

**SURVEY AND POPULATION STUDIES ON CATCHES OF
HEMIPTERA BY A LIGHT TRAP AT AL-ARISH CITY
(NORTH SINAI)**

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Abstract

A survey together with studies on population densities and relative abundance of hemipterous insects were conducted by the use of a Robinson light trap at Al-Arish city, North Sinai during two successive years (October, 1994-September, 1996). The survey revealed the presence of 92 hemipterous species belonging to 58 genera of 16 families: Alydidae, Anthocoridae, Berytidae, Coreidae, Cydnidae, Dicranocephalidae, Joppeicidae, Lygaeidae, Miridae, Nabidae, Pentatomidae, Plasiidae, Plesmidae, Pyrrhocoridae, Reduviidae and Rhopalidae.

The total annual number of bugs was 13908 and 7272 bugs in the first and second years, respectively. The highest numbers of bugs were trapped during May-October. The peak was during September in the first year and in August in the second one. The lowest numbers were obtained through December-March. Families Pentatomidae and Lygaeidae contained the largest number of species and/or individuals, followed by families Reduviidae, Cydnidae and Miridae, respectively. Other families were represented by lesser number of individuals and/or species. Individuals of the species *Nysius erucae*, *Nysius cymoides* (Lygaeidae), *Eusarcocoris ventralis* and *Nysius viridula* (Pentatomidae) were found to be the most abundant and active species in the two years of study.

INTRODUCTION

The Hemipterous insects are large and widely distributed group of insects of economic importance as phytophagous and/or zoophagous. In spite of the economic importance of these insects, very little and scattered informations on their ecology and activity are known.

In the mean time, our knowledge on the fauna of Hemiptera in Sinai is still scarce. Although, studies on the population dynamics and activity of some insect orders by the use of light-traps have been made by many authors (Williams, 1939; Frost, 1952; Priesner and Alfieri, 1953; Hasanein, 1956; Ibrahim, 1977; Zolotove, 1979; Sharaf El-Din, 1981; Afifi et al., 1994). However, light-trap work on this order appears to be scanty. In an attempt to overcome the lack of information concerning the hemipterous fauna in North Sinai, the present work aimed to survey and

study the populations of these insects in this area by using a light-trap.

The aim of the present work is to make a systematic study including description of the nymphal instars of the mentioned species according to the new taxonomic status; and making a key to differentiate between the nymphal stages.

MATERIALS AND METHODS

An ultraviolet Robinson light trap was set up and operated twice/week from sunset to sunrise at the farm of the College of Environment and Agriculture at Al-Arish City, North Sinai during two successive years (October, 1994-September, 1996).

The farm was planted mainly by ornamentals, some vegetables and field crops. The trap was installed at 3 meters above the ground. Catches of hemipterous insects were periodically isolated from other insect groups, sorted out into species, identified and then recorded.

Data of annual monthly catches for each species and/or family together with their percentage of abundance were tabulated. Families, genera, and species are alphabetically arranged. Species were identified and counted in the Insect Classification Department, Plant Protection Research Institute, A.R.C., Egypt.

RESULTS AND DISCUSSION

Table 1 shows a survey of nocturnal hemipterous insects at Northern Sinai together with their total annual and their relative abundance during two successive years 1994-1996 as indicated by the light-trap catches.

The survey revealed the presence of 92 species of 58 genera belonging to 16 families: Alydidae, Anthocoridae, Berytidae, Coreidae, Cydnidae, Dicranocephalidae, Joppeicidae, Lygaeidae, Miridae, Nabidae, Pentatomidae, Plasidae, Piesmididae, Pyrrhocoridae, Reduviidae and Rhopalidae. However, family Plasidae was not represented in the first year of investigation. Families Lygaeidae and Pentatomidae contained the largest number of species, 19 and 18 species, respectively. Families Miridae and Reduviidae were represented by 11 and 10 species, respectively. Other families were represented by less number of species.

The total annual number of hemipterous insects was 13908 insects in the first

year and was 7272 insects in the second one. Hemipterous insects fluctuated throughout the whole year and were found to be most active and were trapped in large numbers during the period from May to October with one peak of abundance during September in the first year (2714 insects, constituting 19.5% of the total catch) and during August in the second year with a number of 1322 insects, constituting 18.2% of the total catch. The minimum population occurred during winter months (December-March) and disappeared completely during December in the first year.

Individuals of Pentatomidae and Lygaeidae made the majority of the catch with a total annual number of 3945 and 3802 insects forming 28.4% and 27.3% of the total catch in the first year, respectively, and of 1823 and 1945 insects, forming 25.1% and 26.7% in the second year, respectively. The peak of pentatomid insects was observed during August (766 insects) in the first year and during September (330 insects) in the second one. Whereas, the peak of lygaeids was during September and August (690 and 375 insects) in the first and second years, respectively.

Individuals of families: Reduviidae, Cydnidae and Miridae came after in abundance and were trapped in relatively high numbers, constituting 11%, 9.4% and 8.3% of the total catch in the first year and 10.8%, 10.6% and 10.1% in the second year. Also, one peak of population was observed for three families in the two years of study, during September for the two former families and during August for the later one. On the other hand, families Rhopalidae, Piesmidae, Loppeidae, Berytidae, and Plasidae were the least abundant among hemipterous catch and were represented by very few numbers of individuals and/or species. Insects of other families were trapped in relatively considerable numbers and were represented in the catch all the year round except during the most winter seasons from December to February.

The lygaeid species, *Nysius ericae* and *N. cymoides* were the most abundant and active species in the first year, where 795 and 721 individuals were captured constituting 20.9% and 19.0% of the total lygaeid catch, respectively. Followed by the pentatomid species *Eusarcoris inconspicuus* and *Nezara viridula* (626 and 620 individuals, each constituting nearly 15.7% of the total pentatomid catch, whereas in the second year, *Nezara viridula* was most abundant with 426 insects constituted 23.4% of the pentatomid catch, followed by *Nyseioides cymoides* and *N. ericae* (364 and 314 insects, constituting 18.7% and 16.1% of the total lygaeid catch, respectively. In the first year, four peaks were detected for *N. ericae* during April, June, August and October and only one peak during August was observed in the second

year. As for *N.viridula* only one peak was detected during September in both years. While *N.cymoides* had one peak and *E.ventralis* two peaks. Other species of other families were less abundant and were trapped in relatively moderate and low numbers in the two years of study as shown in Table 1.

Table 1. Total numbers and relative abundance of hemipterous families as indicated by a light trap catch during two years at Northern Sinai.

Family	1994												1995												1996												T	%
	10			11			12			1			2			3			4			5			6			7			8			9				
	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9		
Alydidae	4	4	0	0	4	3	9	13	17	2	5	11	72	0.5	1	0	0	0	0	0	0	4	6	12	9	12	6	7	57	0.8								
Anthrocoridae	115	35	0	0	2	9	20	28	46	72	82	57	476	3.4	37	9	0	0	0	0	1	11	19	27	42	43	51	240	3.3									
Berytidae	3	0	1	0	4	2	0	7	10	3	12	0	42	0.3	0	0	0	0	0	0	2	6	3	6	7	10	11	0	46	0.6								
Coreidae	48	6	0	1	13	34	29	36	67	57	55	73	419	3	19	6	0	2	5	16	30	49	55	30	39	43	294	3.9										
Cyrtidae	107	48	0	0	43	64	95	103	138	187	213	310	1308	9.4	79	40	6	6	20	34	56	63	84	123	122	136	769	10.6										
Dermocoptidae	8	0	0	1	3	4	0	7	16	9	20	13	81	0.6	9	8	3	2	1	4	3	6	11	7	23	15	92	1.3										
Ippocampidae	3	0	0	0	1	2	3	4	0	6	0	2	21	0.2	2	1	0	0	0	4	1	0	0	0	0	0	1	10	0.1									
Lygaeidae	473	207	0	0	26	154	271	311	465	538	667	690	3802	27.3	226	123	60	16	13	41	79	146	242	304	375	320	1945	26.7										
Miridae	114	36	0	12	20	62	70	113	175	212	194	147	1156	8.3	71	52	14	6	12	36	65	66	89	117	129	81	738	10.1										
Nabidae	20	0	0	3	4	6	12	0	8	8	0	0	61	0.4	0	0	0	0	1	0	3	5	9	6	7	3	34	0.5										
Pentatomidae	334	146	0	10	38	113	248	361	531	643	766	755	3945	28.4	238	99	30	1	2	25	81	153	243	294	327	330	1823	25.1										
Plasidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	4	1	22	14	0.2											
Plesmidae	3	0	0	0	1	2	4	0	6	2	0	3	21	0.2	0	0	0	0	0	0	1	0	3	0	2	0	6	0.1										
Pyrrhocoridae	144	26	0	0	11	23	39	60	87	150	188	234	962	6.9	75	36	10	1	2	7	10	24	31	55	70	92	413	5.7										
Reduviidae	186	69	0	0	2	29	48	113	150	191	327	409	1524	11	105	33	3	0	3	11	23	46	87	124	167	185	787	10.8										
Rhopalidae	2	1	0	0	0	3	6	2	1	0	4	0	19	0.1	0	0	0	0	0	1	2	0	0	0	0	0	4	0.1										
Total	1564	578	1	27	172	510	854	1158	1717	2080	2533	2714	13908		862	407	127	35	61	192	273	597	902	1128	1322	1266	7272											
%	11.2	4.2	0	0.2	1.2	3.7	6.1	8.3	12.3	15	16.3	19.5			11.9	5.6	1.7	0.5	0.8	2.6	5.1	6.2	2.4	15.5	18.2	17.4												

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حصص ودراصة التعداد الحشرى لرتبة نصفية الأجنحة باستخدام المصيدة الضوئية بمدينة العريش

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تم حصص ودراصة الكثافة العددية والوفرة النسبية لشرات رتبة نصفية الأجنحة باستخدام المصيدة الضوئية فى مدينة العريش بمحافظة شمال سيناء، خلال الفترة من أكتوبر ١٩٩٤ وحتى سبتمبر ١٩٩٦، وقد أسفر الحصص عن وجود ٩٢ نوعا تحت ٥٨ جنسا تنتمى إلى ١٦ فصيلة من رتبة نصفية الأجنحة. وكان العدد الكلى للشرات ١٣٩٠٨ فى السنة الأولى و ٧٢٧٢ حشرة فى السنة الثانية. كانت الشرات أكثر انجذابا للمصيدة خلال الشهور من مايو إلى أكتوبر ووصلت إلى قمة نشاطها ووفرتها خلال شهر سبتمبر فى السنة الأولى وخلال شهر أغسطس فى السنة الثانية، وكانت أقل تواجدا خلال الفترة من ديسمبر إلى مارس.

إحتوت فصيلتى بنتاتوميدي وليجيدي على أكبر عدد من الأنواع والأفراد يليها فصائل رديوفيدي وسيدنيدي ومريدي على التوالي، هذا وقد مثلت الفصائل الأخرى بأعداد قليلة من الأنواع والأفراد.

وجد أن الأنواع *Nysius eruca*, *N.cymoides* من فصيلة ليجيدي و *Ensarcoris inconspicua*, *Necara viridula* ومن فصيلة بنتاتوميدي هى أكثر الأنواع وفرة ونشاطا خلال سنتى الدراصة على الترتيب.