m, 07.VIII.2005, *Malus domestica* B., Umbelliferae, 4♀♀, 1♂; Kelkit, Gürüz mountain, 1871 m, 02.07.2005, Rosaceae, Umbelliferae, 1♀; Rize, İkizdere, Vanı, 1080 m, 31.08.2004, *Corylus avellana* L., pasture, 2♀♀.

Hosts: *Recurvaria nanella* (Hb.), *Stenolechia albiceps* Z., (Gelechiidae); *Epicallima formosella* S. (Oecophoridae); *Narycia melanella* H. (Psychidae); *Hyponomeuta malinellus* Z., *Yponomeuta padellus* L., (Yponeumatidae).

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Chelonus (Chelonus) bimaculatus Szépligeti, 1896

Distribution: Albania, Bulgaria, China, Croatia, former Czechoslovakia, former Yugoslavia, Germany, Hungary, Kazakhstan, Mongolia, Russia, Switzerland, Ukraine, Uzbekistan (Yu *et al.*, 2005).

Material examined: Balıkesir, Burhaniye, Pelitköy, 50 m, 22.VI.1998, *Olea europaea* L., *Thymus vulgaris* L., Umbelliferae, 2♀♀.

Hosts: *Gypsonoma dealbana*, *G. incarnana* (Tortricidae).

New record for Turkey.

Chelonus (Chelonus) canescens Wesmael, 1835

Distribution: Belgium, Czech Republic, former Czechoslovakia, France, Germany, Hungary, Italy, Mongolia, Poland, Romania, Russia, Spain, Sweden, Switzerland, Turkey, United Kingdom, former Yugoslavia (Yu *et al.*, 2005), Turkey: Amasya, Bilecik, Bolu, Çankırı, Edirne, İzmit, Kastamonu, Kırklareli, Manisa, Samsun, Tekirdağ (Aydogdu and Beyarslan, 2002; Beyarslan *et al.*, 2002b; Aydogdu and Beyarslan, 2007).

Material examined: Artvin, Şavşat, Meşeli, Davzet, 1618 m, 30.VI.2005, *Picea orientalis* (L.), *Quercus sp.*, Umbelliferae, 1♀; Yusufeli-Demirdöven, 1463 m, 02.VII.2005, *Cerasus avium* (L.), pasture, 1♀; Gümüşhane, Kelkit, Gürüz mountain, 1871 m, 02.VII.2005, Rosaceae, Umbelliferae, 1♂.

Hosts: *Cnephasia pasiuna* H. (Tortricidae).

Chelonus (Chelonus) capsa Tobias, 1972

Distribution: Hungary, Mongolia, Russia (Yu *et al.*, 2005).

Material examined: Afyon, Çay, 1200 m, 07.VII. 2006, *Malus domestica* B., Umbelliferae, 1♀♀, 1♂.

Hosts: Unknown.

New record for Turkey.

Chelonus (Chelonus) corvulus Marshall, 1885

Distribution: Azerbaijan, Belgium, China, Croatia, Czech Republic, former Czechoslovakia, former Yugoslavia, Finland, France, Germany, Greece, Hungary, Israel, Italy, Kazakhstan, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Netherlands, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Spain, Switzerland, Turkey, Ukraine, United Kingdom, Uzbekistan (Yu *et al.*, 2005), Turkey: Adiyaman, Kayseri (Kohl, 1905, Lozan, 2005).

Material examined: Rize, Çamlıhemşin, Galerüzü, 1570 m, 01.IX.2004, mixed forests, 2♀♀, 1♂.

Hosts: *Autographa gamma*, *Eublemma pannonica*, *E. respersa*, *Shargacucullia verbasci*, *Spodoptera exigua* (Lepidoptera, Noctuidae), *Chamaesphesia leucopsiformis* (Sesiidae), *Coleophora caespitiella* (Coleophoridae), *Dichrorampha simpliciana* (Lepidoptera, Tortricidae), *Epiblema foenella* (Olethreutinae), *Scrobipalpa atriplicella* (Gelechiinae).

***Chelonus (Chelonus) dauricus* Telenga, 1941**

Distribution: Former Czechoslovakia, former Yugoslavia, Mongolia, Russia, Turkey (Yu *et al.*, 2005), Turkey: Nevşehir (Lozan, 2005).

Material examined: Artvin, Şavşat, Meşeli, Davzet, 1618 m, 30.VI.2005, *Picea orientalis* (L.), *Quercus* sp., Umbelliferae, 1♀.

Hosts: Unknown.

***Chelonus (Chelonus) inanitus* (Linnaeus, 1767)**

Distribution: Albania, Algeria, Armenia, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, former Czechoslovakia, former Yugoslavia, Denmark, Egypt, Finland, France Germany, Greece, Hungary, Iran, Ireland, Israel, Italy, Korea, Latvia, Lithuania, Mongolia, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey (Yu *et al.*, 2005), Turkey: Adapazarı, Afyon, Amasya, Balıkesir, Bilecik, Bursa, Canakkale, Çorum, Edirne, İçel, Kastamonu, Kayseri, Kırklareli, Tekirdağ (Aydogdu & Beyarslan, 2002, 2007; Beyarslan, 1985; Beyarslan *et al.*, 2002a; Beyarslan *et al.*, 2002b; Kohl, 1905).

Material examined: Giresun, Dereli, Kümbet, 1756 m, 03.VIII.2005, pasture, 1♀; Trabzon, Maçka, Ocaklı, 1071 m, 05.VIII.2005, *Corylus avellana* L., pasture, 2♀♀.

Hosts: *Aethes francillana* F., *Eucosma tripoliana* Barr., *E. aemulana* Schlag. (Tortricidae); *Sylepta derogata* F., *Ostrinia nubilalis* Hb. (Pyraustidae); *Etilla zinckenella* Tr. (Phycitidae); *Oligia literosa* Hw., *Photedes elymi* Tr. (Noctuidae).

***Chelonus (Chelonus) lissogaster* Tobias, 1972**

Distribution: Kazakhstan, Ukraine (Yu *et al.*, 2005).

Material examined: Adapazarı, Hendek, Hüseyinşeyh, 220 m, 27.06.2001, *Corylus avellana* L., *Cystus* sp., 2♀♀.

Hosts: Unknown.

New record for Turkey.

***Chelonus (Chelonus) obscuratus* (Herrich-Schäffer, 1838)**

Distribution: Bulgaria, Czech Republic, former Czechoslovakia, Finland, France, Germany, Greece, Hungary, Italy, Kazakhstan, Moldova, Mongolia, Poland, Russia, Slovakia, Spain, Sweden, Switzerland, Tunisia, Turkey, Ukraine, United Kingdom (Yu *et al.*, 2005), Turkey: Adana, Antalya, Bilecik, Burdur, Kastamonu, Sinop Gaziantep, Kahramanmaraş, İçel, Isparta (Aydogdu & Beyarslan, 2007; Beyarslan, 1985).

Material examined: Giresun, Duruoğlu, 86 m, 05.VII.2004, *Corylus avellana* L., 1♀.

Hosts: *Spodoptera exigua* (Noctuidae), *Rhyacionia buoliana* D.&S. (Tortricidae).

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

Distribution: Afghanistan, Albania, Azerbaijan, , Belgium, Bulgaria, Croatia, Czech Republic, former Czechoslovakia, former Yugoslavia Finland, France, Georgia, Germany, Greece, Hungary, Iran, Italy, Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain,

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Sweden, Switzerland, Tajikistan, Turkey, Turkmenistan, Ukraine, United Kingdom, Uzbekistan (Yu *et al.*, 2005), Turkey: Adapazarı, Adıyaman, Amasya, Afyon, Balıkesir, Bilecik, Bolu, Bursa, Çanakkale, Çankırı, Çorum, Denizli, Edirne, İstanbul, İzmir, Karabük, Kastamonu, Kırklareli, Kütahya, Manisa, Muğla, Osmaniye, Ordu, Samsun, Tekirdağ, Tokat, Uşak, Zonguldak (Aydoğdu & Beyarslan, 2002, 2007; Beyarslan *et al.*, 2002b; Lozan, 2005).

Material examined: Artvin, Saçınka, 1331 m, 03.IX.2004, *Anemon* sp. *Picea orientalis* L., Umbelliferae, 1♂; Bayburt, 1562 m, 07.VIII.2005, vegetable garden, 32♀♀, 25♂♂; Çerçi, 1760 m, 07.VIII.2005, pasture, 5♀♀, 4♂♂; Giresun, Şebinkarahisar, Dereli, 1431 m, 02.VIII.2005, mixed forests, 2♀♀, 2♂♂; Gümüşhane, Arzular, 1304 m, 07.VIII.2005, *Malus domestica* B., Umbelliferae, 2♀♀, 9♂♂; Kelkit, Yeniköy, 1474 m, 29.VIII.2004, *Malus domestica* B., 3♀♀; Şiran, Arıtaş, 1300 m, 08.VIII.2005, pasture, 1♂.

Hosts: *Loxostege sticticalis* L. (Pyraustidae); *Coleophora anatipennella* Hb. (Coleophoridae); *Agrotis segetum* D. and S., *Helicoverpa armigera* Hb., *Heliothis virespallata* Hfn., *H. peltigera* D. & S., *Spodoptera exigua* Hb., *Photodes elymi* Tr. (Noctuidae); *Zeiraphera isertana* F. (Tortricidae).

***Chelonus (Chelonus) scabrator* (Fabricius, 1793)**

Distribution: Albania, Armenia, Austria, Belgium, Bulgaria, Czech Republic, Finland, France, Germany, Greece, Hungary, Iran, Italy, Kazakhstan, Lithuania, Macedonia, Moldova, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom former Yugoslavia (Yu *et al.*, 2005), Turkey: Afyon, Adıyaman, Bursa, Edirne, İstanbul, İzmit, Denizli, Muğla, Nevşehir, Osmaniye, Tekirdağ, Uşak (Aydoğdu and Beyarslan, 2002, 2007; Beyarslan *et al.*, 2002 b; Lozan, 2005).

Material examined: Bayburt, Konursu, 1522 m., 30.VIII.2004, pasture, 1♀; Gümüşhane, Şiran, Karaşeyh, 1435 m, 29.VIII.2004, pasture, 2♀♀, 1♂.

Hosts: *Oligia strigilis* L. (Noctuidae); *Loxostege sticticalis* L. (Pyralidae); *Prausta sticticalis* L. (Pyraustidae); *Cydia fractifasciana* Hw., *Griselda stagnana* D. & S. (Tortricidae).

***Chelonus (Chelonus) submuticus* Wesmael, 1835**

Distribution: Albania, Azerbaijan, Belgium, Bulgaria, Croatia, former Czechoslovakia, former Yugoslavia, Finland, France, Georgia, Hungary, Israel, Italy, Kazakhstan, Macedonia, Moldova, Mongolia, Poland, Romania, Russia, Sweden, Switzerland, Ukraine, United Kingdom (Yu *et al.*, 2005).

Material examined: Bartın, 10 m, 09.VI.2002, *Corylus avellana* L., Umbelliferae, 2♀♀, 1♂.

Hosts: *Homoeosoma nebulella* (Lepidoptera, Pyralidae), *Spodoptera littoralis* (Lepidoptera, Noctuidae).

New record for Turkey.

***Chelonus (Chelonus) wesmaelii* Curtis, 1837**

Distribution: Former Czechoslovakia, Germany, Hungary, Poland, Russia, Slovakia, United Kingdom (Yu *et al.*, 2005).

Material examined: Afyon, İhsaniye, Yeniceköy, 950 m, 26.VII.1997, Graminae, Umbelliferae, 1♀.

Hosts: *Scolytus scotylus* (Coleoptera: Curculionidae).

New record for Turkey.

DISCUSSION

In this study five *Chelonus* species first recorded in Turkey: *Chelonus* (*Chelonus*) *bimaculatus* Szépligeti, 1896; *C. (C.) capsa* Tobias, 1972; *C. (C.) lissogaster* Tobias, 1972; *C. (C.) submuticus* Wesmael, 1835 and *C. (C.) wesmaelii* Curtis, 1837. Eight species: *C. (C.) annulatus*, *C. (C.) canescens*, *C. (C.) corvulus*, *C. (C.) dauricus*, *C. (C.) inanitus*, *C. (C.) obscuratus*, *C. (C.) oculator* and *C. (C.) scabrator* are new to the fauna of East Black Sea Region of Turkey. Up to now total 21 *Chelonus* species were recorded in Turkey, with the new records the number of species reached to 26.

All species determined in this study are confined to the Palaearctic region. Of the one species have been found in western palaeartic (*Chelonus wesmaelii*), while the rest have been recorded west- and east palaeartic. The introduced species are rare in Turkey and these were recorded only one locality in the country. Due to its geographical position between Europe and Asia, Turkey shares *Chelonus* species distributed in both Europe and Asia. Species collected in the study have been recorded only in Asia. With the present study, total of the Turkey *Chelonus* species have been recorded only in Asia (54 %, 14 species). These results claim that in our country which as different geographical and climate characteristic, there may be much more different species. It is anticipated that the number of *Chelonus* species will increase considerably by the future investigations of the Turkey Cheloninae fauna.

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