



## Assessment of Marketing and Distribution Channels of Bushmeat in Kwara State, Nigeria

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### ABSTRACT

Marketing and consumption of bushmeat has been part of rural livelihoods. This study therefore assessed the marketing of bushmeat in Ilorin, capital of Kwara State, Nigeria. The respondents targeted include the hunters, wholesalers and retailers of bushmeat. Purposive sampling technique was employed for selection of 15 wholesalers and 20 retailers of bushmeat, while snowball method was adopted for sampling of 20 hunters making 55 respondents. Majority of the bushmeat hunters were male (90.0%), while 80.0% and 85.0% of the retailers and wholesalers respectively were female. The people that engaged in hunting were local farmers and full-time local hunters. About 63.3% of the hunters processed their kills to prevent decay (46.6%) and for value addition (36.7%). From estimation, the increase in the average seasonal selling prices for the bushmeat was as high as 100% between the middlemen in some cases, while some was just about 10% or below. Marketing of the bushmeat is mainly driven by the final consumers, hence there is the need for proper public education and awareness creation on the implication of killing animals in the wild. Training on domestication of wild animals should be organized among the hunters, marketers and consumers with incentive provided for their establishment.

**Keyword:** Marketing chain – middlemen – selling price – hunters – consumers – public education.

### INTRODUCTION

Bushmeat is an important source of protein and widely consumed in both urban and rural areas (Wilkie and Carpenter 1999). According to a 1994 study in Gabon, annual sales of bushmeat were estimated at US\$50 million thereby accounting for more than half of meat sold in local markets (Adeola, 1992). The volume of the bushmeat trade in West and Central Africa was estimated at one to five million tons per year at the turn of the century. The magnitude of bushmeat exploitation and consumption however varies from one place to another and it is determined principally by its availability, government control on hunting, socio economic status and cultural prohibitions (Asibey 1977).

Bushmeat has been part of the local diet for centuries. National estimates of the value of the domestic trade in bushmeat range from US Dollar 42 to US Dollar 205 million across countries in West and central Africa (Davies, 2002). For example, it was reported by Ajayi (1991) that wild animal consumption among rural people in Nigeria's rainforest was 20% of their total animal protein intake compared to the 13% for the whole country. Furthermore, Ajayi and Olawoye (1974) reported that wild animals were consumed, sold locally or transported to urban markets where they fetch higher prices and factors which determine which species are sold or consumed include the size of the animal, cultural inhibitions as well as personal or public appeal and demand. Adefalu *et al.* (2013) also reported that rodents and other small-sized animals were killed, processed



and consumed locally while the more appealing and profitable game were sold.

The bushmeat trade is perceived as a major threat to wild animal population in the tropics. There is little information in the literature about the organization of the trade or those involved, thus hindering the development of effective conservation policy (Guy *et al.* 2005). It is also on records that bushmeat extraction in Africa is exceptionally high and West Africa in particular is noted for severe hunting of game animals, leading to extinctions of some animal species (Oates *et al.* 2000). Previous studies (Macdonald *et al.* 2012, Macdonald *et al.* 2011, Petrozzi 2016, Martin 1983, Ajayi 1978) focused more on the biological rather than the socio-economic aspects of the trade, surprisingly little is known about the structure and performance of the market. This lack of knowledge is a significant obstacle to the management of the bushmeat trade because the development of effective management policies requires a comprehensive understanding of how bushmeat markets operate (Samantha *et al.* 2003). Assessment of the marketing structure and distribution channel of the bushmeat as well as the actors involved is important in formulating adequate conservation and sustainable exploitation strategy.

Brown and Williams (2003) identified many positive characteristics of the bushmeat trade that make it an attractive option for the poor. First, bushmeat has a low barrier to entry and offers high returns with minimal investment, perfect for risk-averse small farmers whose main constraint is labour. Second, it requires low-level extractive technology and can be undertaken flexibly year-round. Third, when dried it has excellent storage qualities and can be easily transported. Fourth, the gender aspects of the trade are surprisingly positive as the men hunt, but the women do virtually all of the downstream processing and commerce. Finally, the trade is mostly unregulated and decentralized and so a considerable proportion of the product value

remains with the hunters. Despite the fact that the bushmeat trade is a multi-million-dollar industry in West-Central Africa, most policy makers turn a blind eye to these positive attributes. However, any attempts at managing the bushmeat industry should preserve these attributes as fundamental parameters (Brown 2003).

## METHODOLOGY

### Study Area

The study was carried out in Ilorin, the capital city of Kwara State located in north central part of Nigeria. The three Local Government Areas (LGAs) in Ilorin include Ilorin East, Ilorin South and Ilorin West (Fig. 1). These LGAs have major markets where wholesalers and retailers of bushmeat were found to be carrying out their business. For instance, the major markets where bushmeat sellers were found in Ilorin East were Oke-Oyi and Ipata markets; Ilorin West were Ojo-Oba and Idi-Ape markets; and the markets in Ilorin South were Ganmo and Unity Road.

### Respondents of the study

The respondents targeted for this study include the hunters, wholesalers and retailers. The respondents categorized as hunters for this study include farmers that kill and sell wild animals and hunters that engage in full time hunting. The bushmeat stakeholders categorised as retailers are the marketers that sold bushmeat directly to the final consumers, mostly in small quantities after further processing. Specifically, the retailers were group of processors who operate canteens, restaurants, and pepper soup joints, and buy bushmeat from the wholesalers and made into delicacies ready to be eaten with drinks. The retailers depend on the wholesalers, and sometimes the hunters for regular supply of the bushmeat. The consumers are at the final stage along the bushmeat marketing chain, and are individuals and households that purchase and consumed the bushmeat that have been



partially or fully processed. Included in the bushmeat consumers are the herbal healers that use wild animal parts in local medicines. In addition to direct consumption of

bushmeat as animal protein and delicacies, wild body parts of animals have been used in preparations of local medicines (Mahawar and Jaroli 2006).

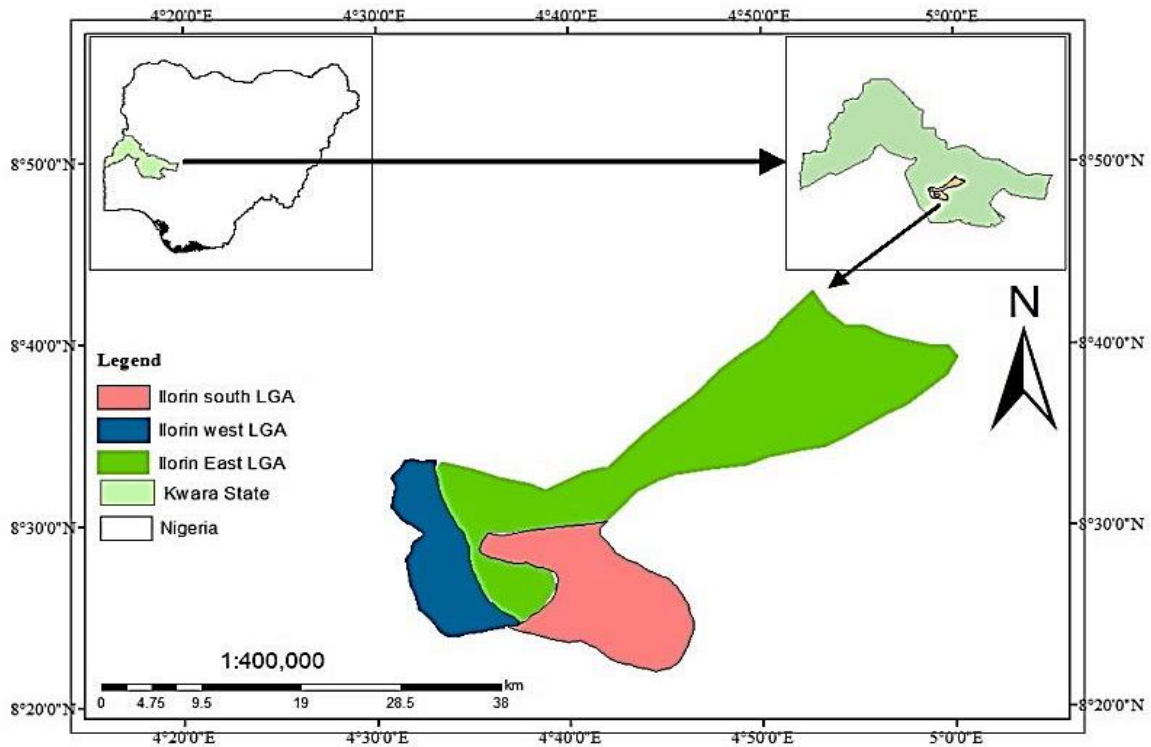


Figure 1: Map of Nigeria showing Local Governments in Ilorin, Kwara State, Nigeria

### Sampling technique

Purposive sampling technique was employed for sampling of the wholesalers and retailers of bushmeat, while snowball method was adopted for sampling of the hunters. The wholesalers were visited and sampled in their shops and sheds located in the major markets mentioned under the study area. The retailers were purposively sampled in markets as well as in canteens, restaurants, and pepper soup joints within the city. For the hunters, their contacts were obtained from the wholesalers and retailers. Phone numbers of some hunters were obtained and appointment set for data collection.

### Survey tool

Three sets of semi-structured questionnaires were designed for the survey with each targeting the hunters, wholesalers and retailers identified along the marketing and distribution channels of bushmeat in the

study area. The questionnaires were designed to obtain information on the demographics of each of the bushmeat actors (hunters, wholesalers and retailers) and their functions as the bushmeat exchange hands along the marketing chain; and also evaluated the selling prices of selected bushmeat and economic returns to the actors.

### Data collection

Prior to the data collection, local markets where bushmeat were sold were identified and visitations were made to the market leaders. The goal of the project was explained to the market leaders and with explanation that the information to be generated is strictly for research and academic purposes. Moreover, anonymity of the marketers that responded to the questionnaire was also assured. After the explanation, permission was granted to the researcher and the team by the market



leaders for interviews of the bushmeat marketers. Seeking permission from the market leaders is a mandatory protocol that any visitor must carry out in such a local market setting for the purpose of acceptance. In addition to granting of permission, the market leaders constituted key informants for the study.

A reconnaissance survey was carried out in the local market and among the bushmeat marketers and this produced a list of contacts to the hunters. Some of the hunters were reached on mobile phones while personal visits were made to others. The researcher first obtained consent to interview and administered the questionnaire to marketers. Also, the marketers were informed of the permission already sought from the market leaders before approaching them for the data collection. From the preliminary information obtained through the reconnaissance survey, majority of the hunters had more than 10 years of hunting experience. The hunters carried out hunting during both dry and rainy seasons and popular hunting tools they used include cutlass, traps and local guns.

In all, 55 marketers were sampled in the order of 20 hunters, 15 wholesalers and 20 retailers. The interviews and questionnaire administration were carried out through direct and one-on-one reading and interpretation of the questions to the hunters, wholesalers and the bushmeat retailers. This strategy was adopted because majority of the marketers could not personally read the questionnaires. Also, reading, explaining and interpreting of the questions to the respondents were necessary to maintain uniformity and avoid distortion of the questions (as suggested by Cowlshaw *et al.* 2005). This method also provided opportunity for the respondents to seek clarification and to further obtain some vital information that emanated during the questionnaire administration.

The data obtained through the questionnaire was coded and input into the computer software for appropriate analysis. Mainly,

descriptive analysis such as frequency and percentages were employed for the data analysis and presented in tables. The marketers were asked for the prices that they sold different wild animals during the rainy and dry seasons. These prices were then pulled together to obtain their average prices for each of the different marketers along the marketing chain. Finally, information obtained during the interviews was transcribed, interpreted used to present the views of the respondents.

## RESULTS

### Demographic information of bushmeat marketers

As presented in Table 1, majority of the bushmeat hunters were male (90.0%), while 80.0% and 85.0% of the retailers and wholesalers respectively were female. These findings show a balance on the gender distribution across the actors of bushmeat in Kwara state. Majority of the hunters (60.0%), followed by the retailers (35.0%) and then the wholesalers (33.3%) were within the age group of 31 – 40 years. On average, only 10.9% of the marketers along the marketing chain were above 51 years of age. On their marital status, more than half (54.5%) of all the marketers (hunters = 55.0%; retailers = 55.0% and wholesalers = 53.3%) were married.

For the level of education, majority of the hunters (45.0%) and wholesalers (46.7%) had no formal education, while 75% of the retailers had secondary education. More than a quarter of the hunters (30.0%) and wholesalers (33.3%) had primary education. Less than a quarter of all the marketers had primary education. Majority of the hunters (80.0%) and wholesalers (66.7%) practiced Islam as religion while most of the retailers were Christians (70.0%). None of the sampled hunters and retailers indicated that they practiced traditional religion, whereas 13.3% of the wholesalers indicated that they practised traditional religion (Table 1).



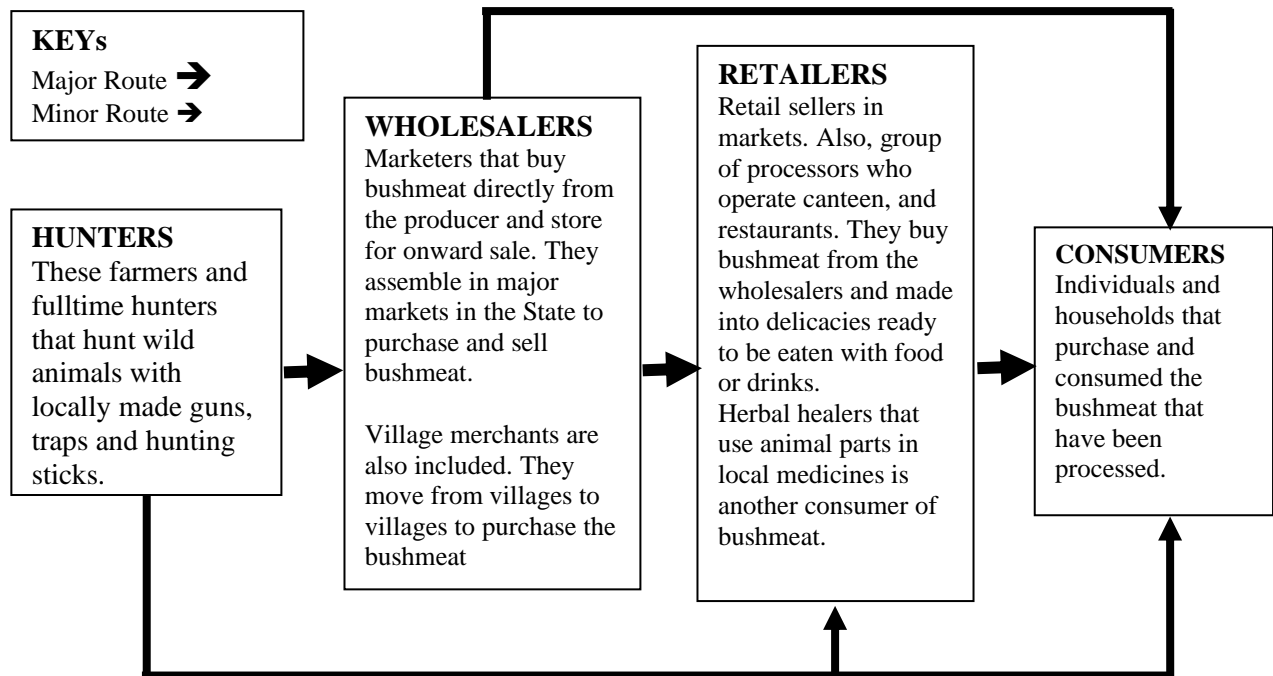
**Table 1: Demographic information of the respondents**

Demographics	Variables	Hunters (n=20)		Wholesalers (n=15)		Retailers (n=20)		Total (n=55)	
		Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent
Gender	Male	18	90.0	3	20.0	3	15.0	24	43.6
	Female	2	10.0	12	80.0	17	85.0	31	56.4
Age (years)	≤ 20	1	5.0	2	13.3	0	0	3	5.5
	21-30	2	10.0	3	20.0	6	30.0	11	20.0
	31 – 40	12	60.0	5	33.3	7	35.0	24	43.6
	41 – 50	3	15.0	2	13.3	6	30.0	11	20.0
	≥ 51	2	10.0	3	20.0	1	5.0	6	10.9
Marital status	Single	5	25.0	3	20.0	4	20.0	12	21.8
	Married	11	55.0	8	53.3	11	55.0	30	54.5
	Divorced	2	10.0	2	13.3	2	10.0	6	10.9
	Widow	0	0	2	13.3	3	15.0	5	9.1
	Widower	2	10.0	0	0	0	0	2	3.6
Level of education	No formal	9	45.0	7	46.7	0	0	16	29.1
	Primary	6	30.0	5	33.3	2	10.0	13	23.6
	Secondary	5	25.0	2	13.3	15	75.0	22	40.0
	Tertiary	0	0	1	6.7	3	15.0	4	7.3
Religion	Christianity	4	20.0	3	20.0	14	70.0	21	38.2
	Islamic	16	80.0	10	66.7	6	30.0	32	58.2
	Traditional	0	0	2	13.3	0	0	2	3.6

**Marketing chain and distribution channel of bushmeat**

The marketing and distribution channel of bushmeat in Ilorin metropolis is presented in Figure 2. The people that engaged in hunting

in this marketing chain comprised of the local farmers and full-time local hunters that hunt animals in the wild. The hunters are the first contact in this chain and are the major supplier of bushmeat to the wholesalers and retailers.



**Figure. 2: Marketing chain and distribution channel of bushmeat from the producer to consumer in Kwara State, Nigeria**

**Marketing of the bushmeat by hunters**

Results on marketing of the bushmeat are presented in Table 2. About 63.3% of the

hunters informed that they processed their kills before selling to the middlemen while 36.7% preferred to sell the bushmeat raw.





Topmost on the reasons why the hunters preferred to process the bushmeat before selling was to prevent the fresh kills from getting spoilt or decayed (46.6%); this was followed by value addition to increase the selling price of the meat (36.7%). In line with the information obtained from the marketing chain and channel of distribution, 66.7% of the hunters indicated that they sold their bushmeat to the wholesalers while 20.0% and 13.3% sold to the retailers and consumer respectively.

On how the hunters got buyers for their kills, 33.3% responded that they go to the buyer to sell the bushmeat, 13.3% indicated that the buyers came to them, and 53.4% indicated that they combined the two methods. Most of the full-time hunters preferred to sell their

kills to the wholesalers who processed and sold to the retailers. The situation where the hunters sold the bushmeat directly to the consumers is when both of them have direct contact outside the market. On the reason why the hunters chose the method of selling the bushmeat, 43.3% indicated that they preferred the method because they wanted to get their money on time, while 30.0% indicated that they wanted to prevent the bushmeat from getting decayed. However, some of the hunters preferred to take their kills to the buyers so as to get good bargain for their product. For the trend of supply and demand for bushmeat, 86.7% of the hunters indicated that there is increase in demand for the bushmeat, while only 3.3% indicated that the demand trend for the bushmeat is decreasing.

**Table 2: Marketing of bushmeat by the hunters**

Questions	Variables	Frequency (n = 30)	Percentage
Forms in which the bushmeats are sold	Processed	19	63.3
	Raw	11	36.7
Why preferred to sell processed bushmeat	Add value to increase price	11	36.7
	Prevent spoilage or decay of the fresh kills	14	46.6
	Customer not be able to process themselves	5	16.7
Who the bushmeats are sold to	Consumers	4	13.3
	Retailers	6	20.0
	Wholesalers	20	66.7
How do you get buyers for the bushmeat?	I go to the market to meet buyer	10	33.3
	The buyers come to me	4	13.3
	Both	16	53.4
Why did you prefer the method of getting the buyer for the bushmeat?	To supply fresh bushmeat	3	10.0
	To prevent the bushmeat going bad	9	30.0
	For good bargain of selling price	5	16.7
	To get money on time	13	43.3
Trend of bushmeat demand	Increasing	26	86.7
	Decreasing	1	3.3
	Does not change	3	10.0

**Selling prices of selected bushmeat**

The selling prices of some bushmeat for the two main seasons (dry and rainy) of the year were sampled along the marketing chain and presented in Table 3. There were general increases in the average selling prices of the bushmeat across the actors and from the rainy season to dry season. For example, the wild animal with highest selling prices across

the marketing chain was crocodile at 10,000 ₴, followed by the monitor lizard at 6,000 ₴ at the hunters’ level during the dry season. Some of the marketed wild animals sold as bushmeat are presented in Figure 3.

In most of the observed cases, the selling prices of the bushmeat increased from hunters to wholesalers and final sale by retailers for both rainy and dry seasons



(Table 3). Except for grasscutter which recorded lower average selling prices from rainy to dry season, all other animals recorded increase selling prices from rainy to dry season. The percentage increase in the average selling prices of monitor lizard recorded the highest along the marketing

chain. For instance, the average selling prices of monitor lizard by hunters to wholesalers increased 100% from rainy to dry season. In the same vein, there was 114.3% price increase from wholesalers to retailers and 114.0% from retailers to the final consumer from rainy to dry season.



West African Crocodile



Monitor lizard (*Varanus exanthematicus*)



Grasscutter (*Thryonomys swinderianus*)



Giant Ground Pangolin: *Manis gigantea*

**Figure 3. Some of wild animals sold at bushmeat markets**

**Table 3: Average selling prices of selected bushmeat among the hunters, wholesalers and retailers in Kwara State, Nigeria**

Wild Animals		Hunters		Wholesalers		Retailers	
		Rainy	Dry	Rainy	Dry	Rainy	Dry
Crocodile ( <i>Crocodylus niloticus</i> )	Selling Price (₦)	8,000	10,000	12,000	14,000	13,800	15,700
	Seasonal increase	2,000 (25.0%)		2,000 (16.7%)		1,900 (13.8%)	
Monitor Lizard ( <i>Varanus exanthematicus</i> )	Selling Price (₦)	3,000	6,000	3,500	7,500	4,300	9,200
	Seasonal increase	3,000 (100%)		4,000 (114.3%)		4,900 (114.0%)	
Grasscutter ( <i>Thryonomys swinderianus</i> )	Selling Price (₦)	2,500	2,000	3,200	3,000	3,800	3,200
	Seasonal increase	-500 (-20.0%)		-200 (-6.3%)		-600 (-15.8%)	
Pangolin ( <i>Manis gigantea</i> )	Selling Price (₦)	2,000	1,800	2,700	2,500	4,000	3,500
	Seasonal increase	200 (10.0%)		200 (7.4%)		500 (12.5%)	
Rabbit ( <i>Oryctolagus cuniculus</i> )	Selling Price (₦)	1,700	1,200	2,000	1,500	3,600	3,200
	Seasonal increase	500 (29.4%)		500 (25.0%)		400 (11.1%)	

**Source:** Market Survey, 2016; 1 USD = 320 ₦

The seasonal increase in the average selling prices of the bushmeat as they exchange hands across the marketers were also determined and presented in Table 3. It is

interesting to discovered that the seasonal increase in the average selling prices of some of the bushmeat (for instance rabbit=29.4%, crocodile=25.0%, pangolin=10.0%) as they



exchange hands between the hunters and wholesalers were more than what the wholesalers sold to retailers (for instance rabbit=25.0%, crocodile=16.7%, pangolin=7.4%). At the wholesalers' level, the percentage increase in the seasonal selling prices of the bushmeat to the retailers were higher than the price purchased from the hunters for monitor lizard (114.3%) and grasscutter (-6.3%). It is for only the pangolin that percentage increase of the seasonal selling price that the bushmeat was sold by retailers was highest (12.5%) when compare with the prices between the hunters and the wholesalers (10.0%) and between the wholesalers and the retailers (7.4%).

From estimation, the increase in the average seasonal selling prices for the bushmeat was as high as 100% between the middlemen in some cases, while some was just about 10% or below. Another observation made among the marketers was that before the bushmeat got to the final consumer, it would have increased to almost 100% in price. This could be observed at the beginning of the chain as the hunters sold crocodile to wholesalers for ₦8,000 and ₦10,000 during rainy and dry seasons respectively, whereas at the end of the chain, the retailers sold the crocodile to the consumer for ₦13,800 and ₦15,700 during the rainy and dry seasons respectively. These final increases in average selling prices of crocodile bushmeat were ₦5,800 (increase of 72.5%) and ₦5,700 (increase of 57.0%) in rainy and dry seasons respectively. For monitor lizard, the final average selling price increased by about 307% (₦3,000 sold by hunters and ₦9,200 sold by retailers) by the time it got to the final consumer.

## DISCUSSION

Hunting is generally believed in the local communities as male job and occupation and the important roles of bushmeat in the diets of rural households have been reported (Nasi *et al.* 2011). In the study area, it is considered

strange or a taboo for a woman or a lady to engage in hunting as a job or choose it as a profession. Women were not allowed to carry gun to go hunting, nor allowed to join men in hunting. From tender age to maturity, this belief is in the mind and subconscious of everyone that hunting is for only men. However, rather than considering women a lesser being to man in hunting, this is more of a social believe and widely acceptable norm within the community that hunting belongs to the men.

On the other hand, female dominated the wholesale and retail stages of marketing chain of bushmeat against their male counterpart, which is in agreement with other studies (Adefalu *et al.* 2012, Babalola and Oladipupo 2018, Oyegbami *et al.* 2018). This dominance of women in the marketing of bushmeat could be connected with their primary role of cooking and processing of food in homes. Fresh kills require processing and preservation which is directly related to normal domestic cooking. After bringing the kills' home, women from there take over the role of processing and preservation. In addition, in most cases, hunters gave the responsibility of selling the processed bushmeat at the market to their wives. These roles, among others, may contribute to some of the reasons why women dominated the marketing chain of bushmeat.

The roles of religion in human society have been recognised by Peoples *et al.* (2016) starting with the religions of hunters-gatherers. Hunting is sometimes associated with traditional believe and religion (Peoples *et al.*, 2016), however our study discovered that none of the hunters indicated that they practiced traditional religion which is directly linked with hunting. Instead, most of the hunters and wholesalers in the study area indicated that their religion was Islam while the retailers indicated that they were Christians. This result reveals the spread and dominance of Christianity and Islam in the rural societies. It has been reported by various authors (Johnson 2005, Brown 1991,





Peoples *et al.* 2016, Murdock and White 1980) that the belief in supernatural being occurs in virtually all human cultures. Lee (1989) found that many of the hunters-gatherer societies have little or no concept of religion; however, religion often permeates regular activities of people and with daily life (Lee 1989). Furthermore, Marlowe (2010) reported that simple democratic hunters-gatherer societies generally practise fewer religion beliefs than complex societies. However, it was observed in our study that many of the young people, so also the old people, are getting converted from traditional religion to either Christianity or Islam. This spread and dominance of Christianity and Islam may have implications and pose threats to continuous existence of local belief, culture and tradition. It has been reported by Babalola *et al.* (2014) that adoption of Christianity and Islam by rural people is contributing to the neglect of cultural beliefs that are in support of the sacred forests thereby leading to encroachment into sacred forests.

The full-time hunters carry out hunting as primary occupation in both dry and rainy seasons, although may engage in farming and other secondary business activities to compliment hunting. Boakye *et al.* (2016) has reported that local hunters comprise of farmers who engage in hunting during farming off season and full-time hunters. Farmers tend to be involved in hunting during off season or set traps to catch animals around their farms. This study also supports similar findings that hunting tends to increase during off season farming periods leading to increase in killing of wild animals (Mendelson *et al.* 2003, Crookes *et al.* 2007, Jachmann 2008a; 2008b, Schulte-Herbrüggen *et al.* 2013). Whichever the category, most of the hunters use locally made guns, traps, hunting sticks, and charms to hunt and kill wild animals. Hunters also go in company of their locally trained dogs to assist in sniffing out wild animals from hidings and involve in chasing for a kill.

Next along the marketing chain and distribution channel is the wholesalers. The wholesalers generally buy bushmeat directly from the local hunters (the producer). Sometimes, some marketers under wholesalers are village merchants. Village merchants are the marketers that move from village to village to buy the bushmeat from the hunters and transport to the market.

Retailers consist of small and large businesses that sell the bushmeat directly to the consumers. Included in the retailers are the herbal healers that use animal parts in local medicines. They buy from the wholesalers and sell the bushmeat in small quantities. Some examples of these retailers are the operators of canteens, restaurants, hotel and pepper soup seller. These operators processed bushmeat into ready-to-eat delicacies that are directly consumed with cooked food and drinks. They buy the quantity of bushmeat they can sell from the wholesalers and further process the bushmeat to add values and sell in small quantities with higher prices and profits. The consumer is last along the marketing chain. They are individuals and households that purchase and consumed the bushmeat that have been processed.

In essence, hunters, in most cases, preferred to take the bushmeat to the middlemen for quick sale and income, as well as good bargain for the bushmeat and establishment of personal relationship. Meeting the wholesalers in person is also a good way of building personal long-lasting relationship. On the other hand, there are some middlemen who preferred to travel to the local communities to meet the hunters for purchase of their kills. In this study, these middlemen who go to meet the hunters are referred to as village merchant. The village merchant took advantage of transporting themselves to the villages to negotiate for lower prices with the hunters. Most importantly, the village merchant also targets hunting seasons to travel to the villages to meet hunters for their purchases. All the



bushmeat purchased are then transported to the wholesalers in the city market for sale. Sometimes, the village merchant also sold to some retailers who they have establish business relationship.

Although hunters sold both freshly killed and processed animals to the middlemen, however, most hunters may prefer to process the bushmeat to add value for more profit and bargain with the middlemen. The hunters themselves or family members normally handle the processing when the kills are brought home. The processing is normally done by opening of stomach of the fresh animals and removal of all the internal organs before smoking over fire.

It has been reported that wholesalers were few along the bushmeat market chain (Boakye *et al.* 2016), but they held larger share of the bushmeat for sale (Mendelson *et al.* 2003, Cowlshaw *et al.* 2005). They have gathered experiences in buying and selling freshly killed and processed bushmeat of different animal species brought by hunters for sale. Through their power of bargain built over the years, they know how much a bushmeat should be bought so as to sell at prices that will yield profits. Studies conducted by Cowlshaw *et al.* (2005) and Boakye *et al.* (2016) discovered that wholesalers now processed modern storage facilities such as refrigerators to store the bushmeat thereby increasing their willingness to buy from hunters. Wholesalers were able to sell bushmeat at their determined prices due to improving storage facilities and increasing demand for bushmeat.

The advent of mobile communication is also contributing to marketing of bushmeat. A number of the hunters as well as the middlemen now make calls to know when the bushmeat are available and ready for sale. The hunters can make calls to the middlemen to inform about the bushmeat that have been killed and available for sale. On the other hand, the middlemen can make calls hunters to demand if there is bushmeat or when going

for hunting. The call is very important because of the scarcity of bushmeat and most of the middlemen have to secure their supply of the available bushmeat. In situation where a long-time relationship has been built between hunters and the middlemen, especially the wholesalers, this can secure and guarantee supply of the bushmeat from the hunters in as much as the middleman make prompt payment.

From the results of the seasonal selling prices of the bushmeat, the retailers had the highest selling price. As also reported by Boakye *et al.* (2016) and Mendelson *et al.* (2003), the retailers had higher market prices of bushmeat than the wholesalers. The selling of bushmeat in Nigeria has been one of the major income generation activities in local communities (Adefalu *et al.* 2015, Babalola and Oladipupo 2018). As presented in the results of selling prices, there were general increases in the average selling prices of the bushmeat across the stakeholders, specifically from the hunters to the wholesalers and the retailers. As reported by Babalola and Oladipupo (2018), increase in prices of bushmeat from the hunters to the retailers was mainly as a result of value addition along the marketing chain. Except for grasscutter that recorded lower average selling prices from rainy to dry season, all other animals recorded increase in their selling prices from rainy to dry season along the marketing chain. Among the wild animals selected for this study, crocodile recorded the highest average selling prices; although the monitor lizard recorded the highest percentage increase in price among the marketers. For instance, there was an increase of 100% in the average selling prices of monitor lizard between the hunters and wholesalers. In the same vein, there was 114.3% price increase from wholesalers to retailers and 114.0% from retailers to the final consumer from rainy to dry season.

As reported by Subramanean and Vikram Reddy (2012), meat and fat of monitor lizard have been reported to be a delicacy and



important product in preparation of local medicines. In South India, the meat was used in curing respiratory stress as well as in relieves of asthma and cough. Also, the products of the lizard were used production of blood tonics, in treating different ailments ranging from rheumatism to body pain and burns, haemorrhoids, arthritis as well as snake and spider bites (Alves *et al.* 2008, Padmanabhan and Sujana 2008, Subramanean and Vikram Reddy 2012). The skin is also sought after by the manufacturer of leather products. To the farmers, monitor lizard is very important as they feed on insect pests of crops such as locusts and grasshoppers and help in keeping out snakes (Subramanean and Vikram Reddy 2012).

Grasscutter, also known as cane rat, is a large rodent but a small mammal and mainly found in African grasslands (Van der Merwe and Van Zyl 2001, Adu *et al.* 2017). The animal has been successfully domesticated, although still hunted in the wild. One of the reasons for successful domestication of grasscutter was its high rate of breeding all year round (Adu *et al.* 2017). The meat of grasscutter is a delicacy acceptable to all social classes in the rural and urban areas. Scientifically, grasscutter meat is found to have highest protein and lowest fat content when compare to that of rabbit, chicken, and pig (Olomu *et al.* 2003, Akuru *et al.* 2016). Economically, the meat of grasscutter per kilogram has been found to be more expensive than that of chicken, beef, pork, mutton among other domestic animals (National Research Council 1991, Yeboah and Adamu 1995). From the foregoing, rearing of grasscutter has the potential of generating more income to urban and rural dwellers and support livelihoods through job creation.

The use of poison to kill grasscutter by hunters in Ghana has been reported (Essuman and Duah 2020). According to the authors, powder made from root of yellow oleander (*Thevetia peruviana*) (the plant contains toxic cardiac glycosides in all its

parts) (Prasad *et al.* 2016) and carbofuran (most toxic carbamate crop pesticide with the trade name Furadan) were discovered as the main ingredients used in preparing the poisonous substances used in baiting grasscutters. The poison was mainly used in dry season on baits to prevent rain water from washing it off (Essuman and Duah 2020). These poisons stay in the body of the killed grasscutter and subsequently in the meat even after processing. After ingestion, this poison led to serious health effect on the consumers. The authors then recommended complete removal of entire digestive system of the fresh kill during processing without allowing the content to spill on the carcass. However, one may not know of poisoned meat from poison spillage when buying already processed meat.

Pangolin is a mammal with body scales. As explained in the New World Encyclopedia (undated), pangolins are of different species and mainly found in Africa and Asia. The animal has no teeth but with long tongue mostly uses in capturing ants and termites, and roll up into a pine-cone like ball when threatened (Kingdon 1971, Lim *et al.* 2007, Ganguly 2013). The animal is hunted and traded for its body scales, meat and skin (Atkins 2004). Marketing of the body parts, especially the scales, has dominated the global illegal trade with major destination in Asia (Bräutigam *et al.* 1994, Challender and Hywood 2012). Most importantly, the use of pangolin body parts in local medicines has dominated previous research and public discourse has been on for a long period of time (Bräutigam *et al.* 1994, Soewu and Ayodele 2009, Soewu and Adekanola 2011, Whiting 2011, Sodeinde and Adedipe 1994, Sodeinde and Soewu 1999, Akpona *et al.* 2008, Challender and Hywood 2012, Boakye *et al.* 2014). Majority of these authors have reported that scales of pangolin are the most used part in local medicines. However, other parts of the animal such as meat, oil and skin, among others have found their usefulness in local medicinal preparations. Boakye *et al.* (2014) reported some body parts of pangolin



are used more than the other in local medicines.

The present study has been able to establish the consumption of pangolin as bushmeat in savanna zone of Nigeria. However, we did not go into the medicinal use of the animal. Some extensive studies conducted in southwest Nigeria have revealed that local Traditional Yorubic medicines are made from body parts of whole juvenile and adult, as well as male and female, or even pregnant female pangolin (Sodeinde and Adedipe 1994, Soewu and Ayodele 2009, Soewu and Adekanola 2011). Specifically, Soewu and Ayodele (2009) found that local medicines made from pangolin were used to treat about 42 conditions including infertility, gastrointestinal disorders, safe parturition, stomach ulcers, rheumatism and fibroid.

## CONCLUSION AND RECOMMENDATIONS

### Conclusion

The study assessed the socio-economic aspect of marketing of bushmeat in Ilorin, the capital of Kwara State and located in savanna zone of Nigeria. It was discovered that most of the bushmeat hunters along the marketing chain were males but on the other hand majority of the retailers and wholesalers were females. Majority of the hunters falls within the age categories of 21 and 50 years with no formal education. In the same vein, majority of the wholesalers had no formal education, but on the contrary quite a number of the retailers had secondary education. The bushmeat hunters are local people and comprise of both the farmers and full-time hunters. Other actors identified along the marketing chain and distribution channel are the wholesalers, village merchant, retailers and the final consumer.

### Recommendations

Since the marketing of bushmeat is mainly driven by the final consumers, there is therefore the need for proper public

education and awareness creation on the implication of killing animals in the wild. The general public as well as the hunters and marketers of bushmeat should be made to know the threatened and endangered state of wild animals, and how this could further lead to extinction. Policies and laws that regulate or prohibit poaching and other illegal killing of wild animals should be instituted.

To compliment every effort aimed at prevention of poaching and consumption of wild animals, there should be provision of alternative source of bushmeat production to the public, including promoting domestication of wild animals among the hunters and marketers of bushmeat.

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