

AN INTRODUCTION TO TRUE BUGS FAUNA OF GUNBER VALLEY WITH TWO NEW RECORDS FOR IRANIAN FAUNA (HEMIPTERA: HETEROPTERA)

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ABSTRACT: Gunber region, in East Azarbayjan province was surveyed for aquatic and terrestrial Heteroptera between May 2008 and September 2009. Forty two species belonging to 33 genera and 14 families were collected. Among these species *Anthocoris nemorum* (Linnaeus, 1761), *Nabis pseudoferus pseudoferus* Romane, 1949, *Orius niger* (Wolff, 1811), *Orius horvathi* (Reuter, 1884), *Geocoris arenarius* (Jakovlev, 1867), *Geocoris megacephalus* (Rossi, 1790), *Velia affinis* Kolenati, 1857, *Gerris maculatus* Tamanini, 1946, *Gerris lateralis* Schummel, 1832 are predators. The Species belonging to Miridae were the most conspicuous and reversely the members of Stenocephalidae had the minimum frequency. All of the species are new for the Gunber region, *Stenodema calcarata* (Fallén, 1807) and *Globiceps flavomaculatus* (Fabricius, 1794) belonging to family Miridae are new records to the Iran Heteroptera fauna.

KEY WORDS: Fauna, Gunber valley, New records, Heteroptera.

Gunber valley, in north western of Sahand mountain; East Azerbaijan province, is located in UTM (Universal transfer Mercator) coordinate system, X from 594563 to 611450 E; Y from 4174485 to 4179862 N, with varying latitude from 2188 m to 2276 m. This mountainous area is one of the famous localities in Iran in view point of Damascus rose producing.

Heteroptera, true bugs, are generally regarded as a suborder of the Hemiptera (Triplehorn & Johnson, 2005). They can often be identified by the structure of the forewing or hemelytron which consisting of a hardened or thickened basal portion and a membranous apical portion (Kelton, 1980). There may be around 37000 described species worldwide, and possibly another 25000 species remaining to be described. The world fauna is divided into roughly 75 families. The number of species of better known continental faunas such as North America, Europe and Australia may be around 2000 to 5000 species (Chaplin, 2009).

Heteroptera have sucking mouthparts encased in a labium or rostrum that is used to guide the mouthparts to the food source or prey (Lodos & Önder, 1986). Most of the Heteroptera feed on plants or plant material such as seeds, fruits or pollen which some of them known as serious plant pests (Dolling, 1991). On the other hand, predacious bugs, catch other insects and Acarina, reduce the number of agricultural pests and may be used in biological control (Schuh, 1995; Meyer, 2005). So far the fauna of this group of insects has been studied in limited areas of Iran by related specialists (Safavi, 1973; Modarres Awal, 1993; Linnavuori & Modarres Awal, 1998; Linnavuori & Hosseini, 2000; Linnavuori, 2008). Considering the importance of Heteroptera in view point of agriculture, their identification seems valuable in unstudied regions of the country.

MATERIAL AND METHODS

This study was conducted during 2008 - 2009. Samples collected from 15 localities through Gunber valley (Fig. 1). Sampling was performed using various methods such as sweep net, malaise trap and long handled sieve. The collected specimens were placed in ordinary paper envelopes after killing them in cyanid bottle in order to bring them in laboratory. The most important part of the body which used for identification is the male genital organ which has sclerotic structure. Methods of Kelton (1980) with some modifications were used for extraction of the organ. Then genital organs of male (pygophore and parameres) and female (spermatheca and genital plates) were sand out and supplied constant preparation. In order to specimen identification, various valid identification keys particularly for Palearctic region (Stichel, 1960; Kerzhner & Yachevski, 1964; Wagner, 1970, 1971, 1973) were used. Finally characteristic parts of specimens were drawn for identification.

The distributional information for the new records is listed under three subheadings: Europe (EU), North Africa (NA), Asia (AS).

RESULTS

In this study 42 species belonging to 14 families were collected and identified. All of them are as new records for the region and two species marked by an asterisk are newly reported to Iran insect fauna which listed as follows:

Family Gerridae Leach, 1815

***Gerris maculatus* Tamanini, 1946**

Material examined: 24 specimens (12♂, 12♀), May 2009, on flora and lake surface.

Family Notonectidae Latreille, 1802

***Notonecta viridis* Delcourt, 1909**

Material examined: 8 specimens (5♂, 3♀), May 2009, on fluor and lake surface.

Family Veliidae Brullé, 1836

***Velia affinis* Kolenati, 1857**

Material examined: 65 specimens (33♂, 32♀), May 2009, on flora and lake surface.

Family Anthocoridae Fieber, 1836

***Anthocoris nemorum* (Linnaeus, 1761)**

Material examined: 24 specimens (12♂, 12♀), May 2009, on sunflowers.

Note: Predator of *Psylla pyricola*, *Anthonomus pomorum*, *Euzophera bigella*, *Hyponomeuta malinellus* and aphids (Modarres Awal, 2002).

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

Material examined: 18 specimens (12♂, 6♀), May 2009, on sunflowers.

Distribution in Iran: Fars, Kerman and Khorasan (Modarres Awal, 2002).

***Orius horvathi* (Reuter, 1884)**

Material examined: 21 specimens (13♂, 8♀), May 2009, from alfalfa fields.

Family Lygaeidae Schilling, 1829

***Aphanus rolandri* (Linnaeus, 1758)**

Material examined: 25 specimens (15♂, 10♀), may 2009, on debris.

***Geocoris arenarius* (Jakovlev, 1867)**

Material examined: 34 specimens (12♂, 22♀), may 2009, on debris.

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

Material examined: 8 specimens (3♂, 5♀), May 2009, on debris.

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

Material examined: 13 specimens (9♂, 4♀), May 2009, on weeds.

***Nysius senecionis* (Shilling, 1829)**

Material examined: 18 specimens (9♂, 9♀), May 2009, on weeds.

Family Miridae Hahn, 1833***Adelphocoris lineolatus* (Goeze, 1778)**

Material examined: 22 specimens (18♂, 4♀), April 2009, on grasses.

Note: The species is commonly distributed in Iran on sugar-beet, cotton, tamarisk, sainfoin (Modarres Awal, 2002).

***Campylomma diversicorne* Reuter, 1878**

Material examined: 17 specimens (12♂, 5♀), May 2009, on grasses.

***Deraeocoris pallens* (Reuter, 1904)**

Material examined: 23 specimens (13♀, 10♂), May 2009, on alfalfa.

****Globiceps flavomaculatus* (Fabricius, 1794)**

Material examined: 5 specimens (4♂, 1♀), June 2009, on alfalfa.

Description: Length 5- 5.5 mm, black and pale yellow mirids, Arolia converging apically (Fig. 2,a). Distance from eye to apex of clypeus equal to diameter of an eye (Fig. 2,b). proboscis usually reaching beyond middle coxae and gradually tapering apically, 3ed and 4th segments of proboscis together much shorter than 2nd segment, not thickening their articulations. Raised areas of pronotum not conical but more or less flat at least base of corium and cuneus (except its apex) white. Dorsum of body (especially pronotum and base of hemelytra) with silvery scales which easily fall off (Fig. 2,c). male paramers as shown in Fig. 2,d (Carvalho, 1960).

Distribution: **EU:** Austria, Belgium, Bosnia Hercegovina, Byelorussia, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Greece, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Moldova, The Netherlands, Norway, Poland, Portugal, Romania, Russia (North, Central and South European Territories), Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, Yugoslavia (Serbia, Montenegro). **AS:** Azerbaijan, China (Northeastern, Northern and Northwestern Territories), Kazakhstan (Asian part), Korea (North and South), Russia (East Siberia, Far East, West Siberia), Turkey (Asian part), (Kerzhner & Josifov, 1999; Chaplin, 2009).

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

Material examined: 55 specimens (39♂, 16♀), June 2009, on alfalfa.

***Lygus rugulipennis* Poppius, 1911**

Material examined: 46 specimens (26♂, 20♀), April 2009, on alfalfa.

****Stenodema calcarata* (Fallén, 1807)**

Material examined: 52 specimens (24♂, 28♀), May 2009, on grasses.

Description: Length 7-8 mm, membrane with 2 cells, or hemelytra shortened without membrane. If hemelytra shortened, they usually cover not less than 1/2-1/3 of the abdomen, if hemelytra normal, cuneus separated by a distinct suture and membrane with 2 cells (Fig. 3,a) Claws with more or less widened and flattened, laminate or scalelike arolia (Fig. 3,b). Pronotum without cervical ring sides, pronotum not broadly laminate, scutellum and posterior part of pronotum distinctly punctuate, vertex with longitudinal groove (Fig. 3,c). First segment of hind tarsi twice as long as second segment of hind tarsi (Fig. 2,d). Second antennal segment not clavate (Fig. 3,e). Hind femora with 2 denticles close together (Fig. 3,f) (Kerzhner & Yachevski, 1964).

Distribution: **EU:** Albania, Andorra, Austria, Belgium, Byelorussia, Bosnia Hercegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Hungary, Ireland, Italy, Kazakhstan (European part), Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldova, The Netherlands, Norway, Poland, Portugal, Romania, Russia (North, Central and South European Territories), Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, Yugoslavie (Serbia, Montenegro). Turkey (European part). **NA:** Algeria, Morocco, Tunisia. **AS:** Azerbaijan, Armenia, China (Northeastern, Northern and Northwestern Territories), Georgia, Iraq, Israel, Japan, Kazakhstan (Asian

part), Kirgizia, Korea (North and South), Lebanon, Russia (East Siberia, Far East, West Siberia), Syria, Tadzhikistan, Turkey (Asian part), Uzbekistan (Kerzhner & Josifov, 1999; Chaplin, 2009).

***Stenodema turanica* Reuter, 1904**

Material examined: 12 specimens (7♂, 5♀), May 2009, on peppermint and alfalfa.

Family Nabidae A. Costa, 1853

***Nabis pseudoferrus pseudoferus* Remane, 1949**

Material examined: 55 specimens (35♂, 20♀), April 2009, on borage, alfalfa and licorice.

Note: The species is predator and collected on sainfoin and Lucerne (Modarres Awal, 2002).

Family Pyrrhocoridae Amyot & Serville, 1843

***Pyrrhocoris apterus* (Linnaeus, 1758)**

Material examined: 88 specimens (41♂, 47♀), April 2009, on debris.

Note: The species has been collected from East Azarbaijan, Khorasan, Tehran, Khozestan, Fars, Gilan and Gorgan provinces in Iran (Modarres Awal, 2002).

Family Rhopalidae Amyot & Serville, 1843

***Corizus hyoscyami* (Linnaeus, 1758)**

Material examined: 42 specimens (18♂, 24♀), May 2009; 12 specimens, June 2009, on weeds.

***Rhopalus parumpunctatus* Schilling, 1829**

Material examined: 15 specimens (9♂, 6♀), May 2009; 12 specimens, June 2009, on weeds.

Family Stenocephalidae Dallas, 1852

***Dicranocephalus agilis* (Scopoli, 1763)**

Material examined 4 specimen, (2♂, 2♀), April 2009, on weeds.

Family Coreidae Leach, 1815

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

Material examined: 21 specimens (12♂, 9♀), May 2009, 29 specimens, June 2010, on *Cirsium*.

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

Material examined: 44 specimens (16♂, 28♀), June 2009, 20 specimens, May 2010, on *Cirsium* and poison hemlock.

Family Alydidae Amyot & Serville, 1843

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

Material examined: 3 specimens (2♂, 1♀), May 2009, on weeds.

Family Scutelleridae Leach, 1815

***Eurygaster integriceps* Puton, 1888**

Material examined: 78 specimens (42♂, 36♀), May 2009, on wheat.

Note: This species has generally distribution in Iran (Modarres Awal, 2002).

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

Material examined: 16 specimens (5♂, 11♀), May 2009, on wheat.

***Odontotarsus robustus* Jakovlev, 1883**

Material examined: 16 specimens (7♂, 9♀), June 2009, on weeds.

Family Pentatomidae Leach, 1815

***Aelia rostrata* Boheman, 1852**

Material examined: 23 specimens (13♂, 10♀), May 2009, on wild gramineae.

***Aelia virgata* (Herrich-Schaeffer, 1841)**

Material examined: 34 specimens (16♂, 18♀), October 2009, under *astragalus* sp.

***Ancyrosoma leucogrammes* (Gmelin, 1789)**

Material examined: 13 specimens (6♂, 7♀), May 2009, on weeds.

***Carpocoris lunulatus* (Goeze, 1778)**

Material examined: 31 specimens (16♂, 15♀), May 2009, on cereals.

***Apodiphus amygdali* (Germar, 1817)**

Material examined: 29 specimens (18♂, 11♀), May 2009, on apricot.

Note: This species has been collected from Tehran, Fars, Markazi, Kerman, Hormozgan, Semnan, Balouchestan, Esfahan provinces in Iran on poplar, almond, apricot, oriental plane, pistachio, tamarisk, oak, tung (Modarres Awal, 2002).

***Carpocoris fuscispinus* (Boheman, 1849)**

Material examined: 18 specimens (8♂, 10♀), May 2009, on weeds.

***Carpocoris purpureipennis* (De Geer, 1761)**

Material examined: 22 specimens (14♂, 8♀), May 2009, on weeds.

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

Material examined: 25 specimens (18♂, 7♀), May 2009, on Lucerne.

***Dolycoris penicillatus* Horváth, 1904**

Material examined: 12 specimens (4♂, 8♀), June 2009, on weeds.

***Eurydema ventralis* Kolenati, 1846**

Material examined: 32 specimens (15♂, 17♀), May 2009, on rape.

Note: the species has been collected from different regions of Iran on turnip, cabbage, colza, mustard, wheat, radish and cultivated and wild crucifereae family plants (Modarres Awal, 2002).

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

Material examined: 44 specimens (23♂, 11♀), June 2009, on wild crucifereae.

***Ventocoris fischeri* (Herich-Schaeffer, 1851)**

Material examined: 38 specimens (18♂, 20♀), May 2009, on weeds; October 2009, under *Astragalus* sp.

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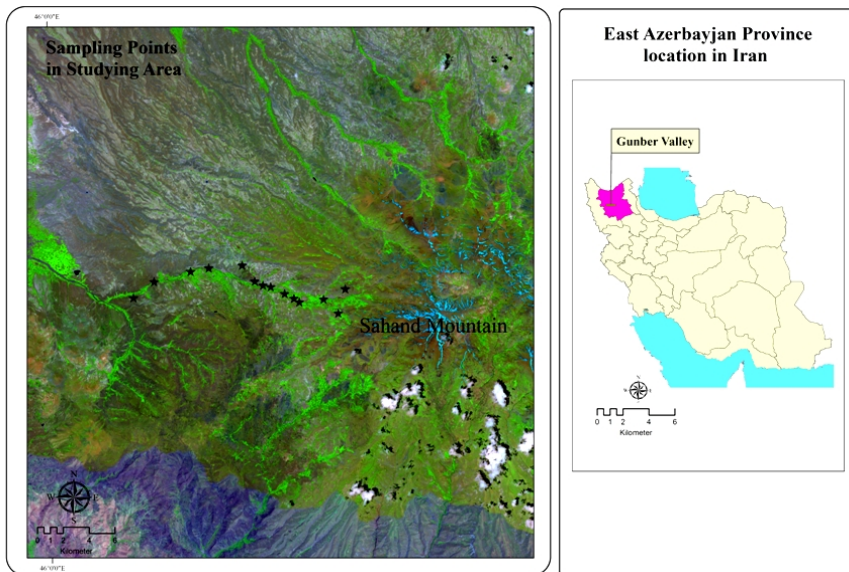


Figure 1. Location of sampling points on satellite image (SPOT) of Gunber valley.

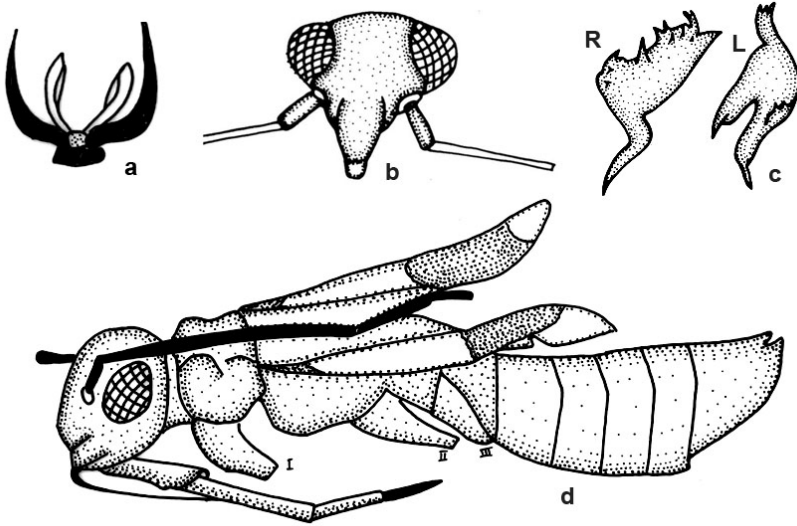


Figure 2. *Globiceps flavomaculatus* (Fabricius, 1794), a: Apex of tarsi; b: Head; c: Parameres (Right and Left); d: Head, pronotum, proboscis and hemelytra.

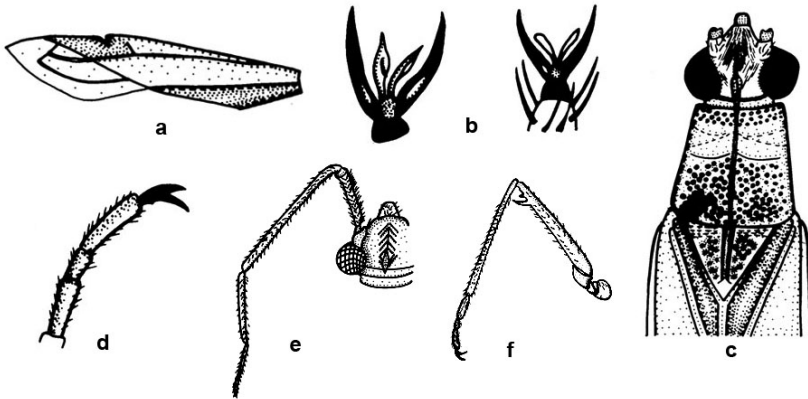


Figure 3. *Stenodema calcarata* (Fallén, 1807), a: Hemelytra; b: Claw; c: Vertex, pronotum and scutellum; d: Tarsus; e: Head and antenna; f: Hind femur.