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Full Length Research

Peoples' perception of rodents as pest and their control in Ibadan, South-western Nigeria: A case study of University of Ibadan, Ibadan, Oyo State

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ABSTRACT: The prolific rate of rodents in the University of Ibadan is becoming alarming and thus there is need to investigate their perception of rodents as pests by the people residing within the University premises. The study design employed was descriptive and data was collected using self-structured research questionnaires. A total of One hundred and twenty (120) questionnaires were administered and retrieved from the respondents. The results of the findings showed that majority of the respondents 96(80%) were aware of the rodents' presence on campus. Ninety eight (81.7%) of the respondents had knowledge of rodents as pests while 50 (41.7%) respondents perceived food materials as what are mostly damaged by rodents. Fifty five (45.9%) respondents indicated that the extent of rodents damage to their belongings was serious while 45 (38.3%) reported it to be insignificant. Use of rodenticides was the method mostly adopted by 66 (55%) respondents to reduce rodent damage followed by setting of traps by 37 (30.8%). There was no significant difference between the methods employed to reduce rodent damage ($p>0.05$) by the respondents. It can be concluded that rodents are recognized as pests that cause damage to human belongings in the study area and methods of control perceived to be mostly used to reduce rodent damage are the use of rodenticides and setting of traps.

Keywords: Perception, rodents, pests, pesticides, rodenticides, traps.

INTRODUCTION

Rodents are categorized among the small mammals whose weights are not more than 5 kg (Merritt, 2010). They belong to the order Rodentia with more than 2700 species (Aplin et al., 2003). Among the species of rodents are those that are commensals (they live in association with humans for their shelter and food) while some are peri-domestic (occasional invaders). Rodents are reported to be successful groups of vertebrates due to their high reproductive potential as they have short gestation periods, more litters produced per year and larger litter size than other vertebrates (Odeyemi and Daramola, 2000). Rodents play ecological roles in the ecosystem as they aid in soil mixing and aeration, serve as prey for some predatory vertebrates, and also serve as agents of seeds and spores dispersal (Witmer, 2007). Conversely, rodents have been reported to cause a great deal of economic losses to foods (both on the fields and in the stores) in the developing countries (Brown et al., 2013). In addition to crop losses, rodents have been implicated in the damage of buildings, electric cables, and consume and contaminate foodstuff (Pimentel et al., 2000). They are also recognized as the vectors and reservoirs of pathogens of some diseases (Liu et al., 2014).

For effective management of rodent pests, there are factors to be considered which include biology and population dynamics of the rodent species, ecology of the rodent species within its physical and biotic environment, and the relationship of the rodent species to the activities of humans (Conover, 2002). Based on the enormity of the roles played by rodent species and the considerable

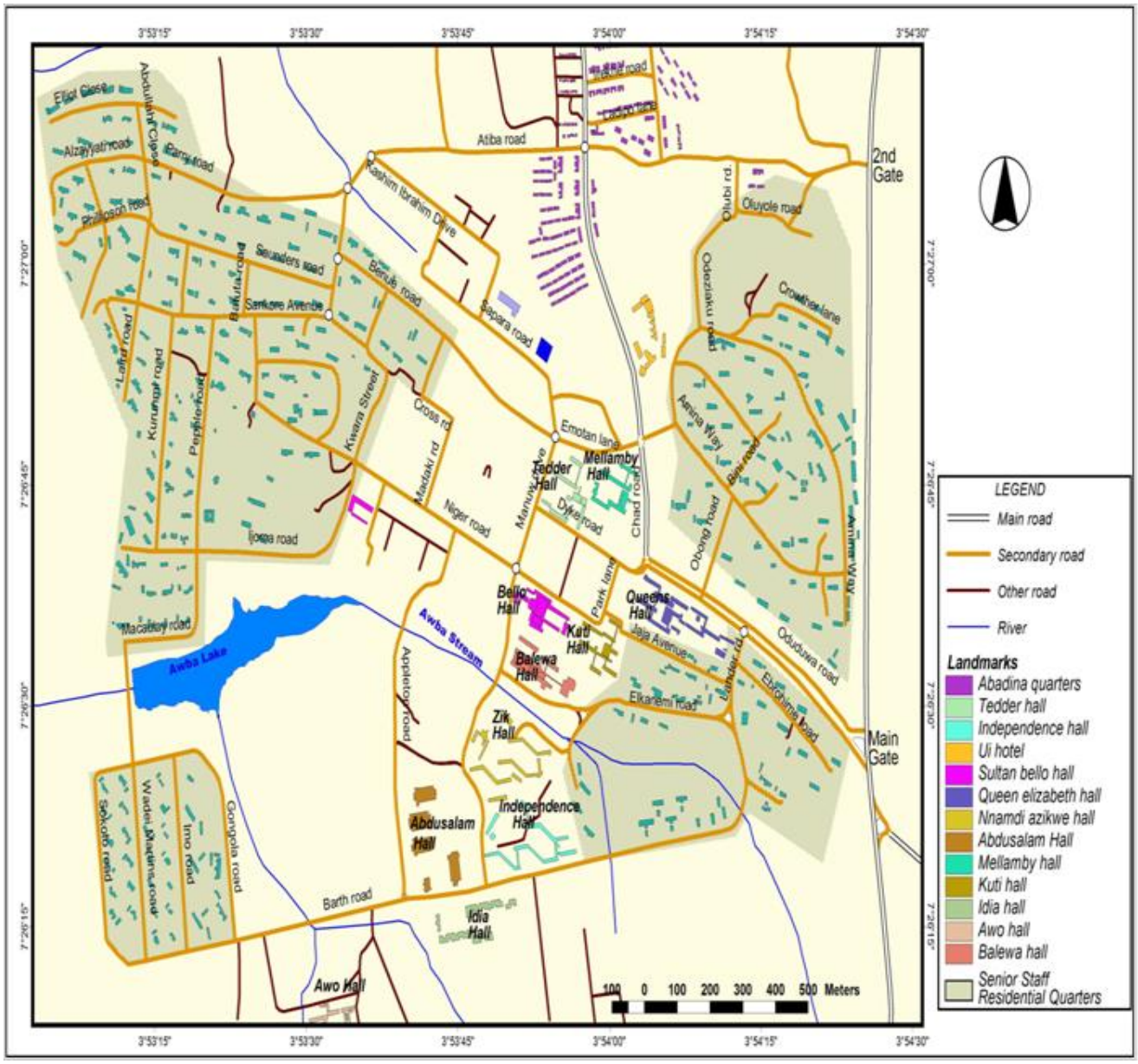

Figure 1. Map of University of Ibadan (the study area).

damages caused by some of the species, there is need for investigating the people's perception of rodents as pests in the University of Ibadan, Ibadan, south-Western Nigeria.

MATERIALS AND METHODS

The present study was conducted within the University of Ibadan premises (Figure 1) because of the perceived prolific rate of rodent species in the premises- both the commensal and peri-domestic species. Data was collected using self-structured questionnaires. One hundred and twenty (120 respondents were randomly selected within the university premises and administered self-structured questionnaire making a total of one hundred and twenty (120) questionnaires administered and retrieved back. In section A of the questionnaire, the respondents were asked about their demographic and socio-demographic profiles. Section B consisted of questions on the awareness of the existence of rodents on the university campus. Section C comprised questions on the knowledge and purpose of rodents while section D consisted of questions about the damage caused by the rodent species and ways of reducing them. Information collected from the respondents through the questionnaires was summarised using percentages and presented in the form of tables and figures. Chi-square test was used to test statistical significance among the different respondents and their

Table 1. Socio-demographic characteristics of the respondents.

Character	No. of respondents	Percent (%)
Sex		
Male	70	58.3
Female	50	41.7
Age		
18-22years	46	38.3
23-28years	30	25.0
29-34years	21	17.5
35-40years	13	10.9
41years and above	10	8.3
Marital Status		
Single	77	64.2
Married	42	35.0
Separated	01	0.8
Divorced	00	0.0
Widow/Widower	00	0.0
Education		
Informal	00	0.0
Primary	00	0.0
Secondary	09	7.5
Tertiary	107	89.2
Others	04	3.3
Occupation		
Academic Staff	07	5.8
Administrative Staff	10	8.3
Student	93	77.5
Farmer	03	2.5
Others	07	5.9
Years of staying on the Campus		
1-5years	80	66.7
6-10years	20	16.6
11-15years	10	8.3
16-20years	05	4.2
21years and above	05	4.2

responses at level of significance of 0.05.

RESULTS

Respondents' socio-economic profile

Out of 120 respondents that participated in the study, 70 (58.3%) were males while 50 (41.7%) females. 46(38.3%) respondents had their age between 18 to 22years and more than half of the respondents 77(64%) were single (Table 1). Majority of the respondents, 107(89.2%) were in their tertiary level of education. Only 3(2.5%) respondents that participated in the study were farmers. 80 (66.7%) respondents had been living on the campus between 1 to 5 years (Table 1).

Respondents' awareness of rodents on the university campus

This study revealed that majority of the respondents 96(80%) was aware of rodents' presence on the campus where 90 (75%) respondents had encountered rodents

Table 2. Respondents' awareness and encounter of rodents on campus.

Character	No. of Respondents	Percent (%)
Awareness of Rodents' presence on Campus		
Yes	96	80.0
No	24	20.0
Encounter of Rodents on Campus		
Yes	90	75.0
No	30	25.0
Types of Rodents Encountered		
Rats	68	56.7
Mice	19	15.8
Squirrel	30	25.0
Giant Rat	02	1.7
Grass cutter	01	0.8
Where rodents are mostly encountered on campus		
Offices	10	8.3
Lecture halls	12	10.0
Staff housing	40	33.3
Open fields	29	24.2
Others	29	24.2
Rodents encountered and perceived to be edible		
Rats	24	20.0
Mice	01	0.8
Squirrel	52	43.3
Giant Rats	15	12.5
Grasscutter	15	12.5
None	13	10.9

(Table 2). More than half of the respondents 68 (56%) stated the types of rodents encountered as rats. Mice were encountered by 19 (15.8%) while squirrels were encountered by 30 (25%) respondents (Table 2). It was recorded that rodents were mostly encountered in staff housing with 40 (33.3%) respondents followed by open field and others having the same number of respondents 29(24.2%). Squirrels were the rodents mostly perceived by the respondents 52(43.3%) to be edible (Table 2). Giant rats and grass cutters were the second most perceived to be edible where 15(12.5%) respondents were recorded for each. Thirteen (10.9%) respondents perceived none of the rodents to be edible (Table 2).

Respondents' knowledge about rodents as pests and methods employed in reducing their damage

Majority of the respondents 98 (81.7%) in this study had the knowledge of rodents as pests. 50 (41.7%) respondents perceived food materials as those mostly damaged by rodents. This was followed by documents 30 (25%) (Table 3). It was shown from the result of the present study that 59 (49.2%) respondents were of the opinion that rodents mostly caused their damage in the farmland (Table 3). Based on the reaction of respondents to rodents' damage to their belongings, 108 (90%) of the respondents get angry when rodents damage their belongings while 10 (8.3%) respondents reacted indifferently (Table 3). 55 (45.9%) respondents indicated that the extent of rodents' damage to their belongings was serious while 45 (38.3%) respondents reported it to be insignificant. Use of rodenticides was the method mostly adopted by the respondents to reduce rodents damage as 66 (55%) respondents were recorded, followed by setting of traps 37 (30.8%) (Table 3). There was no significant difference between the respondents based on the methods employed to reduce rodent damage ($p>0.05$).

DISCUSSION

In the present study, the percentage of males that participated was more than that of females, which were

Table 3. Respondents' knowledge about Rodents as pests and methods employed in reducing their damage.

Character	No. of Respondents	Percent (%)
Knowledge of Rodents as pests		
Yes	98	81.7
No	22	18.3
Materials perceived to be damaged by Rodents		
Foods	50	41.7
Water	15	12.5
Clothing	22	18.3
Documents	30	25.0
Others	03	2.5
Where Rodents cause damage mostly		
Offices	19	15.8
Lecture Halls	05	4.2
Staff Housing	24	20.0
Farmland	59	49.2
Others	13	10.8
Reaction of Respondents to Rodents damage to their belongings		
Angry	108	90.0
Indifferent	10	8.3
Others	02	1.7
Extent of damage caused by rodents to the Respondents		
Insignificant	46	38.3
Serious	55	45.9
Severe	19	15.8
Methods employed in Reducing Rodents Damage		
Killing with Sharp Objects	08	6.7
Setting Traps	37	30.8
Use of Pesticides	66	55.0
Setting fire to their Habitat	05	4.2
Others	04	3.3

58.3% and 41.7% respectively. This is similar to the result of the findings by Gadisa and Birhane (2016) where it was reported that more males (92.92%) participated in the study than females (7.08%) in the farmers' perception of rodents as pests in Southwest Ethiopia. In contrast, Nsobinenyui et al. (2017) reported 14% males and 86% females in the study in the farmer's knowledge and perception on factors limiting maize storage and their management in the humid rainforest and highland ecozones of Cameroon.

From the result of the present study, majority of the respondents 107(89.2%) were in their tertiary level of education and none of the respondents had either informal or primary education only. This is different from the study of Gadisa and Birhane (2016) where more than half (55%) of the study participants had not completed the first cycle of primary education (Grade 1 to 4) and none of them were college graduates. In this study, thirty eight percent (38.3%) of the respondents were within the age range of 18 to 22years. Meanwhile, Gadisa and Birhane (2016) reported in their findings that 37.08% of the study participants were within the age range of 31 to 40 years.

The present result revealed that rodents were perceived as pests by majority of the respondents 98 (81.7%). This is similar to the result of the findings by Kasso (2013) who reported that rodents were the most noxious pests.

Food, water, clothing, and documents were perceived to be damaged by rodents as 50 (41.7%) of the respondents perceived food materials as being damaged, 15 (12.5%) respondents perceived water, 22 (18.3%) respondents perceived clothing, and 30 (25%) respondents perceived documents. Kasso (2013), in line with the present findings,

stated that rodents cause substantial damage to agricultural crops, livestock, poultry, household items and human health through different mechanisms like feeding, discomforting, contaminating and mechanical and disease transmission. Most respondents perceived that rodents fall into drinking water, ate and spoiled prepared human food. They contaminate the food more than what they eat. About 81% of respondents face the rodents' problem related to mechanical damage. They reported that rodents cause mechanical damage almost on all household materials and structures (Kasso, 2013).

Similarly, the effect of bird and rodent pests was not significantly different on seed and grain yield. Fayenuwo (2005) and Odeyemi and Daramola (2000) had earlier reported the activities of bird and rodent pests on maize in South-western Nigeria. Birds and rodents (vertebrate pests) have been reported to cause total crop failure in cases where the planted seeds were all dug from ground (Fayenuwo, 2005), while damages resulting from birds and rodent damage in some maize farms in humid forest of south-western Nigeria has been reported to have varied between 20 and 60% (Odeyemi and Daramola., 2000).

Integrated Pest Management (IPM) has been described as the natural control of pests, for example the use of natural enemies; planting of pest resistant / tolerant varieties, selecting maize for desirable characters such as good plant stand, plant height and ear height, as suggested by Olakojo (2001) so as to reduce the vulnerability of maize to pest attack; adapting cultural management and use of trap among others to catch those that can be reared domestically and reduce their population in the wild. Such Integrated Pest Management should however be ecologically since some vertebrate pests such as bush fowls get used to the control devices after a while.

Quite a number of respondents 59 (49.2%) believed that damages were mostly done in the farmland. This is corroborated by Kasso (2013) who reported that respondents reported the damage caused by rodents to both standing crops and stored grains on the farm. Cereal crops particularly sorghums and maize, which dominantly cultivated, was most susceptible at the seedling, vegetative, matured and storage stage of its development (Kasso, 2013).

It was recorded in the present study that rodents were mostly encountered in staff housing with 40 (33.3%) respondents followed by open field 29(24.2%). Similar result was reported by Kasso (2013) that the majority (76.7%) of respondents believed that the frequency of rodent damage occurrence was 'regular' and 'frequent' in the house and on the field whereas a few respondents (3.3%) were either unable to determine the rate of occurrence or consider it as that which occurred rarely. This was not in line with Fayenuwo et al. (2000) who reported that damage caused by rodents in open field and farmland are not frequent and cannot be measured due to number of rodents and amount of spaces in open field and farmland. The remaining respondents stated that the rate of occurrence of rodents' damage is 'occasional'. Most respondents claim the seasonal or regular outbreak of rodents' damage on their household products based on the availability of food in the house or field as reported by Kasso (2013).

Use of rodenticides was the method mostly adopted by the respondents to reduce rodents damage where 66 (55%) respondents were recorded, followed by setting of traps 37 (30.8%). This is different from the study conducted by Kasso (2013) who reported that the most widely used method to control rodents damage was the use of cat although it only used to control rodent pest in house or human residence while the second widely used methods or techniques were hunting, trapping and scaring.

Conclusion

Based on the result of the study, rodents are recognized as pests that cause damage to human belongings such as foods, water, clothing, documents etc. in the study area. Methods of control perceived to be mostly used to reduce rodent damage are the use of rodenticides and setting of traps.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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