

CONTRIBUTION TO THE KNOWLEDGE OF CHELONINAE (HYMENOPTERA, BRACONIDAE) OF SOME PROVINCES OF EASTERN TURKEY

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Contribution to the knowledge of Cheloninae (Hymenoptera, Braconidae) of some Provinces of Eastern Turkey. – Beyarslan A., Deveci Çolak R., Şahsuvaroğlu Ö. – In order to determine Cheloninae (Hymenoptera, Braconidae) fauna of Turkey, adult specimens were collected from different habitats of Bingöl, Bitlis, Muş, and Van provinces. In addition, the material provided from Gaziantep, Iğdır, Kars and Siirt was also evaluated in the study. Sweeping nets, Malaise and light traps were used for samples collection. Material was prepared and appropriately labeled. Relevant literature and comparison material available in our collection were used for taxonomical examination of the material. The properties of the localities are also given. In total, of 43 species from 4 genera were recorded. Eleven of these species are the first record for the Turkish fauna.

Keywords: cryptobiont, carapace, chelonins, first records, koinobionts

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Внесок у вивчення Cheloninae (Hymenoptera, Braconidae) деяких провінцій Східної Туреччини. – Беярслан А., Девечі Чолак Р., Шахсувароглу Е. – Cheloninae – велика за кількістю видів підродина у складі родини Braconidae, з 1523 описаними видами у світовій фауні. Представники Cheloninae є ендopаразитоїдами личинок лускокрилих, особливо Tortricoidea і Pyraloidea. Самки відкладають яйця яйцекладом у господаря криптобіонта. Койнобіонти не пригнічують перезимів'я, і він розвивається до наступної стадії життєвого циклу, поки паразитоїдна личинка не стане лялечкою. Cheloninae ілюструють доволі екстремальні приклади такого виду затримки розвитку. Для визначення складу фауни Cheloninae (Hymenoptera, Braconidae) Туреччини були зібрані дорослі особини з різних біотопів провінцій Бінголь, Бітліс, Муш і Ван. Крім того, в процесі дослідження також був опрацьований матеріал, отриманий із Газіантепа, Ігдіра, Карса та Сірта. Для збору матеріалу використовувалися ентомологічні сачки, пастки Малеза та світлові пастки. Матеріал був промаркований відповідним чином. Для таксономічного дослідження матеріалу використовували спеціалізовану літературу та порівняльний колекційний матеріал, наявний у нашій колекції. В роботі також подано характеристику локалітетів, де проводилися збори матеріалу. Загалом для фауни Туреччини зафіксовано 43 види, що належать до 4 родів. Одинадцять видів із наведеного переліку є першими знахідками для турецької фауни.

Ключові слова: криптобіонти, панцир, хелоніни, перші знахідки, койнобіонти

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Introduction

Cheloninae (Hymenoptera: Braconidae) is a large subfamily of 1523 described species worldwide. Most of the species (1077 species) of the subfamily belong to the tribe Chelonini Foerster, 1863, while the other tribes are small (Adeliini Viereck, 1918 and Odontosphaeropygini Zettel, 1990) or of medium-size (Phanerotomini Baker, 1926) (Yu et al. 2016). This subfamily is characterized by the following apomorphic characters: metasomal carapace, short and wide radial cell, the presence of the postpectal carina, eyes with setae (van

Achterberg 1976), which are often intensely seen, final instar larvae with thin and cylindrical mandibles and usually the presence of indeterminate hypostomal sutures (Kaeslin et al. 2005). Members of the Cheloninae are egg-larval solitary endoparasitoids of Lepidoptera, especially Tortricoidea and Pyraloidea. The hosts of chelonins are found in the grooves, galls, fruits, and curled or rounded leaves of bark. Adult chelonins inject their eggs with their ovipositor in cryptobiont host. The physical and chemical effects of the volatiles produced by the host are important in its settlement

and acceptance: the parasitoid larvae encounter less problems in the host body and develop rapidly. The koinobionts allow the development of the host until the next cycle, that, they allow the host larva to survive until the parasitoid larva becomes pupa. Cheloninae illustrate the most extreme examples of this kind of delayed development (Shaw, Huddleston 1991). While *Ascogaster* species are more common in bush areas and forest habitats, *Chelonus* species are mostly tolerant to heat and drought, they are commonly found in steppe and grassland areas. *Phanerotoma* species are more abundant in arid regions or during dry seasons. The Turkish fauna of Cheloninae is poorly known due to the low number of studies performed on the subfamily. The first records of the chelonines in Turkey date back to the early 1900, by Kohl (1905), which were followed by studies all performed decades later Aydoğdu (2008; 2016; 2017), Aydoğdu, Beyarslan (2002; 2006a; 2006b; 2007; 2009; 2011; 2012), Beyarslan (1985; 1995), Beyarslan et al. (2002), Beyarslan, Şahin (2018), Beyarslan, Şahan (2019), Tobias (1986), Lozan (2005), Özgen et al. (2012). On the other hand, important contributions to Turkish Chelonini fauna were made in the past in a number of studies. Some of these studies: Twenty-three Cheloninae species were determined in the Eastern Anatolian region with 20 being new records for the region (Aydoğdu 2016). More recently, thirteen *Chelonus* species were identified from the Middle Anatolian region (Aydoğdu 2017). Aydoğdu and Beyarslan (2006a) published 18 *Microchelonus* species from the Marmara, Western, and Middle Black Sea regions of Turkey and eight of these species were reported

for the first time from Turkey. Twenty-six species of *Ascogaster* and *Chelonus* were recorded by the same researchers in the same region in 2007. Aydoğdu and Beyarslan (2009) determined thirteen *Phanerotomini* species, and six of these were reported for the first time from Turkey. Thirteen *Chelonus* species were identified, and five of them are new records for the Turkish fauna (Aydoğdu, Beyarslan 2011). Eighteen *Ascogaster* species were recorded from Turkey and two of these are new to the Turkish fauna (Aydoğdu, Beyarslan 2012). Five species of *Chelonus*, *Phanerotoma*, and *Phanerotomella* were recorded from the Turkish islands Imbros and Tenedos (Beyarslan et al. 2002). With all this study, a total of 59 species belonging to five genera were identified (*Ascogaster*: 16, *Chelonus*: 18, *Microchelonus*: 18, *Phanerotoma*: 6, and *Phanerotomella*: 1 species). With this study, in total, of 43 species were recorded. Eleven of these species are the first record for the Turkish fauna and the number of Cheloninae species in Turkey was increased to 70.

Material and methods

Samples of adult Cheloninae were provided from different localities of Kars, Iğdır, Bigöl, Muş, Bitlis, Van, Siirt and Gaziantep provinces of Turkey (Fig. 1). Sweeping nets, malaise and light traps were used for material collection. Adult individuals were separated from the other material with the help of an aspirator and were immediately killed in the absorption tubes with cigarette smoke. The collected material was brought to the laboratory in storage containers and in 70% ethanol.



Fig. 1. Investigated provinces of Turkey: 1. Kars, 2. Iğdır, 3. Bigöl, 4. Muş, 5. Bitlis, 6. Van, 7. Siirt, 8. Gaziantep.

Preparation: Samples were, purified from ethyl alcohol, dried and mounted on cards, in a way or card points that the important diagnostic characters are clearly visible. Samples are then labeled with locality labels.

Identification: Comparison material in our collection and related literature (Belokobylskij 1993; Huddleston 1984; Papp 1995; 2004; Shaw, Huddleston 1991; Tobias 1976; 1986; 2008; van Achterberg 1982; 1990) were used for identification of the material. Information on parasitoids, hosts, synonyms, general distribution (in terms of zoogeographical regions), and parasitoids of species are given according to Tobias (1986) and Yu et al. (2016).

In the text, the host plants of host species are shown in brackets. Specimens housed in Bitlis Eren University, Faculty of Arts and Sciences, Department of Biology, Zoology collection. An asterisk (*) was used within the text for the species that were recorded in Turkey for the first time.

Taxonomical note: Szépligeti (1908) errased the genus *Microchelonus*. Until recently, it has been treated as a genus. A molecular study on Chelonini by Kittel and Austin (2016) revealed that *Microchelonus* is not a separate genus, but the part of the genus *Chelonus*. However, in this study, we accept *Microchelonus* as a genus. Because we made the diagnosis and evaluations according to the old literature.

Results

Adult chelonins from 8 provinces of Eastern Turkey were identified and in total, 43 species belonging four genera (*Ascogaster*, *Chelonus*, *Microchelonus* and *Phanerotoma*) were identified. Eleven of these species are the first records for the Turkish fauna.

Subfamily Cheloninae Foerster, 1863

Genus *Ascogaster* Wesmael, 1835

Subgenus *Ascogaster* s.str.

Ascogaster (Ascogaster) bicarinata (Herrich-Schäffer, 1838)

Chelonus bicarinatus Herrich-Schäffer, 1838

Ascogaster bicarinata: Curtis, 1837

Ascogaster (Ascogaster) bicarinata: Bergamesco et al. 1995.

Synonyms: *Ascogaster caucasicus* Kokoujev, 1895, *Ascogaster mlokoszewitschi* Kokoujev, 1895, *Ascogaster rostratus* Szépligeti, 1896, *Ascogaster rufiventris* Telenga, 1941.

Material examined: Bingöl-Sancak (39°05'42.87"N, 40°24'05.91"E), 1591 m., 29.vi.2012, 1♀; - Bitlis-Adilcevaz kültür parkı (38°48'16.93"N, 42°44'16.20"E), 1678 m., 1.vi.2019, 1♀; - Buzlupınar (38°17'53.23"N,

42°00'04.12"E), 1196 m., 17.vi.2019, 1♀; - Hizan Gayda Köyü (38°10'34.62"N, 42°23'29.88"E), 1268 m., 3.6.2015, 1♂, 13.vi.2019, 2♀; - Nemrut-Dağı Kalderası (38°38'38.58"N, 42°14'15.48"E), 2259 m., 18.vi.2015, 2♀, 18.10.2015, 1♀, 9.vi.2019, 1♂; - Tatvan Dibekli Köyü (38°28'10.44"N, 42°25'06.39"E), 1826 m., 21.vi.2017, 1♀, 21.6.2019, 1♀.

Hosts: Lepidoptera. Tortricidae: *Archips rosana* (Linnaeus, 1758).

General distribution: Palaearctic region.

Ascogaster (Ascogaster) excisa (Herrich-Schäffer, 1838)

Chelonus excisus Herrich-Schäffer, 1838

Ascogaster (Ascogaster) excisa: Szépligeti, 1904.

Synonym: *Ascogaster longiventris* Tobias, 1964.

Material examined: Bingöl-Sancak (39°05'42.87"N, 40°24'05.91"E), 1591 m., 29.vi.2012, 1♀; - Bitlis-Hizan, Gayda köyü (38°10'34.62"N, 42°23'29.88"E), 1268 m., 13.vi.2015, 1♀; - Nemrut Dağı Kalderası (38°38'38.58"N, 42°14'15.48"E), 2259 m., 18.vi.2015, 1♀.

Hosts: Unknown.

Distribution: Palaearctic region.

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

Sigalphus similis Nees, 1816

Ascogaster similis Fahringer, 1834

Ascogaster (Ascogaster) similis Bergamesco et al. 1995.

Material examined: Bingöl-Sancak, (39°05'42.87"N, 40°24'05.91"E), 1591 m., 29.vi.2012, 1♂, 30.vi.2019 1♂; - Bitlis-Nemrut Dağı Kalderası (38°38'38.58"N, 42°14'15.48"E), 2259 m., 18.vi.2015, 1♀, 18.6.2019, 1♀; - Orta Kapı Köyü (38°17'38.38"N, 42°00'46.77"E), 1272m., 17.vi.2017, 1♀.

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

Distribution: Western Palaearctic region.

The first record for the fauna of Turkey.

Genus *Chelonus* Panzer, 1806

Subgenus *Chelonus* s.str.

**Chelonus (Chelonus) aberrans* Tobias, 1964

Chelonus aberrans Tobias, 1964

Chelonus (Chelonus) aberrans Tobias, 1986.

Material examined: Bitlis-Adilcevaz (38°48'16.93"N, 42°44'16.20"E), 1678m., 28.vii.2016, 1♂; - Erikkapı Köyü (38°17'38.38"N, 42°00'46.77"E), 1272m., 28.vii.2016, 1♂.

Hosts: Unknown.
Distribution: Palaearctic region.
The first record for the fauna of Turkey.

***Chelonus (Chelonus) ahngeri Tobias, 1966**

Chelonus ahngeri Tobias, 1966

Chelonus (Chelonus) ahngeri Tobias, 1972.

Material examined: Bingöl-Salköy (38°54'05.20"N, 41°19'09.15"E), 1117 m., 29.vii.2016, 1♂; - Bitlis-Tatvan, Güntepe (38°21'58.80"N, 42°37'40.69"E), 1710 m., 30.ix.2017, 1♀.

Hosts: Unknown.

Distribution: Eastern Palaearctic region.

The first record for the fauna of Turkey.

Chelonus (Chelonus) annulipes Wesmaell, 1835

Chelonus annulipes Wesmaell, 1835

Chelonus (Chelonus) annulipes Abdinbekova, 1971.

Synonyms: *Chelonus falcatus* Szépligeti, 1896, *Sigalphus annulatus* Nees von Esenbeck, C. G., 1816, *Sigalphus sulcatus* Szépligeti, 1901.

Material examined: Bingöl-Karlıova Kalencik (39°9'14.25"N, 40°53'20.70"E) 1788 m., 26.ix.2012, 1♂, 30.ix.2017, 1♂; - Solhan, Çavuşlar (38°56'1.48"N, 40°45'23.99"E) 1560 m., 1♂; - Bitlis-Tatvan Güntepe (38°21'58.80"N, 42°37'40.69"E), 1710 m., 30.ix.2017, 1♀, 30.ix.2019, 1♀; - Döşkaya (38°16'43.48"N, 41°59'20.26"E), 1337 m., 16.ix.2017, 1♀; - Orta Kapı Köyü (38°17'38.38"N, 42°00'46.77"E), 1272 m., 17.vi.2017, 1♀; - Rahva Üçyol (38°29'18.11"N, 42°11'07.00"E), 1795 m., 12.viii.2019, 2♀, 1♂; - Muş-Bulanık, Ahlat tarafından girişi (39°5'46.38"N, 42°16'4.69"E), 1479 m., 23.ix.2017, 7♀, 5♂; - Bulanık, Güllüova Köyü (38°03'38.84"N, 42°19'01.07"E), 1537 m., 23.ix.2017, 2♀, 2♂; - Van- Erciş, Van, Erciş (39°01'43.39"N, 43°21'32.51"E), 1693 m., 28.vii.2016, 1♀.

Hosts: Lepidoptera. Crambidae: *Loxostege sticticalis* (Linnaeus, 1761); Crambidae: *Ostrinia nubilalis* (Hübner, 1796) [*Zea mays*]; Noctuidae: *Agrotis (Agrotis) segetum* (Denis-Schifferrmüller, 1775), *Cydia pomonella* (Linnaeus, 1758), *Eublemma pannonica* (Freyer, 1840), *Heliothis virescens* (Hübner, 1796), *Spodoptera exigua* (Hübner, 1808), Pyralidae: *Ephestia kuehniella* Zeller, 1879.

Distribution: Nearctic, Oriental, Eastern Palaearctic region. Introduced into Canada-Ontario, Guam, Puerto Rico and Connecticut, Delaware, Florida, Illinois Indiana Iowa, Louisiana, Massachusetts, Michigan, New Jersey, New York, Ohio,

Pennsylvania, Virginia and Wisconsin of USA for biological control of pests.

***Chelonus (Chelonus) armeniacus Tobias, 1976**

Chelonus armeniacus Tobias, 1976

Chelonus (Chelonus) armeniacus Tobias, 1976.

Material examined: Bingöl-Sancak (39°05' 2.87"N, 40°24'05.91"E), 1591 m., 29.vi.2012, 1♂; - Bitlis-Orta Kapı Köyü (38°17'38.38"N, 42°00'46.77"E), 1272m., 17.vi.2017, 1♀; - Muş-Bulanık, Ahlat tarafından girişi (38°45'18.45"N, 42°29'13.30"E), 1720 m., 23.ix.2017, 1♀; - Konuk bekler (38°53'46.01"N, 41°21'37.66"E), 1290 m., 29.vii.2016, 1♀.

Distribution: Eastern Palaearctic region.

The first record for the fauna of Turkey.

Chelonus (Chelonus) bidens Tobias, 1972

Material examined: Bitlis-Ahlat (38°45'18.45"N, 42°29'13.30"E), 1720m., 18.vi.2015, 2♂.

Hosts: Unknown.

Distribution: Palaearctic region.

Chelonus (Chelonus) caradrinae Kokujev, 1914

Chelonus caradrinae Kokujev, 1914

Chelonus (Chelonus) caradrinae Tobias, 1972.

Material examined: Bitlis-Orta kapı (38°17'38.38"N, 42°00'46.77"E), 1272 m., 17.vi.2017, 1♀.

Hosts: Lepidoptera. Noctuidae: *Spodoptera exigua* (Hübner, 1808).

Distribution: Eastern Palaearctic region.

Chelonus (Chelonus) cesa Koçak & Kemal, 2013

Chelonus cesa Kocak & Kemal, 2013

Chelonus cesa Kocak & Kemal, 2013. New name for primary homonym

Chelonus asiaticus Telenga, 1941

Chelonus (Chelonus) asiaticus Tobias, 1972.

Primary Homonym: *Chelonus asiatica* Fahringer, 1932.

Material examined: Bitlis-Ahlat, Tatlısüleyman (38°45'10.0116"N, 42°27'3.4344"E), 1650 m., 23.ix.2019, 1♂; - Rahva Üçyol (38°29'18.11"N, 42°11'07.00"E), 1795 m., 12.viii.2019 2♀, 1♂; - Tatlı kaynak (38°21'59.28"N, 42°04'10.66"E), 1502 m., 14.x.2018, 1♂; - Muş-Yaygı Solhan arası (38°56'00.32"N, 40°45'23.41"E), 1351 m., 29.vii.2016, 1♂.

Hosts: Unknown.

Distribution: Palaearctic region.

***Chelonus (Chelonus) contrarius Tobias, 1964**

Chelonus (Chelonus) contrarius Tobias, 1972.

Material examined: Bitlis, Tatvan, Reşadiye

(38°29'20.67"N, 42°32'14.40"E), 1688 m., 27.vii.2016, 1♀.
Hosts: Unknown.
Distribution: Palaearctic region.
The first record for the fauna of Turkey.

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

Chelonus corvulus Marshall, 1885

Chelonus (Chelonus) corvulus Zhang & Hong, 2008.

Synonym: *Chelonus suturatus* Szépligeti, 1898.

Material examined: Bitlis-Tatvan-Yoncabaşı Köyü (38°26'27.93"N, 42°20'59.63"E), 1781 m., 27.vii.2016, 1♀, 4♂; - Küçüksu (38°25'21.73"N, 42°19'27.11"E), 2219 m., 21.vi.2017, 1♂; - Yoncabaşı (38°26'27.93"N, 42°20'59.63"E), 1781 m., 27.vii.2016, 1♀, 4♂.

Hosts: Lepidoptera. Coleophoridae: *Coleophora caespititiella* Zeller, 1839; Erebiidae: *Eublemma pannonica* Freyer, 1840; *Eublemma respersa* Hübner, 1790; Gelechiidae: *Scrobipalpa atriplicella* (F. v Röslerstam, 1841); Sesiidae: *Chamaesphesia leucopsiformis* (Esper, 1800); Noctuidae: *Autographa gamma* (Linnaeus, 1758), *Shargacucullia verbasci* (Linnaeus, 1758), *Spodoptera exigua* (Hübner, 1808); Tortricidae: *Dichrorampha simpliciana* (Haworth, 1811), *Epiblema foenella* (Linnaeus, 1758).

Distribution: Palaearctic region.

***Chelonus (Chelonus) cylindrus* (Klug, 1816)**

Sigalphus cylindrus Klug, 1816

Chelonus cylindrus Nees, 1834

Chelonus (Chelonus) cylindrus Zhang & Hong, 2008.

Synonyms: *Chelonus ebeninus* Belokobylskij et al., 2003; *Chelonus erythropodus* Zhang, 2008; *Chelonus macrocerus* Papp, 1997; *Chelonus ruflava* Zhang, 2008; *Chelonus speculator* Belokobylskij et al., 2003; *Chelonus variabilis* Belokobylskij et al., 2003.

Material examined: Bingöl-Sancak (39°05'42.87"N, 40°24'05.91"E), 1591 m., 5.vii.2012, 1♀.

Hosts: Unknown.

Distribution: Palaearctic region.

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

Chelonus dauricus Telenga, 1941.

Chelonus (Chelonus) dauricus Zhang, 2008.

Material examined: Muş-Bulanık-Güllüova Köyü (38°03'38.84"N, 42°19'01.07"E), 1537 m., 23.ix.2017, 1♀; - Van-Erciş (39°01'43.39"N, 43°21'32.51"E), 1693 m., 28.vii.2016, 1♀.

Hosts: Unknown.

Distribution: Palaearctic region.

***Chelonus (Chelonus) elongatus* Szépligeti, 1898**

Material examined: Bitlis-Tatvan-Reşadiye (38°29'20.67"N, 42°32'14.40"E), 1688 m., 27.vii.2016, 1♀.

Distribution: Oriental, Palaearctic region.

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

Cynips inanita Linnaeus, 1767

Chelonus (Chelonus) inanitus Muesebeck, 1967.

Synonyms: *Ichneumon atomos* Rossi, 1790, *Ichneumon binarius* Geoffroy, 1785, *Ichneumon oculator* Fabricius, 1775.

Material examined: Iğdır-Merkez (39°53'29.56"N, 44°00'27.08"E), 880 m., 6.vi.2014, 2♂.

Hosts: Lepidoptera. Crambidae: *Haritalodes derogata* (Fabricius, 1775), *Ostrinia nubilalis* (Hübner, 1796); Noctuidae: *Chortodes elymi* (Treitschke, 1825), *Leucania loreyi* (Duponchel, 1827), *Mesoligia literosa* (Haworth, 1809), *Oligia strigilis* (Linnaeus, 1758), *Peridroma saucia* (Hübner 1803-1808), *Pseudaletia unipuncta* (Haworth, 1809) [*Medicago sativa*, *Zea mays*], *Spodoptera littoralis* (Boisduval, 1833) (*Gossypium hirsutum*); Pyralidae: *Etiella zinckenella* (Treitschke, 1832); Tortricidae: *Aethes francillana* (Fabricius, 1794).

Distribution: Holarctic region. Introduced into California U.S.A. for biological control of pests.

****Chelonus (Chelonus) mirandus* Tobias, 1964**

Chelonus mirandus Tobias, 1964

Chelonus (Chelonus) mirandus Tobias, 1972.

Material examined: Bitlis-Tatvan, Güntepe (38°21'58.80"N, 42°37'40.69"E), 1710 m., 30.ix.2017, 1♀, 30.ix.2019, 1♂; - Adilcevaz (38°48'16.93"N, 42°44'16.20"E), 1678 m., 12.x.2019, 1♂; - Ahlat, Okçular, (38°45'18.45"N, 42°29'13.30"E), 1720 m., 12.x.2019, 1♂; - Hizan, Albalıkları vadisi (38°10'34.62"N, 42°23'29.88"E), 1268 m., 13.vi.2015, 1♂; - Nemrut Dağı Kalderası (38°38'38.58"N, 42°14'15.48"E), 2259 m., 18.vi.2019, 1♂; - Norşin (Güroymak) (38°34'34.05"N, 42°01'15.19"E), 1311 m., 14.vii.2019, 1♂; - Tatlıkaynak (38°34'34.05"N, 42°01'15.19"E), 1311 m., 14.x.2018, 1♀, 14♂; - Tatvan, Küçüksu (38°25'21.73"N, 42°19'27.11"E), 2219 m., 21.vi.2017, 1♂; - Tatvan, Reşadiye (38°29'20.67"N, 42°32'14.40"E), 1688 m., 27.vii.2016, 1♀.

Hosts: Unknown.

Distribution: Palaearctic region.

The first record for the fauna of Turkey.

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

Chelonus obscuratus Herrich-Schäffer, 1838

Chelonus obscurator nigrifemur Papp, 1971
[Variety]

Chelonus (*Chelonus*) *obscuratus* Tobias, 1972.

Synonyms: *Chelonus intermedius* Thomson, 1874, *Chelonus speculator* Marshall, 1885, *Sigalphus mutabilis* Nees von Esenbeck, C.G., 1816.

Material examined: Gaziantep-Nizip-Alahacı (37°13'4.7244"N, 37°46'12.9612"E), 734 m., 11.iv.2017, 1♂; - (37°13'4.72"N, 37°46'12.96"E), 732 m., 11.iv.2017, 1♀; - Nizip, Yağmuralan (36°55'2.478"N, 37°45'1.230"E), 534 m., 4.v.2017, 3♀; - Van, Gevaş (38°17'52.05"N, 43°06'20.12"E), 1687 m., 25.v.2019, 3♂.

Hosts: Lepidoptera. Noctuidae: *Spodoptera exigua* (Hübner, 1808) [*Zea mays*]; Tortricidae: *Rhyacionia buoliana* (Denis & Schiffermüller, 1775).

Distribution: Palaearctic region.

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

Ichneumon oculator Fabricius, 1775

Chelonus (*Chelonus*) *oculator* Abdinbekova, 1971.

Synonyms: *Anomala integra*, *Ichneumon scabrator* Fabricius, 1793, *Sigalphus cylindrus* Nees von Esenbeck, 1816, *Sigalphus mutabilis* Nees von Esenbeck, C.G., 1816.

Material examined: Bitlis-Güroyamak (38°34'34.05"N, 42°01'15.19"E), 1311 m., 14.vii.2019, 1♂; - Küllüce Köyü (38°28'35.41"N, 42°11'29.33"E), 1822 m., 15.vii.2019, 3♀; - Merkez, Buzlupınar (38°17'53.23"N, 42°00'04.12"E), 1196 m., 20.vi.2019, 1♂; - Norşin, Balık çiftliği (38°34'35.16"N, 42°01'14.23"E), 1310 m., 30.vi.2019, 1♀, 3♂; - Rahva Üçyol (38°29'18.11"N, 42°11'07.00"E), 1795 m., 12.viii.2019, 2♀, 1♂; - Tatvan, Polis kampı (38°30'5.35"N, 42°16'51.10"E), 1668 m., 15.vi.2019, 1♀; - Iğdır-Merkez (39°53'29.56"N, 44°00'27.08"E), 880 m., 6.vi.2014, 2♀; - Siirt-Tillo, Taşbalta Köyü (37°58'53.12"N, 37°58'53.12"E), 1011 m., 6.vii.2019, 1♂; - Van-Erciş (39°01'43.39"N, 43° 21'32.51"E), 1693 m., 28.vii.2016, 2♀, 20.6.2019, 1♀, 28.vii.2016, 1♂, 1♀.

Hosts: Lepidoptera. Coleophoridae: *Coleophora anatipennella* (Hübner, 1796); Crambidae: *Loxostege sticticalis* (Linnaeus, 1761), *Ostrinia nubilalis* (Hübner, 1796); Noctuidae: *Agrotis segetum* Denis-Schiffermüller, 1775, *Chortodes elymi* (Treitschke, 1825), *Helicoverpa armigera* (Hübner, 1805), *Heliiothis peltigera* (Denis-Schiffermüller, 1775), *H. viriplaca* (Hüfnagel, 1766), *Leucania loreyi* (Duponchel, 1827) [*Zea mays*]; *Spodoptera exigua* (Hübner, 1808); Pyralidae: *Ephestia kuehniella* Zeller, 1879, *Etiella zinckenella* (Treitschke, 1832), *Homoeosoma*

nebulella Denis-Schiffermüller, 1775; Tortricidae: *Apotomis turbidana* (Hübner, 1825), *Archips rosana* (Linnaeus, 1758), *Zeiraphera isertana* (Fabricius, 1794).

Distribution: Palaearctic Region.

****Chelonus* (*Chelonus*) *propodealis* Tobias, 1964**

Chelonus (*Chelonus*) *propodealis*: Tobias, 1972.

Material examined: Bingöl-Karlıova, Kalencik (39°9'14.25"N, 40°53'20.70"E) 1788 m., 26.ix.2012, 1♂, 30.ix.2017, 1♂.

Hosts: Unknown.

Distribution: Eastern Palaearctic Region.

The first record for the fauna of Turkey.

****Chelonus* (*Chelonus*) *subseticornis* Tobias, 1971**

Chelonus (*Chelonus*) *subseticornis* Tobias, 1972.

Material examined: Bitlis-Nemrut Dağı Kalderası (38°38'38.58"N, 42°14'15.48"E), 2259 m., 18.vi.2019, 1♂.

Hosts: Unknown.

Distribution: Palaearctic Region.

The first record for the fauna of Turkey.

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

Chelonus submuticus Wesmael, 1835

Chelonus (*Chelonus*) *submuticus* Tobias, 1972.

Synonyms: *Chelonus luteipes* Thomson, 1874, *Chelonus productus* Nees, 1816, *Chelonus subannulatus* Abdinbekova, 1971.

Material examined: Bitlis-Tatvan, Reşadiye (38°29'20.67"N, 42°32'14.40"E), 1688 m., 27.vii.2019, 1♀.

Hosts: Lepidoptera. Pyralidae: *Homoeosoma nebulella* Denis-Schiffermüller, 1775; Noctuidae: *Spodoptera littoralis* (Boisduval, 1833).

Distribution: Palaearctic Region.

***Chelonus* (*Chelonus*) *szépligetii* Dalla Torre, 1898**

Chelonus szépligetii Dalla Torre, 1898

Chelonus szépligetii nigrifemur Fahringer, 1934 [aberration].

Primary Homonym: *Chelonus rufiscapus*.

Chelonus (*Chelonus*) *szépligetii* Tobias, 1972.

Material examined: Bitlis-Tatlı kaynak köyü (38°34'34.05"N, 42° 01'15.19"E), 1311 m., 14.x.2018, 1♀, 2♂.

Hosts: Unknown.

Distribution: Palaearctic region.

Genus *Microchelonus* Szépligeti, 1908

Subgenus *Microchelonus* s.str.

***Microchelonus* (*Microchelonus*) *artus* Tobias, 1986**

Microchelonus (Microchelonus) artus Tobias, 1986.

Material examined: Bingöl-Sancak (39°05'42.87"N, 40°24'05.91"E), 1591 m., 29.vi.2012, 2♀, 27.vi.2019, 1♀; - Yeşilova (39°05'42.87"N, 40°24'05.91"E), 1591 m., 6.vii.2012, 1♀.

Hosts: Unknown.

Distribution: Western Palaearctic Region.

***Microchelonus (Microchelonus) contractus* (Nees, 1816)**

Sigalphus contractus Nees, 1816

Microchelonus (Microchelonus) contractus Papp, 2014.

Synonyms: *Chelonus compressiscapus* Szépligeti, 1898, *Chelonus depressus* Thomson, 1874.

Material examined: Bitlis-Ahlat (38°45'18.45"N, 42°29'13.30"E), 1720 m., 10.vi.2015, 2♀; 18.6.2019, 1♂.

Hosts: Lepidoptera. Choreutidae: *Anthophila fabriciana* (Linnaeus, 1767) [*Urtica*], *Prochoreutis myllerana* (Fabricius, 1794) [*Scutellaria galericulata*]; Coleophoridae: *Coleophora hungariae* Gozmány, 1955 [*Camphorosma annua*]; Cosmopterigidae: *Stagmatophora extremella* Wocke, 1871 [*Salvia pratensis*]; Gelechiidae: *Mirificarma mulinella* (Zeller, 1839), *Phthorimaea operculella* (Zeller, 1873); Plutellidae: *Plutella xylostella* (Linnaeus, 1758); Tischeriidae: *Emmetia szoeci* (Kasy, 1961) [*Sanguisorba officinalis*]; Tortricidae: *Cydia nigricana* (Fabricius, 1794), *Rhyacionia buoliana* (Denis-Schifferrmüller, 1775); Yponomeutidae: *Argyresthia pygmaeella* (Denis-Schifferrmüller, 1775).

Distribution: Palaearctic Region.

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

Chelonus exilis Marshall, 1885

Microchelonus (Microchelonus) exilis Papp, 2014

Synonym: *Chelonus excavatus* Papp, 2014.

Material examined: Bitlis-Adilcevaz (38°47'54.53"N, 42°44'09.12"E), 1651 m., 28.vii.2016, 1♀, 2♂.

Hosts: Lepidoptera. Cosmopterigidae: *Cosmopterix scribaiella* Zeller, 1850 [*Phragmites communis*]; Elachistidae: *Elachista gangabella* Zeller, 1850 [*Brachypodium pinnatum*]; Cosmopterigidae: *Lienigia lienigiella* (Liening & Zeller, 1846); Pyralidae: *Myelois circumvoluta* (Fourcroy, 1785).

Distribution: Palaearctic region.

***Microchelonus (Microchelonus) fenestratus* (Nees, 1816)**

Sigalphus fenestratus Nees, 1816

Chelonus (Microchelonus) fenestratus Papp, 2014.

Synonyms: *Chelonella mongolica* Telenga 1941, *Chelonus dispar*, *Chelonus lugubris* Wesmael, 1835, *Sigalphus contractus* Nees, 1816.

Material examined: Bingöl-Sancak (39°05'42.87"N, 40°24'05.91"E), 1591 m., 29.vi.2012, 2♀.

Hosts: Lepidoptera. Tortricidae: *Dichrorampha alpinana* (Treitschke, 1830), *D. Petiverella* (Linnaeus, 1758), *Epiblema foenella* (Linnaeus, 1758), *Rhyacionia buoliana* (Denis-Schifferrmüller, 1775).

Distribution: Palaearctic region.

***Microchelonus (Microchelonus) flavipalpis* (Szépligeti, 1896)**

Chelonus flavipalpis Szépligeti, 1896.

Microchelonus (Microchelonus) flavipalpis Papp, 2014.

Material examined: Bitlis-Adilcevaz (38°47'54.53"N, 42°44'09.12"E), 1651 m., 28.vii.2016, 1♀, 6♂.

Hosts: Lepidoptera. Coleophoridae: *Kermania pistaciella* Amsel, 1964 [*Pistacia vera*], *Parametriotes theae* Kusnetzov, 1916; Tortricidae: *Sparganothis pilleriana* (Denis-Schifferrmüller, 1775).

Distribution: Palaearctic region.

***Microchelonus (Microchelonus) flavoneavulus* (Abdinbekova, 1971)**

Chelonus flavoneavulus Abdinbekova, 1971

Microchelonus (Microchelonus) flavoneavulus Papp, 2014.

Material examined: Bingöl-Sancak, Yeşilova (39°05'42.87"N, 40°24'05.91"E), 1591 m., 6.vii.2012, 1♀.

Hosts: Unknown.

Distribution: Palaearctic Region.

***Microchelonus (Microchelonus) karakumicus* (Tobias, 1966)**

Neochelonella karakumica Tobias, 1966

Microchelonus (Microchelonus) karakumicus Papp, 2014.

Material examined: Bitlis-Adilcevaz (38°47'54.53"N, 42°44'09.12"E), 1651 m., 23.vi.2019, 1♀, 28.7.2016, 1♂.

Hosts: Unknown.

Distribution: Eastern Palaearctic Region.

****Microchelonus (Microchelonus) kiritshenkoi* (Tobias, 1976)**

Chelonus kiritshenkoi Tobias, 1976.

Microchelonus (Microchelonus) kiritshenkoi Papp, 2014.

Taxonomical note: Tobias described the new species as *Microchelonus* (*Microchelonus*) *kiritschenkoi*, but he wrote it as *Chelonus* (*Microchelonus*) *kiritschenkoi* in diagnostic key.

Material examined: Bingöl-Sancak (39°05'42.87"N, 40°24'05.91"E), 1591 m., 29.vi.2012, 1♀.

Hosts: Unknown.

Distribution: Western Palaearctic Region.

This species is the first record for the fauna of Turkey.

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

Neochelonella caucasica Abdinbekova, 1967.

Chelonus (*Microchelonus*) *kopetdagicus* Tobias, 1976.

Microchelonus (*Microchelonus*) *kopetdagicus* Tobias, 1986.

Synonyms: *Microchelonus cretensis* Tobias, 1999, *Neochelonella kopetdagica* Tobias 2003.

Material examined: Bingöl-Ilıcalar (39°3'45.49"N, 40°46'10.59"E), 1484 m., 26.ix.2012, 1♀; -Sancak (39°05'42.87"N, 40°24'05.91"E), 1591 m., 29.vi.2012, 1♀; - Bitlis-Adilcevaz (38°47'54.53"N, 42°44'09.12"E), 1651 m., 23.vi.2019, 1♀, 28.vii.2016, 1♀, 1♂; - Adilcevaz, Erkkapıköyü (38°47'54.53"N, 42°44'09.12"E), 1651 m., 19.vi.2019, 1♂; - Van-Muradiye Şelalesi (39°03'23.83"N, 43°45'24.13"E), 1807 m., 23.vi.2019, 1♀, 1♂.

Hosts: Unknown.

Distribution: Palaearctic region.

***Microchelonus* (*Microchelonus*) *latrunculus* (Marshall, 1885)**

Chelonus latrunculus Marshall, 1885.

Microchelonus (*Microchelonus*) *latrunculus* Papp, 2014.

Synonyms: *Chelonus parvicornis* Papp, 1995, *Microchelonus rectus* Papp, 1996, *Microchelonus rufipedor* Tobias, 2010.

Material examined: Bitlis-Adilcevaz (38°47'54.53"N, 42°44'09.12"E), 1651 m., 28.vii.2016, 1♀; - Gaziantep-Merkez (Pistasia), 6.vii.2017, Pistasia, 4♂, 7♀, 6.vii.2018 7♀, 1♂; - Nizip, Alahacı (36°55'09.83"N, 37°45'04.21"E), 544 m., 11.iv.2017, 7♀; - Nizip, Yağmuralan (36°55'09.83"N, 37°45'04.21"E), 544 m., 4.v.2017, 5♀, 1♂; - Şahinbey (37°03'53.96"N, 37°22'34.46"E), 836 m., 11.iv.2017, 6♀.

Hosts: Coleoptera. Curculionidae: *Anthonomus pomorum* (Linnaeus, 1758).

Distribution: Palaearctic region.

***Microchelonus* (*Microchelonus*) *longiventris* (Tobias, 1964)**

Neochelonella longiventris Tobias, 1964

Microchelonus (*Microchelonus*) *longiventris* Papp, 2014.

Material examined: Bingöl-Salköy (38°54'05.20"N, 41°19'09.15"E), 1117 m., 29.vii.2012, 3♂; - Bitlis-Güroymak (38°34'34.05"N, 42°01'15.19"E), 1311 m., 14.vii.2019, 1♂; - Rahva Üçyol (38°29'18.11"N, 42°11'07.00"E), 1795 m., 12.viii.2019, 2♂; - Tatvan Hizan, 10 km (38°25'16.85"N, 42°17'37.90"E), 1744 m., 13.vi.2015, 2♂.

Hosts: Unknown.

Distribution: Palaearctic region.

***Microchelonus* (*Microchelonus*) *nigritibialis* (Abdinbekova, 1971)**

Chelonus nigritibialis Abdinbekova, 1971.

Microchelonus (*Microchelonus*) *nigritibialis* Papp, 2014.

Material examined: Bitlis-Adilcevaz girişi (38°47'54.53"N, 42°44'09.12"E), 1651 m., 23.vi.2019, 1♀, 1.7.2017 1♀; - Adilcevaz, Kültür parkı (38°47'54.53"N, 42°44'09.12"E), 1651 m., 23.vi.2019, 1♀, 1.7.2017 1♀; - Karınca Köyü (38°16'12.07"N, 41°58'08.10"E), 1140 m., 16.vi.2019, 1♂; - Orta Köy (38°17'38.38"N, 42°00'46.77"E), 1272 m., 17.vi.2017, 1♂.

Hosts: Unknown.

Distribution: Palaearctic region.

***Microchelonus* (*Microchelonus*) *rostratus* (Tobias, 1966)**

Neochelonella rostrata Tobias, 1966

Microchelonus (*Microchelonus*) *rostratus* Papp, 2014.

Material examined: Bitlis, Hizan, Gayda köyü (38°10'34.62"N, 42°23'29.88"E), 1268 m., 14.vi.2015, 2♀; - Yolalan Köyü (38°16'12.94"N, 42°18'26.26"E), 1656m., 13.vi.2019, 1♀, 1♂.

Hosts: Unknown.

Distribution: Palaearctic region.

***Microchelonus* (*Microchelonus*) *subarcuatilis* Tobias, 1986**

Material examined: Van-Erciş (39°01'43.39"N, 43°21'32.51"E), 1693 m., 28.7.2016, 2♀, 20.vi.2019 1♀.

Hosts: Unknown.

Distribution: Palaearctic region.

***Microchelonus* (*Microchelonus*) *sulcatus* (Jurine, 1807)**

Chelonus sulcatus Jurine, 1807

Microchelonus (Microchelonus) sulcatus Papp, 2014.

Synonyms: *Chelonus curvisulcatus* Szepliget, 1896, *Chelonus pamiricus* Vojnovskaja-Krieger, 1931, *Chelonus rimatus* Szepliget, 1896, *Chelonus rimulosus* Thomson, 1874, *Chelonus scabrosus* Szepliget, 1896.

Material examined: Bingöl-Sancak (39°05'42.87"N, 40° 24'05.91"E), 1591 m., 29.vi.2012, 3♀; - Bitlis-Ahlat (38°45'18.45"N, 42°29'13.30"E), 1720 m., 18.vi.2015, 2♀; - Rahva üçyol (38°29'18.11"N, 42°11'07.00"E), 1795 m., 12.viii.2019, 1♀; - Gaziantep-Nizip-Alahacı (36°55'09.83"N, 37°45'04.21"E), 544 m., 11.vii.2017, 4♀; - Yağmuralan (36°55'09.83"N, 37°45'04.21"E), 544 m., 4.v.2017, 4♀; - Şahinbey (37°03'53.96"N, 37°22'34.46"E), 836 m., 11.iv.2017, 2♀; - Van-Erciş (39°01'43.39"N, 43°21'32.51"E), 1693 m., 18.v.2019, 1♀; - Muratlı (38°53'41.08"N, 43°45'59.26"E), 1684 m., 12.v.2019, 1♀.

Hosts: Diptera. Mycetophilidae: *Neoempheria striata* (Meigen, 1818); Lepidoptera. Yponomeutidae: *Euhypnometoides albithoracellus* (Gaj, 1954) [*Ribes nigrum*]; Carposinidae: *Carposina niponensis* Walsingham, 1900; Coleophoridae: *Augasma aeratella* (Zeller, 1839), *Coleophora tadhikiella* Danielevskij, 1955; Crambidae: *Eudonia truncicolella* (Stainton, 1849); Erebiidae: *Metachrostis dardouini* (Boisduval, 1840); Gelechiidae: *Pectinophora gossypiella* (Saunders, 1844) [*Gossypium* sp.], *Pexicopia malvella* (Hübner, 1805), *Prolita solutella* (Zeller, 1839); Plutellidae: *Prays citri* (Milliere, 1873); Tortricidae: *Rhyacionia buoliana* (Denis & Schiffermüller, 1775).

Distribution: Palaearctic region.

Subgenus *Parachelonus* Tobias, 1995

Microchelonus (Parachelonus) pellucens (Nees, 1816)

Sigalphus pellucens Nees, 1816

Microchelonus (Parachelonus) pellucens Tobias, 1995.

Synonyms: *Chelonus alboannulatus* Szépliget, 1896, *Chelonus nitens* Reinhard, 1867, *Chelonus pulchricornis* Szépliget, 1898, *Chelonus varimaculatus* Tobias, 1986.

Material examined: Bitlis-Ahlat (38°45'18.45"N, 42°29'13.30"E), 1720 m., 12.v.2019, 1♀, 1♂; - Tatvan, Reşadiye (38°29'20.67"N, 42°32'14.40"E), 1688 m., 27.vii.2019, 1♂.

Hosts: Lepidoptera. Sesiidae: *Bembecia hungarica* (Tomala, 1910), *B. ichneumoniformis* (Denis-Schiffermüller, 1775), *B. scopigera* (Scopoli, 1763), *Chamaesphex euceraeformis*

(Ochsenheimer, 1816), *C. tenthrediniformis* (Denis-Schiffermüller, 1775).

Distribution: Palaearctic region.

****Microchelonus (Parachelonus) starki* (Telenga, 1953)**

Chelonus starki Telenga, 1953

Chelonus (Parachelonus) starki Tobias, 1995.

Material examined: Muş-Yaygın Solhan arası (38°57'57"N, 41°3'3"E), 1369 m., 29.vii.2016, 1♀.

Hosts: Lepidoptera. Sesiidae: *Chamaesphex bibioniformis* (Esper, 1800). *Paranthrene tabaniformis* (Rottemburg, 1775). *Synanthedon formicaeformis* (Esper, 1782), *S. myopaeformis* (Borkhausen, 1789), *S. tipuliformis* (Clerck, 1759); Tortricidae: *Cydia pomonella* Linnaeus, 1758.

Distribution: Palaearctic region.

The first record for the fauna of Turkey.

Subgenus *Stylochelonus* Hellén, 1958

Microchelonus (Stylochelonus) mucronatus (Thomson, 1874)

Chelonus mucronatus Thomson, 1874

Microchelonus (Stylochelonus) mucronatus Tobias, 2010.

Synonym: *Chelonus tuberculifer* Tobias, 1972.

Material examined: Bingöl-Sancak (39°05'42.87"N, 40°24'05.91"E), 1591 m., 29.vi.2012, 1♀.

Hosts: Unknown.

Distribution: Palaearctic region.

Genus *Phanerotoma* Wesmael, 1838

Subgenus *Phanerotoma* s.str.

Phanerotoma (Phanerotoma) leucobasis Kriechbaumer, 1894

Phanerotoma leucobasis Kriechbaumer, 1894

Phanerotoma (Phanerotoma) leucobasi Papp, 2012.

Synonyms: *Phanerotoma desertorum* Hedwig, 1957, *Phanerotoma flavitestacea* Fischer, 1959, *Phanerotoma media* Shestakov, 1930, *Phanerotoma ocularis* Kohl, 1906, *Phanerotoma ornatulopsis* de Saeger, 1942, *Phanerotoma rjabovi* Vojnovskaja Krieger, 1929.

Material examined: Bitlis-Merkez (Işık tuzağı, leg. K. Akın), 03.08.2017, 1♀.

Hosts: Lepidoptera. Crambidae: *Desmia horaria* Meyrick, 1937. *Maruca vitrata* (Fabricius, 1787) [*Arachis hypogaea*, *Glycine*, *Lonchocarpus cyanescens*, *Lonchocarpus sericeus*, *Pterocarpus santalinoides*, *Pueraria phaseoloides*, *Tephrosia platycarpa*, *Vigna unguiculata*]; Gelechiidae: *Pectinophora gossypiella* (Saunders, 1844); Noctuidae: *Busseola fusca* (Fuller, 1901); Nolidae: *Earias biplaga* Walker, 1866 [*Gossypium*

hirsutum]; Pyralidae: *Amyelois transitella* (Walker, 1863), *Apomyelois ceratoniae* (Zeller, 1839) [*Ceratonia siliqua*], *A. decolor* (Zeller, 1881), *Cadra calidella* (Guenée, 1845) (= *Cadra bizonella* (Ragonot, 1888) [*Allophylus africanus*, *Harungana madagascariensis*], *Etiella zinckenella* (Treitschke, 1832). *Galleria mellonella* (Linnaeus, 1758), *Prays citri* (Millière, 1873).

Distribution: Afrotropical, Holarctic, Ocean region.

****Phanerotoma (Phanerotoma) potanini* Kokujev, 1895**

Phanerotoma potanini Kokujev, 1895

Phanerotoma (Phanerotoma) potanini Tobias, 2000.

Synonym: *Phanerotoma zaidamensis* Shestakov, 1930.

Material examined: Siirt-Merkez, (37°55'38.65"N, 41°56'31.12"E), 896 m., 2.vii.2009, 1♀; - Kars-Sarıkamış, büyükumru (40°26'6.69"N, 42°29'7.09"E), 2514 m., 6.ix.2012, 1♀.

Hosts: Unknown.

Distribution: Eastern Palaearctic Region. The first record for the fauna of Turkey.

Discussion

A total of 43 species were identified under the 4 genus of the Cheloninae subfamily in the studied region. The 40 species identified are new records for the fauna of research area and eleven of these species are the first record for the Turkish fauna: *Ascogaster similis*, *Chelonus aberrans*, *C. ahngeri*, *C. armeniacus*, *C. contrarius*, *C. mirandus*, *C. propodealis*, *C. subseticornis*, *Microchelonus kiritshenkoi*, *M. starki*, *Phanerotoma potanini* (Yu et al. 2016)

The distribution of the species by genera is as follows. *Ascogaster*: 3 species, *Chelonus*: 20, *Microchelonus*: 18, and *Phanerotoma*: 2 species. The genus represented by the most species is *Chelonus* (Fig. 2).

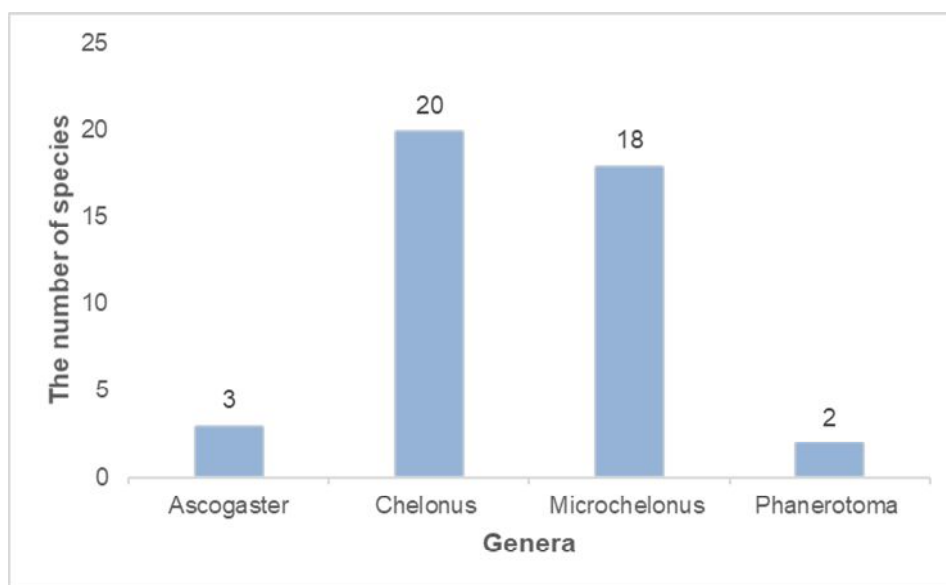


Fig. 2. The recorded genera and their number of species.

The provinces surveyed and their species densities are as follows: Kars 1, Iğdır 2, Bingöl 16, Muş 5, Bitlis 30, Van 6, Sirt 2 and Gaziantep 3 species. Bitlis is the province with the highest species density (Fig. 3).

Chelonus annulipes, *C. mirandus*, and *C. oculator* species were recorded from 9 locales each. Thus these 3 species are the most common species of research areas. Of the other species, 1 species from 4 localities, 2 species from 3 localities, 9 species from 2 localities and 29 species from 1 locality were recorded.

C. annulipes control the following important pest species of Lepidoptera: *Loxostege sticticalis* (Crambidae). *Ostrinia nubilalis* [*Zea mays*]; *Agrotis (Agrotis) segetum*, *Cydia pomonella*, *Eublemma pannonica*, *Heliothis virescens*, *Spodoptera exigua* (Noctuidae). *Ephestia kuehniella* (Pyralidae). Therefore, these species have been introduced into the following countries and regions for biological control of plant pest species: Ontario, Guam and Puerto Rico, Canada; Connecticut, Delaware, Florida, Illinois, Indiana, Iowa, Louisiana, Massachusetts, Michigan, New

Jersey, New York, Ohio, Pennsylvania, Virginia, Wisconsin. *C. annulipes* be used for the same biological control of pests in Turkey.

Phanerotoma leucobasis is the largest spreading species in the world from the detected species and is the parasitoid of the following plant pests. *Phanerotoma leucobasis* is the most widely distributed species in the zoogeographical regions (the Afrotropical, Holarctic, and Oceanic). This species use the following plant pest species of Lepidoptera as hosts: Crambidae: *Desmia horaria*; *Maruca vitrata* [*Arachis hypogaea*, *Glycine*,

Lonchocarpus cyanescens, *Lonchocarpus sericeus*, *Pterocarpus santalinoides*, *Pueraria phaseoloides*, *Tephrosia platycarpa*, *Vigna unguiculata*]; Gelechiidae: *Pectinophora gossypiella*; Noctuidae: *Busseola fusca*; Nolidae: *Earias biplaga* *Apomyelois decolor*, *Cadra calidella* (= *Cadra bizonella*; *Edulicodes hylobatis* [*Allophylus africanus*, *Harungana madagascariensis*]; *Etiella zinckenella*, *Galleria mellonella*, *Prays citri*. This species can also be used in biological control in your country for the same purposes.

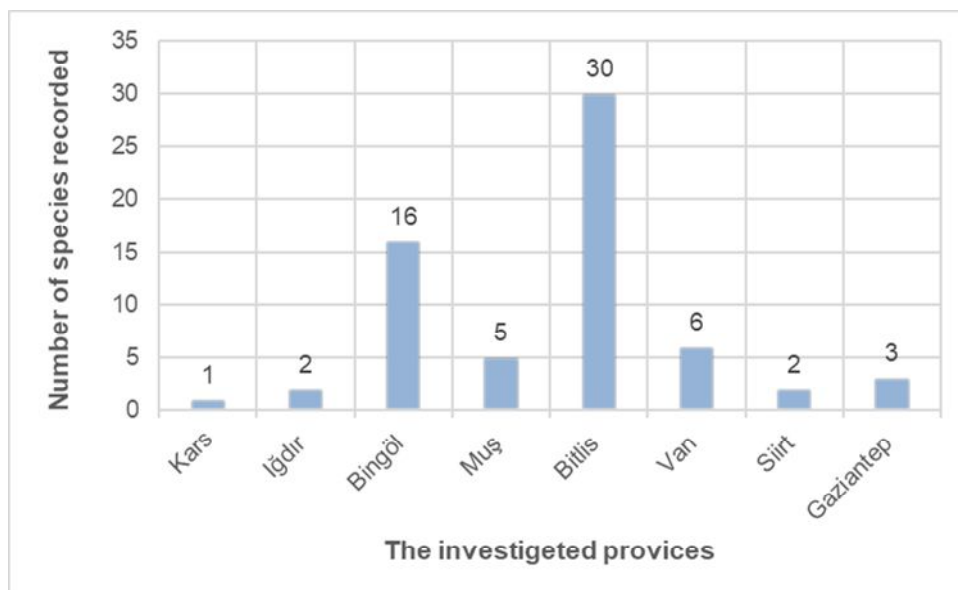


Fig. 3. The species densities of the provinces surveyed.

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