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Research Article

About the Taxonomic List of Heteroptera Collection in Zoological Museum of Gazi University (ZMGU), Ankara-Türkiye

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ABSTRACT: In the Zoology Museum of Gazi University(ZMGU) has a collection of Türkiye by a variety of insect groups.

In this paper is given presented list of suboder Heteroptera collection of this Museum, and this collection maintains much more than 381 species-group taxa belonging to 30 families.

In the collection includes aquatic, semi-aquatic and terrestrial specimens of Heteroptera specimens, they are also important part of the ZMGU- collection.
The collection material of Heteroptera was mostly stored in insect cases as pinned dry specimens or alcohol jars.

KEY WORDS: Heteroptera, collection, species list, Türkiye, zoological museum, Gazi University

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Professor Dr. Ahmet Koçak, who passed away in 2021, the founder of the Zoology Museum of Gazi University, has studied the insect fauna of Türkiye and many parts of the world since 1967.

He has published many scientific articles on these topics. He represented the lepidopterist field and was an international expert in his field.

There are thousands of specimens in the Heteroptera Collection at Gazi University Zoology Museum (ZMGU).

There is also a collection of various insect groups from Türkiye in this museum.

In the Türkiye Heteroptera fauna was included at least 1540 species/ subspecies belonging to 420 genera of 40 families (Önder, et al., 2006; (Önder, et al., 2006; Dursun et al, 2010; Fent et al. 2010; Fent et al. 2011; Kıyak & Akar 2010; Çerçi & Dursun, 2017; Dursun & Fent, 2017; Özgen & Çerçi, 2018; Çerçi & Gözüaçık, 2019; Çerçi et al., 2019, 2020, 2021; Çerçi & Koçak, 2017; Çerçi, 2021; Çerçi & Tezcan, 2020; Çerçi & Özgen, 2021; Çerçi & Oruz, 2021).

The Heteroptera (Hemipera) Collection of Zoological Museum of Gazi (ZMGU) contains, 381 species/subspecies identified belonging to 204 genera of 30 Heteroptera families.

In the collection includes aquatic, semi-aquatic and terrestrial of Heteroptera specimens.

The collection material of ZMGU is mostly stored in insect cases as pinned dry specimens.

In addition, a considerable proportion of the specimens is stored in alcohol-jars – the most comprehensive entomological collection at the zoological museum of Gazi University.

The collection has with a geographical focus on Türkiye insect fauna.

Furthermore, there are many specimens from Kosovo in the collection.

History:

The oldest pieces of the collection are over 35 years old, dating back to the time the Zoological Museum was founded.

The collection is scientifically invaluable due to its volume and number of specimens.

Over the past 20 to 30 years, the collection has been replenished with materials mainly from Türkiye. Samples belonging to 20 authors, including Kıyak and other researchers in his team, are kept in the Heteroptera collection as samples or references for species identification.

Highlights:

Collection materials have mostly been collected and described by Kıyak, and since 1985 many articles have been published on Türkiye's Heteroptera by Kıyak and Kıyak et al (See. References).

Research:

The ZMGU Heteroptera collection is used various research projects.

Because this collection specimens are important for the determination and description of Turkish Heteroptera fauna species.

They allow the study fauna of Türkiye are the basis for research in systematics, ecological and developmental biology, the study of historical changes of habitats or the study of the distribution history and current distribution of a species.

Specimens from different regions of the Türkiye or from different adjacent geographic regions can be compared.

The nomenclatural reviews of the taxa in the collection were arranged according to Aukema & Rieger (1995-2013).

The classification of identified all specimens in this collection into taxa is given and listed in the table below (Table 1).

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Table 1. List of heteroptera species in Zoological Museum of Gazi University (ZMGU)

FAMILIA / GENUS	SPECIES
ACANTHOSOMATIDAE Signoret, 1864	
***Elasmostethus* Fieber, 1860**	*Elasmostethus interstinctus* (Linnaeus, 1758)
	Elasmostethus minor Horváth, 1899
ALYDIDAE Amyot & Serville, 1843	
***Alydus* Fabricius, 1803**	*Alydus calcaratus* (Linnaeus, 1758)
***Camptopus* Amyot & Serville, 1843**	*Camptopus bifasciatus* Fieber, 1864
	Camptopus illustris Horváth, 1899
	Camptopus lateralis (Germar, 1817)
	Camptopus tragacanthae (Kolenati, 1845)
ANTHOCORIDAE Fieber, 1836	
***Anthocoris* Fallen, 1814**	*Anthocoris nemorum* (Linnaeus, 1761)
	Anthocoris pilosus (Jakovlev, 1877)
***Orius* Wolff, 1811**	*Orius laticollis* (Reuter, 1884)
	Orius majusculus (Reuter, 1879)
BERYTIDAE Fieber, 1851	
***Berytinus* Kirkaldy, 1900**	*Berytinus geniculatus* (Horvath, 1885)
	Berytinus hirticornis nigrolineatus (Jakovlev, 1903)
	Berytinus minor (Herrich-schaeffer, 1835)
	Berytinus hirticornis pilipes (Puton,1875)
***Metatropis* Fieber, 1859**	*Metatropis rufescens* (Herrich-Schäffer, 1835)
***Neides* Latreille, 1802**	*Neides brevipennis* Puton, 1895
	Neides tipularius (Linnaeus, 1758)
COREIDAE Leach, 1815	
***Anoplocerus* Kiritshenko, 1926**	*Anoplocerus Luteus (Fieber, 1861)*
Arenocoris Hahn, 1834	*Arenocoris falleni* (Schilling, 1829)
	Arenocoris waltlii (Herrich-Schäffer, 1835)
***Bathysolen* Fieber, 1860**	*Bathysolen nubilus* (Fallen,1807)
Centrocoris Kolenati, 1845	*Centrocoris spiniger* (Fabricius, 1781)
	Centrocoris variegatus Kolenati,1845
***Ceraleptus A.* Costa, 1847**	*Ceraleptus lividus* Stein,1858
	Ceraleptus obtusus (Brulle,1839)
***Coreus* Fabricius, 1794**	*Coreus marginatus* (Linnaeus,1758)

Table 1. Continued...

***Coriomeris* Westwood, 1842**	***Coriomeris affinis* (Herrich-Schaeffer, 1839)**
	Coriomeris denticulatus (Scopoli, 1763)
	Coriomeris hirticornis (Fabricius, 1794)
	Coriomeris subglaber Horváth, 1917
***Enoplops* Amyot & Serville, 1843**	*Enoplops disciger* (Kolenati, 1845)
	Enoplops scapha (Fabricius, 1794)
***Gonocerus* Berthold, 1827**	*Gonocerus acuteangulatus* (Goeze, 1778)
	Gonocerus juniperi Herrich-Schaeffer, 1839
***Haploprocta* Stål, 1872**	*Haploprocta sulcicornis* (Fabricius, 1794)
	Haploprocta umbrina Jakovlev, 1883
***Phyllomorpha* Laporte,1833**	*Phyllomorpha laciniata* (Villers, 1789)
***Spathocera* Stein, 1860**	*Spathocera dalmani* (Schilling, 1829)
	Spathocera tenuicornis Jakovev, 1883
Strobilotoma Fieber, 1860	*Strobilotoma typhaecornis* (Fabricius, 1803)
***Syromastus* Berthold, 1827**	*Syromastus rhombeus* (Linnaeus,1767)
CORIXIDAE Leach, 1815	
***Corixa* Geoffroy, 1762**	*Corixa affinis* Leach, 1817
	Corixa punctata (Illiger, 1807)
***Hesperocorixa* Kirkaldy, 1908**	*Hesperocorixa linnaei* (Fieber, 1848)
	Hesperocorixa parallela (Fieber, 1860)
***Sigara* Fabricius, 1775**	*Sigara daghestanica* Jansson, 1983
	Sigara lateralis (Leach, 1817)
	Sigara nigrolineata (Fieber, 1848)
	Sigara striata (Linnaeus, 1758)
CYDNIDAE Billberg, 1820	
***Canthophorus* Mulsant & Rey, 1866**	*Canthophorus melanopterus* (Herrich-Schäffer, 1835)
***Cydnus* Fabricius, 1803**	*Cydnus aterrimus* (Forster, 1771)
***Macroscytus* Fieber, 1860**	*Macroscytus brunneus* (Fabricius, 1803)
***Ochetostethus* Fieber, 1860**	*Ochetostethus nanus* (Herrich-Schaeffer, 1834)
	Ochetostethus sahlbergi Wagner, 1952
***Sehirus* Amyot & Serville, 1843**	*Sehirus morio* (Linnaeus, 1761)
***Tritomegas* Amyot & Serville, 1843**	*Tritomegas bicolor* (Linnaeus, 1758)
	Tritomegas sexmaculatus (Rambur, 1839)

Table 1. Continued...

GERRIDAE Leach, 1815	
***Gerris* Fabricius, 1794**	*Gerris argentatus* Schummel, 1832
	Gerris costae (Herrich-Schäffer, 1850)
	Gerris gibbifer Schummel, 1832
	Gerris lacustris (Linnaeus, 1758)
	Gerris thoracicus Schummel, 1832
Aquarius Schellenberg, 1800	*Aquarius ventralis* (Fieber, 1860)
	Aquarius palludum (Fabricius, 1794)
HYDROMETRIDAE Billberg, 1820.	
***Hydrometra* Latreille, 1796**	*Hydrometra stagnarum* (Linnaeus, 1758)
LEPTOPODIDAE Amyot and Serville, 1843	
***Leptopus* Latreille, 1809**	*Leptopus marmoratus* (Goeze, 1778)
LYGAEIDAE Schilling, 1829	
***Aphanus* Laporte, 1833**	*Aphanus rolandri* (Linnaeus, 1758)
***Apterola* Mulsant & Rey, 1866**	*Apterola louni* (Saunders, 1876)
***Beosus* Amyot & Serville, 1843**	*Beosus maritimus* (Scopoli, 1763)
***Brachyplax* Fieber, 1860**	*Brachyplax tenuis* (Mulsant & Rey, 1852)
***Callistonotus* Horvath, 1906**	*Callistonotus nigroruber* (Stål, 1859)
***Camptotelus* Fieber, 1860**	*Camptotelus sp.*
***Cymus* Hahn, 1832**	*Cymus simplex* Horvath, 1882
***Diomphalus* Fieber, 1864**	*Diomphalus sp.*
***Emblethis* Fieber, 1860**	*Emblethis bracynotus* (Horvat, 1897)
	Emblethis denticollis Horváth, 1878
	Emblethis griseus (Wolff,1802)
***Engistus* Fieber, 1864**	*Engistus sp.*
***Gastrodes* Westwood, 1840**	*Gastrodes grossipes* (De Geer, 1773)
***Geocoris* Fallen, 1814**	*Geocoris arenarius* (Jakovlev, 1867)
	Geocoris erythrocephalus (Lepeletier & Serville, 1825)
	Geocoris pallidipennis Costa 1843
	Geocoris pubescens (Jakovlev,1871)
***Gonianotus* Fieber, 1860**	*Gonianotus sp.*
***Graptopeltus* Stål, 1872**	*Graptopeltus validus* (Horvath, 1875)
	Graptopeltus lynceus (Fabricius, 1775)
***Heterogaster* Schilling, 1829**	*Heterogaster affinis* (Herrich-Schaeffer,1835)
	Heterogaster urticae (Fabricius, 1775)

Table 1. Continued...

***Icus* Fieber, 1860**	***Icus angularis* Fieber, 1861**
***Ischnodemus* Fieber, 1837**	*Ischnodemus suturalis* Horvath 1883
***Ischnopeza* Fieber, 1860**	*Ischnopeza hirticornis* (Herrich-Schaeffer, 1850)
***Lasiocoris* Fieber, 1860**	*Lasiocoris anomalus* (Kolenati,1845)
	Lasiocoris crassicorvis (Lucas, 1849)
Lethaeus Dallas, 1852	*Lethaeus fulvovarius* Puton, 1884
	Lethaeus picipes (Herrich-Schaeffer, 1850)
***Lygaeosoma*, Spinola, 1837**	*Lygaeosoma sp.*
	Lygaesoma sardeum sardeum Spinola, 1837
***Lygaeus* Fabricius, 1794**	*Lygaeus equestris* (Linnaeus, 1758)
***Macroplax* Fieber, 1860**	*Macroplax fasciata* (Herrich-Schaeffer, 1835)
	Macroplax preyssleri (Fieber, 1837)
***Megalonotus* Fieber, 1860**	*Megalonotus chiragra* (Thomson, 1794)
	Megalonotus setosus Puton, 1874
***Melanocoryphus* Stål, 1872**	*Melanocoryphus albomaculatus* (Goeze, 1778)
	Melanocoryphus tristrami (Douglas & Scott, 1868)
***Horvatholus* Josifov, 1965**	*Horvathiolus superbus* (Pollich, 1781)
***Metopoplax* Fieber, 1860**	*Metopoplax fuscinervis* Stal, 1872
***Microplax* Fieber, 1860**	*Microplax interrupa* (Fieber, 1837)
	Microplax limbata Fieber, 1864
***Nysius* Dallas, 1852**	*Nysius ericae* (Schilling, 1829)
	Nysius cymoides (Spinola, 1837)
	Nysius graminicola (Kolenati, 1845)
	Nysius helveticus (Herrich-Schaeffer, 1850)
	Nysius thymi (Wolff, 1804)
	Nysius senecionis (Schilling, 1829)
***Ortholomus* Stål, 1872**	*Ortholomus punctipennis* (Herrich-Schaeffer, 1838)
***Orsillus* Dallas, 1852**	*Orsillus depressus* (Mulsant & Rey, 1852)
***Oxycarenus* Fieber, 1837**	Oxycarenus pallens (Herrich-Schaeffer, 1850)
***Pachybrachius* Hahn, 1826**	*Pachybrachius fracticollis* (Schilling, 1829)
***Paranysius* Horvath, 1895**	*Paranysius fraterculus* Horvath, 1895
***Paraparomius*, Harrington, 1980**	*Paraparomius leptopoides* (Bärensprung, 1859)
***Peritrechus* Fieber, 1860**	*Peritrechus geniculatus* (Hahn, 1832)
***Perillus* Stål, 1862**	*Perillus bioculatus (Fabricius, 1775)*

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Table 1. Continued...

***Pezocoris* Jakovlev, 1875**	***Pezocoris apicimacula* apicimacula (A. Costa 1853)**
	Piezocoris minutus (Jakovlev, 1874)
***Pionosomus* Fieber, 1860**	*Pionosomus engizekicus* (Kıyak, 1995)
***Proderus* Fieber, 1860**	*Proderus bellevoyei* (Puton, 1873)
***Rhyparochromus* Hahn, 1826**	*Rhyparochromus phoeniceus* (Rossi, 1794)
	Rhyparochromus vulgaris (Schilling, 1829)
	Rhyparochromus pini (Linnaeus, 1758)
***Raglius* Stål, 1872**	*Raglius albaacuminatus* (Goeze, 1778)
	Raglius confusus (Reuter, 1886)
	Raglius zarudyni (Jakovlev, 1905)
***Xanthochilus* Stål, 1872**	*Xanthochilus minusculus* (Reuter, 1885)
	Xanthochilus saturnius (Rossi, 1790)
***Spilostethus* Stål, 1868**	*Spilostethus pandurus* (Scopoli, 1763)
	Spilostethus saxatilis (Scopoli, 1763)
***Tropidothorax* Bergroth, 1894**	*Tropidothorax leucopteris* (Goeze, 1778)
MESOVELIDAE Douglas & Scott, 1867	
***Mesovelia* Malsant & Rey, 1852**	*Mesovelia vittigera* Horváth, 1895
MICRONECTIDAE Douglas & Scott, 1867	
***Micronecta* Kirkaldy, 1897**	*Micronecta anatolica anatolica* Lindberg,1922
	Micronecta griseola Horváth, 1899
***MIRIDAE* Hahn, 1833**	
***Adelphocoris* Reuter, 1896**	*Adelphocoris bimaculicollis* Lindberg, 1948
	Adelphocoris lineolatus (Goeze, 1778)
	Adelphocoris vandalicus (Rossi, 1790)
***Alloeonotus* Fieber, 1858**	*Alloeonotus fulvipes* (Scopoli, 1763)
***Aphanosoma* A. Costa, 1842**	*Aphanosoma italicum* A. Costa, 1842
***Brachycoleus* Fieber, 1858**	*Brachycoleus decolor* Reuter, 1887
***Calocoris* Fieber, 1858**	*Calocoris affinis* (Herrich-schaeffer, 1835)
	Calocoris norvegicus (Gmelin, 1790)
	Calocoris roseomaculatus (De Geer, 1773)
***Closterotomus* Fieber, 1858**	*Closterotomus reuteri* (Horvath, 1882)
***Camponotidea* Reuter, 1879**	*Camponotidea fieberi* Reuter, 1879
	Camponotidea saundersi (Puton, 1874)

Table 1. Continued...

***Horistus* Fieber, 1860**	***Horistus bimaculatus* (Jakovlev, 1884)**
	Horistus orientalis (Gimelin, 1790)
	Horistus infuscatus (Brulle, 1832)
***Chargochilus*, Fieber 1858**	*Chargochilus gyllenhali* (Fallén, 1807)
***Chlamydatus* Curtis, 1833**	*Chlamydatus pullus* (Reuter, 1870)
***Cranocapsus Wagner*, 1954**	*Cranocapsus turcicus* Kıyak, 1990
***Cyphodema* Fieber, 1858**	*Cyphodema cilicica* Seidenstücker, 1954
	Cyphodema instabilis (Lucas, 1849)
	Cyphodema mendosa Montandon, 1887
***Deraeocoris* Kirschbaum, 1856**	*Deraeocoris punctum* (Rambur, 1839)
	Deraeocoris rutilus (Herrich-Schäffer, 1838)
	Deraeocoris trifasciatus (Linnaeus, 1767)
	Deraeocoris ventralis Reuter, 1904
***Dicyphus* Fieber, 1858**	*Dicyphus montandoni* Reuter, 1888
***Dimorphocoris* Reuter, 1890**	*Dimorphocoris distylus* Seidenstucker, 1964
***Eurycolpus* Reuter, 1875**	*Eurycolpus aureolus* Seidenstücker, 1961
***Globiceps* Lepeletier & Serville, 1825**	*Globiceps flavomaculatus* (Fabricius, 1794)
	Globiceps horvathi Reuter, 1912
***Grypocoris* Douglas & Scott, 1868**	*Grypocoris amoneus* (Douglas & Scott,1868)
	Grypocoris fieberi Dougles & Scot, 1868
	Grypocoris heinzi Wagner, 1966
	Grypocoris melanopygus Horvath, 1906
***Halticus* Hahn, 1832**	*Halticus pusillus* (Herrich-Scaeffer, 1835)
***Leptopterna* Fieber 1858**	*Leptoterna dolobrata* (Linnaeus, 1758)
***Liocoris* Fieber, 1858**	*Liocoris tripustulatus* (Fabricius, 1781)
***Lygocoris* Reuter, 1875**	*Lygocoris pernicoides* Seidenstücker, 1957
	Lygocoris rugicollis (Fallen, 1807)
Lygus Hahn, 1833	*Lygus gemellatus* (Herrich-Schaeffer, 1835)
	Lygus rugulipennis (Poppius, 1911)
	Lygus pratensis (Linnaeus,1758)
***Megalocelous* Reuter, 1890**	*Megalocelous hungaricus* Wagner E., 1944
	Megalocoleus molliculus (Fallén, 1807)
	Megalocoleus tanaceti (fallen 1807)
***Myrmecoris* Gorski, 1852**	*Myrmecoris gracilis* (R.F. Sahlberg, 1848)
***Notostira* Fieber, 1858**	*Notostira erratica* (Linné, 1758)

Table 1. Continued...

***Oncotylus* Fieber, 1858**	***Oncotylus viridiflavus* (Goeze, 1778)**
	Oncotylus setulosus (Herrich-Schaeffer, 1837)
***Opisthotaenia* Reuter, 1901**	*Opisthotaenia fulvipes* Reuter, 1901
***Orthocephalus* Fieber, 1858**	*Orthocephalus melas* Seidenstücker, 1962
	Orthocephalus fulvipes Reuter, 1904
***Piezocranum* Horvath, 1877**	*Piezocranum corvinum* Puton, 1895
***Plagiotylus* Scott, 1874**	*Plagiotylus dispar* Reuter, 1899
***Poecilonotus* Reuter, 1896**	*Poecilonotus picturatus* (Reuter, 1896)
***Polymerus* Hahn, 1831**	*Polymerus unifasciatus* (Fabricius, 1794)
***Psallus* Fieber, 1858**	*Psallus ocularis* (Mulsant & Rey, 1852)
***Rhabdomiris* Wagner, 1968**	*Rhabdomiris striatellus striatellus* (Fabricius, 1794)
***Stenodema* Laporte, 1833**	*Stenodema calcarata* (Fallen, 1807)
	Stenodema laevigata (Linnaeus,1758)
***Stenotus* Jakovlev, 1877**	*Stenotus binotatus* (Fabricius, 1794)
NABIDAE A. Costa, 1853	
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	Himacerus mirmicoides (A. Costa, 1834)
***Nabis* Latreille, 1802**	*Nabis capsiformis* Germar, 1838
	Nabis ferus (Linnaeus, 1758)
	Nabis limbatus Dahlbom, 1851
	Nabis pseudoferus Remane, 1949
	Nabis punctatus A.Costa, 1847
	Nabis rugosus (Linnaeus, 1758)
	Nabis viridilus Spinola, 1837
NAUCORIDAE Leach, 1815	
***Ilyocoris* Stål, 1861**	*Ilyocoris cimicoides* (Linnaeus, 1758)
NEPIDAE Latreille, 1802	
***Nepa* Linnaeus, 1758**	*Nepa* sp. *Linnaeus, 1758*
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	Anisops sardeus sardeus Herrich-Schäffer, 1849
***Notonecta* Linnaeus, 1758**	*Notonecta glauca* Linnaeus, 1758
	Notonecta maculata Fabricius, 1794

Table 1. Continued...

***Notonecta* Linnaeus, 1758**	*Notonecta obliqua* Thunberg, 1787
	Notonecta viridis Delcourt, 1909
OCHTERIDAE Kirkaldy, 1906	
***Ochterus* Latreille, 1807**	*Ochterus marginatus marginatus* (Latreille, 1804)
PENTATOMIDAE Leach, 1815	
***Acrosternum* Fieber, 1860**	*Acrosternum heegeri* Fieber, 1861
***Aelia* Fabricius, 1803**	*Aelia acuminata* (Linnaeus, 1758)
	Aelia albovittata Fieber, 1868
	Aelia sibirica Reuter, 1884
	Aelia rostrata Boheman, 1852
	Aelia virgata (Herrich-Schäffer, 1841)
***Ancyrosoma* Amyot & Serville, 1843**	*Ancyrosoma leucogrammes* (Gmelin, 1790)
***Antheminia* Mulsant & Rey, 1866**	*Antheminia absinthii* (Wagner, 1952)
	Antheminia lunulata (Goeze, 1778)
	Antheminia pusio (Kolenati, 1846)
***Apodiphus* Spinola, 1837**	*Apodiphus amygdali* (Germar, 1817)
***Arma* Hahn, 1832**	*Arma insperta* Horvath, 1899
***Bagrada* Stål, 1862**	*Bagrada stolida* (Herrich & Schaffer, 1839)
***Carpocoris* Kolenati, 1846**	*Carpocoris fuscispinus* (Boheman, 1851)
	Carpocoris mediterraneus mediterraneus Tamanini, 1958
	Carpocoris melanocerus (Mulsant & Rey, 1852)
	Carpocoris pudicus (Poda, 1761)
	Carpocoris purpureipennis (De Geer, 1773)
***Cnephosa* Jakovlev, 1880**	*Cnephosa flavomarginata* Jakovlev, 1880
***Codophila* Mulsant & Rey, 1866**	*Codophila varia* (Fabricius, 1787)
***Crypsinus* Dohrn, 1860**	*Crypsinus sp.*
***Derula* Mulsant & Rey, 1856**	*Derula flavoguttata* Mulsant & Rey, 1856
***Dolycoris* Mulsant & Rey, 1866**	*Dolycoris baccarum* (Linnaeus, 1758)
***Dyroderes* Spinola, 1837**	*Dyroderes umbraculatus* (Fabricius, 1775)
***Eurydema* Laporte, 1833**	*Eurydema blanda* Horvath, 1903
	Eurydema fieberi Schummel, 1837
	Eurydema putoni (Jakovlev, 1887)
	Eurydema olarecea (Linnaeus, 1758)

Table 1. Continued...

***Eurydema* Laporte, 1833**	*Eurydema ornata* (Linnaeus, 1758)
	Eurydema rugulosa (Dohrn, 1860)
	Eurydema ventralis Kolenati, 1846
***Eysarcoris* Hahn, 1834**	*Eysarcoris aeneus* (Scopoli, 1763)
	Eysarcoris ventralis (Westwood, 1837)
***Graphosoma* Laporte, 1833**	*Graphosoma consimile* Horvath, 1903
	Graphosoma lineatum (Linnaeus, 1758)
	Graphosoma melanoxanthum Horvath, 1903
	Graphosoma semipunctatum (Fabricius, 1775)
***Holcogaster* Fieber, 1860**	*Holcogaster fibulata* (Germar, 1831)
***Holcostethus* Fieber, 1860**	*Holcostethus albipes* (Fabricius, 1781)
	Holcostethus strictus vernalis (Wolff, 1804)
***Jalla* Hahn, 1832**	*Jalla dumosa* (Linnaeus, 1758)
***Leprosoma* Baerensprung, 1859**	*Leprosoma tuberculatum* Jakovlev, 1874
***Mustha* Amyot & Serville, 1843**	*Mustha spinosula* (Lefebvre, 1831)
***Neottiglossa* W. Kirby, 1837**	*Neottiglossa flavomarginata* (Lucas, 1849)
	Neottiglossa leporina (Herrich-Schaeffer, 1830)
	Neottiglossa pusilla (Gmelin, 1790)
***Nezara* Amyot & Serville, 1843**	*Nezara viridula* (Linnaeus,1758)
***Palomena* Mulsant & Rey, 1866**	*Palomena prasina* (Linnaeus,1761)
***Pausias* Jakovlev, 1905**	*Pausias martini* (Puton,1890)
***Peribalus* Mulsant & Rey**	*Peribalus strictus vernalis* (Wolff, 1804)
***Perillus* Stål, 1862**	*Perillus bioculatus (Fabricius, 1775)*
***Picromerus* Amyot & Serville, 1843**	*Picromerus bidens* (Linnaeus, 1758)
	Picromerus nigridens (Fabricius, 1803)
***Piezodorus* Fieber, 1860**	*Piezodorus lituratus* (Fabricius, 1794)
***Rhaphigaster* Laporte, 1833**	*Raphigaster nebulosa* (Poda, 1761)
***Risibia* Horváth, 1888**	*Risibia christophi* (Jakovlev, 1886)
***Rhombocoris*, Mayr, 1864**	*Rhombocoris sp.*
***Sciocoris* Fallen, 1829**	*Sciocoris cursitans* (Fabricius, 1794)
	Sciocoris distinctus Fieber, 1851
	Sciocoris helferi Fieber, 1851
	Sciocoris homalonotus Fieber, 1851
	Sciocoris luteolus Fieber, 1861
	Sciocoris macrocephalus Fieber, 1851

Table 1. Continued...

***Sciocoris* Fallen, 1829**	*Sciocoris ochraceus* (Fieber, 1861)
	Sciocoris pallens Klug, 1845
	Sciocoris pictus Wagner, 1959
	Sciocoris sulcatus Fieber, 1851
***Stagonomus* Gorski, 1852**	*Stagonomus amoneus* (Brulle,1832)
	Stagonomus bipunctatus (Linnaeus, 1758)
***Staria* Dohrn, 1860**	*Staria lunata* (Hahn, 1835)
***Tarisa* Amyot & Serville, 1843**	*Tarisa osmanica* Hoberlandt, 1956
***Tholagmus* Stål, 1860**	*Tholagmus flavolineatus* (Fabricius, 1798)
***Trochiscocoris* Reuter, 1890**	*Trochiscocoris rotundatus* Horvath, 1895
***Ventocoris* Hahn, 1834**	*Ventocoris rusticus* (Fabricius, 1781)
***Vilpianus* Stål, 1860**	*Vilpianus galii* (Wolff, 1802)
***Zicrona* Amyot & Serville, 1843**	*Zicrona caerulea* (Linnaeus, 1758)
PLATASPIDAE Dallas, 1851	
***Coptosoma* Laporte, 1833**	*Coptosoma scutellatum* (Geoffroy, 1785)
PLEIDAE Fieber, 1853	
***Plea* Leach, 1817**	*Plea minutissima minutissima* Leach, 1817
PYRRHOCORIADE Amyot & Serville, 1843	
***Pyrrhocoris* Fallen, 1814**	*Pyrrhocoris apterus* (Linnaeus, 1758)
	Pyrrhocoris marginatus (Kolenati, 1845)
***Scantius* Stål, 1866**	*Scantius aegyptius* (Linnaeus, 1758)
REDUVIIDAE Latreille, 1807	
***Coranus* Curtis, 1833**	*Coranus aegyptius* (Fabricius, 1775)
	Coranus contrarius Reuter, 1881
	Coranus niger (Rambur, 1840)
***Holotrichius* Burmeister, 1835**	*Holotrichius denudatus* (A. Costa,1842)
***Nagusta* Stål, 1859**	*Nagusta goedeli* (Kolenati, 1857)
***Oncocephalus* Klug, 1830**	*Oncocephalus pilicornis* Reuter, 1882
	Oncocephalus squalidus (Rossi,1790)
	Oncocephalus thoracicus Fieber, 1861
***Phymata* Latreille, 1802**	*Phymata crassipes* (Fabricius, 1775)
***Peirates* Serville, 1831**	*Peirates hybridus* (Scopoli, 1763)
***Reduvius* Fabricius, 1775**	*Reduvius pallipes* Klug, 1830
	Reduvius testaceus (Herrich-Schaeffer, 1845)

Table 1. Continued...

***Rhynocoris* Hahn, 1833**	*Rhynocoris annulatus ssp. annulatus* (Linnaeus, 1758)
	Rhynocoris erytropus (Linne, 1767)
	Rhynocoris ibericus (Kolenati, 1857)
	Rhynocoris iracundus (Poda, 1761)
	Rhynocoris punctiventris (Herrich-Schäffer, 1846)
***Sphedanolestes* Stål, 1867**	*Sphedanolestes pulchellus* (Klug, 1830)
***Zelus* Fabricius, 1803**	*Zelus renardii* (Kolenati, 1857)
RHOPALIDAE Amyot & Serville, 1843	
***Agraphopus* Stål, 1872**	*Agraphopus suturalis* Reuter, 1900
***Brachycarenus* Fieber, 1860**	*Brachycarenus languidus* (Horvath, 1891)
	Brachycarenus tigrinnus (Schilling, 1829)
***Chorosoma* Curtis, 1830**	*Chorosoma schillingii* (Schilling, 1829)
***Corizus* Fallen, 1814**	*Corizus brevicarnis* Horváth, 1917
	Corizus hyosciami hyosciami (Linnaeus, 1758)
	Corizus hyosciami nigridorsum (Puton, 1874)
***Liorhyssus* Stål, 1870**	*Liorhyssus hyalinus* (Fabricius, 1794)
***Maccevethus* Dallas, 1852**	*Maccevethus caucasicus* (Kolenati, 1845) *Maccevethus errans* (Fabricius, 1794)
	Maccevethus corsicus corsicus Signoret, 1862
	Maccevethus corsicus persicus Jakovlev, 1882
***Rhopalus* Schilling, 1827**	*Rhopalus conspersus* (Fieber, 1837)
	Rhopalus lepidus Fieber, 1861
	Rhopalus maculatus (Fieber, 1837)
	Rhopalus parumpunctatus (Schilling, 1829)
	Rhopalus rufus Schilling, 1829
	Rhopalus subrufus (Gmelin, 1790)
***Stictopleurus* Stål, 1872**	*Stictopleurus abutilion* (Rossi, 1790)
	Stictopleurus crassicornis (Linnaeus, 1758)
	Stictopleurus pictus (Fieber, 1861)
	Stictopleurus subtomentotus (Rey ,1888)
SALDIDAE Amyot & Serville, 1843	
***Saldula* Van Duzee, 1914**	*Saldula fucicola* (J. Sahlberg, 1870)
	Saldula pallipes (Fabricius, 1794)
	Saldula saltatoria (Linnaeus, 1758)
***Macrosaldula* Leston & Southwood, 1964**	*Macrosaldula variabilis* (Herrich-Schaeffer, 1835)

Table 1. Continued...

SCUTELLERIDAE Leach, 1815	
***Eurygaster* Laporte, 1833**	*Eurygaster dilaticolis* Dohrn, 1860
	Eurygaster hottentotta (Fabricius,1775)
	Eurygaster integriceps Puton, 1881
	Eurygaster maura (Linnaeus, 1758)
	Eurygaster testudinaria (Geoffroy, 1785)
***Odontoscelis* Laporte, 1833**	*Odontoscelis dorsalis* (Fabricius, 1798)
	Odontoscelis fuliginosa (Linnaeus, 1761)
	Odontoscelis lineola Rambur, 1839
***Odontotarsus* Laporte, 1833**	*Odontotarsus impictus* Jakovlev, 1886
	Odontotarsus plicatulus Horvath, 1906
	Odontotarsus purpureolineatus (Rossi, 1790)
	Odontotarsus robustus Jakovlev, 1884
	Odontotarsus rufescens Fieber, 1861
***Psacasta* Germar, 1839**	*Psacasta cypria* (Puton, 1881)
STENOCEPHALIDAE Dallas, 1852	
***Dicranocephalus* Hahn, 1826**	*Dicranocephalus agilis* (Scopoli, 1763)
	Dicranocephalus albipes (Fabricius, 1781)
	Dicranocephalus setulosus (Ferrari, 1874)
TINGIDAE Laporte, 1832	
***Catoplatus* Spinola, 1837**	*Catoplatus anticus ssp. anticus* Reuter, 1880
	Catoplatus carthusianus (Goeze, 1778)
	Catoplatus hilaris (Horvath, 1906)
	Catoplatus horvathi (Puton, 1878)
	Catoplatus nigriceps Horváth, 1905
***Copium* Thunberg, 1822**	*Copium brevicorne* (Jakovlev, 1879)
	Copium teucrii teucrii (Host, 1788)
***Dictyla* Stål, 1874**	*Dictyla echii* (Schrank, 1782)
	Dictyla nassata (Puton, 1874)
	Dictyla triconula (Seidenstrücker, 1954)
***Elasmotropis* Stål, 1874**	*Elasmotropis testacea testacea* (Herrich-Schäffer, 1830)
***Monosteira* A. Costa, 1862**	*Monosteira lobulifera* (Reuter, 1888)
***Tingis* Fabricius, 1803**	*Tingis cardui cardui* (Linnaeus, 1758)
	Tingis ciliaris Puton, 1879

Table 1. Continued...

***Tingis* Fabricius, 1803**	*Tingis elongata* (Fieber, 1861)
	Tingis grisea Germar, 1835
VELIIADE Brullé, 1836	
***Velia* Latreille, 1804**	*Velia affinis filippii* Tamanini, 1947
	Velia caprai Tamanini, 1947

CONCLUSION

Most of the heteroptera specimens in the Zoology museum of Gazi University consist of diagnosed specimens (Table 1).

These examples of field studies conducted since 1985 from various regions of Türkiye research projects, studies and / or were collected during the thesis work.

However, there are still undiagnosed samples.

Most of the specimens have been included in collections as dry and needled specimens. Some material is preserved in alcohol jars.

The numbers of identified taxa in this collection is given in the table below (Table 2, Figure 1).

Table 2. Numbers taxa of Heteroptera collection in ZMGU

	Families	Genera	Species gruop
Taxa	30	204	381

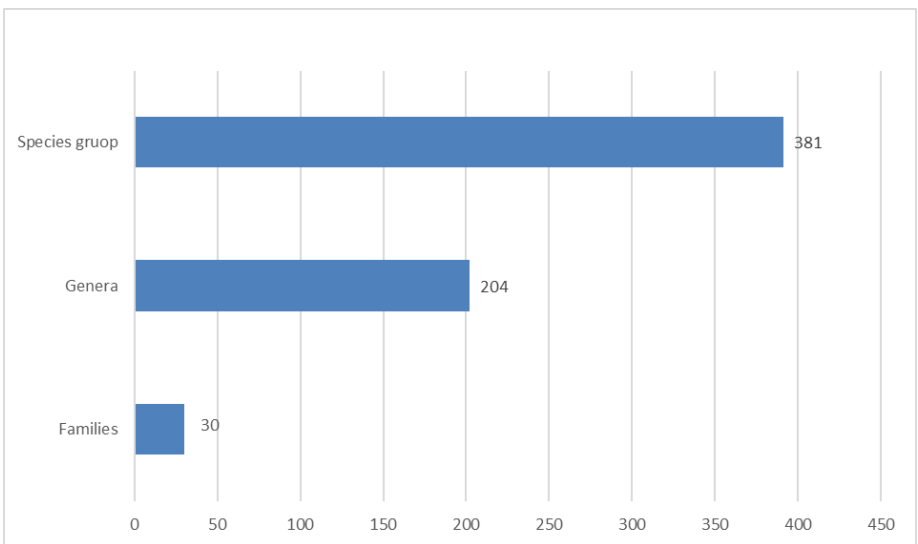

Figure 1. Numbers taxa of Heteroptera collection in ZMGU

Table 3. Numbers taxa of Heteroptera collection in ZMGU in Türkiye.

	Türkiye	ZMGU
Familia	40	30
Genera	420	204
Species/Subspecies	1540	381

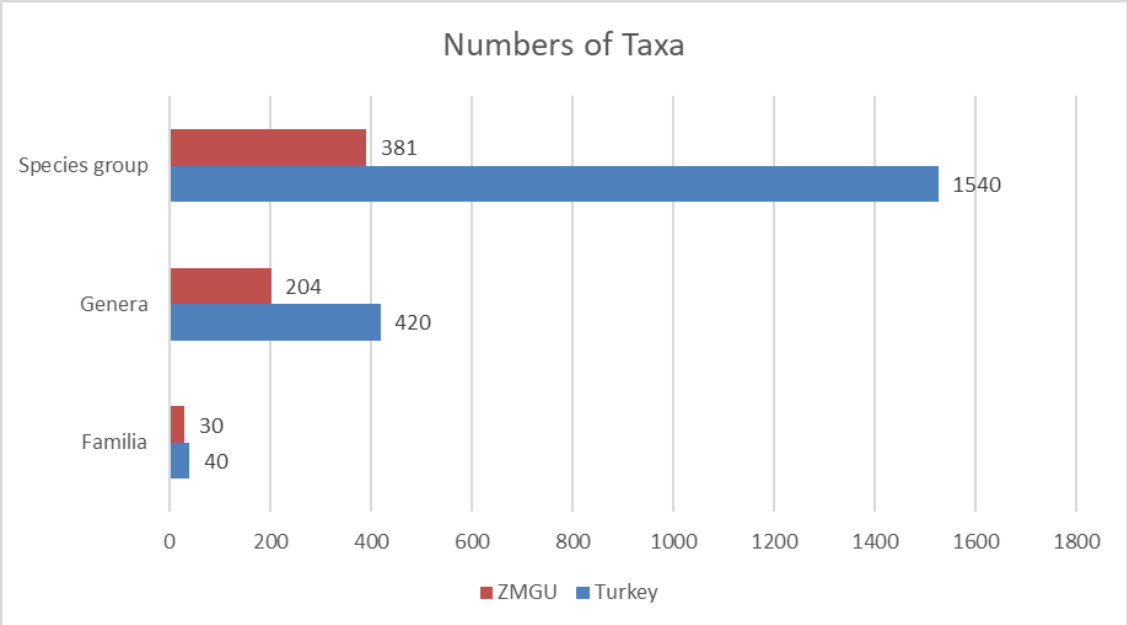

Figure 2. Numbers taxa of Heteroptera collection in ZMGU in Türkiye.

As can be seen from the table 2, 204 genera and 381 species-group belonging to 30 families are preserved in the ZMGU museum (Table 2, Figure 1, 2).

Türkiye Heteroptera fauna is represented by 420 genera and 1540 species of 40 families (Önder, et al., 2006; (Önder, et al., 2006; Dursun et al, 2010; Fent et al. 2010; Kıyak & Akar 2010; Çerçi & Dursun, 2017; Dursun & Fent, 2017; Özgen & Çerçi, 2018; Çerçi & Gözüaçık, 2019; Çerçi et al., 2019, 2020, 2021; Çerçi & Koçak, 2017; Çerçi, 2021; Çerçi & Tezcan, 2020; Çerçi & Özgen, 2021; Çerçi & Oruz, 2021), (Table 2, Figure 1, 2).

Accordingly, 24.7% of species group taxa, 48.5% of genus taxa and 75% of family taxa are available in our museum collection.

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Short Note

First records of *Tempyra biguttula* Stål, 1874 (Hemiptera: Heteroptera: Rhyparochromidae) in Cyprus, Greece and Malta

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ABSTRACT: The first records of *Tempyra biguttula* Stål, 1874 (Hemiptera: Heteroptera: Rhyparochromidae: Rhyparochrominae: Udeocorini) in Cyprus, Greece and Malta are reported. Information on the known distribution of *T. biguttula* in Europe is summarised.

KEY WORDS: *Tempyra biguttula*, alien species, first records, distribution, Cyprus, Greece, Malta, Mediterranean Region.

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So far, the Nearctic bug species *Tempyra biguttula* Stål, 1874 (Hemiptera: Heteroptera: Rhyparochromidae: Rhyparochrominae: Udeocorini) has been reported from the following European countries: France, Italy (mainland, Sardinia, Sicily), Portugal and Spain (Baena & Torres, 2012; Maurel & Porteneuve, 2018; Rattu & Dioli, 2018; Dioli et al., 2021).

Now, the first records of *T. biguttula* in Cyprus, Greece and in Malta can be reported:

On 20.07.2022, Aleks Lund photographed an adult specimen near the village of Mellieħa in the northern part of the island of Malta. Two photographs of the specimen were uploaded to the online database iNaturalist (Lund, 2022).

On 17.06.2023, an adult specimen of *T. biguttula* was photographed by Loïs Rancilhac in Aglantzia, a suburb of Nicosia, the capital of Cyprus. A photo of the specimen was uploaded to the online database iNaturalist (Rancilhac, 2023).

Recently, on 24.08.2023, an adult specimen of *T. biguttula* (Fig. 1) was photographed by Paolo Mazzei in Psili Ammos, located at the eastern coast of the Greek island of Serifos which is one of the Cyclades in the Aegean Sea. Two photographs of the specimen were uploaded to the online database iNaturalist (Mazzei, 2023).

Figure 1. Specimen of *Tempyra biguttula* Stål, 1874, Psili Ammos, Serifos, Greece, 24.08.2023. (Photo: Paolo Mazzei).

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I would like to thank Paolo Mazzei for allowing me to use his photo of *T. biguttula* to illustrate this note.

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Short Note

On the presence of *Zelus renardii* Kolenati, 1857 (Hemiptera: Heteroptera: Reduviidae) in Germany

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ABSTRACT: The presence of *Zelus renardii* Kolenati, 1857 in Germany is discussed. The first record of a nymph of the species in Germany is reported.

KEY WORDS: *Zelus renardii*, alien species, first records, distribution, Germany.

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The first record of the Nearctic assassin bug species *Zelus renardii* Kolenati, 1857 (Hemiptera: Heteroptera: Reduviidae: Harpactorinae: Harpactorini) for Germany was reported by van der Heyden (2021), based on a single adult specimen which was found in October 2020 in the city of Teningen, located in Baden-Württemberg in southwest Germany.

Very likely, the specimen had been imported with grapes from Italy which were bought in a supermarket (van der Heyden, 2021).

Now, another record of *Z. renardii* from Germany can be reported: On 08.10.2023, Laura Bounin photographed a nymph of the species (Fig. 1) in the city of Karlsruhe, also located in Baden-Württemberg.

Interestingly, the nymph was found on a balcony outside a building on a pepper plant (*Capsicum* sp.). The plant was not bought, but has been growing there from seed since May 2023. No imported plants, fruits or vegetables were bought and stored nearby (Laura Bounin, pers. comm.). Thus, it is very likely that the nymph was not introduced with goods from Southern Europe, but hatched from egg in the wild.

Figure 1. Nymph of *Zelus renardii* Kolenati, 1857, Karlsruhe, Germany, 08.10.2023. (Photo: Laura Bounin).

Recently, the first record of *Z. renardii* from Austria, an adult specimen found in April 2023 on a broccoli bought from a nearby organic farm, was reported from the city of Graz (van der Heyden & Staudinger, 2023).

The specimens from Graz and from Karlsruhe were found more or less at the same latitude: 47.126269 and 49.005428, respectively.

Obviously, *Z. renardii* is currently expanding its European distribution northwards from the Mediterranean Region, crossing the Alps.

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I would like to thank Laura Bounin for allowing me to use her photo of *Z. renardii* to illustrate this note and for additional information about her finding.

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Research Article

Heteroptera species detected in agricultural and non-agricultural areas of Samsun Province in Türkiye

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ABSTRACT: As a result of surveys carried out in agricultural and non-agricultural lands in Samsun province and its 17 districts, 12 species belonging to the Heteroptera suborder were found. 7 of them are predators, and 5 are harmful species. Species found; *Deraeocoris serenus, Geocoris megacephalus, Liorhyssus hyalinus, Lygus pratensis, Macrolophus costalis, Macrolophus melanotoma, Macrolophus pygmaeus, Nabis ferus, Orius niger, Oxycarenus hyalinipennis, Rhopalus parumpunctatus, Stictopleurus abutilon*. 5 of them are from the Miridae family, 3 from the Rhophalidae family, 2 from the Lygaeidae family, 1 from the Nabidae and 1 from the Anthocoridae family.

KEY WORDS: Heteroptera, Samsun, Türkiye

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INTRODUCTION

The order Hemiptera was previously considered as two suborders, Heteroptera and Homoptera, in the taxonomic classification. With recent studies, the order Hemiptera has been considered as three suborders: Auchenorrhyncha (Cicadidae and Cicadellidae etc.), Heteroptera (Miridae, Reduvidae, Pentatomidae) and Sternorrhyncha (Aleyrodidae, Coccoidea, Psylloidae and Aphidoidae) (Gullan and Cranston 2014).

The Hemiptera order, designated by Linnaeus in 1758, holds the fifth position globally in terms of species diversity, with a count of 104165 species, following the orders Coleoptera, Diptera, Lepidoptera, and Hymenoptera (Zhang, 2011).

Heteroptera is one of the largest suborders of the Hemiptera order with its aquatic, semi-aquatic and terrestrial species, and there are over 45000 species/subspecies in the world and 9365 species/subspecies in the Palaearctic Region (Aukema, 2013; Henry, 2017).

Studies on the Heteroptera fauna of Türkiye date back to the 1880s, and many local and foreign researchers have presented numerous records from both the Anatolian and Thracian parts of this region. Latest data show that the 1526 species found naturally in Türkiye belong to 40 different families (Önder et al., 2006).

In studies conducted on Heteroptera in Türkiye, researchers have documented over 1,500 Heteropteran species, accounting for approximately 5% of the country's total insect fauna. Among these, the following have been identified: Anthocoridae, Berytidae, Coreidae, Cydnidae, Lygaeidae, Nabidae, Piesmatidae, Reduviidae, Rhopalidae, Scutelleridae, and Tingidae (Tezcan, 2020).

Samsun province has two large plains, Bafra and Çarşamba, which are especially important for Turkish agriculture. Therefore, the Heteroptera fauna in this region continues to be identified.

As a result of the study, 12 species belonging to 5 different families were identified.

The entomological data of Samsun province, which has a very important position in terms of agriculture, has been increased. This situation, which was seen as a deficiency, was resolved with our study.

MATERIALS AND METHODS

The Heteroptera materials were collected from different localities in Samsun province 2020-2022.

Insects were generally collected from cultivated plants, weeds, fruit trees, vegetable greenhouses and fields, meadows and pastures. Field studies were collected during daylight hours, which were suitable for the activity of adults.

All districts were scanned and in this way, information was collected from many places within the research area. Material has been collected.

Working coordinates GPS device. Measured using information about the place where the samples were collected, ministry coordinates and altitude information were used.

Samples were collected using a hand net and a Japanese umbrella. The collected samples were killed by taking them into pre-prepared killing bottles containing 70% alcohol and were made ready for diagnosis.

The samples were sent to Dr. Gülten Yazıcı from Ankara Agricultural Control Central Research Institute for identification and the identification was made by her.

RESULTS

Family ANTHOCORIDAE Fieber, 1836

Subfamily Anthocorinae Fieber, 1836

Genus *Orius* Wolff, 1811

Subgenus *Orius* Wolff, 1811

***Orius (Orius) niger* (Wolff, 1811)**

Material examined: Samsun, Alaçam (15 m), 41° 35' 33.96'' N, 35° 42' 19.38'' E, 31.08.2022, 8 ♂♂, 3 ♀♀; Bafra (18 m), 41° 23' 54.69" N, 35° 51' 32.90" E, 11.09.2022, 2 ♂♂, 1 ♀; Çarşamba (16 m), 41° 4' 47.39" N, 36° 33' 39.56" E, 07.09.2022, 2 ♂♂, 2 ♀♀.

Distribution in Türkiye: Adana, Adıyaman, Ankara, Antalya, Artvin, Bayburt, Batman, Diyarbakır, Edirne, Elazığ, Erzincan, Erzurum, Gaziantep, Iğdır, Karaman, Kars, Kastamonu, Konya, Mardin, Niğde, Siirt, Şanlıurfa It operates widely in every region of our country. (Hoberlandt, 1956; Önder et al., 1984; Yıldırım et al., 2013a; Kaplan, 2014; Matocq et al., 2014; Yazıcı, 2019; Bolu, 2020; Pehlivan & Atakan, 2020; Yazıcı, 2022c).

Distribution in Palaearctic Region: Europe: Albania Andorra Austria Belgium Bosnia Hercegovina Bulgaria Byelorussia Crete Croatia Czech Republic Denmark European Kazakhstan Estonia European Türkiye Finland France Great Britain Germany Greece Hungary Ireland Italy Latvia Liechtenstein Lithuania Luxembourg Malta Macedonia Moldavia Netherlands Norway Poland Portugal Romania Russia (CT NT ST) Serbia Slovakia Slovenia Spain Sweden Switzerland Ukraine. North Africa: Algeria Azores Canary Islands Egypt Libya Morocco Madeira Tunisia. Asia: Asian Kazakhstan Asian Türkiye Armenia Azerbaijan China (SW WP) Georgia Iran Iraq Israel Jordan Kirgizia Mongolia Russia (ES WS) Saudi Arabia Syria Tadzhikistan Turkmenistan Uzbekistan Yemen. Extralimital: S India, USA (Aukema, 2020).

Family GEOCORIDAE Baerensprung, 1860

Subfamily Geocorinae Dahlbom, 1851

Genus *Geocoris* Fallen, 1814

Subgenus *Geocoris* Fallen, 1814

***Geocoris megacephalus* (Rossi, 1790)**

Material examined: Bafra (18 m), 41° 36' 4.85" N, 35° 58' 17.0"E, 09.09.2021, 1 ♂, 2 ♀♀; Çarşamba (15 m), 41° 18' 4.46" N 36° 41' 5.98" E, 30.06.2022, 2 ♂♂, 2 ♀♀; Havza (675 m), 41° 0' 36.87" N, 35° 47' 31.28" E, 15.08.2021, 2 ♀♀; Tekkeköy (4 m), 41° 12' 18.66" N, 36° 34' 4.34" E, 14.07.2022, 1 ♂; Ondokuzmayıs (10 m), 41° 29' 38.14" N, 36° 2' 0.43" E, 19.08.2021, 1 ♂, 2 ♀♀.

Distribution in Türkiye: Elazığ (Çerçi & Özgen., 2021)

Distribution in Palaearctic Region: Europe: Albania Belgium Bosnia Hercegovina Bulgaria Crete Croatia France Germany Greece Hungary Italy Malta Macedonia Montenegro Netherlands Portugal Romania Russia (ST) Serbia Slovenia Spain Switzerland. North Africa: Algeria Canary Islands Egypt Libya Morocco Tunisia. Asia: Azerbaijan Afghanistan Armenia Asian Türkiye Cyprus Georgia Iran Iraq Israel Jordan Kirgizia Sinai Syria Tadzhikistan Turkmenistan Uzbekistan (Aukema, 2020).

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Family MIRIDAE Hahn, 1833

Subfamily Bryocorinae Baerensprung, 1860.

Genus *Macrolophus* Fieber, 1858

***Macrolophus costalis* Fieber**

Material examined: Çarşamba (16 m), 41° 4' 13.79" N, 36° 41' 37.24" E, 15.08.2022, 5 ♂♂, 2 ♀♀; Bafra (18 m), 41° 32' 16.47" N, 36° 1' 37.44" E, 17.08.2022, 6 ♂♂, 4 ♀♀.

Distribution in Türkiye: Marmara, Antalya, Eastern Mediterranean, Central Anatolia, Western and Eastern Black Sea in Türkiye; It has been reported that it is located in Ankara, İzmir, Erzurum provinces and Diyarbakır, Şanlıurfa, Mardin, Şırnak and Batman provinces. (Önder, 1976; Önder et al.; Lodos et al.. 2003; Önder et al. 2006; Tezcan et al. 2010; Yazıcı, 2015, Demircioğlu,2022).

Distribution in Palaearctic Region: Europe: Albania Bulgaria Crete Croatia European Türkiye France Greece Italy Macedonia Portugal Romania Serbia Spain Switzerland Ukraine. North Africa: Tunisia. Asia: Armenia Asian Türkiye Cyprus Georgia Israel Jordan Lebanon (Aukema, 2020).

***Macrolophus melanotoma* (A. Costa, 1853)**

Material examined: Bafra (18 m), 26.08.2021, 41° 31' 27.02" N, 35° 50' 17.71" E, 1 ♂, 2 ♀♀; Atakum (4 m), 41° 21' 22.27" N, 36° 11' 50.13" E, 15.08.2021, 2 ♂♂, 2 ♀♀; Alaçam (18 m), 41° 34' 50.23" N, 35° 39' 24.33" E, 12.08.2021, 2 ♀♀; Ayvacık (50 m), 40° 58' 33.27" N, 36° 39' 51.54" E, 21.07.2022, 1 ♂; Havza (675 m), 40° 54' 30.04" N, 35° 41' 33.88" E, 24.08.2022, 1 ♂, 2 ♀♀; Çarşamba (16 m), 41° 15' 36.03'' N, 36° 36' 58.26'' E, 01.07.2021, 3 ♂♂, 1 ♀; Yakakent (5 m), 41° 38' 12.89'' N, 35° 29' 17.16'' E, 31.08.2022, 1 ♂, 2 ♀♀; Terme (12 m), 41° 12' 22.14" N, 36° 55' 47.28" E, 22.08.2022, 2 ♂♂, 2 ♀♀; Tekkeköy (23 m), 41° 5' 36.90" N, 36° 28' 37.58" E, 19.08.2022, 1 ♂; Ondokuzmayıs (4 m), 41° 28' 54.95" N, 36° 2' 55.31" E, 19.08.2021, 1 ♂, 2 ♀♀.

Distribution in Türkiye: It has natural distribution in the Mediterranean, Aegean and Southeastern Anatolia Regions (Başpınar et al.., 2013; Karut et al.., 2017).

Distribution in Palaearctic Region: Europe: Crete Croatia EuropeanTürkiye France Greece Hungary Italy Malta Macedonia Portugal Slovenia Spain Switzerland. North Africa: Algeria Canary Islands Libya Morocco Tunisia. Asia: Asian Türkiye Cyprus Iraq Iran Israel Jordan Lebanon Yemen (Aukema, 2020).

***Macrolophus pygmaeus* (Rambur, 1839)**

Material examined: Alaçam (15 m), 41° 34' 39.46" N, 35° 38' 38.57" E, 22.07.2021, 1 ♂, 2 ♀♀; Ayvacık (50 m), 40° 58' 33.27" N, 36° 39' 51.54"E, 21.07.2022, 1 ♀; Bafra (18 m), 41° 23' 31.52" N, 35° 49' 17.63" E, 18.08.2022, 3 ♂♂, 3 ♀♀; Çarşamba (15 m), 41°13'45.47"N, 36°48'55,87" E, 31.08.2022, 4 ♂♂, 2 ♀♀; Ondokuzmayıs (5 m), 41° 29' 31.92" N, 36° 2' 2.19" E, 12.08.2021, 1 ♂, 1 ♀; Tekkeköy (16 m), 41° 5' 36.90" N, 36° 28' 37.58" E, 19.08.2022, 2 ♂♂, 2 ♀♀; Terme (12 m), 41° 20' 2.82" N, 36° 50' 58.89" E, 14.07.2022, 1 ♀; Yakakent (5 m), 41° 33' 58.02" N, 35° 25' 27.97" E, 31.08.2022, 1 ♂, 1 ♀.

Distribution in Türkiye: It has been found to be densely found in regions with a Mediterranean climate.

Distribution in Palaearctic Region: Europe: Albania Austria Belgium Bosnia Hercegovina Bulgaria Byelorussia Crete Croatia Czech Republic Denmark European Türkiye Finland France Great Britain Germany Greece Hungary Ireland Italy

Luxembourg Malta Macedonia Moldavia Netherlands Norway Poland Portugal Romania Russia (CT ST) Serbia Slovakia Slovenia Spain Sweden Switzerland Ukraine. North Africa: Algeria Azores Canary Islands Morocco Madeira Tunisia. Asia: Asian Kazakhstan! Asian Türkiye Armenia Azerbaijan Georgia Iran Iraq Israel! Sinai Tadzhikistan Turkmenistan. Extralimital: New Zealand (introduced) (Aukema, 2020).

Subfamily Deraeocorinae Douglas & Scott, 1865

Tribe Deraeocorini Douglas & Scott, 1865

Genus *Deraeocoris* Kirschbaum, 1855

Subgenus *Camptobrochis* Fieber, 1858

***Deraeocoris serenus* Do. & Sc.,1868**

Material examined: Alaçam (15 m), 41° 34' 50.23" N, 35° 39' 24.33" E, 12.08.2021, 1 ♂, 1 ♀; Atakum (4 m), 41° 21' 22.27" N, 36° 11' 50.13" E, 05.08.2021, 2 ♀♀; Bafra (18 m), 41° 37' 37.4" N, 35° 55' 11.5" E, 12.08.2021, 2 ♂♂, 2 ♀♀; Bafra (19 m), 41° 35'43.6"N, 35°53'47.3"E,19.10.2021, 2 ♂♂, 2 ♀♀; Çarşamba (15 m), 41° 15' 36.03'' N, 36° 36' 58.26'' E, 01.07.2021, 1 ♂, 3 ♀♀; Ondokuzmayıs (4 m), 41° 28' 54.95" N, 36° 2' 55.31" E, 19.08.2021, 1 ♂; Tekkeköy (12 m), 41° 7' 9.09" N, 36° 32' 12.42" E, 30.06.2022, 2 ♀♀.

Distribution in Palaearctic Region: Europe: Albania Andorra Austria Bosnia Hercegovina Bulgaria Crete Croatia Czech Republic European Kazakhstan Türkiye France Germany Greece Hungary Italy Malta Macedonia Moldavia Montenegro Portugal Romania Russia (CT ST) Serbia Slovakia Slovenia Spain Switzerland Ukraine. North Africa: Algeria Canary Islands Egypt Libya Morocco Madeira Tunisia. Asia: Asian Kazakhstan Asian Türkiye Armenia Azerbaijan China (NO NW) Cyprus Iran Iraq Israel Jordan Kirgizia Lebanon Mongolia! Saudi Arabia Syria Tadzhikistan Turkmenistan Uzbekistan (Aukema, 2020).

Subfamily Mirinae Hahn, 1833.

Genus *Lygus* Hahn, 1833

***Lygus pratensis* (Linnaeus, 1758)**

Material examined: Alaçam (15 m) 41° 35' 59.75" N, 35° 38' 24.76" E, 23.06.2021, 2 ♀♀; Bafra (18 m), 41° 31' 19.9" N, 35° 56' 41.69" E, 12.08.2021, 1 ♀; Çarşamba (18 m), 41° 64' 41" N, 36° 38' 14.5" E, 14.06.2021, 3♂♂, 2 ♀♀; Tekkeköy (13 m), 41° 7' 15.92" N, 36° 30' 35.58" E, 30.06.2022, 1 ♂, 2 ♀♀.

Distribution in Türkiye: Adana, Ankara, Ardahan, Bayburt, Bursa, Çanakkale, Diyarbakır, Edirne, Erzincan, Erzurum, Gaziantep, Hatay, Iğdır, Kahramanmaraş, Kars, Mardin (Hoberlandt, 1955; Fent, 2011; Matocq et al., 2014; Kaçar & Dursun, 2015; Yazıcı & Yıldırım, 2016).

Distribution in Palaearctic Region: Europe: Albania Andorra! Austria Belgium Bosnia Hercegovina Bulgaria Byelorussia Crete Croatia Czech Republic Denmark European Kazakhstan Estonia European Türkiye Finland France Great Britain Germany Greece Hungary Ireland? Italy Latvia Liechtenstein Lithuania Luxembourg Malta Macedonia Moldavia Montenegro Netherlands Norway Poland Portugal Romania Russia (CT NT ST) Serbia Slovakia Slovenia Spain Sweden Switzerland Ukraine. North Africa: Algeria Canary Islands Morocco. Asia: Azerbaijan Afghanistan Asian Kazakhstan Asian Türkiye Armenia China (NO NW) Cyprus Georgia Iran Iraq Israel Kirgizia Mongolia Russia (ES WS) Syria Tadzhikistan Turkmenistan Uzbekistan. Extralimital: India (Aukema, 2020).

Family NABIDAE A. Costa, 1853

Subfamily Nabinae A. Costa, 1853

Genus *Nabis* Latreille, 1802

Subgenus *Nabis* Latreille, 1802

***Nabis ferus* (Linnaeus, 1758)**

Material examined: Bafra (16 m), 41° 35' 40.62" N, 35° 48' 51.94" E, 11.09.2022, 1 ♀.

Distribution in Türkiye: It has been detected in the Mediterranean, Southeastern Anatolia and many regions (Lodos, 1986).

Distribution in Palaearctic Region: Europe: Albania Austria Belgium Bosnia Hercegovina Bulgaria Byelorussia Crete? Croatia Czech Republic Denmark European Kazakhstan Estonia Finland France Great Britain Germany Greece Hungary Ireland Italy Latvia Lithuania Luxembourg Macedonia Moldavia Montenegro Netherlands Norway Poland Romania Russia (CT NT ST) Serbia Slovakia Slovenia Sweden Switzerland Ukraine. Asia: Afghanistan Asian Kazakhstan Armenia Azerbaijan China (NE NO NW WP) Georgia Japan Kirgizia Mongolia Russia (ES FE WS) Tadzhikistan Turkmenistan Uzbekistan (Aukema, 2020).

Family OXYCARENIDAE Stål, 1862

Genus *Oxycarenus* Fieber, 1837

Subgenus *Oxycarenus* Fieber, 1837

***Oxycarenus hyalinipennis* (A. Costa, 1843)**

Material examined: Samsun, Alaçam (15 m), 41° 35' 33.96'' N 35° 42' 19.38'' E, 31.08.2022, 2 ♂♂, 1♀; Asarcık (780 m), 41° 0' 12.43" N 36° 24' 44.63" E, 03.08.2022, 2 ♂♂; Bafra (18 m), 41° 23' 54.69" N, 35° 51' 32.90" E, 11.09.2022; Ladik (950 m), 40° 54' 4.08" N 35° 47' 55.21" E, 11.08.2022, 2 ♂♂, 2 ♀♀; Terme (25 m), 41° 20' 2.82" N 36° 50' 58.89" E, 14.07.2022, 1 ♂, 2 ♀; Vezirköprü (340 m), 41° 28' 57.68" N 36° 2' 24.63" E, 12.08.2022, 1 ♂, 2 ♀♀.

Distribution in Türkiye: Adana, Ankara, Antalya, Çanakkale, Gaziantep, Hatay, İstanbul, İzmir, Karaman, Kastamonu, Kilis, Konya, Mersin, Muğla, Niğde, Osmaniye, Sinop (Aysev, 1974; Lodos et al., 1999; Şerban, 2010; Yazıcı et al., 2015a; Yazıcı, 2022b).

Distribution in Palaearctic Region: Europe: Bosnia Hercegovina Bulgaria Crete Croatia France Greece Italy Malta Portugal Serbia Spain. North Africa: Algeria Canary Islands Egypt Libya Madeira Morocco Tunisia. Asia: Azerbaijan? Afghanistan Arab Emirates Armenia Asian Türkiye Cyprus Iran Iraq Israel Jordan Lebanon Saudi Arabia Sinai Syria Yemen. Extralimital: Oriental Region, tropical and S Africa, and introduced in S America (Aukema, 2020).

Family RHOPALIDAE Amyot & Serville, 1843

Subfamily Rhopalinae Amyot & Serville, 1843

Genus *Liorhyssus* Stål, 1870

***Liorhyssus hyalinus* (Fabricius, 1794)**

Material examined: Bafra (18 m), 41° 35' 40.62" N, 35° 48' 51.94" E, 11.09.2022, 3 ♂♂, 1 ♀.

Distribution in Türkiye: Adana, Ankara, Amasya, Çanakkale, Diyarbakır, Elazığ, Erzincan, Erzurum, Giresun, Mardin, Nevşehir, Samsun, Sivas, Tokat, Tunceli

(Hoberlandt, 1955; Kıyak et al., 2004; Dursun, 2009; Fent, 2011; Yıldırım et al., 2013a; Matocq et al., 2014; Çerçi, et al., 2018; Zengin & Dursun, 2019; Çerçi & Özgen, 2021).

Distribution in Palaearctic Region: Europe: Albania Austria Belgium Bosnia Hercegovina Bulgaria Byelorussia Croatia Crete Czech Republic Denmark European Kazakhstan European Türkiye Finland France Great Britain Germany Greece Hungary Ireland Italy Liechtenstein Luxembourg Malta Macedonia Moldavia Montenegro Netherlands Poland Portugal Romania Russia (NT? ST) Serbia Slovakia Slovenia Spain Sweden Switzerland Ukraine. North Africa: Algeria Azores Canary Islands Egypt Libya Morocco Madeira Tunisia. Asia: Arab Emirates Afghanistan Asian Kazakhstan Asian Türkiye Armenia Azerbaijan China (CE NE NO NW SE SW WP) Cyprus Georgia Iran Iraq Israel Japan Jordan Kirgizia Korea Kuwait Lebanon Mongolia Oman Russia (ES FE WS) Saudi Arabia Sinai Syria Tadzhikistan Turkmenistan Uzbekistan Yemen. Extralimital: all Regions (Aukema, 2020).

Genus *Rhopalus* Schilling, 1827

***Rhopalus parumpunctatus* Schilling, 1829**

Material examined: Çarşamba (17 m), 41°13'45.47"N, 36°48'55,87" E, 31.08.2022, 1 ♂, 1 ♀; Yakakent (5 m), 41° 33' 58.02" N, 35° 25' 27.97" E, 31.08.2022, 2 ♀♀.

Distribution in Türkiye: It is a common species and is available in almost all regions of Türkiye (Önder et al, 2006).

Distribution in Palaearctic Region: Europe: Albania Andorra Austria Belgium Bosnia Hercegovina Bulgaria Byelorussia Crete Croatia Czech Republic Denmark European Kazakhstan Estonia European Türkiye Finland France Great Britain Germany Greece Hungary Ireland? Italy Latvia Liechtenstein Lithuania Luxembourg Macedonia Moldavia Montenegro Netherlands Norway Poland Portugal Romania Russia (CT NT ST) Serbia Slovakia Slovenia Spain Sweden Switzerland Ukraine. North Africa: Algeria Canary Islands Morocco Tunisia. Asia: Afghanistan Asian Kazakhstan Asian Türkiye Armenia Azerbaijan China (NE NO NW) Cyprus Georgia Iran Iraq Jordan Kirgizia Korea Mongolia Russia (ES FE WS) Syria Tadzhikistan Uzbekistan (Aukema, 2020).

***Stictopleurus* Stål, 1872**

***Stictopleurus abutilon* (Rossi, 1790)**

Material examined: Bafra (16 m), 41° 23' 31.52" N, 35° 49' 17.63" E, 18.08.2021, 1 ♂, 1 ♀; Çarşamba (15 m), 41°13'45.47"N, 36°48'55,87" E, 31.08.2022, 1 ♀; Terme (17 m), 41° 12' 22.14" N, 36° 55' 47.28" E, 22.08.2022, 2 ♂♂, 1 ♀.

Distribution in Türkiye: Adana, Amasya, Ankara, Çanakkale, Diyarbakır, Edirne, Elazığ, Erzincan, Erzurum, Mardin, Tokat (Hoberlandt, 1955; Dursun, 2009; Fent, 2011; Yıldırım et al., 2013a; Matocq et al., 2014; Çerçi et al., 2018; Zengin & Dursun, 2019).

Distribution in Palaearctic Region: Europe: Albania Andorra Austria Belgium Bulgaria Byelorussia Crete Croatia Czech Republic Denmark European Kazakhstan Estonia European Türkiye Finland France Great Britain Germany Greece Hungary Italy Kosovo Latvia Liechtenstein Lithuania Luxembourg Malta Macedonia Moldavia Montenegro Netherlands Norway Poland Portugal Romania Russia (CT NT ST) Serbia Slovakia Slovenia Spain Sweden Switzerland Ukraine. North Africa: Algeria Morocco Madeira Tunisia. Asia: Afghanistan Asian Kazakhstan Asian Türkiye Armenia Azerbaijan China (NW) Cyprus Georgia Iran Iraq Israel Kirgizia Lebanon Mongolia Russia (ES WS) Syria Tadzhikistan Turkmenistan Uzbekistan (Aukema, 2020).

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Research Article

High mountain range (Aladağlar National Park) Lygaeoidea (Hemiptera: Heteroptera) fauna of Türkiye, with three new records

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ABSTRACT: The study was carried out between 2016 and 2017 in Aladağlar National Park within the borders of Niğde-Kayseri in Central Anatolia. In order to detect Lygaeoidea fauna of the region, as a result of this study conducted in 38 locations, 57 species belonging to 37 genera and 6 families were identified. Of these species *Lygaeus melanostolus* (Kiritshenko, 1931), *Plinthisus brevipennis* (Latreille, 1807) and *Tropidophlebia costalis* (Herrich & Schaeffer, 1850) are recorded for the first time in Türkiye. The record of *L. melanostolus* in this study constitutes the westernmost point of its distribution. In addition, the rare species recorded from only one locality in Türkiye up to now, *Emblethis latus* Seidenstücker,1963, *Emblethis nox* Kiritshenko, 1912, *Ischnocoris punctulatus* Fieber, 1861, *Taphropeltus hamulatus* (Thomson, 1870) and the very sporadic species *Apterola lownii* (Saunders,1876), *Brachyplax tennuis* (Mulsant & Rey, 1852), *Callistonotus nigroruber* (Stål, 1859), *Diomphalus hispidulus* Fieber, 1864, *Eremocoris podagricus* (Fabricius, 1775), *Ischnocoris hemipterus* (Schilling, 1829), *Megalonotus chiragra* (Fabricius, 1794) and *Trapezonotus arenarius arenarius* (Linnaeus, 1758) are also significant findings in this study.

KEY WORDS: Lygaeoidea fauna, Heteroptera, high mountain range, Aladağlar National Park, Türkiye

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INTRODUCTION

Aladağlar National Park is one of the biggest National Parks in Türkiye with an area of approximately 55 thousand hectares, located within the borders of Adana, Niğde and Kayseri provinces (Figure 1).

The Aladağlar forms a part of the Taurus Mountains, which are a part of the Alpine -Himalayan mountain belt (Tüzel, 2001).

Aladağlar region, which is an important center both in terms of mountaineering activities and nature tourism, was declared a National Park in 1995 and taken under protection.

Aladağlar is an important region in terms of the fact that the highest intertwined peaks of the Middle Taurus Mountains coexist, there are many peaks above 3500 m and deep valleys between these peaks and a wide height scale.

The northern part of the region is composed of Paleozoic strata and is called "Black Aladağlar". The southern part is composed of Mesozoic layers and is called the "White Aladağlar". In the northern part, the structure is in the form of soft scree cones, while the southern part consists of higher, steep and hard rocks.

The natural boundaries of the region are Develi Plain in the north, Zamantı River in northeast-southwest direction, Ecemiş Corridor in the west and Karsanti Basin in the south (Toroğlu & Ünaldı, 2008). It is also possible to see glacial remains and glacial bowls belonging to the last glacial period in Aladağlar. Cımbar Valley, Mangırcı Valley, Hacer Strait and Sıyırma Strait are valleys in the form of "V-shaped valleys" formed by glacial movements in the past. In addition, ice troughs present formed by glacial depressions in Yedigöller Plateau (Ülker, 2006). In this respect, the region is a very important study area, both because it is capable of creating a refuge for species during the last glacial period and as an important geographical barrier. The region is also important in terms of phytogeography because it is located on the Anatolian diagonal (Toroğlu & Ünaldı, 2008).

Aladağlar is an important flora area due to its different climatic features (Tüfekçi et al., 2002). In the north-western part of Aladağlar, semi-arid steppe climate is observed, while the south-eastern part has mediterranean climate (Toroğlu & Ünaldı, 2008).

Aladağlar National Park is also very rich in terms of vegetation, and the dominant species forming the forest are black pine and red pine. Mixed stands formed by these two species are occasionally encountered in the red pine transition zone. In the south-facing parts of the larch distribution area, cedars, which do not form a stand, and firs are also found in the north-facing and more favorable moisture-wise areas.

The "Alpine zone" starts from the upper limit of the forest. Alpine meadows are located in this zone. In the Alpine zone and higher parts, bare rocky areas are reached due to height and slope (Anonym, 2023).

Tüfekçi et al. (2002) determined 1566 taxa belonging to 95 families and 473 genera in their study upon the flora of Aladağlar National Park. They stated that 392 of them are endemic to Türkiye and 26 taxa are endemic only to Aladağlar National Park. Starting from the north ern and western borders, there are fruit orchards, mainly apple and cherry, in and around the villages of Pınarbaşı, Demirkazık, Çukurbağ, Elekgölü, Yelatan, around Ecemiş Suyu.

In addition, a small number of grains are planted. As you go towards the mountains from these orchards, the altitude increases and the steppe vegetation in and around Çamardı catches the eye. It is possible to observe some species belonging to *Euphorbia* L., *Astragalus* L., *Acantholimon* Boiss., *Verbascum* L. *and Ornithogalum* L. genera. As you go higher, the depth of the soil decreases and the soil surface becomes covered with

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eroded rock pieces. Vegetation gradually decreases on the valley walls and rock surfaces. Although the land above 2500 m generally has a bare appearance, plants belonging to *Ranunculus* L., *Aethionema* R.Br., *Anthyllis* L., *Sedum* L., *Androsace* L. genera can be seen in rock cracks and areas sheltered from the wind. In addition, there is a forest that still exists in the Emli Valley and Mangırcı Valley in the western part of the area. *Abies cilicica* Carrière (Taurus Fir), which is the dominant tree species in this forest area in the valley, is an important species for the area (Tüfekçi et al., 2002).

If we look at the vegetation of the Kayseri side of the area, the maquis formation stands out in the section up to Kapuzbaşı Waterfalls due to the effect of the Mediterranean climate. *Styrax officinalis* L. and *Pistacia terebinthus* L. are common species in this area. As you move from Kapuzbaşı towards Ulupınar Village, there are deciduous forests where *Ostrya carpinifolia* Scop. *Sambucus ebulus* L., *Populus tremula* L., *Pyrus syriaca* Boiss., *Acer sempervirens* L., *Juniperus excelsa* M. Bieb., *J. oxycedrus* L. subsp. *oxycedrus*, *Pinus nigra* J.F.Arnold, *Platanus orientalis* L., *and Rhus coriaria* L. are other important tree species in the area. Higher up there is Hacer Forest, the largest forest area of the National Park, where *P. nigra* and *A. cilicica* species are dominant (Halıcı & Aksoy, 2009).

The family classification within the Lygaeoidea has fluctuated considerably in recent years.

Henry (1997) concluded that Lygaeidae were polyphyletic and gave family status to 10 subfamilies and transferred Henicocorinae as a family to Idiostoloidea.

As a result, he formed a more broadly defined Lygaeoidea consisting of 15 families. With this change, Lygaeoidea is represented by 240 genera and 995 species belonging to 13 families in the Palearctic Region (Henry, 2017).

The first studies about the Lygaeoidea superfamily in Türkiye are based on the end of the 1800s.

Pioneer researchers such as Reuter (1890), Puton (1892), Puton & Noualhier (1895), Escherich (1897), Horváth (1883, 1901, 1905, 1918), Kiritshenko (1918, 1924), Gadeau de Kerville (1939) gave records from various parts of Anatoli (Asian part of Türkiye). Hoberlandt (1956) determined the number of species belonging to the Lygaeoidea superfamily with previous records, as well as the species he recorded from Thrace and

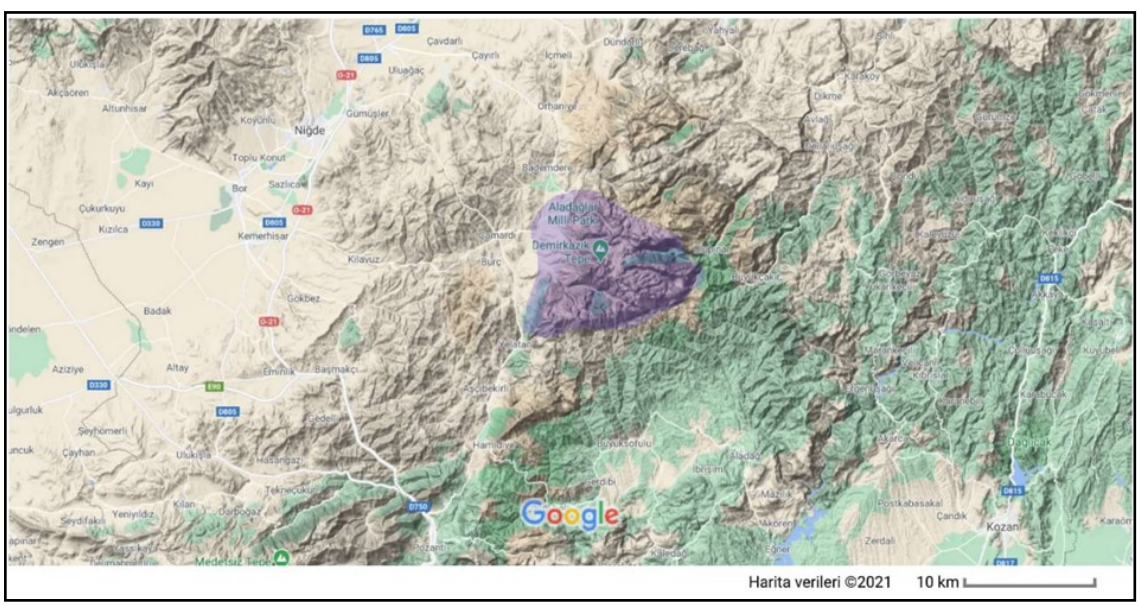

Figure 1. Location of Aladağlar National Park in Central Anatolia.

Anatolia. In the following years, Seidenstücker (1957, 1958, 1960), Wagner (1959, 1966, 1967), Linnavuori (1965) and Péricart (1999a, b, c) gave faunistic records in different provinces in Anatolia and Thrace. Lodos et al. (1978) found 64 species belonging to 9 subfamilies from the Lygaeidae family in their study to identify pest fauna of the Marmara and Aegean Region. Later, Lodos et al. (1999) recorded 149 species in these three regions in their detailed study to detect pest insect fauna in the Western Black Sea, Central Anatolia and Mediterranean Region. Çakır & Önder (1990) studied the Geocoridae family (at that time Geocorinae subfamily), which contains important predator species and identified 8 species from it.

Although there are a limited number of records in its nearby regions, there are no specific studies upon the Lygaeoidea fauna that have been carried out in the Aladağlar National Park. So far, only Lodos et al. (1999) have identified 10 species in Çamardı in the immediate vicinity of the national park, and 17 species from Pozantı in the south of the study area. In addition, Péricart (1999a, b, c) states that 22 Lygaeoidea species were registered from Pozantı.

MATERIALS AND METHODS

Adult specimens were collected from 38 different localities located in a vertical range from 750 m to 3726 m (Table 1, Figure 2) in Aladağlar National Park between May 2016 – July 2017. Among the 38 sampling localities, only 5 located at altitudes below 1000 m.

Sampling studies were carried out on short herbaceous plants according to habitat conditions by using sweeping nets and beating tray from shrubs and trees. An insect collecting aspirator was used for specimens living on the soil surface and lower parts of the plants. The samples collected in the field were preserved in 70% alcohol solution, prepared in the laboratory and diagnosed with stereo microscope. The works of Kerzhner (1964), Péricart (1999a,b,c), Stichel (1962) and Seidenstücker (1967) was used for diagnosis of collected samples. In the identification process, pygophore and paramere structures of some male individuals were used. For the removal of genitalia, the sample materials were kept in hot water for a period of time and then fin tipped forceps and preparation needles were used. Collected specimens are preserved in the Department of Biology in Trakya University.

In the resaults and discussion section, material examined for each species identified during the research; Palaearctic distributions, redescriptions, general body and paramere photos for the species recorded for the first time in Türkiye; previous records in Türkiye for rare species are given.

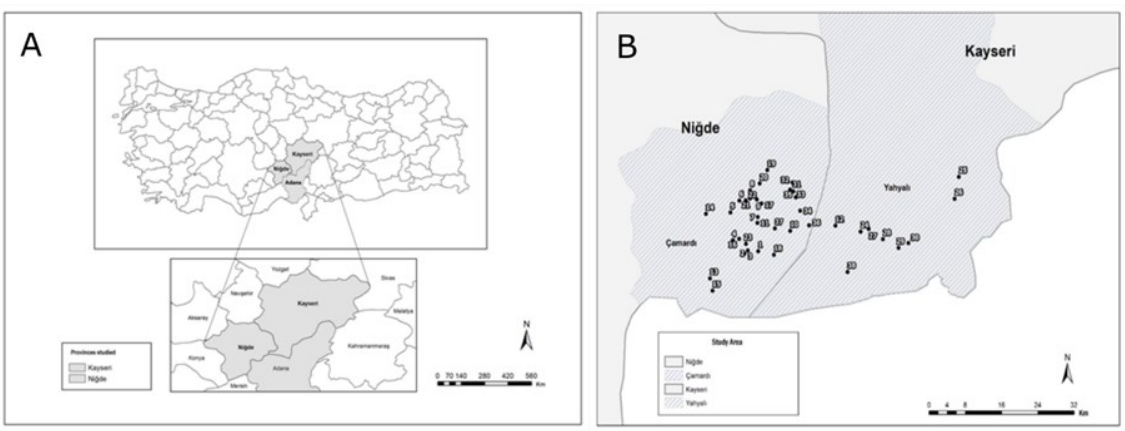

Figure 2. **A.** Aladağlar National Park area **B.** Studied localities in Aladağlar National Park.

Table 1. The localities, altitudes, coordinates and dates of study areas (Altitude: m)

	Locality	**(m)**	**Coordinate**	**Date**
1	Niğde-Emli Valley	1885	37 ° 45,986 N 35°06,932 E	30.06.2016/ 30.05.2017
2	Niğde-Sarımemetler camp site	1751	37° 46,073 N 35° 05,684 E	01.07.2016/ 04.06.2016
3	Niğde-Oluksekisi Pasture	2050	37° 45,751 N 35° 05,302 E	01.07.2016/ 02.06.2017
4	Niğde-Kazıklı Ali Canyon	1600	37° 47,139 N 35° 03,921 E	01.07.2016/ 01.06.2017
5	Niğde-Çukurbağ Village apple orhard	1509	37° 50,064 N 35° 03,622 E	01.07.2016
6	Niğde-Demirkazık Village road	1570	37° 51,322 N 35° 04,693 E	01.07.2016
7	Niğde-Sokullupınarı camp site	1990	37° 49,583 N 35° 06,874 E	02.07.2017
8	Niğde-Cımbar Canyon	1803	37° 51,438 N 35° 06,76 E	02.07.2017/ 29.05.2017
9	Niğde-Yedigöller Plateau	3090	37° 48,133 N 35° 10,760 E	04.07.2016/ 04.07.2017
10	Niğde-Karayalak Valley entrance	2100	37° 49,17 N 35° 06,828 E	05.07.2016
11	Niğde-Hacer Pass 1	1682	37° 48,676N 35° 16,140 E	06.07.2016
12	Kayseri-Elekgölü-Yelatan	1305	37° 43,129 N 35° 01,178 E	28.05.2017
13	Niğde-Çamardı Province	1571	37° 49,920 N 35° 00,702 E	28.05.2017
14	Niğde-Yelatan Village	1300	37° 42,197 N 35° 01,576 E	28.05.2017
15	Niğde-Ziyaret Locality	1710	37° 47,287 N 35° 04,669 E	29.05.2017
16	Niğde-Arpalık Pasture	2280	37° 51,014 N 35° 07,344 E	29.05.2017
17	Niğde-Akşampınarı Valley	2150	37° 45,603 N 35° 08,816 E	30.05.2017
18	Niğde-Maden Valley entrance	1945	37° 54,546 N 35° 08,036 E	31.05.2017
19	Niğde-Pınarbaşı Canyon	1755	37° 53,109 N 35° 07,117 E	31.05.2017
20	Niğde-Demirkazık Hatıra Forest	1616	37° 51,552 N 35° 05,940 E	31.05.2017
21	Niğde-Demirkazık Village	1608	37° 51,351 N 35° 05,457 E	31.05.2017
22	Niğde-Elmasekisi Pasture	1840	37° 46,753 N 35° 05,470 E	01.06.2017
23	Kayseri-Hacer Forest lower part	1415	37° 48,060 N 35° 19,137 E	03.06.2017
24	Kayseri-Çamlıca 3 HEP	803	37° 53,825 N 35° 30,858 E	03.06.2017
25	Kayseri-Balcıçakırı Village	826	37° 51,507 N 35° 30,350 E	03.06.2017
26	Kayseri-Ulupınar Village	1113	37° 48,321 N 35° 20,110 E	03.06.2017
27	Kayseri-Kapuzbaşı Village (upper part)	830	37° 47,260 N 35° 21,798 E	03.06.2017
28	Kayseri-Kapuzbaşı Falls	750	37° 46,343 N 35° 23,663 E	03.06.2017
29	Kayseri-Büyükçakır Village	830	37° 46,857 N 35° 24,846 E	03.06.2017
30	Kayseri-Karagöl	2875	37° 52,482 N 35° 10,743 E	02.07.2017
31	Niğde-Meydan Pasture	2600	37° 53,230 N 35° 11,019 E	02.07.2017
32	Niğde-Çömçü Lake	2963	37° 52,277 N 35° 11,119 E	02.07.2017
33	Niğde-MTA Pass	3337	37° 50,249 N 35° 11,941 E	03.07.2017
34	Niğde-Hasta Hoca Pasture	3070	37° 49,295 N 35° 11.415 E	03.07.2017
35	Niğde-Yıldız Lake	2963	37° 51,673 N 35° 11,406 E	03.07.2017
36	Niğde-Hacer Pass 2	2578	37° 48,716 N 35° 12,992 E	05.07.2017
37	Niğde-Emler Peak	3726	37° 48,380 N 35° 08.917 E	05.07.2017
38	Kayseri-Acıman Pasture	1870	37° 43,807 N 35° 17,591 E	06.07.2017

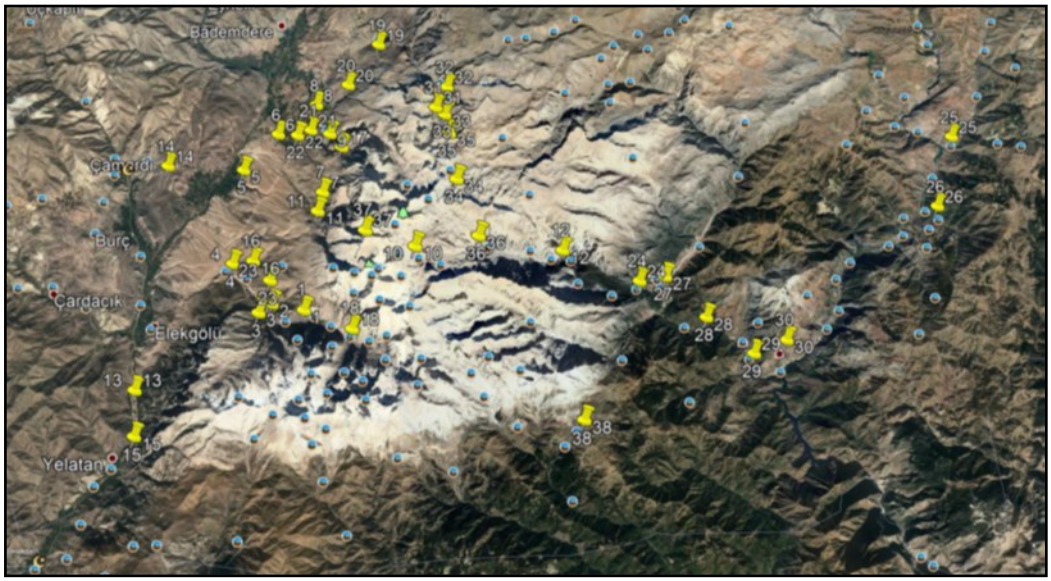

Figure 3. Satellite image of the researched localities in Aladağlar National Park

RESULTS and DISCUSSION

Family Cymidae Baerensprung, 1860

Subfamily Cyminae Baerensprung, 1860

Tribe Cymini Baerensprung, 1860

Genus *Cymus* Hahn, 1832

Cymus melanocephalus Fieber, 1861

Material examined. Demirkazık Village road (1570 m): 01.07.2016, 1♀; Hacer Pass (1682 m): 06.07.2016, 1♀.

Family Heterogastridae Stål, 1872

Subfamily Heterogastrinae Stål, 1872

Genus *Heterogaster* Schilling, 1829

Heterogaster affinis Herrich & Schaeffer, 1835

Material examined. Yedigöller Plateau (3100 m): 04.07.2016,1♀; 04.07.2017, 3♂♂; Hacer Pass (1682 m): 06.07.2016, 1♀; Ziyaret Locality (1710 m): 29.05.2017, 1♀; Pınarbaşı Canyon (1755 m): 31.05.2017, 2♀♀, 2♂♂; Kazıklı Ali Canyon (1600 m): 01.06.2017, 3♀♀, 2♂♂.

Heterogaster artemisiae Schilling, 1829

Material examined. Pınarbaşı Canyon (1755 m): 31.05.2017, 1♂; Balcıçakırı Village (830 m): 03.06.2017, 9♀♀, 7♂♂.

Family Geocoridae Baerensprung, 1860

Subfamily Geocorinae Dahlbom, 1851

Genus *Geocoris* Fallen, 1814

Subgenus *Geocoris* Fallen, 1814

***Geocoris ater* (Fabricius, 1787)**

Material examined. Yelatan (1300 m): 28.05.2017, 1♂; Arpalık Pasture (2280 m): 29.05.2017, 2♀♀.

***Geocoris lineola lineola* (Rambur, 1839)**

Material examined. Çamlıca 3 HES (803 m): 03.06.2017, 1♂.

Subgenus *Piocoris* Stål, 1872

***Geocoris erythrocephalus* (Lepeletier & Serville, 1825)**

Material examined. Karayalak Valley entrance (2100 m): 05.07.2016, 1♀; Çamardı (1571 m): 28.05.2017, 4♀♀, 4♂♂; Ziyaret Locality (1710 m): 29.05.2017, 1♀; Maden Valley entrance (1945 m): 31.05.2017, 1♂; Pınarbaşı Canyon (1755 m): 31.05.2017, 1♀; Elmasekisi (1840 m): 01.06.2017, 1♀, 4♂♂; Kazıklı Ali Canyon (1600 m): 01.06.2017, 2♂♂; Oluksekisi (1990 m): 02.06.2017, 15♀♀, 6♂♂.

Family Lygaeidae Schilling, 1829

Subfamily Lygaeinae Schilling, 1829

Genus *Apterola* Mulsant & Rey, 1866

***Apterola lownii* (Saunders, 1876)**

Material examined. Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♂; Ziyaret Locality (1710 m): 29.05.2017, 1♂; Çamardı (1571 m): 28.05.2017, 5♀♀, 6♂♂.

Distribution in Türkiye. Adana, Ankara, Edirne, Kahramanmaraş, Karaman, Kayseri, Konya, Malatya, Mardin, Mersin (Horváth, 1898, 1905; Hoberlandt, 1956; Péricart 1998; Önder et al; 2006; Kıyak & Özdamar, 2017; Çerçi & Koçak, 2023).

Genus *Horvathiolus* Josifov, 1965

***Horvathiolus superbus* (Pollich, 1781)**

Material examined. Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♂; Demirkazık Village (1608 m): 31.05.2017, 1♀, 2♂♂; Oluksekisi (1990 m): 02.06.2017, 1♀.

Genus *Lygaeosoma* Spinola, 1837

***Lygaeosoma sardeum sardeum* Spinola, 1837**

Material examined. Arpalık Pasture (2280 m): 29.05.2017, 1♀,2♂♂; Cımbar Canyon (1803 m): 29.05.2017, 1♂; Akşampınarı (2150 m): 30.05.2017, 2♀♀, 1♂; Emli Valley (1885 m): 30.06.2016, 1♀; Maden Valley entrance (1945 m): 31.05.2017, 1♀; Kazıklı Ali Canyon (1600 m): 01.06.2017, 4♂♂.

Genus *Lygaeus* Fabricius, 1794

***Lygaeus creticus* Lucas, 1854**

Material examined. Hacer Pass 2 / Beli (2578 m): 05.07.2017, 1♂.

***Lygaeus equestris* (Linnaeus, 1758)**

Material examined. Sarımemetler Camp site (1751 m): 04.06.2016, 2♀♀, 1♂; Yedigöller Plateau (3100 m): 04.07.2016, 1♂; Demirkazık Village (1608 m): 31.05.2017, 1♀; Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♂.

***Lygaeus melanostolus* (Kiritshenko, 1931)**

Material examined. Yedigöller Plateau (3100 m): 04.07.2016, 1♂; 04.07.2017, 4♂♂;

Meydan Pasture (2600 m): 02.07.2017, 2♀♀, 2♂♂; Hasta Hoca Pasture (3070 m): 03.07.2017, 1♂; MTA Pass (3337 m): 03.07.2017, 4♂♂.

Distribution in Türkiye. This study, new record for Türkiye

Distribution in Palaearctic Region. Asia: China (Northern Territory, Western plateau), Iran, Kirgizia, Mongolia, Tadzhikistan. **Extralimital:** North India? (Aukema, 2020)

Redescription. Head red, a broad latero-posterior border which encompasses the eyes black, clypeus black at the apex. Antennae black. Anterior part of the pronotum broadly black, including two lobes protruding on the disc, posterior margin broadly black, narrow in the middle, wider and arched towards the edges. Scutellum completely black, with Y shaped carina. Distal part of clavus darkened behind the glabrous black circular spot, proximal part red. Corium red, transverse black median band of corium widening towards the lateral margin; lateral margin black, thicker in the area in front of the median black band. Membrane proximally black, distally dark brown, with whitish anal angle, the middle of the membrane with a circular white spots, and another along the middle of their basal border. Venter of the thorax entirely black. Legs black. Posterior margin of the abdomen red. Paratergite bicolorous. Paramere is as in (Figure 4). Body length 8-9 mm.

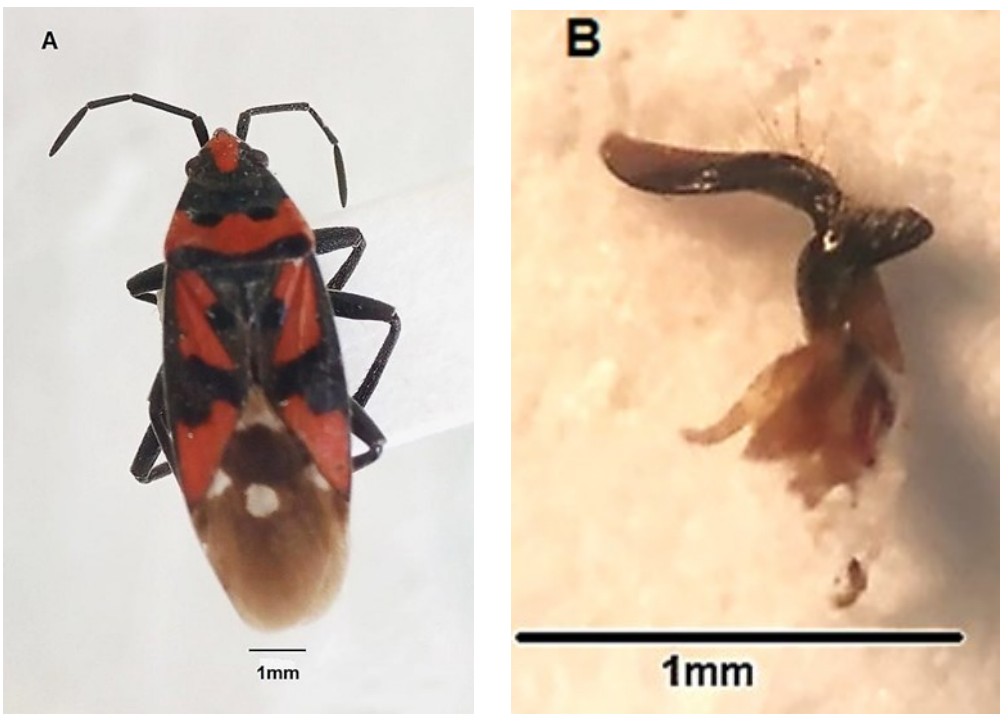

Figure 4. *Lygaeus melanostolus* (Kiritshenko, 1931) **A.** Habitus **B.** Paramere

Comment. Perhaps the most interesting of the determined species is *Lygaeus melanostolus,* which is distributed only in Asian part of the Palaearctic region (Aukema, 2020). In this study, *L. melanostolus* was recorded for the first time in Türkiye It was found in rocky ridges and high mountain deserts in the mountains at altitudes of 3400 – 4000 m in Central Asia (Winkler & Kerzhner, 1977). During the study, L. melanostolus was found at high localities from 2600 to 3337 meters.

Identification. Among the *Lygaeus* species identified in this study, *L. equestris* is the closest morphologically to *Lygaeus melanostolus* L. differs from *L. equestris* in having a smaller size *(L. melanostolus* 8-9 mm*, L. equestris* 12 mm*)* and a black band on the lateral margin of the exocorium.

Genus *Melanocoryphus* Stål, 1872

***Melanocoryphus tristrami* (Douglas & Scott, 1868)**

Material examined. Cımbar Canyon (1803 m): 02.07.2017, 1♀; 29.05.2017, 7♀♀, 5♂♂; Arpalık Pasture (2280 m): 29.05.2017, 1♂; Akşampınarı (2150 m): 30.05.2017, 1♂; Kazıklı Ali Canyon (1600 m): 01.06.2017, 7♂♂, 5♂♂; Oluksekisi (1990 m): 02.06.2017, 1♂.

Genus *Spilostethus* Stål, 1868

***Spilostethus pandurus* (Scopoli, 1763)**

Material examined. Cımbar Canyon (1803 m): 02.07.2017, 1♀, 29.05.2017, 3♂♂; Sarımemetler Camp site (1751 m): 04.06.2016, 1♂; Yedigöller Plateau (3100 m): 04.07.2016, 1♂, 04.07.2017, 3♀♀, 1♂; Elekgölü-Yelatan (1305 m): 28.05.2017, 1♂; Ziyaret Locality (1710 m): 29.05.2017, 1♂; Emli Valley (1885 m): 30.05.2017, 1♀; Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♂; Kapuzbaşı Fall (750 m): 03.06.2017, 1♂; Ulupınar (1113 m): 03.06.2017, 1♀; Karagöl (2875 m): 02.07.2017, 2♀♀, 3♂♂; Yıldız Lake (2963 m): 02.07.2017, 1♀, 1♂; MTA Pass (3337 m): 03.07.2017, 1♂; Hasta Hoca Pasture (3070 m): 03.07.2017, 4♀♀, 2♂♂; Emler Peak (3726 m): 05.07.2017, 1♂.

***Spilostethus saxatilis* (Scopoli, 1763)**

Material examined. Cımbar Canyon (1803 m): 02.07.2017, 1 ♀, 29.05.2017, 8♀♀, 11♂♂; Arpalık Pasture (2280 m): 29.05.2017, 1♂; Emli Valley (1885 m): 30.05.2017, 1♂; Hasta Hoca Pasture (3070 m): 03.07.2017, 1♂.

Subfamily Orsillinae Stål, 1872

Tribe Nysiini Uhler, 1876

Genus *Nysius* Dallas, 1852

***Nysius cymoides* (Spinola, 1837)**

Material examined. Cımbar Canyon (1803 m): 02.07.2017, 1♀; Sokullupınarı camp site (1990 m): 02.07.2017, 1♀; Çamardı (1571 m): 28.05.2017, 1♀; Ulupınar (1113m): 03.06.2017, 2♂♂; Yedigöller Plateau (3100 m): 04.07.2017, 2♂♂.

***Nysius graminicola graminicola* (Kolenati, 1845)**

Material examined. Kazıklı Ali Canyon (1600 m): 01.07.2016, 1♀; Hacer Pass (1682 m): 06.07.2016, 2♀♀; Kapuzbaşı upper part (830 m): 03.06.2017, 5♂♂; Ulupınar (1113 m): 03.06.2017, 1♀, 3♂♂; Yedigöller Plateau (3100 m): 04.07.2017, 3♀♀, 1♂.

***Nysius helveticus* (Herrich & Schaeffer, 1850)**

Material examined. Yedigöller Plateau (3100 m): 04.07.2016, 1♀.

Tribe Orsillini Stål, 1872

Genus *Orsillus* Dallas, 1852

***Orsillus depressus* (Mulsant & Rey, 1852)**

Material examined. Oluksekisi (1990 m): 02.06.2017, 3♀♀, 3♂♂.

Genus *Ortholomus* Stål, 1872

***Ortholomus carinatus* (Lindberg, 1932)**

Material examined. Kazıklı Ali Canyon (1600 m): 01.07.2016, 2♀♀, 3♂♂; Hasta Hoca Pasture (3070 m): 03.07.2017, 1♀.

Family Oxycarenidae Stål, 1862

Subfamily Oxycareninae Stål, 1862

Genus *Brachyplax* Fieber, 1860

***Brachyplax tennuis* (Mulsant & Rey, 1852)**

Material examined. Kazıklı Ali Canyon (1600 m): 01.07.2016, 1♀.

Distribution in Türkiye. Edirne, Gaziantep, Hatay, İzmir, Kayseri, Mersin, Niğde (Horváth, 1901; Linnavuori, 1953; Hoberlandt, 1956; Çağatay,1985; Lodos et al., 1999; Matocq et al., 2014).

Genus *Macroplax* Fieber, 1860

***Macroplax fasciata fasciata* (Herrich-Schaeffer, 1835)**

Material examined. Demirkazık Village road (1570m): 01.07.2016, 1♂; Çukurbağ apple orchard (1509 m): 01.07.2016, 2♂♂; Kazıklı Ali Canyon (1600 m): 01.06.2017, 2♂♂, 2♂♂.

Genus *Metapoplax* Fieber, 1860

***Metopoplax fuscinervis* Stål, 1872**

Material examined. Meydan Pasture (2600 m): 02.07.2017, 1♀.

Genus *Microplax* Fieber, 1860

***Microplax interrupta* (Fieber, 1837)**

Material examined. Balcıçakırı Village (826 m): 03.06.2017, 3♀♀, 1♂.

Genus *Tropidophlebia* Kerzhner, 1964

***Tropidophlebia costalis* (Herrich & Schaeffer, 1850)**

Material examined. Akşampınarı (2150 m): 30.05.2017, 1♂; Emli Valley (1885 m): 30.05.2017, 1♂.

Distribution in Türkiye. This study, new record for Türkiye

Distribution in Palaearctic Region. Europe: Austria, Bulgaria, Czech Republic, Estonia, France, Germany, Italy, European Kazakhstan, Netherlands, Sweden, Switzerland, Poland, Romania ?, Russia (Central, Western and Eastern European Territory), Slovakia, Ukraine. **Asia:** Asian Kazakhstan, Mongolia, Russia (East and West Siberia) (Aukema, 2020).

Redescription. Body mostly brown except on hemelytra, bearing pale erect, somewhat glandular bristles, the largest of which, on the head and pronotum, as long as 2/3 of the antennal segment I. Head dark, elongated forward, 1.2-1.3 times longer than its width. Ocelli absent. In lateral view, the buccula extends to the middle of the lower edge of the head. Antennae more or less dark brown. articles II and III generally lighter. Antennal segment II as long as twice time length of segment I and almost as long as the interocular distance, segment III hardly longer than I and IV subequal to II. Rostrum extending to procoxa. Pronotum 1.2-1.5 times as wide as its long, brown, sometimes lightened in front and behind its midline. Scutellum brown,

with shiny hairs. Veins of the hemelytra, membrane included, prominent, largely darkened along their entire length; posterior edge of corium with a prominent black vein; membranes usually barely overlapping, only touching, or rarely half overlapping. Membrane usually not reaching the end of the abdomen, rarely covers abdomen. Femur dark brown, tibia and tarsus light brown or yellowish color. Abdomen reddish-brown with black apical region. Length: 2.5 mm. In our study, we found two newly emerged specimens: their cuticles had not yet hardened and acquired their natural color. Therefore, they appear red in color except for the very prominent wing veins (Figure 5).

Comment. The distribution of *Tropidophlebia costalis* in Asia is limited to Kazakhstan (Asian part), Mongolia and Russia (East and West Siberia), although it has a wide distribution in Europe (Aukema, 2020). This species is known as Euro-Siberian fauna element (Šeat, 2013). *T. costalis*, which is valued among the rare species in Bulgaria, has been suggested to be protected by local entomologists (Gueorguiev et al., 1998). However, it is also classified in the "Near Threatened" (NT) category in the Czech Republic (Kment et al., 2013). T. costalis feeds on seeds of various plants, can be seen on dunes, barren lands, and on sun-exposed lichen-bearing rocks (Stehlík and Vavřínová, 1997). In a study comparing species compositions in 4 different desert types in Kazakhstan, it was stated that *T. costalis* was detected in deserts with dune characteristics (Yesenbekova & Homziak, 2013). In this study, when we look at the localities where *T. costalis* was collected, we see that there are areas that can be described as arid, with rocks of various sizes in places that are exposed to the sun, even though they do not show dune characteristics (Figure 6.). The locality of *T. costalis* in this study is its southernmost limit in its Asian distribution area.

Figure 5. *Tropidophlebia costalis* (Herrich & Schaeffer, 1850). Habitus

Figure 6. Akşampınarı Valley- One of the two localities where *Tropidophlebia costalis* was detected.

Family Rhyparochromidae Amyot & Serville, 1843

Subfamily Rhyparochrominae Amyot & Serville, 1843

Tribe: Antillocorini Ashlock, 1964

Genus *Tropistethus* Fieber, 1860

***Tropistethus holosericus* (Schultz, 1846)**

Material examined. Arpalık Pasture (2280 m): 29.05.2017, 1♀; Cımbar Canyon (1803 m): 29.05.2017, 1♀; Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♀.

***Tropistethus lanternae* Linnavuori, 1960**

Material examined. Ulupınar (1113 m): 03.06.2017, 1♂.

Distribution in Türkiye. Adana, Adıyaman, Ankara, Diyarbakır, Gaziantep, Hatay, Karaman, Kahramanmaraş, Mersin, Siirt (Hoberlandt 1956; Çağatay 1985; Péricart 1999b; Matocq & Özgen 2010; Çerçi & Koçak, 2023).

Tribe: Drymini Stål, 1872

Genus *Eremocoris* Fieber, 1860

***Eremocoris fenestratus* (Herrich-Schaeffer, 1839)**

Material examined. Yedigöller Plateau (3100 m) : 04.07.2016, 1♀, 1♂; Arpalık Pasture (2280 m): 29.05.2017, 1♀.

***Eremocoris podagricus* (Fabricius, 1775)**

Material examined. Cımbar Canyon (1803 m): 29.05.2017, 1♀.

Distribution in Türkiye. Bitlis, Hakkari, Mersin, Yalova (Péricart, 1999b).

Genus *Ischnocoris* Fieber, 1860

***Ischnocoris hemipterus* (Schilling, 1829)**

Material examined. Elmasekisi (1840 m): 01.06.2017, 1♀.

Distribution in Türkiye. Edirne, Kayseri (Péricart, 1999b, Fent & Okyar, 2022).

***Ischnocoris punctulatus* Fieber, 1861**

Material examined. Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♂.

Distribution in Türkiye. Ankara (Péricart, 1999b).

Genus *Taphropeltus* Stål, 1872

***Taphropeltus hamulatus* (Thomson, 1870)**

Material examined. Cımbar Canyon (1803 m): 29.05.2017, 1♀, 1♂.

Distribution in Türkiye. Konya (Péricart, 1999b).

Tribe Gonianotini Stål, 1872

Genus *Diomphalus* Fieber, 1864

***Diomphalus hispidulus* Fieber, 1864**

Material examined. Karagöl (2875 m): 02.07.2017, 1♂; Çömçü Lake (2963 m): 02.07.2017, 1♂.

Distribution in Türkiye. Antalya, Kahramanmaraş, Karaman (Lodos et al., 1999).

Genus *Emblethis* Fieber, 1860

***Emblethis denticollis* Horváth, 1878**

Material examined. Yedigöller Plateau (3100 m): 04.07.2016, 1♀, 1♂.

***Emblethis griseus* (Wolff, 1802)**

Material examined. Hacer Pass (1682 m): 06.07.2016, 1♂; Çamardı (1571 m): 28.05.2017, 1♂; Elmasekisi (1840 m): 01.06.2017, 2♀♀; Acıman Pasture (1870 m): 06.07.2017, 1♂.

***Emblethis latus* Seidenstücker, 1963**

Material examined. Elekgölü-Yelatan (1305 m): 28.05.2017, 1♂.

Distribution in Türkiye. Kars (Seidenstücker, 1967).

***Emblethis nox* Kiritshenko, 1912**

Material examined. Oluksekisi (1990 m): 02.06.2017, 3♂♂, 3♀♀.

Distribution in Türkiye. Kayseri (Seidenstücker, 1987).

Distribution in Palaearctic Region. Asia: Iran, Uzbekistan (Aukema, 2020).

Identification. The most important differences of *E. nox* from other species of *Emblethis* found in the area is that it has a darker body color (dark brown), black punctures are very prominent, the dorsal surface is shiny and it has a slit on the dorsal surface of the pygophore. The pygophore is similar to the *E. sabulosus,* which has been identified in Anatolia. However, the slit in *E.* nox's pygophore is shorter than that of *E. sabulosus* and divides the proximal capsule wall in half (Seidenstücker, 1967).

Comment. *E. nox* are known except Türkiye only in Iran and Uzbekistan (Aukema, 2020). Seidenstücker (1987) reported this species from Iran at very high altitudes (between 1700 – 3950 m). In the same article, he emphasizes that he found this species at an altitude of 3000 m in Kayseri (Erciyes Mountain) in Türkiye and that

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this record is the most western locality of the species. Aladağlar, which is an extension of the Middle Taurus and considered the highest point is approximately 110 km southwest from Erciyes Mountain. In this study, this species was recorded at 1990 m and for now this record constitutes the westernmost distribution limit of the species.

***Emblethis setifer* Seidenstücker, 1966**

Material examined. Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♂, 3♀♀.

***Emblethis verbasci* (Fabricius, 1803)**

Material examined. Çamardı (1571 m): 28.05.2017, 1♀; Yelatan (1300 m): 28.05.2017, 1♀, 2♂♂; Demirkazık Village (1608 m): 31.05.2017, 10♀♀, 4♂♂; Maden Valley entrance (1945 m): 31.05.2017, 1♀.

Genus *Ischnopeza* Fieber, 1860

***Ischnopeza hirticornis* (Herrich-Schaeffer, 1850)**

Material examined. Elekgölü-Yelatan (1305 m): 28.05.2017, 2♂♂; Yelatan (1300 m): 28.05.2017, 2♀♀, 2♂♂; Demirkazık Memorial Forest (1616 m): 31.05.2017, 1♂; Demirkazık Village (1608 m): 31.05.2017, 6♀♀, 5♂♂; Pınarbaşı Canyon (1755 m): 31.05.2017, 1♂; Kazıklı Ali Canyon (1600 m): 01.06.2017, 2♀♀.

Genus *Neurocladus*, Fieber, 1860

***Neurocladus brachiidens* (Dufour, 1851)**

Material examined. Pınarbaşı Canyon (1755 m): 31.05.2017, 1♀.

Genus *Trapezonotus* Fieber, 1860

***Trapezonotus arenarius arenarius* (Linnaeus, 1758)**

Material examined. Arpalık Pasture (2280 m): 29.05.2017, 4♀♀, 7♂♂; Akşampınarı (2150 m): 30.05.2017, 1♂; Meydan Pasture (2600 m): 02.07.2017, 2♀♀, 1♂.

Distribution in Türkiye. Bursa, Kayseri, Kars (Horváth, 1905; Vinokurov, 1990; Péricart, 1999c).

Tribe Lethaenini Stål, 1872

Genus *Lethaeus* Dallas, 1852

***Lethaeus cribratissimus* (Stål, 1859)**

Material examined. Cımbar Canyon (1803 m): 29.05.2017, 5♀♀, 2♂♂; Pınarbaşı Canyon (1755 m): 31.05.2017, 1♀, 1♂; Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♀, 1♂; Hacer Forest lower part (1415 m): 03.06.2017, 1♀, 2♂♂.

Tribe Megalonotini J.A. Slater, 1957

Genus *Icus* Fieber, 1860

***Icus angularis* Fieber, 1861**

Material examined. Yedigöller Plateau (3100 m) : 04.07.2016, 1♀; Arpalık Pasture (2280 m): 29.05.2017, 1♀, 1♂; Cımbar Canyon (1803 m): 29.05.2017, 1♀, 1♂.

Genus *Megalonotus* Fieber, 1860

***Megalonotus chiragra* (Fabricius, 1794)**

Material examined. Cımbar Canyon (1803 m): 29.05.2017, 1♀.

Distribution in Türkiye. Afyonkarahisar, Edirne, İzmir (Linnavouri, 1953; Hoberlandt, 1956).

***Megalonotus praetextatus* (Herrich-Schaeffer, 1835)**

Material examined. Cımbar Canyon (1803 m): 29.05.2017, 3♀♀, 5♂♂; Pınarbaşı Canyon (1755 m): 31.05.2017, 1♀; Kapuzbaşı Fall (750 m): 03.06.2017, 1♀; Ulupınar (1113 m): 03.06.2017, 1♀.

***Megalonotus sabulicola* (Thomson, 1870)**

Material examined. Yedigöller Plateau (3100 m): 04.07.2016, 1♀, 1♂; Emli Valley (1885 m): 30.05.2017, 2♀♀, 1♂.

Genus *Proderus* Fieber, 1860

***Proderus bellevoyei* Puton, 1874**

Material examined. Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♀.

Tribe Plinthisini J.A. Slater & Sweet, 1961

Genus *Plinthisus* Stephens, 1829

Subgenus *Plinthisus* Stephens, 1829

***Plinthisus brevipennis* (Latreille, 1807)**

Material examined. Balcıçakırı Village (826 m): 03.06.2017, 1♀, 3♂♂.

Distribution in Türkiye. This study, new record for Türkiye

Distribution in Palaearctic Region. Europe: Albania, Andorra, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Great Britain, Germany, Greece, Hungary, Ireland, Italy, Liechtenstein, Luxembourg, Macedonia, Moldavia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia (Central and Southern European Territory), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine. North Africa: Algeria, Azores,Canary Islands? Morocco, Madeira? Tunisia. Asia: Azerbaijan, Iran, Israel, Kirgizia, Tadzhikistan. Extralimital (introduced): North America (Canada, USA) (Aukema, 2020).

Redescription. Usually brachypterous, more rarely macropterous. Body color shiny, black-brown to black with brownish antennae and legs. Antennae barely half as long as the body; antennal segment I extending the clypeus by nearly half of its length, segment II, 1.2-1.3 times as long as the interocular distance, segment III, 0.8-0.9 times as long as segment II; segment IV subequal to III. Rostrum reaching the middle of the mesocoxae. Pronotum subrectangular (brachypterous), or clearly trapezoidal (macropterous). Anterior part with fine and sparse punctuation, posterior part with coarser and dense punctuation, but the points not touching each other. Scutellum densely punctuated, points smaller than those of posterior part of pronotum and anterior part of hemelytra. Hemelytra of the brachypterous specimens leaving the tergite VII and the middle of Vl uncovered, rudiments of membrane always well developed. Punctuation of clavus and anterior part of the corium dense and rather coarse as that of the posterior part of pronotum, comprising 2 rows (clavus) and 1 row (corium) of aligned points; posterior part of the corium with smaller and more scattered points, at least in the brachypterous specimens. Profemur with 2 rows of spines on their ventral surface: one with 3 spines, the other with 4-5 spinules. Length: ♀: 3.6 mm, ♂: 2.8 mm (Figure 7.)

Comment. *Plinthisus brevipennis* has a wide distribution in Europe and it is reported from Asia and North Africa. However, *P. brevipennis* is also found in Canada and USA apart from Palaearctic (Aukema, 2020). *P. brevipennis* has been recorded as a mesophilic species that can be seen at altitudes up to 1000 meters (Péricart, 1999c).

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However, this limit increased with samples collected from 1300 m, 1500 m and 1700 m in the Iberian peninsula, according to the study conducted by Costas et al. (2004). Although it is observed that this species prefers mossy moist areas according to many capture data obtained, it is also found on the leaf shoots of shrubs and trees like *Quercus* sp., *Pinus* sp. and *Juniperus* sp. (Costas et al., 2004). Similarly, *P. brevipennis* specimens found in this study were collected from a reforestation pine forest near Balcıçakırı Village (826 m).

Figure 7. *Plinthisus brevipennis* (Latreille, 1807). Habitus

***Plinthisus longicollis* Fieber, 1861**

Material examined: Çamardı (1571 m): 28.05.2017, 2♀♀; Arpalık Pasture (2280 m): 29.05.2017, 2♀♀, 1♂; Cımbar Canyon (1803 m): 29.05.2017, 1♀, 1♂; Emli Valley (1885 m): 30.05.2017, 1♀; Demirkazık Village (1608 m): 31.05.2017, 1♀, 1♂; Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♂; Kapuzbaşı Fall (750 m): 03.06.2017, 2♀♀, 1♂.

Tribe Rhyparochromini Amyot & Serville, 1843

Genus *Aellopus* Wolff, 1811

***Aellopus atratus* (Goeze, 1778)**

Material examined. Hacer Pass (1682 m): 06.07.2016, 1♀; Akşampınarı (2150 m): 30.05.2017, 1♀, 1♂.

Genus *Beosus* Amyot & Serville, 1843

***Beosus maritimus* (Scopoli, 1763)**

Material examined. Emli Valley (1885 m): 30.05.2017, 1♀; Kazıklı Ali Canyon (1600 m): 01.06.2017, 4♀♀, 1♂.

***Beosus quadripunctatus* (Müller, 1766)**

Material examined. Yelatan (1300 m): 28.05.2017, 2♀♀, 1♂.

Genus *Callistonotus* Horváth, 1906

***Callistonotus nigroruber* (Stål, 1859)**

Material examined. Cımbar Canyon (1803 m): 29.05.2017, 1♀.

Distribution in Türkiye. Ankara, Gaziantep, Hatay, Kahramanmaraş, Kayseri, Niğde (Hoberlandt, 1956; Seidenstücker, 1958; Péricart, 1999c).

Genus *Raglius* Stål, 1872

***Raglius alboacuminatus* (Goeze, 1778)**

Material examined. Emli Valley (1885 m): 30.05.2017, 1♂; Oluksekisi (1990 m): 02.06.2017, 2♀♀; Sarımemetler camp site (1751 m): 04.06.2016, 1♀.

Genus *Rhyparochromus* Hahn, 1826

***Rhyparochromus phoeniceus* (Rossi, 1794)**

Material examined. Elekgölü-Yelatan (1305 m): 28.05.2017, 1♀; Yelatan (1300 m): 28.05.2017, 2♀♀; Emli Valley (1885 m): 30.05.2017, 1♀; Demirkazık Memorial Forest (1616 m): 31.05.2017, 2♀♀; Demirkazık Village (1608 m): 31.05.2017, 1♀; Kazıklı Ali Canyon (1600 m): 01.06.2017, 1♀; Oluksekisi (1990 m): 02.06.2017, 1♀.

Genus *Xanthochilus* Stål, 1872

***Xanthochilus minusculus* (Reuter, 1885)**

Material examined. Kazıklı Ali Canyon (1600 m): 01.06.2016, 4♀♀.

DISCUSSION

In 2016 and 2017, 432 samples belonging to Lygaeoidea superfamily were collected as a result of field studies carried out in 38 localities in and around Aladağlar National Park.

As a result of the identification of these samples, 57 species belonging to 37 genera from 6 families of Lygaeoidea were identified: 32 species and 20 genera from Rhyparochromidae, 14 species and 9 genera from Lygaeidae, 5 species and 5 genera from Oxycarenidae, 3 species and 1 genus from Geocoridae, 2 species and 1 genus from Heterogastridae, and 1 species and 1 genus from Cymidae were identifiedThe rhyparochromid genus *Emblethis* with 6 species was identified as the most numerous.

In this study, *Lygaeus melanostolus*, *Plinthisus brevipennis* and *Tropidophlebia costalis* are recorded for first time in Türkiye. *Emblethis latus, E. nox, Ischnocoris punctulatus,* and *Taphropeltus hamulatus,* are rare species and recorded from only one locality in Anatolia in Türkiye up to now. While *T. hamulatus* (Konya), *E. nox* (Kayseri) and *I. punctulatus (Ankara)* were previously recorded from provinces close to the research area, *E. latus* was recorded from Kars province from the eastern border of the country. In addition, the very sporadically distributed species *Apterola lownii, Brachyplax tenuis, Callistonotus nigroruber, Diomphalus hispidulus, Eremocoris podagricus, Ischnocoris hemipterus, Megalonotus chiragra* and *Trapezonotus arenarius arenarius* are also significant findings in this study (Horváth, 1905; Linnavouri, 1953; Hoberlandt, 1956; Seidenstücker, 1967; Vinokurov, 1990; Lodos et al., 1999;

Péricart, 1999a,b,c; Matocq et al.,2014; Yazıcı et al.; 2015; Fent & Dursun, 2016).

Orsillus depressus, an arboreal species that is mostly seen in parks on species such as *Chamaecyparis* and *Thuja* and has also been detected in natural *Juniperus* species after 2002 (Aukema, 2001), was found in Fir trees in Emli Valley and Oluksekisi Plateau.

In the field studies, samples were taken from many different habitats such as agricultural lands such as orchards and wheat fields, symmetrical and asymmetrical deep valleys, canyons, high mountain rocky formations, alpine meadows and coniferous forests. Considering the localities of the identified species, the species richness is highest in the habitats with canyon characteristics and in the entrance or exit regions of these canyons. Kazıklı Ali Canyon, where 22 different species are diagnosed, and Cımbar Canyon, where 14 species are found, are the most species rich localities. Following these localities, 12 species were identified in the Yedigöller Plateau over 3000 meters (Figure 8).

When the study is evaluated according to the height parameter; 8 species belonging to 7 genera in 5 localities between 500-1000 m, 11 species belonging to 10 genera in 4 localities between 1000-1500 m, 36 species belonging to 31 genera in 16 localities between 1500-2000 m, 17 species belonging to 16 genera in 4 localities between 2000-2500 m, 6 species belonging to 6 genera in 5 localities between 2500-3000 m, and 13 species belonging to 9 genera in 4 localities above 3000 m were identifed (Table 2).

Spilostethus pandurus that has been collected 14 localities out of 38 was found to be the most widespread species in the study area. However, the fact that *Spilostethus pandurus* is located at the summit of Emler Peak (3726 m), which has the highest altitude among the studied localities, can be interpreted as having a high tolerance in both widespread and vertical distribution. *Emblethis*

Figure 8. A. Hacer Pass **B.** Kazıklı Ali Canyon **C.** Yedigöller Plateau **D.** Cımbar Canyon

denticollis and *Nysius helveticus* were found only in localities over 3000 m. *Lygaeus melanostolus,* one of the new species for Türkiye, could not be detected under 2500 meters (Table 2). The results of this study show us that Aladağlar National Park is rich in Lygaeoidea species, considering the floral and ecosystem diversity. However, the new species records and the existence of species such as *L. melanostolus,* whose distribution limits are above a certain height, are also important for future studies in this region.

Table 2. Composition of species detected in Aladağlar and its surroundings according to altitude

Species/Altitude	500-1000 m	1000-1500 m	1500-2000 m	2000-2500 m	2500-3000 m	3000 m <
Cymus melanocephalus			x			
Heterogaster affinis			x			x
Heterogaster artemisae	x					
Geocoris ater		x	x	x		
Geocoris lineola	x					
Geocoris erythrocephalus			x	x		
Apterola lounii			x			
Horvathiolus superbus			x	x		
Lygaeosoma sardeum			x	x		
Lygaeus creticus					x	
Lygaeus equestris			x			x
Lygaeus melanostolus					x	x
Melanocoryphus tristrami			x	x		
Spilostethus pandurus	x	x	x		x	x
Spilostethus saxatilis			x	x		x
Nysius cymoides		x	x			x
Nysius graminicola	x	x	x			x
Nysius helveticus						x
Orsillus depressus				x		
Ortholomus carinatus			x			x
Brachyplax tennuis						
Macroplax fasciata			x			
Metopoplax fuscinervis					x	
Microplax interrupta	x					
Tropidophlebia costalis			x	x		
Tropistethus holosericus			x	x		
Tropistethus lanternae		x				
Eremocoris fenestratus				x		x
Eremocoris podagricus			x			
Ischnocoris hemipterus						
Ischnocoris punctulatus			x			
Taphropeltus hamulatus			x			
Diomphalus hispidulus					x	
Emblethis denticollis						x
Emblethis griseus			x			
Emblethis latus		x				
Emblethis nox				x		

Table 2. Continued.

Emblethis setifer			x			
Emblethis verbasci		x	x			
Ischnopeza hirticornis		x	x			
Neurocladus brachiidens			x			
Trapezonotus arenarius				x	x	
Lethaeus cribratissimus		x	x			
Icus angularis			x	x		x
Megalonotus chiragra			x			
Megalonotus praetextatus	x		x			
Megalonotus sabulicola			x			x
Proderus bellevoyei			x			
Plinthisus brevipennis	x					
Plinthisus longicollis	x		x	x		
Aellopus atratus			x	x		
Beosus maritimus			x			
Beosus quadripunctatus		x				
Callistonotus nigroruber			x			
Raglius alboacuminatus			x	x		
Rhyparochromus phoeniceus		x	x	x		
Xantochilus minusculus			x			

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Research Article

Morphological diagnosis information about some rare Heteroptera (Hemiptera) species in Türkiye

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ABSTRACT: This study is based on specimens of species that were collected by light trap in Diyarbakır Province, located in the Eastern Anatolia Region of Turkey, and which are rarely known in Anatolia.

7 species (*Acrosternum breviceps* (Jakovlev, 1889), *Mecidea lindbergi* Wagner, 1954, *Lethaeus nitidus* (Douglas & Scott, 1868), *Megalonotus maximus* (Puton, 1895), *Peritrechus flavicornis* Jakovlev, 1877, *Ectomocoris caucasicus* Linnavuori, 1972 and *Reduvius ciliatus* Jakovlev, 1879) specimens were examined and diagnostic photographs of their general morphology and male genitalia were presented.

KEY WORDS: Heteroptera, rare species, morphology, Türkiye.

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INTRODUCTION

Türkiye, especially Anatolia (the Asian part of Türkiye), is very rich in terms of living diversity and Heteroptera species diversity. With the latest studies conducted in Türkiye, it is estimated that there are 1645 species belonging to Heteroptera (Çerçi & Koçak, 2023). Of these, the type localities of 237 species are in Anatolia and 107 species and 4 subspecies are endemic to Türkiye (Dursun & Fent, 2017).

In various studies conducted on the Heteroptera fauna in Türkiye some species that are rarely distributed both in the Palearctic Region and the country were also obtained. In the study conducted with a light trap in Diyarbakır Province, located in the east of Türkiye, some species with rare distribution were detected (Fent et al., 2022). In this study are given general morphological and male genitalia photographs and descriptions of these little-known species detected by Fent et al. (2022) and it is aimed to assist the researchers who will work on this subject in identification.

MATERIALS AND METHODS

In this study, samples of a total of 7 species from the Pentatomidae, Reduviidae and Rhyparochoromidae families were studied. General morphologies of the species and paramers obtained from male specimens were photographed. Distinctive features of the species were defined and their distribution in Türkiye and Palaearctic were given.

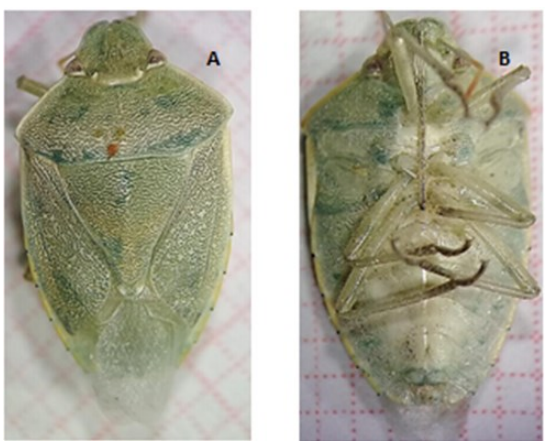

Figure 1. *Acrosternum breviceps* (Jakovlev, 1889); **A.** Dorsal view, **B.** Ventral view.

RESULTS AND DISCUSSION

Family Pentatomidae Leach, 1815

Acrosternum breviceps (Jakovlev, 1889) (Figure 1)

Distribution in Türkiye: Asian Türkiye: Adıyaman, Şanlıurfa (Gözüaçık et al., 2011); Diyarbakır (Önder et al., 1995; Gözüaçık et al., 2011; Matocq et al., 2014; Fent et al., 2022); Mersin (Yazıcı et al., 2014).

Distribution in Palaearctic: Asia: Afghanistan, Armenia, Asian Türkiye, Azerbaijan, Georgia, Iran, Iraq, Kirgizia, Kuwait, Saudi Arabia, Tadzhikistan, Turkmenistan, Uzbekistan (Aukema, 2020).

Diagnosis: (Fig. 1) The body completely green and with black and the same color as the ground punctures. Thylus surrounded the front of the gena. The first two segments of the antennas green, III. segment proximally green, distally reddish, IV and V. segments brownish. The distal part of the lateral edge of the pronotum straight, and the proximal edge rounded. Corium and clavus green, the base of exocorium yellowish green. Connexivum green, lateral distal edge with small black spots. Membranes translucent, whitish. The rostrum extends to the middle of the hind coxae. Legs green, distal of tibiae and tarsi darkened. Length: 12-13 mm.

The most important feature that distinguishes *Acrosternum brevicep* from other *Acrosternum* species is that the thylus cover the front of the gena, in other species the distal part of the thylus is free.

Mecidea lindbergi Wagner, 1954

Distribution in Türkiye: Asian Türkiye: Siirt (central province) (Özgen

& Çerçi, 2018); Diyarbakır (Fent et al., 2022).

Distribution in Palaearctic: Europe: Belgium, Crete, France, Great Britain (migrant), Greece, Italy, Portugal, Romania, Spain. **North Africa:** Algeria, Canary Islands, Egypt? Morocco, Tunisia. **Asia:** Afghanistan, Asian Türkiye, Iran, Iraq, Israel, Jordan, Saudi Arabia, Sinai, Syria, Turkmenistan, Yemen.

Extralimital: Burkina Fasso, Cape Verde Island (Aukema, 2020).

Diagnosis: (Fig. 2) Very slim and long body. Body pale yellow color pale yellow color, with large punctures same as ground. Head equilateral triangle shaped, slightly diverging distally. Antennae reddish green, the second segment 1.6 times (male) and 2.8 times (female) longer than the third (Fig. 2C, D). The lateral edge of the pronotum is straight distally and curved in the middle. The middle of the pronotum and scutellum flattened along a line.

Membranes translucent, whitish. Rostrum pale yellow, distally darkened, extending beyond the middle coxa (Fig. 2A). Legs are pale yellow, sometimes the distal femurs and tibias and the first tarsal segment are reddish. Length: 11,3 -12,2 mm.

Mecidea lindbergi differs from *Mecidia pallidissima* in that its body is larger (*M. lindbergi* size: 11.5-12 mm, *M. pallidissiama* size: 7-10.7 mm); The ratio of the second and third segments of the antenna to each other (in *M. lindbergi*, the second segment is 1.6 times (male) and 2.8 times (female) longer than the third, in *M. pallidissima*, the second segment is 0.4-0.7 (male) and 1.38-2.0 (female) times the length longer than the third.

Family Rhyparochromidae Amyot & Serville, 1843

***Lethaeus nitidus* (Douglas & Scott, 1868)**

Distribution in Türkiye: Asian Türkiye: Hatay (Akbez) (Puton & Noualhier, 1895); Hatay (Antakya), Adana, Kahraman-maraş (Pazarcık) (Péricart, 1999b); Diyarbakır (Fent et al., 2022).

Distribution in Palaearctic: Europe: Bulgaria, Crete, Greece. Asia: Asian Türkiye, Cyprus, Israel, Jordan, Lebanon, Syria (Aukema, 2020).

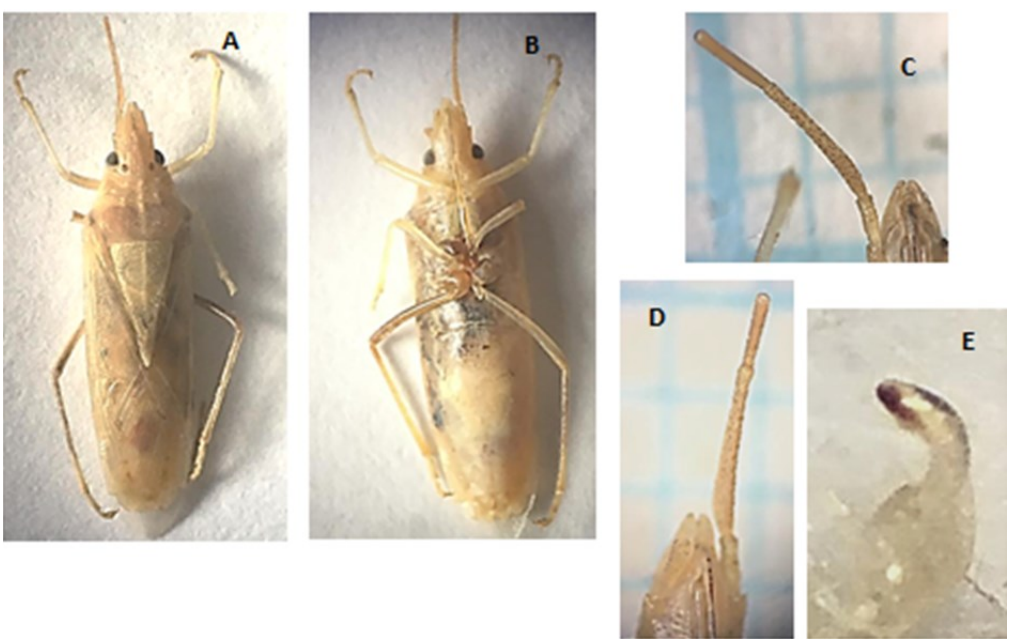

Figure 2. *Mecidea lindbergi* Wagner, 1954; **A.** Dorsal view, **B.** Ventral view, **C.** Antennae (male), **D.** Antennae (female), **E.** Paramere.

Diagnosis: (Fig. 3) Only macropter forms are known. Oblong oval, shiny, subglabrous, covered above with a rather coarse and tight puncture, finer on the head and the front of the pronotum; head and thorax mostly black-brown to black. Hemelytra and abdomen reddish brown or dark mahogany, antennae and legs yellowish. Head densely punctuated, black except the clypeus which is mahogany behind and yellowish in front; eyes almost touching the anterior edge of the prothorax; forehead 3.8-4.8 times as wide as the eyes seen from above; Antenniferous tubercles slightly visible from above. Antennae 0.5 times as long as the body, article I exceeding the clypeus by half its length, article II quite slender, 0.9 times as long as diatone and 1.25-1.35 times as long as III; IV equal to III. Rostrum reaching the anterior edge of the metacoxae. Pronotum 1.4-1.68 times as wide as long, weakly trapeziform often dark mahogany on the posterior field; lateral edges arched, especially in the anterior half, lateral keels yellow-brown, integument almost smooth in the middle of the anterior field. Hemelytra, reaching or almost the apex of the abdomen; costal blades yellow-brown; clavus bearing 4 rows of points, the 2 posterior ones separated by a small side; membranes translucent, whitish. Legs light brownish yellow; slightly swollen profemurs, armed in front with 2 spiniform setae and one or two denticles in the anterior part; tibias bearing rows of pale spines generally longer than their diameter. Length: 5,5 mm (Péricart, 1999a).

Lethaeus nitidus can only be confused with *Lethaeus lethierryi* because both species are similar in size and smaller than other species in the genus.

However, *L. nitidus* is shiny black-brown and roughly punctuated, whereas *L. lethierryi* is a mat and the punctuation is thin (Péricart, 1999a).

Distribution in Türkiye: Asian Türkiye: Hatay (Akbez), **(**Puton & Noualhier,1895), Ankara (central province), Konya (central province) (Lodos *et al.*,1999); Bingöl, Kahramanmaraş (Pazarcık), Şanlıurfa (Çaylarbaşı) (Péricart, 1999b); Siirt (central province) (Matocq & Özgen, 2010); Diyarbakır (Fent et al., 2022).

Distribution in Palaearctic: Asia: Asian Türkiye, Armenia, Cyprus, Iraq, Israel, Jordan, Syria (Aukema, 2020).

Diagnosis. (Fig. 4) Elongated oval, mat, black, the antennae and legs entirely yellow-brown or yellow.

Figure 3. *Lethaeus nitidus* (Douglas & Scott, 1868); **A.** Dorsal view, **B.** Ventral view.

Head as long as it is broad, clypeus yellow-brown, (Fig. 4D) eyes touching or almost the pronotum. Antennae 0.5 times as long as the body; article I exceeds the clypeus by half its length; article II, 0.95-1.05 times as long as the diatone and 1.15-1.2 times as long as Ill; article IV as long as II. Rostrum extending to mesocoxae, (Fig. 4C). Pronotum 1.3 times as wide as long, trapeziform. The anterior part of the pronotum black, the posterior part brownish, space punctuation barely larger than that of the anterior field. Very light, clear, applied dorsal pubescence. Laterally barely sinuous behind the middle, clearly bordered by a narrow brownish border. The anterior part of the scutellum black, posterior part brownish. Hemelytra yellow, anal edge brownish, membrane whitish.

Armament of the ventral face of the profemurs comprises a row of 8-12 spinules then a big sharp spine, then 3-5 spinules in the most distal part; the large spine is located slightly out of alignment which thus appears sinuous (Fig. 4F); in addition, a second row of 2-3 spinules near the distal end. Non-arched protibia; meso- and metatibias furnished with rows of dark spiniform bristles, as long as their diameter. Length: 8,1 mm (Péricart, 1999b).

The most distinctive feature that distinguishes *Megolonotus maximus* from other *Megalonotus* species is its size (8 mm and above). Apart from this, the proximal half of the pronotum and scutellum are brownish (completely black in other species), the antennae and legs are completely yellow, the spines on the

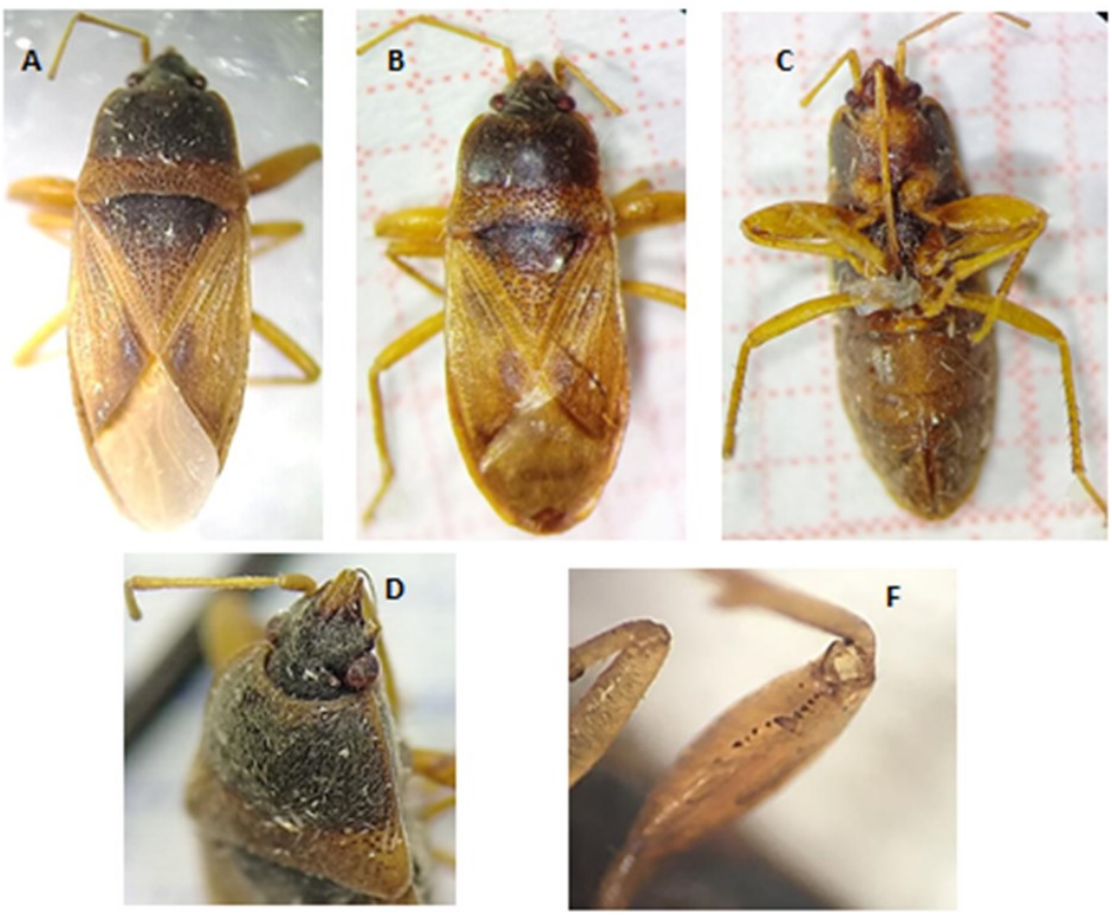

Figure 4. *Megalonotus maximus* (Puton, 1895); **A-B.** Dorsal view, **C.** Ventral view, **D.** Head (clypeus), **E.** Profemur.

profemur and the paramer (could not be evaluated because we do not have a male sample).

***Peritrechus flavicornis* Jakovlev, 1877**

Distribution in Türkiye: Asian Türkiye: Adana (Karataş) (Hoberlandt, 1956); Hatay (Altınözü) (Lodos et al., 1999); Siirt (central province) (Matocq & Özgen, 2010); Diyarbakır (Fent et al., 2022).

Distribution in Palaearctic: Europe: Russia (South European Territory). **Asia:** Asian Türkiye, Caucasus, Iran, Saudi Arabia, Uzbekistan (Aukema, 2020).

Diagnosis. (Fig. 5) Head dark brown, brilliant, finely punctuated, with light silvery-white pubcsence, proximal margin and apex of the clypeus reddish. Rostrum and legs yellow, antennae light, very light brown to dirty yellow, first segment brownish with lightened apex, or yellowish browned in the middle, and last segment brownish or yellowish. Pronotum and hernelytra bearing fine grayish reclining pubescence. Pronotum trapeziform, 1.7-1.75 times as wide at the top as it is long along its median, anterior part brown, posterior part and anterior margin (back of the head) yellow, posterior angles brownish, finely punctuated with brownish except lateral edges. Lateral edges slightly arched in front of the posterior angles; lateral margins narrow, and lateral keels dark in front, and yellowish behind. Hemelytra with parallel external edges: grey, pale yellowish or whitish yellow and with a brownish pattern in the anal edge and a brownish spot in the distal edge. Clavus often a fairly whitish plaque contrasting near its anterior edge and another near its posterior region. Membranes clear, and semi-transparent with some brownish spots or bands between the veins. The abdomen and connexivum completely black. Length: 4-4.9 mm (Péricart, 1999b).

The species most similar to *Peritrechus flavicornis* is *Peritrechus meridionalis*. However, in *P. flavicornis*, the legs are completely yellow, whereas in *P. meridionalis*, the femurs are light brown.

Family Reduviidae Latreille, 1807

***Ectomocoris caucasicus* Linnavuori, 1972**

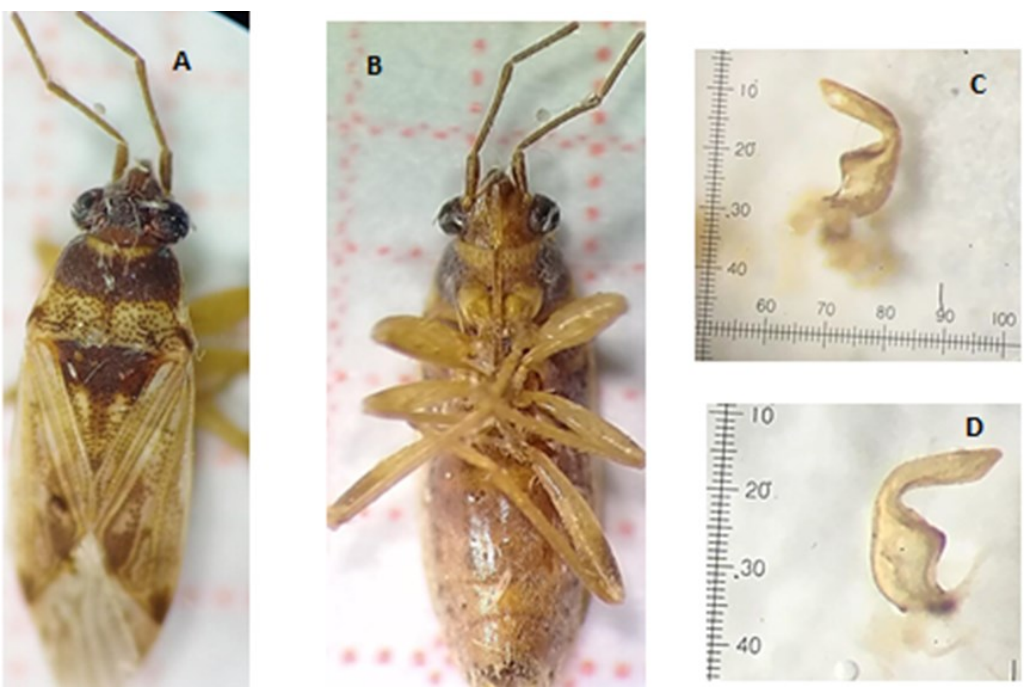

Figure 5. *Peritrechus flavicornis* Jakovlev, 1877; **A.** Dorsal view, **B.** Ventral view, **C-D.** Paramere.

Distribution in Türkiye: Asian Türkiye: Adıyaman (Kahta, Elbeyi), (Yıldırım et al., 2013); Şanlıurfa (Tülmen) (Dursun & Fent, 2015); Diyarbakır (Fent et al., 2022).

Distribution in Palaearctic: Europe: Russia (South European Territory). **Asia:** Asian Türkiye, Armenia, Azerbaijan, Georgia, Iran, Iraq (Aukema, 2020).

Diagnosis: (Fig. 6) The general coloring dark brown to blackish. Head with a deep transverse furrow behind the eyes, convex behind; a short, less deep median furrow between the eyes; anterior lobe (eyes included) triangular, posterior lobe short no higher than the anterior, ending in a collar ring posteriorly; eyes prominent, acute ventrally; strong eyespots. Head, pronotum and scutellum covered with short white hairs and much longer golden brown hairs. The first segment of the antenna dark brown, and the other segments lighter brown. Black pronotum with very deep transverse furrow; anterior lobe with a medial furrow in a medio-posterior depression; anterior margin markedly concave, anterior angles obtuse, lateral margins with long brown setae; posterior lobe 0.4-0.5 times as long as the anterior, decorated behind with 3 mouse nipples; posterior margin regularly convex. Scutellum black, posterior half of lateral edges with a soft keel; these lateral keels united medially; globose apex. Legs of the ground clue, of the same structure as the other species of the genus; black profemurs; fossula spongiosa occupying 54-60% of the length of the protibia and 34-44% of the mesotibia, the latter decorated with a range of golden setae densely implanted at the apex of their upper surface. Chocolate brown cories decorated with a yellowish-white spot against the clavus which is slightly darkened. Membrane of the same color as the coria (sometimes slightly lighter or darker); inner apical cell decorated with a yellowish-white spot extending beyond the vein Cu; outer apical cell decorated with a velvety black spot but sometimes (dark examples) the entire membrane black. Hemelytra reaching or very slightly exceeding the apex of the abdomen. Back of the abdomen and connexivum of the ground color.

Rostrum brown to blackish, articles I and II of diameter II much finer. Ventral side of the general color. Length: 17.5 mm (Putshkov & Moulet, 2009).

The characteristic that distinguishes *E. caucasicus* from other species is the membranal light spot surpassing the Cu vein (Indicated by arrow in Fig. 2A)

***Reduvius ciliatus* Jakovlev, 1879**

Distribution in Türkiye: Asian Türkiye: Hatay (Akbez) (Puton & Noualhier, 1895); Ağrı (Ağrı Mountain) (Kiritshenko, 1918); Gaziantep (central province) (Hoberlandt, 1956); Mardin (Ömerli) (Matocq & Özgen,

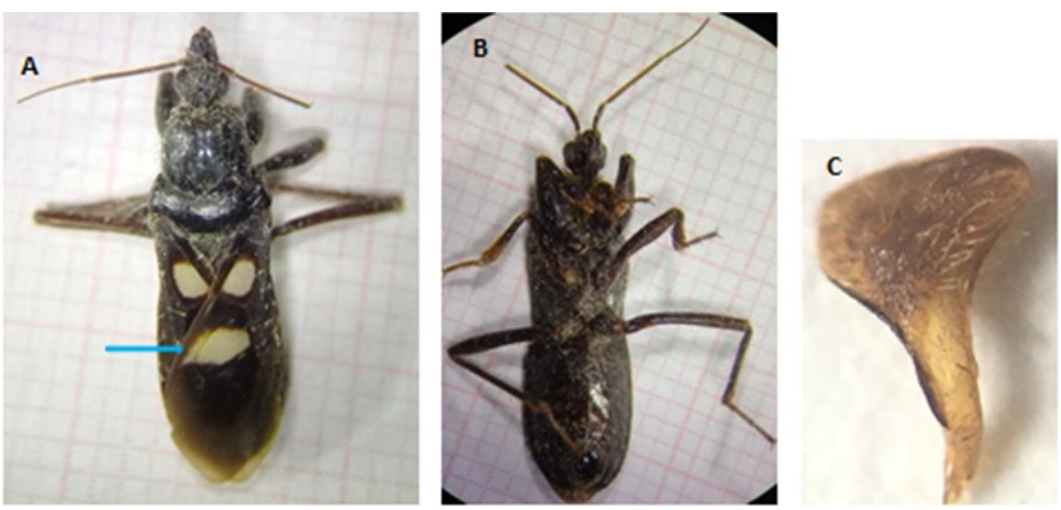

Figure 6. *Ectomocoris caucasicus* Linnavuori, 1972; **A.** Dorsal view, **B.** Ventral view, **C.** Paramere.

2010); Iğdır (Center-Suveren) (Çerçi et al., 2022); Diyarbakır (Fent et al., 2022); Karaman (Çerçi & Koçak, 2023).

Distribution in Palaearctic: Europe: Russia (South European Territory). **Asia:** Asian Türkiye, Armenia, Azerbaijan, Iran, Iraq, Israel, Syria (Aukema, 2020).

Diagnosis. (Fig. 7) The head, pronotum and scutellum blackish brown, with long brownish hairs. Antennae yellowish brown, with long golden hairs. Sometimes the first segment is light yellow, the other segments are darker. Pronotum broadly trapezoidal at base, blackish brown; the anterior lobe bilobed, separated in the middle by a deep line and decorated with a raised pattern on both sides (Fig. 7D), the posterior lobe decorated with two submedian keels strongly divergent behind and delimiting a hollow and striated mid-longitudinal dimple. Scutellum black-brown except for the apex which is tapered and often thinned (Fig. 7E); when viewed from the top, the carinated lateral edges meet at the apical end to form a long apical extension and appear as a "Y" shape. The part between the arms of the "Y" forms regular wrinkles. Clavus brown, proximal part brownish-yellow or pale yellow. Corium bicolor; corium pale yellow, postmedially with black-brown band, distal angle black-brown. Connexivum pale yellow, 6th paratergites black-brown. Legs pale yellow, apical of profemurs and mesofemurs dark brown, apical of metafemurs blackish brown. Sometimes the proximal part of the tibia is darkened and the tarsi are pale yellow. Fossula spongiosa on 1/7 of the length of the protibia (Fig. 7F). Venter dark brown or black brown. Process of the pygophorus cylindrical (Fig. 7G). Length: 10.2-11.5 mm.

Reduvius ciliatus distinguished from *Reduvius pallipes* and *Reduvius tabidus* with posterior tarsus segment I longer than segment II (segment I is shorter than segment II in *R. pallipes* and *R. tabidus).* Additionally, the body length of *R. ciliatus* is 10-11.5 mm, *R. pallipes* is 15 mm and *R. tabidus* is 18.5 mm.

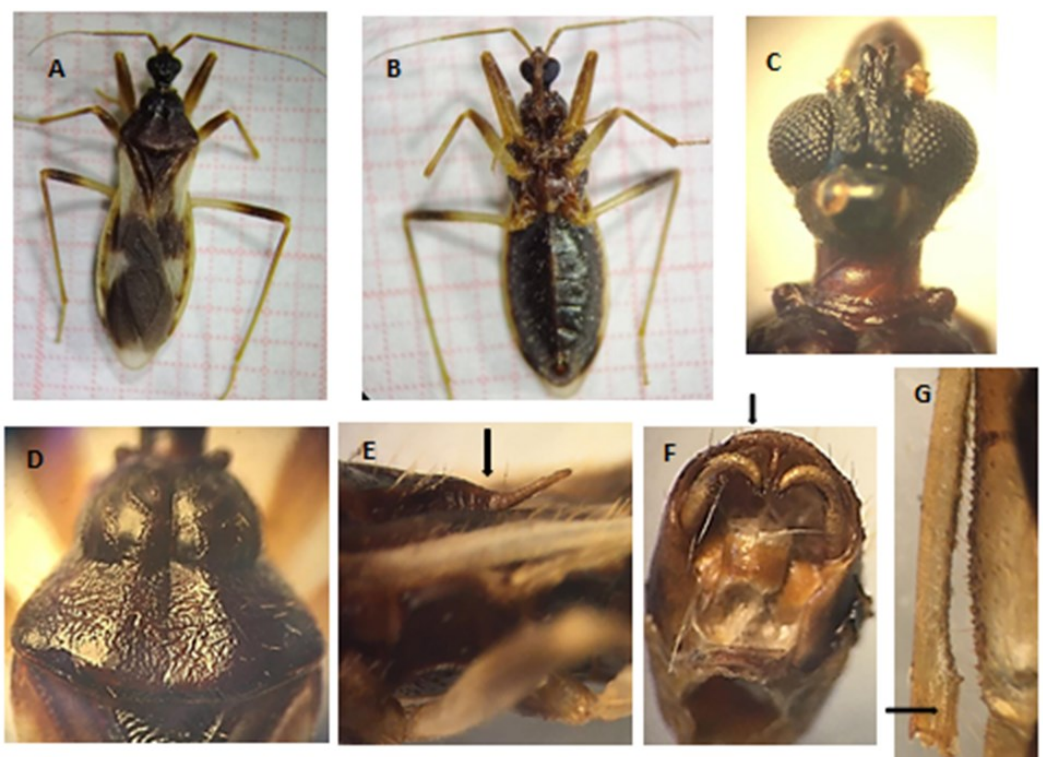

Figure 7. *Reduvius ciliatus* Jakovlev, 1879; **A.** Dorsal view, **B.** Ventral view, **C.** Head, **D.** Pronotum, **E.** Scutellum (lateral view), **F.** Pygophore, **G.** Protibia.

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Research Article

A study on the Lygaeidae Schilling, 1829 (Hemiptera: Heteroptera: Lygaeoidea) fauna of Amasya Province, Türkiye

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ABSTRACT: This study was carried out in 46 localities with different habitat characteristics in Amasya Province and its surroundings between 2020-2021. As a result of the diagnosis of the collected samples revealed 21 species and 11 genera belonging to 2 subfamilies from Lygaeidae. All species except *Lygaeus equestris* (Linnaeus, 1758) are new records for the Lygaeidae fauna from Amasya province. Of those, the species *Apterola lownii* (Saunders, 1876), *Lygaeosoma anatolicum* Seidenstücker, 1960, *Lygaeosoma angulare* Reuter, 1885 and *Nysius thymi* (Wolff, 1804) are new records for the fauna of Black Sea Region and also *Horvathiolus superbus* (Pollich, 1781), *Lygaeus simulans* Decker, 1985, *Spilostethus pandurus* Scopoli, 1763, *Nysius ericae* (Schilling, 1829), *Nysius helveticus* (Herrich-Schaeffer, 1850), *Orsillus maculatus* Fieber, 1861 and *Ortholomus punctipennis* (Herrich-Schäffer, 1839) are new records for Central Black Sea Region. In this study according to the chorotype analysis, the species of Lygaeidae have been categorized into 9 categories, and West Palaearctic species (47,62 %) is a major group in Amasya province.

KEY WORDS: Heteroptera, Lygaeidae, Lygaeinae, Orsillinae, new records, Amasya, Türkiye.

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INTRODUCTION

The superfamily Lygaeoidea Schilling, 1829 is currently known to be represented with more than 1000 species belonging to 242 genera of 14 families from the Palaearctic region and distributed in almost all habitable lands (Péricart, 2001; Önder et al., 2006). In Türkiye, 305 Lygaeoidea species has been reported according to the available records so far (Çerçi & Tezcan, 2021).

The Lygaeidae Schilling, 1829 was known very rich family in the Lygaeoidea superfamily. However, Henry (1997) reported that the family Lygaeidae is polyphyletic and 10 subfamilies should be elevated to family status. Therefore, today the Lygaeidae family is represented by Lygaeinae Schilling, 1829, Ischnorhynchinae Stål, 1872 and Orsillinae Stål, 1872 subfamilies. Currently, there are 21 genera and 108 species in Lygaeinae, 6 genera and 34 species in Orsillinae, and 3 genera and 18 species in Ischnorhynchinae from the family Lygaeidae in the Palaearctic Region (Péricart, 2001). In the studies conducted so far, 24 species and 10 genera belonging to Lygaeinae, 13 species and 4 genera belonging to Orsillinae, and 2 species and 1 genera belonging to Ischnorhynchinae from Lygaeidae in Türkiye were recorded (Péricart, 2001; Önder et al., 2006; Çerçi & Tezcan, 2021). There are approximately 160 species belonging to 30 genera in the Palaearctic region; Of these, 45 species belonging to 15 genera are distributed in the European-Mediterranean region (Péricart, 2001).

The family Lygaeidae is known to contain some species bearing an aposematic coloration (red-black-white, red-black- yellow red-black) frequently associated with an attraction towards sucking toxic plants, or toxic seeds. The adult and nymph specimens of Lygaeidae are distributed generally on the soil, under stones, on low plants, in forests and swamps, on plants on the shores of salt lakes and salt pans, and in calcareous soils of different biotopes. The species especially feed on seeds, but it is also known that they feed on plant parts such as leaves, stems, and trunks (Péricart, 2001).

Amasya is an important province in Black Sea Region, between the hight peaks of the Akdağ and Tavşan Mountains and Gümüş, Geldingen, Suluova, Merzifon and Taşova plains coexist. Therefore, Amasya has very rich biotopes in terms of conditions of microclimate, diverse vegetation and specific habitat. Amasya also shows a unique feature of flora and faunal elements.

No detailed study has been done so far on the Lygaeidae family in Amasya province, and the only known species belonging to this family is Lygaeus equestris (Önder et al., 2006). In this study was aimed to reveal the species diversity of the Lygaeidae fauna of Amasya province.

MATERIAL AND METHODS

The study materials (166 ♂♂, 195♀♀ adults specimens) were collected from 46 localities with different vegetation and habitats above ground with a sweep net in Amasya province in the years 2020 to 2021 (Figure 1). All specimens were put in tubes in 70% ethanol and brought to the Entomology laboratory. In the laboratory, the samples were softened in boiling water (90°C-100°C) for preparation of the male genitalia which was used for further identification. The specimens were prepared and identified using the relevant diagnostic was investigated under a stereomicroscope (Leica EZ4) and keys of Stichel (1960) and Péricart, 1999). Chorotype analysis of the species are determined based on the distributional data using Aukema (2020), Vigna Taglianti et al., 1999, and Çerçi & Koçak, 2023.The material is deposited in the collection of Amasya University, Faculty of Science and Arts, Department of Biology (Amasya, Turkiye).

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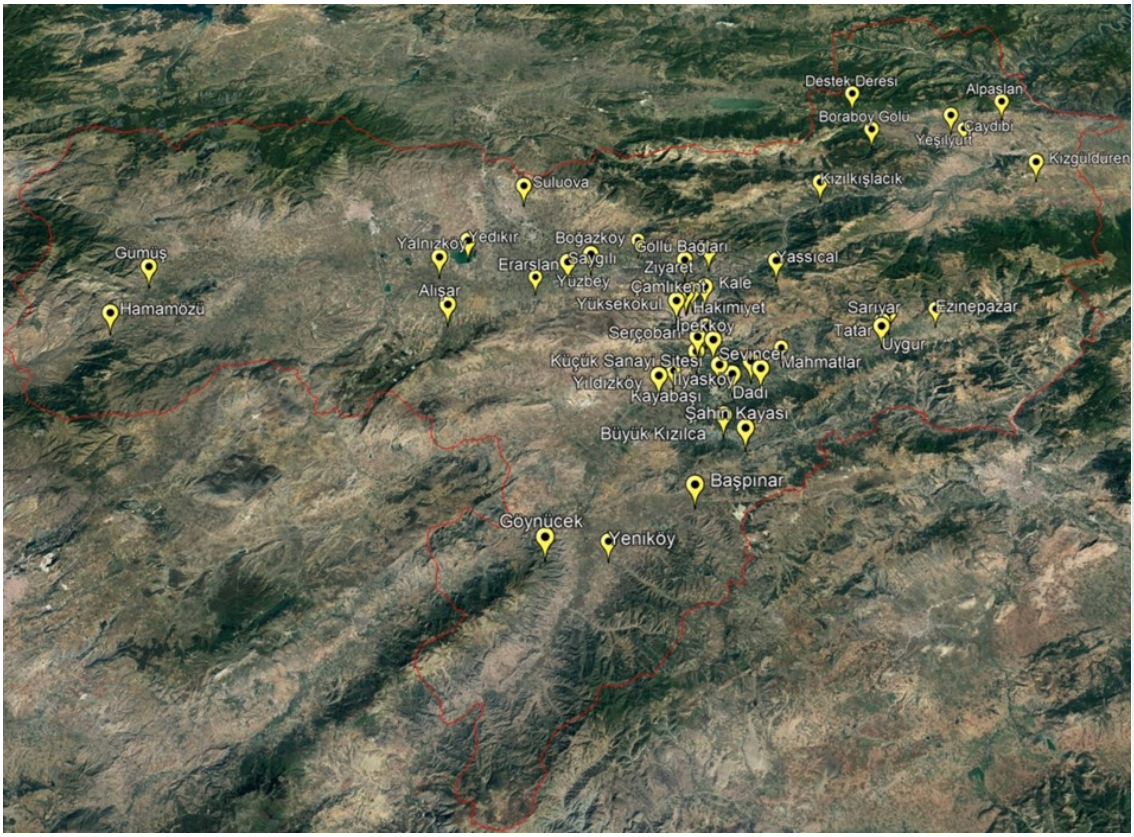

Figure 1. The area of Lygaeidae study in Amasya (from google earth).

RESULTS

Hemiptera Linnaeus, 1758

Heteroptera Latreille, 1810

Lygaeidae Schilling, 1829

Lygaeinae Schilling, 1829

Genus: *Apterola* Mulsant & Rey 1866

***Apterola lownii* (Saunders, 1876)**

Material examined: Amasya: Ziyaret, 14.04.2020, 1♂.

Distribution in Türkiye: Adana, Ankara, Edirne, Kahramanmaraş, Karaman, Kayseri, Konya, Malatya, Mardin, Mersin (Horváth, 1898, 1905; Hoberlandt, 1956; Péricart, 1999; Önder et al., 2006; Kıyak & Özdamar, 2017; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Bulgaria, Greece, Macedonia, Türkiye. **Asia:** Armenia, Azerbaijan, Cyprus, Georgia, Iraq, Iran, Israel, Kazakhstan, Kyrgyzstan, Syria, Tajikistan, Turkmenistan, Türkiye, Uzbekistan (Aukema, 2020).

Note: This species is new record for Black Sea Region. Chorotype: Turano-East Mediterranean.

Genus: *Arocatus* Spinola, 1837

***Arocatus longiceps* Stål, 1872**

Material examined: Amasya: Taşova: Destek stream, 28.06.2020, 2♂♂.

Distribution in Türkiye: Adana, Ankara, Antalya, Aydın, Bartın, Burdur, Bursa, Çanakkale, Denizli, Edirne, Hatay, Isparta, İstanbul, İzmir, Kahramanmaraş, Karabük, Karaman, Mersin, Muğla, Samsun, Tekirdağ, Uşak, Zonguldak (Linnavuori, 1965; Lodos et al. 1978, 1999; Çağatay, 1995; Péricart, 1999; Önder et al, 2006; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Belgium,

Bulgaria, Croatia!, Czech Republic, Germany, Great Britain, Channel Islands (Guernsey), Greece, Hungary, Italy, Macedonia, Netherlands, Portugal, Russia (ST), Serbia, Slovakia, Slovenia, Spain, Switzerland, Türkiye (European part), Ukraine. **Asia:** Armenia, Azerbaijan, Madeira, Cyprus, Georgia, Iran, Israel, Türkiye (Asian part) (Aukema, 2020).

Note: This species is new record for Amasya province. Chorotype: Europeo-Mediterranean.

Genus: *Horvathiolus* Josifov, 1965

***Horvathiolus superbus* (Pollich, 1781)**

Material examined: Amasya: Merkez: Ziyaret, 19.04.2021, 1♀; Sarıyar, 19.05.2021, 1♂; Ezinepazar, 19.05.2021, 1♀; **Suluova:** Yedikuğular, 04.03.2020, 12♂♂, 2♀♀; Yüzbeyi, 28.06.2021, 1♂; Taşova: 27.05.2021, Çaydibi, 1♀.

Distribution in Türkiye: Adana, Afyonkarahisar, Ağrı, Ankara, Antalya, Aydın, Balıkesir, Bolu, Diyarbakır, Edirne, Gaziantep, Hatay, Isparta, İzmir, Karaman, Kayseri, Kilis, Konya, Kırıkkale, Mersin, Niğde, Uşak, Van (Puton & Noualhier 1895; Horváth, 1905; Kiritshenko, 1918; Gadeau de Kerville, 1939; Hoberlandt, 1956; Lodos et al., 1978, 1999; Önder & Adıgüzel, 1979; Çağatay, 1995; Péricart, 1999; Abacıgil et al., 2010; Fent & Japoshvili, 2012; Özgen & Dioli, 2019; Yence, 2019; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Andorra, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Great Britain (Jersey), Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Luxembourg, Macedonia, Malta, Montenegro, Netherlands, Poland?, Portugal, Romania, Russia (Central European part), Serbia, Slovakia, Spain, Switzerland, Ukraine. **North Africa:** Canary Islands, Madiera. **Asia:** Afghanistan, Armenia, Azerbaijan, China (Northwest part), Cyprus, Georgia, Iran, Israel, Kazakhstan (Asian part), Kyrgyzstan, Mongolia, Tajikistan, Türkiye (Asian part), Turkmenistan, Uzbekistan, (Aukema, 2020).

Note: This species is new record for Central Black Sea Region. Chorotype: West Palaearctic.

Genus: *Lygaeosoma* Spinola, 1837

***Lygaeosoma anatolicum* Seidenstücker, 1960**

Material examined: Amasya: Merkez: Ziyaret, 19.04.2021, 3♂♂, 1♀; İlyasköy, 05.07.2021, 1♂; Yıldızköy, 25.08.2021, 3♂♂; Tatar, 19.05.2021, 2♀♀, Kayabaşı, 25.08.2021, 1♀; Kızılkışlacık, 10.09.2021, 1♀; İlyasköy, 24.08.2021, 1♂; Gümüşhacıköy: Gümüş, 07.09.2021, 1♂.

Distribution in Türkiye: Kırıkkale, Konya (Önder et al, 2006).

Distribution in Palaearctic Region: **Europe:** Bulgaria, France, Greece. Hungary, Italy?, Romania, Russia, Spain, Ukraine. **Asia:** Armenia, Azerbaijan, Georgia, Iran, Iraq, Israel, Kazakhstan (Asian part), Syria, Türkiye (Asian part) (Aukema, 2020).

Note: This species is new record for Black Sea Region. Chorotype: Turano-Mediterranean.

***Lygaeosoma angulare* Reuter, 1885**

Material examined: Amasya: Yıldızköy, 25.08.2021, 1♀.

Distribution in Türkiye: Bingöl, Hatay, Konya, Manisa (Péricart, 1999).

Distribution in Palaearctic Region: **Europe:** Bulgaria, Greece, Macedonia. **Asia:** Cyprus, Lebanon, Türkiye (Asian part) (Aukema, 2020).

Note: This species is new record for Black Sea Region. Chorotype: East Mediterranean.

***Lygaeosoma sardeum* Spinola, 1837**

Material examined: Amasya: Boğazköy, 18.05.2020, 1♀; Tatar, 19.05.2021, 2♂♂; Hakimiyet, 12.09.2021, 1♂; Gümüşhacıköy: Gümüş, 29.08.2020, 2♀♀.

Distribution in Türkiye: Adana, Aksaray, Ankara, Antalya, Bursa, Çanakkale, Çankırı, Çorum, Diyarbakır, Düzce, Gaziantep, Hatay, İzmir, Karaman,

Kahramanmaraş, Kastamonu, Kayseri, Kilis, Kocaeli, Konya, Kırıkkale, Kırşehir, Mersin, Nevşehir, Osmaniye, Sakarya, Tokat, Yozgat (Horváth, 1883; Reuter, 1890; Puton & Noualhier, 1895; Hoberlandt, 1956; Lodos et al., 1978; Kıyak et al., 2004; Önder et al, 2006; Şerban, 2010; Fent & Dursun, 2016; Çerçi et al, 2018; Yence, 2019; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, France, Germany, Great Britain (Jersey), Greece, Hungary, Italy, Macedonia, Malta, Moldova, Montenegro, Portugal, Romania, Russia (Southern European region), Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine. **North Africa:** Algeria, Canary Islands, Egypt, Morocco, Tunisia. **Asia:** Afghanistan, Armenia, Azerbaijan, Cyprus, Georgia, Iran, Iraq, Israel, Jordan, Kazakhstan (Asian part), Kyrgyzstan, Mongolia, Syria, Tajikistan, Türkiye (Asian part), Turkmen -istan, Uzbekistan (Aukema, 2020).

Note: This species is new record for Amasya province. Chorotype: West Palaearctic.

Genus: *Lygaeus* Fabricius, 1794

***Lygaeus simulans* Decker, 1985**

Material examined: Amasya: Tatar, 19.05.2021, 1♂; Taşova: Alpaslan, 27.05.2021, 1♀.

Distribution in Türkiye: Ankara, Bolu, Diyarbakır, Elazığ, Erzincan, Gümüşhane, İzmir, Kastamonu, Kayseri, Malatya, Maraş, Niğde (Péricart, 1999; Fent & Dursun, 2016; Özgen & Dioli, 2019; Özgen et al, 2021).

Distribution in Palaearctic Region: **Europe** Austria, Bulgaria, Cyprus, Czech Republic, France, Germany, Great Britain, Greece, Hungary, Italy, Kazakhstan (European part), Macedonia, Moldova, Poland, Romania, Russia (European part), Serbia, Slovakia, Spain, Switzerland, Ukraine. **Asia:** Afghanistan, Armenia, Azerbaijan, Cyprus, Georgia, Iran, Kazakhstan (Asian part), Kyrgyzstan, Mongolia, Russia, Taiwan, Tajikistan, Türkiye (Asia part), Turkmenistan, Uzbekistan (Aukema, 2020).

Note: This species is new record for Central Black Sea Region. Chorotype: Turano-European.

***Lygaeus equestris* (Linnaeus, 1758)**

Material examined: Amasya: Merkez: 13.11.2020, 2♂♂; 18.11.2020, 2♂♂; 20.11.2020, 2♀♀; 25.02.2020, 1♀; Kale, 28.04.2020, 1♀; Sarıyar, 19.05.2021, 1♀; Büyük Kızılca, 12.05.2020, 1♂; 40 Uygur, 27.07.2020, 1♀; Göllü Bağları, 01.07.2021, 1♀; Orman Bağları, 29.07.2021, 1♂; **Göynücek:** Başpınar, 29.07.2020, 2♂♂, 1♀; 30.08.2020, 1♂; **Hamamözü:** 07.09.2021, 1♂; Suluova: 16.05.2020, 2♀♀; Yüzbeyi, 18.08.2020, 1♀; Gümüşhacıköy: Gümüş, 29.08.2020, 2♂♂.

Distribution in Türkiye: Adana, Afyonkarahisar, Ağrı, Aksaray, Amasya, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bartın, Bayburt, Bilecik, Bingöl, Bolu, Burdur, Bursa, Çanakkale, Çankırı, Çorum, Denizli, Diyarbakır, Edirne, Elazığ, Erzincan, Erzurum, Eskişehir, Gaziantep, Giresun, Hakkâri, Hatay, Iğdır, Isparta, İstanbul, İzmir, Kahramanmaraş, Karabük, Karaman, Kars, Kastamonu, Kayseri, Kırklareli, Kilis, Konya, Kütahya, Malatya, Manisa, Mersin, Muğla, Muş, Nevşehir, Niğde, Osmaniye, Rize, Sinop, Sivas, Tekirdağ, Trabzon, Tunceli, Uşak, Van, Yozgat (Horváth, 1883, 1901, 1905; Puton, 1892; Escherich, 1897; Kiritshenko, 1918, 1924; Fahringer, 1922; Gadeau de Kerville, 1939; Hoberlandt, 1956; Linnavuori, 1965; Lodos et al., 1978, 1999; Kıyak, 1990; Çağatay, 1995; Önder et al, 2006; Fent & Japoshvili, 2012; Matocq et al., 2014; Yazıcı et al., 2015; Fent & Dursun, 2016; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Andorra, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Greece. Hungary, Italy, Kazakhstan (European part), Latvia, Liechtenstein, Luxembourg, Macedonia, Moldova, Montenegro, Netherlands?, Norway, Poland, Portugal,

Romania, Russia (Central and Southern Europe region), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye (European part), Ukraine. **North Africa:** Algeria, Egypt, Libya, Morocco, Tunisia.

Asia: Afghanistan, Armenia, Azerbaijan, China (all except the Southeast region regions), Cyprus, Georgia, Iran, Iraq, Israel, Japan, Jordan. Kazakhstan (Asian part), Korea (North and South), Kyrgyzstan, Lebanon, Mongolia, Russia (East and West Siberia, Far eastern region), Syria, Tajikistan, Türkiye (Asian part), Turkmenistan, Uzbekistan. **Outside the Palaearctic:** India (Northwest), Pakistan (Aukema, 2020).

Chorotype: Palaearctic.

Genus: *Melanocoryphus* Stål, 1872

***Melanocoryphus tristrami* (Douglas & Scott, 1868)**

Material examined: Amasya: Yassıçal, 28.04.2021, 1♂; Tatar, 19.05.2021, 1♂. **Suluova:** Yedikır Barajı, 1♂. **Merzifon:** Alişar, 20.08.2021, 1♀; Taşova: Boraboy, 29.08.2021, 2♀♀.

Distribution in Türkiye: Adana, Afyonkarahisar, Ankara, Antalya, Aydın, Bilecik, Bitlis, Burdur, Bursa, Çanakkale, Denizli, Diyarbakır, Hatay, Isparta, İstanbul, İzmir, Karabük, Karaman, Kastamonu, Kayseri, Kırıkkale, Kırklareli, Konya, Kütahya, Manisa, Mersin, Muğla, Niğde, Sakarya, Samsun, Uşak, Zonguldak (Horváth, 1883; Puton & Noualhier, 1895; Hoberlandt, 1956; Lodos et al., 1978, 1999; Péricart, 1999; Önder et al., 2006; Fent & Japoshvili 2012; Fent & Dursun, 2016; Yence, 2019; Bolu, 2020; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Bosnia-Herzegovina, Bulgaria, Croatia, Greece, Hungary, Macedonia, Moldova, Montenegro, Romania, Russia (Southwest Region), Serbia, Türkiye (European part), Ukraine. **North Africa:** Egypt. **Asia:** Armenia, Azerbaijan, Cyprus, Georgia, Iran, Iraq, Israel, Jordan, Kyrgyzstan, Tajikistan, Türkiye (Asian part), Uzbekistan (Aukema, 2020).

Note: This species is new record for Amasya province. Chorotype: Turano-East Mediterranean.

Genus: *Spilostethus* Stål, 1868

***Spilostethus pandurus* Scopoli, 1763**

Material examined: Amasya: Merkez: 31.08.2021, 1♂; Şeyhcui, 01.07.2021, 1♂; Suluova: 16.05.2020, 1♂.

Distribution in Türkiye: Adana, Afyonkarahisar, Ankara, Antalya, Aydın, Balıkesir, Bartın, Bilecik, Burdur, Bursa, Çanakkale, Çankırı, Denizli, Diyarbakır, Edirne, Elazığ, Erzincan, Erzurum, Eskişehir, Gaziantep, Giresun, Hakkâri, Hatay, Iğdır, Isparta, İzmir, Kahramanmaraş, Karaman, Kars, Kayseri, Kilis, Konya, Kütahya, Kırklareli, Manisa, Mardin, Mersin, Muğla, Niğde, Osmaniye, Rize, Şanlıurfa, Uşak, Van (Horváth, 1883, 1905; Escherich, 1897; Fahringer, 1922; Gadeau de Kerville, 1939; Hoberlandt, 1956; Wagner, 1959; Kıyak, 1990; Çağatay, 1995; Lodos et al., 1999; Önder et al., 2006; Abacıgil et al., 2010; Matocq et al., 2014; Yazıcı et al., 2015; Fent & Dursun, 2016; Çerçi et al., 2018; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Andorra, Austria, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, France, Great Britain, Greece**,** Hungary, Italy, Macedonia, Malta, Moldova, Montenegro, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Switzerland, Türkiye (European part). **North Africa:** Algeria, Canary Islands, Egypt, Libya, Madeira Island, Morocco, Tunisia. **Asia:** Afghanistan, Armenia, Azerbaijan, China, Cyprus, Egypt (Sinai Peninsula part), Georgia, Iran, Iraq, Israel, Jordan, Kuwait, Saudi Arabia, Syria, Türkiye (Asian part), Turkmenistan, Uzbekistan, Yemen. **Outside the Palaearctic:** Australia, India, Philippines, Tropical Africa (Aukema, 2020).

Note: This species is new record for Central Black Sea Region. Chorotype: Subcosmopolitan.

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***Spilostethus saxatilis* (Scopoli, 1763)**

Material examined: Amasya: Boğazköy, 18.05.2020, 1♀.

Distribution in Türkiye: Adana, Afyonkarahisar, Ağrı, Aksaray, Ankara, Antalya, Ardahan, Burdur, Çankırı, Çorum, Diyarbakır, Elazığ, Erzincan, Erzurum, Eskişehir, Gaziantep, Hatay, Isparta, İstanbul, Kahramanmaraş, Karaman, Kars, Kastamonu, Kayseri, Kırıkkale, Kırşehir, Konya, Malatya, Mersin, Muğla, Nevşehir, Niğde, Osmaniye, Sivas, Tunceli, Van, Yalova, Yozgat (Puton, 1892; Escherich, 1897; Horváth, 1901; Kiritshenko, 1918, 1924; Fahringer, 1922; Hoberlandt, 1956; Linnavuori, 1965; Kıyak, 1990; Lodos et al., 1999; Önder et al., 2006; Fent & Japoshvili, 2012; Matocq et al., 2014; Yazıcı et al., 2015; Küçükbasmacı & Kıyak, 2015; Çerçi et al., 2018; Yence, 2019; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Andorra, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Great Britain, Greece, Hungary, Italy, Liechtenstein, Luxembourg, Macedonia, Montenegro, Netherlands, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Switzerland. **North Africa:** Algeria, Canary Islands, Egypt, Libya, Morocco, Tunisia. **Asia:** Afghanistan, Armenia, Azerbaijan, Cyprus, Georgia, Iran, Iraq, Israel, Jordan. Syria, Türkiye (Asian part), Turkmenistan, Uzbekistan. **Outside the Palaearctic:** India?, Kashmir (Aukema, 2020).

Note: This species is new record for Amasya province. Chorotype: West Palaearctic.

Genus: *Tropidothorax* Bergroth 1894

***Tropidothorax leucopterus* (Goeze, 1778)**

Material examined: Amasya: Merkez, 03.07.2021, 1♀; 18.08.2021, 1♂.

Distribution in Türkiye: Ankara, Antalya, Artvin, Bartın, Bursa, Çanakkale, Çorum, Denizli, Erzincan, Erzurum, Iğdır, Karaman, Kars, Kastamonu, Konya, Manisa, Niğde, Zonguldak (Horváth, 1883; Kiritshenko, 1918; Hoberlandt, 1956; Çağatay, 1995; Lodos et al., 1999; Önder et al., 2006; Şerban, 2010; Yazıcı et al., 2015; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Kazakhstan (European part), Liechtenstein, Macedonia, Moldavia, Poland, Portugal, Romania, Russia (Southwest and Central Region), Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine. **North Africa:** Algeria, Egypt. **Asia:** Afghanistan, Armenia, Azerbaijan, Georgia, Iran, Iraq, Kazakhstan (Asian part), Kyrgyzstan, Tajikistan, Türkiye (Asian part), Turkmenistan, Uzbekistan (Aukema, 2020).

Note: This species is new record for Amasya province. Chorotype: West Palaearctic.

Orsillinae Stål, 1872

Tribus: Nysiini Uhler, 1876

Genus: Nysius Dallas, 1852

***Nysius cymoides* (Spinola, 1837)**

Material examined: Amasya: Center: 25.02.2020, 1♀; İpekköy, 16.05.2021, 3♂♂; Sarıyar, 19.05.2021, 1♀; Uygur, 19.05.2021, 1♂, 2♀♀; Dadıköy, 21.04.2021, 1♀; Yağmur, 02.09.2021, 3♂♂, 4♀♀; Karasenir, 09.09.2021, 1♀; İlyasköy, 24.08.2021, 1♀; İpekköy, 24.08.2021, 1♂; Suluova: Saygılı, 28.06.2021, 21♂♂, 28♀♀; Yüzbeyi, 28.06.2021, 6♂♂, 17♀♀; Taşova: Kızgüldüren, 10.07.2020, 1♂; Hamamözü: 07.09.2021, 1♂, 1♀.

Distribution in Türkiye: Adana, Adıyaman, Aksaray, Ankara, Antalya, Aydın, Artvin, Balıkesir, Batman, Bayburt, Burdur, Bursa, Çanakkale, Çorum, Denizli, Diyarbakır, Edirne, Elazığ, Erzincan, Erzurum, Eskişehir, Hatay, Iğdır, Isparta, İstanbul, İzmir, Kahramanmaraş, Karaman, Kars, Kastamonu, Kayseri, Kırklareli, Kilis, Kocaeli, Konya, Manisa, Mardin, Mersin, Muğla, Muş, Niğde, Osmaniye, Siirt, Şanlıurfa, Şırnak, Tekirdağ, Tokat, Yalova, Yozgat, Van

(Puton, 1892; Hoberlandt, 1956; Linnavuori, 1965; Lodos et al., 1978, 1999; Önder & Adıgüzel, 1979; Önder et al., 1984, 2006; Péricart, 1999; Matocq & Özgen, 2010; Yazıcı et al., 2015; Çerçi et al., 2018; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Andorra, Austria, Belgium, Bulgaria, Corsica, Croatia, Czech Republic?, France, Great Britain, Germany, Greece, Hungary, Italy, Liechtenstein, Luxembourg, Malta, Macedonia, Moldavia, Montenegro, Netherlands, Poland, Portugal, Romania, Russia (ST), Serbia, Slovakia?, Slovenia, Spain, Switzerland, Türkiye (European part), Ukraine. **North Africa:** Algeria, Canary Islands, Egypt, Libya, Morocco, Madeira, Tunisia. **Asia:** Arab Emirates, Armenia, Azerbaijan, China?, Cyprus, Georgia, Iran, Iraq, Israel, Jordan, Kazakhstan, Kirgizia, Saudi Arabia, Sinai, Tadzhikistan, Turkmenistan, Türkiye (Asian part), Uzbekistan, Yemen. **Extralimital:** Cabo Verde Is., Mauritania, Sierra Leone, Sudan. (Aukema, 2020).

Note: This species is new record for Amasya province. Chorotype: West Palaearctic.

***Nysius ericae* (Schilling, 1829)**

Material examined: Amasya: Sarıyar, 19.05.2021, 3♀♀; Ezinepazar, 19.05.2021, 3♂♂, 9♀♀; İpekköy, 16.05.2021, 3♂♂, 16♀♀; 24.08.2021, 2♂♂, 3♀♀; Sevincer, 05.07.2021, 1♂; Ziyaret, 19.04.2021, 1♂; Dadıköy, 21.04.2021, 1♂, 1♀; Yağmur, 02.09.2021, 8♂♂, 3♀♀; Suluova: Saygılı, 28.06.2021, 7♂♂, 6♀♀; Eraslan, 28.06.2021, 1♂, 1♀; Taşova: Kızgüldüren, 10.07.2020, 1♀; Göynücek: 03.09.2021, 1♀; Hamamözü: 07.09.2021, 1♀.

Distribution in Türkiye: Adana, Ankara, Antalya, Bolu, Gaziantep, Hatay, Kahramanmaraş, Kayseri, Kilis, Manisa, Mersin, Nevşehir, Osmaniye, Yozgat, Zonguldak (Önder et al., 2006).

Distribution in Palaearctic Region: **Europe:** Austria, Belgium, Bosnia Hercegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Italy, Kazakhstan, Latvia, Luxembourg, Malta, Macedonia, Moldavia, Netherlands, Poland, Portugal, Romania, Russia (Central, Northern and Southern European Region), Serbia, Slovakia, Spain, Sweden, Switzerland, Ukraine. **North Africa:** Algeria, Azores, Canary Islands, Egypt?, Libya, Madeira, Morocco, Tunisia. **Asia:** Armenia, China (Northern, Southwest and Western Plateau), Cyprus, Georgia, Iran, Iraq, Kazakhstan (Asian part), Kyrgyzstan, Mongolia, Russia (Western Siberia, Eastern Siberia and the Far East regions), Saudi Arabia, Saudi Arabia, Taiwan, Tajikistan, Türkiye (Asian part), Turkmenistan, Uzbekistan, Yemen. **Outside the Palaearctic:** Tropical Africa. (Aukema, 2020).

Note: This species is new record for Central Black Sea Region. Chorotype: West Palaearctic.

***Nysius graminicola* (Kolenati, 1846)**

Material examined: Amasya: Merkez: 21.06.2020, 1♀; 19.04.2021, Ziyaret, 1♂; Yağmur, 02.09.2021, 5♂♂, 7♀♀; İpekköy, 16.05.2021, 3♂♂; Uygur, 19.05.2021, 1♀; Mahmatlar, 05.07.2021, 1♂; Suluova: Saygılı, 28.06.2021, 2♀♀; Eraslan, 28.06.2021, 2♂♂, 3♀♀; Merzifon: Yalnız, 20.08.2021, 1♀; Taşova: Kızgüldüren, 10.07.2020, 1♂.

Distribution in Türkiye: Adana, Afyonkarahisar, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bartın, Bayburt, Bilecik, Burdur, Bursa, Çanakkale, Çorum, Denizli, Diyarbakır, Düzce, Edirne, Erzincan, Erzurum, Eskişehir, Gaziantep, Hatay, Isparta, İstanbul, İzmir, Kahramanmaraş, Karaman, Kars, Kastamonu, Kayseri, Kilis, Kocaeli, Konya, Manisa, Mardin, Mersin, Muğla, Nevşehir, Sakarya, Sinop, Osmaniye, Tekirdağ, Uşak, Zonguldak (Puton & Noualhier 1895; Horváth 1901, 1905; Hoberlandt 1956; Lodos et al. 1978, 1999; Önder & Adıgüzel 1979; Önder et al. 1981, 1984, 2006; Yazıcı al., 2015; Fent & Dursun, 2016; Yence, 2019; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia,

France, Germany, Great Britain, Greece. Hungary, Italy, Latvia, Liechtenstein, Luxembourg, Macedonia, Malta, Moldova, Montenegro, Netherlands, Norway, Poland?, Portugal, Romania, Russia (South region), Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine. **North Africa:** Algeria, Canary Islands, Egypt, Morocco, Tunisia. **Asia:** Armenia, Azerbaijan, China (Southeast and southwest regions, Western plateaus), Cyprus, Georgia, Iran, Iraq, Israel, Kazakhstan (Asian part), Korea (North and South), Kyrgyzstan, Lebanon, Mongolia, Russia (East and Western Siberia, Far Eastern regions), Saudi Arabia, Syria, Tajikistan, Türkiye (Asian part), Turkmenistan, Uzbekistan, Yemen (Aukema, 2020).

Note: This species is new record for Amasya province. Chorotype: West Palaearctic.

***Nysius helveticus* (Herrich-Schaeffer, 1850)**

Material examined: Amasya: Merkez: İpekköy, 24.08.2021, 1♂; Uygur, 19.05.2021, 2♀♀; Yağmur, 02.09.2021, 2♀♀; Serçoban, 25.08.2021, 1♂; Taşova: Yeşilyurt, 27.05.2021, 1♀.

Distribution in Türkiye: Adana, Ankara, Antalya, Artvin, Balıkesir, Elazığ, Erzurum, İzmir, Kars, Kastamonu, Muğla, Niğde (Péricart, 1999; Önder et al., 2006; Kıyak & Akar, 2010; Yazıcı et al., 2015; Fent & Dursun, 2016; Yence, 2019; Özgen et al., 2021).

Distribution in Palaearctic Region: **Europe:** Austria, Belgium, Bosnia Hercegovina, Bulgaria, Byelorussia, Croatia, Czech Republic Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Italy, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldavia, Netherlands, Norway, Poland, Portugal Romania, Russia (Northern, Southern and Central European Region), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine**. Asia:** Azerbaijan, China (North European Region), Georgia, Iran, Iraq, Kazakhstan (Asian part), Kyrgyzstan, Mongolia, Russia (East Siberia, Far East and West Siberia Region), Tajikistan, Türkiye (Asian part), Uzbekistan (Aukema, 2020).

Note: This species is new record for Central Black Sea Region. Chorotype: Turano-European.

***Nysius senecionis* (Schilling, 1829)**

Material examined: Amasya: Merkez: Uygur, 27.07.2020, 1♀; Sarıyar, 19.05.2021, 1♂; İpekköy, 16.05.2021, 2♀♀; Mahmatlar, 05.07.2021, 15♂♂, 14♀♀; Yağmur, 02.09.2021, 2♂♂, 3♀♀; Şeyhcui Mahallesi, 22.08.2021, 1♀; İpekköy, 24.08.2021, 1♂; Çamlıkent, 31.08.2021, 1♀; **Suluova:** Saygılı, 14.07.2020, 1♀; 28.06.2021, 1♂, 3♀♀; Eraslan, 28.06.2021, 1♀; **Taşova:** Alpaslan, 27.05.2021, 2♀♀; **Hamamözü:** 07.09.2021, 3♂♂; **Göynücek:** 03.09.2021, 1♀.

Distribution in Türkiye: Ankara, Antalya, Çorum, Eskişehir, Hatay, İzmir, Kahramanmaraş,

Karabük, Kayseri, Kilis, Konya, Mersin, Nevşehir, Zonguldak (Lodos et al., 1999).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Croatia, Czech Republic, Denmark, France, Great Britain, Germany, Greece, Hungary, Italy, Kosovo, Luxembourg, Malta, Macedonia, Moldavia, Montenegro, Netherlands, Poland, Portugal, Romania, Russia (Central and Southern European Region), Serbia, Slovakia, Slovenia, Spain, Switzerland, Türkiye (European part), Ukraine. **North Africa:** Algeria, Egypt, Libya, Morocco, Tunisia. **Asia:** Armenia, Azerbaijan, China (Northern Region: Mongolia), Cyprus, Georgia, Israel, Kazakhstan (Asian part), Kuwait, Kyrgyzstan, Mongolia, Saudi Arabia, Türkiye (Asian part), Turkmenistan, Uzbekistan, Yemen. **Outside the Palaearctic:** Tropical Africa (Aukema, 2020).

Note: This species is new record for Amasya province. Chorotype: West Palaearctic.

***Nysius thymi* (Wolff, 1804)**

Material examined: Amasya: Suluova:

Saygılı, 28.06.2021, 1♂.

Distribution in Türkiye: Adana, Antalya, Aydın, Çanakkale, Denizli, Diyarbakır, Elazığ,

Gaziantep, Hatay, Izmir, Kahramanmaraş, Kayseri, Kilis, Manisa, Mersin, Muğla, Osmaniye

(Lodos et al., 1999; Önder et al., 2006; Matocq et al., 2014).

Distribution in Palaearctic Region: **Europe:** Albania, Andorra!, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece?, Hungary, Ireland, Italy, Kazakhstan (European part), Kosovo, Latvia, Lithuania, Luxembourg, Malta, Macedonia, Moldavia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia (North, South and Central European Part), Serbia, Slovakia, Spain, Sweden, Switzerland, Türkiye (European part), Ukraine **North Africa:** Algeria. **Asia:** Armenia, Azerbaijan, China (Northeast, Northern, Northwest, Southwest and Western Plateau), Georgia, Israel, Kazakhstan (Asian part), Mongolia, Russia (Far East, Eastern and Western Siberia Region), Türkiye (Asian part). **Outside the Palaearctic:** Alaska, Canada, United States (Aukema, 2020).

Note: This species is new record for Black Sea Region. Chorotype: West Palaearctic.

Tribus: Orsillini Stål, 1872

Genus: Orsillus Dallas, 1852

***Orsillus depressus* Dallas, 1852**

Material examined: Amasya: Center: Boğazköy, 18.05.2020, 6♂♂, 3♀♀; Dadı, 21.04.2021, 3♂♂, 7♀♀; Şahin Kayası, 21.06.2021, 2♂♂; Gümüşhacıköy: Yeniköy, 03.09.2021, 2♀♀.

Distribution in Türkiye: Adana, Antalya, Çankırı, Çorum, Denizli, Elazığ, Karaman, Kahramanmaraş, Konya, Mersin, Niğde. (Péricart, 1999; Önder et al., 2006; Yence, 2019; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Belgium, Bosnia- Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Great Britain, Greece, Hungary, Italy, Liechtenstein, Luxembourg, Macedonia, Montenegro, Netherlands, Portugal, Romania, Russia (Central European region), Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine. **North Africa:** Algeria, Libya, Morocco, Tunisia. **Asia:** Armenia, Azerbaijan, Cyprus, Georgia, Iran, Kazakhstan (Asian part), Tajikistan, Türkiye (Asia part), Turkmenistan?, Uzbekistan (Aukema, 2020).

Note: This species is new record for Amasya province. Chorotype: West Palaearctic.

***Orsillus maculatus* Fieber, 1861**

Material examined: Amasya: Center: Hakimiyet Park, 10.10.2021, 2♂♂, 1♀; İpekköy, 01.09.2021, 1♀.

Distribution in Türkiye: Adana, Bursa, Çanakkale, İzmir, Kastamonu, Mersin (Önder et al., 2006).

Distribution in Palaearctic Region: **Europe:** Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, France, Greece, Italy, Macedonia, Russia (Southern Europe Region), Slovenia, Spain, Ukraine. **North Africa:** Libya. **Asia:** Azerbaijan, Cyprus, Georgia, Israel, Jordan, Türkiye (Asian part) (Aukema, 2020).

Note: This species is new record for Central Black Sea Region. Chorotype: Turano-Europeo-Mediterranean.

Genus: *Ortholomus* Stål, 1872

***Ortholomus punctipennis* (Herrich-Schäffer, 1838)**

Material examined: Amasya: Ziyaret, 12.10.2020, 1♀; Mahmatlar, 05.07.2021, 1♂.

Distribution in Türkiye: Ağrı, Ankara, Antalya, Bolu, Çankırı, Düzce, Edirne, Gaziantep,

Hatay, Karabük, Kars (Önder et al., 2006; Küçükbasmacı & Kıyak, 2015; Fent &

Dursun, 2016).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Italy, Kazakhstan (European part), Latvia, Lithuania, Liechtenstein, Luxembourg, Macedonia, Moldavia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye (European part), Ukraine. **Asia:** Armenia, Azerbaijan, China, Cyprus, Georgia, Iran, Kazakhstan (Asian part), Korea, Kyrgyzstan, Mongolia, Russia, Tajikistan, Türkiye (Asian part), Uzbekistan, (Aukema, 2020).

Note: This species is new record for Central Black Sea Region. Chorotype: Turano-European.

DISCUSSION

In this study, as a result of the identification of the 166 ♂♂ and 195♀♀ adult specimens in Amasya province revealed 12 species of the 8 genera belonging to subfamily Lygaeinae, 9 species of the 3 genera belonging to subfamily Orsillinae were reported.

All species except *Lygaeus equestris* are new records for the Lygaeidae fauna from Amasya province.

The species *Apterola lounii* (Saunders, 1876), *Lygaeosoma anatolicum* Seidenstücker, 1960, *Lygaeosoma angulare* Reuter, 1885 and *Nysius thymi* (Wolff, 1804) are new records for the fauna of Black Sea Region and also *Horvathiolus superbus* (Pollich, 1781), *Lygaeus simulans* Decker, 1985, *Spilostethus pandurus* Scopoli, 1763, *Nysius ericae* (Schilling, 1829), *Nysius helveticus* (Herrich-Schaeffer, 1850), *Orsillus maculatus* Fieber, 1861 and *Ortholomus punctipennis* (Herrich-Schäffer, 1839) are new records for Central Black Sea region. Among the species identified in the study area, *A. lounii, A. longiceps*, *L. angulare*, *L. simulans*, *S. saxatilis*, *T. leucopterus*, *N. thymi*, *O. maculatus* and *O. punctipennis* are extremely rarely distributed species (Péricart, 2001; Önder et al., 2006). Although *L. anatolicum* is a species with a very rare distribution and recorded so far only from Kırıkkale and Konya, it was determined to have a high population density in the research area.

Although the species belonging to the subfamily Ischnorhynchinae could not be detected in the research area, the recording of many species belonging to the sub-families Lygaeinae and Orsillinae show the fauna richness of Amasya.

Amasya is a very rich region in terms of microclimate areas. Amasya has different habitats such as forest areas, Yeşilırmak Valley, orchards and wheat fields, rocks, and meadows.

Amasya is also located on the dispersal corridor for animal migration between the Central Black Sea Region and Central Anatolia. These features can be considered among the reasons for Amasya's fauna richness. The findings obtained in this study are also an indicator of the fauna richness of Amasya.

In this study according to the chorotype analysis of the species of Lygaeidae identified 9 different categories are obtained. According to this analysis, 10 species are from West Palaearctic. West Palaearctic (47,62 %) is a major group in Amasya province. Other groups are listed as Turano-European (14,29 %) with 3 species, and Turano-East Mediterranean (9,52 %) with two species and Europeo-Mediterranean, Turano-Mediterranean, East Mediterranean, Palaearctic, Sub-cosmopolitan and Turano-Europeo-Mediterranean are represented by one species each.

The present additional records increase the biodiversity of the family Lygaeidae in the surroundings of Amasya and contribute to the distributional data of the family in Türkiye.

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Review Article

Olive Pests Members of the Lygaeoidea Schilling, 1829 (Hemiptera: Heteroptera)

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ABSTRACT: In this study, information about the harmful Lygaeoidea Schilling, 1829 (Hemiptera) superfamily species and their effects on olive plants in olive (*Olea europaea*, Linnaeus, 1758) which contains various vitamins and minerals with high economic value, which are cultivated efficiently in the Marmara, Aegean and Mediterranean regions rich in antioxidant and anti-inflammatory nutrients that remain green in all seasons, specific to the Mediterranean climate, whose homeland is Anatolia, was compiled by making use of related studies. As a result of the researches, 20 species (*Aphanus rolandri* (Linnaeus, 1758), *Geocoris lineola* (Rambur, 1839), *Graptostethus servus* (Fabricius, 1787), *Geocoris megacephalus* (Rossi, 1790), *Heterogaster urticae* (Fabricius, 1775), Horvathiolus superbus (Pollich, 1781), *Lamprodema maura* (Fabricius, 1803), *Lygaeus creticus* (Lucas, 1854), *Microplax albofasciata* (A. Costa, 1847), *Nysius cymoides* (Spinola, 1837), *Oxycarenus pallens* (Herrich-Schaeffer, 1850), *Peritrechus meridionalis* Puton, 1877, *Plinthisus longicollis* Fieber, 1861, *Proderus belloveyei* Puton,1874, *Raglius alboacuminatus* (Goeze, 1778), *Paromius gracilis* (Rambur, 1839), *Remaudiereana annulipes* (Baerensprung, 1859), *Xanthochilus quadratus* (Fabricius, 1798), *Scolopostethus pictus* (Schilling, 1829), *Spilostethus pandurus* (Scopoli, 1763) from the Lygaeoidea superfamily are observed as olive pests in Türkiye.

KEY WORDS: Heteroptera, *Olea europaea*, Lygaeoidea, pest, Türkiye .

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INTRODUCTION

Olive, whose homeland is Anatolia, is a very important food source for the world and Türkiye (Canözer, 1991). Ecologically, olives, which find a habitat in certain regions of the world, are cultivated between 300-450 latitudes of the Southern and Northern hemispheres. Olive production is carried out economically in 38 countries in the world and there are about 900 million olive trees on approximately 10 million hectares (FAO, 2017).

According to FAO's 2016 data, 82.4% of the world's olive production is produced in Mediterranean countries, with Spain and Italy being the main producers (FAOSTAT, 2018). Türkiye is among the world's leading olive and olive oil producers along with other Mediterranean countries such as Spain, Italy, Tunisia and Greece due to its geographical location and Mediterranean climate characteristics (Karabulut, 2013).

Although Türkiye ranks fifth in the world in terms of olive production with a share of 8% in terms of area, it ranks fourth in terms of production with a share of 8.2% (FAOSTAT, 2018). Olive production areas in Türkiye are concentrated especially in coastal regions.

The Aegean Region ranks first with a 53% share. The Aegean region is followed by the Marmara Region with 19% and the Mediterranean Region with 16.7% (TUIK, 2017).

As there are many pest species that cause product losses in all fruits, there are many pest species that cause significant quality and quantity losses in olives. Attractive nutrient traps (McPhail) were among the first biotechnical control methods applied against olive pests, and in the following years, sexually attractive pheromone traps and visual sticky yellow traps were also introduced. Recently, it has been observed that studies on combined traps (combination of attractive food odor, pheromone, color and insecticide), some repellent substances (repellent, deterrent) and natural substances that can be used in direct control have increased and successful results have been obtained. While the search for alternative methods continues, it has been noted that combined traps and mass trapping methods have come to the fore (Kılınç, 2019).

The Heteropteran species present the largest and most varied group of hemimetabolous bugs, containing about 50,000 species in over 5800 genera worldwide, with over 1500 species belonging to 470 genera in Türkiye (Henry, 2009; Önder et al., 2006; Çerçi and Koçak, 2016; Dursun and Fent, 2017). Species of this suborder have the sucking mouthparts, evolved into a long, thin beak that feeds on liquids from plants and animals (Weber, 1930; Dolling, 1991; Schuh and Slater, 1995). The species of Heteroptera in the olive groves are monophagous, oligophagous, phytophagous and polyphagous.

Data revealed a the presence of a total of 1268 specimens of Heteroptera collected from the olive groves, belonged to 99 species, 12 families and 70 genera. The majority of these specimens belonged to Miridae, Anthocoridae, Lygaeidae and Pentatomidae (Kaçar & Dursun, 2015, 2022).

In the studies conducted, Lygaeidae, Pentatomidae, Coreidae, Reduviidae were the most common families in the Heteroptera order as olive pests.

MATERIAL AND METHOD

In this study, species which are pests on olive in Türkiye were investigated.

It was compiled from the studies (Güçlü et al., 1995, Abacıgil et al., 2010, Kaçar & Dursun, 2015, 2022; Yazıcı, 2022, Genç & Saran, 2023), which were carried out on Olive, which is one of the important crops especially for the Mediterranean region, and how they cause damage to the plant.

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RESULTS

Türkiye has an important potential land aspects of olive production in the world. It has many olive pests changing in number not only year by year but also region by region. Turkish olive fauna is also very rich in its natural enemy complex.

Lygaeoidea is a superfamily belonging to the Hemiptera order having mostly phytophagous pests. There are 20 species of olive pests in the Lygaeoidea superfamily:

Aphanus rolandri (Linnaeus, 1758),

Geocoris lineola (Rambur, 1839),

Graptostethus servus (Fabricius, 1787),

Geocoris megacephalus (Rossi, 1790),

Heterogaster urticae (Fabricius, 1775),

Horvathiolus superbus (Pollich, 1781),

Lamprodema maura (Fabricius, 1803),

Lygaeus creticus (Lucas, 1854),

Microplax albofasciata (A. Costa, 1847),

Nysius cymoides (Spinola, 1837),

Oxycarenus pallens (Herrich-Schaeffer, 1850),

Peritrechus meridionalis Puton, 1877,

Plinthisus longicollis Fieber, 1861,

Proderus belloveyei Puton,1874,

Raglius alboacuminatus (Goeze, 1778),

Paromius gracilis (Rambur, 1839),

Remaudiereana annulipes (Baerensprung, 1859),

Xanthochilus quadratus (Fabricius, 1798),

Scolopostethus pictus (Schilling, 1829),

Spilostethus pandurus (Scopoli, 1763)

Nysius cymoides (Spinola, 1837) is one of the most harmful species. *Nysius cymoides* (Spinola, 1837) (Hemiptera: Lygaeidae) is known and widely distributed around the world (Hori, 2000; Sweet, 2000; Scaccini & Furlan, 2019). The common name is called the false chinch bug and was described previously as *A. cymoides* (Bocchi et al., 2016; Haouas et al., 2019).

In Türkiye, it has been determined that on canola in Hatay (Demirel, 2009), olive orchards in Edremit (Abacıgil et al., 2010), and cultivated fruit trees in Mardin and Siirt (Matocq & Özgen, 2010), pistachio (Bolu, 2012), vineyard (Özgen, 2012) and on tomato, cucumber, watermelon, eggplant, pepper, corn, purslane, alfalfa and weeds as well (Özgen et al., 2020).

Nysius cymoides is thermophilic insect (Péricart, 1999; Aukema, 2013; Scaccini & Furlan, 2019). It is an epidemic species in Türkiye and commonly distributed in Europe, Central Asia and North Africa, the Middle East, and Arabian deserts (Péricart, 1999; Aukema, 2013; Scaccini & Furlan, 2019; Haouas et al., 2019). It is reported to prefer cruciferous plants as legumes and many other plant families (Haouas et al., 2019; Yazıcı, 2022).

It is stated as univoltine or multivoltine at lower latitudes (Bocchi et al., 2016).

The outbreaks occur in hot summer by increasing their population causing damages to seeds, vegetables and fruits. Several epidemic populations were reported for the false chinch bug on quinoa and canola (Bocchi et al., 2016). Like all sucking mouth insects, the damages of *N. cymoides* are caused by vascular tissues (phloem and xylem) and new growth parts of the plants by nymphs and adults (Özgen et al., 2020). The damaged plant turns to yellowish-brown in color and develops wilthing and necrosis. However, recent distributions and new host plants of this pest were determined, and the enhanced cultivated host plant list, the biology of the false chinch bug, the different biological stages, generation times, managements, biological control agents and molecular studies were not well studied.

According to Lodos 1986, most of the species are phytophagous, feeding mainly on plant seeds and are usually found on the soil surface, under rocks or on low plants. It spends winters in plant residues. Adults and nymphs of the pest feed on leaves. Spots appear on the affected areas of the leaves, which are

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first light-colored, then darken.

As a result, in the light of the studies conducted for Türkiye, the most common pests of the Lygaeoidea superfamily are *Nysius cymoides* (Spinola, 1837), *Lamprodema maura* (Fabricius, 1803) and *Plinthisus longicollis* Fieber, 1861.

A total of 20 genera and 20 species were found in olives.

Priority should be given to producer training in order to preserve the existing natural balance in the increasing olive areas and to prevent possible unnecessary spraying. In addition to adhesive and food traps, drugs with active ingredients fenthion, delthamethrin and dimethoate are now used in the fight against pests.

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Research Article

A study on the Cymidae, Blissidae, Artheneidae, Heterogastridae, Oxycarenidae, Berytidae and Piesmatidae (Hemiptera: Heteroptera: Lygaeoidea) fauna of Amasya Province, Türkiye

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ABSTRACT: This work aimed to determine the families Cymidae, Blissidae, Artheneidae, Heterogastridae, Oxycarenidae, Berytidae, and Piesmatidae in Amasya province. In result of the identification of the material collected revealed 22 species belonging to 16 genera of 7 families. All species are new records for the Amasya province and 9 species were recorded for the first time from the Black Sea region and 7 species were also new records for the central Black Sea region. Additionally, *Gampsocoris culicinus* Seidenstücker, 1948 (Berytidae), known from Anatolia so far only from Malatya, was recorded for the second time for Anatolia in our present study area.

KEY WORDS: Heteroptera, Lygaeoidea, new records, Amasya, Türkiye .

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INTRODUCTION

The Heteroptera Latreille, 1810 with terrestrial, aquatic, and semiaquatic species is the most diverse suborder of Hemiptera, including approximately 45.000 species belonging to 24 süper-families belonging to seven infraorder in the world, and in the Palaearctic region 1632 genera, and nearly 9365 described species (Henry, 2017; Péricart, 2001). Among these species, 1650 species are distributed in Türkiye (Önder et al., 2006; Dursun & Fent, 2015, 2017, 2022; Çerçi & Koçak, 2017, 2023). The superfamily Lygaeoidea Schilling, 1829 is known in the world with 4290 species belonging to 708 genera of 17 families (Henry, 2017). Among them, most 1000 species belonging to 242 genera of 14 families were mentioned from the Palaearctic region according to the available records so far (Péricart, 2001). All species are terrestrial of the superfamily Lygaeoidea and distributed in almost all habitats (Péricart, 2001).

The subfamilies Cyminae, Blissinae, Artheneinae, Heterogastrinae, and Oxycareninae were within the family Lygaeidae but these polyphyletic subfamilies were elevated to family status by Henry (2017). The families Cymidae Baerensprung, 1860, Blissidae Stål, 1862, Artheneidae Stål, 1872, Heterogastridae Stål, 1872, Oxycarenidae Stål, 1862, Berytidae Fieber, 1851, and Piesmatidae Amyot & Serville, 1843 are small taxa in terms of the number of species. The family Piesmatidae includes 2 genera and 19 species in the Palaeractic region. Of those, 6 species belonging to 2 genera are distributed in Türkiye. All species are phytophagous and feeding especially on Caryophyllaceae and Chenopodiacea (Heiss & Péricart, 2001). The other rather little family Berytidae includes 54 species belonging to 13 genera in the Palaearctic region. 19 species of 5 genera were mentioned from Türkiye (Péricart, 2001; Kment & Fent, 2012). Of those, the type localities of *Gampsocoris culicinus melitenus* Seidenstücker, 1965, *Gampsocoris enslini* Seidenstücker, 1953 and *Neides brevipennis* Puton, 1895 are in Türkiye (Dursun & Fent, 2017). The Family Cymidae includes 5 genera and 22 species from Palaearctic region. In Türkiye, 7 species belonging to the 2 genera are mentioned. *Cymus turcicus* Matocq, 2000 belonging to the family Cymidae is an endemic species from Türkiye (Péricart, 2001). 8 genera and 56 species belonging to the Blissidae family are distributed in the Palaearctic region. In Türkiye, 7 species belonging to 3 genera are known. The Family Artheneidae includes 4 genera and 16 species from Palaearctic region. 8 species belonging to 2 genera are distributed in Türkiye. The Oxycarenidae is a relatively richer family in terms of the number of species compared to the others. 63 species belonging to 19 genera are known in the Palaearctic region. Of these, 9 genera and 15 species have been recorded from Türkiye. The family Heterogastridae includes 11 genera and 24 species from Palaearctic region. 5 species belonging to 2 genera are distributed in Türkiye (Péricart, 2001).

The discovery of the Heteroptera fauna of Amasya, which is an important province in the Central Black Sea Region, is important for the biodiversity of Türkiye. Amasya has different biotopes and microclimate areas with its mountains, plains, and valleys. It needs further studies on the Biodiversity of Lygaeoidea from Amasya. Therefore, this study aims to bring forth the Biodiversity of the families of Lygaeoidea fauna of Amasya.

MATERIAL AND METHODS

This study was carried out with adult 182 males and 150 females collected from 29 different localities in Amasya province in the years 2020 to 2021 (Figure 1). The specimens were collected from under herbaceous vegetation and above ground with a sweep net and aspirator. All specimens were put in tubes in 70% ethanol and brought to the

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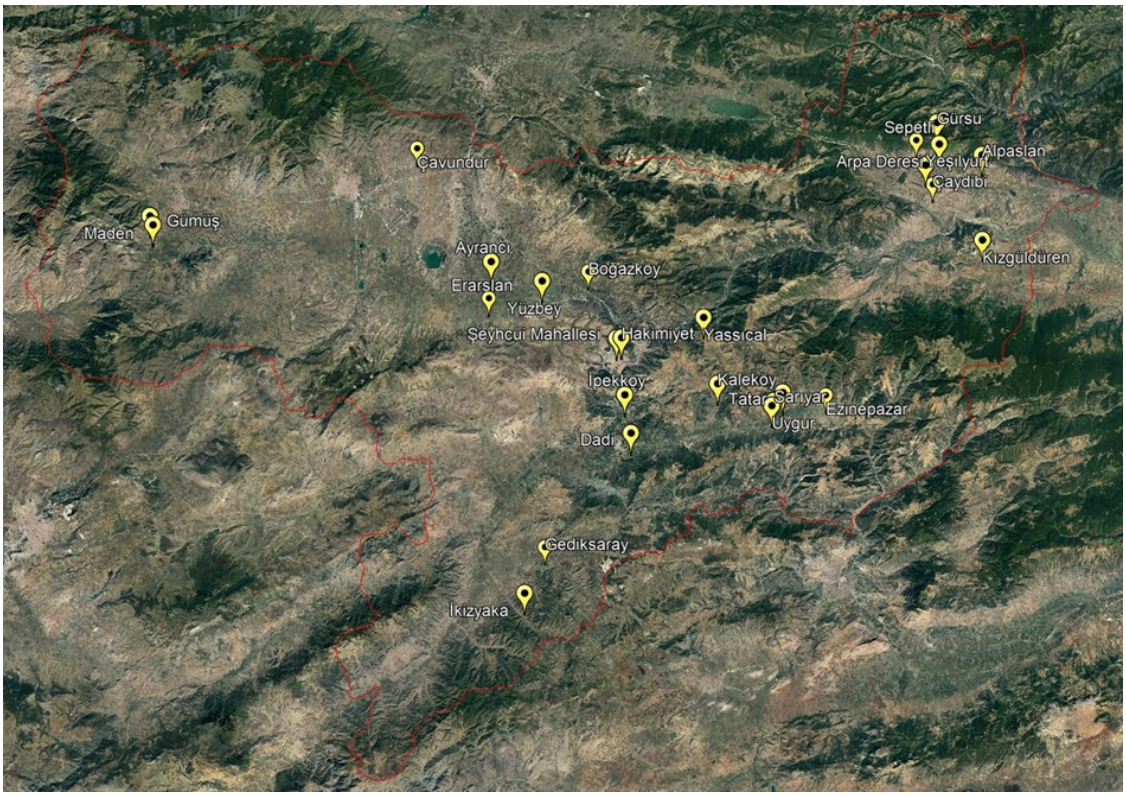

Figure 1. The area of Cymidae, Blissidae, Artheneidae, Heterogastridae, Oxycarenidae, Berytidae and Piesmatidae study in Amasya (from google earth).

laboratory. In the laboratory, as in our previous studies, the specimens were softened in hot water (90°C-100°C) for preparation of the male genitalia which was used for further identifications. The specimens were prepared and identified using the relevant diagnostic was investigated under a stereomicroscope (Leica EZ4) and keys of Stichel (1960), and Péricart, 1999a, b). The material is deposited in the collection of Amasya University, Faculty of Science and Arts, Department of Biology (Amasya, Türkiye).

RESULTS

Hemiptera Linnaeus, 1758

Heteroptera Latreille, 1810

Cymidae Baerensprung, 1860

Cyminae Baerensprung, 1860

Tribus: Cymini Baerensprung, 1860

Genus: *Cymus* Hahn, 1832

***Cymus claviculus* (Fallen, 1807)**

Material examined: Amasya: Taşova: Kızgüldüren, 10.07.2020, 1♂, 3♀♀.

Distribution in Türkiye: Adana, Ankara, Antalya, Bartın, Bursa, Çankırı, Diyarbakır, Edirne, Hatay, İzmir, Karaman, Kahramanmaraş, Kocaeli, Konya, Mersin, Muğla, Zonguldak (Horváth, 1901; Gadeau de Kerville, 1939; Hoberlandt, 1956; Önder et al., 1981, 2006; Lodos et al., 1999; Péricart, 1999a; Çerçi & Koçak, 2023; Yazıcı et al., 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Andorra, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan (European part), Kosovo, Latvia, Lithuania, Luxembourg, Macedonia, Moldavia, Montenegro, Netherlands, Norway, Poland, Portugal,

Romania, Russia (South European Part), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye (Europeran part), Ukraine **North Africa:** Algeria, Canary Islands, Morocco, Tunisia. **Asia:** Armenia, Azerbaijan, Cyprus, Georgia, Israel, Jordan Kazakhstan (Asian part), Kyrgyzstan, Mongolia, Russia (Eastern and Western Siberian Regions), Syria, Tajikistan, Türkiye (Asian part), Turkmenistan, Uzbekistan (Aukema, 2020).

***Cymus glandicolor* Hahn, 1832**

Material examined: Amasya: Taşova: 27.05.2021, Arpaderesi, 1♂.

Distribution in Türkiye: Adana, Afyonkarahisar, Ankara, Antalya, Bartın, Bursa, Hatay, İstanbul, Karaman, Kahramanmaraş, Kars, Kastamonu, Kocaeli, Kütahya, Kırşehir, Osmaniye, Yozgat, Zonguldak (Horváth, 1883, 1901, 1918; Kiritshenko, 1918; Lodos et al., 1999; Önder et al., 2006; Fent & Dursun, 2016; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Andorra, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Ireland, Italy, Kosovo, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldavia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia (Northern, Southern and Central European Region), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine.**:** Azerbaijan, China (North, Northeast, Southwest, Western Plateau), Georgia, Japan, Kazakhstan (Asian part), Korea, Kyrgyzstan, Mongolia, Russia (Far East, Eastern and Western Siberia Regions), Tajikistan, Türkiye (Asian part), Uzbekistan (Aukema, 2020).

***Cymus melanocephalus* Fieber, 1861**

Material examined: Amasya: Suluova: Eraslan, 29.06.2021, 1♂; **Taşova:** Kızgüldüren, 10.07.2020, 14♂♂, 15♀♀; 27.05.2021, Arpaderesi, 24♂♂, 27♀♀.

Distribution in Türkiye: Adana, Ankara, Antalya, Bartın, Bayburt, Bolu, Bursa, Çanakkale, Diyarbakır, Edirne, Erzincan, Erzurum, Gaziantep, Hatay, İstanbul, İzmir, Karabük, Karaman, Kahramanmaraş, Kastamonu, Kayseri, Kocaeli, Konya, Konya, Kırşehir, Mersin, Muğla, Nevşehir, Nevşehir, Niğde, Ordu, Sinop, Sivas, Yozgat, Zonguldak (Horváth, 1883, 1901, 1918; Hoberlandt, 1956; Lodos et al. 1999; Önder et al. 2006; Matocq et al., 2014; Yazıcı et al. 2015; Fent & Dursun, 2016; Yence, 2019; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Great Britain, Germany, Greece, Hungary, Italy, Kosovo, Liechtenstein, Luxembourg, Macedonia, Moldavia, Montenegro, Netherlands, Poland, Portugal, Romania, Russia (Southern European Region), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye (European part), Ukraine. **North Africa:** Algeria, Morocco, Tunisia. **Asia:** Armenia, Azerbaijan, Cyprus, Georgia, Iran, Iraq, Israel, Kyrgyzstan, Syria, Tajikistan, Türkiye (Asian part), Uzbekistan (Aukema, 2020).

Blissidae Stål, 1862

Blissinae Stål, 1862

Genus: *Dimorphopterus* Stål, 1872

***Dimorphopterus blissoides* (Barensprung, 1859)**

Material examined: Amasya: Merzifon: Çavundur, 06.09.2020, 2♂♂, 2♀♀.

Distribution in Türkiye: Mersin (Tarsus) (Péricart, 1999a); Elazığ (Çerçi et al., 2018).

Distribution in Palaearctic Region: **Europe:** Bosnia Hercegovina, Bulgaria, Croatia, Greece, Hungary, Italy, Macedonia, Moldavia, Romania, Russia (South European Region), Serbia, Slovenia, Ukraine. **Asia:** Armenia, Azerbaijan, Iraq, Israel, Türkiye (Asian part) (Aukema, 2020).

***Dimorphopterus doriae* (Ferrari, 1874)**

Material examined: Amasya: Center:

Dadıköy, 21.04.2021, 1♀.

Distribution in Türkiye: Aksaray, Bolu, Izmir, Niğde, Tokat, Yalova (Péricart, 1999a; Önder et al., 2006).

Distribution in Palaearctic Region: **Europe:** Albania, Bosnia Hercegovina, Bulgaria, France, Greece, Hungary, Italy, Kazakhstan (European part), Kosovo, Macedonia, Moldavia, Montenegro, Romania, Russia (South European Region), Serbia, Slovakia, Ukraine. **Asia:** Armenia, Azerbaijan, Iran, Kazakhstan (Asian part), Syria, Türkiye (Asian part) (Aukema, 2020).

Genus: Ischnodemus Fieber, 1837

***Ischnodemus caspius* Jakovlev, 1871**

Material examined: Amasya: Göynücek: Gediksaray, 31.08.2020, 1♀.

Distribution in Türkiye: (Péricart, 1999a), Kahramanmaraş (Lodos et al., 1999).

Distribution in Palaearctic Region: **Europe:** Bulgaria, Croatia, Greece, Russia (Southern Europe region), Serbia, Ukraine. **North Africa:** Egypt. **Asia:** Afghanistan, Azerbaijan, Iran, Iraq, Israel, Kazakhstan (Asian part), Kuwait, Syria, Tajikistan, Türkiye (Asian part), Turkmenistan, Uzbekistan (Aukema, 2020).

Artheneidae Stål, 1872

Artheneinae Stål, 1872

Tribus: Artheneini Stål, 1872

Genus: *Holcocranum* Fieber, 1860

***Holcocranum saturejae* (Kolenati, 1845)**

Material examined: Amasya: Center: Kızgüldüren, 10.07.2020, 22♂♂, 17♀♀.

Distribution in Türkiye: Bursa, Edirne, Elazığ, Hatay, İzmir, Karaman, Kahraman -maraş, Kocaeli, Mersin (Önder et al., 1981, 1984; Çağatay, 1988; Péricart, 1999a; Lodos et al., 1999; Önder et al., 2006; Çerçi et al., 2018; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Kazakhstan (European part), Macedonia, Moldova, Montenegro, Netherlands, Romania, Russia (Southern European Region), Slovakia, Spain, Türkiye (European part), Ukraine. **North Africa:** Algeria, Egypt, Morocco, Tunisia. **Asia:** Azerbaijan, Israel, Jordan, Kyrgyzstan, Türkiye (Asian part), Turkmenistan. **Outside the Palaearctic:** North America, Tropical Africa (Chad, Ghana, Sudan and Tanzania) (Aukema, 2020).

Heterogastridae Stål, 1872

Heterogastrinae Stål, 1872

Genus: *Heterogaster* Schilling, 1829

***Heterogaster artemisiae* Schilling, 1829**

Material examined: Amasya: Center: Tatar, 19.05.2021, 1♀.

Distribution in Türkiye: Adana, Antalya, Düzce, Edirne, Erzurum, Hatay, Kahramanmaraş, Kastamonu, Mersin, Niğde, Osmaniye (Lodos et al., 1999; Önder et al., 2006; Yazıcı et al., 2015; Fent & Dursun, 2016; Yence, 2019).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Belgium, Bosnia-Hercegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Great Britain, Greece, Hungary, Italy, Kosovo, Macedonia, Moldova, Montenegro, Poland, Portugal, Romania, Russia (Central and southern European region), Serbia, Slovakia, Slovenia, Spain, Switzerland, Türkiye (European part), Ukraine. **North Africa:** Algeria, Morocco, Tunisia. **Asia:** Armenia, Azerbaijan, China (Northwest region), Georgia, Iran, Kazakhstan (Asian part), Kyrgyzstan, Tajikistan, Türkiye (Asian part), Turkmenistan, Uzbekistan, (Aukema, 2020).

***Heterogaster urticae* (Fabricius, 1775)**

Material examined: Amasya: Center: Sarıyar, 19.05.2021, 1♂, 1♀.

Distribution in Türkiye: Adana, Aksaray, Ankara, Antalya, Artvin, Aydın,

Balıkesir, Bartın, Bayburt, Bilecik, Bolu, Bursa, Çankırı, Erzurum, Gaziantep, Hatay, İzmir, Karaman, Kahramanmaraş, Kars, Kayseri, Kırıkkale, Kütahya, Manisa, Mersin, Muğla, Nevşehir, Osmaniye, Samsun, Trabzon, Zonguldak (Horváth, 1883, 1905a; Hoberlandt, 1956; Lodos et al., 1978, 1999; Çağatay, 1989; Abacıgil et al., 2010; Yazıcı et al., 2015, 2023; Yazıcı, 2022; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Andorra!, Austria, Belgium, Bosnia-Hercegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine. **North Africa:** Algeria, Azores, Canary Islands, Egypt, Madeira, Morocco, Tunisia. **Asia:** Armenia, Azerbaijan, Cyprus, Georgia, Iran, Israel, Japan, Jordan, Kyrgyzstan, Lebanon, Russia (Western Siberia), Syria, Türkiye, Turkmenistan (Aukema, 2020).

Genus: *Platyplax* Fieber, 1860

***Platyplax inermis* (Rambur, 1839)**

Material examined: Amasya: Center: Boğazköy, 18.05.2020, 4♂♂, 4♀♀; **Gümüşhacıköy:** Gümüş, 07.09.2021, 1♂.

Distribution in Türkiye: Adana, Balıkesir, Bursa, Çanakkale, İzmir, Kastamonu, Kayseri, Mersin (Péricart, 1999a; Önder et al., 2006).

Distribution in Palaearctic Region: **Europe:** Albania, Bosnia-Hercegovina, Croatia, France, Greece, Italy, Macedonia, Montenegro, Portugal, Spain. **North Africa:** Algeria, Canary Islands, Libya, Morocco, Tunisia. **Asia:** Cyprus, Israel, Türkiye (Asian part), Yemen. **Outside the Palaearctic Region:** Ethiopia (Aukema, 2020).

Oxycarenidae Stål, 1862

Oxycareninae Stål, 1862

Genus: *Brachyplax* Fieber, 1860

***Brachyplax tenuis* (Mulsant & Rey, 1852)**

Material examined: Amasya: Center: Kaleköy, 28.04.2021, 1♂; **Taşova:** Gürsu, 27.05.2021, 1♂, 1♀.

Distribution in Türkiye: Ankara, Edirne, Elazığ, Gaziantep, Hatay, İzmir, Karaman, Kastamonu, Kayseri, Mersin, Niğde (Horváth, 1901; Linnavuori, 1953; Hoberlandt, 1956; Lodos et al., 1999; Péricart, 1999b, 2001; Önder et al., 2006; Matocq et al., 2014; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Austria, Bosnia-Hercegovina, Bulgaria, Croatia, Czech Republic, France, Greece, Hungary, Italy, Macedonia, Malta, Montenegro, Portugal, Romania, Russia (Southern European Region), Serbia, Slovakia, Slovenia, Spain, Switzerland, Türkiye (European part), Ukraine. **North Africa:** Algeria, Egypt, Libya, Morocco, Tunisia.

Asia: Armenia, Azerbaijan, Cyprus, Georgia, Israel, Kazakhstan (Asian part), Kyrgyzstan, Syria, Tajikistan, Türkiye (Asian part), Turkmenistan Uzbekistan (Aukema, 2020).

Genus: *Macroplax* Fieber, 1860

***Macroplax fasciata* (Herrich-Schaeffer, 1835)**

Material examined: Amasya: Center: Yassıçal, 28.04.2021, 1♂, 3♀♀; Sarıyar, 19.05.2021, 1♂, 1♀; **Taşova:** Çaydibi, 27.05.2021, 1♂; **Gümüşhacıköy:** Gümüş, 07.09.2021, 1♂.

Distribution in Türkiye: Adana, Afyonkarahisar, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bilecik, Bursa, Çanakkale, Çorum, Denizli, Düzce, Edirne, Elazığ, Erzincan, Erzurum, Gaziantep, Hatay, Isparta, İstanbul, İzmir, Karaman, Kahramanmaraş, Karaman, Kayseri, Kırıkkale, Kırşehir, Konya, Kocaeli, Kütahya, Manisa, Mardin, Mersin, Muğla, Osmaniye, Sinop, Tekirdağ, Uşak, Zonguldak (Horváth, 1883, 1905b; Fahringer, 1922; Linnavuori, 1953; Hoberlandt, 1956;

Lodos et al., 1978, 1999; Çağatay, 1985; Fent & Japoshvili, 2012; Matocq et al., 2014; Yazıcı et al., 2015; Fent & Dursun, 2016; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Andorra, Austria, Bosnia-Hercegovina, Bulgaria, Croatia, France, Germany, Great Britain (Jersey), Greece, Hungary, Italy, Macedonia, Malta, Moldova, Montenegro, Portugal, Romania, Russia (Southern European Region), Serbia, Slovakia, Slovenia, Spain, Switzerland, Türkiye (European part), Ukraine. **North Africa:** Algeria, Canary Islands, Libya, Morocco, Tunisia. **Asia:** Armenia, Azerbaijan, Cyprus, Georgia, Israel, Lebanon, Syria, Türkiye (Asian part) (Aukema, 2020).

Genus: *Microplax* Fieber, 1860

***Microplax albofasciata* (A. Costa, 1847)**

Material examined: Amasya: Taşova: Çaydibi, 27.05.2021, 1♀.

Distribution in Türkiye: Adana, Afyonkarahisar, Ankara, Antalya, Balıkesir, Bilecik, Bursa, Edirne, Gaziantep, İstanbul, Karaman, Kayseri, Kütahya, Mersin, Tekirdağ, Uşak (Horváth, 1883; Linnavuori, 1953; Hoberlandt, 1956; Péricart, 1999b; Lodos et al., 1999; Önder et al., 2006; Abacıgil et al., 2010; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: Europe: Albania, Andorra, Belgium?, Bosnia Hercegovina, Bulgaria, Croatia, Cyprus, France, Germany, Great Britain, Greece, Holland, Hungary, Italy, Macedonia, Montenegro, Slovenia, Portugal, Romania, Russia, Spain, Türkiye (European part), Ukraine, **Asia:** Syria, Israel, Türkiye (Asian part). **North Africa:** Algeria, Tunisia (Aukema, 2020).

***Microplax interrupta* (Fieber, 1837)**

Material examined: Amasya: Center: Yassıçal, 28.04.2021, 1♀; İpekköy, 16.05.2021, 2♂♂, 7♀♀; Ezinepazar, 19.05.2021, 4♂♂, 5♀♀; **Suluova:** Eraslan, 28.06.2021, 1♂.

Distribution in Türkiye: Adana, Ankara, Antalya, Diyarbakır, Edirne, Erzurum, Gaziantep, Hatay, Kahramanmaraş, Karabük, Karaman, Kayseri, Konya, Kırşehir, Mardin, Mersin (Linnavuori, 1953; Hoberlandt, 1956; Lodos et al., 1999; Önder et al., 2006; Matocq et al., 2014; Yazıcı et al., 2015; Fent & Dursun, 2016; Bolu, 2020; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Andorra, Austria, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Kazakhstan (European part), Kosovo, Macedonia, Moldavia, Montenegro, Portugal, Romania, Russia (Southern European Part), Serbia, Slovakia, Slovenia!, Spain, Türkiye (European part), Ukraine. **North Africa:** Algeria, Canary Islands, Egypt, Madeira, Morocco, Tunisia. **Asia:** Armenia, Azerbaijan?, China (Northwest Region), Cyprus, Georgia, Iran, Iraq, Israel, Kazakhstan (Asian part), Kyrgyzstan, Lebanon, Mongolia, Syria, Tajikistan, Türkiye (Asian part), Turkmenistan. Uzbekistan. **Outside the Palaearctic:** India (Péricart, 2001).

Genus: *Oxycarenus* Fieber, 1837

Subgenus: *Euoxycarenus* Samy, 1969

***Oxycarenus pallens* (Herrich-Schäffer, 1850)**

Material examined: Amasya: Center: Sarıyar, 19.05.2021, 3♂♂, 1♀; Uygur, 19.05.2021, 1♂; Ezinepazar, 19.05.2021, 2♂♂, 1♀; Tatar, 19.05.2021, 1♀; İpekköy, 16.05.2021, 2♂♂, 1♀; Boğazköy, 28.06.2021, 6♂♂, 1♀; **Suluova:** Yüzbeyi, 28.06.2021, 2♂♂; Eraslan, 28.06.2021, 1♀; Ayrancı, 28.06.2021, 1♀; **Taşova:** Kızgüldüren, 10.07.2020, 1♂; Alpaslan, 27.05.2021, 2♀♀; Arpaderesi, 27.05.2021, 1♂, 1♀; Yeşilyurt, 27.05.2021, 1♂, 1♀; Gürsu, 1♂, 1♀; **Göynücek:** İkizyaka, 03.09.2021, 2♂♂, 1♀; **Gümüşhacıköy:** Gümüş, 29.08.2020, 1♀; 07.09.2021, 1♀.

Distribution in Türkiye: Adana, Ankara, Antalya, Balıkesir, Bayburt, Bolu, Burdur, Çankırı, Çorum, Diyarbakır, Edirne, Elazığ, Erzincan, Erzurum,

Gaziantep, Hatay, İzmir, Karabük, Karaman, Kahramanmaraş, Kastamonu, Kayseri, Kilis, Konya, Kırıkkale, Kırşehir, Mardin, Mersin, Muğla, Nevşehir, Niğde, Siirt, Sivas, Şanlıurfa, Van, Yozgat, Zonguldak (Linnavuori, 1953; Hoberlandt, 1956; Önder & Adıgüzel, 1979; Çağatay, 1985; Lodos et al., 1999; Önder et al., 2006; Abacıgil et al., 2010; Matocq & Özgen, 2010; Matocq et al., 2014; Yazıcı et al., 2015, 2023; Fent & Dursun, 2016; Bolu, 2020; Çerçi & Özgen, 2021; Yazıcı, 2022; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Bosnia-Hercegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Kazakhstan (European part), Macedonia, Moldavia, Montenegro Portugal, Romania, Russia (Central and Southern European Part), Slovakia, Slovenia, Spain, Switzerland, Türkiye (European part), Ukraine. **North Africa:** Algeria, Canary Islands, Egypt, Libya, Morocco, Tunisia. **Asia:** Afghanistan, Armenia, Azerbaijan, China, Cyprus, Georgia, Iran, Iraq, Israel, Jordan, Kazakhstan (Asian part), Kyrgyzstan, Lebanon, Mongolia, Syria, Tajikistan, Türkiye (Asian part), Turkmenistan, Uzbekistan, Yemen. **Outside the Palaearctic:** India, Sudan (Aukema, 2020).

Subgenus: *Oxycarenus* Fieber, 1837

***Oxycarenus hyalinipennis* (A. Costa, 1843)**

Material examined: Amasya: Center: İpekköy, 16.05.2021, 1♀; Şeyhcui, 22.08.2021, 3♂♂, 6♀♀; Hakimiyet Park, 58♂♂, 24♀♀.

Distribution in Türkiye: Adana, Ankara, Antalya, Çanakkale, Çankırı, Hatay, İstanbul, İzmir, Karaman, Kastamonu, Kilis, Konya, Mersin, Niğde, Osmaniye, Sinop (Puton & Noualhier, 1895; Linnavuori, 1953; Hoberlandt, 1956; Çağatay, 1985; Péricart, 1999b; Lodos et al., 1999; Önder et al., 2006; Şerban, 2010; Yazıcı et al., 2015, 2023; Yazıcı, 2022; Çerçi & Koçak, 2023).

Distribution in Palaearctic Region: **Europe:** Austria, Bosnia-Hercegovina, Bulgaria, Croatia, France, Greece, Italy, Malta, Portugal, Serbia, Slovakia, Spain. **North Africa:** Algeria, Canary Islands, Egypt, Libya, Morocco, Tunisia. **Asia:** Afghanistan, Armenia, Azerbaijan?, Cyprus, Iran, Iraq, Israel, Jordan, Lebanon, Saudi Arabia, Sinai Peninsula (Egypt), Syria, Türkiye (Asian part), Yemen. **Outside the Palaearctic:** Eastern Region, South America, Tropical and Southern Africa (Aukema, 2020).

Berytidae Fieber, 1851

Berytinae Fieber, 1851

Tribus: Berytini Fieber, 1851

Genus: *Apoplymus* Fieber, 1859

***Apoplymus pectoralis* Fieber, 1859**

Material examined: Amasya: **Taşova:** 27.05.2021, Sepetli, 1♂; 07.09.2021, Gümüş, 1♂, 2♀♀.

Distribution in Türkiye: Balıkesir, İzmir (Önder et al., 2006; Dursun, 2016).

Distribution in Palaearctic Region: **Europe:** Albania, Bulgaria, Croatia, France, Greece, Italy, Macedonia, Portugal, Romania, Serbia, Spain, Türkiye (European part), Ukraine. **North Africa:** Algeria, Morocco, Tunisia. **Asia:** Cyprus, Iran, Iraq, Israel, Lebanon, Syria, Türkiye (Asian part) (Aukema, 2020).

Genus: *Neides* Latreille, 1802

***Neides tipularius* (Linnaeus, 1758)**

Material examined: Amasya: **Gümüşhacıköy:** 07.09.2021, Maden, 3♂♂.

Distribution in Türkiye: Ankara, Bingöl, Çankırı, Edirne, Elazığ, Kars, Kastamonu, Kayseri (Önder et al., 2006; Küçükbasmacı & Kıyak, 2015, Çerçi & Özgen, 2021).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Belgium, Bosnia-Hercegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland,

Italy, Kosovo, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Russia (South, Northern and Central European Region), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye (European part), Ukraine. **Asia:** Armenia, Azerbaijan, Georgia, Iran, Iraq, Kazakhstan (Asian part), Russia (Western, Siberian Region), Türkiye (Asian part), Uzbekistan (Aukema, 2020).

Tribus: Berytinini Southwood & Leston, 1959

Genus: *Berytinus* Kirkaldy, 1900

Subgenus: *Lizinus* Mulsant & Rey, 1870

***Berytinus geniculatus* (Horváth, 1885)**

Material examined: Amasya: **Merzifon:** 06.09.2020, Çavundur, 1♂, 1♀.

Distribution in Türkiye: İzmir, Kahramanmaraş (Önder et al., 2006; Kıyak, 2016).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Bosnia-Hercegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Macedonia, Moldova, Portugal, Romania, Russia (Southern European region), Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine. **North Africa:** Algeria, Canary Islands, Libya, Morocco, Tunisia. **Asia:** Azerbaijan, Georgia, Iraq, Israel?, Türkiye (Asian part) (Aukema, 2020).

Gampsocorinae Southwood & Leston, 1959

Tribus: Gampsocorini Southwood & Leston, 1959

Genus: *Gampsocoris* Fuss, 1852

***Gampsocoris culicinus* Seidenstücker, 1948**

Material examined: Amasya: **Göynücek:** 03.09.2021, İkizyaka, 1♂; **Gümüşhacıköy:** 07.09.2021, Gümüş, 2♂♂, 6♀♀.

Distribution in Türkiye: Edirne, Malatya (Seidenstücker, 1965; Kothe et al., 2004; Önder et al., 2006).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Bosnia-Hercegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Kosovo, Macedonia, Moldova, Romania, Russia (Southern European Region), Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine. **North Africa:** Algeria, Morocco. **Asia:** Kazakhstan (Asian part), Kyrgyzstan, Russia (Western, East Siberian Region), Türkiye (Asian part) (Aukema, 2020).

Metacanthinae Douglas & Scott, 1865

Tribus: Metacanthini Douglas & Scott, 1865

Genus: *Metacanthus* A. Costa, 1843

Subgenus: *Metacanthus* A. Costa, 1843

***Metacanthus meridionalis* (A. Costa, 1843)**

Material examined: Amasya: 28.06.2021, Boğazköy, 4♂♂, 4♀♀.

Distribution in Türkiye: Ankara, Balıkesir, Bursa, Bitlis, Hakkari, İzmir, Manisa, Mardin (Önder et al., 2006; Dursun, 2016).

Distribution in Palaearctic Region: **Europe:** Bulgaria, Croatia, France, Greece, Hungary, Italy, Kosovo, Macedonia, Portugal, Romania, Russia (Southern European Region), Serbia, Spain, Ukraine. **Asia:** Azerbaijan, Georgia, Iran, Iraq, Israel, Türkiye (Asian part), Yemen. (Aukema, 2020).

Piesmatidae Amyot & Serville, 1843

Piesmatinae Amyot & Serville, 1843

Genus: *Piesma* Lepeletier & Serville, 1828

***Piesma maculatum* (Laporte, 1833)**

Material examined: Amasya: **Center:** Dadı, 21.04.2021, 2♂♂.

Distribution in Türkiye: Balıkesir, Çankırı, Erzurum (Yıldırım & Özbek, 1990; Abacıgil et al., 2010; Önder et al.,

2006; Yazıcı et al., 2023).

Distribution in Palaearctic Region: **Europe:** Albania, Austria, Belgium, Bosnia-Hercegovina, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Kazakhstan (European part), Kosovo, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Moldavia, Netherlands, Norway, Poland, Portugal, Romania, Russia (South, Northern and Central European Region), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine. **North Africa:** Algeria, Morocco, Tunisia. **Asia:** Armenia, Azerbaijan, China (North and Northeast Region), Georgia, Japan, Kazakhstan (Asian part), Korea, Kyrgyzstan, Mongolia, Russia (West, East and Far East Siberia Region), Türkiye (Asian part), Uzbekistan (Aukema, 2020).

CONCLUSION AND DISCUSSION

We examined in this study a total of 332 (182 males and 150 females) adult specimens.

As a result of the determination of the material collected in Amasya province, 3 species belonging to 1 genera of Cymidae, 3 species belonging to 2 genera of Blissidae, 1 species belonging to 1 genera of Artheneidae, 3 species belonging to 2 genera of Heterogastridae, 6 species belonging to 4 genera of Oxycarenidae, 5 species belonging to 5 genera of Berytidae and 1 species belonging to 1 genera of Piesmatidae families were recorded. All species are new records for the Amasya province.

In addition, among these species, *Dimorphopterus blissoides*, *Ischnodemus caspius*, *Holcocranum saturejae*, *Microplax albofasciata*, *Apoplymus pectoralis*, *Berytinus geniculatus*, *Gampsocoris culicinus*, *Metacanthus meridionalis* and *Piesma maculatum* were recorded for the first time from the Black Sea Region and *Cymus claviculus*, *Cymus glandicolor*, *Heterogaster artemisiae*, *Platyplax inermis*, *Brachyplax tenuis*, *Microplax interrupta* and *Neides tipularius* were also new records for the Central Black Sea Region (Table 1).

Dimorphopterus blissoides a rarely distributed species, was until now only known from Mersin (Péricart, 1999a) in the Mediterranean Region and from Elazığ in east Anatolia (Çerçi et al.,2018) and *Ischnodemus caspius* from İzmir (Péricart, 1999a) in western Anatolia and from Kahramanmaraş in Mediterranean Region (Lodos et al.,1999), and *Apoplymus pectoralis*, from Balıkesir and Izmir in western Anatolia (Önder et al., 2006; Dursun, 2016).

Berytinus geniculatus was recorded from Kahramanmaraş in the Mediterranean Region and İzmir in western Anatolia, *Gampsocoris culicinus* was recorded from Edirne in the Thrace Region and Malatya in the eastern Anatolia Region (Seidenstücker, 1965; Kothe et al., 2004; Önder et al., 2006; Kıyak, 2016).

In this study, these species were recorded for the third time. The northernmost limit of the distribution of these species in Türkiye was also given in this study.

It was known that among the identified species, *Platyplax inermis*, *Neides tipularius,* and *Metacanthus meridionalis* are rare species in Türkiye. In addition, it was determined that the population densities of all species except *Oxycarenus hyalipennis*, *Oxycarenus pallens*, *Cymus melanocephalus,* and *Holcocranum saturae* were quite low in the research area.

Yıldırım & Özbek (1990) stated that *Piesma maculatum* causes damage to sugar beet (*Beta vulgaris* (Linnaeus, 1758) (Chenopodiaceae)) in Türkiye.

There are many farmers engaged in sugar beet production in Amasya, and if the population density of *Piesma maculatum* increases, it would have the potential to cause serious damage to Amasya sugar beet fields. However, we were able to detect only two examples of this species in our study.

Table 1. List of Cymidae, Blissidae, Artheneidae, Heterogastridae, Oxycarenidae Berytidae and Piesmatidae species of Amasya province. (A: Amasya, C: Central Black Sea Regon, B: Black Sea Region, N: Number of Localities detected, S: Specimens)

Nu.	Family	Species	A	C	B	N	S
1	Cymidae Baerensprung, 1860	*Cymus claviculus* (Fallen, 1807)		+		1 locality	1♂, 3♀♀
2		*Cymus glandicolor* Hahn, 1832		+		1 locality	1♂
3		*Cymus melanocephalus* Fieber, 1861	+			3 localities	39♂♂, 42♀♀
4	Blissidae Stål, 1862	*Dimorphopterus blissoides* (Barensprung, 1859)			+	1 locality	2♂♂, 2♀♀
5		*Dimorphopterus doriae* (Ferrari, 1874)	+			1 locality	1♀
6		*Ischnodemus caspius* Jakovlev, 1871			+	1 locality	1♀
7	Artheneidae Stål, 1872	*Holcocranum saturejae* (Kolenati, 1845)			+	1 locality	22♂♂, 17♀♀
8	Heterogastridae Stål, 1872	*Heterogaster artemisiae* Schilling, 1829		+		1 locality	1♀
9		*Heterogaster urticae* (Fabricius, 1775)	+			1 locality	1♂, 1♀
10		*Platyplax inermis* (Rambur, 1839)		+		2 localities	5♂♂, 4♀♀
11	Oxycarenidae Stål, 1862	*Brachyplax tenuis* (Mulsant & Rey, 1852)		+		2 localities	2♂♂, 1♀
12		*Macroplax fasciata* (Herrich-Schaeffer, 1835)	+			4 localities	4♂♂, 4♀♀
13		*Microplax albofasciata* (A. Costa, 1847)			+	1 locality	1♀
14		*Microplax interrupta* (Fieber, 1837)		+		4 localities	7♂♂, 13♀♀
15		*Oxycarenus pallens* (Herrich-Schäffer, 1850)	+			16 localities	22♂♂, 15♀♀
16		*Oxycarenus hyalinipennis* (A. Costa, 1843)	+			3 localities	61♂♂, 31♀♀
17	Berytidae Fieber, 1851	*Apoplymus pectoralis* Fieber, 1859			+	2 localities	2♂♂, 2♀♀
18		*Neides tipularius* (Linnaeus, 1758)		+		1 locality	3♂♂
19		*Berytinus geniculatus* (Horváth, 1885)			+	1 locality	1♂, 1♀
20		*Gampsocoris culicinus* Seidenstücker, 1948			+	2 localities	3♂♂, 6♀♀
21		*Metacanthus meridionalis* (A. Costa, 1843)			+	1 locality	4♂♂, 4♀♀
22	Piesmatidae Amyot & Serville, 1843	*Piesma maculatum* (Laporte, 1833)			+	1 locality	2♂♂

Regional studies are very important in revealing the fauna of a country. In this regard, the findings obtained in this study are important. The additional records obtained in this study also contribute to the biodiversity of the Cymidae, Blissidae, Artheneidae, Heterogastridae, Oxycarenidae, Berytidae, and Piesmatidae families in Amasya Province and its surroundings and the distribution data of the families in Türkiye.

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Research Article

Contribution to the knowledge of Heteroptera (Hemiptera) fauna of the Rhodopes Mountains, Xanthi Region, Greece

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ABSTRACT: This study was caried to determine the Heteroptera fauna in the part of the Rhodopes Mts., Xanthi Region, Greece between July and September 2022. As a result of the study, 45 species belonging to 16 families from the Heteroptera suborder were identified. While the first exact locality records were given for *Lygaeus simulans* Deckert, 1985 and *Corythucha arcuata* (Say, 1832), *Eysarcoris aeneus* (Scopoli, 1763) was recorded for the second time in Greece.

KEY WORDS: True bugs, Heteroptera, Rhodopes Mountains, Xanthi, Greece.

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INTRODUCTION

Heteroptera, like other insect groups, have rarely been studied in Greece until the 1980s, and most of the few studies available have been carried out by foreign scientists collecting species from various geographical regions during short periods of the year (Drosopoulos, 1980).

However, these studies only included records of species and the geographical areas where they were collected.

Drosopoulos (1980) was the first to complete a checklist of both terrestrial and aquatic Heteroptera of Greece by bringing together records from museums and literature, including his personal collections.

Data on the Greek Heteroptera fauna were later published in the Balkan Heteroptera checklist by Josifov (1986).

Several records for Greek Heteroptera Fauna are also published by Josifov & Heiss (1989), Josifov (1990, 1993), Linnavuori (1992, 1994,1999). Rieger (1995) recorded 128 Heteroptera species from the Santorini archipelago.

The study on aquatic and semi-aquatic Heteroptera in Greece's holiday islands of Rhodes, Crete and Corfu of Csabai et al. (2017), the aquatic and semi-aquatic Heteroptera checklist of Kefalonia and Ionian islands of Cianferoni (2019) and the Pentatomoidea checklist with new records of Ramsay (2019) and Antonios et al. (2022) are other important studies on the Heteroptera fauna of Greece. In their study on endemic Heteroptera species in the Balkan Peninsula, Josifov & Simov (2006) gave species from the Greek mainland and the islands.

Apart from these, there are studies in which new records are generally given, including invasive species (Petrakis, 2011; Simov et al., 2017; Davranoglou & Koutsoukos, 2018; Davranoglou & Karaouzas, 2021; Davranoglou et al., 2021; van der Heyden, 2020, 2021; Langourov et al., 2022).

MATERIALS AND METHODS

This study was carried out in diferent localities, close to Oraion/ Yassıören (Ωραιου) village, Xanthi province, Greece, between July and September 2022.

Heteroptera were collected from different habitats: grasslands, beech (*Fagus sylvatica*) forest and streams, by sweeping

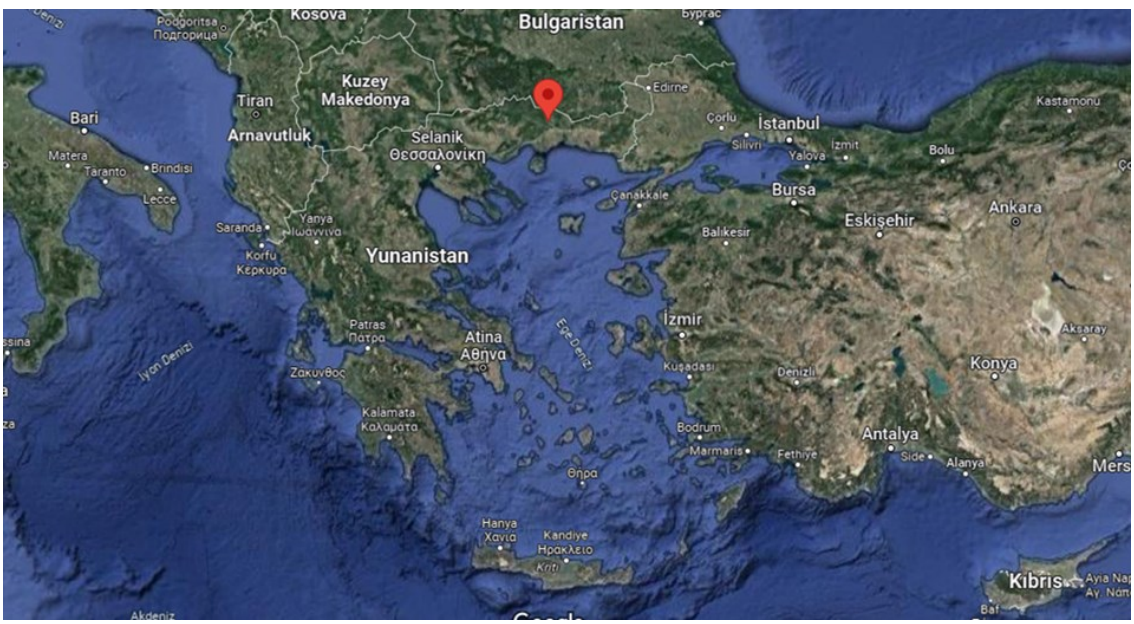

Figure 1. Location of the research area Oraion (Xanthi) (Google earth)

net, an insect trap, a suction tube, and transferred to vials with 96% ethyl alcohol.

The samples collected from the field were brought to the laboratory and prepared in accordance with museum techniques. Identifications of the species were made by the first author.

Oraion located 28 kilometers north of Xanthi (41°16'20"N 24°49'56"E), has continued to be a large settlement center since the 1300s. It is a mountainous region located at the foot of the Rhodopes Mountains (Fig. 1).

The transitional position between Mediterranean and Continental climatic zones, elevation from 400 to 1500 m above sea level and diffrent rock complexes are the reasons of the high habitat diversity of the region.

Predominatly oak and Oriental hornbeam forests, but also pine and beech are typical for the region. Riverine habitats are dominated by Oriental plane at the lower altitudes and Common alder in the higher. The tobacco is intensively planted (Fig. 2).

Figure 2. Typical habitats for the region where samples were collected in Oraion (Xanthi)

RESULTS AND DISCUSSION

Family Alydidae Amyot & Serville, 1843

***Alydus calcaratus* (Linnaeus,1758)**

Material examined: Xanthi-Oraion (grassland), 10.08.2022, 1♀, 1♂.

***Camptopus lateralis* (Germar, 1817)**

Material examined: Xanthi-Oraion (grassland), 30.07.2022, 1♀; 10.08.2022, ♂; 08.09.2022, 1♀.

Family Coreidae Leach, 1815

***Centrocoris variegatus* (Kolenati, 1845)**

Material examined: Xanthi-Oraion (grassland), 17.08.2022, 1 ♀;

***Coreus marginatus* (Linnaeus, 1758)**

Material examined: Xanthi-Oraion (grassland), 10.08.2022, 2 nymphen; 17.08.2022, 1 ♀; 03.09.2022, 3 nymphs.

***Coriomeris denticulatus* (Scopoli, 1763)**
Material examined: Xanthi-Oraion (grassland), 30.07.2022, 1 ♂; 03.09.2022, 1 ♂.

***Coriomeris affinis* (Herrich-Schaeffer, 1839)**
Material examined: Xanthi-Oraion (grassland), 30.07.2022, 1 ♂.

***Leptoglossus occidentalis* (Heidemann, 1910)**
Material examined: Xanthi-Oraion (*Pinus* sp.), 10.08.2022, 1 ♂.

***Syromastus rhombeus* (Linnaeus, 1767)**
Material examined: Xanthi-Oraion (grassland), 10.08.2022, 1 ♂.

Family Cydnidae Billberg, 1820

***Tritomegas sexmaculatus* (Rambur, 1839)**
Material examined: Xanthi-Oraion (beech forest), 10.08.2022, 1 ♀.

Family Geocoridae Baerensprung, 1860

***Geocoris lineola lineola* (Rambur, 1839)**
Material examined: Xanthi-Oraion (beech forest), 17.08.2022, 1 ♀.

Family Gerridae Leach, 1815

***Aquarius ventralis* (Fieber, 1860)**
Material examined: Xanthi-Oraion (stream), 30.07.2022, 4 ♀♀, 3 ♂♂; 03.09.2022, 1♀; 07.09.2022, 1♀, 3 ♂♂.

Family Lygaeidae Schilling, 1829

***Lygaeus simulans* (Deckert, 1985)**
Material examined: Xanthi-Oraion (stream), 30.07.2022, 1 ♀; 30.08.2022, 1 ♀, 1 ♂.

***Nysius graminicola graminicola* (Kolenati, 1845)**
Material examined: Xanthi-Oraion (grassland), 30.08.2022, 2 ♀♀, 1 ♂.

***Nysius cymoides* (Spinola, 1837)**
Material examined: Xanthi-Oraion (grassland), 25.08.2022, 2 ♂♂; 03.09.2022, 1 ♀

Family Micronectidae Jaczewski, 1924

***Micronecta (Dichaetonecta) scholtzi* (Fieber, 1860)**
Material examined: Xanthi-Oraion (stream), 30.07.2022, 1♀, 1♂.

Family Miridae Hahn, 1833

***Adelphocoris lineolatus* (Goeze, 1778)**
Material examined: Xanthi-Oraion (beech forest), 17.08.2022, 3 ♀♀; 25.08.2022, 1 ♂; 30.08.2022, 1 ♀; 09.09.2022, 1♀, 1♂.

***Adelphocoris vandalicus* (Rossi, 1790)**
Material examined: Xanthi-Oraion (grassland), 30.08.2022, 1 ♀.

***Deraeocoris serenus* (Douglas & Scott, 1868)**
Material examined: Xanthi-Oraion (grassland), 30.08.2022, 1 ♀, 1 ♂.

***Oncotylus setulosus* (Herrich-Schaeffer, 1837)**
Material examined: Xanthi-Oraion (grassland), 30.08.2022, 1 ♀.

***Trigonotylus caelestialium* (Kirkaldy, 1902)**
Material examined: Xanthi-Oraion (beech forest), 25.08.2022, 1 ♀; 30.08.2022, 1 ♀.

***Trigonotylus pulchellus* Hahn, 1834**
Material examined: Xanthi-Oraion (grassland), 25.08.2022, 1 ♂.

Family Oxycarenidae Stål, 1862

***Microplax interrupta* (Fieber, 1837)**
Material examined: Xanthi-Oraion (grassland), 03.09.2022, 1 ♂.

***Oxycarenus pallens* (Herrich-Schaeffer, 1850)**
Material examined: Xanthi-Oraion (grassland), 30.08.2022, 1 ♀.

Family Nabidae A. Costa, 1853

***Nabis punctatus punctatus* (A.Costa, 1847)**
Material examined: Xanthi-Oraion (grassland), 17.08.2022, 3 ♀♀; 25.08.2022, 1 ♂; 03.09.2022, 1 ♂; 09.09.2022, 1 ♀, 1 ♂.

***Nabis rugosus* (Linnaeus, 1758)**
Material examined: Xanthi-Oraion (grassland), 10.08.2022, 1 ♀, 1 ♂.

Family Pentatomidae Leach, 1815

***Aelia acuminata* (Linnaeus, 1758)**
Material examined: Xanthi-Oraion (grassland), 10.08.2022, 1 ♂; 17.08.2022, 1 ♀, 1 ♂.

***Ancyrosoma leucogrammes* (Gmelin, 1790)**
Material examined: Xanthi-Oraion (beech forest), 17.08.2022, 1 ♀.

***Dolycoris baccarum* (Linnaeus, 1758)**
Material examined: Xanthi-Oraion (grassland), 30.07.2022, 1 ♀; 10.08.2022, 1 ♀.

***Eurydema ornata* (Linnaeus, 1758)**
Material examined: Xanthi-Oraion (grassland), 30.08.2022, 1 ♀, 1 ♂.

***Eysarcoris aeneus* (Scopoli, 1763)**
Material examined: Xanthi-Oraion (grassland), 17.08.2022, 1 ♂.

***Graphosoma italicum italicum* (O.F.Müller, 1766)**

Material examined: Xanthi-Oraion (grassland), 03.09.2022, 1 ♀, 2 ♂♂.

***Nezara viridula* (Linnaeus, 1758)**

Material examined: Xanthi-Oraion (grassland), 17.08.2022, 10 nymphen; 03.09.2022, 1 ♀.

***Palomena prasina* (Linnaeus, 1761)**

Material examined: Xanthi-Oraion (grassland), 08.09.2022, 1 ♂.

***Staria lunata* (Hahn, 1835)**

Material examined: Xanthi-Oraion (grassland), 10.08.2022, 1 ♂.

Family Piesmatidae Amyot & Serville, 1843

***Parapiesma salsolae* (Becker, 1867)**

Material examined: Xanthi-Oraion (grassland), 10.08.2022, 1 ♀.

Family Rhopalidae Amyot & Serville, 1843

***Chorosoma schillingii* (Schilling, 1829)**

Material examined: Xanthi-Oraion (grassland), 17.08.2022, 1 ♀, 1 nymph; 03.09.2022, 1 ♂.

***Liorhyssus hyalinus* (Fabricius, 1794)**

Material examined: Xanthi-Oraion (grassland), 30.08.2022, 1 ♀, 1 ♂.

***Rhopalus parumpunctatus* (Schilling, 1829)**

Material examined: Xanthi-Oraion (grassland), 30.07.2022, 1 ♂; 30.08.2022, 4 ♀♀, 3 ♂♂.

***Rhopalus subrufus* (Gmelin, 1790)**

Material examined: Xanthi-Oraion (grassland), 10.08.2022, 1 ♀.

***Stictopleurus abutilon* (Rossi, 1790)**

Material examined: Xanthi-Oraion (grassland), 17.08.2022, 1♂.

***Stictopleurus subtomentosus* (Rey, 1888)**

Material examined: Xanthi-Oraion (grassland), 30.08.2022, 2 ♀♀.

Family Rhyparochromidae Amyot & Serville, 1843

***Xanthochilus quadratus* (Fabricius, 1798)**

Material examined: Xanthi-Oraion (grassland), 09.09.2022, 1 ♀.

***Paromius gracilis* (Rambur, 1839)**

Material examined: Xanthi-Oraion (grassland), 25.08.2022, 7 ♀♀, 3 ♂♂, 3 nymphs.

Family Scutelleridae Leach, 1815

***Odontotarsus purpureolineatus* (Rossi, 1790)**

Material examined: Xanthi-Oraion (grassland), 30.08.2022, 1 ♀, 1 ♂.

Family Tingidae Laporte, 1832

***Corythucha arcuata* (Say, 1832)**

Material examined: Xanthi-Oraion (*Quercus* sp.), 30.08.2022, 1 ♂; 08.09.2022, 5♀♀, 2 ♂♂.

In this study, conducted in the Oraion (Yassıören) Village of Xanthi district in Greece in the summer of 2022, a total of 45 species belonging to 16 families were identified; 9 species from the Pentatomidae family, 6 species from the Coreidae, Miridae and Rhopalidae families, 3 species from the Lygaeidae family, two species from the Alydidae, Oxycarenidae, Nabidae and Rhyparochromidae families and only one species identified from the Cydnidae, Geocoridae, Gerridae, Micronectidae, Piesmatidae, Scutelleridae and Tingidae.

The record of *Lygaeus simulans* in this study, is the first with the exact locality in Greece. In the study by Van der Heyden & Dioli (2019) in which the first record of *Lygaeus simulans* from Albania is given, Greece is also mentioned while giving the Palaearctic distribution of the species. However, in the literature review, no study on the existence of *Lygaeus simulans* from Greece was found. The previous published information is based on the *Lygaeus simulans* photographs taken from Greece on the website https://www.inaturalist.org/observations/9232190 (personal communication T. van der Heyden).

A similar situation exists for the allien invasive *Corythucha arcuata* (oak lace bug), which is spreading rapidly in Europe and causing great damage to oaks. Csóka et al. (2020) in their study investigating the distribution and potential host range of the invasive oak lace beetle in Eurasia, mentioned this species from the north-east of Greece as a result of personal communication with D. Avtzis, without giving the locality. Our record is the first with exact locality in Greece. Many eggs, newly hatched nymphs and adults were observed together on the undersides of the leaves of the oak trees. Although yellowing leaves due to insect feeding could not be observed much, the lower surfaces of many leaves were damaged due to fecal contamination.

Eysarcoris aeneus was published by Tsagkarakis et al. (2022) based on a single specimen collected by S. Drosopoulos from Sidironero in the Rhodopes Mountains. Our record is the second in the region (57 km northeast on a bee line from the Sidironero) and in Greece at whole and confirm the presence ot this species in the mountain.

Leptoglossus occidentalis, another alien invasive species like *Corythucha arcuata*, which has the potential to cause great damage especially to conifers, was also detected during the study. In this study, Pentatomidae is the family with the highest number of species with 9 species.

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Research Article

New records for the Heteroptera (Hemiptera) fauna of Ankara province

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ABSTRACT: This study was carried out based on Heteroptera (Hemiptera) samples collected in various locations of Kahramankazan district of Ankara province between April and November 2022.
Codophila maculicollis (Dallas, 1851), *Apodyphus amygdali* (Germar, 1817), *Holcogaster fibulata* (Germar, 1831) and *Oncotylus (Oncotylus) punctipes* Reuter, 1875 species, which were previously reported in Türkiye, were recorded for the first time from Ankara, and *O. punctipes* was also new record for the central Anatolia region in this study.

KEY WORDS: Heteroptera, fauna of Ankara province (Türkiye), contribution

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INTRODUCTION

The Heteroptera (Hemiptera) suborder, with more than 45,000 species known worldwide, includes terrestrial, semi-aquatic, and aquatic species.

More than 9,365 species belonging to 1,632 genera are distributed in the Palaearctic Region (Aukema et al., 2013, Henry, 2017: Fent & Dursun, 2022).

Many Heteroptera species have been found in Türkiye (Kıyak, 2019) and it has been reported that there are 1650 species in total (Çerçi and Koçak, 2023).

The Pentatomidae Leach, 1815 and Miridae Hahn, 1833 families are of economic importance and are among the largest families of the Heteroptera suborder.

MATERIALS AND METHOD

The specimens included in this study were collected in different localities in the Kahramankazan district of Ankara from April to November 2022.

Heteroptera specimens were collected with a swap net, killed in containers containing 70% alcohol, and then prepared in accordance with the standards of the zoological museum.

Identification of species was made with the help of comparison material and literature.

Identification of species was done under a stereo microscope and using the keys of Stichel (1955-1962) and Wagner (1970/71).

In this study, locality records of 4 species identified as a result of the evaluation of Pentatomidae and Miridae species are presented.

In addition to the Türkiye distributions (Önder et al., 2006; Fent & Dursun, 2022; Yazıcı et al., 2014; Yıldırım & Yazıcı, 2016) of the species, the Palaearctic distributions are given from Aukema (1995-2013).

RESULTS

In this study, four species belonging to two families of the suborder Heteroptera were identified. The results of the study are given below:

Family: Pentatomidae Leach, 1815

Genus: *Codophila* Mulsant & Rey, 1866

Codophila maculicollis (Dallas, 1851)

Material examined: Ankara: Kahramankazan, Durasan Şah Nature Park, (1285 m) 40°15'54.0" N 32°35'38.1"E, 06.11.2022, 1 ♂.

Distribution in Türkiye: Artvin, Bilecik, Denizli, Erzincan, Erzurum, Isparta, Kars, Tunceli (Yazıcı et al., 2014).

General Distribution: North Africa: Algeria, Egypt, Libya, Morocco, Tunisia. Asia: Afghanistan, Asian Türkiye, China (NW)?, Iran, Israel, Jordan, Saudi Arabia, Sinai, Syria, Yemen. Extralimital: Ethiopia, India, Sudan (Aukema, 1995-2013; Fent & Dursun, 2022).

Genus: *Apodiphus* Spinosula, 1837

Apodiphus amygdali (Germar, 1817)

Material examined: Ankara: Kahramankazan, around Ahi Koca stream (905 m); 40°13'08.6"N 32°45'01.9"E; 28 13.08.2022, 1♂.

Distribution in Türkiye: Çanakkale, Edirne, İstanbul, Tekirdağ, Adana, Adıyaman, Antalya, Artvin, Aydın, Balıkesir, Bayburt, Bingöl, Burdur, Bursa, Çorum, Denizli, Diyarbakır, Elazığ, Erzincan, Erzurum, Eskişehir, Gaziantep, Hatay, Iğdır, Isparta, İçel, İstanbul, İzmir, Kahramanmaraş, Karabük, Kars, Kayseri, Kilis, Konya, Malatya, Manisa, Mardin, Mersin, Muğla, Osmaniye, Rize, Şanlıurfa, Tokat, Tuncel, (Fent & Dursun, 2022).

General Distribution: Albania, Bosnia Hercegovina, Bulgaria, Croatia, European Türkiye, Greece, Italy, Macedonia, Montenegro, Serbia, Armenia, Asian Türkiye, Azerbaijan, Georgia, Iran, Iraq, Israel, Lebanon, Syria, Turkmenistan (Aukema, 1995-

2013; Fent & Dursun, 2022).

Genus: *Holcogaster* Fieber, 1861

***Holcogaster fibulata* (Germar, 1831)**

Material examined: Ankara: Kahramankazan Susuz (914 m); 40°01'14.4"N 32° 38'58.0"E; 29.10.2022, 1♀, 4♂♂.
Distribution in Türkiye: Tekirdağ, İstanbul Kırklareli, Adana, Amasya, Antalya, Balıkesir, Burdur, Çanakkale, Çorum, Elazığ, Eskişehir, Gaziantep, Hatay, Isparta, İçel, İzmir, Kahramanmaraş, Karaman, Kastamonu, Manisa, Mersin, Muğla, Niğde, Sakarya, Samsun, Sinop, Sivas, Tekirdağ, Tokat (Fent & Dursun, 2022).
General Distribution: Albania, Belgium, Bulgaria, Crete, Croatia, European Türkiye, France, Germany, Greece, Italy, Macedonia, Montenegro, Netherlands, Portugal, Spain, Switzerland, Algeria, Canary Islands, Libya, Morocco, Tunisia, Asian Türkiye, Cyprus, Iraq, Israel, Syria. Note: According to Fent and Dursun (2022), this species was previously given as *Holcogaster exilis* by some authors.

Familya: Miridae Hahn, 1833

Genus: *Oncotylus* (Fieber, 1858)

***Oncotylus (Oncotylus) punctipes* Reuter, 1875**

Material examined: Ankara: Kahramankazan, Bitik neighbourhood; 40°07'43.0"N 32°36'28.6"E (853 m) 39, 24.09.2022, 1♀.
Distribution in Türkiye: Ağrı, Erzurum, Kütahya (Önder et al., 2006; Yıldırım & Yazıcı, 2016).
General Distribution: Albania, Austria, Belgium, Bulgaria, Byelorussia, Croatia, Czech Republic, Denmark, Finland, France, Germany, Luxembourg, Macedonia, Moldavia, Netherlands, Norway, Poland, Romania, Russia (CT NT ST), Slovakia, Slovenia, Sweden, Ukraine, Armenia, Azerbaijan, Kazakhstan, Türkiye, Georgia, Russia (ES WS), Uzbekistan (Aukema, 1995-2013).

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Aims & Scope

The *Journal of the Heteroptera of Turkey* is a biannual peer reviewed international journal that publishes original articles, review articles, and short communication on all aspects of Heteroptera.

The *Journal of the Heteroptera of Turkey* publishes qualified research articles on the systematics, taxonomy, faunistical and ecology of heteroptera suborder. The topic of the research may include a wide range of heteropteran fields. Detailed studies on systematics, morphology, ecology, and phenology of heteroptera, and the biological, ecological, and faunistic formation of heteroptera taxons.

In this Journal full-papers and short communications containing original researches on any aspect of heteropteran in palaearctic region and Turkey will be considered as publication.

The *Journal of the Heteroptera of Turkey* welcomes review articles in the field of heteropteran.

The *Journal of the Heteroptera of Turkey* also published short notes on heteropteran topics. Information of the heteropteran specialists and book reviews will also be published.

We would like to make an open invitation to all potential contributors. We have a fast publishing process to process and evaluate.

Taxonomic revisions and descriptions of individual species will be accepted especially if additional information is included on habitat preferences, behavior, phenology etc. Descriptions of single specimens are discouraged.

For submitted article there are restrictions on the subject, author, geographic area, and so on of any submission (palaearctic only). For our journal mission all fields of heteroptera studies are suitable.

All papers being peer-reviewed by two referees, and under rapid publication process.

Preparation of Manuscript

All manuscripts should be written in the Turkish or English languages to be published only in the Journal of the Heteroptera and should be prepared with Microsoft Word.

Manuscripts should be written on A4 (21 cm x 29.7 cm) paper with margins of at least 2 cm in width.

All pages should be numbered consecutively. Manuscripts should be organized in the following order: Title, abstract, brief introduction, materials and methods, results, discussion, acknowledgments, references, tables and figure legends.

Parts of the Manuscript should be:

Arrange manuscripts in this order: title; name(s), address(es) and e-mail address(es) of the corresponding author(s) who will receive and approve the page proofs (research articles only); keywords; text; acknowledgments; references; tables and figure legends.

Title: The title of the manuscript should be informative and clear, not exceed 15-20 words. Just under the title full name(s) of author(s); (surname(s) in capital letters; full address(es); e-mail address(es); if available, ORCID numbers for all authors, Corresponding Author contact information should be give (each on a separate line).

Abstract: The abstract should not exceed 250-300 words (maximum), should be one paragraph.

Keywords: For subject indexing, up to 6 topical keywords in English are required (for Turkish articles).

Text: Introduction, Materials and Methods, Results, Conclusion and Discussion, Acknowledgments, References, Figure and table legends.

Use italics for Scientific names of genera, species, and subspecific taxa.
Do not use italics for abbreviations such as “spp.”, “sp.”, “ssp.”, ”var.”, ”gen.nov.”, “sp.n.”, “ssp.nov.”, “stat.n.”, “comb.n.”, “s.l.”, “s. str.”, “et al.”, and names of taxa of rank higher than genus.
For faunistic research follow this order: Taxon name, Material examined, Habitat, Host plant(s), Distribution. Example:
Miridae Hahn, 1831
Deraeocoris rutilus (Herrich-Schaeffer, 1838)
Habitat: The specimens belonging to *D. rutilus* (H.,-S., 1838) were found on *Carduus pycnocephalus* subsp. *albidus* (Bieb) Kazmi.
Materials examined: 1 male, 24.6.1996 (Loc. 1), 1 female, 24.6.1996 (Loc.6).

Distribution in Turkey: The Aegean, the Marmara, and the Anatolia regions (18,10,8,13,29).
Distribution in the world: Israel, Sardinia, Syria, Cyprus, Poland, the Balkans, Russia, and Turkey (18,25).

References: References should be prepared according to "*The Guidelines to Authors*".

The complete reference list should appear alphabetically by name at the end of the paper. A sample of the most common entries in reference lists appears below. Please note that a DOI should be provided for all references where available.

References must be cited in the text as (Dursun, 2013), Fent & Dursun (2005) or Fent et al. (1997), or in a parenthesis (Dursun, 2013; Fent & Dursun, 2005; or Fent et al. ,1997).

Journal article: Abbreviate names of periodicals basically according to the World List of Scientific Periodicals, 4th Edition, Butterworths, London, 1964–1965. (If you are not certain about the correct abbreviation, give the journal's name in full).

Fent, M., Kment, P., Elipek-Çamur, B., Kırgız, T., 2011, Annotated catalogue of Enicocephalomorpha, Dipsocoromorpha, Nepomorpha, Gerromorpha and Leptopodomorpha (Hemiptera: Heteroptera) of Turkey with new records, *Zootaxa*, 2856:1-84.

Books: Alexi Popov, A., Grozeva, S., Simov,N., Tasheva, E., 2013, *Advances in Hemipterology*, PenSoft Publishers Ltd, 377 pp., Sofia, Bulgaria.

Article/Chapter in Book: Kerzhner, I. M., Jaczewski, T. L.,1964, *Order Hemiptera (Heteroptera) 851–1118pp. I*n: *Keys to the insects of the European USSR 1. (Ed. G. Y. Bei-Bienko).* Nauka, Moskva & Leningrad [in Russian; English translation, Israel Program for Scientific Translations, Jerusalem, 1967]. 1214 pp.

No Author Given: (USDA) U.S. Department of Agriculture. 2001. Title. USDA, Beltsville, MD. (IRRI) International Rice Research Institute. 2001. Title. IRRI, City, State or Country.

Proceedings: Šeat, J., Kaur, H., Gallé, R., Torma, A. 2018, The role of road verges as secoundary linear habitats for Forest steppe Heteroptera, *8th European Hemiptera Congress*, 24-29 Jun 2018, Zawiercie, Poland. Book of Abstracts, 61 p.

Theses/Dissertations: James, H., 2001, Thesis or dissertation title. M.S. thesis or Ph.D. dissertation, University of Pennsylvania, Philadelphia.

Özsaraç, Ö., 2004, Çiçekdağı (Kırşehir) Heteropterleri, Basılmamış Doktora Tezi, Gazi Üniversitesi Fen Bilimleri Enstitüsü, Ankara, 225 s.

Online Citations/ Websites: Rabitsch, W., 2005, Spezialpraktikum aquatische und semiaquatische Heteroptera; (Web page: http: homepage.univie.ac.at/wolfgang.rabitsch).(Date accessed: May 2010).

Using the DOI (Digital Object Identifier) Number: Nestel D., Papadopoulos N. T. & Miranda Chueca M. A. (2008). Current advances in the study of the ecology of fruit flies from Europe, Africa and the Middle East. *Journal of Applied Entomology*, DOI: 10.1111/j.1439-0418.2008.01378.x

Please note on the illustrations, figure, table, and photographs legends: Illustrations should be arranged into blocks or plates by the author(s). Figures should be provided electronically in either JPG or TIFF format. JPG images should be the highest resolution possible. TIFF images should be at 300 dpi resolution.

Morphological illustrations (if not schematic) and **photographs/** electron microscope micrographs should include scale bars. Photographs and electron microscope micrographs must be in JPEG file format (300 dpi).

Images pasted into Word become low-resolution and cannot be used in print.

Photographs should be high-contrast, black and white or color. Lettering should be typed and legible. All papers should be accompanied by information on the credited photographer or copyright holder. If the photographer or copyright holder is not an author on the paper, then permission must be granted by the copyright holder.

Tables should be numbered consecutively and include headings and explanations. References in the text to illustrations (schematic, photographs) and tables into parenthesis: e.g.(Fig.1) (Figs.1–4) (Table 1.) (Table 1., Figs.1-4). Morphological illustrations should be provided with scale bars.

Taxonomic papers in *JHT* must follow the *requirements below:* Follow all requirements of the current *International Code of Zoological Nomenclature* (4th edition 1999), and be followed the recommendations of the Code.

A holotype should always be designated for each newly described species-level taxon and at least holotypes should be deposited in public collections that provide long-term care and access for study (note that such deposition is mandatory for neotypes). For this reason, two particular recommendations (73A and 16C) should be observed in JHT.

In the Abstract must be listed new combinations, new status, new taxa, new synonyms, etc. in. The list of synonymized names must indicate their disposition. For newly should be described taxa included for all newly synonymized or combined names. Use “sp. n.”, “gen. n.” etc.. **Important note:** Descriptions based on single specimens are discouraged.

The standard order of sections for description a species is: “Diagnosis”, “Description”, “Material”, “Type locality”, “Etymology”, “Distribution”, “Biology”, and other comments if appropriate. Author(s) of species name must be provided when the scientific name of any animal species is first mentioned. (The year of publication is not compulsory. ıf you give it, then provide a full reference of this in the reference list.)

It is the *author’s responsibility* to know the group, both material and literature, well enough (preferably on a worldwide basis) to be able to ensure that all relevant taxa were taken into account and that any new taxa proposed have not already been described from elsewhere.

Accepted manuscripts are published online and in two issues at the end of May and December.