

**MITES INHABITING GRANARY, CATTLE FARM  
AND VILLAGE-HOUSE RAT BURROWS**

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**ABSTRACT**

*Three samples from rat burrows (Cattle farms, granaries and village-houses) in Menoufia Governorate were examined for the occurrence of mite species during the period from April 1991 to March 1992. Results revealed that 18 mite species belong to 13 families were found inhabitin rat burrows, only eight species are parasitic. The total number of mite species inhabiting village-houses, granaries and cattle farm rat burrows were 14, 13 and 6, while the numbers of parasitic mite species were 6, 2 and 4 respectively. The data revealed that the highest population densities of mites were found in village-house rat burrows followed by granary and the least was in cattle farm rat burrows. The seasonal fluctuation of mites inhabiting rat burrows showed that, there was one peak of seasonal abundance during November in both village-house and granary rat burrows while, this peak was recorded during October for cattle farm rat burrows.*

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## INTRODUCTION

Parasitic diseases are a frequent problem in veterinary medicine, and acarina significantly contribute to this group of diseases. Transient acarinas can occur in man as a result of contact with an infested animal or its surroundings. Certain acarines, can act as vectors for viral, rickettsial, bacterial and protozoan diseases. The parasite causes skin or wool or hair diseases. The heavy infestation causes poor food conversion and decreased milk or meat production. In fact, domestic and commensal rodents which live in intimate association with man and his domestic animals have a great role as transmitters of mites and certain serious pathogens (Bishopp, 1923, Clark et al., 1966 and Lodha, 1969). In Egypt, reference might be made to Hirst (1914) who gave an account to acarina on rodents, Imam and Magid, (1966) found that the ectoparasitic mites on *Rattus norvegicus* (Berkenhout) had two peaks of abundance during Spring and Autumn. Yunker and Guirgis (1969) concluded that the presence or absence of laelaptid mites in burrows depend on occupancy by the host habitat, host species and time of the year. Mourad (1972) found that *Androlaelaps zuluensis* (Z.), *Ornithonyssus bacoti* (H.) and *Echinolaelaps mutalli* (H.) were found in large numbers, Abo-Taka and Sweelam (1987) reported that the highest density of ecotoparasitic mites on the rats of genus *Rattus* appeared during Autumn (10.06) individuals/host)

The purpose of the present work is to study the occurrence of different mite species inhabiting rat burrows from cattle farm, granaries and village- houses and their seasonal fluctuation during a whole year.

## MATERIALS AND METHODS

Samples from rat burrows (*Rattus rattus*) (Linnaeus) were collected from different areas of Menoufia Province during the period extended from April 1991 to March 1992. Samples were collected monthly, each about one kg., from cattle farms, granaries and village-houses, three samples for each. Mites were extracted using Tullgren funnels, counted, mounted and identified according to Baker et al., 1956, Keegan 1956, Krantz 1978 and Zaher 1986.

## RESULTS AND DISCUSSION

Data presented in Table (1) revealed that there are 19 mite species belong to 13 families inhabiting rat burrows. Only eight parasitic mite species were obtained belong to five families as follows:

### 1- Family: Laelapidae:

Laelapine mites include over 15 genera which are facultative parasites on mammals (Strandtmann and Wharton, 1958). From data in Table (1) there are three ectoparasitic genera related to this family inhabiting rat burrows: *Haemolaelaps*, *Echinolaelaps* and *Laelaps*. *Laelaps muttali* (Hirst) was found in moderate numbers in granary rat burrows, this species feeds on secretion of their mammal hosts and occasionally imbibe blood and prefer myomorph rodents especially which occur in moist habitat (Radovsky, 1967). Both *Haemolaelaps aegypticus* (Keegan) and *Echinolaelaps echidninus* (Berlese) were found in few numbers in cattle farm and village-house rat burrows.

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**Table (1):** Distribution of mite species inhabiting different rat burrows.

	Cattle farm	Granary	Village-house
Sub-Order: Gamasida			
1-Fam: laelapidae			
<i>Haemolaelaps aegypticus</i>	+	-	+
<i>Echinolaelaps echidninus</i>	+	-	+
<i>Laelaps nuttali</i>	-	++	-
2-Fam: Dermanyssidae			
<i>Dermanyssus muris</i>	+	-	-
<i>Allodermanyssus sanguineus</i>	-	-	+
3-Fam: Macronyssidae			
<i>Ornithonyssus bacoti</i>	+	+	+++
4-Fam: Ascidae			
<i>Proctalaelaps sp.</i>	-	-	+
Sub-Order: Actinedida			
1-Fam: Cheyletidae			
<i>Chyletus malaccensis</i>	+	++	-
<i>Chyletus zaheri</i>	-	+	-
<i>Chyletus sp.</i>	+	++	-
2-Fam: Cheyletiellidae			
<i>Cheyletiella parasitivorax</i>	-	-	+
3-Fam: Cunaxidae			
<i>Cunaxa setirostris</i>	-	++	++
4-Fam: Stigmaeidae			
<i>Stigmaeous rattus</i>	-	-	+
5-Fam: Myobiidae			
<i>Myobia muscifix</i>	-	+	++
Sub-Order: Acaridida			
1-Fam: Acaridae			
<i>Acarus siro</i>	-	++	+++
<i>Tyrophagus sp.</i>	-	++	++
2-Fam: Glycyphagidae			
<i>Glycyphagus aegypticus</i>	-	+	++
3-Fam: Carpoglyphidae			
<i>Carpoglyphus sp.</i>	-	++	+
Sub-Order: Oribatida			
Fam: Oribatulidae	-	+	+
Number of parasitic mite sp.	1	2	6
Number of non- parasitic sp.	2	10	8
Total numbers of species	6	12	14

- Non found

+ rare numbers: (1-8 individuals / sample)

++ moderate numbers: (9-15 indiv. / sample)

+++ large numbers: (16 - 25 indiv. / sample).

**2- Family: Dermanyssidae:**

The family includes nest & host- dwelling blood- feeding parasites of birds and mammals. *Allodermanyssus sanguineus* (Hirst), nest dwelling parasite on rodents especially house mice, transmits rickettsialpox to mice and humans, appears in few numbers from village-house rat burrows while, *Dermanyssus muris* (Hirst) is found only in cattle farm samples.

**3- Family: Macronyssidae:**

Larvae, deutonymphs non-feeding, protonymphs and adults are blood-feeding. Members of this family ranges from nest dwelling to host-dwelling. They have relatively high fecundity. *Ornithonyssus bacoti* (Hirst) (the tropical rat mite), cosmopolitan on rodents, was recorded by Strandtmann and Wharton (1958) to bite humans.

Williams and Brown (1945) stated that *Ornithonyssus bacoti* (H.) was the intermediate host of the filariid worm *Litomosoides carinii*, and *Pasteurella pestis* is experimentally transmitted from rat to rat by this mite (Baker et al., 1956). Clark et al., (1966) observed the ability of *O. bacoti* to retain Eastern equine encephalitis virus and endemic typhus. In this experiment, this mite appears to be the most dominant species and the only one which appeared in all collected samples with high numbers in village-houses and few numbers in both cattle farm and granary rat burrow samples.

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#### **4- Family: Cheyletiellidae.**

Members of this family are ectoparasites on birds and small mammals there are five species included in the genus *Cheyletiella*, its feeding had been studied on the rabbit by Fox and Ewing, (1969) and on man by Olsen and Roth, (1947). Megnin (1878) stated that *C. Parasitivorax* (Megnin) is predatory on smaller ectoparasites but Mykylowycz (1958) demonstrated transmission of myxoma virus by this mite between rabbits. *C. Parasitivorax* (M.) was found in rare numbers from village- house rat burrow samples.

#### **5- Family: Myobiidae**

Mites of this family have highly modified leg for clinging to their hosts, feeding is more or less confined to the hair follicle bases and often involves haematophagy. Female ingest blood during reproductive period (Krantz., 1978). *Myobia musculi* (Schrank) are common parasites on laboratory rodents. This species was recorded from village- house rat burrow samples in large numbers in comparison with granary ones.

From the above results we could mention that, village- house rat burrows were infested with six parasitic mite species which may attack the house inhabitants and it could transmit pathogenic organisms. Rat burrows in granaries, village-houses and cattle farms were inhabited with 10,8, and 2 non- parasitic mite species respectively which are fungivorous, saprophagous and predators respectively.

### *Mites Inhabiting Granary, Cattle .....*

Individuals of families Cheyletidae, Cunaxidae and Acaridae were found in large numbers especially family Acaridae. Regarding to seasonal fluctuation data depicted in Fig. (1) illustrated that, mite population density showed one peak during November 245 and 620 individuals/sample in granary and village-house rat burrows while, there were slight increase in mite numbers during May (85,55 individuals/sample) in granary and village house rat burrows, respectively. The mite populations were increased slightly from April reaching the maximum numbers during October month (66 individuals/sample) in cattle farm rat burrows.

Generally, population trends were increased in counts during the warm seasons (Autumn and Spring) this is in agreement with Iman and Magid (1966). The highest population densities of mites observed in village-house samples followed by granary and the least densities in cattle farm samples.

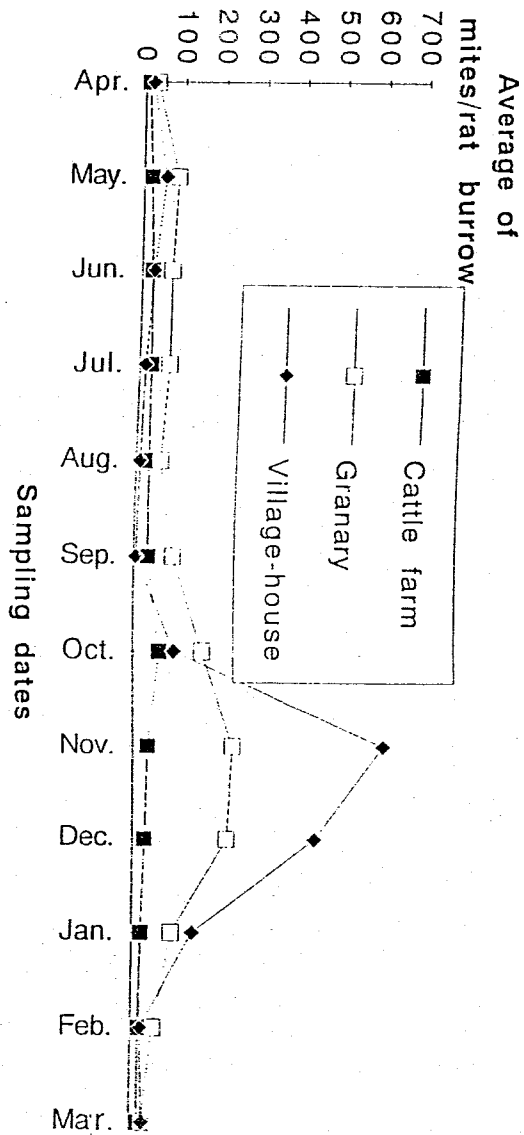


Fig. (1) Seasonal fluctuation of mites inhabiting different rat burrows during the period from April 1991 to March 1992



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## الحلم المرتبط بأنفاق الفئران المجموعة من مخازن الغلال مزارع الماشية، البيوت الريفية

صفاء مصطفى أبو طاقة - عبد القوى عبد الحكيم العبد  
كلية الزراعة- قسم الحشرات الإقتصادية- جامعة المنوفية  
شبين الكوم- مصر

جمعت العينات من أنفاق الفئران من ثلاثة مصادر (مزارع الماشية-  
مخازن الغلال - البيوت الريفية) في محافظة المنوفية في الفترة من أبريل  
١٩٩١ إلى مارس ١٩٩٢ وتم فصل وفحص الأكاروسات الموجودة بها.

أظهرت النتائج تواجد ١٨ نوع حلم ينتمي إلى ١٣ عائلة تم جمعها من  
أنفاق الفئران منها ٨ أنواع فقط من الأكاروسات المتطفلة. كما أظهرت النتائج  
أن أعلى تعداد للحلم سجل في أنفاق الفئران المجموعة من البيوت الريفية  
يتبعها مخازن الغلال وأقل تعداد سجل في مزارع الماشية.

بدراسة التغيرات الموسمية للحلم سجلت مجاميع الحلم الموجودة في  
أنفاق الفئران قمة واحدة خلال شهر نوفمبر في كل من البيوت الريفية  
ومخازن الغلال بينما زادت مجاميع الحلم بوضوح في مزارع الماشية خلال  
شهر أكتوبر.