

SURVEY AND POPULATION FLUCTUATION OF SOME RODENT SPECIES AT DIFFERENT LOCALITIES IN EL-IBRAHEMIA DISTRICT, SHARKIA GOVERNORATE

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Abstract

The present investigation was carried out to survey the population fluctuation of some rodent species in different localities in El- Ibrahemia district, Sharkia Governorate.

Result revealed that the rodent species trapped from the three different habitats are classified as follows:

(A) The white bellied rat *Rattus rattus frugivorus*, (B) the grey bellied rat *Rattus rattus alexandrinus*, (c) the Norway rat *Rattus norvegicus*, (D) the house mouse *Mus musculus* and (E) the Egyptian spiny mouse *Acomys cahrinus*. The total number of rodent species in the houses during two successive years (2004-2005 and 2005 -2006) was 451 and 335 individuals, respectively. The white bellied *Rattus rattus frugivorus* was the most dominant species in this locality, while the total number of rodent species in the granaries during the same years was 115 and 120 individual, respectively. The white bellied rat *Rattus rattus frugivorus* was recorded the highest number of rodents. On the other hand, in poultry farm the total number of rodent species was 123 and 76 individuals during two successive years, respectively.

The highest values of total number of rats were recorded during May 2006 (98 and 73 individuals respectively), when the mean of temperature was 25.7°C during May 2005 and 2006, while the mean of relative humidity (RH) was 54.1 and 54.7%, respectively.

INTRODUCTION

Rodents are cosmopolitan in their distribution and they constitute the largest group of mammals reaching nearly 40% of all mammals living at the present time (Bajomi, 1984). They are characterized by rapid sexual maturation, short gestation period and increase frequent pregnancy in the year. The commensal rodents are of great importance, they play an important role in the spread of numerous diseases to man and domestic animals as well as causing considerable damage to agriculture crops specially sugarcane plantations, wheat, maize, rice, fruit trees and vegetables. They can be attack small animals, especially chickens, squabs of pigeon and suckling rabbits (Abdel- Azeem, 2008).

Wild rats can attack all kinds of cereals and forage crops, granaries and stored food. On a world wide basis an annual loss of 3.55 % of stored grains is due to the damage of these wild rats (Dykstra, 1966).

In Egypt, several authors studied the population density of different rodent species in some governorates Abdel-Gawad, 1974, Abdel-Gawad, *et al.* 1982, Mourad, *et al.* 1982, Asran, *et al.* 1985, El-Bahrawy, 1986, Abdel-Karim, 1991, Asran, *et al.* 1991, Asran, 1994, Hegab, 2004 and Hegab *et al.* 2006. The aim of the present work is an attempt to throwlight on the problems of rodents in sewi- area at Sharkia governorate, Ibrahemia district during two successive seasons of 2005 /2006 in the three different localities, i.e. houses, granaries and poultry farm).

The aim of study as following:

- 1- Survey and population fluctuation of the rodent species during two successive seasons 2004 -2005 and 2005 / 2006 at the three different localities in Ibrahemia, district, Sharkia governorate.
- 2- Effect of temperature and relative humidity on the total numbers of rodent species during two successive years.

MATERIALS AND METHODS

1- Survey:

The present study was carried out in three different localities, granaries, houses and poultry farm at El-Ibrahemia district, Sharkia governorate during two successive season 2004 /2005 and 2005 /2006. The seasonal fluctuation of rodent was carried out for two years from November 2004 up to the end of October 2006. The first locality was cereal granaries (about 5 granaries), the second site was urban area including many houses (about 100 houses). The third site was a poultry farm about 300m² consists of two floors building and feed storage.

Rodents were trapped alive from the three localities, forty clean wire-box traps with spring doors were used at each locality for two times per month (at the beginning and the half of month), traps were cleaned by water and liquid soap before each use. The traps were supplied with fresh bait materials, namely: tomato slices. In each investigated site, the traps were baits with fresh bait and distributed two times in different positions, in the granaries the traps were setup beside the wall at distances of 10 m from another trap, in the houses the traps were setup in the infested places, in the poultry farm the traps were setup in the food storage granary and inside the farm beside the wall. The traps were left from 6p.m. in above mentioned positions and collected in the morning at 7 a.m. Captured traps were

separately enclosed in white cloth bags fastened with a string and transferred carefully in the same day to the laboratory for examination, El-Bahrawy *et al.* (2008).

The trapped rats were individually inserted in to a killing jar provided with a piece cotton wool moistened with chlorophorm for anesthetizing rats.

The estimated data from the trapped rats were:

- a- Survey, identification and classification into species according to the Osbron and Helmy (1980).
- b- Population density of the rodent species.

2- Effect of temperature and relative humidity on the total numbers of rodent species during two successive years.

The collected rodents were estimated for each season and studied locality and analyzed by using factorial analysis method. The influence of temperature and relative humidity on the activity of rodent species trapped during two successive years of study was determined. The data of temperature and relative humidity were taking from the central Lab. For Agric. Climate, Agric, Res. Center, Giza, Egypt.

RESULTS AND DISCUSSION

1. Survey.

Rodent species in three different sites in El-Ibrahemia district, Sharkia Governorate were surveyed, the population fluctuation was studied during two successive years 2004 /2005 and 2005 /2006.

Rodent species were the white bellied rat *Rattus rattus frugivorus*, the grey bellied rat *Rattus rattus alexandarinus*, the Norwayrat *Rattus norvegicus*, the house mouse *Mus musculus* and the spiny mouse *Acomys cahrinus*.

The rodent species were identified according to the full description of rodent species of Egypt adopted by Osbron and Helmy (1980).

2. Population fluctuation of rodent species at three different sites.

Data presented in Tables (1 & 2) indicated that the relative abundance of different rodent species at the three different localities in El-Ibrahemia district, Sharkia governorate during years of 2004 / 2005 and 2005 /2006. The average of rat index was 0.24 and 0.18 during the 1st year and the 2nd year, respectively. The highest mean of rat index were 0.47 and .35 during the 1st and 2nd years, respectively in the houses followed by the poultry farm (0.13), the granaries (0.12) during the 1st year, and while during the 2nd years the granaries and poultry farm were recorded 0.13 and 0.18, respectively.

The highest value of rat index of all sites were obtained 0.41 and 0.30 during May 2005 and 2006, respectively, while the lowest value of rat index was 0.12 recorded during November 2004 and (0.08) during March 2006.

It appears also that the highest rat index in the houses were observed during August 2005 and 2006 (0.86 and 0.70, respectively), while the lowest rat index was 0.16 and 0.11 during March 2005 and February 2006. The highest rat index in the granaries were 0.25 during May 2005 and 0.20 during January 2006, the lowest rat index in the granaries was 0.01 and zero during June 2005 and March 2006, respectively. While the highest rat index in the poultry farm was 0.25 during the three months May 2005 & 2006 and June 2005, the lowest rat index in the poultry farm was 0.04 during February 2005 and the period from August up to October 2006 (zero).

1.2.1. In houses.

Data in Tables (3 & 4) indicated that the total number of rodent species in the houses during two successive years 2004 / 2005 and 2005/2006 were 451 and 335 individuals, respectively. The white bellied rat, *Rattus rattus frugivorus* was the most dominant species in this site, followed by the grey bellied rat, *R. rattus. frugivours*, the house mouse, rat, *Mus musculus* and the Egyptian spiny mous, *Acomys cahrinus*.

The maximum number of total rodent species was 69 and 56 individuals during August 2005 and 2006, respectively, while the minimum number was 13 and 9 during March 2005 and February 2006, respectively.

1.2.2. In Granaries.

Data present in Tables (5 & 6) showed that the total number of rodent species in the granaries during two successive years was 115 and 120 individuals, respectively. The white bellied rat *Rattus rattus frugivorus* recorded the highest number of rodent, followed by *R. norvegicus* and *R. rattus. alexandrinus*. The highest population of total rodent species was recorded during May 2005 (20 individuals), November 2005 and January 2006 (16 individuals), while the lowest population was obtained during June 2005 and March 2006 (1 and zero, respectively).

1.2.3. In poultry farm.

Data in Tables (7 & 8) showed that the total number of rodent species in the poultry farm during two successive years was 123 and 76 individuals during the 1st and 2nd years, respectively. The white bellied rat *R. r. frugivorus* was the most dominant species in the poultry farm during the two years, followed by *R. rattus. alexandrinus* and *R. norvegicus*. The maximum number of total rodent species was recorded during May 2005, 2006 and June 2005 (20 individuals), while the minimum number was noticed during February 2005 (3 individuals) and no observed during of three months (August, September and October 2006). Also, it is that the rodent

species disappeared during the period from August up to October 2006 in the poultry farm. Most of poultry farms are destroyed by virus fowel influenza (H5N2) during this time.

These findings agree with those obtained by Gaaboub *et al.* (1978), Asran *et al.* (1985), El-Bahrawy (1986), Soliman *et al.* (2001), Hegab (2004) and Hegab *et al.* (2006).

Gaaboub *et al.* (1978) made a survey of rodent in Alexandria governorate, Egypt and found six species of rodents namely: *R. r. frugivorus*, *R. norvegicus*, *R. r. alexandrinus*, *A. niloticus*, *R. r. rattus* and *Mus musculus*.

Asran *et al.* (1985) in Fayoum governorate, Egypt studied rodent population density of *A. niloticus* in different location and showed that the rodent population density differed from location to location, from district to another and from month to month. El-Bahrawy (1986) found that the relative abundance of rodent species in Ismailia governorate may be arranged in the following descending order: *R. r. frugivorus*, *R. norvegicus*, *R. r. alexandrinus* and *Mus musculus*, respectively. It concluded that *R. r. frugivorus* was the most dominant species and *Mus musculus* was the least dominant. Soliman *et al.* (2001) in his work in 3 villages, namely kafr Ayoub Soliman, Kafr Ibrahim El-Aidi, and El-Saadat, Sharkia governorate, Egypt. A total of 519 rats were collected from the 3 study sites: 46.6 % *R. rattus*, and 53.4% *R. norvegicus*.

Hegab (2004) in his study in three different localities during winter, 2003 – 2004 at Sharkia governorate showed that the highest population density were in houses (198), in granaries and citrus farm (54).

Hegab *et al.* (2006) in his work in three different sites at Sharkia governorate (i.e. houses, citrus farm and granaries). Results revealed that the houses gave the highest values of numbers for rodents (192) followed by citrus farm (51) and the granaries (42).

Mmetwaly, *et al.* (2009) found that seven rodent species belonging to 6 genera and 2 families at Behera governorate. Firstly, concerning family Muridae , four genera were found namely *Rattus* , *Arvicanthis* , *Acomys* and *Mus* , *Rattus rattus* (Linn.) , in addition to *Rattus norvegicus* (Berk)., as well as *Mus musculus* (Linn.) , were recorded in the buildings, while *Meriones shawi isis* (Thomas) and *Gerbillus gerbillus* (Olivier) were found in field crops.

3. Effect of temperature and relative humidity on the total numbers of rodent species during two successive years.

It appears from the results given in Tables (9 & 10) and Figs (1 & 2) that the relation between monthly fluctuation abundance of the rodent species and

temperature & relative humidity (RH) in Sharkia governorate during two successive years 2004 /2005 and 2005 /2006. The results revealed that the highest total number of rats were recorded during May 2005 and 2006 (98 and 73, respectively), when the mean of temperature was 25.7°C during May 2005 and 2006, while the mean of relative humidity was 54.0 and 54.7 %, respectively. The lowest percentage of rats were 12.1 and 7.5% obtained during November 2004 and March 2006, respectively, when the mean of temperature was 22°C during November 2004 and 20.1°C during March 2006. Also, the mean of relative humidity was 65 and 58.6% during November 2004 and March 2006, respectively. These results agree with those obtained by Abdel-Gawad (1974 and 1979) found that, the highest density was observed in Summer and the lowest one was recorded in winter. Omar (1980) in his survey of domestic and commensal rodents in the 10th of Ramadan city found that the population of the rodents could be arranged according to the different seasons in a descending order in 1979 as follow: spring, summer, autumn and winter. Embarak (1997) reported that the fluctuation of the number of rodent in cultivated area was studied for two successive years and showed that the highest density was recorded in summer and least density in winter during the two years, while in newly reclaimed area the highest population density of rodents was recorded in spring and the least occurred in winter during the studied year.

Table 1. Population fluctuation of the different rodent species in El-Ibrahemia district, Sharkia Governorate during year of 2004 / 2005.

Months	Houses					Granaries					Poultry farm					total	
	M.	F.	T.	No. of positive traps	Rat index.	M.	F.	T.	No. of positive traps	Rat index	M.	F.	T.	No. of positive traps	Rat index	No. of rats	Rat index
Nov. 04	7	7	14	14	0.18	8	2	10	10	0.13	4	1	5	5	0.06	29	0.12
Dec.	7	9	16	15	0.20	5	5	10	10	0.13	4	6	10	10	0.13	36	0.15
Jan. 05	14	11	25	24	0.31	1	4	5	5	0.06	7	3	10	10	0.13	40	0.17
Feb.	13	16	29	28	0.36	4	2	6	6	0.08	1	2	3	3	0.04	38	0.16
Mar.	6	7	13	12	0.16	5	6	11	11	0.14	5	3	8	8	0.10	32	0.13
Apr.	21	31	52	49	0.65	4	9	13	13	0.16	7	7	14	14	0.18	79	0.33
May	24	34	58	54	0.73	14	6	20	20	0.25	7	13	20	20	0.25	98	0.41
June	20	29	49	45	0.61	0	1	1	1	0.01	10	10	20	20	0.25	70	0.29
July	19	20	39	39	0.49	5	5	10	10	0.13	2	3	5	5	0.06	54	0.23
Aug.	31	38	69	65	0.86	5	5	10	10	0.13	4	8	12	12	0.15	91	0.38
Sep.	25	27	52	46	0.65	6	10	16	16	0.20	5	5	10	10	0.13	78	0.33
Oct.	18	17	35	32	0.44	1	2	3	3	0.04	3	3	6	6	0.08	44	0.18
Total	205	246	451			58	57	115			59	64	123			689	
Mean					0.47					0.12					0.13		0.24

M. Males, F.: Females, T. : Total

Table 2. Population fluctuation of the different rodent species in El-Ibrahemia district, Sharkia Governorate during year of 2005 /2006.

Months	Houses					Granaries					Poultry farm					total	
	M.	F.	T.	No. of positive traps	Rat index.	M.	F.	T.	No. of positive traps	Rat index	M.	F.	T.	No. of positive traps	Rat index	No. of rats	Rat index
Nov. 05	7	10	17	15	0.21	11	5	16	16	0.20	0	5	5	5	0.06	38	0.16
Dec.	10	10	20	19	0.25	5	9	14	14	0.18	7	4	11	11	0.14	45	0.19
Jan. 06	5	10	15	15	0.19	7	9	16	16	0.20	5	2	7	7	0.09	38	0.16
Feb.	6	3	9	9	0.11	9	5	14	14	0.18	5	1	6	6	0.08	29	0.12
Mar.	7	3	10	10	0.13	0	0	0	0	0.00	3	5	8	8	0.10	18	0.08
Apr.	24	17	41	39	0.51	3	4	7	7	0.09	3	7	10	10	0.13	58	0.24
May	16	25	41	41	0.51	10	2	12	12	0.15	7	13	20	20	0.25	73	0.30
June	23	14	37	36	0.46	4	1	5	5	0.06	3	5	8	8	0.10	50	0.21
July	16	16	32	30	0.40	7	0	7	7	0.09	1	0	1	1	0.01	40	0.17
Aug	28	28	56	55	0.70	3	4	7	7	0.09	0	0	0	0	0.00	63	0.26
Sep.	14	16	30	30	0.38	7	1	8	8	0.10	0	0	0	0	0.00	38	0.16
Oct.	9	18	27	26	0.34	9	5	14	14	0.18	0	0	0	0	0.00	41	0.17
Total	165	170	335			75	45	120			34	42	76			531	
Mean					0.35					0.13					0.18		0.18

M. Males, F.: Females, T. : Total

Table 3. Population fluctuation of the different rodent species in the houses during year of 2004 / 2005.

Months	R. r. frugivorus			R. r. alexandrinus			Acomys cahrinus			Mus musculus			Grand total
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	
Nov.04	5	7	12	2	0	2	0	0	0	0	0	0	14
Dec.	5	6	11	1	1	2	0	0	0	1	2	3	16
Jan.05	10	7	17	1	1	2	0	1	1	3	2	5	25
Feb.	10	13	23	1	2	3	1	1	2	1	0	1	29
Mar.	4	5	9	2	1	3	0	1	1	0	0	0	13
Apr.	20	27	47	0	4	4	0	0	0	1	0	1	52
May	21	29	50	2	5	7	0	0	0	1	0	1	58
June	18	25	43	2	4	6	0	0	0	0	0	0	49
July	18	16	34	1	4	5	0	0	0	0	0	0	39
Aug	27	26	53	4	11	15	0	1	1	0	0	0	69
Sep.	21	23	44	4	4	8	0	0	0	0	0	0	52
Oct.	16	14	30	2	3	5	0	0	0	0	0	0	35
Total	175	198	373	22	40	62	1	4	5	7	4	11	451

Table 4. Population fluctuation of the different rodent species in the houses during year of 2005 / 2006.

Months	R. r. frugivorus			R. r. alexandrinus			Acomys cahrinus			Mus musculus			Grand total
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	
Nov.05	6	10	16	1	0	1	0	0	0	0	0	0	17
Dec.	9	10	19	0	0	0	1	0	1	0	0	0	20
Jan.06	5	8	13	0	2	2	0	0	0	0	0	0	15
Feb.	5	3	8	1	0	1	0	0	0	0	0	0	9
Mar.	7	2	9	0	0	0	0	1	1	0	0	0	10
Apr.	22	15	37	2	2	4	0	0	0	0	0	0	41
May	15	23	38	1	2	3	0	0	0	0	0	0	41
June	20	13	33	3	1	4	0	0	0	0	0	0	37
July	15	15	30	1	1	2	0	0	0	0	0	0	32
Aug	28	24	52	0	4	4	0	0	0	0	0	0	56
Sep.	13	15	28	0	1	1	0	0	0	1	0	1	30
Oct.	7	14	21	1	2	3	1	2	3	0	0	0	27
Total	152	152	304	10	15	25	2	3	5	1	0	1	335

M. Males, F.: Females, T.: Total

Table 5. Population fluctuation of the different rodent species in the granaries during
year of 2004 / 2005.

Months	R. r. frugivorus			R. r. alexandrinus			R. norvegicus			Grand total
	M.	F.	T.	M.	F.	T.	M.	F.	T.	
Nov.04	5	2	7	0	0	0	3	0	3	10
Dec.	3	2	5	0	0	0	2	3	5	10
Jan.05	1	2	3	0	0	0	0	2	2	5
Feb.	2	1	3	0	0	0	2	1	3	6
Mar.	0	3	3	0	0	0	5	3	8	11
Apr.	3	9	12	1	0	1	0	0	0	13
May	12	5	17	2	1	3	0	0	0	20
June	0	1	1	0	0	0	0	0	0	1
July	0	3	3	0	0	0	5	2	7	10
Aug	3	5	8	2	0	2	0	0	0	10
Sep.	5	8	13	0	0	0	1	2	3	16
Oct.	1	2	3	0	0	0	0	0	0	3
Total	35	43	78	5	1	6	18	13	31	115

Table 6. Population fluctuation of the different rodent species in the granaries during
year of 2005 / 2006.

Months	R. r. frugivorus			R. r. alexandrinus			R. norvegicus			Grand total
	M.	F.	T.	M.	F.	T.	M.	F.	T.	
Nov.05	8	5	13	0	0	0	3	0	3	16
Dec.	1	4	5	2	0	2	2	5	7	14
Jan.06	3	0	3	2	1	3	2	8	10	16
Feb.	4	1	5	0	0	0	5	4	9	14
Mar.	0	0	0	0	0	0	0	0	0	0
Apr.	2	0	2	0	0	0	1	4	5	7
May	6	2	8	1	0	1	3	0	3	12
June	0	0	0	0	0	0	4	1	5	5
July	3	0	3	0	0	0	4	0	4	7
Aug	3	2	5	0	2	2	0	0	0	7
Sep.	3	0	3	0	0	0	4	1	5	8
Oct.	8	4	12	0	0	0	1	1	2	14
Total	41	18	59	5	3	8	29	24	53	120

M. Males, F.: Females, T.: Total

Table 7. Population fluctuation of the different rodent species in the poultry farm during year of 2004 / 2005.

Months	R. r. frugivorus			R. r. alexandrinus			R. norvegicus			Grand total
	M.	F.	T.	M.	F.	T.	M.	F.	T.	
Nov.04	2	0	2	2	1	3	0	0	0	5
Dec.	0	0	0	1	4	5	3	2	5	10
Jan.05	2	3	5	2	0	2	3	0	3	10
Feb.	1	2	3	0	0	0	0	0	0	3
Mar.	3	3	6	0	0	0	2	0	2	8
Apr.	3	0	3	1	2	3	3	5	8	14
May	2	6	8	2	5	7	3	2	5	20
June	0	5	5	3	2	5	7	3	10	20
July	0	0	0	0	2	2	2	1	3	5
Aug	2	1	3	1	7	8	1	0	1	12
Sep.	5	2	7	0	3	3	0	0	0	10
Oct.	1	0	1	2	3	5	0	0	0	6
Total	21	22	43	14	29	43	24	13	37	123

Table 8. Population fluctuation of the different rodent species in the poultry farm during year of 2005 / 2006.

Months	R. r. frugivorus			R. r. alexandrinus			R. norvegicus			Grand total
	M.	F.	T.	M.	F.	T.	M.	F.	T.	
Nov.05	0	3	3	0	2	2	0	0	0	5
Dec.	4	1	5	3	3	6	0	0	0	11
Jan.06	5	0	5	0	2	2	0	0	0	7
Feb.	5	1	6	0	0	0	0	0	0	6
Mar.	3	5	8	0	0	0	0	0	0	8
Apr.	3	2	5	0	3	3	0	2	2	10
May	3	7	10	1	6	7	3	0	3	20
June	0	2	2	1	0	1	2	3	5	8
July	1	0	1	0	0	0	0	0	0	1
Aug	0	0	0	0	0	0	0	0	0	0
Sep.	0	0	0	0	0	0	0	0	0	0
Oct.	0	0	0	0	0	0	0	0	0	0
Total	24	21	45	5	16	21	5	5	10	76

M. Males, F.: Females, T.: Total

Table 9. Relation between averages of monthly fluctuation abundance and temperature & relative humidity (RH) of some rodent species in Sharkia Governorate during (Nov. 2004- Oct. 2005).

Months	Min temp	Max temp	Mean temp	Min RH%	Max RH%	Mean RH%	Total No. of rats	%
Nov.04	17.2	26.7	22.0	45.0	85.0	65.0	29	12.1
Dec.	13.2	22.9	18.1	39.5	82.7	61.1	36	15.0
Jan.05	10.5	19.4	14.9	41.3	80.5	60.9	40	16.7
Feb.	11.2	20.9	16.0	38.8	83.8	61.3	38	15.8
Mar.	13.3	24.0	18.7	37.6	82.7	60.2	32	13.3
Apr.	15.2	28.5	21.9	29.3	83.3	56.3	79	32.9
May	18.8	32.6	25.7	24.0	84.1	54.0	98	40.8
June	23.2	34.2	28.7	35.3	83.1	59.2	70	29.2
July	25.3	34.5	29.9	45.9	84.5	65.2	54	22.5
Aug	25.6	34.4	30.0	50.4	84.9	67.7	91	37.9
Sep.	23.7	34.1	28.9	39.8	84.5	62.2	78	32.5
Oct.	20.7	30.8	25.8	37.8	83.5	60.7	44	18.3

Table 10. Relation between averages of monthly fluctuation abundance and temperature & relative humidity (RH) of some rodent species in Sharkia Governorate during (Nov. 2005 – Oct. 2006).

Months	Min temp	Max temp	Mean temp	Min RH%	Max RH%	Mean RH%	Total No. of rats	%
Nov.04	16.0	26.3	21.1	39.9	84.0	62.0	38	15.8
Dec.	14.2	22.9	18.5	49.6	83.8	66.7	45	18.8
Jan.05	10.1	20.2	15.1	42.9	85.9	64.4	38	15.8
Feb.	12.0	22.4	17.2	63.0	80.3	71.6	29	12.1
Mar.	13.2	27.0	20.1	33.6	83.7	58.6	18	7.5
Apr.	15.3	28.8	22.1	33.1	83.3	58.2	58	24.2
May	19.5	31.8	25.6	25.2	84.1	54.7	73	30.4
June	24.0	35.6	29.8	35.3	85.5	60.4	50	20.8
July	26.1	34.9	30.5	47.1	85.1	66.1	40	16.7
Aug	25.6	35.0	30.3	47.5	85.1	66.3	63	26.3
Sep.	23.5	34.4	29.0	41.7	84.4	63.0	38	15.8
Oct.	21.4	31.3	26.3	41.2	84.3	62.8	41	17.1

Correlation between mean of temperature & relative humidity (RH) and the total number of rats during two years of the study.		
	Total number of rats	
	2004 /2005	2005 / 2006
Mean Temp	0.652*	0.421
Mean RH%	-0.265	-0.380

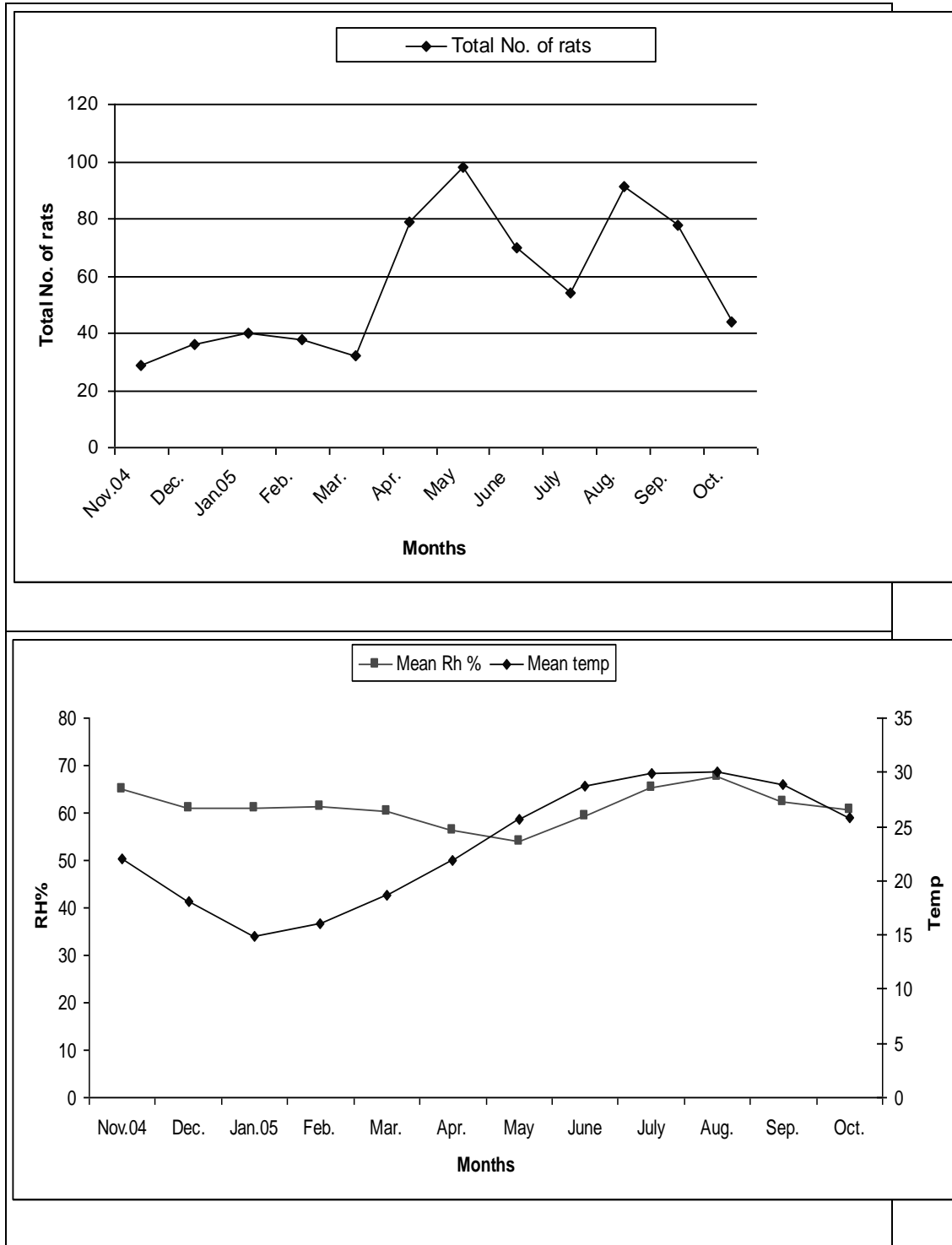


Fig 1. Relation between averages of monthly fluctuation abundance and temperature & relative humidity (RH) of some rodent species in Sharkia Governorate during (Nov. 2004- Oct. 2005).

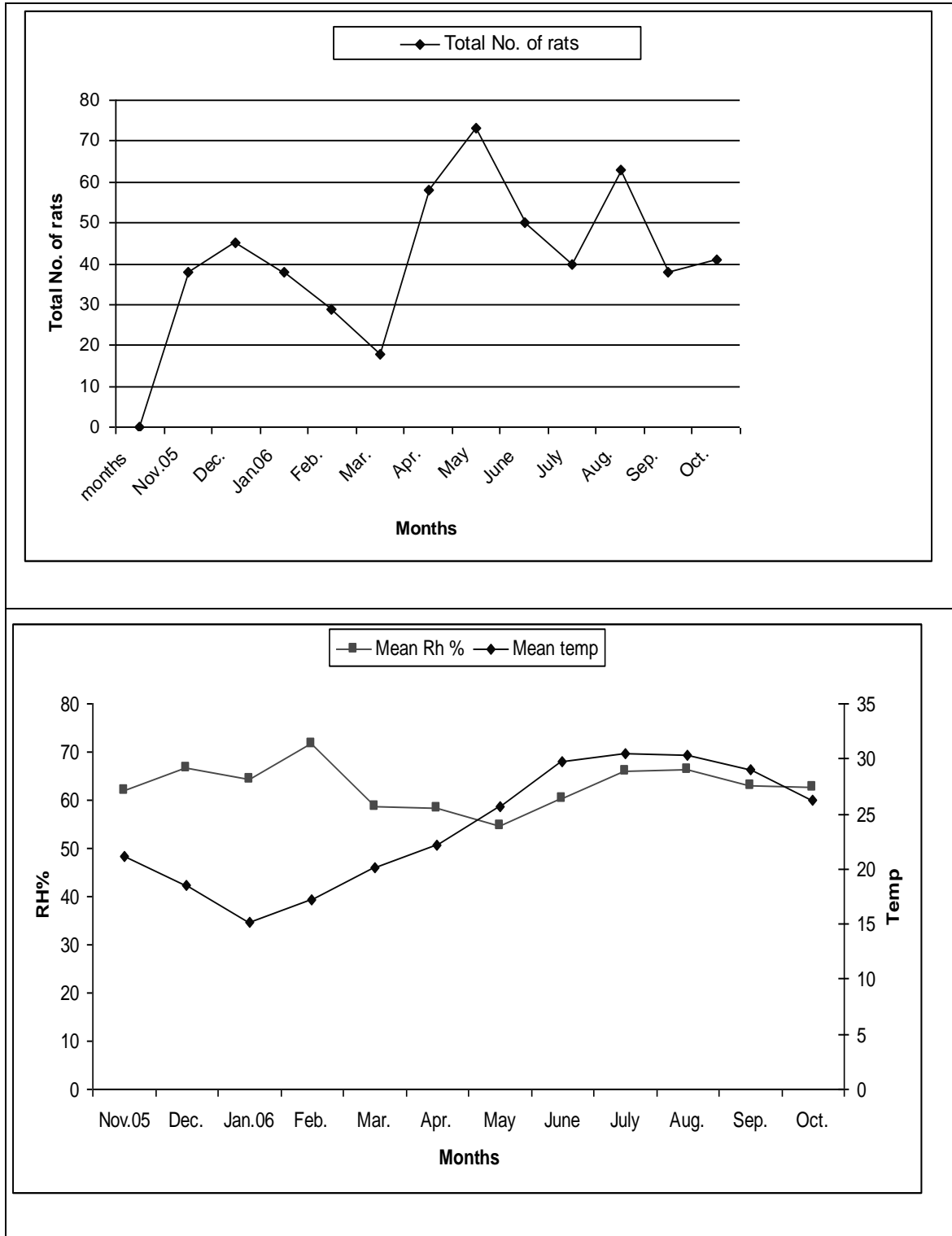


Fig 2. Relation between averages of monthly fluctuation abundance and temperature & relative humidity (RH) of some rodent species in Sharkia Governorate during (Nov. 2005 – Oct. 2006).

REFERENCES

1. Abdel- El- Azeem, M.I. 2008. Ecological studies on some commensal rodent species and their ectoparasites in different habitats at Sharkia governorate. M. Sc. Thesis, Fac. Agric. Suez Canal. University. pp 193.
2. Abdel- El- Karim, S.M. 1991. Studies on rodents in Sharkia Governorate. Ph. D. Thesis, Fac. of Agric. Zagazig Univ. Egypt.
3. Abdel – Gawad, K.H. 1974. Ecological and toxicological studies on commensal and household rodents in Assiut area. M. Sc. Thesis, Fac. Of Agric., Assiut Univ., Egypt.
4. Abdel- Gawad, K.H. 1979. Studies on the interrelation. Between rodents and their ectoparasites in the cultivated and semiarid. Zones. Ph. D. Thesis, Fac. Of Agric., Assiut Univ., Egypt.
5. Abdel – Gawad, K.H., A.M. Salit and A. Maher- Ali. 1982. Population density of rodent species in agricultural and semi-arid areas. Assuit J. Agric. Sci., 13 (2): 27 – 37.
6. Asran, A.A. 1994. Population dynamics and reproduction aspects of the Nile rat *Arvicanthis niloticus*. Egypt. J. Agric. Res., 72 (2): 427 – 432.
7. Asran, A.A., H.I. El-Deeb, G. Kuehrnert and M.A. El-Halafawy. 1985. Population density of rodent in different locations in Fayoum Governorate. J. Agric. Sci. Mansoura Univ. Egypt, 10 (4): 1527 – 1528.
8. Asran, A.A., H.I. El-Deeb and M.A. El-Halafawy. 1991. Rat damage to certain crops and population density of *A. nilaticas* in Fayoum Governorate. Egypt. J. Agric. Res., 69 (1): 273 – 280.
9. Bajomi, D. 1984. Commensal rodent proplems in Hungry Organization and practice of vertebrate pest control. Hampshire Conference, England: 18 – 20.
10. Dykstra, W.W. 1966. The economic importance of commensal rodents. WHO / Vector Control, 66 : 217.
11. El-Bahrawy, A.A. F. 1986. Studie on ecology and control of some rodent species in Ismailia Governorate –Ph.D. Thesis, Fac. Of Agric. Suze canal, Univ., Egypt.
12. El-Bahrawy, A.A.F., A.M.I. Hegab, G.A. El-Kady and M.I.A. El-bkhshwangi 2008. Field studies on commensal rodents at El-Ibrahemia District, Sharkia Governorate. Egypt J. Appl. Sci., 23 (5): 230 – 243.

13. Embarak, M.Z. 1997. Ecological and control studies on rodents and their ectoparasites in cultivated and newly reclaimed areas. M. Sc. Thesis, Fac. Agric. Assiut Univ.
14. Gaaboub, I. A., A. E.E. Widaatalla and M.F. El-Sawy. 1978. Seasonal of small rodents in relation to cultivated area in the vicinity of Alexandria Governorate, Egypt. J. Agric. Res. Tanta, Univ., 4 (2): 312 – 322.
15. Hegab, A.M.I. 2004. Studies on some commensal rodent species and their ectoparasites in different habitats at Sharkia Governorate. Agric. Res. J. Suez Canal Univ., 4 (2): 119 – 124.
16. Hegab, A.M.I., Sh.A.A. Ismail and S.A.A. El-Massry. 2006. Survey, morphological studies and ectoparasites associated with some commansal rat species at Sharkia Governorate. Egypt. J. Appl. Sci., 21 (5): 340- 349.
17. Mourad, M.G., K.H. Abdel –Gawad and A. Maher Ali. 1982. Population density of rodent species in Some Urban area in Minia Governorate. Assiut J. Agric. Sci., Egypt., 13 (2): 19 – 25.
18. Mmetwaly, A.M., S. A. Montasser and A. A. R. Al-Gendy. 2009. Survey of Rodent Species and Damage Assessment Caused by *Meriones shawi isis* (Thomas) in Some Field Crops at Bustan Area . J. Appl. Sci. Res., 5(1): 40-45.
19. Omar, M.T. 1980. A Preliminary survey and seasonal population on domestic and commensal rodents in 10th of Ramadan city as a non –inhabited area. Proc. Conf. Pl. Protec. Res. In., 3: 269 – 274. Int. Conference Plant Protection Res
20. Osbron, D.J. and I. Helmy. 1980. The contemporary land mammals of Egypt (including Sinai). Fieldiana Zoology new series 5: 1-579
21. Soluman, S., A.J. Main, A.S. Marzouk and A.A. Montasser. 2001. Seasonal studies on commensal rats and their ectoparasites in rural area of Egypt: the relationship of ectoparasites to the species, locality, and relative abundance of the host. J. Parasitol., 87 (3): 545 – 553.

حصر وتذبذب تعداد بعض أنواع الجرذان فى ثلاث مواطن مختلفة بمركز الإبراهيمية محافظة الشرقية

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الهدف من هذا البحث هو حصر بعض أنواع القوارض فى ثلاث مواقع مختلفة بمحافظة الشرقية وأظهرت النتائج أن الجرذان المصاحبه تنقسم إلى الآتى:

- ١- الفأر المتسلق ذو البطن البضاء
- ٢- الفأر الاسكندارى.
- ٣- الفأر النروجى.
- ٤- فؤيرة المنازل.
- ٥- الفأر الشوكى.

وأن إجمالى أنواع الجرذان فى المنازل أثناء موسمين متتالين ٢٠٠٤ - ٢٠٠٥ م، ٢٠٠٥ - ٢٠٠٥ م - ٢٠٠٦ م هو ٤٥١، ٣٣٥ جرذ على التوالى.
وأن الجرذ المتسلق ذو البطن البضاء كان أكثر الأنواع السائدة فى المنازل بينما إجمالى أنواع الجرذان أثناء نفس الفترة كان ١١٥، ١٢٠ فى المخازن على التوالى. وسجل الفأر المتسلق ذو البطن البضاء أعلى تعداد للجرذان. وعلى الجانب الآخر كان إجمالى تعداد الجرذان ١٢٣، ٧٦ جرذ فى مزرعة الدواجن أثناء نفس الموسمين المتتالين على التوالى.
وعندما كانت درجة الحرارة ٢٥,٧ درجة مئوية والرطوبة ٥٤,١، ٥٤,٧% أثناء مايو سنة ٢٠٠٥، ٢٠٠٦ كان أعلى قيمة للتعداد للجرذان ٩٨، ٧٣ جرذ على التوالى.