



**PARASITOID SPECIES OF THE GENERA *ASCOGASTER* AND *CHELONUS* (HYMENOPTERA: BRACONIDAE: CHELONINAE) FROM THE MARMARA, WESTERN AND MIDDLE BLACK SEA REGIONS OF TURKEY**

M. AYDOGDU and A. BEYARSLAN

Trakya University, Faculty of Arts and Science, Department of Biology,  
22030 Edirne, Turkey; e-mail: maydogdu75@hotmail.com

**Abstract** – Coleoptera, Diptera, Hymenoptera and Lepidoptera larvae, which occur commonly in orchards, vegetable areas, crop fields and forests, are frequently accompanied by a considerable number of natural enemies. A great importance in nature is attributed to the parasitoid insects belonging to the genera of *Ascogaster* and *Chelonus*. Even infrequent treatments of insecticides on plantations limit the population of parasitoids and reduce their species richness. *Ascogaster* and *Chelonus* species play the greatest role in parasitization of Lepidoptera. Twenty-six species of Coleoptera, Diptera, Hymenoptera and Lepidoptera parasitoids were found in this study. *Ascogaster excisa*, *A. gonocephala*, *A. grahami*, *A. varipes*, *Chelonus (C.) annulipes*, *C. (C.) annulatus*, *C. (C.) caradrinae*, *C. (C.) elongatus* and *C. (C.) processiventris* are reported for the first time from Turkey. The relationships with hosts, the species and their habitats are given in the table. This study ought to be an important first step to integrated pest management studies which will be accomplished in the future.

**KEY WORDS:** *Ascogaster*, *Chelonus*, parasitization, hosts, plantations, Turkey

**Izvešček** – PARAZITOIDI RODOV *ASCOGASTER* IN *CHELONUS* (HYMENOPTERA: BRACONIDAE: CHELONINAE) IZ MARMARSKÉ TER ZAHODNE IN SREDNJE ČRNOMORSKE REGIJE TURČIJE

Ličinke hroščev, dvokrilcev, kožekrilcev in metuljev, ki živijo v vrtovih, zelenjavi, njivah in gozdovih, pogosto spremlja znatno število naravnih sovražnikov. Velik pomen v naravi je pripisan parazitoidnim žuželkam, uvrščenim v rodova *Ascogaster* in *Chelonus*. Tudi neredna uporaba insekticidov na plantažah omeji populacije parazitoidov in zmanjša njihovo vrstno pestrost. Vrste rodov *Ascogaster* in *Chelonus*

imajo največjo vlogo pri zajedanju metuljev. 26 vrst parazitoidov hroščev, dvokrilcev, kožekrilcev in metuljev je bilo najdenih v tej raziskavi. Vrste *Ascogaster excisa*, *A. gonocephala*, *A. grahmi*, *A. varipes*, *Chelonus (C.) annulipes*, *C. (C.) annulatus*, *C. (C.) caradrinae*, *C. (C.) elongatus* in *C. (C.) processiventris* so prvič zabeležene v Turčiji. Odnosi z gostitelji, vrste in njihova prebivališča so podani v tabeli. Ta raziskava bi morala biti prvi korak k raziskavam integrirane kontrole škodljivcev, ki bodo potekale v prihodnosti.

KLJUČNE BESEDE: *Ascogaster*, *Chelonus*, zajedanje, gostitelji, plantaže, Turčija

## Introduction

All members of the subfamily Cheloninae (Hymenoptera: Braconidae) are solitary egg-larval koinobiont endoparasitoids of Lepidoptera. Chelonines mainly exploit host groups that have concealed larvae. Few *Chelonus* species are important and well-studied parasitoids of certain 'macrolepidoptera' such as the noctuid genera *Heliothis* and *Spodoptera*. Two *Ascogaster* have occasionally been reared from geometrids and largely restricted to attacking tortricoid hosts (HUDDLESTON, 1984; SHAW and HUDDLESTON, 1991; SILVA-JUNIOR et al., 2000). 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 insect pests (KAESLIN, 2005; LA SALLE and GAULD, 1993).

To date, a total of 100 species of *Ascogaster* and 180 species *Chelonus* have been reported in the world and approximately 50 species of *Ascogaster* and 90 species of *Chelonus* are found in the Palaearctic region (TOBIAS et al., 1986).

Only 26 species of *Ascogaster* and *Chelonus* are recorded from Turkey (AYDOGDU and BEYARSLAN, 2002; BEYARSLAN, 1985; BEYARSLAN and INANÇ, 1990; BEYARSLAN et al., 2002a; BEYARSLAN et al., 2002b; KOHL, 1905). The faunistic study of the Cheloninae species of Turkey hasn't been carried out up to now. The aim of this study was to survey the Coleoptera, Diptera, Hymenoptera and Lepidoptera parasitoids in a wide range of habitats at different altitudes in the Marmara, Western and Middle Black sea Regions of Turkey.

## Materials and Methods

Parasitoid *Ascogaster* and *Chelonus* species from different habitats and altitudes of Marmara, Western and Middle Black sea Regions were collected with sweeping nets and malaise traps. The specimens were then pinned and labeled. Pertinent literature was used for determination of species (ABDINBEKOVA, 1975; ACHTERBERG, 1997; FAHRINGER, 1934; HUDDLESTON, 1984; PAPP, 1971, 1995, 1996, 1997, 1999,

2003; TOBIAS, 1976; TOBIAS et al., 1986). The host records of HUDDLESTON (1984), PAPP (1995, 1996), SHENEFELT (1973), TOBIAS et al. (1986) and YU et al. (2005) for *Ascogaster* and *Chelonus* are used in this paper. Identified species of *Ascogaster* and *Chelonus* provided by Dr J. Papp (Zoological Department, Hungarian Natural History Museum, Budapest, Hungary) were used for comparison.

The specimens are deposited in the Collection of the Biological Department of Trakya University, Edirne, Turkey (T.U.).

## Results

### *Ascogaster* Wesmael, 1835

#### 1. *Ascogaster abdominalis* (Dahlbom, 1833)

Material examined: Kastamonu-Daday-Ballıdağ-Sarpun, 1350 m, 01.VII.2001, ♂; Küre-İpsinler, 1900 m, 12.VI.2002, ♀, ♂; Kırklareli-Demirköy-Balaban, 390 m, 06.VII.1997, 4♀♀, 2♂♂; Ordu-Gölköy, 1020 m, 04.VII.2003, ♂.

Distribution in Turkey: Antalya, Isparta (BEYARSLAN, 1985).

Hosts: Lepidoptera: *Roeslerstammia erxlebelli* (Roeslerstammiidae); *Epinotia cruciana* (Tortricidae).

#### 2. *Ascogaster annularis* (Nees von Esenbeck, 1816)

Material examined: Edirne-Büyükdöllük, 50 m, 20.VI.1987, ♀.

Distribution in Turkey: Kütahya (BEYARSLAN et al., 2002b).

Hosts: Hymenoptera: *Diplolepis rosae* (Cynipidae); Lepidoptera: *Chrysoclista linneella* (Blastodacnidae); *Coleophora lutipennella* (Coleophoridae); *Parachronistis albiceps*, *Recurvaria leucatella*, *R. nanella*, *Stenolechia albiceps*, *S. gemmella* (Gelechiidae); *Batia lambdella* (Oecophoridae); *Narycia duplicella* (Psychidae); *Pandemis cerasana*, *P. heparana*, *Spilonota ocellana* (Tortricidae); *Yponomeuta malinella*, *Y. padella* (Yponomeutidae)

#### 3. *Ascogaster bicarinata* (Herrich-Schäffer, 1838)

Material examined: Amasya-Merzifon-Tavşandağı-Uzunağaç, 1600 m, 09.VII.2003, 11♀♀, 5♂♂; Taşova-Sarıçiçek, 1567 m, 29.VI.2004, 3♂♂; Balıkesir-Manyas-Kayacaköy, 100 m, 15.VII.1993, ♀; Bolu-Gerede-Güney, 1200m, 13.VI.2002, 4♀♀, 6♂♂; Edirne- Lalapaşa-Hacıdanışment, 210 m, 05.VII.1997, ♂; İskenderköy, 41 m, 23.V.1991, ♀; 28.V.1992, ♂; 23.VI.1987, ♀; Bilecik-Ayvacık, 700 m, 09.VII.1993, ♀; Demirköy, 400 m, 10.VII.1993, ♀; Pazaryeri-Bahçesultan, 1000 m, 10.VII.1993, 5♀♀, ♂; Bursa-İnegöl-Mezitli, 1450 m, 11.VII.1993, ♂; Çanakkale-Gelibolu-Fındıklı, 10 m, 07.VI.2001, ♀, ♂; Çorum-Dodurga-Yeniköy, 1035 m, 28.VI.2004, ♀; Kuşsaray, 1015 m, 29.VI.2004, ♀; Karabük-Çay, 470 m, 13.VI.2002, 4♀♀, 2♂♂; Safranbolu-İnceçay-Sarıçiçek dağı, 1000 m, 30.VI.2001, ♂; Kastamonu-Araç-Toprakcuma, 350 m, 13.VI.2002, ♀; Daday-Ballıdağ-Sarpun, 1350 m, 01.VII.2001, 4♀♀, 4♂♂; Kırklareli-Dereköy, 500 m, 17.VII.2001: ♀; Pınarhisar, 150 m, 06.VII.1997, ♂; İstanbul-Çatalca-Durusu, 110 m, 25.VI.1993, ♂; Ordu-Akkuş-

Yukarıdüğencili, 1340 m, 05.VII.2003, 2♀♀, 2♂♂; Samsun-Kavak-Boğaziçi, 380 m, 02.VII.2003, ♀; Tekirdağ-Işıklar-Mermerköy, 250 m, 21.VI.1987, ♂; Şarköy-Güzelköy, 150 m, 25.VI.2003, ♀, ♂; Tokat-Çamağzı, 692 m, 01.VII.2004, 2♀♀; Turhal-Üçyol, 1040 m, 07.VII.2003, 10♀♀, 2♂♂.

Distribution in Turkey: Adana, Tekirdağ (BEYARSLAN, 1985).

Hosts: So far unknown.

#### 4. *Ascogaster bidentula* Wesmael, 1835

Material examined: Kırklareli-Demirköy, 330 m, 06.VII.1997, 7♀♀, 7♂♂; Dereköy-Çağalayık, 450 m, 17.VII.2001, ♀; İğneada, 20 m, 19.VII.1994, ♀.

Distribution in Turkey: İzmir (BEYARSLAN et al., 2002b).

Hosts: Lepidoptera: *Eupithecia venosata* (Geometridae); *Archips rosana*, *Epinotia cruciana*, *Gypsonoma sociana*, *Notocelia roborana*, *Pandemis* sp., *Rhopobota myrtillana* (Tortricidae).

#### 5. *Ascogaster caucasica* Kokoujev, 1895

Material examined: Bolu-Gerede-Güney, 1200 m, 13.VI.2002, 5♀♀, 2♂♂; Edirne-İskenderköy, 41 m, 23.VI.1987, 2♂♂; 28.V.1992, 3♂♂; Lalapaşa-Doğanköy, 370 m, 04.V.1992, ♂; Süleoğlu, 80 m, 29.V.1993, 2♂♂; Çanakkale-Ayvacık-Söğütlü, 95 m, 04.VI.1993, ♂; Tekirdağ-Malkara-Izgar, 90 m, 23.V.1992, ♂.

Distribution in Turkey: Adana, Edirne, Tekirdağ (BEYARSLAN and İNANÇ, 1990).

Hosts: So far unknown.

#### 6. *Ascogaster dentifer* Tobias, 1976

Material examined: Bolu-Çaydurt, 720 m, 28.VI.2001, ♀, ♂; Kırklareli-Dereköy, 500 m, 28.VI.2002, 2♂♂; -Çağalayık, 450 m, 28.VI.2002, ♂; Sinop-Boyabat-Çangal dağı-Avdullu, 1330 m, 02.VII.2001, ♂; Tekirdağ-Şarköy-Güzelköy, 150 m, 25.VI.2003, ♂; Tokat-Niksar-Çamiçi, 1300 m, 05.VII.2003, ♂; Turhal-Üçyol, 1040 m, 07.VII.2003, ♂.

Hosts: So far unknown.

New record for Turkey.

#### 7. *Ascogaster excisa* (Herrich-Schäffer, 1838)

Material examined: Edirne-Budakdoğanca, 45 m, 26.VII.1992, ♀; Lalapaşa-Doğanköy, 370 m, 04.V. 1992, ♂.

Hosts: So far unknown.

New record for Turkey.

#### 8. *Ascogaster gonocephala* Wesmael, 1835

Material examined: Çorum-Dodurga-Yeniköy, 1035 m, 28.VI.2004, 2♀♀.

Hosts: Lepidoptera: *Bembecia scopigera* (Sesiidae).

New record for Turkey.

**9. *Ascogaster grahami* Huddleston, 1984**

Material examined: Kırklareli-Demirköy, 330 m, 06.VII.1997, ♀, 4♂♂; İğneada-Limanköy, 25 m, 17.VI.1987, ♂; Pınarhisar, 150 m, 06.VII.1997, ♀, ♂.

Hosts: Lepidoptera: *Sorhagenia lophyrella* (Cosmopterigidae); *Borkhausenia einsleri* (Oecophoridae); *Infurcitinea argentimaculella* (Tineidae).

New record for Turkey.

**10. *Ascogaster rufipes* (Latreille, 1809)**

Material examined: Balıkesir-Susurluk-Demirkapı, 65 m, 23.VII.2001, ♀, ♂; Kırklareli-Yeniceköy, 600 m, 06.IX.1988, ♂.

Distribution in Turkey: Adana, Edirne (BEYARSLAN and İNANÇ, 1990).

Hosts: Coleoptera: *Anthonomus pomorum* (Curculionidae); Hymenoptera: *Blennocampa pusilla* (Tenthredinidae); Lepidoptera: *Coscinia cribraria* (Arctiidae); *Coleophora discordella*, *C. gryphipennella* (Coleophoridae); *Agonopterix conterminella* (Depressariidae); *Ethmia funerella* (Ethmiidae); *Earias clorana* (Nolidae); *Acleris hastiana*, *Archips oporana*, *A. rosana*, *Croesia holmiana*, *Cydia funebrana*, *C. pomonella*, *Dichelia histrionana*, *Hedya nubiferana*, *Lobesia botrana*, *Notocelia uddmanniana*, *Olethreutes lediana*, *Rhopobota ustomaculana*, *Selania leplastriana* (Tortricidae); *Yponomeuta evonymella*, *Y. padella* (Yponomeutidae).

**11. *Ascogaster quadridentata* Wesmael, 1835**

Material examined: Amasya-Fındıklı, 380 m, 03.IX.2003, ♂; Göynücek, 650 m, 28.V.2002, ♂; Kaleköy, 620 m, 07.VII.2004, ♀; Taşova-Yolaçan, 233 m, 28.VIII.2004, 2♂♂; Yıldızköy, 420 m, 29.VI.2004, ♂; Edirne-Keşan-Koru dağı, 330m, 19.V.1986, 2♀♀; Balıkesir-Manyas-Kayacaköy, 100 m, 15.VII.1993, ♀; Bartın-Kurucasıle-Danişment, 150 m, 09.VI.2002, ♀; Bilecik-Küplü, 500 m, 20.IX.1992, ♂; Bolu-Aladağ-Şerif Yüksel Ormanı, 1550 m, 27.VIII.2002, ♂; Karacasu-Gölcük, 1200 m, 26.VIII.2002, ♀, ♂; İstanbul-Silivri, 50 m, 25.VIII.1992, ♂; Kastamonu-İnebolu-Yakaboyu, 100 m, 10.VI.2002, ♂; Taşköprü-Alamaşışli, 620 m, 06.IX.2001, ♂; Karabük-Çay, 470 m, 28.VIII.2002, ♂; Kırklareli-Lüleburgaz-Evrensekiz, 65 m, 18.VII.2001, ♂; 25.8.1992, ♀; Ordu-Ünye-Çatalpınar, 80 m, 05.VII.2003, ♂; Samsun-Salıpazarı-Derbentaltı, 970 m, 03.VII.2003, ♂; -Soyuk, 650 m, 03.VII.2003, 2♂♂; Tekirdağ-Çanakçılar, 65 m, 17.V.1986, ♀; Hayrabolu-Susuzmüsellim, 110 m, 05.VIII.1993, ♂.

Distribution in Turkey: Adana, Tekirdağ (BEYARSLAN and İNANÇ, 1990).

Hosts: Coleoptera: *Anthonomus pomorum*, *Pachytychius strumarius* (Curculionidae); Diptera: *Anthomyia albimana* (Anthomyiidae); *Clusiodes albimanus* (Clusiidae); Hymenoptera: *Andricus terminalis*, *Biorhiza pallida* (Cynipidae); Lepidoptera: *Blastodacna atra*, *B. hellerella* (Blastodacnidae); *Filatima persicaeella*, *Recurvaria leucateella*, *R. nanella* (Gelechiidae); *Eupithecia absinthiata*, *Operophtera brumata* (Geometridae); *Cnidocampa flavescens* (Limacodidae); *Desmia funeralis*, *Etiella zinckenella*, *Loxostege sticticalis* (Pyrilidae); *Phyllocolpa leucosticta* (Tenthredinidae); *Aethes francillana*, *Ancylic achatana*, *A. apicella*, *A. comptana*, *Archips rosana*, *Croesia bergmanniana*, *Cydia*

*delineana*, *C. duplicana*, *C. funebrana*, *C. medicaginis*, *C. nigricana*, *C. pactolana*, *C. pallifrontana*, *C. pomonella*, *C. splendana*, *C. zebeana*, *Epinotia solandriana*, *Eupoecilia ambiguella*, *Grapholita molesta*, *G. packardi*, *G. prunivora*, *Gypsonoma aceriana*, *G. dealbana*, *G. oppressana*, *G. sociana*, *Hedya nubiferana*, *Lobesia botrana*, *L. viteana*, *Notocelia cynosbatella*, *N. uddmanniana*, *Olethreutes arbutella*, *Pandemis cerasana*, *P.heparana*, *Spilonota ocellana*, *Zeiraphera griseana* (Tortricidae); *Yponomeuta evonymella*, *Y. malinella*, *Y. padella* (Yponomeutidae).

## 12. *Ascogaster varipes* Wesmäl, 1835

Material examined: Kırklareli-Yeniceköy, 600 m, 19.VII.1994, 12♀♀, 8♂♂; İstanbul-Sarıyer-Bilezikçi çiftliği, 35 m, 14.VI.2001, ♂; Ordu-Akkuş-Yukarıdüğencili, 1340 m, 05.VII.2003, ♀.

Hosts: Coleoptera: *Magdalis violacea* (Curculionidae); Lepidoptera: *Coleophora binderella* (Coleophoridae); *Gelechia rhombella* (Gelechiidae); *Cydia compositella*, *C. grunertiana*, *C. pactolana*, *C. zebeana*, *Endothenia gentianaeana*, *Epinotia cruciana* (Tortricidae).

New record for Turkey.

## *Chelonus* Jurine, 1801

### 13. *Chelonus (Chelonus) annulatus* (Nees von Esenbeck, 1816)

Material examined: Amasya-Gümüşhacıköy, 849 m, 07.VII.2004, 2♀♀; Kaleköy, 620 m, 08.VII.2003, ♀; Merzifon-Tavşan dağı- Esenköy Yaylası, 1700 m, 09.VII.2003, 6♀♀, 14♂♂; -Uzunagaç, 1600 m, 09.VII.2003, 32♀♀, 70 ♂♂; Taşova-Boraboy gölü, 1100 m, 08.VII.2003, 2♀♀, 2♂♂; Yolyanı, 700 m, 30.VI.2004, ♀; Bilecik-Pazaryeri, 700 m, 10.VII.1993, ♀; Bolu-Aladağ-Çepni yaylası, 1470 m, 27.VIII.2002, ♀, 2♂♂; Karacasu-Gölcük, 1200 m, 26.VIII.2002, ♀, ♂; Mengen-Kıyaslar, 610 m, 28.VI.2001, 2♀♀, ♂; Balıkesir-Gönen-Gündoğan, 500 m, 15.VII.1993, ♀; Bursa-İnegöl-Çiçekyaylası, 1670 m, 11.VII.1993, ♂; Çorum-Kuşsaray, 1015 m, 29.VI.2004, ♀; Hamamlıçay, 835 m, 28.VI.2004, 4♀♀, ♂; İskilip-Elmabeli, 1117 m, 26.VIII.2004, ♀; Kastamonu-Araç-Toprakkuma, 350 m, 13.VI.2002, ♀; Akaya, 110 m, 31.VIII.2002, ♀; Azdavay-Kirazdağı, 1000 m, 05.IX.2001, 2♀♀, ♂; -Kayaboğazı, 850 m, 05.IX.2001, ♀, ♂; -Mehmetçelebi, 900 m, 05.IX.2001, 16♀♀, 19♂♂; Ilgaz dağı, 2100 m, 30.8.2002, ♀; -Çatören, 1280 m, 30.VIII.2002, ♀; Daday-Sarpun, 1350 m, 29.VIII.2002, 4♀♀, 3♂♂; -İnceğiz-Çiftlik, 860 m, 29.VIII.2002, ♀; Küre-İpsinler, 1900 m, 12.VI.2002, ♂; Tosya-Ekinci, 1000 m, 31.VIII.2002, ♀; Ordu-Akkuş-Yukarıdüğencili, 1340 m, 05.VII.2003, 11♀♀, 46♂♂; Gürgentepe, 1100 m, 06.VII.2004, ♂; Korgan-Belalan, 1040 m, 31.VIII.2003, 2♀♀, ♂; Samsun-Salıpazarı-Soyuk, 650 m, 03.VII.2003, 3♀♀, 13♂♂; SİNOP-Küre-İkizciler, 1960 m, 12.VI.2002, ♂; Tokat-Almus-Gümelönü, 800 m, 02.IX.2003, 3♀♀, 3♂♂; Pazar-Balıca, 1020 m, 07.VII.2003, 2♀♀, ♂; Niksar-Çamiçi, 1300 m, 05.VII.2003, 10♀♀, 10♂♂; Turhal-Üçyol, 1040 m, 07.VII.2003, 5♀♀; 15♂♂.

Hosts: Lepidoptera: *Chrysoclista linneella* (Blastodacnidae); *Parachronistis albiceps*, *Recurvaria nanella*, *Stenolechia gemmella* (Gelechiidae); *Batia lambdella* (Oecophoridae); *Narycia duplicella* (Psychidae); *Chaetostomella cylindrica*, *Trypeta acuticornis*, *Urophora eriolepidis* (Tephritidae); *Dichrorampha petiverella* (Tortricidae); *Yponomeuta malinella*, *Yponomeuta padella* (Yponomeutidae).

New record for Turkey.

#### 14. *Chelonus (Chelonus) annulipes* Wesmael, 1835

Material examined: Ordu-Akkuş-Yukarıdüğencili, 1340 m, 05.VII.2003, ♀; Gölköy, 1020 m, 04.VII.2003, 3♀♀, 3♂♂.

Hosts: Lepidoptera: *Agrotis segetum*, *Eublemma pannonica*, *Heliothis viriplaca*, *Spodoptera exigua* (Noctuidae); *Ephestia kuehniella*, *Loxostege sticticalis*, *Ostrinia nubilalis* (Pyralidae); *Cydia pomonella* (Tortricidae).

New record for Turkey.

#### 15. *Chelonus (Chelonus) asiaticus* Telenga, 1941

Material examined: Amasya-Merzifon-Tavşan Dağı-Uzunağaç, 1600 m, 09.VII.2003, ♀; Yolyanı, 700 m, 30.VI.2004, ♂; Bursa-Burhaniye, 400 m, 18.IX.1992, ♀; Çanakkale-Ayvacık, 350 m, 22.VII.2001, ♀; Kırklareli-Kofçaz-Beyci, 350 m, 17.VII.2001, ♀, ♂; İstanbul-Gaziosmanpaşa-Boğazköy, 60 m, 14.VII.2002, ♀, ♂; Ordu-Akkuş-Yukarıdüğencili, 1340 m, 05.VII.2003, ♀.

Distribution in Turkey: Kırklareli (AYDOĞDU and BEYARSLAN, 2002).

Hosts: So far unknown.

#### 16. *Chelonus (Chelonus) caradrinae* Kokujev, 1914

Material examined: Bilecik-Okluca, 420 m, 24.VII.2001, ♀, ♂; Bursa-İnegöl-Çakırçiftlik, 110 m, 24.VII.2001, ♀; Çorum-Dodurga-Yeniköy, 1035 m, 28.VI.2004, ♀; Edirne-Kırcasalih, 100 m, 09.VI.1987, ♀; Kastamonu-Ballıdağ-Kelebek yaylası, 1600 m, 01.VII.2001, ♀; Kırklareli-Dereköy, 500 m, 06.VIII.1985, ♀; İğneada, 20 m, 17.VI.1987, ♀; Ordu-Ünye-İkizce, 10 m, 30.VIII.2003, 2♀♀; Samsun-Ayvacık, 40 m, 30.VIII.2003, ♀; -Hasan Uğurlu barajı, 60 m, 30.VIII.2003, ♀, ♂; Tekirdağ-Kınıklar, 110 m, 26.VI.2003, ♀, ♂; Muratlı, 60 m, 09.VI.2001, ♂; Tokat-Çamağzı, 692 m, 01.VII.2004: 2♀♀; Reşadiye-Çayırpınar, 672 m, 01.VII.2004, 4♀♀, ♂.

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

New record for Turkey.

#### 17. *Chelonus (Chelonus) canescens* Wesmael, 1835

Material examined: Amasya-Yolyanı, 700 m, 30.VI.2004, ♀; Bolu-Gerede-Güney, 1200 m, 13.VI.2002, ♀; Çankırı-Çerkeş, 1170 m, 04.VII.2001, ♀; Edirne-Babaeski-Taşağıl, 50 m, 18.VI.1993, ♂; Meriç-Küplü, 60 m, 21.VI.1993, ♀; Uzunköprü-Çöpköy, 70 m, 19.VI.1993, ♂; İzmit, 50 m, 15.VIII.2003, ♀, 3♂♂; Kastamonu-Daday, 700 m, 29.VIII.2002, 2♂♂; -Sarpun, 1350 m, 29.VIII.2002, ♂; Samsun-Vezirköprü-Kızılcaören, 500 m, 02.VII.2003, ♀, ♂; Tekirdağ, 20 m, 23.VI.1993, ♀.

♂; Tokat-Çamağzı, 692 m, 01.VII.2004, ♀; Niksar-Ormanbeyli, 920 m, 06.VII.2003, ♀.

Distribution in Turkey: Bilecik, Edirne, Kırklareli, Manisa (AYDOĞDU and BEYARSLAN, 2002; BEYARSLAN et al., 2002b).

Hosts: Lepidoptera: *Cnephasia pasquana* (Tortricidae).

### 18. *Chelonus (Chelonus) elongatus Szépligeti, 1898*

Material examined: İstanbul-Çatalca-Kızılcaali, 60 m, 14.VI.2001, ♀, ♂.

Hosts: So far unknown.

New record for Turkey.

### 19. *Chelonus (Chelonus) inanitus (Linnaeus, 1767)*

Material examined: Amasya-Merzifon-Tavşan dağı-Uzunağaç, 1600 m, 09.VII.2003, 7♀♀, 5♂♂; Çorum-Kuşsaray, 1015 m, 29.VI.2004, ♀; Kastamonu-Daday-Ballıdağ-Sarpun, 1350 m, 29.VIII.2002, 3♀♀, 2♂♂; Ilgaz dağı- Çatören, 1280 m, 30.VIII.2002, ♀, ♂.

Distribution in Turkey: Adapazarı, Afyon, Balıkesir, Bilecik, Bursa, Çanakkale, Edirne, İcel, Kayseri, Kırklareli, Tekirdağ (AYDOĞDU and BEYARSLAN, 2002; BEYARSLAN, 1985; BEYARSLAN et al., 2002a; BEYARSLAN et al., 2002b; KOHL, 1905).

Hosts: Lepidoptera: *Chortodes elymi*, *Leucania loreyi*, *Mesoligia literosa*, *Oligia strigilis*, *Peridroma saucia*, *Pseudaletia unipuncta*, *Spodoptera exigua*, *Spodoptera littoralis* (Noctuidae); *Etiella zinckenella*, *Haritalodes derogata*, *Ostrinia nubilalis* (Pyralidae); *Aethes francillana*, *Eucosma aemulana* (Tortricidae).

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

Material examined: Adapazarı-Hendek-Hüseyinşeyh, 220 m, 27.VI.2001, ♀; Sapanca-Atatürk Milli Parkı, 10 m, 27.VI.2001, ♂; Pamukova-Mekece, 20 m, 25.VII.2001, 3♀♀, 3♂♂; Amasya-Gümüşhacıköy, 849 m, 07.VII.2004, ♀, ♂; Kaleköy, 620 m, 08.VII.2003, 11♀♀, 10♂♂; 07.VII.2004, 7♀♀, 6♂♂; Taşova-Boraboy, 740 m, 08.VII.2003, 3♀♀, 4♂♂; 29.VI.2004, 3♀♀, 5♂♂; -Boraboy gölü, 1100 m, 08.VII.2003, ♀; -Sarıçiçek, 1567 m, 29.VI.2004, 3♀♀; -Yolaçan, 233 m, 28.VIII.2004, 7♀♀, 2♂♂; Merzifon, 690 m, 07.VII.2004, ♀, 2♂♂; -Tavşan dağı-Esenköy Yaylası, 1700 m, 09.VII.2003, 2♂♂; -Uzunağaç, 1600 m, 09.VII.2003, 5♀♀, ♂; 29.VI.2004, ♂; Suluova, 470 m, 03.IX.2003, 2♀♀, ♂; Yıldızköy, 420 m, 29.VI.2004, 5♀♀, 2♂♂; Yolyanı, 700 m, 30.VI.2004, 2♂♂; Balıkesir-Susurluk-Demirkapı, 65 m, 23.VII.2001, ♀; -Yahyaköy, 20 m, 23.VII.2001, 5♀♀; Manyas-Kayacaköy, 100 m, 15.VII.1993, ♀, ♂; Bartın, 10 m, 09.VI.2002, ♀; Çamlık, 60 m, 30.VI.2001, ♀; Bolu-Çaydurt, 720 m, 28.VI.2001, ♂; Gerede-Güney, 1200m, 13.VI.2002, ♀; Mengen-Kıyaslar, 610 m, 28.VI.2001, ♂; Siyamoğlu, 600 m, 28.VI.2001, 2♀♀; Bilecik-Okluca, 420 m, 24.VII.2001, 2♀♀, 2♂♂; Osmaneli, 150 m, 25.IX.1992, ♀; Pazaryeri-Dikilitaş, 700 m, 06.VII.1997, ♀; Vezirhan, 75 m, 25.VII.2001, 8♀♀, 16♂♂; Bursa-İnegöl-Çakırçiftlik, 110 m, 24.VII.2001, 5♀♀, 4♂♂; Karacabey-Hara, 30 m, 23.VII.2001, 3♀♀, 7♂♂; -Yenikaraağaç, 30 m,



23.VII.2001, 6♀♀, ♂; Uluçam-Doğanlı, 300 m, 13.VII.1993, ♀, ♂; Yenişehir, 350 m, 20.IX.1992, ♀; -Çayırılı, 100 m, 24.VII.2001, 16♀♀, 8♂♂; -Köprühisar, 120 m, 24.VII.2001, 3♀♀, 2♂♂; Çanakkale-Eceabat-Ilgardere, 10 m, 08.VI.2001, ♂; -Tuzgözü, 10 m, 08.VI.2001, ♂; Gelibolu-Kavakköy, 10 m, 07.VI.2001, ♀; -Cumalı, 50 m, 07.VI.2001, ♂; Lapseki, 40 m, 06.V.1993, ♀; Çankırı-Ilgaz-Kale, 1000 m, 04.VII.2001, ♂; Çorum-Dodurga-Gücümen, 793 m, 28.VI.2004, ♂; -Osmaniye, 1028 m, 28.VI.2004, ♂; -Yeniköy, 1035 m, 28.VI.2004, ♀, 3♂♂; İskilip, 981 m, 26.VIII.2004, ♀; -Elmabeli, 1117 m, 26.VIII.2004, 2♀♀, 2♂♂; -Kavak, 546 m, 26.VIII.2004, ♀, ♂; Kargı, 110 m, 31.VIII.2002, ♀; Kuşsaray, 1015 m, 29.VI.2004, 2♀♀, ♂; Osmancık, 410 m, 07.VII.2004, 3♀♀, 10♂♂; Seydim, 1049 m, 26.VIII.2004, 5♀♀, 4♂♂; Edirne-Büyükdöllük, 50 m, 20.VI.1987, ♀; Enez-Sultanıçe, 20 m, 04.VIII.2001, 2♀♀, ♂; 22.IX.1991, ♂; Hanlıyenice, 55 m, 04.VI.1992, ♂; Havsa, 45 m, 05.VII.1992, 2♂♂; 18.VIII.1991, ♀; -Necatiye, 70 m, 30.8.2002, ♀; İpsala, 10 m, 25.VIII.1993, 4♀♀; 26.7.2001, ♀; İskenderköy, 41 m, 23.V.1991, 2♀♀, 4♂♂; Keşan-Koru dağı, 330 m, 25.VII.2002, 3♂♂; -Sazlıdere, 65 m, 31.V.1999, 3♂♂; Lalapaşa-Doğanköy, 370 m, 04.V.1992; ♀, ♂; Meriç-Küplü, 60 m, 21.VI.1993, ♀; Sarayakpınar, 41 m, 26.VII.2003, ♂; Tavuk Ormanı, 41 m, 26.V.2002, ♀; Trakya Üniv. Güllapoğlu-Yerleşkesi, 41 m, 15.VIII.2001, 3♀♀, 2♂♂; 08.VI.2001, ♂; 15.X.2001, ♀; 17.V.2002, ♀, ♂; Uzunköprü-Bahçeagıl, 70 m, 26.VII.2000, ♀; -Çalıköy, 75 m, 30.VIII.1992, 6♀♀; -Çöpköy, 70 m, 13.VII.2002, ♀, ♂; -Karapınar, 70 m, 13.VII.2002 ♀; -Yeniköy, 70 m, 22.V.2002, 5♀♀, ♂; İstanbul-Gaziosmanpaşa-Boğazköy, 60 m, 15.VI.2001, 3♀♀, 2♂♂; Çatalca-Durusu, 110 m, 14.VI.2001, ♀, ♂; -Oklalı, 65 m, 14.VII.2002, ♀, 3♂♂; -Ömerli, 80 m, 15.VI.2001, 3♀♀, ♂; Silivri-Akören, 60 m, 14.VII.2002, 2♀♀; -Büyükkılıçlı, 150 m, 15.VI.2001, ♂; -Küçüksinekli, 170 m, 25.VIII.1992, 5♀♀, 3♂♂; İzmit-Sapanca-Kurtköy, 10 m, 27.VI.2001, ♂; Karabük-Çay, 470m, 13.VI.2002, ♂; Kastamonu-Araç-Akgeçit, 400 m, 28.VIII.2002, ♀; -Toprakcuma, 350 m, 13.VI.2002, 2♂♂; Cide, 60 m, 10.VI.2002, ♂; Çatalzeytin-Köprüköy, 90 m, 10.VI.2002, ♂; Daday-Balıdağ, 1750 m, 01.VII.2001, 5♀♀, 7♂♂; -İncegiz, 750 m, 01.VII.2001, 3♀♀; Hanönü, 450 m, 02.VII.2001, 2♀♀, ♂; 06.VIII.2001, 2♀♀; İnebolu-Yakaboyu, 100 m, 10.6.2002, ♂; Taşköprü-Alamaşışlı, 620 m, 02.VII.2001, ♀; Tosya-Ekinci, 1000 m, 31.VIII.2002, 2♀♀; Kırklareli-Babaeski-Nadırlı, 70 m, 07.IX.1990, ♀; -Yeniköy, 90 m, 25.VII.2002, 5♀♀, 5♂♂; Balaban-Velika, 400 m, 26.V.2002, 2♀♀; Dereköy, 500 m, 23.VII.2000, ♀, ♂; 17.VII.2001, ♀; -Gümrük, 590 m, 23.VII.2000, ♀; Deveçatağı, 70 m, 25.VII.2002, ♀, ♂; İğneada-Begendik, 20 m, 28.VII.1986, ♀; İnece-Paşayeri, 150 m, 02.VIII.2000, ♀; Kofçaz-Beyci, 350 m, 17.VII.2001, ♂; -Erikler, 430 m, 02.VIII.2000, ♀; Lüleburgaz-Çengelli, 60 m, 18.VII.2001, 4♀♀, ♂; Emirali, 70 m, 18.VII.2001, ♀, 3♂♂; -Evrensekiz, 65 m, 18.VII.2001, 4♀♀, 3♂♂; -Karaağaç, 65 m, 18.VII.2001, 2♀♀; -Seyitler, 75 m, 18.VII.2001, 6♀♀, 5♂♂; -Türkgeldi farm, 65 m, 25.VII.2002, 7♀♀, 2♂♂; Vize, 150 m, 25.VIII.1992, 2♀♀; 25.VII.2000, 3♂♂; -Kıyıköy, 15 m, 16.VI.2001, ♂; -Kömürköy, 180 m, 16.VI.2001, 4♀♀, ♂; Ordu-Akkuş-Yukarıdüğencili, 1340 m, 05.VII.2003, 2♂♂; Gürgentepe, 1100 m, 04.VII.2003, ♀; Orman fidanlığı, 30 m, 04.VII.2003, ♂; Ünye-Çatalpınar,

80 m, 05.VII.2003, 2♀♀; -İkizce, 10 m, 30.VIII.2004, ♀; Samsun-Havza-Mismiliağaç, 610 m, 02.VII.2003, 2♀♀, 6♂♂; Vezirköprü-Erduası, 110 m, 02.VII.2003, 2♀♀; -İncesu, 240 m, 28.VIII.2003, ♀; Sinop-Boyabat-Salar, 450 m, 03.VII.2001, 11♀♀, 12♂♂; -Yabancı, 900 m, 07.IX.2001, ♀; Boyalı, 1400 m, 11.VI.2002, ♂; Demirci, 30 m, 03.VII.2001, 8♀♀, 21♂♂; 11.VI.2002, ♀; Kabalı, 70 m, 11.VI.2002, ♂; Yeniçam, 30 m, 06.IX.2001, 8♀♀, 8♂♂; 02.VII.2001, 6♀♀, 8♂♂; Tekirdağ, 20 m, 23.VI.1993, 3♂♂; Banarlı, 108 m, 09.VI.2001, ♀; Bıyıklı, 110 m, 26.VI.2003, 4♀♀, 10♂♂; Çorlu, 65 m, 12.VIII.1993, ♀; Çerkezköy-Bahçeagıl, 70 m, 25.VII.2000, 2♀♀; -Veliköy, 130 m, 25.VII.2000, ♀, ♂; Deregündüzlü, 80 m, 12.VIII.1993, ♀, ♂; Hayrabolu, 90 m, 26.VI.2003, 3♀♀, ♂; -Kandamış, 70 m, 26.VIII.1991, ♀; -Soylu, 50 m, 26.VIII.1994, 2♀♀, 6♂♂; Karacaali, 120 m, 25.VI.2003, 4♀♀, ♂; Malkara, 100 m, 26.IX.1992, 2♀♀; 26.VII.2000, ♂; -Izgar, 90 m, 09.VI.2001, ♀, 2♂♂; -Kozyörük, 90 m, 26.VI.2003, 3♂♂; -Sağlamtaş, 120 m, 25.VI.2003, 2♀♀, ♂; Muratlı-Arzulu, 105 m, 09.VI.2001, ♂; -Hanoğlu, 87 m, 09.VI.2001, 2♀♀; -Yaylagöre, 53 m, 09.VI.2001, ♂; Naipköy, 20 m, 24.VI.2003, 5♀♀, 12♂♂; Saray, 110 m, 16.VI.2001, 2♂♂; Şarköy-Güzelköy-Radar, 650 m, 25.VI.2003, ♀; Yazırköy, 60 m, 24.VI.2003, ♀, 10♂♂; Tokat-Almus-Gezgi, 740 m, 02.IX.2003, ♀, 2♂♂; Çamağzı, 692 m, 01.VII.2004, 2♀♀; Erbaa, 234 m, 28.VIII.2004, 3♀♀; Niksar-Çamiçi, 1300 m, 05.VII.2003, 3♀♀; -Orhanbeyli, 920 m, 06.VII.2003, 3♀♀, ♂; Reşadiye-Çayırpınar, 672 m, 01.VII.2004, 6♀♀, 5♂♂; Turhal-Çamlıca, 900 m, 07.VII.2003, ♀, 3♂♂; -Doğanlı farm, 530 m, 03.IX.2003, ♀, 30.VI.2004, 12♀♀, 20♂♂; -Kalaycık, 570 m, 07.VII.2003, 6♀♀, 3♂♂; -Üçyol, 1040 m, 07.VII.2003, 2♀♀, ♂; Pazar-Balıca, 1020 m, 07.VII.2003, 2♀♀, 7♂♂; Taşlıçiftlik, 550 m, 06.VII.2003, ♀, 4♂♂; Zonguldak-Çaycuma-Kayıkçılar, 20 m, 30.VI.2001, 2♀♀, 5♂♂; -Yolgeçen, 20 m, 09.VI.2002, 2♀♀; Çukurören, 70 m, 29.VI.2001, ♂; Devrek-Orman işl., 800 m, 28.VI.2001, 2♀♀; -Davulga, 800 m, 29.VI.2001, 2♀♀, ♂; Ilıksu 25 m, 08.VI.2002, ♀.

Distribution in Turkey: Adapazarı, Afyon, Balıkesir, Bilecik, Bursa, Çanakkale, Denizli, Edirne, İzmir, Kırklareli, Kütahya, Manisa, Muğla, Tekirdağ, Uşak (AYDOĞDU and BEYARSLAN, 2002, BEYARSLAN et al., 2002b).

Hosts: Lepidoptera: *Coleophora anatipennella* (Coleophoridae); *Agrotis segetum*, *Chortodes elymi*, *Helicoverpa armigera*, *Heliiothis peltigera*, *H. virescens*, *Leucania loreyi*; *Spodoptera exigua*, *S. littoralis* (Noctuidae); *Ephestia kuehniella*, *Etiella zinckenella*, *Homoeosoma nebulella*, *Loxostege sticticalis*, *Ostrinia nubilalis* (Pyralidae); *Cydia corticana*, *Zeiraphera isertana* (Tortricidae).

## 21. *Chelonus (Chelonus) obscuratus* Herrich-Schäffer, 1838

Material examined: Bilecik-Pazaryeri-Dikilitaş, 700 m, 10.IX.2002, ♀; Kastamonu-Daday-İnceğiz-Çiftlik, 860 m, 29.VIII.2002, 6♀♀, 4♂♂; Sinop-Yeniçam, 30 m, 06.IX.2001, ♀, 6♂♂.

Distribution in Turkey: Adana, Antalya, Burdur, Gaziantep, Kahramanmaraş, İçel, Isparta (BEYARSLAN, 1985).

Hosts: Lepidoptera: *Spodoptera exigua* (Noctuidae); *Rhyacionia buoliana* (Tortricidae).

**22. *Chelonus (Chelonus) olgae* Kokujev, 1895**

Material examined: Balıkesir-Susurluk-Demirkapı, 65 m, 23.VII.2001, ♀; Edirne-Meriç-Akçadam, 80 m, 13.VII.2002, ♀, ♂; Tekirdağ-Çorlu, 65 m, 12.VIII.1993, ♀.  
Distribution in Turkey: Denizli (BEYARSLAN et al., 2002b).

Hosts: So far unknown.

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

Material examined: Ordu-Akkuş-Yukarıdüğencili, 1340 m, 05.VII.2003, 5♀♀.

Hosts: So far unknown.

New record for Turkey.

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

Material examined: Bartın-Çamlık, 60 m, 30.VI.2001, 2♂♂; Bilecik-Pazaryeri-Dikilitaş, 700 m, 10.IX.2002, ♀; Bolu-Siyamoğlu, 600 m, 28.VI.2001, ♀; Çorum-Dodurga-Osmaniye, 1028 m, 28.VI.2004, ♀; Osmancık, 410 m, 07.VII.2004, 3♀♀; Düzce-Kabalar, 250 m, 03.IX.2001, ♂; Karabük-Bostanbükü, 290 m, 13.VI.2002, ♂; Kastamonu-Akkaya, 110 m, 31.VIII.2002, ♂; Ilgaz dağı-Çatören, 1280 m, 03.VII.2001, ♀, ♂; Tosya-Ekinci, 1000 m, 31.VIII.2002, ♀; Kırklareli-Aşağıkanara, 130 m, 4.6.1993, ♀; Tekirdağ-Saray, 110 m, 16.VI.2001, 2♀♀; Zonguldak-Çaycuma-Kayıkçılar, 20 m, 30.VI.2001, ♂; -Yolgeçen, 20 m, 09.VI.2002, ♀; Çukurören, 70m, 29.VI.2001, ♂.

Distribution in Turkey: Afyon, Bursa, Edirne, İstanbul, İzmit, Denizli, Muğla, Tekirdağ, Uşak (AYDOĞDU and BEYARSLAN, 2002, BEYARSLAN et al., 2002 b).

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

**25. *Chelonus (Chelonus) smirnovi* Telenga, 1953**

Material examined: Bolu-Siyamoğlu, 600 m, 28.VI.2001, ♀.

Distribution in Turkey: Kırklareli (AYDOĞDU and BEYARSLAN, 2002).

Hosts: Lepidoptera: *Etiella zinckenella* (Tortricidae).

**26. *Chelonus (Chelonus) szepligetti* Dalla Torre, 1898**

Material examined: Bilecik-Vezirhan, 75 m, 25.VII.2001, ♀, ♂; Tekirdağ-Deregündüzlü, 80 m, 12.VIII.1993, 5♀♀, 4♂♂; Hayrabolu, 90 m, 26.VI.2003, ♀.

Distribution in Turkey: Kırklareli, İstanbul, Tekirdağ (AYDOĞDU and BEYARSLAN, 2002).

Hosts: So far unknown.

**Table 1:** The relationships among hosts, the species and their habitats.

<b>Species</b>	<b>Habitats</b>	<b>Hosts</b>
<i>Ascogaster abdominalis</i>	Meadow, Mixed forests, Hazelnut garden, Fir forests	Roeslerstammiidae, Tortricidae
<i>Ascogaster annularis</i>	Crop field	Blastodacnidae, Coleophoridae, Cynipidae, Gelechiidae, Oecophoridae, Psychidae, Tortricidae, Yponomeutidae
<i>Ascogaster bicarinata</i>	Meadow, Mixed forests, Orchard, Trefoil, Crop field, Fir forests	Unknown
<i>Ascogaster bidentula</i>	Meadow, Mixed forests, Orchard	Geometridae, Tortricidae
<i>Ascogaster caucasica</i>	Meadow, Mixed forests	Unknown
<i>Ascogaster dentifer</i>	Mixed forests, Orchard, Pine forest	Unknown
<i>Ascogaster excisa</i>	Meadow, Mixed forests	Unknown
<i>Ascogaster gonocephala</i>	Vegatable garden	Sessidae
<i>Ascogaster grahami</i>	Meadow, Mixed forests	Cosmopterigidae , Oecophoridae, Tineidae
<i>Ascogaster rufipes</i>	Meadow, Mixed forests	Arctiidae, Coleophoridae, Curculionidae, Depressariidae, Ethmiidae, Nolidae, Tenthredinidae, Tortricidae, Yponomeutidae
<i>Ascogaster quadridentata</i>	Meadow, Mixed forests, Orchard Crop field	Anthomyiidae, Blastodacnidae, Clusiidae, Curculionidae, Cynipidae, Gelechiidae, Geometridae, Limacodidae, Pyralidae, Tenthredinidae, Tortricidae, Yponomeutidae
<i>Ascogaster varipes</i>	Meadow, Mixed forests	Coleophoridae, Curculionidae, Gelechiidae, Tortricidae
<i>Chelonus (C.) annulatus</i>	Meadow, Mixed forests, Orchard, Pine forests, Crop field, Hazelnut garden. Fir forests, Vegatable garden	Blastodacnidae, Gelechiidae, Oecophoridae, Psychidae, Tephritidae, Tortricidae Yponeumatidae

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<b>Species</b>	<b>Habitats</b>	<b>Hosts</b>
<i>Chelonus (C.) annulipes</i>	Meadow, Hazelnut garden	Noctuidae, Pyralidae, Tortricidae
<i>Chelonus (C.) asiaticus</i>	Meadow, Mixed forests, Oak forests, Orchard, Trefoil	Unknown
<i>Chelonus (C.) caradrinae</i>	Meadow, Mixed forests, Orchard, Fir forests, Vegetable garden	Noctuidae
<i>Chelonus (C.) canescens</i>	Meadow, Mixed forests, Orchard, Trefoil, Crop field, Fir forests	Tortricidae
<i>Chelonus (C.) elongatus</i>	Vegetable garden	Unknown
<i>Chelonus (C.) inanitus</i>	Meadow, Mixed forests, Crop field, Fir forests	Noctuidae, Pyralidae, Tortricidae
<i>Chelonus (C.) oculator</i>	Meadow, Mixed forests, Oak forests, Beech forests, Orchard, Pine forests, Trefoil, Hazelnut garden, Fir forests, Vegetable garden	Coleophoridae, Noctuidae, Pyralidae, Tortricidae
<i>Chelonus (C.) obscuratus</i>	Meadow, Trefoil, Vegetable garden	Noctuidae, Tortricidae
<i>Chelonus (C.) olgae</i>	Mixed forests, Crop field	Unknown
<i>Chelonus (C.) processiventris</i>	Pine forests	Unknown
<i>Chelonus (C.) scabrator</i>	Meadow, Mixed forests, Oak forests, Orchard, Pine forests, Hazelnut garden, Vegetable garden	Noctuidae, Pyralidae, Tortricidae
<i>Chelonus (C.) smirnovi</i>	Mixed forests	Tortricidae
<i>Chelonus (C.) szepligetti</i>	Crop field	Unknown

## Discussion

In the present survey twenty-six taxa of Coleoptera, Diptera, Hymenoptera and Lepidoptera parasitoids were found in the Marmara, Western and Middle Black sea regions of Turkey, which have not yet been exposed to massive applications of pesticides. By adding these new records, the number of *Ascogaster* and *Chelonus* species in Turkey has been raised from 26 to 35.

Many species of Braconidae use as hosts insects which are important economically as pests of crops. The need for programmed “biological” control is already becoming more urgent as the effectiveness of chemical methods of pest control declines. The use of parasitoid insects in the control of pest species has not met more than sporadic success. To be effective in biological control an intimate knowledge of the biology of the insects involved is essential, and this depends upon an accurate knowledge of their taxonomy.

*Chelonus (C.) inanitus* is a solitary egg-larval parasitoid which lays its eggs into eggs of *Spodoptera littoralis* (Noctuidae: Lepidoptera) and codling moth larvae parasitised by braconid *Ascogaster quadridentata* (TOMKINS et al, 1987, WHARTON et al., 1998). In this study *Ascogaster bicarinata*, *A. dentifer*, *Chelonus (Chelonus) annulatus*, *C. (C.) asiaticus*, *C. (C.) caradrinae*, *C. (C.) canescens*, *C. (C.) oculator*, *C. (C.) scabrator* were obtained from orchards, *A. annularis*, *A. bicarinata*, *A. quadridentata*, *C. (C.) annulatus*, *C. (C.) canescens*, *C. (C.) olgae* from crop fields, *A. gonocephala*, *C. (C.) annulatus*, *C. caradrinae*, *C. (C.) elongatus*, *C. (C.) oculator*, *C. (C.) obscuratus*, *C. (C.) scabrator* from vegetable garden and *A. abdominalis*, *C. (C.) annulatus*, *C. (C.) annulipes*, *C. (C.) oculator* and *C. (C.) scabrator* from hazelnut garden. These species could potentially be used as biological control agents of the Lepidoptera hosts.

This study is an important first step to integrated pest management studies which will be made in the future.

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### References

- Abdinbekova, A. A.**, 1975: Braconids (Hymenoptera, Braconidae) of Azerbaijan. *Akad. Nauk. Azerbaid. SSR, Inst. Zool*, “ELM”, Baku, pp. 204-229 (Russian with English title).
- Achterberg, C. Van**, 1997: Revisionary notes on *Chelonus* Jurine and *Anomola* von Block (Hymenoptera: Braconidae: Cheloninae). *Entomol. Ber. (Luzern)*, 42:18-190.
- Aydogdu, M. and Beyarslan, A.**, 2002: The *Chelonus* Jurine (Hymenoptera: Braconidae: Cheloninae) Species of the Marmara Region. *Turk. J. Zool*, 26 (1):1-13.
- Beyarslan, A.**, 1985: Die im Mittelmeergebiet der Türkei vertretenen Cheloninae-Arten (Hym.: Braconidae) und ihre Verbreitung. *Turk. J. Zool*, 9 (1):12-19 (Turkish with German summary).

- Beyarslan, A. and Inanç, F.,** 1990: Taxonomic investigations on the Species of Cheloninae (Hym.: Braconidae). X. *National Biology Congress* (Erzurum, Turkey), pp. 141-151 (Turkish with English summary) .
- Beyarslan, A., Inanç, F., Cetin, O., Aydogdu, M.,** 2002a: Braconiden von den türkischen Inseln Imbros und Tenedos (Hymenoptera, Braconidae: Agathidinae, Braconinae, Cheloninae, Microgastrinae). *Entomofauna*, 23(15):173-188.
- Beyarslan, A., Inanç, F., Cetin, O., Aydogdu, M.,** 2002b: Braconidae Species of Turkish Aegean Region. Parasitic Wasps: Evolution, Systematics, Bio diversity and Biological Control. International Symposium 14-17. May. 2001, Kőszeg-Hungary, George Melika and Csaba Thuroczy (editors), pp. 285-290.
- Fahringer, J.,** 1934: Palearktische Region Band II, Braconinae and Cheloninae. *Opuscula braconologica*, Verl. F. Wagner, Lief, Wien, Austria, pp. 408-504.
- Huddleston, T.,** 1984: The Palaearctic species of *Ascogaster* (Hymenoptera: Braconidae). *Bull. Br. Mus. nat. Hist. (Ent.)*, London, England, 49 (5):341-392.
- Kaeslin, M., Wehrle, I., Gossliknaus-Bürgin, C., Wyler, T., Guggisberg, U., Schittny, J.C., Lanzrein, B.,** 2005: Stage-dependent strategies of hosts invasion in the egg-larval parasitoid *Chelonus inanitus*. *J. Insect Physiol.*, 51:287-296.
- Kohl F.F.,** 1905: Hymenopteren. In: Penther A. und E. Zederbauer, Ergebnisse einer naturwissenschaftlichen Reise zum Erdschias Dagh. (Klein Asien), *Annalen Naturhistorischen Hofmuseums, Wien*, Austria. 20: 227.
- La Salle, J. and Gauld, I.D.,** 1993: Hymenoptera and Biodiversity. *CAB International*, England, pp. 384.
- Papp, J.,** 1971: Review of the Braconidae (Hymenoptera) of the USSR. *Horae Soc. Ent. Un. Sov.*, 54:156-268.
- Papp, J.,** 1995: Revision of C. Wesmael's *Chelonus* species (Hymenoptera: Braconidae: Cheloninae). *Entomologie*, 65: 115-134.
- Papp, J.,** 1996: Contribution to the Braconid fauna of Hungary, XI. Cheloninae and Sigalphinae (Hymenoptera: Braconidae). *Folia ent. hung.*, 57:131-156.
- Papp, J.,** 1997: Revision of the *Chelonus* species described by A. G. Dahlbom (Hymenoptera: Braconidae: Cheloninae). *Acta zool. hung.*, 43(1):1-19.
- Papp, J.,** 1999: Redescription of F. Silvestri's two Cheloninae Species (Hymenoptera: Braconidae: Cheloninae). *Bull. Lab. Ent. agr. Flippo Silvestri*, 55:15-26.
- Papp, J.,** 2003: Revision of Szépligeti's *Chelonus* s. str species described from Hungary (Hymenoptera: Braconidae: Cheloninae). *Ann. Hist.-Nat. Mus. Natl. Hung.* 95:113-123.
- Shaw, M.R. and Huddleston, T.,** 1991: Classification and biology of braconid wasps (Hymenoptera: Braconidae). Handbooks for the Identification of British Insects, Vol.7, Part 11. *Royal Entomol. Soc. of London*, England, 7(11):59-62.

- Shenefelt, R.D.**, 1973: Braconidae 6 Cheloninae. –In Vander Vecht, J. & Shenefelt, R.D. (eds.). Hymenopterum Catalogus (nova editio). W. Junk, 's Gravenhage, pp. 813-936.
- Silva-Junior, J.C., Pompolo, S. das G., Campos, L.A. de O. and Cruz, I.**, 2000: The karyotype of the Parasitoid *Chelonus insularis* Cresson (Hym. Braconidae: Cheloninae). *Rev. Brasil. Biol.*, 60 (2):337-339.
- Tobias, V. I.**, 1976: Braconidae of the Caucasus. Key to the Fauna SSSR, Leningrad, Russia. 110: 1-286 (Russian with English title).
- Tobias, V.I., S. A. Belokobylskij, A.G. Kotenko**, 1986: Keys to The Insects The European part of USSR, 3 (4). Medvedev, G.S. (ed.), New Delhi, Baba barkha Nath, 900 pp.
- Tomkins, A.R., Pennan, D.R., Chapman, R.B.**, 1987: Owerwintering of codling moth larvae in an abandoned Canterbury apple orchard. *N. Z. Entomol.* 10: 40-44.
- Wharton, A. R., Marsh, P. M., Sharkey, M. J.**, 1998: Manual of new World Genera of Braconidae (Hymenoptera). Special Publication of the International Society of Hymenopterists, Washington, No: 1, pp. 433-439.
- Yu, D.S., van Achterberg, K., Horstmann, K.**, 2005: World Ichneumonidea 2004. Taxonomy, biology, Morphology and distribution [Braconidae]. Taxapad 2005 (Scientific names for information management) Interactive catalogue on DVD/CD-ROM. Vancouver.

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Autor(en)/Author(s): Aydogdu Mitat, Beyarslan Ahmet

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