

## Study on Heteroptera in biotope of alfalfa fields in Isfahan province

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**Abstract**—Heteroptera with more than 74 known families is one of the most important order in class insecta. A faunistic survey was carried out to collect and identify of Heteroptera members in 2004-2007. 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 province. Identification was confirmed by

Prof.. Linnavouri from Finland.

### 1. Anthocoridae

*Orius albidipennis* (Reuter)

*O. pallidicornis* (Reuter)

### 2. Lygaeidae

*Nysius cymoides* (Spinola)

*Geocoris pallidipennis* (Costa)

### 3. Miridae

*Lygus gemellatus* (Herrich-schaffer)

*Deraeocoris serenus* (Douglas & Scott)

### 4. Nabidae

*Nabis palifer*\* (Seidenstucker)

### 5. Pentatomidae

*Dolycoris baccarum* (Linnaeus)

*Perilus* sp.\*\* (Stall)

### 6. Reduviidae

*Coranus aegyptius*\* (Fabricius)

*Zelus* sp.\*\* (Fabricius)

### 7. Rhopalidae

*Brachycarenum tigrinus*\* (Schilling)

**Keywords**- *Heteroptera, Biotope, Alfalfa, Faunistic*

## I. INTRODUCTION

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). The Heteroptera occupy an enormous range of habitats and display as wide a variety of lifestyles as any other most insect order. (Dollin 1991). The approximate count of Heteroptera species for the world is 50,000. (Arnett and Ross 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), army worm *Spodoptera litoralis* (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 insecticide-treated hay 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). An initial phase in developing and improved pest management program for this crop, we are interested in determining which insect predators were found in Isfahan region hay alfalfa, their abundance and range. (Razmjoo *et al.* 2008).

The present study was undertaken in order to define the biodiversity and abundance of all the beneficial as well as the destructive species of Heteroptera found in Isfahan region hay alfalfa.

## II. MATERIAL AND METHODS

Survey was conducted during 2004-7. The major collection methods used were the sweep net and light traps. A Sweep sample unit consisted of fifty 180° sweeps using a standard 3-m. A light trap composed of 300w light bulb and killing jar container of alcohol and sample unit consisted of insect traps at 24 hour (Triplehorn and Johnson 2005). Different sampling sites were as following:

a) Northern region: Natanz, Meimeh and Kashan counties situated at 1500m, 1990m and 940m above sea levels, respectively. b) Southern region: Lenjan, Mobarake and Shahreza counties situated at 1642m, 1533m and 1825m above sea levels, respectively. c) Central region: Najvan, Flavarjan and Khorasgan counties situated at 1573, 1610 and 1562 above sea levels, respectively. d) Eastern region: Zardanj, Ziar and Naeen counties situated at 1555m, 1520m and 1560m above sea levels, respectively. e) Western region: Khomeini shahr, Najafabad and Daran counties situated at 1625m, 1655m and 2290m above sea levels, respectively.

### A. Results and discussion

A total of 12 species belonging to 7 families and 11 genera of Hemiptera 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 6 predator species contained in 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 in (Table 1). The only other common heteropteran found was the *Lygus gemellatus* (Herrich-Schaffer) an important pest group. It 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. The alfalfa fauna in the Isfahan region has been studied by Hatami (1992). Our results showed that reveals the 7 species were new record for Isfahan.

In this study showed that 2 heteropterans was reported (Hatami, 1992) but we identified 4 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 biome 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 (Eubank, 2003, Stell and Meyer 2003), and herbivores may feed on animal tissue (Miller 1991, Alomar and Wiedenmann 1996, Jervis and Kiid 1996).

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

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TABLE 1. AVERAGE DIVERSITY, HETEROPTERA SPECIES COLLECTED IN ESFAHAN PROVINCE, IN 2004 – 2007.

Family	Species	Total collected per species	% of grand total	Broad distribution in species Isfahan
Anthocoridae	<i>Orius albidipennis</i> (Reuter)	152.8	9.44	Widely distributed

	<i>O. Pallidicornis</i> (Reuter)	96.3	5.9	In Isfahan region
Lygaeidae	<i>Nysius cymoides</i> (spinola)*	49.8	30.07	Eastern and
	<i>Geocoris pallidipennis</i> (costa)*	114.1	7.05	Central region
Miridae	<i>Lygus gemellatus</i> (Herrich-Schaffer)	526.4	32.5	Widely distributed
	<i>Deraeoris serenus</i> (Douglas & Scott)	303.6	18.7	In Isfahan region
Nabidae	<i>Nabis palifer</i> (Seidenstucker)*	234.3	14.5	In Isfahan region
Pentatomide	<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