

İç Anadolu Bölgesi *Chelonus* Panzer, 1806 (Hymenoptera, Braconidae, Cheloninae) Faunası Üzerine Taksonomik bir Araştırma

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Bu çalışma, İç Anadolu Bölgesi'nde bulunan *Chelonus* Panzer, 1806 (Hymenoptera, Braconidae, Cheloninae) cinsi türlerini belirlemek amacıyla 2007-2009 yılları arasında yürütülmüştür. Cheloninae türleri Lepidoptera (özellikle Tortricodea ve Pyraloidea) ve Coleoptera takımları üzerinde soliter koinobiont yumurta-larva endoparazitoidleridirler. Bu yüzden bu grubun üyeleri zararlı böcekler için önemli bir potansiyel biyolojik mücadele etmenidirler. Örnekler atrap kullanarak kısa boylu bitkiler üzerinden toplanmış ve % 70 'lik alkol içeren tüplere aktarılmış, daha sonra müze tekniklerine uygun olarak prepare edilip etiketlenmiştir. Araştırmada 45 lokaliteden örnekler alınmış ve değerlendirme sonucu *Chelonus* cinsine ait 14 tür elde edilmiştir. Saptanan türlerden *Chelonus* (*Chelonus*) *carbonator* Marshall, 1885 Türkiye faunası için yeni kayıttır. Ayrıca bilinen türlere ait yeni kayıtlarla da bu türlerin Türkiye'deki dağılım sınırları genişletilmiştir. Saptanan türlerin, Türkiye ve genel coğrafi dağılımları verilerek zoocoğrafik dağılımları tartışılmıştır. Araştırılan 45 habitattan 30'unda bulunan *C. (C.) oculator*'un ekolojik valansı en yüksek tür olduğu belirlenmiştir.

Anahtar Kelimeler: Braconidae, *Chelonus*, Fauna, Hymenoptera, Türkiye

A Taxonomic Study on *Chelonus* Panzer, 1806 (Hymenoptera, Braconidae, Cheloninae) Fauna of Central Anatolian Region of Turkey

The study was carried out to determine the species of the genus *Chelonus* Panzer, 1806 (Hymenoptera, Braconidae, Cheloninae) in Central Anatolia Region between 2007 and 2009. Cheloninae species are solitary koinobiont egg-larval endoparasitoids on Lepidoptera (especially Tortricodea and Pyraloidea) and Coleoptera. For this reason, members of this group are potentially very important biological control agents for the pest insects. Samples were collected from short plants using standard insect sweeping nets, transferred into tubes containing 70% ethanol and labeled following their preparations according to museum techniques. Samplings were performed in 45 localities and 14 species of *Chelonus* were determined of which *Chelonus* (*Chelonus*) *carbonator* Marshall, 1885 is a new record for Turkey fauna. The distributional ranges of already known species were expanded with the addition of new records for these species. The distributions of the determined species in Turkey as well as their general distributions were given and discussed zoogeographically. *C. (C.) oculator* is found in 30 of the 45 habitats, and appears to perform the highest ecological valance.

Keywords: Braconidae, *Chelonus*, Fauna, Hymenoptera, Turkey

Introduction

Important morphological characters are distinguished Cheloninae Förster, 1862 from all other subfamilies of Braconidae (Ichneumonidae, Hymenoptera) by the possession of complete posterior mesopleural carina and heavily sculptured rigid metasoma by the fusion of tergites. Two tribe of the Cheloninae subfamily are represented in the Palearctic region. Phanerotomini tribe, in which the metasoma is divided by crenulate sutures into three tergites and body colour is testaceous. Chelonini tribe, in which the metasoma is entire with no trace of sutures, and the body color is generally black. Chelonines are rather robust and

heavily sculptured insects. Although frequently having some pale markings, *Chelonus* Panzer, 1806 and *Ascogaster* Wesmael, 1835 are predominantly blackish, while *Phanerotoma* Wesmael, 1838, of which there are relatively few rather scarce species in Turkey, is largely yellowish-brown. This is a fairly large subfamily of parasitic Hymenoptera with 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 (Aydoğdu, 2011; Tobias, 1986; Yu et al., 2012).

Braconidae share with other groups of parasitoids many biological features that can be described using standard terminology. Thus the parasitoid

larva can feed from a position external to the host, in which case it is termed ectoparasitic, or from inside the hosts body endoparasitically. The relationship a parasitoid has to its host can be described in another way, reflecting the extent to which the host's active life continues after being parasitised. Parasitoids that do not permit the host significant activity or development after attack are termed idiobionts, while those whose host continues to feed, develop, move around or otherwise look after itself for a time following oviposition are called koinobionts. Cheloninae species are solitary koinobiont egg-larval endoparasitoids on Lepidoptera (especially Tortricioidea, Pyraloidea) and Coleoptera. The genus *Chelonus* is very numerous and includes a lot of natural enemies of Lepidoptera which are considered pests of several crops. 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 in regulating the population of their hosts (Askew & Shaw, 1986; Hawkins et al., 1990; Kaeslin et al. 2005; Özkan and Özmen 2001; Shaw & Huddleston, 1991). For this reason, members of this group are potentially very important biological control agents for pest insects.

A few taxonomical survey has been done on the *Chelonus* fauna of Turkey and therefore the Turkish fauna of this genus is not well-known (Aydoğdu, 2008; Aydogdu & Beyarslan 2002, 2007, 2011; Beyarslan 1985; Beyarslan et al. 2002a, 2002b, 2006; Kohl, 1905; Lozan, 2005; Özkan and Özmen 2001).

Material and Methods

Following a sampling of the parasitic wasps of Central Anatolian Region of Turkey and identification of the collected species, the taxonomical aspects of the *Chelonus* have been studied. Samples were collected from short plants using standard insect sweeping nets between 2007 and 2009, killed in tubes containing 70% ethanol and labeled following their preparations according to museum techniques. Orchards and vegetable gardens in particular and the nearby woodlands and pastures where the specimens were high in number were selected as the sampling localities. Sampling localities, altitudes, habitats, date of collecting and number of individuals as male and female are provided together with each species. Pertinent literature

was used for the determination of species (Aydoğdu 2008, Abdinbekova 1975, Papp 1995, Tobias 1986). References are used for known distributions and hosts of the species in the world (Özkan, 2006; Özkan and Tunca, 2005; Özkan and Özmen 2001; Yu et al. 2012). All the specimens have been deposited at Entomology Museum of the Trakya University, Department of Biology, Edirne.

Results

14 species belonging to *Chelonus* were identified of which one species are new record for the fauna of Turkey. The taxa are presented alphabetically.

Cheloninae Förster, 1862

Chelonini Förster, 1862

Chelonus (Chelonus) Panzer, 1806

Chelonus (Chelonus) annulatus (Nees, 1816)

Material examined: Ankara-Kalecik-Elmapınar, 28.05.2007, 40°16'47N, 33°28'04E, crop field and pasture, 912 m., 1♀, 2♂♂; -Beypazarı-Akçakavak, 08.06.2007, 40°06'21N, 32°01'48E, crop field and pasture, 527 m., 1♀; Eskişehir, 07.07.2007, 39°55'50N, 30°16'32E, poplar and willow grove, 839 m., 1♂; -Alpu-Sündiken-Geriz, 09.07.2007, 39°59'06N, 31°08'06E, pine forest, 1266 m., 3♀♀, 5♂♂; Kayseri-Bünyan-Ekrek, 12.07.2007, 38°39'42N, 36°03'30E, pasture, 1424 m., 1♀; Kırıkkale-Keskin-Yeniyapan, 05.06.2008, 39°35'52N, 39°40'47E, pasture, 950 m., 2♀♀; Sivas-Gürün, 05.06.2007, 38°46'05N, 37°06'03E, pasture, 1621 m., 1♀; -Hafik-Durulmuş, 31.05.2007, 39°50'18N, 37°18'53E, poplar grove and clover field, 1275 m., 1♀; Sivas-Tepeönü, 01.06.2007, 39°39'32N, 37°08'01E, poplar and willow grove, 1306 m., 2♂♂; -Ulaş-Yağdonduran, 01.06.2007, 39°20'28N, 37°08'43E, crop field and pasture, 1630 m., 3♀♀, 2♂♂; -Yıldizeli, 30.05.2007, 39°52'07N, 36°37'45E, poplar and willow grove, 1352 m., 2♀♀, 2♂♂; Yozgat-Kuşçu, 29.05.2007, 39°39'15N, 34°43'14E, poplar and willow grove, 1202 m., 1♀, 2♂♂; -Akdağmadeni-Gökdere, 30.07.2007, 39°41'38N, 35°42'02E, poplar grove and pasture, 1194 m., 1♀.

Distribution: Palaearktik: Belarus, Bulgaria, former Czechoslovakia, Finland, France, Georgia, Germany, Hungary, Iran, Italy, Kazakhstan, Kyrgyzstan, Lithuania, Moldova, Mongolia, Poland, Russia, Slovakia, Spain, Sweden, Switzerland, Turkey (Artvin, Amasya, Balıkesir, Bilecik, Bursa,

Çorum, Giresun, Gümüşhane, Kastamonu, Ordu, Rize, Sinop, Tokat), Ukraine, United Kingdom.

Chorotype: Asiatic-European.

Hosts: Lepidoptera: *Chyrsoclista lineella* C. (Blastodacnidae); *Parachronistis albiceps* Z., *Recurvaria nanella* Sch., *Stenolechia gemella* L. (Gelechiidae); *Batia lambdella* D. (Oecophoridae); *Narycia duplicella* G. (Pscyhididae); *Chaetostomella cylindrica* RD., *Trypeta acuticornis* L., *Urophora eriolepidis* L. (Tephritidae); *Dichrorampha petiverella* (L.) (Tortricidae); *Yponomeuta malinella* Z., *Yponomeuta padella* (L.) (Yponematidae).

***Chelonus (Chelonus) annulipes* Wesmael, 1835**

Material examined: Eskişehir-Türkmendağı-Kavacık, 08.07.2007, 39°31'59N, 30°20'28E, pine forest and pasture, 1230 m., 1♀.

Distribution: Palaearctic: Afghanistan, Armenia, Azerbaijan, Belgium, Bulgaria, former Yugoslavia, China, Georgia, France, Iran, Italy, Kazakhstan, Latvia, Lithuania, Moldova, Netherlands, Poland, Romania, Russia, Tajikistan, Turkmenistan, Turkey (Ordu), Ukraine, United Kingdom, Uzbekistan. Nearctic, Oriental.

Chorotype: Holarctic.

Hosts: Lepidoptera: *Agrotis segetum* D.& S, *Eublemma pannonica* F., *Heliolithis viriplaca* Hfn., *Spodoptera exigua* Hb. (Noctuidae); *Ephestia kuehniella* Zel. (Pyralidae); *Loxostege sticticalis* (L.), *Ostrinia nubilalis* Hb. (Pyraustidae); *Cydia pomenella* (L.) (Tortricidae).

***Chelonus (Chelonus) beyarslani* Aydogdu, 2008**

Material examined: Kayseri-Tarım İl Müdürlüğü Misafirhanesi, 24.06.2009, 38°44'28N, 35°31'07E, pasture, 1350 m. 1♀.

Distribution: Palaearctic: Turkey (Aydın).

Chorotype: SW-Asiatic.

Hosts: Unknown.

***Chelonus (Chelonus) canescens* Wesmael, 1835**

Material examined: Ankara-Beypazarı-Akçakavak, 08.06.2007, 40°06'21N, 32°01'48E, crop field and pasture, 527 m., 1♀.

Distribution: Palaearctic: Belgium, Czech Republic, Czechoslovakia, France, Germany, France, Hungary, Italy, Mongolia, Poland, Romania, Russia, Spain, Sweden, Switzerland, Turkey (Amasya, Artvin, Bilecik, Bolu, Çankırı, Edirne,

Gümüşhane, İzmit, Kastamonu, Kırklareli, Manisa, Samsun, Tekirdağ), United Kingdom.

Chorotype: Asiatic-European.

Hosts: Lepidoptera: *Cnephasia pasiuana* (H.) (Tortricidae).

***Chelonus (Chelonus) capsa* Tobias, 1972**

Material examined: Konya-Ilgın, 28.06.2009, 38°17'11N, 31°51'03E, pasture, 1091 m., 1♀.

Distribution: Palaearctic: Hungary, Mongolia, Russia, Turkey (Afyon).

Chorotype: Asiatic-European.

Hosts: Unknown.

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

Material examined: Ankara-Gölbaşı-Oğulbey, 11.07.2007, 39°42'49N, 32°48'52E, orchard and pasture, 1021m., 1♀, 1♂.

Distribution: Palaearctic: Azerbaijan, former Yugoslavia, Greece, Hungary, Italy, Kazakhstan, Moldova, Mongolia, Romania, Slovakia, Turkey (Bilecik, Bursa, Çorum, Edirne, Kastamonu, Kırklareli, Samsun, Tekirdağ, Tokat), Turkmenistan, Uzbekistan.

Chorotype: Centralasiatic- European.

Hosts: Lepidoptera: *Spodoptera exigua* (H.) (Noctuidae).

***Chelonus (Chelonus) carbonator* Marshall, 1885**

Material examined: Kayseri-Talas-Başakpınar, 06.06.2007, 38°40'37N, 35°38'34E, crop field and pasture, 1421m., 1♀.

Distribution: Palaearctic: Austria, Croatia, Czech Republic, Czechoslovakia, Finland, France, Former Yugoslavia, Germany, Greece, Hungary, India, Italy, Mongolia, Poland, Romania, Russia, Slovenia, Spain, Switzerland, Tajikistan, United Kingdom.

Chorotype: Asiatic-European.

Hosts: Lepidoptera: *Spodoptera litura* (F.) (Noctuidae); *Cydia janthinana* (D.) (Tortricidae).

New record for Turkey.

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

Material examined: Konya-Ereğli-İvriz, 26.06.2009, 37°25'14N, 34°10'26E, willow grove and pasture, 1174m., 1♀.

Distribution: Palaearctic: Czechoslovakia, former Yugoslavia, Mongolia, Russia, Turkey (Artvin, Nevşehir).

Chorotype: Asiatic-European.

Hosts: Unknown.

Chelonus (Chelonus) inanitus (Linnaeus, 1767)

Material examined: Eskişehir-Alpu-Karakütük, 09.07.2007, 39°58'10N, 31°07'58E, pine foests and pasture, 1573 m., 1♀.

Distribution: Palaearctic: Albania, Algeria, Armenia, Belgium, Bulgaria, Canary Islands, Croatia, Cyprus, Czech Republic, Czechoslovakia, Denmark, Egypt, Finland, France, Former Yugoslavia, Germany, Greece, Hungary, Iran, Ireland, Israel, Italy, Korea, Latvia, Lithuania, Mongolia, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey (Adapazarı, Afyon, Amasya, Balıkesir, Bilecik, Bursa, Canakkale, Çorum, Edirne, Giresun, İçel, Kastamonu, Kayseri, Kırklareli, Tekirdağ, Trabzon), United Kingdom. Nearctic.

Chorotype: Holarctic.

Hosts: Lepidoptera: *Chortotedes elymi* (T.), *Leucania loreyi* (D.), *Mesoligia literosa* (H.), *Oligia strigilis* (Linnaeus,1758), *Peridroma saucia* (H.), *Pseudaletia unipuncta* (H.), *Spodoptera exigua* (H.), *Spodoptera littoralis* (B.) (Noctuidae); *Aethes francillana* (F.), *Eucosma aemulana* (Sch.) (Tortricidae); *Etilla zinckenella* (Tr.) *Haritalodes derogata* F., *Ostrinia nubilalis* (Hb.) (Pyralidae).

Chelonus (Chelonus) obscuratus Herrich-Schäffer,1838

Material examined: Eskişehir-Sivrihisar-Babatat, 10.07.2007, 39°31'42N, 31°37'36E, vegetable garden, 868 m 1♀.

Distribution: Palaearctic: Bulgaria, Czech Republic, Czechoslovakia, Finland, France, Germany, Greece, Hungary, Italy, Kazakhstan, Moldova, Mongolia, Poland, Russia, Slovakia, Spain, Sweden, Switzerland, Tunisia, Turkey (Adana, Antalya, Bilecik, Burdur, Giresun, Kastamonu, Sinop Gaziantep, Kahramanmaraş, İçel, Isparta), Ukraine, United Kingdom.

Chorotype: Palaearctic.

Hosts: Lepidoptera: *Spodoptera exigua* (Hb.) (Noctuidae); *Rhyacionia buoliana* (D.&S.) (Tortricidae).

Chelonus (Chelonus) oculator (Fabricius, 1775)

Material examined: Ankara-Bey pazarı-Akçakavak, 08.06.2007, 40°06'21N, 32°01'48E, crop field and pasture, 527 m.,1♂; -Haymana-Balakhisar, 20.07.2007, 39°14'46N, 32°45'00E, orchard, 1080 m., 1♀, 2♂♂; -Gölbaşı-Oğulbey, 11.07.2007, 39°42'49N, 32°48'52E, orchard and pasture, 1021m., 3♀♀; Çankırı-Ilgaz-İndağı, 28.05.2007, 40°53'16N, 33°39'32E, oakwood and pasture, 1017 m., 1♀; Eskişehir, 07.07.2007, 39°55'50N, 30°16'32E, poplar and willow grove, 839 m., 8♀♀, 3♂♂; -Sivrihisar-Babatat, 10.07.2007, 39°31'42N, 31°37'36E, vegetable garden, 868 m., 2♀♀; -Türkmendağı-Çamlıca, 08.09.2008, 39°33'01N, 30°22'21E, crop field and pasture, 1010 m., 2♀♀; -Yörükhırka, 08.07.2007, 39°36'00N, 30°25'12E, poplar grove and pasture, 862 m., 4♀♀, 2♂♂; Karaman-Çakırbağ, 27.06.2009, 37°11'55N, 33°07'44E, orchard, 1025 m., 1♀; -Yeşildere, 26.06.2009, 37°15'03N, 33°22'56E, orchard, 1036m., 1♀; Kayseri-Bünyan-Ekrek, 12.07.2007, 38°39'42N, 36°03'30E, crop field and pasture, 1424 m., 1♀; -Yeşilhisar-Araplı, 18.07.2007, 38°14'05N,35°03'13E, crop field and vegetable garden, 1349 m., 2♂♂; Kırıkkale-Karakeçili, 11.07.2007, 39°34'35N, 33°21'25E, poplar grow and clover field, 839 m., 39°01'54N, 34°26'41E 1♀; Kırşehir-Mucur-Kurugöl, 07.06.2007, 39°01'54N, 34°26'41E, pasture, 1049 m., 2♀♀, 1♂; Konya-Çumra-Avdul, 27.06.2009, 37°25'26N, 32°44'51E, pasture, 1073 m., 2♀♀, 4♂♂; -Ereğli-İvriz, 26.06.2009, 37°25'14N, 34°10'26E, willow grove and pasture, 1174m., 3♀; Nevşehir-Avanos-Saruhan, 06.06.2007, 38°42'47N, 34°54'47E, willow grove and pasture, 958 m., 1♀; -Gülşehir-Gümüşkent, 07.06.2008, 38°51'12N 34°33'44E, crop field and pasture, 1258 m., 1♀; Sivas-Gürün, 05.06.2007, 38°46'05N, 37°06'03E, pasture, 1621 m., 1♀; -Gürün-Osmandede, 01.08.2008, 38°45'29N, 37°02'51E, clover field and pasture, 1638 m., 6♀♀, 11♂♂; -Hafik-Durulmuş, 31.05.2007, 39°50'18N, 37°18'53E, clover field and pasture, 1275 m., 2♀♀, 1♂; -Kangal-Yeşildere, 01.06.2007, 39°08'33N, 37°30'00E, crop field, 1630 m., 1♀; -Merkez-Tepeönü, 39°39'32N, 37°08'01E, poplar and willow grove 01.06.2007, 2♀♀; -Sincan yolu, 31.05.2007, 39°52'07N, 36°37'45E, poplar and willow grove,1352 m., 1♀; -Zara-Kılınçlar Din. Tes., 22.08.2008, 39°51'19N, 37°51'47E, poplar and willow grove, 1355 m., 2♀♀, 2♂♂; -Zara- Ağalıkçay, 31.05.2007, 39°32'11N, 37°45'39E, crop field and pasture, 1247 m., 1♀; -Zara- Canova, 39°52'48N, 37°33'15E, pasture, 1300 m., 22.08.2008, 1♀; Yozgat-Akdağmadeni-Gökdere, 30.07.2007, 39°41'38N, 35°42'02E, pasture, 1194 m., 2♀♀; -

Kabaktepe, 39°50'09N, 34°46'54E, pine forest, 1380 m., 29.05.2007, 1♀; -Şefaati-Karanlıkdere, 29.05.2007, 39°34'28N, 34°38'48E, crop field and pasture, 840 m., 1♂.

Distribution: Palaearctic: Afghanistan, Albania, Azerbaijan, Belgium, Bulgaria, Canary Islands, Croatia, Czech Republic, Czechoslovakia, Finland, France, former Yugoslavia, Georgia, Germany, Greece, Hungary, Iran, Italy, Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Turkey (Adana, Adapazarı, Adıyaman, Afyon, Amasya, Artvin, Balıkesir, Bayburt, Bilecik, Bolu, Bursa, Çanakkale, Çankırı, Çorum, Denizli, Edirne, Giresun, Gümüşhane, İstanbul, İzmir, Karabük, Kastamonu, Kırklareli, Kütahya, Manisa, Muğla, Osmaniye, Ordu, Samsun, Tekirdağ, Tokat, Uşak, Zonguldak), Turkmenistan, Ukraine, United Kingdom, Uzbekistan.

Chorotype: Asiatic-European.

Hosts: Lepidoptera: *Coleophora anatipennella* Hb. (Coleophoridae); *Agrotis segetum* (D.& S.), *Chortedes elymi* (Tr.), *Helicoverpa armigera* (Hb.), *Heliothis peltigera* (D.& S.), *H. viriplaca* (Hfn.), *Leucania loreyi* (D.), *Spodoptera exigua* (Hb.), *S. littoralis* (B.) (Noctuidae); *Ephestia cautella* Walk., *Ephestia kuehniella* Z., *Etiella zinckenella* (T.), *Homoeosoma (Homoeosoma) nebulella* (D.&S.), *Loxostege sticticalis* (L.), *Ostrinia nubilalis* (H.), *Plodia interpunctella* (H.) (Pyralidae); *Cydia corticana* (H.), *Zeiraphera isertana* (F.) (Tortricidae).

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

Material examined: Ankara-Ayaş-Başbereket, 08.06.2008, 40°05'36N, 32°23'39E, poplar and willow grove, 1058 m., 3♀♀; Kayseri-Bünyan-Ekrek, 12.07.2007, 38°39'42N, 36°03'30E, pasture, 1424 m., 1♀; Eskişehir-Çatacık-Geyik Üretim Çiftliği, 39°58'07N, 31°10'38E, pine forest, 1332 m., 09.07.2007, 1♀.

Distribution: Palaearctic: Albania, Armenia, Austria, Belgium, Bulgaria, Czech Republic, Czechoslovakia, Finland, France, France, former Yugoslavia, Germany, Greece, Hungary, Iran, Italy, Kazakhstan, Lithuania, Macedonia, Moldova, Mongolia, Netherlands, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey (Afyon, Adıyaman, Bayburt, Bursa, Edirne, Gümüşhane; İstanbul, İzmit, Denizli, Muğla,

Nevşehir, Osmaniye, Tekirdağ, Uşak), United Kingdom.

Chorotype: Asiatic-European.

Hosts: Lepidoptera: *Oligia strigilis* (L.) (Noctuidae); *Loxostege sticticalis* (L.) (Pyralidae); *Rhopobota stagnana* (D.& S.) (Tortricidae).

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

Material examined: Sivas-Zara-Kılınçlar, 23.08.2008, 39°51'19N, 37°51'47E, poplar and willow grove, 1355 m., 1♂.

Distribution: Palaearctic: Albania, Azerbaijan, Belgium, Bulgaria, Croatia, Czechoslovakia, Finland, former Yugoslavia, France, Georgia, Hungary, Israel, Italy, Kazakhstan, Macedonia, Moldova, Mongolia, Poland, Romania, Sweden, Switzerland, Turkey (Bartın), Ukraine, United Kingdom.

Chorotype: Asiatic-European.

Hosts: Lepidoptera: *Spodoptera littoralis* (B.) (Noctuidae); *Homoeosoma (Homoeosoma) nebulella* (D.& S.) (Pyralidae).

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

Material examined: Yozgat-Kırım, 29.05.2007, 39°54'34N, 34°46'23E, crop field and pasture, 1278 m., 2♀♀, 1♂.

Distribution: Palaearctic: Kazakhstan, Turkey (Ordu).

Chorotype: Centralasiatic-European.

Hosts: Unknown.

Discussion

With the present study, the new data seem to affect the taxonomy of the genus *Chelonus* in Central Anatolian region of Turkey. In this study, 14 species belonging to *Chelonus* genus were collected of which one is new record for Turkey. *C. (C.) carbonator* species was recorded by Beyarslan (1985) first time in Turkey, however, when material of museum were redetermined, this species was identified as *C. (C.) oculator*. *C. (C.) carbonator* species is new record for Turkey in this study as well. *C. (C.) oculator* is found in 30 of the 45 habitats, and appears to perform the highest ecological valance. In this paper the distributional ranges of already known species were expanded with the addition of new records for these species.

Many scientists dealing with biogeography defined the term "chorotype" by synthetically grouping geographical distributions of plants and animals. Different chorotypes were put forward either by taking into account only the geographical distributions, species groups in a particular geographical region with specific ecological needs, species groups assumed to have the same biogeographical history, phylogenetically related species groups emerged within the same area or species groups restricted in a region defined by climatological and phytogeographic criteria. Taglianti et. al. (1999) revised the current chorological models used for Western Palaearctic fauna, suggested a new chorotype classification based on these criteria and grouped Holarctic region in 13 chorotypes.

The zoogeographical classification used in the present study follows the chorotype classification proposed by Taglianti et al., (1999). The following groups can be recognized:

1. Species with ranges in two zoogeographical regions, usually Holarctic and Oriental (1 species): *C. (C.) annulipes* Wesmael.
2. Species with Holarctic ranges (1 species): *C. (C.) inanitus* (Linnaeus).
3. Species with Palaearctic ranges (1 species): *C. (C.) obscuratus* Herrich-Schäffer.
4. Asiatic-European range (8 species): *C. (C.) annulatus* (Nees), *C. (C.) canescens* Wesmael, *C. (C.) capsa* Tobias, *C. (C.) carbonator* Marshall, *C. (C.) dauricus* Telenga, *C. (C.) oculator* (Fabricius), *C. (C.) scabrator* (Fabricius), *C. (Chelonus) submuticus* Wesmael.
5. SW-Asiatic (1 species): *C. (C.) beyarslani* Aydogdu.
6. Centralasiatic- European (2 species): *C. (C.) caradrinae* Kokujev, *C. (C.) processiventris* Tobias.

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