

Field Behaviour, Habitat and Food Preference of the Grasscutter (Rodentia: Thryonomyidae) in the Akpaka Forest Reserve, Onitsha, Nigeria

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Abstract

Grasscutter (*Thryonomys swinderianus* Temminck) habitat preference, feeding habits and field behaviour were investigated at Akpaka forest reserve Onitsha between 2002 and 2004. Of the ten habitats that were prevalent in the reserve, grasscutters preferred riverine and upland areas with reeds and grass-cover but avoided thick forests and rocky areas with scanty grass-cover. Their runways were well trodden between resting and feeding areas. In the dry season the runways were observed at distances more than 30 but less than 50 meters from the nearest river. During the wet season however, grasscutters migrated further into the upland areas where tender and succulent grasses had blossomed. Hunters' mean monthly returns on adult grasscutters in the study area were 64.9 ± 8.7 for the wet season and 31.7 ± 4.6 for the dry season. Average of 579 adult grasscutters (41.62% females and 58.38% males) were captured annually in the study area. There was a high preponderance of grasses and grass-like plants among the 20 different plant species utilized as feeds by the grasscutter on the reserve. Of these, stems of *Andropogon gayanus*, *Andropogon tectorum*, *Pennisetum purpureum*, *Paspalum vaginatum*, *Saccharum officinarum*, stems and leaves of *Arundo donax*, *Oryza sativa*, *Phragmites karka*, *Panicum maximum*, were cherished by the grasscutter. Cultivars utilized included grains and straws of *Sorghum vulgare*, stems, leaves and grains of *Zea mays*, and tubers of *Manihot esculenta*, *Discorea dumentorium* and *Ipomea batatas*. Seasonal availability of the plant species and parts utilized by the grasscutter in Akpaka forest reserve are reported in this study.

Key words: Conservation, Grasscutter, Food preference and Field Behaviour.

Introduction

The grasscutter (*Thryonomys swinderianus* Temminck) is one of the most important wild life species found in the guinea savanna of Anambra State, southern Nigeria to which intense hunting pressure had been mounted against in recent times. In addition to hunting pressure, rapid urbanization is in progress in most designated forest reserves in that state. As a result of similar human intervention in other places, the grasscutter is now considered as an endangered species. Ajayi (1971) and Hemmer (1992) had called for the production of the grasscutter 'bush-meat' as a sustainable agricultural business that could provide man with the needed animal protein as well as serve as a way of conservation of the wild species in Nigeria. In order to understand better some aspects of the reproductive biology and feeding habits of the grasscutter, there would be need to keep and observe the animal in captivity. This would necessitate the knowledge of the animal's natural behaviour and ecology in the wild in order to achieve a compromise between feasibility and duplication of the natural surroundings in captivity (Dryden, 1975, Martin, 1975).

The aims of this study are to determine the ecological requirement of the grasscutter in the wild for the purpose of simulating such conditions in captivity, provide the information on feed preference of the grasscutter and the seasonal availability of the feed materials. The result of this study would serve as a very useful guide to prospective grasscutter producers, breeders and researchers in Nigeria.

Materials and Methods

Akpaka forest reserve, the study area, has been listed as one of the 36 National Game Reserves in Nigeria (Afolayan, 1983). It is located at the northern border of Onitsha Local Government Area (LGA), on the eastern bank of the Niger River. Both Anambra and Nkisi rivers drain the area of study. The topography is characterized in places by undulating landscape, with gentle rocky slope and fertile plains extending from the bank of the river Niger towards the hinterland and up to Nsugbe and the Trans Nkisi Housing Estate. Mean maximum and minimum temperatures for the area lie between 30-35°C and 20-24°C respectively. Rainy season in the area lasts for about 7 months, from April to October, with bimodal peaks in July and September while the dry season is from November to March. The area has a high relative humidity of about 84% throughout the year. Vegetation of the area consists of forest trees (*Gmelina aborea*), elephant and guinea grasses, abandoned farmlands, cultivated farmlands, thick forest, shrubs, and reeds. Figure 1 is a map of Onitsha LGA showing the position of Akpaka forest reserve (inset) relative to rivers Niger, Anambra and Nkisi.

Ten observatory plots (each measuring about 30 m x 30 m) were, after preliminary surveys of the reserve, chosen to represent each of the ten different habitats prevalent in the area. The plots, which included abandoned farmlands, cassava (*Manihot esculenta*) farms on sloppy areas, maize (*Zea mays*) and vegetable farms, forest trees

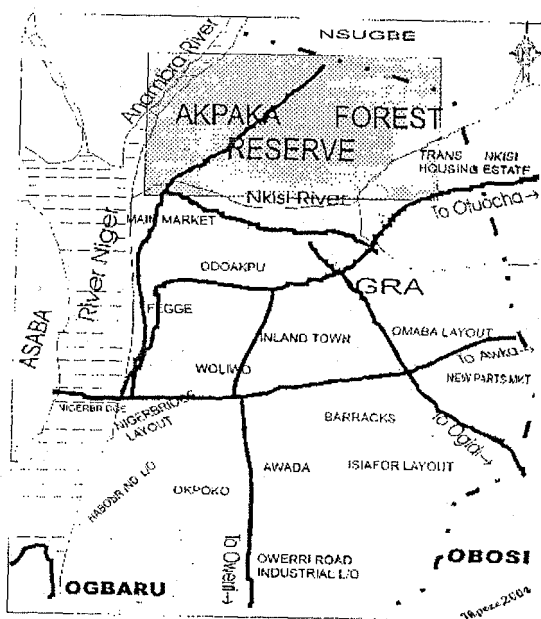


Fig. 1: Sketch of Onitsha LGA showing Akpaka Forest Reserve (inset)

(*Gmelina aborea*) with guinea grass (*Panicum maximum*) and elephant grass (*Pennisetum purpureum*) cover on plain grounds, elephant grass and reed (*Arundo donax*) cover on riverine areas, scanty grass cover on rocky areas, and thick forest by the riverside and in upland areas are also shown in Figure 2.

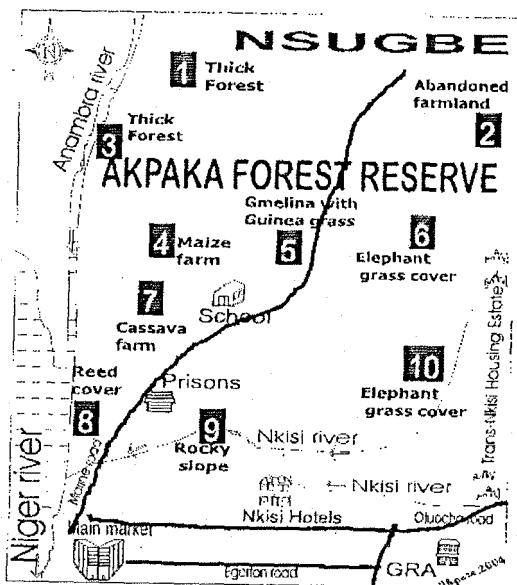


Fig. 2: Sketch of the Akpaka Forest Reserve (showing the 10 sample plots)

Each plot was visited four times monthly between January 2002 and December 2004. During each visit, thorough search was made to ascertain the level of grasscutter activity on the ground. The 45° characteristic cut made on grasses, indiscriminate scattering of leftover plant feed materials, faecal pellets as well as footmarks on the soil were indications of grasscutter's presence and activity in

an area. The leaders of hunter's guilds in the study area were interviewed to ascertain the magnitude of the hunting pressure exerted on the reserve. Analysis of hunters' return on adult grasscutters was also carried out at a popular 'bush meat' eating centre in the study area.

Feed utilized by the grasscutter in the reserve were identified and categorized under plant species, plant status, parts utilized, level of utilization and their seasonal availability in the study area.

Results

Habitat preference of the grasscutter at Akpaka forest reserve is shown in Table 1. Grasscutter activity was markedly absent from rocky and thick forest areas throughout the year. Less prominent activities were observed at abandoned farms, riverine areas with reed cover, forest areas with *Gmelina* and guinea grass cover during the dry season. In the wet season however, prominent activities occurred in abandoned farms, cassava farms and in areas with *Gmelina* and guinea grass cover. Very prominent grasscutter activities were observed throughout the year in the riverine areas with elephant grass cover (plot 10), plain grounds with elephant grass cover (plot 6) and in maize farms (plot 4).

Grasscutter runways were observed to occur at distances more than 10 meters but less than 80 meters from the nearest body of water, during the dry season, in the study area. However, maximum activity was at distances greater than 20 meters and less than 50 meters. No activity was observed at distances over 80 meters from the nearest water source during the dry season.

Analysis of hunters' returns on adult grasscutters at the popular 'bush meat' restaurant in the area is shown in Table 2. Average annual return on adult grasscutters was 579; and 58.38% for males and 41.62% for females (i.e., male to female ratio of 1.4:1). Mean monthly returns on adult grasscutters were 64.9±8.7 for the wet season (April to September) and 31.7±4.6 for the dry season (October to March). Twenty different plant species utilized as feed by the grasscutter (see Table 3), included eight species of cultivated crops, nine species of grasses, two species of trees and a species of shrub.

Discussion

Table 1 shows that the grasscutter was more commonly found in areas with abundance of succulent grasses, and it avoided the thick forest areas and rocky, sloppy grounds with scanty grass cover. Since availability of grasses largely determined the presence of grasscutters in an area, the grasscutter in the reserve was found only in cleared areas with grasses (the derived savanna) in line with the findings of Kingdon (1971). The grasscutter runway in the dry season, which varied between 10-80 meters from the nearest river, was usually well trodden from resting places to feeding areas.

Table 1: Habitat preference of the grasscutter in Akpaka Forest Reserve, Onitsha

Plot	Vegetation type	Season	
		Wet	Dry
1	Thick forest in upland	NA*	NA
2	Abandoned farmland	P	LP
3	Thick forest by riverbank	NA	NA
4	Maize farm	VP	VP
5	Gmelina and guinea grass cover on plain land	LP	P
6	Elephant grass cover on plain ground	LP	VP
7	Cassava farm on sloppy ground	P	P
8	Reed cover on riverine area	LP	VP
9	Scanty grass cover on rocky slope	NA	NA
10	Elephant grass cover on riverine area	VP	VP

* NA: No activity, LP: Less prominent activity, P: Prominent activity, VP: very prominent activity

Table 2: Hunters' return on the adult grasscutter at a bush-meat restaurant in the study area

Year	Sex	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Total		
														Male	Female	
2002	M	16	15	22	26	28	34	48	38	38	19	23	19	326		
	F	7	13	14	16	35	36	30	27	26	22	10	12		248	
2003	M	18	18	25	27	41	51	48	28	34	18	22	14	344		
	F	12	14	16	28	25	27	33	24	18	20	16	12		245	
2004	M	18	14	14	38	41	46	40	44	32	21	20	19	347		
	F	8	14	14	20	33	25	32	27	25	17	11	4		230	
Total		79	88	105	155	203	219	231	188	173	117	102	80	1014	723	
Average		26.3	29.3	35	51.6	67.6	73	77	62.6	57.6	39	34	26.6	338	241	
Average annual return															579	
Sex ratio															1.4	1
															(58.3%)	(41.6%)
Mean dry season returns: October-March (in italics)															31.7±4.6	
Mean wet season returns: April-September															64.9±8.7	

Table 3: Plants utilized by the grasscutter in Akpaka Forest Reserve, Onitsha

Plant species	Plant status	Parts utilized	Level of utilization	Seasonal availability
1 <i>Ananas cosmosus</i> (Pine apple)	Cultivar	Crown & fruit	M*	D
2 <i>Andropogon gayanus</i>	Grass	Stem	P	D & W
3 <i>Andropogon tectorum</i>	Grass	Stem	M	D & W
4 <i>Arundo donax</i> (Giant reed)	Grass	Stem & leaves	P	D & W
5 <i>Bambusa sp</i> (Bamboo)	Grass	Tender stem	S	D
6 <i>Chromolaena odonta</i>	Shrub	Root	S	D
7 <i>Discorea dumentorium</i> (Bitter yam)	Cultivar	Tuber	P	D
8 <i>Elias guineensis</i> (Oil palm)	Tree	Fruit	S	D
9 <i>Imperfecta cylindrica</i> (Spear grass)	Grass	Root	S	D
10 <i>Ipomea batatas</i> (Sweet potato)	Cultivar	Tuber	M	D
11 <i>Lodoicea maldivica</i> (Coconut palm)	Tree	Leaf-vein	M	D
12 <i>Manihot esculenta</i> (Cassava)	Cultivar	Tuber & stem	M	D & W
13 <i>Oryza sativa</i> (Rice)	Cultivar	Stem & leaves	P	W
14 <i>Panicum maximum</i> (Guinea grass)	Grass	Stem & leaves	M	D & W
15 <i>Paspalum vaginatum</i>	Grass	Stem	P	D & W
16 <i>Pennisetum purpureum</i> (Elephant grass)	Grass	Stem	P	D & W
17 <i>Phragmites karka</i> (Reed)	Grass	Stem & leaves	P	D & W
18 <i>Saccharum officinarum</i> (Sugar cane)	Cultivar	Stem	P	D & W
19 <i>Sorghum vulgare</i> (Guinea corn)	Cultivar	Stem & grains	P	D & W
20 <i>Zea mays</i> (Maize)	Cultivar	Stem, leaves & grains	P	W

* S: Slightly utilized, M: Moderately utilized, P: Most preferred, D: Dry season, W: Wet season

Although the soil characteristics of the runways were not reported, it was observed that food availability rather than soil type determined the distribution of the grasscutter in the study area.

During the dry season, grasscutters migrated to areas close to riverbanks where the grasses still retained their greenness and high moisture content. In the wet season, grasses in the upland blossomed so much that the grasscutters migrated into these areas. The grasscutters were observed, by the hunters' guilds in the area, to be less social when compared with other rodents and

lived in distinct territories or colonies, which consisted of the dominant male with several females and their young. This inherent territorial exploitative tendency of the male may readily have exposed it to the hunter. This might be responsible for the male: female ratio of 1.4:1 observed in this study. It could therefore be inferred that the migration of grasscutters to upland areas influenced their susceptibility to hunting pressure in wet season. Hence, the mean monthly hunters' returns of 64.9±8.7 and 31.7±4.6 on the adult grasscutter recorded for wet and dry seasons respectively (see Table 2). Going by these figures, the overall

hunters' returns on the grasscutter in Anambra State could amount to very sizable tonnage of bush-meat if similar returns at all the 'bush-meat' centers in the state were pooled together.

Twenty plant species utilized by the grasscutter in the reserve revealed a high preponderance of grass and grass-like plants in the diets of the grasscutter (Table 3). These grasses were available on the reserve almost throughout the year and were preferred by the grasscutter. There was a strong indication that *Pennisetum* sp., *Paspalum vaginatum*, *Andropogon gayanus*, straws and grains of cereal crops as well as *Saccharum officinarum* were the most cherished food of the grasscutter in the study area. But the grasscutter also fed on cultivated crops like maize, rice, guinea corn, cassava, pineapple and bitter yam. This study revealed that towards the end of the dry season when most of the grasses have withered, except the tussock and perennial ones, the grasscutter utilized some other plant materials like large leaf-veins of oil palm and coconut fronds that were cut and left on the ground by farmers. Roots of *Chromolaena odorata* and *Imperata cylindrica*, tender stems of *Bambusa* spp., tubers of *Discorea dumetorum* and *Ipomea batatas* as well as crowns and fruits of pineapples and oil palm fruits were also utilized by the grasscutter.

The abundance of these plant feed-materials in the study area and elsewhere in the country shows that captive rearing of the grasscutter, whose meat is widely acceptable to the people of Anambra State, has very bright prospects in southern Nigeria. Observations in the wild showed that the grasscutter defaecated as it fed; hence measures should be taken in captivity to isolate the feeding area from the sleeping chambers. Essential items in the "cage furniture" would include tree branches, twigs, tree stumps and pieces of rock as the grasscutter utilized these in the wild to wear down its constantly growing incisors and claws (Delany, 1971; Twigg, 1975; Martin, 1975; Twigg, 1977).

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