

## SURVEY OF TRUE BUGS (HEMIPTERA) IN DUHOK PROVINCE- KURDISTAN REGION OF IRAQ

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(Received: July 5,2020; Accepted for Publication: October 25, 2020)

### ABSTRACT

This work is a first comprehensive survey of true bugs (Hemiptera). A total of 14 species belonging to 14 genera, 12 tribes, 9 subfamilies and 9 families of the suborder Heteroptera and order Hemiptera were recorded and identified in Duhok province, Kurdistan region. A percent 40% of species belonged Pentatomidae family. Date and collecting localities and general distribution with plant association data for each species are given.

**KEY WORDS:** Survey, Hemiptera, Kurdistan region, Iraq.

### INTRODUCTION

The order Hemiptera (True bugs) is the fifth largest group of insects after Coleoptera, Lepidoptera, Diptera and Hymenoptera (Grimaldi and Engel 2005; Cameron et al. 2006). The number of described species within Hemiptera approximately reached 82,000 (Arnett 2000). The Heteroptera is consist of 15 families, nearly 1,250 genera and approximately 7,200 species worldwide which is consider as one of the most species-rich groups of terrestrial Heteroptera (Henry 2009). Hemipterans can be recognized by the scutellum is triangular in shape, fore wings hemelytron and by their particular structure of the mouthparts; the mandibles and maxillary lacinia are modified into concentric stylets, the mandibular enclosing the maxillary ones, both forming the food and salivary channels, the labium is covering the mandibular and maxillary stylets and the maxillary and labial palp are always absent, (Cobben 1978; Hennig 1981; Kristensen 1991). Their feeding habits range from phytophagous to predation, including ecto-parasitism and hematophagy. Many species of them are important pest species to Agricultural crops and some are important vectors of human and plant diseases (Albert 2005).

The Iraqi fauna of Hemiptera was very poorly studied, especially that of the Kurdistan region. Based on the most official lists, the

records of Iraqi fauna of hemiptereans were published by Derwesh (1965) how listed 130 species within 113 genera and 18 families, Shalaby *et al.* (1966) recorded 5 species belonged 4 genera and 2 families, Al-Ali (1977) listed 37 species within 29 genera and 7 families, Abdul-Rassoul (1976) in his checklist recorded 26 species belong to 25 genera and 10 families, Shalli and Fat-hullah (1986) reported 37 species within 28 genera and 10 families in Sulaymaniyah province. More recently studies by Augul *et al.* (2012) during their survey of Hemipteran species on alfalfa plant in Abu Ghraib and Baghdad recorded 8 species belonging to 8 genera and 6 families, Abdulla (2013) in her study in Iraqi Kurdistan region listed 10 species within Pentatomidae family. Augul and Mzhr (2013) during their study listed 34 species of 9 genera and 4 families (Anthracoridae, Lygaeidae, Miridae and Rhopalidae) collected from different wild herbs. The aim of this work is faunistic study of hemipteran species in Duhok province and possibility of recording new species to Iraqi entomofauna.

### MATERIAL AND METHODS

The specimens were collected from different localities related to Duhok province, Kurdistan region, Iraq, during March 2013 to April 2014, from fruit and forest trees, vegetables and wild plants using different

methods for collecting; hand picking, Aspirator and sweeping net with 2-3 field collecting trips per week during spring and summer months, while two trips for the other months have been made. All specimens are preserved in Plant protection department labs, the large and medium size specimens were mounted on pin while small specimens were preserved in 70% alcohol then the specimens deposited in the Museum of College Agricultural Engineering Sciences, Duhok University. All species mentioned in this paper have been identified by the Iraqi Natural History Research Center and Museum at Baghdad University. The general distribution and name of families, Subfamilies and Tribes of each species were followed (Ghahari, *et al.* 2009; Aukema, *et al.* 2013; Ghahari & Moulet 2013; Ghahari, *et al.* 2014).

## RESULTS AND DISCUSSION

The result of this study is a total of 14 species belonging to 14 genera, 12 tribe, 9 subfamilies and 9 families of hemiptereans collected and identified from Kurdistan region and the species listed alphabetically as below:

**1. Family: Cydnidae Billberg, 1820**  
**Subfamily: Cydninae Billberg, 1820**  
**Tribe: Cydnini Billberg, 1820**  
***Cydnus aterrimus* (Froster, 1771)**

**Material examined:** (3 specimens) Summel (Grigaury village), May 2013 on potato plants.

**General distribution:** Afghanistan, Albania, Algeria, Armenia, Austria, Azerbaidjan, Bangladesh, Belgium, Bosnia Herzegovina, Bulgaria, Canary Islands, China (Neimenggu, Ningxia), Congo, Crimea, Croatia, Cyprus, Czech Republic, Egypt, France, Georgia, Germany, Greece, Hungary, Iraq, India, Israel, Italy, Jordan, Kazakhstan, Kirgizia, Lebanon, Libya, Lithuania, Luxembourg, Macedonia, Madeira, Malta, Malaya, Malta, Moldavia, Morocco, Netherlands, Pakistan, Poland, Portugal, Romania, Russia (South European Territory, West Siberia), Senegal, Serbia and Montenegro, Slovakia, Slovenia, South Africa (introduction), Spain, Sri Lanka, Switzerland, Syria, Tadjhikistan, Tunisia, Turkey, Turkmenistan, Ukraine, USA (introduction), Uzbekistan, West Indies, Yemen.

**2. Family: Lygaeidae Schilling, 1829**  
**Subfamily: Lygaeinae Stal, 1862**  
**Tribe: Lygaeini Stal, 1872**  
***Lygaeus pandurus* (Scopoli, 1763)**

**Material examined:** (2 specimens) Zawita (Bhere), June 2013 on tomato, cucumber and sunflower; (2 specimens) Amadia (Sarsink) June 2013 on sunflower; (1 specimen) Shekhan (Shekhan, Qasrok) July-August 2013 on sunflower.

**General distribution:** Albania, Austria, Bulgaria, China, Croatia, Cyprus, Czech Republic, France, Germany, Greece, Hungary, India, Italy, Israel, Malta, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Switzerland, Turkey, Iraq.

**3. Family: Miridae Hahn, 1831**  
**Subfamily: Deraeocorinae Douglas & Scott, 1865**

**Tribe: Deraeocorini Douglas & Scott, 1865**

***Deracoris* sp. Kirschbaum, 1855**

**Material methods:** (2 specimen) Summel (Batel), July 2013 on melon plants.

**General distribution:** Asia, Europe.

**4. Family: Nabidae Costa, 1853**  
**Subfamily: Nabinae A. Costa, 1853**  
**Tribe: Nabini A. Costa, 1853**

***Nabis* sp. Latreille, 1802**

**Material examined:** (1 specimen) (DarkarAjam); (1 specimen) Summel (Fayda) and (2 specimens) Shekhan (Qasrok), May-August 2013 on pea and weed plants.

**General distribution:** Worldwide.

**5. Family: Pentatomidae Leach, 1815**  
**Subfamily: Pentatominae Leach, 1815**  
**Tribe: Halyini Amyot & Serville, 1843**

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

**Material examined:** (11 specimens) Duhok (Mangesh), June 2013 on almond; (6 specimens) Amadia (Sarsink) June 2013 on weeds; (3 specimens) Summel (Fayda) May 2013 on Quince trees.

**General distribution:** North-Western Mediterranean basin from Italy, Caucasus, Central Asia, Near East, Iraq (Derwesh, 1965).

***Mustha spinosula* (Lefebvre, 1831)**

**Material examined:** (6 specimens) Summel district, July 2013 on pine bark.

**General distribution:** Ponto-Mediterranean from Balkanic Region to Azerbaijan, Iran and Turkmenistan, Near East (Syria, Israel), Sinai and probably elsewhere in Egypt, Iraq (Abdul-Rassoul, 1976).

**Tribe: Carpocorini Mulsant and Rey (1866)**

***Carpocoris* sp.**

**Material examined:** (3 specimens) Amadia (Sarsink) May and June 2013 on weeds.

**General distribution:** Europe, Egypt, Iraq (Al-Ali 1977)

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

**Material examined:** (1 specimen) Duhok (Mangesh); (2 specimens) Amadia (Sarsink), May and June 2013 on weeds and berry.

**General distribution:** Palearctic regions, Indian subcontinent, Iraq (Al-Ali 1977).

**Tribe: Strachiini Mulsant & Rey (1866)**

***Eurydema ornata* (Linnaeus, 1758)**

**Material examined:** (3 specimens) Zawita (Rashanki) May 2013 on weeds.

**General distribution:** Palearctic though not in Scandinavia, Korea, or Japan, Iraq (Derwesh, 1965).

**Tribe: Pentatomini Leach, 1815**

***Rhaphigaster nebulosa* (Poda, 1761).**

**Material examined:** (4 specimens) Duhok center, May 2013 on plum trees.

**Distribution:** Holland, Austria, Croatia, France, Germany, Greece, Hungary, Italy, Luxembourg, Serbia, Slovenia, Spain, Switzerland, Turkey, United Kingdom and Poland, Morocco, Caucasus, Central Asia, Pakistan, Iran, Iraq.

**6. Family: Pyrrhocoridae Fieber, 1860**

**Subfamily: Pyrrhocorinae Fieber, 1860**

**Tribe: Pyrrhocorini Fieber, 1860**

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

**Material examined:** (7 specimens) Summel (Qalabadre village), June 2013 on plum trees; (6 specimens) Amadia (Chamanke), July 2013 on weeds.

**General distribution:** Holarctic and Palearctic regions.

**7. Family: Rhopalidae Amyot & Serville, 1843**

**Subfamily: Rhopalinae Amyot & Serville, 1843**

**Tribe: Rhopalini Amyot and Serville, 1843**

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

**Material examined:** (3 specimens) Summel (Grishin village), May 2013 on weeds.

**Distribution:** The northern parts of Africa, Cyprus, Russia, China, Japan, Turkey and Iraq.

**8. Family: Scutelleridae Leach, 1815**

**Subfamily: Eurygastrinae Amyot & Serville, 1843**

**Tribe: Eurygastrini Amyot & Serville, 1843**

***Eurygaster integriceps* Puton, 1881**

**Material examined:** (10 specimens) Summel, May 2013 on wheat.

**General distribution:** Northeastern Mediterranean basin (from Italy), Cyprus, Caucasus, Central Asia extending to China, Near East, Egypt, Pakistan.

**9. Family: Tingidae Laporte, 1832**

**Subfamily: Tinginae Laporte, 1832**

**Tribe: Tingini Laporte, 1832**

***Stephanitis pyri* (Fabricius, 1775)**

**Material examined:** (8 specimens) Duhok (Mangesh) June 2013 on apple; (10 specimens) Amadia (KaniMase, Sarsink, Chamanke), May-August 2013 on pear, apple, walnut and berry; (6 specimens) Akra (Akra center, Bjil), August 2013 on apple and walnut; (6 specimen) Zakho (Bedar, Bezihe, Chamkurk), June 2013 on pear and apple; (12 specimens) Summel, May 2013 on apple; (4 specimen) Shekhan (Atrish), June 2013 on grapevine.

**General distribution:** Mediterranean basin to central Asia.

**REFERENCES**

- Abdul-Rassoul M S (1976). Checklist of Iraq natural history museum insect's collection, Nat. Hist. Res. Cen., Iraq, Pub. 1(30): 41.
- AL -Ali A S (1968). List and distribution of Hemiptera of Iraq. Iraqi J. Agric. Sci., 3: 43-58.
- AL -Ali A S (1977). Phytophagous and entomophagous insects and mites of Iraq Nat. Hist. Res. Cen. Iraq, 33(8): 142.
- Albert VA (2005). Parsimony, phylogeny and genomics. Oxford University Press, New York, USA. 229 pp.
- Arnett R H (2000). American insects: a handbook of the insects of America north of Mexico. CRC Press, Boca Raton, USA. 1.003 p.
- Augul R Sh and Mzhr N N (2013). Survey of hemipteran species on herbs from different regions of Iraq with a new records to fauna. International Journal of Recent Scientific Research, 4 (7): 1109– 1111.
- Augul R Sh, Mzhr N N and Abul-Rassoul M S (2012). Occurrence of hemipteran species on alfalfa plant in Baghdad. *Bull. Iraq nat. Hist. Mus.* 12 (2): 7-13.
- Aukema B, RiegerChr & Rabitsch W (2013). Catalogue of Heteroptera of the Palaearctic Region. A book published by The Netherlands Entomological Society 655pp.

- Cameron, S L, Beckenbach A T, Dowton M and Whiting M F (2006). Evidence from mitochondrial genomics on interordinal relationships in insects. *Arthropod Systematics and Phylogeny* 64 (1): 27-34.
- Cobben R H (1978). Evolutionary trends in Heteroptera. Part 2. Mouthpart-structures and feeding strategies. Mededelingen Landbouwhogeschool 78-5. H. Veeman, Wageningen, the Netherlands. 407 pp.
- Derwesh, A. I. (1965). A preliminary list of identified insects and some arachnids of Iraq. *Direct. Gen. Agr. Res. and Proj. Baghdad. Iraq. Bulletin* 112: 128.
- Ghahari H and Moulet P (2013). An annotated catalog of the Iranian Pyrrhocoridae (Hemiptera: Heteroptera: Pentatomomorpha: Pyrrhocoroidea). *Zootaxa* 3609 (3): 335-342.
- Ghahari H, Chérot F, Linnavuori R E and Ostovan H (2009). Annotated catalogue of Iranian burrower bugs (Heteroptera, Pentatomoidea, Cydnidae). *ZooKeys* 26: 1-31 (2009).
- Ghahari H, Moulet P and Rider D A (2014). An annotated catalog of the Iranian Pentatomoidea (Hemiptera: Heteroptera: Pentatomomorpha). *Zootaxa* 3837 (1): 001-095.
- Grimaldi D and Engel M S (2005). *Evolution of the insects*. Cambridge University Press, New York, USA. 755 pp.
- Hennig W (1981). *Insect phylogeny*. John Wiley & Sons, New York, USA. 514 p.
- Henry T J (2009). Biodiversity of Heteroptera. In Foottit R.G. and Adler P.H. (eds): *Insect Biodiversity: Science and Society*. 1<sup>st</sup> ed. Wiley-Blackwell, Oxford, UK, pp. 223-263.
- Kristensen N P (1991). Chapter 5. Phylogeny of extant Hexapods. Pp. 125-140. In: CSIRO, Division of Entomology. *Insects of Australia*. 2nd edition, 2 volumes. Cornell University Press, Ithaca, USA. 1137 pp.
- Linnavuori, R E (1995). Hemiptera of Iraq. V. Heteroptera, Lygaeidae. -*Entomol. Fennica* 6:29-38.
- Shalaby F, El- Haidari H S and Derwesh A I (1966). Contribution to the insect Fauna of Iraq (Part I). Directorate General of Agricultural Research and Projects, Technical Bulletin, 143: 1- 11.
- Shalli R A and Fat-hullah B S (1986). List of Identification Insects and Arachnids of Sulaimaniya Regions. Applied Agricultural Research Center, Plant Protection Research Section – Bekrajo. 12-15.

#### پوخته

ئه ف هه كۆلینه ئیکهه هه كۆلینه هه مالینی یه هاتیه ئه نجام دان له سهه جورین کیزیئ سهه اوردههرا (Hemiptera) له پارێزگهه دهوکی / کوردستانا عیراقی. د ئه نجامی ئی هه كۆلینیدا 14 جورین کیزا کو هه دگرین بو 14 رهگهزا و 12 تیرا و 9 ژیر خیزانا و 9 خیزانا بین ژوور اوردههرا Heteroptera و اوردههرا Hemiptera هاتنه تومار کرن و پولین کرن. ریژا 40% ز جورین هاتیهه کومکرن بین بنه مالا Pentatomidae بون. داتایین گریدایی ب هوست و جهین میروو له هاتین کومکرن هاتنه تومارکرن.

#### الخلاصة

یتضمن هذا البحث اول دراسة مسح شامل لحشرات رتبة نصفية الاجنحة في محافظة دهوك/ كوردستان العراق. تم تسجيل وتشخيص 14 نوعا تعود الى 14 جنسا، 12 قبيلة، 9 عويلات و 9 عوائل تابعة لتحت رتبة Heteroptera و رتبة الحشرات نصفية الاجنحة في محافظة دهوك- كوردستان العراق. نسبة 40% من الانواع التي جمعت كانت لعائلة Pentatomidae. ذكرت البيانات المتعلقة بالعوائل و توزيع المناطق المتواجدة فيها.