

**A Faunistic Survey of Hemiptera-Heteroptera Found in Isfahan Hay Alfalfa**

MASIH RAZMJOO

*Department of Plant Protection, Khorasgan Branch, Islamic Azad University , Isfahan, Iran*

\*Corresponding author: Email: masihxyz@yahoo.com

Received: 25 August 2010

Accepted: 25 February 2011

**ABSTRACT**

Heteroptera with more than 80 known families is one of the most important suborder in class of insects and this is a large and diversity group of insects. A faunistic survey was carried out to collect and identify of Heteroptera members in 2008-2011. Among collected Specimens 8 species was new record for Isfahan province, which was marked by one asterisk (\*) and 2 species to new record for Iranian fauna by two asterisks (\*\*). Species in Isfahan regions were as listed below:

1. Anthocoridae *Orius albidipennis* (Reuter)  
*O. pallidicornis* (Reuter)
2. Lygaeidae *Nysius cymoides* (Spinola)  
*Geocoris pallidipennis* (Costa)
3. Miridae *Lygus gemellatus* (Herrich-Schaffer)  
*Deraeoris serenus* (Douglus and Scott)
4. Nabidae *Nabis palifera*\* (Seidenstucker)
5. Pentatomidae *Dolycoris baccarum* (Linnaeus)  
*Perilus* sp.\*\* (Stall)
6. Reduviidae *Coranus aegyptius* \*(Fabricus)  
*Zelus* sp.\*\* (Fabricus)
7. Rhopalidae *Brachycarenum tigrinus* \*(Schilling)

**Keywords:** Heteroptera, Isfahan, Alfalfa, Faunistic**INTRODUCTION**

The Heteroptera occupy an enormous range of habitats and display as wide variety of lifestyles as any other most insect order (Dolling, 1991). The approximate count of Heteroptera species

for the world is 50,000 (Arnett, 2000; Gullan and Cranston, 2000).

Alfalfa, important livestock feed-crop, is damaged by a complex of insect pests which frequently require insecticide treatment, especially to control the alfalfa weevil *Hypera postica* (Gyll) and army

worm *Spodoptera littoralis* (Bois.) (Clements and Yeargan, 1997; Elliot *et al.*, 2002; Schiller, 2003).

Preliminary studies and published data had indicated that one of the most abundant groups of insect predators in alfalfa fields was Heteroptera (Benedict and Cothran 1975; Coll, 1998; Gerling and Alomar, 2001).

There are 332 Species in 173 genera presently recorded in the Iran (Modarres Awal, 1997). Isfahan is the third largest city in Iran and situated at 1590 m above sea levels. The city is geographically located at 32° 38' N and 51° 29' E, in the Zayandeh - Rud plain, at the foothills of the Zagros mountain range (Honarfar, 1996).

Before this, a survey to do Biology and seasonal fluctuation of population of *Nabis palifer* in alfalfa fields in Zardanj region of Isfahan (Razmjoo *et al.*, 2008). The present study was undertaken in order to define the fauna and abundance of all the beneficial as well as the species of Heteroptera found in Isfahan region hay alfalfa.

#### MATERIALS AND METHODS

The survey was conducted during 2008 - 2011. Sweep net and light traps were the major collection methods used.

A sweep sample unit consisted of fifty 180° sweeps using a standard 1m.

A light trap composed of 300 w light bulb and killing jar container of alcohol and sample unit consisted of insect traps (Triplehorn and Johnson, 2005).

Sampling sites were consist of:

1) Northern region: Natanz, Meimeh and Kashan situated at 1500 m, 1990 m and 940 m above sea levels, respectively.

2) Southern region: Lenjan, Mobarake and Shahreza situated at 1642 m, 1533 m and 1825 m above sea levels, respectively.

3) Central region: Najvan, Flavarjan and Khorasgan situated at 1573m, 1610m and 1562m above sea levels, respectively.

4) Eastern region: Zardanj, Ziar and Naeen situated at 1555 m, 1520 m and 1560 m above sea levels, respectively.

5) Western region: Khomeini shahr, Najafabad and Daran situated at 1625 m, 1655 m and 2290 m above sea levels, respectively.

#### RESULTS AND DISCUSION

12 species belonging to 7 families and 11 genera of Heteroptera were collected and identified. Among collected specimens, 8 species were new record for Isfahan province which was marked by one asterisk (\*) and 2 species to new record for Iranian fauna by two asterisk (\*\*) (Table 1).

The six predator species belongs to the genera *Orius* (Anthocoridae, 2 species), *Geocoris* and *Nysius* (Lygaeida 2 species), *Nabis* (Nabidae, 1 species) and *Deracoris* (Miridae, 1 species) compose 60% (951 individuals) of the total 1618 collected specimens (Table 1).

The *Lygus gemellatus* (Herrich - Schaffer) was found an composed 32.5% (526 individuals) of the survey total. All other species in these surveys were considered visitors since they were found rarely and collected only as adults. This suggests that they do not normally feed and reproduce on alfalfa. Hatami (1992) has studied the alfalfa fauna in the Isfahan region. Our results showed that reveals the seven species were new record for Isfahan.

Table 1. Average diversity, Heteroptera species collected in Isfahan province, in 2004 – 2007

Family	Species	Total collected per species	% of grand total	Broad distribution of species in Isfahan
Anthocoridae	<i>Orius albidipennis</i> (Reuter)	152.8	9.44	Widely distributed
	<i>O. Pallidicornis</i> (Reuter)	96.3	5.9	
Lygaeidae	<i>Nysius cymoides</i> (Spinola)*	49.8	30.07	Eastern and Central region
	<i>Geocoris pallidipennis</i> (Costa)*	114.1	7.05	
Miridae	<i>Lygus gemellatus</i> (Herrich-Schaffer)	526.4	32.5	Widely distributed
	<i>Deraeoris serenus</i> (Douglas and Scott)	303.6	18.7	
Nabidae	<i>Nabis palifera</i> (Seidenstucker)*	234.3	14.5	Widely distributed
Pentatomidae	<i>Dolycoris baccarum</i> (Linnaeus)	48.8	3	Central region
	<i>Perilus</i> sp.(Stall)**	16.1	0.99	
Reduviidae	<i>Coranus aegyptius</i> (Fabricus)*	6.9	0.42	Western region
	<i>Zelus</i> sp.(Fabricus)**	4.1	0.25	
Rhopalidae	<i>Brachycarenum tigrinus</i> (Schilling)*	64.7	3.99	Northern region

This study showed that two heteropterans was reported (Hatami, 1992) but we identified four more heteropterans to the most abundant predator. The more number of recorded heteropteran species in our study might be the reason that in the Isfahan province agriculture the greater environmental heterogeneity as compared with in the central Isfahan region. In many cases these divisions of herbivore and carnivores are not entirely distinct since some carnivores, especially *Geocoris pallidipennis* (Costa) occasionally take plant Juices (Eubanks, 2003; Stell and Meyer, 2003)and herbivores may feed on

animal tissue (Miller, 1991; Alomar and Wiedenman, 1996; Jervis and Kiid, 1996).

The difference in visitor species that exist between regions were attributed to limitations inherent in an extensive survey such as: small number of sample unites relative to the size of the area surveyed, the nature of the vegetation bordering the sample are from which visitors may immigrate, and variations in management practices, which exist between fields.

#### ACKNOWLEDGMENT

We are grateful to Dr. Rauno Linnavouri, University of Finland, for his help to identify the specimens.

#### REFERENCES

- Alomar O. and R.N. Wiedenmann. 1996. Zoophytophagous Heteroptera: Implications for Life History and Integrated Pest Management. Thomas Say publications in Entomology, Entomological Society of America. Lanham, MD. 27:145-150.
- Arnet Jr R.H. 2000. American Insects. A hand book of the insects of America north of Mexico. Second Edition. CRC Press ILC. Boca Raton. Florida. 1003p.

- Clements D.J. and K.V. Yeargan. 1997. Comparison of *Oriusinsidiosus* (Heteroptera :Anthocoridae) and *Nabisroseipennis* (Heteroptera : Nabidae) as predators of the green cloverworm (Lepidoptera :Noctuidae). Environmental Entomology, 26: 1482-1487.
- Coll M. 1998. Feeding and living on plants in predatory Heteroptera. pp: 89 -129. In M. Coll and J.R. Ruberson (eds.), Predatory Heteroptera in Agroecosystems: their Ecology and Use in Biological Control. Thomas Say Publications in Entomolgy, Entomological Society of America, Lanham, MD.
- Dolling W.R. 1991. The Hemiptera .Oxford University Press, New York, 274p.
- Elliot N.C., R.W. Kiechefer and M.G.J. Giles. 2002. Predator abundance in alfalfa fields in relation to aphids, within field vegetation, and landscape matrix. Entomological Society of America, 32:253-260.
- Eubanks D. 2003. The evolution of omnivore in heteropteran insects. Entomology and Ecology, 84:2549-56.
- Gerling D., O. Almar and J. Amo. 2001. Biological control of *Bemisia tabaci* predators and parasitoids. Crop Protection, 20: 779-799.
- Gullan P.J. and P.S. Cranston. 2000. The Insects, an Outline of Entomology. Second edition, Black Well Science, 470p.
- Hatami B. 1992. A preliminary report on the artheropod fauna of alfalfa fields in Isfahan province. Ferdowsi Mashhad University Journal,6 (1):71-83. (in Persian)
- Honarfar L. 1996. Esfahan. Ketabe Javan Publishing, 274p. (in Persian)
- Jervis M. and N. Kiid. 1996. Insect Natural Enemies. Chapman & Hall. 491p.
- Miller J.C. 1990. Field assessment of the effects of microbial pest control agent on non target Lepidoptera. American Entomology, 36:135-139.
- Modarres Awal M. 1997. List of Agricultural Pests and Natural Enemies in Iran. Second edition, Ferdowsi University Press. 428p. (in Persian)
- Razmjoo M., H. Ostovan, M. Shojaee and K. Kamali. 2008. Biology and seasonal fluctuation of population of *Nabispalifer* S. in alfalfa fields in Zardanja region of Isfahan. Journal of Agricultural Science, Vol.13, No.4 (in Persian)
- Schiller F. 2003. Six species of Nabidae (Heteroptera) were collected by standardized sweep net sampling in alfalfa. Journal of Applied Entomology, 27: 221-227.
- Stell J. and J. Meyer. 2003. The Rhophalidae of Florida "Scentless Plant Bugs.125p.
- Triplehorn C.A. and N.F. Johnson. 2005. Borror and DeLong's Introduction to the Study of Insects. 7<sup>th</sup> edition. Pub Peter Marshal. Printed in the United State of America. 864p.