

About Heteroptera of Gerede District and Contributions to Heteroptera Fauna of Bolu Province

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ABSTRACT: The study conducted so far on the order Heteroptera in Gerede district (Bolu province) belongs to Hoberlandt (1955) and she recorded 23 species belonging to 11 families belonging to the order Heteroptera from Gerede district of Bolu province. In this study conducted in 2016 and 2017, 56 species belonging to 44 genera belonging to 12 families were collected from the Gerede district (Bolu province), only two of which were recorded by Hoberlandt (1955), and 54 species were recorded for the first time in the study area. With this study, the total number of species identified from Gerede increased to 75, and the number of species for Bolu province increased to 169 belonging to 21 families.

KEYWORDS: Heteroptera, fauna, Gerede district, Bolu, Türkiye.

INTRODUCTION

The faunistic list of Heteropteran species and the determination of their habitats are important in terms of preventing the destruction of plant populations by many agricultural practices.

It is necessary to conduct new and more detailed studies on the Heteroptera fauna of Turkey in lesser-known localities. For example, no detailed study has been conducted on Heteroptera in the Gerede district of Bolu province. Although Gerede is located in the Black Sea Region, it is a

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region with a "transitional climate" between the humid-temperate climate of the Black Sea Region and the continental climate of the Central Anatolia Region due to its border with the Central Anatolia Region (Erhan, 2013).

This study was carried out because it is a region thought to be rich in biological diversity due to its climatic characteristics, and until this study, only 23 species belonging to 11 families of the order Heteroptera had been recorded from Gerede (Bolu province) by Hoberlandt (1955).

Gerede is located within the geographical borders of Bolu province. According to Önder et al. (2006), a total of 102 Heteroptera species were listed from Bolu.

The study aims to determine the current status of the Heteroptera fauna in Gerede / Bolu, and to contribute to the Heteroptera fauna of Bolu province (Türkiye).

In this study conducted in 2016 and 2017, 56 species belonging to 44 genera belonging to 12 families were identified from the Gerede district (Bolu province), only two of which were species recorded by Hoberlandt, and 54 species were recorded for the first time in the study area.

MATERIAL AND METHODS

In 2016 and 2017, research material was collected from forests, maquis and meadows around the Gerede district of Bolu province by sweeping method, and from short trees, bushes and herbaceous plants using cloth nets; samples found in soil and under rocks were collected by hand or with forceps. The coordinates and altitudes of 19 localities where samples were collected between the coordinates 40°37'11"N, 32°23'20"E and 40°49'12.0"N, 32°27'59.9"E in the study area (Figure 1) are given in Table 1. The captured samples were thrown into killing jars containing 70% ethyl alcohol. Entomology Museum Methods (Kıyak, 2000) were applied in the preparation of the samples as museum material.

For the identification of the species, relevant literature (Aysev, 1974; Kerzner, 1964; Pehlivan, 1981; Stichel, 1956-62; Wagner, 1970-1971) and comparative materials were used. The distribution of the species in Bolu (Türkiye) was compiled from the literature of Önder et al., (2006), Hoberlandt (1955). The material is stored in Gazi University Faculty of Science Prof. Dr. Metin Aktaş Zoology Museum.



Figure 1. Study area (grey pattern) within the borders of the Gerede district of Bolu province

Table 1. Coordinates and altitudes of 19 localities where samples were collected in the study area

Loc. no	Locality	Coordinate	Altitude (m)
S1	Gerede Stream Side	40°49'12"N 32°27'59"E	1025
S2	Yukarıörenbaşı Village	40°48'06"N 32°28'32"E	1268
S3	Kayısoğan Village Road	40°48'18"N 32°27'15"E	1334
S4	Between Demirci sopran- Kayısoğan	40°47'27"N 32°26'47"E	1353
S5	Aşağıörenbaşı Village	40°48'22"N 32°28'29"E	1173
S6	Avcılar Neighborhood	40°48'16"N 32°28'28"E	1260
S7	Yukarı Örenbaşı Village	40°48'10"N 32°28'32"E	1290
S8	Macarlar Village (Aktaşkurtlar)	40°49'51"N 32°30'59"E	1021
S9	Yukarı Örenbaşı Demirci Area	40°47'51"N 32°28'53"E	1338
S10	Avcılar Neighborhood	40°48'16"N 32°28'28"E	1261
S11	Yukarı Örenbaşı (Aydın Rock)	40°48'20"N 32°28'27"E	1269
S12	Kayısoğan Village	40°48'18"N 32°27'13"E	1344
S13	Aşağı Örenbaşı Village Road	40°48'43"N 32°29'13"E	1130
S14	Ortaca Village Road	40°46'51"N 32°26'19"E	1279
S15	Ortaca Village	40°46'26"N 32°25'46"E	1322
S16	Hasanlar Village Road	40°45'48"N 32°21'13"E	1309
S17	Hasanlar Village	40°45'30"N 32°20'43"E	1238
S18	Kazanlar Village (Birinci Afşar)	40°43'43"N 32°18'25"E	1180
S19	Yukarı Ovacık Village Plateau	40°37'11"N 32°23'20"E	1581

RESULTS

This study includes a total of 56 terrestrial species belonging to the order Heteroptera in Gerede. These are species of 44 genera belonging to 12 families and the study was carried out based on 391 Heteroptera specimens.

The species names given in this study were checked for some spelling errors in the records used in the literature used in the study and valid names were given. Aukema (2018) was used for checking.

Miridae Hahn, 1833

Mirinae Hahn, 1833

***Aphanosoma* Costa, 1842**

***Aphanosoma italicum* Costa, 1841**

Material examined: Adult individuals of this species were encountered at an altitude of 1130m-1344m. 6 ♀♀, 10 ♂♂ Loc. S7, 10.06.2017; 13 ♀♀, 8 ♂♂ Loc. S10, 29.06.2017; 3 ♀♀, 3 ♂♂ Loc. S11, 29.06.2017; 2 ♀♀ Loc. S12, 30.06.2017; 1♂ Loc. S13, 30.06.2017. This species is recorded for the first time in the study area.

***Brachycoleus* Fieber, 1858**

***Brachycoleus decolor* Reuter, 1887**

Material examined: Adult individuals of this species were encountered at an altitude of 1021m-1344m. 1♀ Loc. S8, 27.06.2017; 1♂ Loc. S11, 29.06.2017; 1♂ 1♀ Loc. S12, 30.06.2017. This species is recorded for the first time in the study area.

***Horistus* Fieber, 1860**

***Horistus orientalis* (Gmelin, 1790)**

Material examined: Adult individuals of this species were encountered at an altitude

of 1261m-1269m. 1♀ Loc. S10, 29.06.2017; 4 ♀♀ 2 ♂♂ Loc. S11, 29.06.2017. This species is recorded for the first time in the study area.

Grypocoris Douglas & Scott, 1868

Grypocoris syriacus Reuters, 1896

Material examined: Adult individuals of this species were encountered at an altitude of 1261m-1344m. 3 ♀♀ 2 ♂♂ Loc. S10, 29.06.2017; 1♀ Loc. S12, 30.06.2017.

Remark: It is an endemic species found in the Hassa-Akbez type locality of Hatay and is distributed in Adana, Hatay, Kahramanmaraş and Osmaniye provinces. It was recorded for the first time from Northern Anatolia and was previously published for the study area by Kiyak & Yılmaz Şahin (2021).

Leptopterna Fieber, 1858

Leptoterna dolobrata (Linnaeus, 1758)

Material examined: Adult individuals of this species were encountered at an altitude of 1130m-1261m. 3 ♀♀ Loc. S10, 29.06.2017; 4 ♀♀, 5 ♂♂ Loc. S13, 30.06.2017. This species is recorded for the first time in the study area.

Stenodema Laporte, 1833

Stenodema laevigata (Linnaeus, 1758)

Material examined: Adult individuals of this species were encountered at an altitude of 1025m-1581m. 1♀ Loc. S1, 03.09.2016; 1♀ Loc. S3, 05.09.2016; 2 ♀♀ Loc. S4, 05.09.2016; 2 ♀♀ Loc. S9, 28.06.2017; 1♀ Loc. S10, 29.06.2017; 4 ♀♀ 3 ♂♂ Loc. S15, 08.09.2017; 6 ♀♀ 6 ♂♂ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

Nabidae A. Costa, 1853

Nabinae A. Costa, 1853

Himacerus Wolf, 1811

Himacerus (Aptus) mirmicoides (O.Costa, 1834)

Material examined: Adult individual of this species were encountered at an altitude of 1021 m. 1♀ Loc. S8, 27.06.2017. This species is recorded for the first time in the study area.

Nabis Latreille, 1802

Nabis cf. ferus (Linnaeus, 1758) _1.8.)

Material examined: Adult individuals of this species were encountered at altitude of 1238m-1334m. 1♀ Loc. S3, 05.09.2016; 1♀ Loc. S15, 08.09.2017; 1♀ Loc. S16, 08.09.2017; 1♂ Loc. S17, 08.09.2017; 1♀ Loc. S18, 08.09.2017. This species is recorded for the first time in the study area.

Nabis meridionalis Kerzner, 1963

Material examined: Adult individuals of this species were encountered at an altitude of 1025m-1581m. 1♀, 2 ♂♂ Loc. S1, 03.09.2016; 1♀, 4 ♂♂ Loc. S3, 05.09.2016; 1♀ Loc. S5, 07.09.2016; 1♂ Loc. S6, 07.09.2016; 2 ♀♀, 1♂ Loc. S9, 28.06.2017; 2 ♀♀ Loc. S12, 30.06.2017; 1♀ Loc. S17, 08.09.2017; 1♂ Loc. S19, 08.09.2017. This species is recorded for the first time in the study area.

Reduviidae Latreille, 1807

Reduviinae Latreille, 1807**Reduvius Fabricius, 1775****Reduvius personatus (Linnaeus, 1758)**

Material examined: Adult individual of this species were encountered at an altitude of 1130 m. 1♂ Loc. S13, 30.06.2017. This species is recorded for the first time in the study area.

Lygaeidae Schilling, 1829**Lygaeinae Schilling, 1829****Lygaeus Fabricius, 1794****Lygaeus equestris (Linnaeus, 1758)**

Material examined: Adult individuals of this species were encountered at an altitude of 1021m-1581m 1♂ Loc. S4, 05.09.2016; 1♀ Loc. S5, 07.09.2016; 1♀, 4 ♂♂ Loc. S7, 07.09.2016; 2 ♀♀ Loc. S8, 27.06.2017; 4 ♀♀, 2 ♂♂ Loc. S10, 29.06.2017; 3 ♀♀ Loc. S11, 29.06.2017; 1♂ Loc. S12, 30.06.2017; 1♀ Loc. S13, 30.06.2017; 1♂ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

Lygaeus pandurus (Scopoli, 1763)

Material examined: Adult individuals of this species were encountered at an altitude of 1173m-1260m. 1♂ Loc. S5, 07.09.2016; 1♀ Loc. S6, 07.09.2016. This species is recorded for the first time in the study area.

Heterogasterinae Stål, 1872**Heterogaster Schilling, 1829****Heterogaster artemisiae Schilling, 1829**

Material examined: Adult individual of this species were encountered at an altitude of 1173 m. 1♂ Loc. S5, 07.09.2016. This species is recorded for the first time in the study area.

Orsillinae Stal, 1872**Ortholomus Stål, 1872****Ortholomus punctipennis (Herrich-Schaeffer, 1838)**

Material examined: Adult individuals of this species were encountered at an altitude of 1581 m. 2 ♀♀ S19, 09.09.2017. This species is recorded for the first time in the study area.

Rhyparochrominae Amyot & Serville, 1843**Rhyparochromus Hahn, 1826****Rhyparochromus sanguineus (Douglas & Scott, 1868)**

Material examined: Adult individuals of this species were encountered at an altitude of 1021m-1581m. 1♂ Loc. S5, 07.09.2016; 1♀ Loc. S8, 27.06.2017; 1♀ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

Rhyparochromus vulgaris (Schilling, 1829)

Material examined: Adult individuals of this species were encountered at an altitude of 1025m-1260m. 1♂ Loc. S1, 03.09.2016; 1♂ Loc. S6, 07.09.2016. This species is recorded for the first time in the study area.

Megalonotus Fieber, 1860***Megalonotus praetextatus (Herrich-Schaeffer, 1835)***

Habitat: Adult individuals of this species were encountered in maquis and meadow areas at an altitude of 1338 m. 40°47'51"N 32°28'53"E, 1♀, Loc. S9, 28.06.2017.

Remark: This species a first record from Bolu province was previously published for the study area by Kiyak & Yılmaz Şahin (2020)

Xanthochilus Stal, 1872***Xanthochilus saturnius (Rossi, 1790)***

Material examined: Adult individuals of this species were encountered at an altitude of 1338 m. 1♂ Lock. S9, 28.06.2017. This species is recorded for the first time in the study area.

Beosus Amyot & Serville, 1843***Beosus quadripunctatus (Muller, 1766)***

Material examined: Adult individuals of this species were encountered at an altitude of 1025m-1173m. 1♂ Loc. S1, 03.09.2016; 1♀ Loc. S5, 07.09.2016. This species is recorded for the first time in the study area.

Emblethis Fieber, 1860***Emblethis angustus Montandon, 1890***

Material examined: Adult individuals of this species were encountered at an altitude of 1290 m. 1♀ Loc. S7, 07.09.2016 This species is recorded for the first time in the study area.

Stenocephalidae Latreille, 1825**Stenocephalinae Latreille, 1825*****Dicranocephalus Hahn, 1826******Dicranocephalus albipes (Fabricius, 1781)***

Material examined: Adult individuals of this species were encountered at an altitude of 1261m-1581m. 1♂ Loc. S8, 27.06.2017; 1♀ Loc. S17, 08.09.2017. This species was recorded in the study area by Hoberlandt (1955) and as the second record with this study.

Coreidae Leach, 1815**Coreinae Leach, 1815*****Coreus Fabricius, 1794******Coreus marginatus (Linnaeus, 1758)***

Material examined: Adult individuals of this species were encountered at an altitude of 1025m-1309m. 1♀, 1♂ Loc. S1, 03.09.2016; 1♀ Loc. S5, 07.09.2016; 1♂ Loc. S7, 10.06.2017; 1♀ 5 ♂♂ Loc. S10, 29.06.2017; 1♀ Loc. S13, 30.06.2017; 1♂ Loc. S16, 08.09.2017. This species is recorded for the first time in the study area.

Enoplops Amyot & Serville, 1843***Enoplops disciger (Colenati, 1845)***

Material examined: Adult individuals of this species were encountered at an altitude

of 1261 m. 1♀ Lock. S10, 29.06.2017. This species is recorded for the first time in the study area.

***Syromastus* Berthold, 1827**

***Syromastus rhombeus* (Linnaeus, 1767)**

Material examined: Adult individuals of this species were encountered at an altitude of 1260m-1581m. 1♀ Loc. S2, 05.09.2016; 1♀ Loc. S6, 07.09.2016; 1♀ Loc. S7, 10.06.2017; 1♂ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

***Centrocoris* Kolenati, 1845**

***Centrocoris spiniger* (Fabricius, 1781)**

Material examined: Adult individuals of this species were encountered at an altitude of 1260m-1344m. 1♀ 1♂ Loc. S2, 05.09.2016; 1♂ Loc. S10 29.06.2017; 1♂ Loc. S12, 30.06.2017. This species is recorded for the first time in the study area.

***Centrocoris variegatus* Kolenati, 1845**

Material examined: Adult individual of this species were encountered at an altitude of 1290 m. 1♀ Lock. S7, 10.06.2017. This species is recorded for the first time in the study area.

***Pseudophloeinae* Stål, 1872**

***Ceraleptus* Costa, 1847**

***Ceraleptus gracilicornis* (Herrich-Schaeffer, 1835)**

Material examined: Adult individuals of this species were encountered at an altitude of 1260-1290m. 1♂ Loc. S7, 10.06.2017; 1♂ Loc. S11, 29.06.2017. This species is recorded for the first time in the study area.

***Ceraleptus lividus* (Stein, 1858)**

Material examined: Adult individuals of this species were encountered at an altitude of 1290 m. 1♀ Lock. S7, 10.06.2017. 27. This species is recorded for the first time in the study area.

***Coriomeris* Westwood, 1842**

***Coriomeris affinis* (Herrich-Schaeffer, 1839)**

Material examined: Adult individuals of this species were encountered at an altitude of 1021m-1338m. 2 ♂♂ Loc. S7, 10.06.2017; 4 ♂♂ Loc. S8, 27.06.2017; 1♂ Loc. S9, 28.06.2017. This species is recorded for the first time in the study area.

Alydidae Amyot & Serville, 1843

Alydinae Amyot & Serville, 1843

***Camptopus* Amyot & Serville, 1843**

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

Material examined: Adult individuals of this species were encountered at an altitude of 1238m-1353m. 1♂ Loc. S4, 05.09.2016; 1♂ Loc. S16, 08.09.2017; 1♂, 3 ♀♀ Loc. S17, 08.09.2017. This species is recorded for the first time in the study area.

***Alydus* Fabricius, 1803**

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

Material examined: Adult individuals of this species were encountered at an altitude of 1268m-1334m. 1♂ Loc. S2, 05.09.2016; 1♀, 1♂ Loc. S3, 05.09.2016. This species is recorded for the first time in the study area.

Rhopalidae Amyot & Serville, 1843**Rhopalinae Amyot & Serville, 1843*****Rhopalus* Schilling, 1827*****Rhopalus maculatus* (Fieber, 1836)**

Material examined: Adult individuals of this species were encountered at an altitude of 1581 m. 1♂ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

***Rhopalus parumpunctatus* Schilling, 1829**

Material examined: Adult individuals of this species were encountered at an altitude 1238m-1581m. of 1♂ Loc. S2, 05.09.2016; 1♂ Loc. S5, 07.09.2016; 7 ♂♂ Loc. S7, 10.06.2017; 1♂ Loc. S9, 28.06.2017; 1♂ Loc. S10, 29.06.2017; 1♂ Loc. S15, 08.09.2017; 1 ♀Loc. S17, 08.09.2017; 1♂ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

***Rhopalus rufus* Schilling, 1829**

Material examined: Adult individuals of this species were encountered at an altitude of 1238 m. 1♂ Loc. S17, 08.09.2017. This species is recorded for the first time in the study area.

Maccevethus* Dallas, 1852**Maccevethus corsicus corsicus* Signoret, 1862**

Material examined: Adult individuals of this species were encountered at an altitude of 1261m-1269m. 1♂ Loc. S2, 05.09.2016; 1♀ Loc. S10, 29.06.2017; 1♀ Loc. S11,29.06.2017. This species is recorded for the first time in the study area.

Plataspidae Dallas, 1851**Coptosomatinae Kirkaldy, 1909*****Coptosoma* Laporte, 1833*****Coptosoma scutellatum* (Geoffroy, 1785)**

Material examined: Adult individual of this species were encountered at an altitude of 1344 m. 1♂ Loc. S12, 30.06.2017. This species is recorded for the first time in the study area.

Cydnidae Billberg, 1820**Sehirinae Amyot & Serville, 1843*****Legnotus* Schiødte, 1848*****Legnotus limbosus* (Geoffroy, 1785)**

Material examined: Adult individuals of this species were encountered at an altitude of 1279 m. 1♀ Lock. S14, 29.06.2017. This species was recorded in study area by Hoberlandt's (1955) and as the second record with this study.

Scutelleridae Leach, 1815

Odontotarsinae Mulsant & Rey, 1865***Odontotarsus* Laporte, 1833*****Odontotarsus purpureolineatus* (Rossi, 1790)**

Material examined: Adult individuals of this species were encountered at an altitude of 1130m-1353m. 1♂ Loc. S2, 05.09.2016; 1♂ Loc. S4, 05.09.2016; 6♂1260m. Loc.S7, 07.09.2016; 1♂ Loc. S10, 29.06.2017; 1♂ Loc. S12, 30.06.2017; 1♂ Loc. S13, 30.06.2017. This species is recorded for the first time in the study area.

Eurygastrinae Amyot & Serville, 1843***Eurygaster* Laporte, 1833*****Eurygaster dilaticollis* Dohrn, 1860**

Material examined: Adult individuals of this species were encountered at an altitude of 1344 m. 1♂ Loc. S12, 30.06.2017. This species is recorded for the first time in the study area.

***Eurygaster maura* (Linnaeus, 1758)**

Material examined: Adult individuals of this species were encountered at an altitude of 1290m -1344m. 1♂ Loc. S7, 10.06.2017; 1♂ Loc. S12, 30.06.2017. This species is recorded for the first time in the study area.

***Eurygaster testudinaria* (Geoffroy, 1785)**

Material examined: Adult individual of this species were encountered at an altitude of 1279 m.1♂ Loc. S14, 08.09.2017. This species is recorded for the first time in the study area.

Pentatomidae Leach, 1815**Pentatominae Leach, 1815*****Derula* Mulsant & Rey, 1856*****Derula flavoguttata* Mulsant & Rey, 1856**

Material examined: Adult individuals of this species were encountered at an altitude of 1290 m. 1♂ Loc. S7, 07.09.2016. This species is recorded for the first time in the study area.

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

Material examined: Adult individuals of this species were encountered at an altitude of 1025m-1290m. 1♀ Loc. S1, 03.09.2016; 1♀ Loc. S5, 07.09.2016; 2♀♀, 4♂♂ Loc. S7, 07.09.2016; 2♀♀ Loc. S8, 27.06.2017; 2♀♀, 5♂♂ Loc. S10, 29.06.2017; 1♀, 1♂ Loc. S12, 30.06.2017; 4♀♀, 6♂♂Loc. S13, 30.06.2017. This species is recorded for the first time in the study area.

Aelia* Fabricius, 1803**Aelia acuminata* (Linnaeus, 1758)**

Material examined: Adult individuals of this species were encountered at an altitude of 1261m-1581m. 2♀♀, 4♂♂ Loc. S3, 05.09.2016; 2♀♀ Loc. S4, 05.09.2016; 7♀♀, 3♂♂ Loc. S7, 07.09.2016; 1♀, 1♂ Loc. S9, 28.06.2017; 1♀, 1♂ Loc. S10, 29.06.2017; 4♀♀, 1♂ Loc. S11, 29.06.2017; 1♂ Loc. S12, 30.06.2017; 1♂Loc. S14, 08.09.2017; 1♀

Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

***Aelia rostrata* Bohemian, 1852**

Material examined: Adult individuals of this species were encountered at an altitude of 1025m-1581m. 1♀, 1♂ Loc. S1, 03.09.2016; 1♀ Loc. S2, 05.09.2016; 1♂ Loc. S3, 05.09.2016; 1♀ Loc. S4, 05.09.2016; 1♀, 3 ♂♂ Loc. S7, 10.06.2017; 1♂ Loc. S10, 29.06.2017; 1♀ Loc. S13, 30.06.2017; 1♂ Loc. S14, 08.09.2017; 1♀ Loc. S15, 08.09.2017; 1♀ Loc. S17, 08.09.2017; 1♂ Loc. S18, 08.09.2017; 2♀, 3 ♂♂ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

***Neottiglossa* W. Kirby, 1837**

***Neottiglossa leporina* (Herrich-Schaeffer, 1830)**

Material examined: Adult individuals of this species were encountered at an altitude of 1268m-1581m. 1♀ Loc. S2, 05.09.2016; 1♀ Loc. S4, 05.09.2016; 3 ♀♀ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

***Palomena* Mulsant & Rey, 1866**

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

Material examined: Adult individuals of this species were encountered at an altitude of 1025m-1334m. 2♀ Loc. S1, 03.09.2016; 1♂ Loc. S3, 05.09.2016; 1♀ Loc. S10, 29.06.2017. This species is recorded for the first time in the study area.

***Holcostethus* Fieber, 1860**

***Holcostethus sphacelatus* (Fabricius, 1794)**

Material examined: Adult individual of this species were encountered at an altitude of 1261 m. 1♀ Loc. S10, 29.06.2017. This species is recorded for the first time in the study area.

***Carpocoris* Kolenati, 1846**

***Carpocoris melanocerus* (Mulsant & Rey, 1852)**

Material examined: Adult individual of this species were encountered at an altitude of 1261 m. 2 ♂♂ Loc. S10, 29.06.2017. This species is recorded for the first time in the study area.

***Carpocoris purpureipennis* (De Geer, 1773)**

Material examined: Adult individuals of this species were encountered at an altitude of 1025m-1581m. 1♀ Loc. S1, 03.09.2016; 2 ♀♀, 1♂ Loc. S3, 05.09.2016; 1♀ Loc. S4, 05.09.2016; 1♀, 3 ♂♂ Loc. S7, 10.06.2017; 1♀, 2 ♂♂ Loc. S8, 27.06.2017; 1♀ Loc. S11, 29.06.2017; 1♀, 1♂ Loc. S13, 30.06.2017; 1♂ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

***Codophila* Mulsant & Rey, 1866**

***Codophila varia* (Fabricius, 1787)**

Material examined: Adult individual of this species were encountered at an altitude of 1238 m. 1♂ Loc. S17, 08.09.2017. This species is recorded for the first time in the study area.

***Dolycoris* Mulsant & Rey, 1866**

***Dolycoris baccarum* (Linnaeus, 1758)**

Material examined: Adult individuals of this species were encountered at an altitude

of 1290m-1581m.3 ♀♀, 2 ♂♂ Loc. S7, 08.09.2017; 1♂ Loc. S9, 28.06.2017; 1♀ Loc. S15, 08.09.2017; 1♂ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

***Eurydema* Laporte, 1833**

***Eurydema oleraceum* (Linnaeus, 1758)**

Material examined: Adult individuals of this species were encountered at an altitude of 1353 m. 1♀ Lock. S4, 05.09.2016. This species is recorded for the first time in the study area.

***Eurydema ornatum* (Linnaeus, 1758)**

Material examined: Adult individual of this species were encountered at an altitude of 1290 m. 1♀ Lock. S7, 07.09.2016. This species is recorded for the first time in the study area.

***Piezodorus* Fieber, 1860**

***Piezodorus lituratus* (Fabricius, 1794)**

Material examined: Adult individuals of this species were encountered at an altitude of 1021m-1260m. 1♀ Loc. S7, 07.09.2016; 4 ♀♀ 1♂ Loc. S8, 27.06.2017; 1♂ Loc. S19, 09.09.2017. This species is recorded for the first time in the study area.

***Holcogaster* Fieber, 1860**

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

Material examined: Adult individual of this species were encountered at an altitude of 1344 m. 1♀ Lock. S12, 30.06.2017. This species is recorded for the first time in the study area.

CONCLUSION

In the field studies carried out in the research area within the borders of Gerede district of Bolu province, 391 specimens were identified and 56 of them were determined to belong to the order Heteroptera. These are species belonging to 44 genera belonging to 12 families (Table 2-A).

Hoberlandt (1955) recorded 23 species belonging to 11 families of the order Heteroptera in his studies in Gerede (Table 2-B). The species identified in Hoberlandt's study and the species commonly identified in this study are given in Table 2.

In this study, only two of the 23 species recorded by Hoberlandt (1955) from the Gerede region were encountered; These are *Lenotus limbosus* (Geoffroy, 1785) from the family Cydnidae and *Dicranocephalus albipes* (Fabricius, 1781) from the family Stenocephalidae.

The following species reported by Hoberlandt (1955) were not found: *Gerris lacustris*, *Hydrometra stagnorum*, *Calocoris affinis*, *Calocoris norvegicus* ssp. *norvegicus*, *Charagochilus gyllenhali*, *Orthocephalus vittipennis*, *Orthops kalmi*, *Stenotus binotatus*, *Xylocoris cursitans*, *Macrosaldula variabilis*, *Agramma atricapillum*, *Physatocheila municeps*, *Aradus versicolor*, *Arma custos*, *Arma insperata*, *Sehirus morio* and *Cydnus atterimus* (Table 2).

While the species belonging to the families Alydidae, Coreidae, Nabidae, Plataspididae, Reduviidae, Rhopalidae and Scutelleridae that we presented in this study were not previously encountered in Gerede, species belonging to the families Miridae, Lygaeidae, Stenocephalidae, Pentatomidae and Cydnidae that were previously known were encountered and it was observed that the number of species belonging to these families was higher in our study. 54 of the 56 species

identified in this study are new records for the research area Gerede (Bolu). The distribution of these species according to families is as follows; New records included 6 species from the Miridae family, 2 species from the Alydidae family, 8 species from the Coreidae family, 10 species from the Lygaeidae family, 3 species from the Nabidae family, 15 species from the Pentatomidea family, 1 species from the Plataspidae family, 1 species from the Reduviidae family, 4 species from the Rhopalidae family and 4 species from the Scutellaridae family. According to these results, the previously known Heteroptera fauna of Gerede increased from 11 families and 23 species to 18 families and 75 species.

When the results of the study we conducted before this study were evaluated together with the records given by Önder et al. (2006) and Hoberlandt (1955), it was

concluded that there were 163 species-group taxa belonging to 117 genera of 21 families belonging to the Heteroptera order in Bolu province (Table 3, Figure 2).

Önder et al. (2006) reported that *Dicranocephalus agilis* (Scopoli, 1763) from the family Stenocephalidae and *Dicranomerus agilis* (Scopoli, 1763) from the family Coreidae were found in Bolu province, and they also mentioned the distribution of *Dicranocephalus albipes* (Fabricius, 1781) from the family Stenocephalidae in all regions of Turkey and the distribution of *Dicranomerus albipes* (Fabricius, 1781) from the family Coreidae in Bolu. Since the genus name *Dicranomerus* is a synonym for the genus name *Dicranocephalus*, the information about these two species belonging to the genus *Dicranomerus* in the Turkish Heteroptera catalog (Önder et al., 2006) is not included in the list in the table (Table 2) in this study.

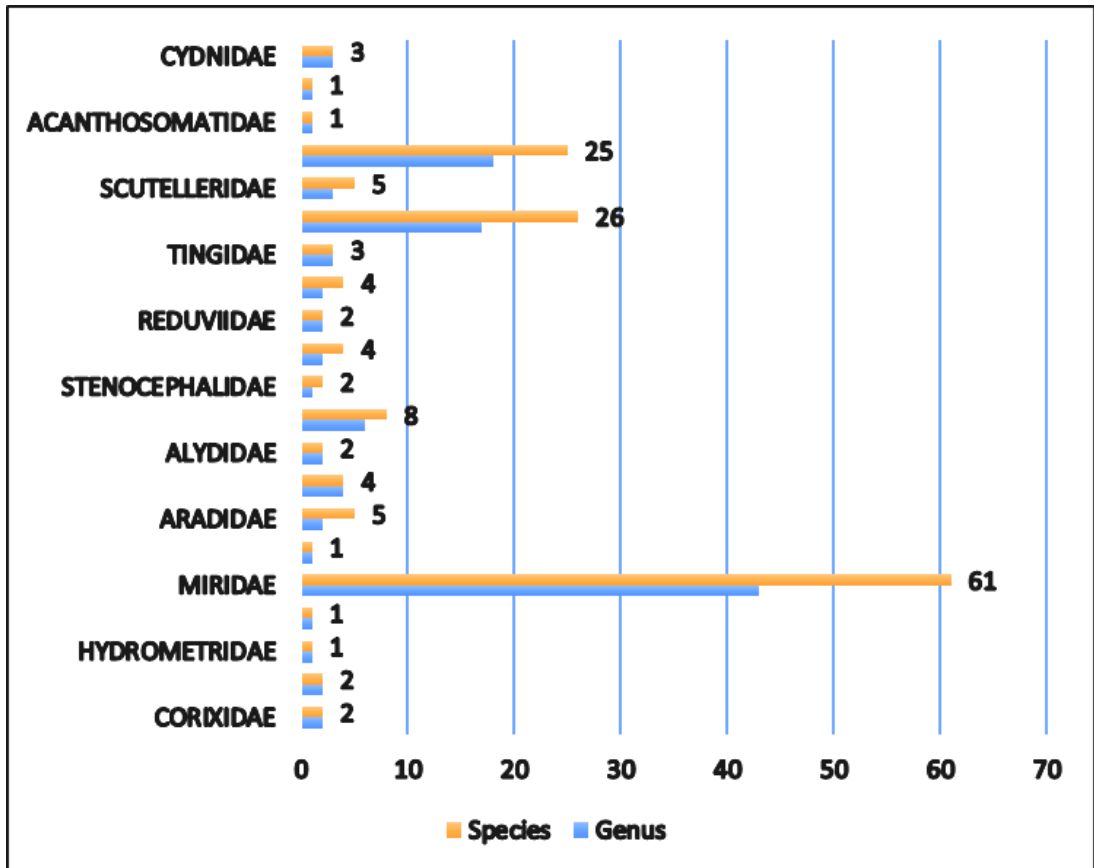


Figure 2. Graph of the number of genera and species of the families of Heteroptera species in Bolu province

Table 2. Heteroptera species recorded in previous studies and in this study in Bolu province and Gerede district (A: This study/Gerede district; B: Hoberlandt (1955); C: Önder et al (2006). (species marked with "*" are available)

Familia/Species list from Bolu province	A	B	C
CORIXIDAE			
<i>Hesperocorixa linnaei</i> (Fieber, 1848)			*
<i>Sigara nigrolineata nigrolineata</i> (Fieber, 1848)			*
GERRIDAE			
<i>Aquarius ventralis</i> (Fieber, 1860)			*
<i>Gerris lacustris</i> (Linnaeus, 1758)		*	*
HYDROMETRIDAE			
<i>Hydrometra stagnorum</i> (Linnaeus, 1758)		*	*
SALDIDAE			
<i>Macrosaldula variabilis</i> (Herrich-Schäffer, 1835)		*	*
MIRIDAE			
<i>Adelphocoris ticinensis</i> (Meyer-Dür, 1843)			*
<i>Adelphocoris vandalicus</i> (Rossi, 1790)			*
<i>Agnocoris reclairei</i> (Wagner, 1949)			*
<i>Alloeotomus gothicus</i> (Fallen, 1807)			*
<i>Aphansoma italicum</i> Costa, 1841	*		
<i>Atractotomus mali</i> (Meyer-Dur, 1843)			*
<i>Blepharidopterus angulatus</i> (Fallén, 1807)			*
<i>Brachycoleus decolor</i> Reuter, 1887	*		
<i>Calocoris affinis</i> (Herrich-Schäffer, 1835)		*	*
<i>Calocoris angularis</i> (Fieber, 1864)			*
<i>Calocoris fulvomaculatus</i> (De Geer, 1773)			*
<i>Calocoris norvegicus</i> ssp. <i>norvegicus</i> (Gmelin, 1788)		*	
<i>Calocoris quadripunctatus</i> (Villers, 1789)			*
<i>Calocoris reuteri</i> Horvath, 1882			*
<i>Calocoris sexguttatus</i> (Fabricius, 1776)			*
<i>Campylomma verbasci</i> (Meyer-Dür, 1843)			*
<i>Capsodes cingulatus</i> (Fabricius, 1787)	*		
<i>Charagochilus gyllenhalii</i> (Fallen, 1807)		*	*
<i>Cyllecoris histrionicus</i> (Linnaeus, 1767)			*
<i>Deraeocoris ruber</i> (Linnaeus, 1758)			*
<i>Dichroscytus seidenstückeri</i> Josifov, 1974			*
<i>Dryophilocoris persimilis</i> (Puton, 1895)			*
<i>Exolygus maritimus</i> Wagner, 1949			*
<i>Globiceps flavomaculatus</i> (Fabricius, 1794)			*
<i>Globiceps sphegiformis</i> (Rossi, 1790)			*
<i>Grypocoris heinzi</i> Wagner, 1966			*
<i>Grypocoris syriacus</i> Reuter, 1896	*		
<i>Halticus luteicollis</i> (Panzer, 1805)			*
<i>Harpocera thoracica</i> (Fallén, 1807)			*

Table 2. Continued

<i>Heterotoma dalmatinum</i> (Wagner, 1950)			*
<i>Hypseloecus visci</i> (Puton, 1888)			*
<i>Leptopterna dolobrata</i> (Linnaeus, 1758)	*		
<i>Macrotylus ponticus</i> Seidenstücker, 1966			*
<i>Malacocoris chlorizans</i> Panzer, 1794			*
<i>Maurodactylus albidus</i> (Kolenati, 1845)			*
<i>Myrmecophyes alboornatus</i> (Stål, 1858)			*
<i>Odontoplatys suturalis</i> (Jakovlev, 1883)			*
<i>Orthocephalus vittipennis</i> Herrich-Schäffer, 1835		*	*
<i>Orthonotus rossicus</i> (Reuter, 1878)			*
<i>Orthops atomarius</i> (Meyer-Dür, 1843)			*
<i>Orthops kalmi</i> (Linnaeus, 1753)		*	
<i>Orthotylus nassatus</i> (Fabricius, 1787)			*
<i>Orthotylus prasinus</i> (Fallén, 1829)			*
<i>Pachyxyphus lineellus</i> (Mulsant & Rey, 1852)			*
<i>Phytocoris pini</i> Kirschbaum, 1855			*
<i>Phytocoris pseudoinsignis</i> Wagner, 1965			*
<i>Phytocoris tiliae</i> (Fabricius, 1776)			*
<i>Pilophorus cinnamopterus</i> (Kirschbaum, 1856)			*
<i>Plagiognathus amygdali</i> Linnavuori, 1965			*
<i>Plagiognathus arbustorum</i> (Fabricius, 1794)			*
<i>Plagiognathus chrysanthemii</i> (Wolff, 1804)			*
<i>Polymerus vulneratus</i> (Panzer, 1806)			*
<i>Psallus lentigo</i> Seidenstücker, 1972			*
<i>Psallus perrisi</i> (Mulsant & Rey, 1852)			*
<i>Saundersiella hirta</i> Wagner, 1948			*
<i>Saundersiella moerens</i> (Reuter, 1876)			*
<i>Stenodema laevigatum</i> (Linnaeus, 1758)	*		
<i>Stenotus binotatus</i> (Fabricius, 1794)		*	*
<i>Sthenarus collaris</i> Wagner, 1975			*
<i>Sthenarus roseri</i> (Herrich-Schäffer, 1838)			*
<i>Tuponia eckerleini</i> Wagner, 1955			*
ISOMETOPIDAE			
<i>Isometopus intrusus</i> (Herrich-Schäffer, 1835)			*
ARADIDAE			
<i>Aneurus avenius</i> Dufour, 1833			*
<i>Aneurus laevis</i> (Fabricius, 1775)			*
<i>Aradus caucasicus</i> Kolenati, 1856			*
<i>Aradus crenatus</i> Say, 1832			*
<i>Aradus versicolor</i> Herrich-Schäffer, 1835		*	*
ANTHOCORIDAE			
<i>Anthocoris nemorum</i> (Linnaeus, 1761)			*
<i>Lyctocoris dimidiatus</i> (Spinola, 1837)			*

Table 2. Continued

<i>Temnostethus pusillus</i> (Herrich-Schäffer, 1835)			*
<i>Xylocoris cursitans</i> (Fallen, 1807)		*	*
ALYDIDAE			
<i>Alydus calcaratus</i> (Linnaeus, 1758)	*		
<i>Camptopus lateralis</i> (Germar, 1817)	*		
COREIDAE			
<i>Centrocoris spiniger</i> (Fabricius, 1781)	*		
<i>Centrocoris variegatus</i> Kolenati, 1845	*		
<i>Ceraleptus gracilicornis</i> (Herrich-Schäffer, 1835)	*		
<i>Ceraleptus lividus</i> (Stein, 1858)	*		
<i>Coreus marginatus</i> (Linnaeus, 1758)	*		
<i>Coriomeris affinis</i> (Herrich-Schäffer, 1839)	*		
<i>Enoplops disciger</i> (Kolenati, 1845)	*		
<i>Syromastus rhombeus</i> (Linnaeus, 1767)	*		
STENOCEPHALIDAE			
<i>Dicronecephalus albipes</i> (Fabricius, 1781)	*	*	
<i>Dicranocephalus aquilis</i> (Scopoli, 1763)			*
RHOPALIDAE			
<i>Maccevethus corsicus corsicus</i> Signoret, 1862	*		
<i>Rhopalus maculatus</i> (Fieber, 1836)	*		
<i>Rhopalus parumpunctatus</i> Schilling, 1829	*		
<i>Rhopalus rufus</i> Schilling, 1829	*		
REDUVIIDAE			
<i>Pirates strepitans</i> Rambur, 1842			*
<i>Reduvius personatus</i> (Linnaeus, 1758)	*		
NABIDAE			
<i>Himacerus (Aptus) mirmicoides</i> (O. Costa, 1834)	*		
<i>Nabis cf. ferus</i> (Linnaeus, 1758)	*		
<i>Nabis meridionalis</i> Kerzhner, 1963	*		
<i>Nabis rugosus</i> (Linnaeus, 1758)			*
TINGIDAE			
<i>Agramma atricapillum</i> (Spinola, 1837)		*	*
<i>Lasiacantha capucina</i> (Germar, 1836)			*
<i>Physatocheila municeps</i> Horvath, 1903		*	
LYGAEIDAE			
<i>Aphanus rolandri</i> (Linnaeus, 1758)			*
<i>Artheneis balcanica</i> (Kormilev, 1938)			*
<i>Beosus quadripunctatus</i> (Müller, 1766)	*		
<i>Emblethis angustus</i> Montandon, 1890	*		
<i>Emblethis verbasci</i> (Fabricius, 1803)			*
<i>Geocoris (Piocoris) erythrocephalus</i> (Lepelletier & Ser-ville, 1825)		*	
<i>Geocoris lineola</i> (Rambur, 1839)		*	

Table 2. Continued

<i>Heterogaster artemisiae</i> Schilling, 1829	*		
<i>Kleidocerys truncatulus ericae</i> (Horvath, 1909)			*
<i>Lygaeus equestris</i> (Linnaeus, 1758)	*		
<i>Lygaeus pandurus</i> (Scopoli, 1763)	*		
<i>Megalonotus praetextatus</i> (Herrich-Schaeffer, 1835)	*		
<i>Melanocoryphus superbus</i> (Pollach, 1779)			*
<i>Nysius ericae</i> (Schilling, 1829)			*
<i>Nysius stalianus</i> Horvath, 1890			*
<i>Ortholomus punctipennis</i> (Herrich-Schaeffer, 1838)	*		
<i>Peritrechus lundi</i> (Gmelin, 1790)			*
<i>Rhyparochromus consors</i> (Horvath, 1878)			*
<i>Rhyparochromus inarimensis</i> (Costa, 1860)			*
<i>Rhyparochromus phoeniceus</i> (Rossi, 1794)			*
<i>Rhyparochromus sanguineus</i> (Douglas & Scott, 1868)	*		
<i>Rhyparochromus saturnius</i> Rossi, 1790)	*		
<i>Rhyparochromus vulgaris</i> (Schilling, 1829)	*		
<i>Scolopostethus affinis</i> (Schilling, 1829)			*
<i>Stygnocoris pedestris</i> (Fallen, 1807)		*	*
<i>Tropistethus fasciatus</i> Ferrari, 1874			*
SCUTELLERIDAE			
<i>Eurygaster dilaticollis</i> Dohrn, 1860	*		
<i>Eurygaster maura</i> (Linnaeus, 1758)	*		
<i>Eurygaster testudinaria</i> (Geoffroy, 1785)	*		
<i>Odontotarsus purpureolineatus</i> (Rossi, 1790)	*		
<i>Psacasta pallida</i> Reuter, 1902			*
PENTATOMIDAE			
<i>Aelia acuminata</i> (Linnaeus, 1758)	*		
<i>Aelia rostrata</i> Boheman, 1852	*		
<i>Arma custos</i> (Fabricius, 1794)		*	*
<i>Arma insperata</i> Horvath, 1899		*	*
<i>Carpocoris melanocerus</i> (Mulsant & Rey, 1852)	*		
<i>Carpocoris purpureipennis</i> (De Geer, 1773)	*		
<i>Codophila varia</i> (Fabricius, 1787)	*		
<i>Derula flavoguttata</i> Mulsant & Rey, 1856	*		*
<i>Dolycoris baccarum</i> (Linnaeus, 1758)	*		
<i>Eurydema oleracea</i> (Linnaeus, 1758)	*		
<i>Eurydema ornatum</i> (Linnaeus, 1758)	*		
<i>Eurydema ventrale</i> Kolenati, 1846			*
<i>Eysarcoris fabricii</i> Kirkaldy, 1904			*
<i>Eysarcoris inconspicuus</i> (Herrich-Schäffer, 1844)			*
<i>Graphosoma lineatum</i> (Linnaeus, 1758)	*		
<i>Holcogaster fibulata</i> (Germar, 1831)	*		
<i>Holcostethus sphaelatus</i> (Fabricius, 1794)	*		

Table 2. Continued

<i>Neottiglossa leporina</i> (Herrich-Schäffer, 1830)	*		
<i>Palomena prasina</i> (Linnaeus, 1761)	*		
<i>Piezodorus lituratus</i> (Fabricius, 1794)	*		
<i>Pinthaeus sanguinipes</i> (Fabricius, 1781)		*	
<i>Pitedia pinicola</i> (Mulsant & Rey, 1852)			*
<i>Sciocoris capitatus</i> Jakovlev, 1881			*
<i>Sciocoris cursitans</i> (Fabricius, 1794)			*
<i>Staria lunata</i> (Hahn, 1835)			*
ACANTHOSOMATIDAE			
<i>Acanthosoma haemorrhoidale</i> (Linnaeus, 1758)			*
PLATASPIDAE			
<i>Captosoma scutellatum</i> (Geoffroy, 1785)	*		
CYDNIDAE			
<i>Cydnius atterimus</i> (Fst., 1771)		*	
<i>Legnotus limbosus</i> (Geoffroy, 1785)	*	*	*
<i>Sehirus morio</i> (Linnaeus, 1761)		*	*
	56	23	102

Table 3. The genera and species numbers of the families to which the Heteroptera species founded in Bolu province

Familia	Genus	Species
CORIXIDAE	2	2
GERRIDAE	2	2
HYDROMETRIDAE	1	1
SALDIDAE	1	1
MIRIDAE	43	61
ISOMETOPIDAE	1	1
ARADIDAE	2	5
ANTHOCORIDAE	4	4
ALYDIDAE	2	2
COREIDAE	6	8
STENOCEPHALIDAE	1	2
RHOPALIDAE	2	4
REDUVIIDAE	2	2
NABIDAE	2	4
TINGIDAE	3	3
LYGAEIDAE	17	26
SCUTELLERIDAE	3	5
PENTATOMIDAE	18	25
ACANTHOSOMATIDAE	1	1
PLATASPIDAE	1	1
CYDNIDAE	3	3
21	117	163

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