JHT
J.Het.Turk.
Journal of the Heteroptera of Turkey
ISSN 2687 - 3249 (online edition)
Nov, 2023
Volume 5, Issue 2

Research Article

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

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§: This study was produced from the MSc thesis.

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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.

To cite this article: Fent, F., Chousein C.P.,2023, Contribution to the knowledge of Heteroptera (Hemiptera) fauna of the Rhodopes Mountains, Xanthi Region, Greece, *J.Het.Turk.*, 5(2): 298-306
DOI:10.5281/zenodo.10207359
To link to this article: https://www.j-ht.org/wp-content/uploads/2023/11/V52-A10.pdf
Received: Oct 31, 2023; **Revised:** Nov 24, 2023; **Accepted:** Nov 26, 2023; **Published online:** Nov 30, 2023

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

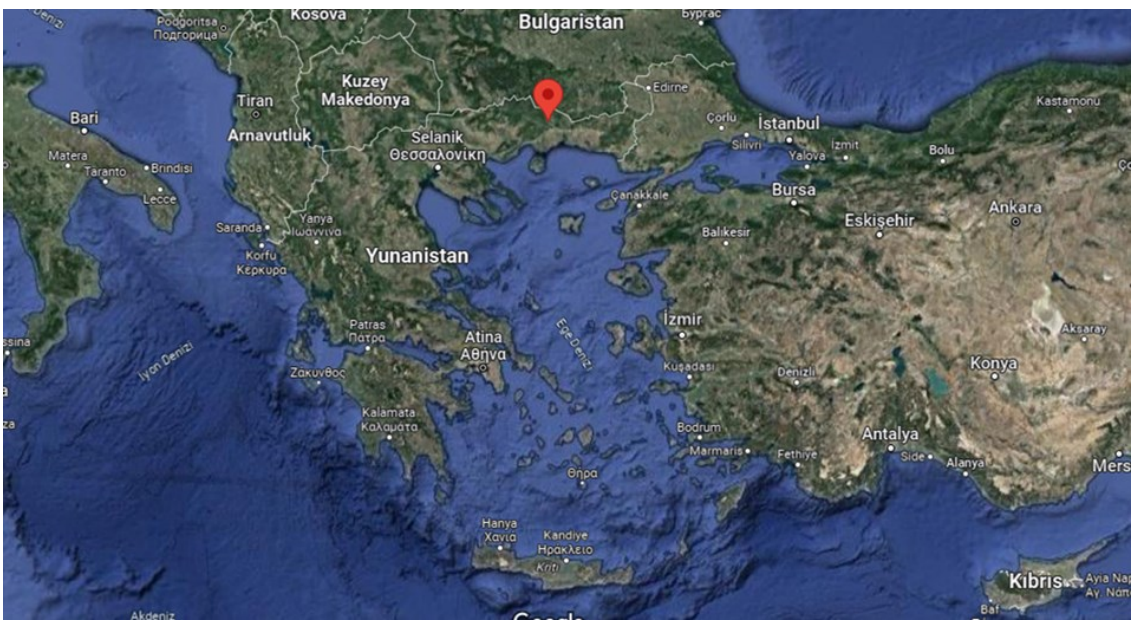

Figure 1. Location of the research area Oraion (Xanthi) (Google earth)

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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