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Assessment of grasscutters' (*Thryonomys Swinderianus*) sellers and hunters conservation knowledge, rate of hunting and methods of hunting in Oyo State, Nigeria

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ABSTRACT

A survey was carried out to evaluate grasscutters' (*T.swinderianus*) sellers and hunters conservation knowledge, rate of hunting and methods of hunting in Oyo State, South-Western Nigeria. It was gathered through the use of structured questionnaire that few of the sellers and hunters of *T. swinderianus* have the knowledge of conservation of this species. However, none of them has ever reared grasscutters before. It was also revealed that this species has been over-hunted and that the rate of hunting of grasscutters is higher in the dry season. Results from the number of carcasses sampled showed that the number of grasscutters caught (4520.5) was more ($P<0.05$) in the dry season than the number (1557.5) in the rainy season. The questionnaire also revealed the various techniques used by the hunters in killing grasscutters. The various methods include: the use of guns, line traps, iron traps, and bush burning. All the respondents (100%) agreed that guns are mostly used. This study concludes that the rate of hunting of grasscutters is high and that the hunters and sellers are not rearing this animal to conserve it. However, to avoid extinction, rearing of grasscutters should be encouraged.

Keywords: Grasscutters, Cane Rats, *T. swinderianus*, Hunters, Conservation, Rearing, Rate of Hunting, Methods of Hunting.

INTRODUCTION

There are two species of grasscutters belonging to the genus *Thryonomys*. These are: *Thryonomys swinderianus* known as greater Cane rats which are found in Africa South Sahara, and *Thryonomys gregorianus* known as lesser cane rats found in Cameroon, Southern Sudan, and Zimbabwe [9]. Grasscutters are robust animals with short tails, small ears, stocky bodies, and short legs. There are five digits on the forefeet, the 1st small, the 5th rudimentary; and four digits only on the hind feet, the 5th very small the hallux lacking. They have thick, heavy claws and enormous orange incisors that can chew through even the toughest vegetation.

The cane rat was originally no doubt an inhabitant of the Savanna, particularly the guinea Savanna. However, its range is extended right into the high forest wherever there is cultivation and grasses [8]. They do not inhabit rainforest, dry scrub, or desert, but they have colonized the road border in forest regions. Distribution is determined by availability of adequate or preferred grass species for food [4]. Grasscutters are vegetarian and they consume nuts, bark, and the soft parts of grasses and shrubs. They particularly favour elephant grass and sweet potatoes. They

commonly raid cassava and yam plantations, and are considered local pests [17]. The greater cane rat is the second largest species of rodents in Nigeria after the crested porcupine. This species has some characteristics, which distinguish it from all other Nigerian rodents. Such characteristics are: thick body covered with very coarse hair interspersed with flattish spines which give the animal a rough, bristly appearance. The head is broad with short flattened muzzle and small eyes. The ears are small and tend to be obscured by the coarse fur [17] [14].

In many parts of Nigeria and West Africa, greater cane rats are hunted and trapped in their numbers as their meat is considered a delicacy [17]. It has a wide acceptability as bush meat and it is not prohibited by any religious or ritual belief [3]. According to [2], the animal has a great turn-over rate for meat production within a short period. This makes it a prospective source of generating income coupled with this ecotourism potential to entertain interested viewers in the Zoological gardens [12]. Grasscutters reproduce year-round, although the births seem to peak at certain times of the year, correlated with weather conditions [15]. Probably one male takes several females, and the family group possibly has more than one generation of young. The gestation is about 152 ± 2 days [7]. This agrees with the one recorded by [6] and [13]. Litters normally contain 2 and 4 young, but in Benin and Togo some litters of up to 11 or 12 were reported [7]. [1] reported a litter size of 11 in grasscutters kept by cane cutters in Bacita Sugar cane plantation. [16] gave a litter size of 8. [10] reported that in the natural range, litter size for grasscutter varies from 2 to 4. Newborns are fully developed, their eyes are open, and they weigh approximately 80g, have tick fur, and quickly become accomplished runners.

There have not been studies available to researchers on the assessment of grasscutters sellers and hunters conservation knowledge, rate of hunting and methods of hunting in Oyo State, Nigeria. This study therefore reveals the conservation knowledge of hunters and sellers of grasscutters as well as the rate at which this rodent is being hunted including the different methods of hunting.

HYPOTHESIS: There is no significant relationship between socio-demographic characteristics (age, education, occupation, religion and income) of respondents and their perception about conservation knowledge, rate of hunting and methods of hunting.

MATERIALS AND METHODS

Source of Data Collection

Collection of data and administration of questionnaires were carried out in two locations: Asejire dam in Egbeda Local Government Area and Odo-Ona Kekere in Oluyole Local Government Area. The two locations, Asejire and Odo-Ona are about Seventeen to eighteen kilometres from the University of Ibadan, Nigeria. The major occupations of the villagers are farming, hunting, and trading. Most of their women engage themselves in bush meat trading.

Data Collection

Fresh (undressed) carcasses of grasscutters (*Thryonomys swinderianus*), were collected from the sellers based on the number of them hunted on each sampling day. Sampling of hunted grasscutters was done to confirm and/or authenticate the information gathered from questionnaires. Generally, the two sampling locations were randomly surveyed to determine the days the grasscutters could be available for data collection. Data collection was carried out twice a month for a period of ten months (i.e. from May 2007 to February 2008).

Questionnaire Administration

A structured questionnaire was also prepared and administered to examine the knowledge and perception of sellers and killers of grasscutters on their conservation knowledge, rate of hunting and methods of hunting of cane rats. A total number of 230 questionnaires were attended to by the respondents. The analysis of the questionnaire using a descriptive method was done.

RESULTS

Table 1 shows that majority of the respondents fall within 31 and 40 years old, greater number finished secondary education while none of the respondents attended any tertiary institution. The major occupation of the people is bush meat trading, hunting and farming.

Table 1: socio-demographic data

Variables	Frequency	(%)
Age		
20-30	50	21.7
31-40	105	45.7
41-50	75	32.6
Education		
Non formal	40	17.4
Primary education	85	37.0
Secondary education	105	45.7
Tertiary education	0.00	00.0
Occupation		
Hunting	100	43.5
Business/farming	130	56.5
Religion		
Christianity	135	58.7
Islamism	95	41.3
Profit per month		
<N20, 000-N35,000	100	43.5
N36, 000-N55,000	75	32.6
N46, 000-N75,000	55	23.9

Conservation Knowledge and Practice

The use of structured questionnaire shed light on the knowledge and perception of the local farmers/hunters on the conservation of grasscutters. The responses of the sellers and killers of grasscutters showed that 105(45.7%) have the knowledge while 125(54.3%) have no knowledge of grasscutters conservation. Out of the 105 respondents that have the knowledge, 75(71.4%) of them said that the only method of rearing of grasscutters they know is the use of cage (i.e. intensive management). The other 30(28.6%) respondents do not know any method, but could say that they know people who rear cane rats. It was also observed that none of the respondents had ever reared grasscutters before.

Hindrances to Grasscutters Rearing

The responses of the sellers and hunters of glasscutters on the hindrances to grasscutters rearing showed that lack of capital and lack of skilled manpower inhibit grasscutters rearing. Out of the 230 respondents, 55(23.9%) opined that lack of capital can be the hindrance, 60(26.1%) said that lack of rearing skill could be the problem, 95(41.3%) said that both lack of capital and rearing skill are the hindrances while 20(8.7%) have no idea of what could hinder grasscutters rearing (Table 2).

Table 2: Hindrances to Grasscutters Rearing in Odo-Ona, Kekere and asejire

Responses	Frequency	Percentage (%)
Lack of capital	55	23.9
Lack of skill	60	26.1
Lack of capital and skill	95	41.3
No idea	20	8.7
Total	230	100

Table 3 explains the importance of rearing grasscutters with respect to the incessant hunting. One hundred and fifty five, 155(67.4%) respondents said that rearing of grasscutters can promote conservation, 45(19.6%) said that it can increase supply in the market while 30(13.0%) has no idea of what importance rearing of grasscutters could be.

Table 3: Importance of Rearing Grasscutters

Responses	Frequency	Percentage (%)
It promotes conservation	155	67.4
It increase supply	45	19.6
No idea	30	13.0
Total	230	100

Hunting Techniques

The questionnaire revealed the various techniques used by the hunters in killing grasscutters. The various methods of hunting include: the use of guns, the use of line traps, the use of iron traps and bush burning. All the respondents

(100%) answered that all the aforementioned methods of hunting are used by the hunters at one time or the other. But of all the above methods of hunting, 230(100%) of the respondents said that guns are mostly used. This could be true as greater number of the grasscutters sampled were found with bullet wounds.

Rate of Hunting

Hunting of grasscutters is on daily bases including Sundays. During the period of data collection, it was observed that fresh grasscutters carcasses were seen in the sampling locations even on Sundays. The responses of the respondents attest to this observation. All the respondents (100%) agreed that the rate of hunting of this species is very high.

Variation in Number Hunted

The number of grasscutters hunted is also affected by seasons. All the respondents (100%) agreed that they experience scarcity of supply in the raining reason and that weather factors such as rain, drought, and harmattan affect grasscutters hunting. The presence of moon in the sky also affects the number of grasscutters hunted. The above mentioned factors are discussed in details in the discussion. Table 4 shows the overall number and percentage of grasscutters carcasses available on the slabs of Odo-Ona, Kekere and Asejire per month in the rainy season (May to September) and dry season (October to February). In the rainy season, the highest percentage (27.9%) and the lowest percentage (15.9%) of the grasscutters hunted were recorded in the months of September and August respectively while in the dry season, the highest percentage (23.4%) and the lowest percentage (16.5%) were recorded in February and October respectively. On the overall, the total number of carcasses sampled in the rainy season was 1557.5 while a total of 4520.5 was sampled in the dry season.

Table 4: Overall number and percentage of grasscutters carcasses available on the slabs of Odo-Ona, Kekere and Asejire per month in the rainy season (May to September) and dry season (October to February)

Rainy season (May to September)				Dry season (October to February)			
Collection period (2007)	Average number of Carcasses per day ($\pm$ SD)	Total Number of carcasses per month	%	Collection period (2007-2008)	Average number of Carcasses per day ($\pm$ SD)	Total Number of carcasses per month	%
May	9 $\pm$ 0.6	279	17.9	October	24 $\pm$ 2.9	744	16.5
June	9 $\pm$ 0.6	270	17.3	November	25.5 $\pm$ 2.1	765	16.9
July	10.5 $\pm$ 0.2	325.5	20.9	December	30 $\pm$ 0.1	930	20.6
August	8 $\pm$ 1.1	248	15.9	January	33 $\pm$ 1.4	1023	22.6
September	14.5 $\pm$ 2.1	435	27.9	February	36.5 $\pm$ 3.3	1058.5	23.4
Total		1557.5	100	Total		4520.5	100

Attraction to Grasscutters Hunting

Various factors attract hunters and sellers to grasscutter business. One of the factors is the lack of law (according to the hunters and killers) guiding the rate of hunting of grasscutters. All the respondents 230(100%) answered that there is no law guiding the rate of hunting of grasscutters. Table 5 explains more vividly that in the absence of the animals abundance in the wild, high profit making is a major factor that attracts dealers to the business. The table depicts that majority of the dealers i.e. 155(67.4%) are attracted by the high profit state of grasscutters business, 35(15.2%) go into it due to no other job situation while the remaining 40(15.4%) inherited the business.

Table 5: Attraction to Grasscutters Hunting in Odo-Ona Kekere and Asejire

Responses	Frequency	Percentage (%)
High profit	155	67.4
No other job	35	15.2
Inheritance	40	15.4
Total	230	100

Perceived Problems

The questionnaire exposed some of the problems perceived from the high rate of hunting of grasscutters. One of the perceived problems is the scarcity of this animal in the market. Out of the 230 respondents, 175(76.1%) said that the supply of cane rats in the market has reduced compared to the rate of supply a few years ago, while 55(23.9%) respondents did not observe any serious change in the rate of supply. Another problem that over-hunting may result to is the problem of extinction. Some respondents 130(56.5%) observed that grasscutters are becoming extinct while 100(43.5%) said that there is no sign of extinction. Table 6 shows the responses of the respondents to the effect of

over-hunting on grasscutters population. Out of the 230 respondents, 90(39.1%) answered that over-hunting can reduce the population of grasscutters in the wild, 110(47.8%) answered that it can lead to extinction while 30(13.0%) said that it has no effect.

Table 6: Effect of Over-hunting on Grasscutters Population in Odo-Ona, Kekere and Asejire

Responses	Frequency	Percentage (%)
It can reduce the population	90	39.1
It can lead to extinction	110	47.8
No effect	30	13.0
Total	230	100

Avoiding the Problems

The various ways by which the problems of scarcity and extinction of grasscutters can be avoided are discussed in the conclusion and recommendation. Responses to state the question showed that 159(69.1%) responded that the problem of extinction can be avoided by reducing the high rate of hunting while 71(30.9%) responded that extinction can be avoided by encouraging rearing.

DISCUSSION

Information gathered from the 230 respondents through the structured questionnaires showed that majority of the farmers has no knowledge of grasscutters rearing. The few (%) who said that they have the knowledge only know few people who rear this animal at subsistence level. Moreover, none of the respondents has ever reared grasscutters.

Grasscutters appeared to be most abundant in the two sampling areas in the drier periods of the year with the peak being in the month of February. This observation was further supported by the information gotten from the hunters and sellers of grasscutters that grasscutters are mostly hunted during the dry season than in the wet season. It also agrees with the findings of [5] who carried out a market survey of the species in Ghana. [11] also observed that grasscutters were most abundant in the drier season in Benin-City and Idah markets when he carried out a comparative study of grasscutters population in those two ecological zones. The variation in the population of grasscutters in the two seasons (Raining season and dry season) may be due to some factors. Grasses get dried up, creating no hiding place for the grasscutters in the dry season. At this time, hunters easily see the grasscutters and hunt them. The forest becomes dry creating better accessibility into the bush for hunting. Traps are also easily used at this time. All these contribute to high rate of hunting during the dry season. Based on interview with the hunters and sellers of grasscutters, it was observed that factors such as Rainfall, drought, harmattan and the moonlight can in one way or the other affect the rate of hunting of grasscutters.

In the raining season, wetlands get inundated, rivers that were dried up in the dry season become filled with water, creating a barrier for the hunters and thereby preventing them from moving far into the forest for hunting. Grasses also grow tall this time and tall grasses create a hide out for the grasscutters during hunting. It was also observed that rain damages line-traps which could probably catch many of the grasscutters. All these conditions reduce the rate of hunting of grasscutters during the rainy season.

When moon is present in the sky, hunting of grasscutters is reduced. The hunters when interviewed disclosed that grasscutters can recognize the moon. When the moon is absent in the sky, the grasscutters can mistake the hunters' light for the moon and will not run away on sighting the hunters' light. At this time, they can easily be caught by the hunters. On the other hand, when moon is present in the sky, the grasscutters will see two lights (the moon light and the hunters light) at the same time. At this time the animal will sense danger and run away. This accounts for the low hunting of grasscutters on days when the moon is present in the sky than days when the moon is absent, both in the dry season and raining season.

During harmattan season, as gathered from the hunters, the animals hide themselves from cold, especially in the early hours of morning when cold is intense. During this period, the hunters scarcely see the grasscutters while hunting. The traps also catch less of the grasscutters since their movement is restricted by the cold weather. Harmattan also affects the hunters themselves. Hunters who are sensitive to cold dare not enter the bush when the weather is so cold.

Consequently, the number of grasscutters hunted at this period is reduced. In the absence of harmattan and moon, the grasscutters are hunted in their hundreds during the dry season. The only time grasscutters are caught in their masses during harmattan season, according to the killers, is when bush burning is used as a method of hunting. But this method is not used often because of the negative impact bush burning has on our environment.

The various techniques used for grasscutters hunting include the use of guns, line traps, iron traps and bush burning. Guns are used more often than other techniques. It was observed during the sampling period that almost all the grasscutters seen had bullet wounds. Traps can stay for days or even weeks in the bush without catching a single grasscutter, but with guns, the hunters can kill them in numbers daily. Animals can avoid traps when they notice their presence. Bush burning on the other hand is seasonal, and can only be applicable in the dry season.

Hunters and sellers go into grasscutters business because of the several advantages in the business. Apart from being abundant in the wild, the dealers (sellers and hunters) derive much profit from the business. Secondly, since there is no law guiding/controlling the business, it has become an open business to anyone who wishes to join. This can result to so many local farmers joining the business of hunting of grasscutters. This particular advantage can in the long run create a big disadvantage. This is true because as many local farmers keep joining the business of hunting of grasscutters, the rate of killing keeps increasing. The consequence of this will be reduction in the number of grasscutters in the wild. And if care is not taken, it can lead to the extinction of the animals.

Already, the sellers of grasscutters are testifying that the rate of supply of grasscutters has reduced. This shows that the animals are already over-hunted, and has affected the population in the wild. Few of the respondents actually said that grasscutters cannot become extinct because they produce large number of young. Some (%) of the sellers said that they have removed up to 11 litters from one female during dissection. However, it is my opinion that despite the fact that the females reproduce several young at a time, the animal can still become extinct. The reason for this is that most of the females are killed in their gestation period. At this time, they die with their young. If the hunters keep killing the females with litters in their womb, extinction will be faster. This is true because the young ones that would have replaced the old ones at death will no longer be there.

CONCLUSION/RECOMMENDATION

Cane rat is one of the bush meats that are of high demand in the market because of its deliciousness. Much money is being made from the sale of cane rats. Because of its high demand and expensiveness, cane rat has been indiscriminately over-hunted.

This work has been able to gather that the rate of hunting of cane rats is probably affected by some weather factors. The rate of hunting is higher in the dry season because the dryness of the environment favours hunting. On the other hand, rainfall will no longer hinder the hunters from entering the bush as it used to be after a heavy downpour during rainy season. Bushes also can easily be set on fire with the intention of killing grasscutters in the dry season. The aforementioned factors and some other factors can favour over-hunting of grasscutters in the dry season.

It has also been established that grasscutters are over-hunted. Therefore, efforts should be made to save the status of this animal from ecological and human threat of irrational over-hunting. It has already been perceived that the supply of grasscutters in the market has reduced. Thus if nothing is done now to conserve them, extinction may ensue in no distant time. To avoid this, I recommend that the rate of hunting of grasscutters should be reduced by law. This will help reduce the pressure on this wildlife resource (grasscutter) through controlled hunting. More so, local farmers and hunters should be trained on how to rear grasscutters. Most of the farmers problem or hindrance to rearing of grasscutters is acquisition of rearing knowledge. Once they are given the right training, I presume, they will like to embark on rearing the animal since they make high profit from selling it. I also recommend that incentives should be given to the local farmers and hunters to start rearing grasscutters after training. This is important since part of the problems they have is lack of capital.

The commercial production of grasscutters will in a large scale help to conserve the species in this kind of situation where they are irrationally hunted and might also protect savanna/forest habitat that are threatened by bush fire organized during bush-meat catching operation. Hence there will be a constant supply of grasscutters meat and income will be generated to boost the national economy.

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