

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 lowii* (Saunders, 1876), *Lygaeosoma anaticum* 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 high 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, Türkiye).

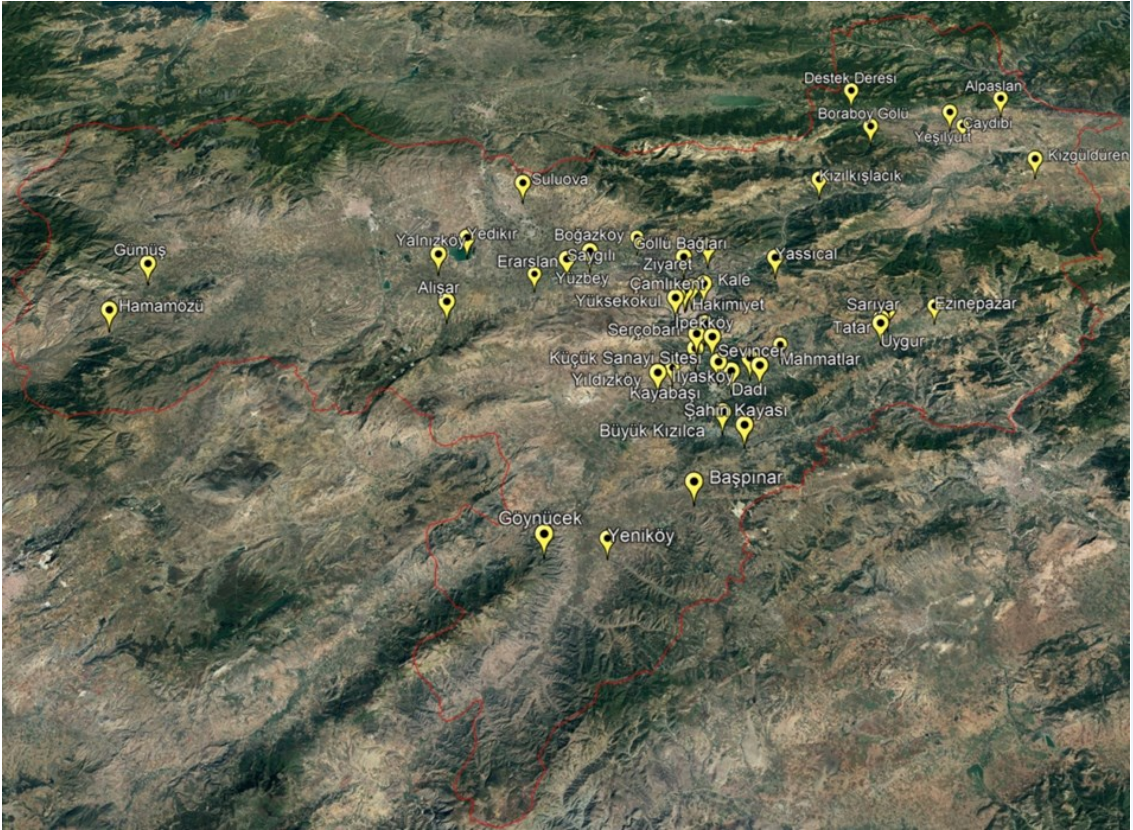


Figure 1. The area of Lygaeidae study in Amasya (from google earth).

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 Palearctic 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 Palearctic 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 superbis* (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), Turkmenistan, 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♂; Şeyhçui, 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; Kiyak, 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.

***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, Tadzhiistan, 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 Palaeartic.

***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♀; Hamam-özü: 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 Palaeartic.

***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 et 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; Kiyak & 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♀; Saryyar, 19.05.2021, 1♂; İpekköy, 16.05.2021, 2♀♀; Mahmatlar, 05.07.2021, 15♂♂, 14♀♀; Yağmur, 02.09.2021, 2♂♂, 3♀♀; Şeyhcu 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, İzmir, 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- Hercegovina, 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-European-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, Yeşilirmak 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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