

SPECIES COMPOSITION OF RODENTS IN CULTIVATED AND RECLAIMED LANDS

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Abstract: Species composition of rodents in the Faculty of Agriculture, Assiut University and El-Ghorieb farms (25km. north east of Assiut city) revealed the presence of three species of rats in the cultivated area (viz., the Nile grass rat, *Arvicanthis niloticus* (Desm.), the grey bellied rat, *Rattus rattus alexandrinus* (Linn.) and the white bellied rat, *Rattus rattus frugivorus* (Linn.)). *R. r. alexandrinus* recorded an average dominant percentage of (24.26 % and 7.84%) in the Faculty of Agriculture and El-Ghorieb Farms. However, the average dominant percentages were (14.35% and 28.30%) for *R.r.frugivorus* and (11.39% and 13.85%) for *A. niloticus* in

the Faculty of Agriculture and El-Ghorieb Farms, respectively.

The Norway rat, *Rattus norvegicus* was the only rodent encountered in the River Nile Bank. Also, survey of rodents in Arab El-Awamer and a newly reclaimed area revealed the presence of four species (*A. niloticus*, *R.r.alexandrinus*, the house mouse, *Mus musculus* and lesser gerbia, *Gerbillus gerbillus*). The dominant percentage values were (63.27% and 18.92%), (24.49% and 67.57%), (12.24% and 0.0) and (0.0 and 13.51%) for *R. r. alexandrinus* , *A. niloticus*, *M. musculus* and *G. gerbillus* in Arab El-Awamer and the newly reclaimed area, respectively.

Key words: species, rodents, cultivated, reclaimed lands.

Introduction

Rodentia is one of the most important mammalian order which has a great numbers of rodent species with their effect on the environment. Directly, through their destructive feeding habits and indirectly by a stable food items for many predators in the food chains. In Egypt changes in the

agroecosystem, during the last 40years, have had a great effect on the distribution and abundance of field rodents population (El-Sherbiny, 1987). In the present study the species composition of wild rodents was studied in different agro ecosystems in Assiut Governorate.

Received on:21/3/2009

Accepted for publication on: 16/4/2009

Referees:Prof.Dr.Al-Said ali M. AL-Eraki Prof.Dr.Najua A. A. Abd-Elbaki

The main objective of this study is to develop an effective strategy for implementation of rodent management programs in cultivated and newly reclaimed agro-ecosystems in Egypt through Information regarding rodent species composition and habitat.

Materials and Methods

The present work was carried out in three types of agro-ecosystems in Assiut Governorate, these areas were described as follows:

1-1.-Cultivated area:

The cultivated area used in the present study was the experimental station of the Faculty of Agriculture, Assiut University. This area planted with vegetables, field crops and orchards.

1-2-River Nile bank:

This area is located in the western beach of the River Nile in Assiut town.

1-3- Reclaimed area:

This area represented by three different reclamation periods which were selected to carry out the present study:

1-3.1. - The experimental station of the Faculty of Agriculture, El-Ghorieb, Assiut University

It is located at 25km north east of Assiut city in the outskirts of the eastern desert and fringe of the alluvial agricultural land in the eastern side of the River Nile. It has

been planted from along period about (50 years) with isolated patches of vegetables, wheat, egyptian clover, alfalfa and certain orchards.

1-3.2.- The experimental station of the Agricultural Research Center (ARC) in Arab El-Awamer, Assiut Governorate

It is represented as a reclaimed area from about 20 years and located at the Eastern desert (20km. South East of Assiut city). It has been planted with vegetables, field crops and fruit trees.

1-3.3. - Newly reclaimed area:

It is located at the Eastern desert (25 km. South East of Assiut city). It has been planted for short period (10 years) with vegetables, field crops, orchards.

Rodent species were collected from the above mentioned sites by applying the common wire traps. Each trap was baited by bread and distributed twice every 15 days at 6 pm. Next morning at 7 am, traps were checked and rodents were identified and recorded for data processing.

Results and Discussion

Data in Table (1) show the species composition of rodents trapped from two different ecological areas in Assiut Governorate during the period from 2004 to 2006. Three species of the rats were recorded, these species can be arranged quantitatively in the following order. The white bellied

rat, *Rattus rattus frugivorus* (41.61%); the grey bellied rat, *Rattus rattus alexandrinus* (33.33%) and the Nile grass rat, *Arvicanthis niloticus* (25.06%).

In the Faculty of Agricultural farm, *R. r. alexandrines* occupied the highest density (52.21%) and (43.56%) followed by *R. r. frugivorus* (24.63%) and (34.16%), *A. niloticus* (23.16%) and (22.28%) during the first and second years, this may be attributed to the availability of food and shelter which make them grow and reproduce.

In El-Ghorieb farm *R.r.frugivorus* ranked the first in abundance among the total population captured from this farm (62.67% and 49.18%) followed by *A. niloticus* (24.89% and 31.15%) and *R.r. alexandrines* (12.44% and 19.67%), during the first and second years, respectively.

In general the high population density of *R.r.frugivorus* in El Ghorieb farm followed by the

Faculty of Agricultural farm, may be due to the ability of *R.r.frugivorus* for nesting and feeding on trees, so it may be concluded that this species is considered as field and domestic one at the same locality. On the other side, *R.r. Alexandrinus* was ranked with high population in the Faculty farm followed by El-Ghorieb farm, this may be attributed to the availability of food and shelter, out of trees. *A. niloticus* was occupied with high population density in the El-Ghorieb farm followed by the Faculty of Agricultural farm.

Availability of preferable food in crops and vegetables farms, attract rats to feed and reproduce this may be in agreement with that of most of ecological studies on this species in Egypt emphasized that this specie was considered the most predominant rodent in the cultivated land. (Abazaid, 1990; Abdel-Galil, 2005 and Baghdadi, 2006).

Table(1): Distribution of rodent species captured from study areas of Assiut Governorate during 2004-2006.

Area	Study of years	species Total	<i>A.niloticus</i>		<i>R.r.frugivorus</i>		<i>R.r.alexandrinus</i>	
			No.	%	No.	%	No.	%
Faculty farm	First year	272	63	23.16	67	24.63	142	52.21
	Second year	202	45	22.28	69	34.16	88	43.56
El-Ghorieb farm	First year	225	56	24.89	141	62.67	28	12.44
	Second year	183	57	31.15	90	49.18	36	19.67
Total		882	221	25.06	367	41.61	294	33.33

Data in Table (2) show the distribution of rodents trapped from three ecological areas in Assiut Governorate during the period from 2004 to 2005. Five species of rats and mice were recorded, these species can be arranged quantitatively in descending order as follows the grey bellied rat, *R. r. alexandrinus* (33.33%), the Nile grass rat, *A. niloticus* (32.46%), the Norway rat, *R. norvegicus* (24.56%), the house mouse *Mus musculus* (5.26%) and *Gerbillus gerbillus* (4.39%).

In River Nile bank area *R. norvegicus* was the only found species while the other species were not trapped from this area, this may be the results of increasing competition with large rodent species and the suitability of atmosphere for *R. norvegicus* on both sides of the River Nile.

In Arab El-Awamer *R. r. alexandrinus* occupied the first rank with (63.27%) followed by *A. niloticus* (24.49%) then *Mus musculus* (12.24%), whereas *R. norvegicus* and *G. gerbillus* were not captured. In newly reclaimed area *A. niloticus* was the most predominant species (67.57%) followed by *R. r. alexandrinus* (18.92%) then *G. gerbillus* (13.51%). while *R. norvegicus* and *M. musculus* were not captured in this area.

In general *A. niloticus* was occupied with high population density rank in semi- newly

reclaimed area followed by Arab El-Awamer, but River Nile bank was not considered. The availability of preferable food in neighbored, crops and vegetables farms attract rats to feed and reproduce. *R. r. alexandrinus* was recorded with high population in Arab El-Awamer followed by the newly reclaimed area, while in the River Nile bank area, the rats were captured, this may be attributed to the availability of food and shelter, Which make them grow and reproduce faster than in other areas.

R. norvegicus was trapped only from River Nile bank area, the extreme temperature and food prevailed in the area may be considered as a limiting factors for the distribution of this species, and may be due to the competition between this species and other ones. On the other side, *M. musculus* was trapped from Arab El-Awamer only, this may be due to the decreasing of food and shelter. *G. gerbillus* was recorded from semi newly reclaimed area only, this area is suitable for the egyptian gerbillus in agreement with (Abdel-Gawad, 1974; Abazaid, 1990 and Abdel-Galil 2005).

Table(2): Distribution of rodent species captured from study areas of Assiut Governorate during 2004-2005.

Area	species Total	<i>A.niloticus</i>		<i>R.r.alexandrinus</i>		<i>R.norvegicus</i>		<i>M. musculus</i>		<i>G.gerbillus</i>	
		NO	%	NO	%	NO	%	NO	%	NO	%
River Bank area	28	0	0.0	0	0.0	28	100	0	0.0	0	0.0
Arab El-Awamer	49	12	24.49	31	63.27	0	0.0	6	12.24	0	0.0
Semi newly reclaimed area	37	25	67.57	7	18.92	0	0.0	0	0.0	5	13.51
Total	114	37	32.46	38	33.33	28	24.56	6	5.26	5	4.39

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التركيب النوعي للقوارض في الأراضي الزراعية وحديقة الأستزراع

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تم دراسة التركيب النوعي لانواع القوارض المتواجدة في الاراضي الزراعية متمثلة في (مزرعة كلية الزراعة- جامعة اسيوط) والمناطق قديمة الأستصلاح (مزرعة الغريب). وقد اظهرت الدراسة تواجد ثلاثة أنواع من الجرذان وهي جرذ الحقل النيلي *Arvicanthis niloticus*، الجرذ المتسلق ذو البطن الرمادي *Rattus rattus alexandrinus*، والجرذ المتسلق ذو البطن البضاء *Rattus rattus frugivorus* ويمكن ترتيب متوسط اعداد تواجدها في عامين الدراسة كالتالي المتسلق الرمادي 24.26% في مزرعة الكلية، 7.84% في مزرعة الغريب كذلك المتسلق ذو البطن البضاء 14.35%، 28.30% أما جرذ الحقل النيلي فكانت النسبة كالتالي 11.39%، 13.85% علي التوالي.

و قد اظهرت دراسة التركيب النوعي للقوارض في منطقة شاطيء نهر النيل عدم تواجد اي نوع منها سوى الجرذ النرويجي *Rattus norvegicus* وهذا ربما يرجع إلي نموه وتكاثره و كذلك التنافس الشديد بينه وبين الأنواع الأخرى و تلائم البيئة من حيث الغذاء والطقس.

ومن حيث دراسة التركيب النوعي للقوارض في الأراضي الصحراوية وحديقة الأستصلاح متمثلة في منطقة عرب العوامر فقد تم تسجيل جرذ الحقل النيلي ، الجرذ المتسلق الرمادي كما وجد الفأر المنزلي كما وجد نوع من الجرابيع *Gerbillus gerbillus* ويمكن ترتيب النسبة المئوية لتواجدها كالتالي، الجرذ المتسلق الرمادي 63.27% في عرب العوامر، 18.92% في المنطقة حديثة الأستصلاح أما جرذ الحقل النيلي فكانت نسبتة 24.49%، 67.57% كذلك كانت نسبة الفأر المنزلي 12.44% صفره% علي حين ان الجربوع ليس له تواجد في منطقة عرب العوامر بينما كانت نسبة تواجده في الاراضي الحديثة 13.51% و يرجع ذلك الي التنافس بين الانواع الكبيرة مثل الجرذان الذي يؤدي الي طرد الانواع الصغيرة من هذه البيئات . كما ان وجود نسبة من العمران في ارض العوامر قد تكون ايضا عاملا يساعد علي ذلك .