

**EFFECT OF SOME WEATHER FACTORS ON
LIGHT TRAP CATCHES OF INSECT FAUNA
AT ABROQ AL-ROUGHAMA REGION,
JEDDAH, SAUDI ARABIA.**

OSAMA M. BAHARETH

**Biology Department, Faculty of Applied Sciences,
Umm Al-Qura University, Makkah, Saudi Arabia**

ABSTRACT

Insect fauna were caught by Robinson light trap erected at a desert area, about 100 meter to Abroq El-Roughama region, Jeddah Saudi Arabia for 8 months from January to August 2003. Ten species belonging to eight families were recorded. The most abundant order was Lepidoptera and the most abundant family was Noctuidae. The two species *Agrotis ipsilon* and *Spodoptera exigua* were dominated. The largest number of *A. ipsilon* was recorded in May while the largest number of *S. exigua* was in March. The results showed that temperature had significant effect on the catches of *A. ipsilon* and *S. exigua*. On the other hand, relative humidity had significant effect on *A. ipsilon* and insignificant effect on *S. exigua*.

INTRODUCTION

Light traps have been widely used to study the flight activity, abundance and population dynamics of different insects (Blair and Catling; 1974; Farrow, 1977 and Morton et al., 1981). They have also been used as means of studying the effect of weather factors (e.g. temperature, relative humidity) on the activity of different insects (Sam and Chelliah 1984, Badr et al., 1985a, Zanaty et al., 1985 and Bishop et al. 2000). Light traps were used by some investigators in Saudi Arabia. Al-Ayedh and Al-Doghairi (2004) evaluate the insects trapping efficiency of various colored traps in cucumber (*Cucumis sativus* L.) crop in Riyadh, Saudi Arabia. The treatments involved seven different sticky traps (green, fluorescent yellow, orange, pink, red, yellow and transparent (control)) placed at four different heights. The insect pests recorded were Thrips, *Thrips tabaci* (Lindeman) and the leafminer, *Liriomyza trifolii* (Burgess). Significantly more insect pests were trapped on fluorescent yellow as compared to other traps whereas pink, green and orange colored traps caught significantly lower number of insects. A survey of sand flies was conducted in the Hanifah Valley, Riyadh city, Saudi Arabia using light traps. Four species of sand flies were identified, *Phlebotomus papatasi*, *P. beregeroti*, *P. sergenti* and *Sergentomyia antennatus*. Among those species, *P. papatasi* accounted for 97% of the total catch. Sand flies had two peaks, one in the middle of July and the other in the middle of October. More sand flies were caught in the southern part of the Valley compared to the northern one due to the presence of water stream in the southern part. However, numbers of sand flies are more positively correlated to temperature than to relative humidity (Aldawood et al. 2004). In the present work,

survey monthly distribution and effect of weather factors were determined from data of light traps for insect catches in Abroq Al-Roughama area, Jeddah, Saudi Arabia.

MATERIAL AND METHODS

Light trap of Robinson type (Robison and Robinson, 1950), equipped with a 125w. Mercury vapour lamp was used. The trap was set up above the ground level at a desert area, about 200 meter to Abroq Al-Roughama region, Jeddah, Saudi Arabia. The traps were run once every two nights from sunset till sunrise for a period of eight months from January till August 2003. The catches of insect species were counted and identified using the available keys. The weather factors, temperature and relative humidity were obtained from the rear-by- Meteorological station, Ministry of Aviation, Saudi Arabia. Statistical analysis of the data were done according to Snedecor and Cochran (1971).

RESULTS AND DISCUSSION

A total of 10 species belonging to 8 families and following 6 orders were caught during the trapping period (table1). As shown in figure (1), the most abundant order was lepidoptera comprising one family (Noctuidae) with three species (258 individuals). The other orders are Coleoptera represented by three families (Carabidae, Elateridae and Tenebrionidae) with 3 species (52 individuals), Hemiptera (family Pentatomidae, 21 individuals), Dictyoptera (family Mantidue 7 individuals) and Orthoptera (family Acrididae, 5 individuals).

The present work showed that lepidopteran fauna trapped in Abroq Al-Roughawa region was dominated and the most abundant

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Table (1): Monthly fluctuations of insect fauna caught by the trap

Order	Family	Species	No. insects caught monthly								Total
			Jan	Feb	Mar	Apr	May	June	July	Aug	
Coleoptera	Carabidae	<i>Carabid sp</i>	4	4	6		6		5	3	28
	Elateridae	<i>Agrypnus notodonata</i>	1	1			1		1		4
	Tenebrionidae	<i>Zophosis sp</i>	2	6		6		5		1	20
Diptera	Tachanidae	<i>Tachanid sp</i>	1	2		3		1		1	8
Hemiptera	Pentatomidae	<i>Nezara viridula</i>	2	2		1		3	2	11	21
Lepidoptera	Noctuidae	<i>Agrotis ipsilon</i>	15	12	15	13	29	17	18	20	139
		<i>Spodoptera exigua</i>	12	10	16	12	11	14	13	10	98
		<i>Spodoptera littoralis</i>	2	2	2	3	1	4	5	2	21
Dictyoptera	Montidae	<i>Sphodromantis viridis</i>	1	1		2	1		1	1	7
Orthoptera	Acrididae	<i>Chrotoyonus sp</i>	1		1		1		2		5

Table (2): Effect of temperature and relative humidity on population Fluctuations of *A. ipsilon* and *S. exigua* during the trapping period

Climatic factors and insect species	Months							
	Jan	Feb	Mar	April	May	June	July	August
Mean temperature c°	31.2	30.7	37.1	39.9	40	45.8	46	46.5
Relative humidity %	78.4	78	73	74	54	46	78	80
<i>Agrotis ipsilon</i>	15	12	15	13	29	17	18	20
<i>Spodoptera exigua</i>	12	10	16	12	11	14	13	10

family was Noctuidae. These results are in agreement with those of many investigators using light traps, to study the population dynamics of lepidopterous insects.

Badr et al. (1985b) showed that lepidopteous fauna trapped in Dakahliya governorate comprised 65 species belonging to 4 families and the family Noctuidae was the most abundant. Badr et al. (1985a) reported the existence of 47 lepidopterous species belonging to 10 families at Beni suef. Zanaty et al. (1985) recorded 40 lepidopterous species at Kafr El-Sheilkh region belonging to 8 families and the most abundant family was Noctuidae. The largest lepidopterous fauna was reported by El-Sayed (1987) in North Sinai, where he recorded 132 species related to 16 families, while Etman et al. (1989) recorded 62 lepidopterous species belonging to 11 families in Fayoum, Egypt.

Aly (1996) recorded 36 Lepidopteran species belonging to 7 families caught by two light traps erected at desert and farm areas in Qena province, for two years. Steinbauer et al. (2000) reported that the lepidopteran insects *Carmanta mimosa* and *Newrostrota gunnilla* were abundant in trap catches.

Table (2) shows the highest monthly numbers of two insect species *Agrotis ipsilon* (139 individuals) and *Spodoptera exigua* (98 individuals) along with the corresponding monthly average temperature and relative humidity. As indicated by figures (2a&3a), it is clear that the peak number of *A. ipsilon* was in May and the temperature was 40°C and the relative humidity was 54%. The highest number of *S. exigua* was in March and the temperature was 37. 1 while the relative humidity was 73% (Figs.2b&3b).

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