



A preliminary study on the investigation of Hemiptera (Pentatomidae, Scutelleridae, Coreidae, Alydidae, Pyrrhocoridae, Lygaeidae, Stenocephalidae, Rhopalidae) fauna in Eskişehir, Türkiye

Mine DURMAZ ^{*1}, Ferhat ALTUNSOY ²
ORCID: 0009-0005-4378-1307; 0000-0002-4446-323X

¹ Eskişehir Technical University, Institute of Graduate Programs, 26470, Eskişehir, Türkiye

² Eskişehir Technical University, Department of Biology, Faculty of Science, 26470, Eskişehir, Türkiye

Abstract

A preliminary study was carried out to determine the species of Hemiptera pests of wheat in Eskişehir province. It was aimed to determine the existing pests in order to develop appropriate control methods with the possible damages that may occur in the region. The study was carried out in 19 different localities determined especially around wheat, barley, lucerne fields and roadsides in Eskişehir. As a result of the study, 26 genera and 41 species belonging to 8 families were identified. Of the species identified; *Aelia cognata* Fieber, 1868, *Aelia virgata* (Herrich-Schaeffer, 1841), *Aelia acuminata* (Linnaeus, 1758), *Eurydema blanda* Horváth, 1903, *Pausias martini* (Puton, 1890), *Carpocoris mediterraneus* Tamanini, 1958, *Rhaphigaster nebulosa* (Poda, 1761), *Ventocoris trigonus* (Krynicky, 1871), *Ventocoris fischeri* (Herrich & Schaeffer, 1851), *Ancyrosoma leucogrammes* (Gmelin, 1789), *Eurygaster dilaticollis* Dohrn, 1860, *Odontotarsus robustus* Jakovlev, 1884, *Odontotarsus purpureolineatus* (Rossi, 1790), *Psacasta tuberculata* (Fabricius, 1781), *Enoplops disciger* (Kolenati, 1845), *Psacasta exanthematica* (Scopoli, 1763), *Coreus marginatus* (Linnaeus, 1758), *Dicranocephalus albipes* (Fabricius, 1781), *Centrocoris spiniger* (Fabricius, 1781), *Lygaeus pandurus* (Scopoli, 1763), *Lygaeus equestris* (Linnaeus, 1758), *Brachycarenum tigrinus* (Schilling, 1829) and *Corizus hyoscyami* (Linnaeus, 1758) were reported for the first time from the research area. As a result of this study, the distribution of the Hemiptera pest fauna in the region was determined. Since most of the detected species are phytophagous, the damages that they may cause to plants such as wheat can be estimated with the data obtained.

Keywords: Hemiptera, fauna, pest, phytophagous, Eskişehir

----- * -----

Eskişehir (Türkiye) ili Hemiptera (Pentatomidae, Scutelleridae, Coreidae, Alydidae, Pyrrhocoridae, Lygaeidae, Stenocephalidae, Rhopalidae) faunasının araştırılmasına yönelik bir ön çalışma

Özet

Eskişehir ilinde buğday zararlısı Hemiptera türlerinin belirlenmesi amacıyla bir ön çalışma gerçekleştirilmiştir. Bu ön çalışma ile bölgede oluşabilecek olası zararlar ile uygun mücadele yöntemlerinin geliştirilebilmesi için mevcut zararlıların belirlenmesi amaçlanmıştır. Çalışma Eskişehir'de özellikle buğday, arpa, yonca tarlaları çevresinde belirlenen 19 farklı lokalitede gerçekleştirilmiştir. Çalışma sonucunda 8 familyaya ait 26 cins ve 41 tür tespit edilmiştir. Tespit edilen türlerden, *Aelia cognata* Fieber, 1868, *Aelia virgata* (Herrich-Schaeffer, 1841), *Aelia acuminata* (Linnaeus, 1758), *Eurydema blanda* Horváth, 1903, *Eurygaster dilaticollis* Dohrn, 1860, *Carpocoris mediterraneus* Tamanini, 1958, *Pausias martini* (Puton, 1890), *Rhaphigaster nebulosa* (Poda, 1761), *Ventocoris trigonus* (Krynicky, 1871), *Ventocoris fischeri* (Herrich & Schaeffer, 1851), *Ancyrosoma leucogrammes* (Gmelin, 1789), *Odontotarsus robustus* Jakovlev, 1884, *Odontotarsus purpureolineatus* (Rossi, 1790), *Psacasta tuberculata* (Fabricius, 1781), *Enoplops disciger* (Kolenati, 1845), *Psacasta exanthematica* (Scopoli, 1763), *Coreus marginatus* (Linnaeus, 1758), *Dicranocephalus albipes* (Fabricius, 1781), *Centrocoris spiniger* (Fabricius, 1781), *Lygaeus equestris* (Linnaeus, 1758), *Brachycarenum tigrinus* (Schilling, 1829), *Lygaeus pandurus* (Scopoli, 1763) ve *Corizus hyoscyami* (Linnaeus, 1758)

* Corresponding author: Tel.: +90 (222)2137777/ 7833; Fax.: +90 (222)2137070; E-mail: tabanidae@msn.com

araştırma alanından ilk kez rapor edilmiştir. Tespit edilen türlerin çoğu fitofag olduğu için buğday gibi bitkilere verebilecekleri zararlar bu çalışmadan elde edilen verilerle tahmin edilebilmektedir. Bir ön çalışma olan bu araştırma ile bölgedeki zararlı Hemiptera faunasının dağılımı belirlenmiştir.

Anahtar kelimeler: Hemiptera, fauna, zararlı böcek, fitofag, Eskişehir

1. Introduction

Agriculture is one of the most important sources of the Turkish economy. Cereals, mainly wheat, are grown on 75% of the agricultural areas. Cereals are also the main product in human nutrition. Wheat is an annual crop and can be produced in large areas because it has many varieties that can grow in different climatic and soil conditions and is highly adaptable. In Türkiye, especially in the Central Anatolian region, wheat production is quite common due to the cool and dry climatic conditions [14].

Cereals especially wheat, which has such a large area under cultivation in Türkiye, have very important pests that affect production. Cereal pests mostly cause damage by sucking the leaves and seeds of the plants. On the one hand, they cause a decrease in yield and on the other hand, they cause a significant decrease in the germination power of the grains and the quality of the flour obtained from such grains. The most important pests of wheat and the most widespread species in cultivated areas are the *Aelia* spp. and *Eurygaster* spp.. The population of these species increased in the 1980s in the Thracian region and very serious damage was reported in 1987 [14]. Studies on agricultural pest species in Türkiye started in the 1930s and continued with the identification, distribution and damage of the species [14, 15, 22, 25].

There are important families within the Hemiptera order. Among these families; Coreidae includes 2200 species belonging to 500 genera worldwide, and has a very wide distribution. Belonging to this family in Türkiye; 17 species of 12 genera were distributed in Thrace and 47 species of 19 genera distributed in Anatolia [4]. Another Hemiptera family Alydidae is represented by 4 genera and 7 species [6]. Again, two species from the family Pyrrhocoridae have been reported [17, 19]. 227 Lygaeidae species from the Hemiptera are known in Türkiye [23].

So far, there are not enough studies on the identification and distribution of cereal pests for Eskişehir province in the literature. The aim of this study was to contribute to the determination of the damage caused by these species in the Central Anatolian region by investigating the Hemiptera species harmful to cereals distributed in Eskişehir province.

2. Materials and methods

The examined specimens were collected from 19 different localities within the borders of Eskişehir province in 2005 and 2006, during the months of June-August, when adult activity was observed. The number of collected specimens was 3395. Specimens were collected by hand or with forceps from short plants, roadsides, cultivated fields and harvested crops. The captured specimens were killed in ethyl acetate jars and then taken to the laboratory. [16] was used to identify the specimens brought to the laboratory.

Male genitalia specimens were prepared for species identification of the genera *Eurygaster* and *Carpocoris*, using the aedeagus and paramere structure in the pygophore for diagnosis, as morphological characteristics were not sufficient for species identification. The methods used were those of [1] for the identification of *Eurygaster* species and [3] for the identification of *Carpocoris* species. During the identification of the material, the collections of Gazi University, Faculty of Science, Department of Biology, Zoological Museum were used as comparison material.

The localities, altitudes, habitats and survey dates are given in the Table 1 and the localities are shown on a map (Figure 1). The specimens of the studied species, which constitute the research material, prepared and labelled according to standard methods, are kept in the Zoological Museum of Eskişehir Technical University.

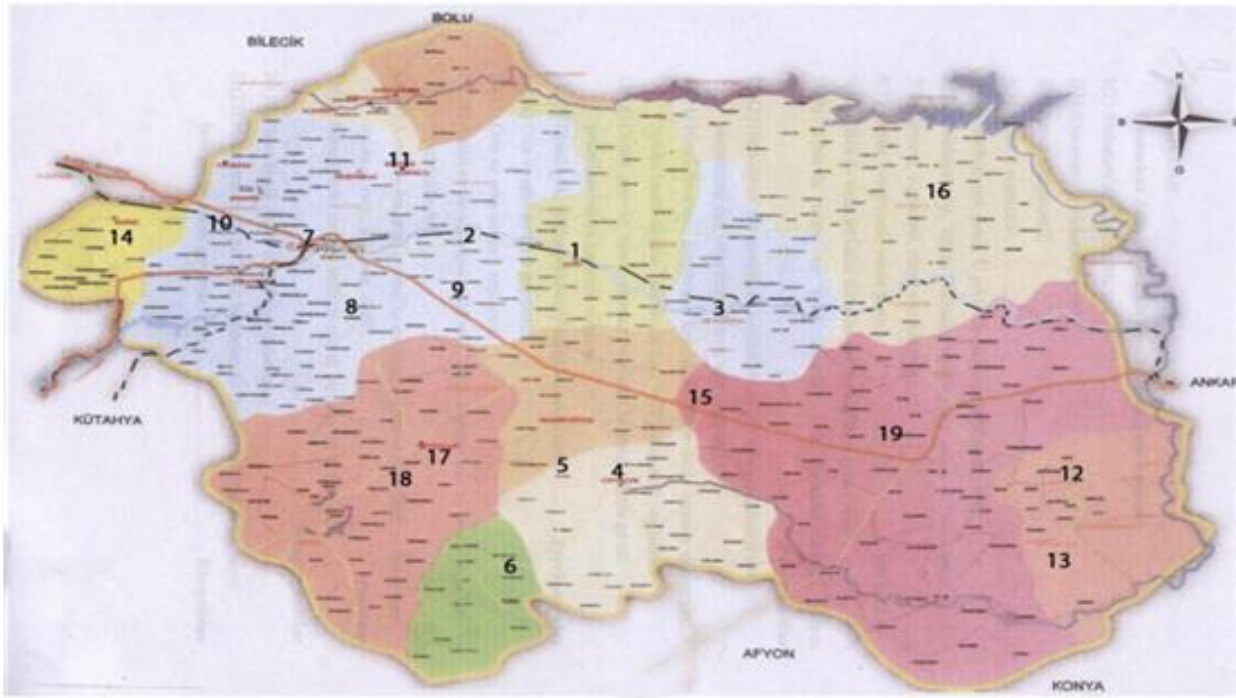


Figure 1. Localities researched in Eskişehir province (numbers refer to the sequence numbers of the localities shown in Table 1)

Table 1. Locations, altitudes, habitats and survey dates in Eskişehir region

Locality no	Locality	Altitude (m.)	Habitat	Date
1	Alpu	768	wheat field	14.07.2006 17.07.2006
2	Alpu-Çavlum	768	wheat field	29.07.2005
3	Beylikova	766	wheat field	29.07.2005 14.07.2006
4	Çifteler	869	wheat field, meadow, barley field, lucerne	31.07.2005 27.07.2005 25.07.2006
5	Çifteler-Hayriye	901	wheat field	05.08.2005
6	Han-İskankuyu	1081	wheat field	10.07.2005
7	Eskişehir	818	Roadside herbaceous plants	12.07. 2006
8	Eskişehir-Akpınar	978	wheat field	11.07.2006
9	Eskişehir-İmişehir	956	wheat field	11.07.2006
10	Eskişehir-Satılmışoğlu	804	wheat field	11.07.2006
11	Eskişehir-Yarımca	1248	Woodland, fruit trees, field edges	11.07.2006 13.07.2006
12	Günyüzü	904	wheat field, barley field, meadow	11.07.2006 15.07.2006
13	Günyüzü- Kayakent	1002	wheat field	13.07.2005
14	İnönü	1008	wheat field	27.07.2006
15	Kaymaz	970	wheat field	10.07.2006 15.07.2006
16	Mihalıççık	1222	Herbaceous plants in harvested wheat field	14.07.2006
17	Seyitgazi	1030	wheat field, meadow	01.08.2005 11.07.2006 17.07.2006
18	Seyitgazi	1030	Harvested wheat heap	01.08.2005
19	Sivrihisar	1039	wheat field	12.07.2006

3. Results

A total of 3395 adult specimens were collected from 19 different localities in present study which is conducted in Eskişehir. 14 genera 22 species belonging to family Pentatomidae; 3 genera and 8 species from Scutelleridae; 3 genera and 3 species belonging to family Coreidae; 1 genus and 1 species from Alydidae; 1 genus and 1 species belonging to Pyrrhocoridae; 1 genus and 3 species belonging to Lygaeidae; 1 genus and 1 species belonging to Stenocephalidae; 2 genera and 2 species belonging to Rhopalidae were collected and identified. According to the results, Hemiptera is represented by 26 genera and 41 species belonging to 8 families in the study area.

Family: Pentatomidae

Genus: *Mustha* Amyot and Serville, 1843

Mustha spinosula (Lefebvre, 1831)

Material examined: Eskişehir, Yarımca (1248 m.): 11.07.2006, 2♀♀

General geographical distribution: Serbia, Albania, Bulgaria, Bulgaria, South Russia, Iran, Israel, Northern Iraq, Cyprus, Caucasus, Egypt, Syria, Turkmenistan, Türkiye, Transcaucasia, Greece [8].

Distribution from Türkiye: Kars [11]; Bursa [23]; Kahramanmaraş, Gaziantep, Eskişehir, Mardin [7]; Muş, Artvin (Çoruh) [7]; İstanbul [7, 9]; Edirne [5, 18]; Ankara [6, 13, 19]; Mersin [15]; İzmir, Aydın, Isparta, Çanakkale, Manisa, Uşak, Muğla [18]; Adana, Antalya [19]; Elazığ [11]; Konya [17]; Karaman [19]; Çorum, Ordu, Samsun, Tokat [7].

Genus: *Aelia* Fabricius, 1803

Aelia acuminata (Linnaeus, 1758)

Material examined: Seyitgazi (1030 m.): 01.08.2005, 2♀♀, 2♂♂; Seyitgazi (1030 m.): 17.07.2006, 3♀♀, 2♂♂; Mihaliçcik (1222 m.): 14.07.2006, 2♀♀, 1♂; Eskişehir- İmişehir (956 m.): 11.07.2006, 1♂; Eskişehir- Akpınar (978 m.): 11.07.2006, 3♀♀, 1♂; Çifteler (869 m.): 27.07.2006, 2♀♀; Çifteler (869 m.): 25.07.2006, 2♀♀; Sivrihisar (1039 m.): 12.07.2006, 1♂; Sivrihisar- Kaymaz (970 m.): 15.07.2006, 1♀; İnönü (1008 m.): 27.07.2006, 5♀♀, 5♂♂.

General geographical distribution: Serbia, Caucasus, Algeria, Austria, Baltic States, Albania, Western Russia, Czech Republic, Balearic Islands, Denmark, Finland, France, Morocco, Netherlands, South Russia, England, Switzerland, Sweden, Spain, Iran, Cyprus, Italy, Hungary, Corsica, Norway, Portugal, Poland, Romania, Slovakia, Sicily, Syria, Siberia, Sardinia, Turkestan, Tunisia, Türkiye, Greece (Crete), Germany, Macedonia, Bulgaria, Croatia. [8].

Distribution from Türkiye: Ankara [10, 16, 24]; Hatay [20, 24]; Adana [10, 24]; Antalya, Zonguldak, Bartın, Kahramanmaraş, Gaziantep, İçel, Bolu, Karabük, Karaman, Niğde, Nevşehir, Sinop, Osmaniye [24]; Kırşehir [17, 24]; Kastamonu, Çankırı [19, 24]; Kocaeli, Sakarya, Artvin, Konya, Rize, Diyarbakır, İzmir, Balıkesir, Afyon, Uşak, Bilecik, Denizli, Aydın, Manisa, Muğla, Bursa [7, 23]; İstanbul, Tekirdağ, Kırklareli, [7, 9, 23]; Edirne [10, 23, 24]; Çanakkale [9, 23]; Ordu, Çorum, Sinop, Tokat, Amasya [5]; Samsun [5, 7, 23].

Aelia cognata Fieber, 1868

Material examined: Alpu- Çavlum (768 m.): 29.07.2005, 1♂; Han- İskankuyu (1081 m.): 10.07.2005, 1♂; Alpu (768 m.): 14.07.2006, 8♂♂; Çifteler (869 m.): 27.07.2005, 1♂; Çifteler (869 m.): 25.07.2006, 3♂♂; Seyitgazi (1030 m.): 01.08.2005, 1♂; Mihaliçcik (1222 m.): 14.07.2006, 5♂♂; Günyüzü (904 m.): 15.07.2006, 7♂♂; Seyitgazi (1030 m.): 17.07.2006, 7♂♂; Eskişehir- İmişehir (956 m.): 11.07.2006, 5♂♂; Sivrihisar- Kaymaz (970 m.): 15.07.2006, 3♂♂; Sivrihisar- Kaymaz (970 m.): 10.07.2006, 1♂; Beylikova (766 m.): 14.07.2006, 5♂♂.

General geographical distribution: Belgium, Algeria, Morocco, France, Spain, Italy (Sicily), Sardinia, Portugal, Slovenia, Syria, Tunisia, Türkiye [8].

Distribution from Türkiye: İzmir, Manisa, Konya, Kayseri, Ankara, Gaziantep, Yozgat [10, 23, 24]; Kırşehir [17]; Samsun, Çorum, Amasya, Tokat [5]; Tekirdağ, Edirne, Kırklareli, İstanbul [9].

Aelia rostrata Boheman, 1852

Material examined: Eskişehir- Akpınar (978 m.): 11.07.2006, 6♀♀, 5♂♂; Mihaliçcik (1222 m.): 14.07.2006, 31♀♀, 21♂♂; Han- İskankuyu (1081 m.): 10.07.2005, 6♀♀, 5♂♂; Eskişehir-İmişehir (956 m.): 11.07.2006, 46♀♀, 29♂♂; Alpu (768 m.): 14.07.2006, 97♀♀, 70♂♂; Alpu- Çavlum (768 m.): 29.07.2005, 3♀♀, 4♂♂; Beylikova (766 m.): 14.07.2006, 32♀♀, 21♂♂; Seyitgazi (1030 m.): 17.07.2006, 32♀♀, 31♂♂; Günyüzü (904 m.):

15.07.2006, 40♀♀, 43♂♂; Eskişehir-Satılmışoğlu (804 m.): 11.07.2006, 3♀♀, 1♂; Sivrihisar (1039 m.): 12.07.2006, 20♀♀, 12♂♂; Eskişehir- Yarımcı (1248 m.): 13.07.2006, ♀; Sivrihisar- Kaymaz (970 m.): 15.07.2006, 61♀♀, 39♂♂; Sivrihisar- Kaymaz (970 m.): 10.07.2006, 13♀♀, 8♂♂; Çifteler (869 m.): 25.07.2006, 37♀♀, 35♂♂; Çifteler (869 m.): 27.07.2005, 7♀♀, 1♂; İnönü (1008 m.): 27.07.2006, 52♀♀, 46♂♂; Beylikova (766 m.): 29.07.2005, 11♀♀, 5♂♂; Çifteler- Hayriye (901 m.): 05.08.2005, 4♀♀.

General geographical distribution: Albania, Austria, Bulgaria, Czech Republic, Denmark, France, South and West Russia, Iran, Sweden, Italy (Sicily), Cyprus, Hungary, Portugal, Romania, Poland, Sardinia, Slovakia, Türkiye, Greece, Germany, Macedonia, Croatia, Serbia, Spain, Switzerland [8].

Distribution from Türkiye: Sakarya, Kocaeli, Bilecik [7]; İstanbul [7, 9]; Ankara, Kars [10]; Edirne [2, 9, 10, 23]; Tunceli [10, 23, 24]; Uşak, Bilecik, Manisa, Isparta, Burdur, İzmir, Kütahya, Afyon, Bursa [23]; Kırklareli [9, 23]; Konya, Nevşehir [24]; Çorum, Tokat [5, 24]; Aksaray, Adana, Bolu, Antalya, Eskişehir, Çankırı, Kastamonu, Çorum, Kahramanmaraş, Karabük, Konya, Kayseri, Kırşehir, Nevşehir, Kırıkkale [24]; Çanakkale, Tekirdağ [9]; Samsun, Ordu, Amasya [5].

Aelia virgata (Herrich-Schaeffer, 1841)

Material examined: Günyüzü (904 m.): 15.07.2006, 1♀, 1♂

General geographical distribution: Bulgaria, South Russia, Macedonia, Iraq, Iran, Israel, Syria, Tunisia, Türkiye, Greece [8].

Distribution from Türkiye: Konya, Ankara [10]; Elazığ, Tunceli [10, 23, 24]; Bilecik, Uşak, Afyon, Kırklareli [23]; Çanakkale, Gaziantep [24]; Edirne [2, 9, 10]; Kahramanmaraş [16, 24]; Tekirdağ [9].

Genus: *Eurydema* Laporte, 1833

Eurydema ornata (Linnaeus, 1758)

Material examined: Günyüzü (904 m.): 15.07.2006, 18♀♀, 14♂♂; Günyüzü-Kayakent (1002 m.): 13.07.2005, 36♀♀, 22♂♂; Seyitgazi (1030 m.): 17.07.2006, 1♀, 1♂; Eskişehir- İmişçir (956 m.): 11.07.2006, 14♀♀, 3♂♂; Alpu (768 m.): 14.07.2006, 2♀♀, 1♂; İnönü (1008 m.): 27.07.2006, 1♀, 3♂♂.

General geographical distribution: Serbia, Afghanistan, Algeria, China, Albania, Germany, Austria, Bosnia and Herzegovina, Balearic Islands, Baltic Region, Belgium, Bulgaria, Croatia, Denmark, Ethiopia, Eritrea, Egypt, Morocco, Hungary, France, Netherlands, India, England, Iraq, Iran, Israel, Spain, Sweden, Switzerland, Italy (Sicily), Czech Republic, Sardinia, Serbia, Caucasus, Canary Islands, Montenegro, Cyprus, Corsica, Libya, Malta, Mongolia, Romania, Poland, Portugal, Western and Southern Russia, Siberia, Slovakia, Slovenia, Transcaucasia, Tunisia, Türkiye, Turkestan, Greece (Crete) [8].

Distribution from Türkiye: Bilecik, Kocaeli [7, 23]; Tekirdağ, İzmir, Manisa [23]; Adana, Ankara, Antalya, Eskişehir, Çorum, İçel, Aksaray, Bolu, Kahramanmaraş, Osmaniye, Hatay, Gaziantep, Nevşehir, Karabük, Kastamonu, Karaman, Kilis, Kırıkkale, Konya, Niğde, Nevşehir, Yozgat, Kayseri [24]; Çankırı [19, 24]; Edirne [2, 9, 10, 23]; Bursa, Aydın, Kırklareli, Balıkesir, İstanbul, Afyon, Muğla, Uşak, Sakarya [24]; Artvin, Adıyaman, Bitlis, Batman, Mardin, Erzincan, Elazığ, Iğdır, Hakkari, Malatya, Trabzon, Şanlıurfa, İçel, Kırıkkale [23, 24]; Çorum, Amasya, Ordu, Samsun, Tokat, Sinop [5, 24]; Kırklareli, Çanakkale, Tekirdağ, İstanbul [9].

Eurydema oleracea (Linnaeus, 1758)

Material examined: Günyüzü (904 m.): 15.07.2006, 1♀, 1♂; Eskişehir- Yarımcı (1248 m.): 11.07.2006, 1♀; İnönü (1008 m.): 27.07.2006, 2♀♀, 2♂♂

General geographical distribution: Serbia, Norway, Albania, Germany, Austria, Portugal, Baltic Region, Belgium, Bulgaria, Algeria, Czech Republic, Denmark, Morocco, Finland, France, Netherlands, England, Spain, Sweden, Switzerland, Italy (Sicily), Sardinia, Caucasus, Corsica, Hungary, Romania, Poland, Portugal, Western and Southern Russia, Siberia, Slovakia, Tajikistan, Transcaucasia, Türkiye, Turkestan, Greece (Crete) [8].

Distribution from Türkiye: Antalya, Çorum, Kastamonu, Afyon, Bartın, Bolu, Bilecik, Kütahya, Sakarya, Uşak, Kocaeli, Manisa [24]; Ankara, Adapazarı, Adana, Balıkesir, Bursa, Isparta, İzmir, Gümüşhane, Kahramanmaraş, Samsun, Trabzon, Rize, Tunceli, Kars, Yozgat, Zonguldak, Yalova [10, 23, 24]; Kastamonu, Çankırı [19]; Tekirdağ, İstanbul, Kırklareli, Çanakkale [9]; Edirne [2, 9, 10]; Tokat, Ordu, Samsun, Amasya, Çorum, Sinop [5]; Eskişehir [7, 24].

Eurydema blanda Horváth, 1903

Material examined: Eskişehir- İmişçir (956 m.): 11.07.2006, 5♀♀, 3♂♂; Günyüzü-Kayakent (1002 m.): 13.07.2005, 3♀♀; Günyüzü (904 m.): 15.07.2006, 2♀♀, 2♂♂; Eskişehir- Yarımcı (1248 m.): 13.07.2006, 1♀; İnönü (1008 m.): 27.07.2006, 3♀♀, 2♂♂

General geographical distribution: Iran, Türkiye [8].

Distribution from Türkiye: Ankara [10, 24]; Antalya, Adana, Niğde, Kahramanmaraş, Kırıkkale [24]; Aydın, Denizli, Afyon, Balıkesir, Bolu, Isparta, Burdur, Bilecik, Erzurum, Uşak, Yalova, Çanakkale, Gümüşhane, Karaman, Kars, Hakkari, İzmir, Kahramanmaraş, Kocaeli, Kırklareli, Kütahya, Kastamonu, Kırıkkale, Malatya, Manisa, Şırnak, Tokat, Ordu [5, 23, 24]; Samsun, Amasya, Çorum [5]; Kırklareli, Tekirdağ, Çanakkale, İstanbul [9].

Genus: *Rhaphigaster* Laporte, 1833

Rhaphigaster nebulosa (Poda, 1761)

Material examined: Eskişehir- Yarımcı (1248 m.): 11.07.2006, 1 ♀; Eskişehir (818 m.): 12.07.2006, 1 ♀; Eskişehir- Yarımcı (1248 m.): 13.07.2006, 1 ♀.

General geographical distribution: Algeria, Afghanistan, Austria, Germany, Balkans, Balearic Islands, Baltic Region, Belgium, Bulgaria, Albania, Czech Republic, China, France, Hungary, Morocco, Mongolia, Italy, Italy, Hungary, Hungary, Mongolia, Mongolia, Portugal, Portugal, Romania, Poland, Poland, Western and Southern Russia, Slovakia, Syria, Turkestan, Türkiye, Cyprus, Greece, Crete Island, Sardinia, Spain, Switzerland [8].

Distribution from Türkiye: Kars [11]; Ankara [10, 18, 22]; Edirne [2]; Afyon, Aydın, Bursa, Çanakkale, İstanbul, İzmir, Denizli, Manisa, Isparta, Burdur, Kırklareli, Kütahya, Uşak, Sakarya, Muğla [23]; Çankırı, Adana, Aksaray, Zonguldak, Antalya, Bolu, Konya, Kayseri, Niğde, Nevşehir, Yozgat, Hatay, Karaman, Gaziantep, Bartın, Karabük, Kahramanmaraş, Kilis, İçel [24]; Kastamonu [19, 24]; Samsun, Sinop, Çorum, Ordu, Tokat [5].

Genus: *Piezodorus* Fieber, 1860

Piezodorus lituratus (Fabricius, 1764)

Material examined: Sivrihisar- Kaymaz (970 m.): 15.07.2006, 1 ♂

General geographical distribution: Serbia, Germany, Albania, Austria, Balearic Islands, Balearic Islands, Western Russia, Bulgaria, Czech Republic, Cyprus, Egypt, Algeria, Morocco, Morocco, Southern France, Southern Russia, Croatia, Netherlands, England, Ireland, Iran, Scotland, Spain, Israel, Italy, Corsica, Libya, Hungary, Macedonia, Poland, Portugal, Romania, Sicily, Switzerland, Sardinia Island, Syria, Türkiye, Turkestan, Tunisia, Greece, Crete Island [8].

Distribution from Türkiye: Eskişehir, İstanbul [7]; Adana, Elazığ [10, 24]; Mersin [20]; Diyarbakır [10, 23]; Manisa, İzmir, Kütahya, Balıkesir, Bilecik, Afyon, Aydın, Burdur, Bursa, Muğla [23]; Kırklareli, Çanakkale [9, 23]; Nevşehir, Hatay, Karabük, Antalya, Bolu, Çorum, İçel, Sinop [23]; Ankara [18]; Kastamonu, Çankırı [19, 23]; Amasya, Ordu, Sinop, Tokat, Çorum, Samsun [5]; Tekirdağ, Edirne, İstanbul [9]; Kırşehir [17].

Genus: *Pausias* Jakowlew, 1905

Pausias martini (Puton, 1890)

Material examined: Eskişehir- Yarımcı (1248 m.): 13.07.2006, 1 ♂

General geographical distribution: Iraq, Iran, Syria, Türkiye [8].

Distribution from Türkiye: İzmir [23]; Karaman [23, 24]; Konya, Ankara, Erzincan [24]; Çanakkale (Bozcaada) [24].

Genus: *Holcostethus* Fieber, 1860

Holcostethus vernalis (Wolff, 1804)

Material examined: Günyüzü (904 m.): 15.07.2006, 1 ♀; Çifteler- Hayriye (901 m.): 05.08.2005, 1 ♂; Han-İskankuyu (1081 m.): 10.07.2005, 1 ♀, 1 ♂; Eskişehir- Akpınar (978 m.): 11.07.2006, 1 ♀.

General geographical distribution: Albania, Germany, Balkans, Western and Southern Russia, Belgium, Baltic Region, Bulgaria, Czech Republic, Algeria, Denmark, England, Finland, Netherlands, Iraq, Iran, Israel, Switzerland, Italy, Sicily, Sweden, Sardinia Island, Spain, Norway, Poland, Portugal, Caucasus, Cyprus, Corsica, Hungary, Siberia, Slovakia, Syria, Türkiye, Turkestan, Tunisia, Transcaucasus, France, Greece, Crete Island, Canary Islands [8].

Distribution from Türkiye: Kahramanmaraş, Gaziantep [24]; Edirne [2, 9, 10, 23]; Adana [1, 10, 24]; Burdur, Bursa, Balıkesir, Aydın, Manisa, Bilecik, Denizli, İzmir, Sakarya, Uşak, Muğla [23]; Tekirdağ, Çanakkale, Kırklareli, [9, 23]; Osmaniye, Hatay, İçel, Ankara, Antalya, Karabük, Karaman, Kahramanmaraş, Kilis [24];

Zonguldak, Konya, Niğde, Çorum, Kayseri [1, 24]; Kastamonu, Çankırı [19, 24]; Eskişehir, Elazığ [1, 16]; Kırşehir [17, 24]; Karaman, Osmaniye, Van, Gümüşhane, Hatay, Malatya [1]; Samsun, Çorum, Ordu, Tokat [5]; İstanbul [9].

Genus: *Carpocoris* Kolenati, 1846

Carpocoris mediterraneus Tamanini, 1958

Material examined: Eskişehir- İmişehir (956 m.): 11.07.2006, 1♀; Seyitgazi (1030 m.): 17.07.2006, 1♀; Beylikova (766m.): 14.07.2006, 1♀.

General geographical distribution: Albania, Germany, Balkans, Bulgaria, Czech Republic, Eritrea, Southern Russia, Greenland, Iraq, Iran, Spain, Italy, Cyprus, Hungary, Egypt, Romania, Slovakia, Syria, Türkiye, Greece, Crete Island [8].

Distribution from Türkiye: Ankara [18, 20, 24]; Karaman, Adana, Çorum, Hatay, İçel, Bartın, Bolu, Karabük, Kastamonu, Antalya [24]; İzmir, Balıkesir, Aydın [23]; Çanakkale [9, 23]; Bursa, Bilecik, Burdur [23]; Elazığ [16]; Edirne [2, 9, 23]; Kahramanmaraş [16, 24]; İstanbul, Tekirdağ, Kırklareli [9, 24]; Sakarya, Isparta, Manisa, Muğla [23]; Yalova, Osmaniye [1]; Sinop, Amasya, Ordu, Samsun, Çorum, Tokat [5]; Çankırı [19].

Carpocoris fuscispinus (Boheman, 1850)

Material examined: Alpu (768 m.): 14.07.2006, 1♀; Eskişehir- Yarımca (1248 m.): 13.07.2006, 1♀; Sivrihisar- Kaymaz (970 m.): 15.07.2006, 1♂

General geographical distribution: Serbia, Afghanistan, Germany, Albania, Austria, Azerbaijan, Baltic Countries, Western Russia, Bulgaria, Czech Republic, China, Denmark, Palestine, Finland, France, Southern Russia, Netherlands, Iraq, Italy, Spain, Sweden, Siberia, Switzerland, Japan, Kazakhstan, Kyrgyzstan, Corsica, Hungary, Mongolia, Poland, Romania, Syria, Slovakia, Türkiye, Tajikistan, Greece [8].

Distribution from Türkiye: Kars-Sarıkamış [11]; Muğla, Isparta [23]; Antalya, Aydın, Ağrı, Amasya, Çorum, Denizli, Diyarbakır, Bitlis, Burdur, Eskişehir, Erzurum, Gaziantep, Yozgat, Hatay, Karaman, Kahramanmaraş, Gümüşhane, Niğde, Hakkari, Kars, Kayseri, Kırşehir, Kırıkkale, Sakaya, Şanlıurfa, Konya, Van [10, 20, 24]; Çankırı, Kastamonu [10, 19, 20, 24]; Ankara [10, 18, 20, 24]; Elazığ [16]; Çorum, Tokat [5].

Carpocoris purpureipennis (DeGeer, 1773)

Material examined: Beylikova (766 m.): 14.07.2006, 2♀♀, 1♂; Alpu (768 m.): 14.07.2006, 2♀♀; Eskişehir- Satılmışoğlu (804 m.): 11.07.2006, 1♀; Çifteler- Hayriye (901 m.): 05.08.2005, 1♂.

General geographical distribution: Serbia [12]; Afghanistan, Germany, Albania, Austria, Bulgaria, Czech Republic, Southern France, Southern Russia, Greenland, Iraq, Iran, Italy, Israel, Caucasus, Corsica, Cyprus, Egypt, Poland, Syria, Slovakia, Switzerland, Türkiye, Turkestan, Transcaucasus, Greece (Crete Island) [8].

Distribution from Türkiye: Kocaeli [7, 10]; Ankara [10, 18]; Elazığ [16]; Edirne [2, 9, 10]; Tunceli, Diyarbakır [10, 23]; Bursa, İstanbul [23]; Bartın, Hatay, Adana, Antalya [24]; Kahramanmaraş [16, 24]; Kastamonu, Karabük, Karaman, Zonguldak, Kayseri, Yozgat [1, 24]; Çankırı [19, 24]; Hakkari, Erzincan, Niğde [1]; Tekirdağ, Kırklareli [9]; Amasya, Çorum, Ordu, Tokat, Samsun, Sinop [5].

Genus: *Codophila* Mulsant and Rey, 1866

Codophila varia (Fabricius, 1787)

Material examined: Eskişehir- İmişehir (956 m.): 11.07.2006, 3♀♀; Eskişehir- Yarımca (1248 m.): 13.07.2006, 1♀; Mihalıççık (1222 m.): 14.07.2006, 1♂; Beylikova (766 m.): 14.07.2006, 2♀♀, 3♂♂; Alpu (768 m.): 14.07.2006, 2♀♀; Günyüzü (904 m.): 15.07.2006, 4♀♀, 4♂♂; Alpu (768 m.): 17.07.2006, 2♂♂; Seyitgazi (1030 m.): 17.07.2006, 1♀; Sivrihisar- Kaymaz (970 m.): 15.07.2006, 1♀.

General geographical distribution: Afghanistan, Algeria, Balearic Islands, Czech Republic, Armenia, Morocco, Greenland, Southern France, Southern Russia, Iraq, Iran, Spain, Israel, Switzerland, Italy, Sicily, Syria, Canary Islands, Caucasus, Cyprus, Corsica, Libya, Hungary, Egypt, Central Asia, Romania, Portugal, Slovakia, Sardinia Island, Türkiye, Bulgaria, Turkestan, Turkmenistan, Transcaucasus, Tajikistan, Albania, Austria, Tunisia, Greece, Crete Island [8].

Distribution from Türkiye: Ankara [10, 18, 24]; Tunceli, Diyarbakır, Mardin [10, 23]; Eskişehir [7]; Elazığ [16]; Aydın, Bilecik, Bursa, Balıkesir, İzmir, Sakarya, Kırıkkale, Muğla [23]; Antalya, Adana, Çorum, İçel, Gaziantep, Kayseri, Karaman, Kırşehir, Nevşehir, Konya, Osmaniye, Kahramanmaraş, Karabük, Hatay [24]; Çankırı [19, 24]; Edirne [9, 10, 23]; Kırklareli, Çanakkale, Tekirdağ, İstanbul [9]; Amasya, Sinop, Çorum, Samsun, Tokat [5].

Genus: *Dolycoris* Mulsant and Rey, 1866*Dolycoris baccarum* (Linnaeus, 1758)

Material examined: Eskişehir- Akpınar (978 m.): 11.07.2006, 1♂; Eskişehir- İmişehir (956 m.): 11.07.2006, 1♀; Beylikova (766 m.): 14.07.2006, 4♀♀, 1♂; Sivrihisar- Kaymaz (970 m.): 15.07.2006, 1♀, 1♂; Günyüzü (904 m.): 15.07.2006, 6♀♀, 5♂♂; Seyitgazi (1030 m.): 17.07.2006, 2♀♀; Alpu (768 m.): 17.07.2006, 2♀♀; İnönü (1008 m.): 27.07.2006, 1♀; Çifteler- Hayriye (901 m.): 05.08.2005, 1♂.

General geographical distribution: Serbia, Germany, Albania, Balearic Islands, Belgium, Bulgaria, Canary Islands, China, Denmark, England, France, Hungary, Greenland, Russia, Netherlands, Ireland, Iraq, Iran, India, Spain, Switzerland, Sweden, Italy, Corsica, Cyprus, Japan, Norway, Romania, Portugal, Sardinia, Siberia, Syria, Slovakia, Türkiye, Greece, Crete Island, Czech Republic, Finland [8].

Distribution from Türkiye: The whole Türkiye [1, 2, 3, 5, 7, 9, 10, 16, 23, 24].

Genus: *Ventocoris* Hahn, 1834*Ventocoris trigonus* (Krynicky, 1871)

Material examined: Sivrihisar- Kaymaz (970 m.): 10.07.2006, 1♂; İnönü (1008 m.): 27.07.2006, 2♀♀, 1♂; Çifteler (869 m.): 31.07.2005, 2♀♀, 5♂♂; Beylikova (766 m.): 14.07.2006, 1♂.

General geographical distribution: Bulgaria, Czech Republic, Southern Russia, Iran, Israel, Caucasus, Cyprus, Hungary, Romania, Slovakia, Syria, Türkiye, Turkestan, Transcaucasia [8].

Distribution from Türkiye: Bursa [11]; Ankara [10, 18, 22]; Konya, Adana [7]; Aydın [11, 23]; Balıkesir, Afyon [23]; Edirne [2, 10]; Gaziantep, Kahramanmaraş [16, 23]; Çanakkale [24]; Çorum, Amasya [5, 11].

Ventocoris fischeri (Herrich & Schaffer, 1851)

Material examined: Eskişehir- Satılmışoğlu (804 m.): 11.07.2006, 1♀; Sivrihisar (1039 m.): 12.07.2006, 9♀♀, 10♂♂; Beylikova (766 m.): 14.07.2006, 128♀♀, 140♂♂; Alpu (768 m.): 14.07.2006, 6♀♀, 4♂♂; Günyüzü (904 m.): 15.07.2006, 9♀♀, 17♂♂; Çifteler (869 m.): 05.08.2005, 3♀♀, 4♂♂; Çifteler (869 m.): 25.07.2006, 1♀.

General geographical distribution: Afghanistan, Southern Russia, Iran, Corsica, Egypt, Portugal, Sudan, Turkestan, Türkiye, Caucasus, Central Asia, Transcaucasia, Turkmenistan [8].

Distribution from Türkiye: Amasya [10]; Ankara [10, 20]; Burdur [23]; İçel, Antalya [23, 24]; Nevşehir [22]; Konya [10]; Çorum [5].

Genus: *Ancyrosoma* Amyot and Serville, 1843*Ancyrosoma leucogrammes* (Gmelin, 1789)

Material examined: Günyüzü (904 m.): 15.07.2006, 18♀, 7♂; Eskişehir- Yarımca (1248 m.): 11.07.2006, 1♀, 1♂.

General geographical distribution: Albania, Austria, Algeria, Morocco, Southern France, Croatia, Iraq, Spain, Israel, Italy, Switzerland, Canary Islands, Caucasus, Corsica, Cyprus, Egypt, Hungary, Malta, Romania, Portugal, Sardinia Island, Slovakia, Slovenia, Syria, Türkiye, Turkestan, Transcaucasia, Tajikistan, Tunisia, Greece, Crete Island, Bulgaria, Czech Republic, Germany [8].

Distribution from Türkiye: Adana [7, 10, 23, 24]; Sakarya, İstanbul [7]; Konya [7, 22]; İzmir, Karaman [23]; Edirne [2, 10, 23]; Ankara [10, 18, 24]; Batman, Diyarbakır, Siirt, Tunceli [10, 24]; Manisa, Tekirdağ, Bursa, Muğla, Aydın, Çanakkale, Bilecik, Burdur, Isparta, Kırklareli, Balıkesir [23]; İçel, Antalya, Kahramanmaraş, Hatay, Gaziantep [23, 24]; Osmaniye [24]; Elazığ [16]; Çorum [5, 23, 24]; Sinop, Amasya, Samsun, Ordu, Tokat [5].

Genus: *Graphosoma* Laporte, 1833*Graphosoma lineatum* (Linnaeus, 1758)

Material examined: Eskişehir- Yarımca (1248 m.): 13.07.2006, 2♀♀, 4♂♂; Eskişehir- Yarımca (1248 m.): 11.07.2006, 1♂; Günyüzü (904 m.): 15.07.2006, 2♂♂

General geographical distribution: Bulgaria, Slovenia, Croatia, Southern Europe, Iran, Northern Africa, Central and Western Asia, Southern and Western Russia, Türkiye, Greece (Crete), Austria, Serbia [8].

Distribution from Türkiye: Kars [11, 23]; Kocaeli, Eskişehir, İstanbul [7]; Ankara [10, 18, 24]; Bursa [10, 23]; Edirne [2, 10]; İzmir, Denizli, Aydın, Çanakkale, Balıkesir, Bilecik, Ağrı, Artvin, Isparta, Manisa, Muğla,

Kırklareli, Kütahya, Sakarya [23]; Adana, Antalya, Kahramanmaraş, İçel, Hatay, Zonguldak [24]; Kastamonu, Çankırı [19, 24]; Elazığ [16]; Sinop, Ordu, Samsun, Tokat, Amasya [5]; Çorum [5, 24].

Genus: *Derula* Mulsant and Rey, 1856

Derula flavoguttata Mulsant and Rey, 1856

Material examined: Günyüzü (904 m.): 15.07.2006, 2♀♀, 1♂; İnönü (1008 m.), 1♀; Sivrihisar (1039 m.): 12.07.2006, 1♂; Eskişehir- Yarımca (1248 m.): 13.07.2006, 1♂.

General geographical distribution: Albania, Bulgaria, Southern France, Southern Russia, Spain, Italy, Caucasus, Hungary, Romania, Slovakia, Transcaucasus, Türkiye, Greece, Czech Republic, Croatia, Serbia [8].

Distribution from Türkiye: Eskişehir [7]; Bolu, Sinop, Gaziantep, Adana, İçel, Antalya [24]; Edirne [9, 10]; Kütahya, Kırklareli, Bursa [23]; Elazığ [16]; Ankara [18]; Samsun, Amasya, Tokat [5].

Family: Scutelleridae

Genus: *Eurygaster* Laporte, 1833

Eurygaster maura (Linnaeus, 1758)

Material examined: Sivrihisar- Kaymaz (970 m.): 10.07.2006, 40♀♀, 35♂♂; Eskişehir-Satılmışoğlu (804 m.): 11.07.2006, 2♀♀, 2♂♂; Seyitgazi (1030 m.): 17.07.2006, 68♀♀, 83♂♂; Beylikova (766 m.): 29.07.2005, 4♀♀, 5♂♂; Han- İskankuyu (1081 m.): 10.07.2005, 3♀♀, 2♂♂; Eskişehir- Akpınar (978 m.): 11.07.2006, 4♀♀, 3♂♂; Eskişehir- İmişehir (956 m.): 11.07.2006, 91♀♀, 77♂♂; Mihaliçcik (1222 m.): 14.07.2006, 83♀♀, 87♂♂; Beylikova (766 m.): 14.07.2006, 51♀♀, 53♂♂; Çifteler (869 m.): 31.07.2005, 5♀♀, 6♂♂; Çifteler (869 m.): 25.07.2006, 143♀♀, 91♂♂; Alpu- Çavlum (768 m.): 29.07.2005, 4♀♀, 3♂♂; Seyitgazi (1030 m.): 01.08.2005, 6♀♀, 5♂♂; Alpu (768 m.): 17.07.2006, 87♀♀, 76♂♂; Günyüzü (904 m.): 15.07.2006, 24♀♀, 39♂♂; Sivrihisar (1039 m.): 12.07.2006, 45♀♀, 35♂♂; İnönü (1008 m.): 27.07.2006, 133♀♀, 121♂♂; Sivrihisar- Kaymaz (970 m.): 15.07.2006, 90♀♀, 93♂♂; Çifteler- Hayriye (901 m.): 05.08.2005, 4♀♀, 3♂♂.

General geographical distribution: Germany, Albania, Austria, Belgium, Bulgaria, Algeria, China, Czech Republic, England, Denmark, Greece, France, Finland, Hungary, Morocco, Netherlands, Iraq, Iran, India, Italy, Ireland, Israel, Spain, Sweden, Syria, Switzerland, Japan, Norway, Pakistan, Portugal, Poland, Russia, Romania, Siberia, Tunisia, Türkiye, Turkestan, [8].

Distribution from Türkiye: Bolu, Çorum, Adana, Antalya, Hatay, İçel, Eskişehir, Gaziantep, Karaman, Kırıkkale, Nevşehir, Zonguldak, Niğde, Yozgat, Kırşehir [1, 24]; Kahramanmaraş [1, 16, 24]; Ankara [1, 18, 24]; Bartın, Karabük, Osmaniye [24]; Kastamonu, Balıkesir, Mardin, Çankırı, Elazığ [1, 19, 24]; Denizli, Afyon, Aydın, Bilecik, Çanakkale, Bursa, Gümüşhane, Diyarbakır, Erzincan, Edirne, Uşak, Tunceli, İstanbul, Erzurum, Isparta, İzmir, Kırklareli, Kayseri, Konya, Kocaeli, Muğla, Manisa, Kütahya, Ordu, Sinop, Samsun, Tekirdağ, Sivas, Tokat, Ağrı [1]; Edirne [9].

Eurygaster austriaca (Schrank, 1776)

Material examined: Sivrihisar- Kaymaz (970 m.): 10.07.2006, 1♀; Eskişehir- İmişehir (956 m.): 11.07.2006, 7♀♀, 3♂♂; Sivrihisar (1039 m.): 12.07.2006, 2♀♀; Sivrihisar- Kaymaz (970 m.): 15.07.2006, 3♀♀; Mihaliçcik (1222 m.): 14.07.2006, 2♀♀, 1♂; Alpu (768 m.): 14.07.2006, 1♀; Alpu (768 m.): 17.07.2006, 2♀♀, 1♂; Seyitgazi (1030 m.): 17.07.2006, 1♀; İnönü (1008 m.): 27.07.2006, 3♀♀, 1♂; Çifteler (869 m.): 25.07.2006, 1♀; Seyitgazi (1030 m.): 01.08.2005, 1♀.

General geographical distribution: Germany, Austria, Bulgaria, Algeria, Czech Republic, Morocco, France, Netherlands, England, Spain, Israel, Switzerland, Italy, Hungary, Belgium, Malta, Poland, Portugal, Russia, Türkiye, Tunisia, Albania, Greece, Denmark, Sweden, Romania [8].

Distribution from Türkiye: Antalya, Eskişehir, Adana, İçel, Karaman, Kahramanmaraş [1, 24]; Karabük [24]; Adıyaman, Bilecik, Balıkesir, Bingöl, Bolu, Bitlis, Bursa, Denizli, Erzincan, Çanakkale, İstanbul, Kırklareli, Aydın, İzmir, Kütahya, Sakarya, Manisa, Tekirdağ, Uşak, Tunceli, Van, Zonguldak [1]; Edirne [1, 9].

Eurygaster dilaticollis Dohrn, 1860

Material examined: Eskişehir- İmişehir (956 m.): 11.07.2006, 1♂; Alpu (768 m.): 17.07.2006, 2♂♂

General geographical distribution: Bulgaria, Kazakhstan, Kyrgyzstan, Spain, Italy, Hungary, Southern Russia, Siberia, Türkiye, Ukraine, Greece [8].

Distribution from Türkiye: Lodos [21] reported that this species was found in Türkiye without giving a locality. Abbas & Önder [1] reported a record from Erzincan.

Genus: *Odontotarsus* Laporte, 1832*Odontotarsus robustus* Jakovlev, 1884**Material examined:** Günyüzü (904 m.): 15.07.2006, 6♀♀, 7♂♂**General geographical distribution:** Germany, Albania, Austria, Bulgaria, Algeria, Crete, Southern France, Southern Russia, Iran, Italy, Caucasus, Cyprus, Hungary, Macedonia, Egypt, Sicily, Syria, Turkestan, Turkmenistan, Türkiye, Greece [8].**Distribution from Türkiye:** Aydın, Afyon, Batman, Bilecik, Balıkesir, Bursa, Isparta, Denizli, Muğla, Uşak, Sakarya [10, 23, 24]; Adana [10, 24]; İzmir [23]; İstanbul [7, 20]; Mersin [20, 23]; Ankara [18, 22]; Konya [22]; Hatay, Antalya, İçel, Karaman, Kahramanmaraş, Kırıkkale, Osmaniye, Nevşehir [24]; Kırşehir [17, 24]; Kastamonu, Çankırı [19]; Edirne [9, 10, 23]; Kırklareli, Çanakkale, Tekirdağ, İstanbul [9].*Odontotarsus rufescens* Fieber, 1861**Material examined:** Eskişehir- Yarımca (1248 m.): 13.07.2006, 1♂; Günyüzü (904 m.): 15.07.2006, 6♀♀, 6♂♂; Alpu (768 m.): 29.07.2005, 1♂.**General geographical distribution:** Türkiye, Greece [8, 10].**Distribution from Türkiye:** Adana [10, 24]; Nevşehir, Kastamonu [22]; Elazığ [16]; Balıkesir, Aydın, Çanakkale, İzmir, Isparta, Muğla, Manisa [23]; Antalya, Ankara, Çankırı, Hatay, Gaziantep, Kırşehir, Kahramanmaraş, Osmaniye, Nevşehir [24]; İstanbul, Çanakkale, Tekirdağ, Kırklareli [9].*Odontotarsus purpureolineatus* (Rossi, 1790)**Material examined:** Beylikova (766 m.): 14.07.2006, 1♀, 1♂; Günyüzü (904 m.): 15.07.2006, 3♂♂.**General geographical distribution:** Germany, Albania, Bulgaria, Czech Republic, France, Crete Island, Southern Russia, Croatia, Iran, Spain, Israel, Switzerland, Italy, Caucasus, Hungary, Macedonia, Malta, Portugal, Romania, Sicily, Turkestan, Türkiye, Greece [8, 10, 23].**Distribution from Türkiye:** Kayseri, Konya [12]; Bursa, Diyarbakır [10]; Niğde, İstanbul [20]; Isparta [23]; Edirne [9, 10]; Gaziantep, Adana, Kahramanmaraş, Hatay [24]; Kırklareli, Tekirdağ, İstanbul [9].**Genus: *Psacasta* Germar, 1839***Psacasta exanthematica* (Scopoli, 1763)**Material examined:** Alpu (768m.): 14.07.2006, 1♂**General geographical distribution:** Albania, Bulgaria, Cyprus, Czech Republic, Dalmatia, Morocco, France, Crete Island, Southern Russia, Croatia, Iran, Italy, Spain, Switzerland, Caucasus, Hungary, Macedonia, Mader Island, Poland, Portugal, Sardinia Island, Syria, Sicily, Tunisia, Turkestan, Türkiye, Greece [8, 19].**Distribution from Türkiye:** Diyarbakır [10, 24]; Elazığ [16]; İzmir, Bursa [23]; Adana [7, 24]; İçel, Antalya, Gaziantep, Osmaniye, Kahramanmaraş [24]; Çorum, Kayseri, Çankırı [23, 24]; Kırklareli, Edirne, Tekirdağ [9].*Pcacasta tuberculata* (Fabricius, 1781)**Material examined:** Eskişehir- Yarımca (1248m.): 13.07.2006, 1♂; Sivrihisar (1039m.): 12.07.2006, 1♂.**General geographical distribution:** Bulgaria, Algeria, Czech Republic, Morocco, Crete Island, Southern France, Southern Russia, Spain, Italy, Cyprus, Hungary, Macedonia, Portugal, Sicily, Syria, Türkiye, Greece [8, 10].**Distribution from Türkiye:** Kahramanmaraş [24]; Edirne [9].**Family: Coreidae****Genus: *Enoplops* Amyot and Serville, 1843***Enoplops disciger* (Kolenati, 1845)**Material examined:** Günyüzü (904 m.): 15.07.2006, 1♀; Çifteler (869 m.): 25.07.2006, 3♀♀, Çifteler (869 m.): 31.07.2005, 19♀♀, 16♂♂.**General geographical distribution:** Anatolia, Balkans, Bulgaria, Armenia, Iraq, Iran, Israel, Southern Russia, Caucasus, Syria, Turkestan, Türkiye, Greece [8, 10].

Distribution from Türkiye: Mediterranean, Marmara, Eastern Anatolia, Central Anatolia, Southeastern Anatolia Regions [10]; Kayseri [16]; Ankara [18]; Kırşehir [17].

Genus: *Coreus* Fabricius, 1794

Coreus marginatus (Linnaeus, 1758)

Material examined: Eskişehir- Yarımca (1248m.): 11.07.2006, 1♀; Çifteler (869m.): 31.07.2005, 1♂.

General geographical distribution: Germany, Arabia, Albania, Austria, Azerbaijan, Balkans, Belgium, Algeria, Czech Republic, China, Finland, France, Crete Island, Southern Russia, Georgia, Iraq, Israel, Iran, Italy, Ireland, Spain, Sweden, Japan, Caucasus, Kazakhstan, Hungary, Norway, Poland, Portugal, Siberia, Slovakia, Syria, Tajikistan, Turkestan, Türkiye, Ukraine, Greece [8, 10, 16].

Distribution from Türkiye: Ankara [10, 16, 18]; Eastern Anatolia, Central Anatolia, Eastern Black Sea Regions and Marmara, Gaziantep, Hatay, Adana, Zonguldak [10, 16]; Kahramanmaraş, Elazığ [16]; Kastamonu, Çankırı [19]; Kırşehir [17].

Genus: *Centrocoris* Kolenati, 1845

Centrocoris spiniger (Fabricius, 1781)

Material examined: Eskişehir- Yarımca (1248 m.): 11.07.2006, 1♀

General geographical distribution: Albania, Austria, Bulgaria, Algeria, Czech Republic, Armenia, Morocco, France, Crete Island, Iraq, Iran, Spain, Israel, Sweden, Switzerland, Italy, Canary Islands, Cyprus, Corsica, Libya, Hungary, Portugal, Romania, Russia, Syria, Tunisia, Turkestan, Türkiye, Turkmenistan, Ukraine, Greece [8, 10, 16].

Distribution from Türkiye: Marmara Region, Aegean Region, Mediterranean Region, Central Anatolia Region, Eastern Anatolia Region, Southeastern Anatolia Region [10, 16]; Ankara [18]; Kırşehir [17].

Family: Alydidae

Genus: *Camptopus* Amyot & Serville, 1843

Camptopus tragacanthae (Kolenati, 1845)

Material examined: Eskişehir- Yarımca (1248 m.): 13.07.2006, 1♂

General geographical distribution: Afghanistan, China, Southern Russia, Iran, Caucasus, Tajikistan, Türkiye [8, 10, 16].

Distribution from Türkiye: Aegean Region, Marmara Region, Central Anatolia Region, Eastern Anatolia Region, Ankara [10, 16, 18]; Elazığ, Bursa, İzmir, Eskişehir, Kars [10, 16]; Elazığ [21]; Kahramanmaraş, Kayseri [16]; Kastamonu [19]; Kırşehir [17].

Family: Pyrrhocoridae

Genus: *Pyrrhocoris* Fallen, 1814

Pyrrhocoris apterus (Linnaeus, 1758)

Material examined: İnönü (1008 m.): 27.07.2006, 1♀

General geographical distribution: Germany, Algeria, Arabia, Albania, Austria, Azerbaijan, Belgium, Bulgaria, Czech Republic, Cyprus, China, Morocco, France, Finland, Hungary, India, Iraq, Iran, Italy, England, Spain, Israel, Sweden, Canary Islands, Kazakhstan, Lebanon, Egypt, Poland, Portugal, Slovakia, Tunisia, Türkiye, Turkestan, Greece, Crete Island, Asia, Europe, Balkans, North Africa, Middle East [8, 10].

Distribution from Türkiye: Aegean, Central Anatolia, Western Black Sea, Eastern Anatolia and Marmara Regions [10, 16]; Kayseri, Elazığ [16]; Ankara [18]; Çankırı [19]; Kırşehir [17].

Family: Lygaeidae

Genus: *Lygaeus* Fabricius, 1794

Lygaeus saxatilis (Scopoli, 1763)

Material examined: Sivrihisar (1039 m.): 12.07.2006, 1♀; Alpu (768 m.): 14.07.2006, 1♂; Günyüzü-Kayakent (1002 m.): 13.07.2006, 1♂.

General geographical distribution: Germany, Afghanistan, Algeria, Albania, Europe, Austria, Bulgaria, Balkans, Belgium, Cyprus, North Africa, Czech Republic, Egypt, Morocco, France, India, Netherlands, Iraq, Iran, Spain, Israel, Switzerland, Italy, Kashmir, Corsica, Lebanon, Hungary, Macedonia, Portugal, Romania, Russia, Syria, Tunisia, Türkiye, Turkestan, Greece, Crete Island, Caucasus [8].

Distribution from Türkiye: Central Anatolia and Southeastern Anatolia Regions, Kahramanmaraş, Eskişehir, Erzincan, Ağrı, Kırşehir, İstanbul, Gaziantep, Isparta, Kayseri, Çankırı, Niğde, Nevşehir, Konya, Çorum, Yozgat [10, 16]; Elazığ, Kahramanmaraş [16]; Kastamonu [19]; Ankara [10, 16, 18].

Lygaeus pandurus (Scopoli, 1763)

Material examined: Eskişehir- Yarımca (1248 m.): 13.07.2006, 1♀

General geographical distribution: Europe, Australia, Balkans, Philippines, Southern Russia, India, Cyprus, North Africa, Middle East, Turkestan, Türkiye [8, 10].

Distribution from Türkiye: Kahramanmaraş, Elazığ [16]; Ankara [18].

Lygaeus equestris (Linnaeus, 1758)

Material examined: Alpu (768 m.): 14.07.2006, 1♀, 1♂

General geographical distribution: Albania, Europe, Balkans, Finland, Norway, Western Russia, Russia, Algeria, China, Egypt, Italy, Morocco, India, Iraq, Iran, Spain, Israel, Sweden, Japan, Caucasus, Cyprus, Crimea, Corsica, Poland, Portugal, Siberia, Sicily, Syria, Tunisia, Türkiye, Turkestan, Crete Island [8, 10].

Distribution from Türkiye: Aegean Region, Central Anatolia Region, Marmara, Eastern Black Sea Region, Eastern Anatolia Region, Western Black Sea Region, Gaziantep, Diyarbakır [10, 16, 23]; Ankara [18]; Elazığ, Kahramanmaraş [16]; Kastamonu [19]; Kırşehir [17].

Family: Stenocephalidae

Genus: *Dicranocephalus* Hahn, 1826

Dicranocephalus albipes (Fabricius, 1781)

Material examined: Eskişehir- Yarımca (1248 m.): 11.07.2006, 1♂

General geographical distribution: Germany, Albania, Austria, Azerbaijan, Balkans, Bulgaria, Algeria, Czech Republic, Morocco, France, Crete Island, Georgia, Iraq, Iran, England, Spain, Israel, Sweden, Italy, Caucasus, Cyprus, North Africa, Hungary, Malta, Portugal, Romania, Russia, Slovakia, Syria, Türkiye, Ukraine, Greece [8].

Distribution from Türkiye: Aegean Region, Western Black Sea Region, Marmara Region, Western Central Anatolia, Southeastern Anatolia Region, Eastern Anatolia Region [10, 16]; Kahramanmaraş [16]; Çankırı, Kastamonu [19]; Kırşehir [17].

Family: Rhopalidae

Genus: *Corizus* Fallen, 1814

Corizus hyosciami (Linnaeus, 1758)

Material examined: Eskişehir- Yarımca (1248 m.): 11.07.2006, 1♂

General geographical distribution: Afghanistan, Germany, Albania, Europe, Austria, Balkans, Belgium, Bulgaria, China, Czech Republic, Armenia, Finland, France, Crete Island, Southern Russia, Iraq, Iran, England, Ireland, Spain, Israel, Sweden, Switzerland, Italy, Caucasus, Kazakhstan, Cyprus, North Africa, Libya, Lebanon, Hungary, Egypt, Poland, Portugal, Romania, Siberia, Slovakia, Syria, Tajikistan, Transcaucasus, Turkestan, Türkiye, Turkmenistan, Ukraine, Greece [8, 10].

Distribution from Türkiye: Western Mediterranean, Aegean Region, Central Anatolia Region, Marmara, Southeastern Anatolia Regions, Eastern Anatolia, Artvin, Amasya, Bursa, Ankara, Diyarbakır, Konya, Edirne [10, 16]; Elazığ, Kahramanmaraş, Kayseri [16]; Ankara [18]; Kastamonu, Çankırı [19]; Kırşehir [17].

Genus: *Brachycarenum* Fieber, 1860

Brachycarenum tigrinus (Schilling, 1829)

Material examined: Alpu (768 m.): 14.07.2006, 3♂♂

General geographical distribution: Northwest Africa, Europe, Cyprus, Anatolia, South and West Russia, Syria, Iran, Israel, Turkestan, Mongolia, Kashmir, China, Türkiye [8].

Distribution from Türkiye: Kırşehir [17].

4. Conclusion and discussion

As a result of this study carried out to determine the harmful Hemiptera species in Eskişehir and its surroundings; 27 genera and 42 species belonging to 8 families were identified. Among the detected species, *A. acuminata*, *A. cognata*, *A. virgata*, *A. leucogrammes*, *E. blanda*, *R. nebulosa*, *P. martini*, *C. mediterraneus*, *C. purpureipennis*, *V. trigonus*, *V. fischeri*, *E. dilaticollis*, *O. rufescens*; *O. purpureolineatus*, *O. robustus*, *P. exanthematica*, *P. tuberculata*, *E. disciger*, *C. spiniger*, *L. equestris*, *L. pandurus*, *D. albipes*, *C. hyosciami*, *C. marginatus*, and *B. tigrinus* are reported for the first time from the research area.

E. maura, *A. rostrata*, *E. ornatum* and *V. fischeri* were the most frequently observed and collected species during the study period. *Aelia* spp. species are known to inflict harm primarily on wheat crops, with both adult insects and young ones beginning to consume by sucking when the grains are in the milky stage, causing the grains to progressively diminish in size, resulting in a low-quality product that cannot germinate [4]. A total of 954 adults belonging to the genus *Aelia* spp. were collected from almost all localities in the study area. It was determined that the most widely distributed species belonging to the genus *Aelia* spp. was *A. rostrata* and the most rarely distributed species was *A. virgata*.

Adults and nymphs of *Eurygaster* spp. species damage wheatgrasses in various periods and have a negative effect on the drying of the plant, grain formation and the quality of flour obtained from the grains [14, 21]. A total of 1739 adults belonging to the genus *Eurygaster* spp. were collected from almost all localities in the present study area. The most widely distributed species belonging to the genus *Eurygaster* was found to be *E. maura*, and the most rarely distributed species was found to be *E. dilaticollis*.

Almost all the species found are phytophagous. They have been collected from plants with high nutritional value that are also used as food by humans. Considering the damage caused by the species of the identified families to economically important plants, it is important to know the habitats, biology and densities of these species. In this study, we tried to determine the fauna of harmful Hemiptera species in Eskişehir province. However, it is hoped that by knowing the biology and density of harmful species in this area, it can contribute to the biodiversity of our country in terms of preserving the existing natural balance between harmful and beneficial species.

Acknowledgement

The authors want to thank the contributions of Bahriye Ayaz for her helpful insights and assistance with literature review and manuscript preparation.

References

- [1].Abbas, H., & Önder, F. (1991). Türkiye'deki *Eurygaster* Lap. (Heteroptera : Scutelleridae) Türleri Üzerinde Sistematik Araştırmalar. *Ege Üniversitesi Fen Bilimleri Enstitüsü Dergisi*, 2(1), 165-172.
- [2].Aktaç, N., & Fent, M. (1999). Edirne Yöresi Pentatomidae (Heteroptera) Faunası Üzerine Taksonomik ve Faunistik Araştırmalar. *Turkish Journal of Zoology*, 23(Ek Sayı 2), 377-395.
- [3].Awad, T. İ., & Pehlivan, E. (2001). Türkiye *Carpocorini* (Heteroptera: Pentatomidae: Pentatominae) tribus'u türleri üzerinde sistematik ve faunistik çalışmalar Kısım I: *Holcogaster* Fb., *Staria* D. & *Cnephosa* Jak. *Turkish Journal of Entomology*, 25(3), 163-174.
- [4].Critchley, B. R. (1998). Literature review of sunn pest *Eurygaster integriceps* Put. (Hemiptera, Scutelleridae). *Crop Protection*, 17(4), 271-287.
- [5].Dursun, A., & Kartal, V. (2008). Orta Karadeniz Bölgesi *Strachiini* Mulsant & Rey, 1866, *Pentatomini* Leach, 1815 ve *Piezodorini* Atkinson, 1888 (Heteroptera: Pentatomidae: Pentatominae) türleri üzerine faunistik bir araştırma. *Turkish Journal of Entomology*, 32(3), 225-239.
- [6].Dursun, A., Kaçar, G., & Ulusoy, M. R. (2010). The Alydidae (Hemiptera: Heteroptera: Coreoidea) of Turkey: A Key to the Genera, New Records and a Species Checklist. *Entomological News*, 121(5), 487-497. doi:10.3157/021.121.0512
- [7].Fahringer, J. (1922). Eine Rynchotenausbeute aus der Türkei, Kleinasien und benachbarten Gebieten. *Konowia*, 1(137-144), 296-307.
- [8].*Fauna Europea*. (2024, April 9). GBIF : https://www.gbif.org/occurrence/search?taxon_key=4485841
- [9].Fent, M., & Aktaç, N. (2009). Trakya Bölgesi *Acanthosomatidae*, *Plataspidae*, *Thyreocoridae*, *Cydnidae*, *Scutelleridae* (Pentatomidae: Heteroptera) Faunasına Katkıları. *Turkish Journal of Entomology*, 33(3), 193-204.
- [10].Hoberlandt, L. (1955). *Results of the Zoological Scientific Expedition of the National Museum in Praha to Turkey-18: Hemiptera IV: Terrestriale Hemiptera- Heteroptera of Turkey* (Cilt 3). Prague: Acta Entomologica Musei Nationalis Pragae.

- [11].Horváth, G. (1890). Conspectus specierum generis *Mustha* (Hemiptera, Pentatomidae). *Revue d'Entomologie*, 9, 262-264.
- [12].Horvath, G. (1903). Conspectus specierum generis *Graphosoma*. *Annales Historico- Naturales Musei Hungarici*, 1, 345-354.
- [13].Horváth, G. (1918). Ad cognitionem faunae Hemipterorum Balcanicae. *Annales Historico-Naturales Musei Nationalis Hungarici*, 16, 321-340.
- [14].Karababa, E., & Ozan, A. N. (1998). Effect of Wheat Bug (*Eurygaster integriceps*) Damage on Quality a Wheat Variety Grown in Turkey. *Journal of the Science of Food and Agriculture*, 77, 399-403.
- [15].Kınacı, E., & Kınacı, G. (2004). Quality and yield losses due to sunn pest (Hemiptera: Scutelleridae) in different wheat types in Turkey. *Field Crops Research*, 89(2-8), 187-195.
- [16].Kıyak, S. (1993). Erstnachweisen fuer die Fauna Heteroptera der Tuerkei Prov Kahramanmaras Binboga Gebirge. *Priamus*, 6, 160.
- [17].Kıyak, S., Öz Saraç , Ö., & Salur, A. (2004). Additional Notes on The Heteroptera Fauna of Nevşehir Province (Turkey). *Gazi University Journal of Science*, 17(1), 21-29.
- [18].Kıyak, S., & Akar, E. (2010). Faunistic study of terrestrial Heteroptera of Çaldağ (Ankara, Turkey). *Munis Entomology & Zoology*, 5 (Supplement), 1104-1118.
- [19].Küçükbasmacı, İ., & Kıyak, S. (2015). A Study on the Fauna of Heteroptera of Ilgaz Mountains Kastamonu Çankırı With a New Record for Turkey. *Nevşehir Bilim ve Teknoloji Dergisi*, 4(1), 1-33.
- [20].Linnavuori, F. (1965). Studies on the South and East Mediterranean Hemiptereus Fauna III. Hemipterological obervations from Turkey. *Acta Entomologica Fennica*, 21, 44-61.
- [21].Lodos, N. (1986). *Türkiye Entomolojisi II (Genel ve Uygulamalı Faunistik)*. Bornova, İzmir: Ege Üniversitesi, Ziraat Fakültesi Yayınları.
- [22].Lodos, N., & Önder, F. (1982). Contrubution to the study on the Turkish Pentatomoidea (Heteroptera) V. Sciocorini Bergroth (Pentatomidae). *Türkiye Bitki Koruma Dergisi*, 6, 133-146.
- [23].Lodos, N., Önder, F., Pehlivan, E., & Atalay, R. (1978). *Ege ve Marmara Bölgesi'nin zararlı böcek faunasının tespiti üzerinde çalışmalar. [Curculionidae, Scarabaeidae, Lygaeida, Miridae, (Heteroptera)]*. Ankara: T.C. Gıda-Tarım ve Hayvancılık Bakanlığı Zirai Mücadele ve Zirai Karantina Müdürlüğü.
- [24].Lodos, N., Önder, F., Pehlivan, E., Atalay, R., Erkin, E., Karsavuran, Y., . . . Aksoy, S. (1998). *Faunistic Studies on Pentatomoidea (Plataspidae, Acanthosomatidae, Cydnidae, Scutelleridae, Pentatomidae) of Western Black Sea, Central Anatolia and Mediterranean Regions of Turkey*. Bornova, İzmir: Ege Üniversitesi Ziraat Fakültesi Basımevi.
- [25].Demirel, E., & Hasbenli, A. (2021). Bolkar Dağları'nın Cercopidae Leach, 1815 (Hemiptera: Auchenorrhyncha) faunasına katkılar. *Biological Diversity and Conservation*, 14(3), 456-463. <https://doi.org/10.46309/biodicon.2021.1012317>