

HUNTING, TRADING AND UTILIZATION OF PANGOLIN (*Phataginus spp.*) IN NIGERIA

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Abstract

Pangolins populations are threatened due to indiscriminate exploitation and incessant destruction of their habitats. They have been ranked as the most trafficked mammals in the world. This study investigates the extent of exploitation of Pangolin in North Central and Southern parts of Nigeria. A structure questionnaire was administered to bush meat marketers and hunters in six states across three vegetation belts of the country. The studied states include; Niger and Kwara in the Guinea Savanna, Oyo in the Southern Guinea Savanna, Ekiti, Ondo and Edo states in the Rain Forest zone of the country. In all, 67 hunters and 27 bush meat marketers were interviewed. The study was carried out in five Months (August-December, 2019). Snowball sampling technique was used to locate the respondents in the study. Data collected were analyzed using descriptive statistics. Wildlife trading activities in Nigeria were dominated by females (100%). All respondents trading on bush meat in all the states visited were females, many (56%) in their middle and were mostly married (93%) with primary (63%) or secondary (25%) education. Hunting profession due to its nature was however dominated by males (100%) comprises married men (67.2%), widower (19.4%), and singles (13.4%). The survey revealed that 42% of the hunters interviewed were living below poverty line (\$1.9 / ₦684 per day). The price range for a matured pangolin in the study areas falls between ₦5,000-₦10,000 only. Almost half (45%) of the respondents agreed that they used pangolin for traditional, food and medicinal purposes in their culture. Pangolin's meat was generally accepted for consumption by all (100%) respondents. Many Marketers (70%) confirm that the animals were available for sale in the study area. More than half (59%) of respondent were of the view that pangolin are available for harvest all year round while some held the view that the month of January (17%), April (13%), and September (9%) tend to favoured the harvest of pangolin. Most of the Pangolins (73%) reported by hunters under this study were Terrestrial while few (27%) of them were Arboreal. Hunters (73%) and marketers (82%) observed reduction in pangolin population in recent years.

Key Words: *Exploitation, Hunting, Pangolin, Pricing, Trading*

Introduction

Pangolins also known as scaly anteaters are mammals of the order *Pholidota*. The only family still in existence, *Manidae*, has three genera: *Manis*, *Phataginus* and *Smutsia*. *Manis* comprises of four species living in Asia. *Phataginus* comprises of two species living in Africa, and *Smutsia*, comprises two species also living in Africa (Gaudin, 2009). These species range in size from 30 to 100 cm. They have large, protective scales covering their skin; they are the only known mammals with this peculiar feature. They live in hollow trees or burrows in the ground, depending on the species. Pangolins are nocturnal, and their diets are predominantly ants and termites, which they capture using their long and narrow tongues. They tend to be solitary animals, meeting only to mate and produce a litter of one to three offspring, which are raised for about two years. The physical appearance of a pangolin is marked by large hardened overlapping plate-like scales, which are soft on young pangolins, but harden as the animal matures (Yu *et al.*, 2015). They are made of keratin, the same material from which human fingernails and tetrapod claws are made, and are structurally and compositionally very different from the scales of reptiles (Spearman, 2008). The pangolin's scaled body is comparable in appearance to a pine cone. It can curl up into a ball when threatened, with its overlapping scales acting as armor, while it protects its face by tucking it under its tail. The scales are sharp, providing extra defense from predators (Wang, 2016). Pangolins can emit a noxious-smelling chemical from glands near the anus, similar to the spray of a skunk (Darren, 2014). They have short legs, with sharp claws which they use for burrowing into

ant and termite mounds, and climbing (Chan, 1995)

Its range in weight from just 4 pounds to a record 70 pounds Due to variation in their size and the size of their scales, each species of pangolin likely has a different range in terms of the number of scales. The number of scales on pangolin has been estimated at approximately 900 to over 1000. The tongues of pangolins are extremely long and – like those of the giant anteater and the tube-lipped nectar bat – the root of the tongue is not attached to the hyoid bone, but is in the thorax between the sternum and the trachea (Chan, 1995). Large pangolins can extend their tongues as much as 40 cm, with a diameter of only 0.5 cm (Mondadori, 1988).

Pangolins populations are threatened by uncontrolled exploitation and massive deforestation of their habitats. They have been ranked as the most trafficked mammals in the world (Goode, 2015). Of the eight species of pangolin, four (*Phataginus tetradactyla*, *P. tricuspis*, *Smutsia gigantea*, and *S. temminckii*) are listed as vulnerable, two (*Manis crassicaudata* and *M. culionensis*) are listed as endangered, and two (*M. pentadactyla* and *M. javanica*) are listed as critically endangered on the International Union for Conservation of Nature Red List of Threatened Species. *Phataginus tetradactyla* and *Phataginus tricuspis* are the two species found in Nigeria (Wikipedia, 2019). These reasons necessitate the concept of this study in order to conserve this unique animal species at the verge of extinction due to uncontrolled exploitation.

In a 2014 assessment, the International Union for Conservation of Nature (IUCN) estimated that if current poaching levels continue, the two most imperiled pangolin

species – the Chinese and Sunda pangolins – will decline by up to 80 percent to 90 percent over the next two decades. IUCN has projected that the Philippine, Indian, long-tailed and tree pangolins will decline by about 50 percent over the next 20 years, and that the giant and Temminck's pangolins will decline by about 30 percent in the next 30 years. The conservation status of the two species in Nigeria are yet to be fully assessed but the market reports on media points to suggests that they are under serious threat from uncontrolled hunting and illegal trading.

Illegal trading makes it difficult to estimate the exact number of pangolins being traded annually. However, based on media reports and seizures, it is suggested that pangolin trade from Africa are more for intercontinental use over local use. Pangolin-related seizures have been linked to Asian markets principally, in China. Pangolins are traded as live animals, dead bodies, trophies, carvings, scales, skins, or leather goods. However, some pangolins have been traded internationally as zoo specimens (Brautigam, 1994). The pressures on African pangolins are likely increasing for several reasons. Firstly, increase in deforestation across West and Central African countries has reduced their habitat, particularly for the semi-arboreal white-bellied pangolin and the arboreal black-bellied pangolin, which rely on forest habitats. As the human populations grow in West, Eastern and Central Africa, this may exacerbate trends in deforestation and wildlife consumption. Secondly, increase in the accessibility of remote areas to people and extractive industries may lead to more pangolin hunting. For example, a recent study showed that Asian industry workers in Gabon requested pangolins from hunters

more than any other species. Finally, the international trafficking of pangolins over the past decade has boomed. They are one of the most trafficked wild mammals in the world. For example, eight tonnes of pangolin scales trafficked from Nigeria, one of the largest ever hauls of scales, was intercepted by World Bank Group (2020).

Objectives of the study

- This study investigates the availability extent of exploitation of Pangolin in North Central and Southern parts of Nigeria.
- Socioeconomic characteristics of pangolin's hunters and traders in the study area were also assessed.

Materials and Methods

Study Area

The study area covered South Western Part of Niger River in Nigeria. It includes the North central, South West and South South geopolitical zones of the country between 3°50' E - 7°00' E and 10°00' N and 5°00' N.

Nigeria has a tropical climate with sharp regional variances depending on rainfall. Nigerian seasons are governed by the movement of the intertropical discontinuity, a zone where warm, moist air from the Atlantic converges with hot, dry, and often dust-laden air from the Sahara known locally as the *harmattan*. During the summer, the zone of intertropical discontinuity follows the Sun northward. As a result, more and more of the country comes under the influence of moisture-laden tropical maritime air. Thus, much of the country experiences a rainy season during summer. As summer wanes, the zone shifts southward, bringing an end to the rainy season. Temperatures are high throughout the year, averaging from 25° to 28°C (77° to 82°F). Northern

Nigeria typically experiences greater temperature extremes than the south.

Rainfall varies widely over short distances and from year to year. Parts of the coast along the Niger Delta, where the rainy season is year-round, receive more than 4,000 mm (160 in) of rain each year. Most of the country's middle belt, where the rainy season starts in April or May and runs through September or October, receives from 1,000 to 1,500 mm (40 to 60 in). In the dry savanna regions, rainfall is especially variable. The region along Nigeria's northeastern border receives less than 500 mm (20 in) of rain per year, and the rainy season lasts barely three months.

Vegetation also varies dramatically at both the national and local level in relation to climate, soil, elevation, and human impact on the environment. In the low-lying coastal region, mangroves line the brackish lagoons and creeks, while swamp forest grows where the water is fresh. Farther inland, this vegetation gives way to tropical forest, with its many species of

tropical hardwoods, including mahogany, iroko, and obeche. However, only in a few reserves - protected from the chainsaw and the farmer - is the forest's full botanic diversity intact. Elsewhere, forest is largely secondary growth, primarily of species like the oil palm that are preserved for their economic value. Forests cover only about 12 percent (2005) of the country's total land area.

Immediately north of the forest is the first wave of savanna: the Guinea, or moist, savanna, a region of tall grasses and trees. The southern margins of the Guinea savanna - which has been so altered by humans that it is also called the derived savanna - were created by repeated burning of forest until only open forest and grassland were left. The burnings destroyed important fire-sensitive plant species and contributed to erosion by removing ground cover. Tropical forest is giving way to the Guinea savanna at such a rate that the only forests expected to survive the next generation are in reserves.



Fig. 1: The Map of the Study Area indicating the study Sites

Method of Data Collection

Questionnaire was administered to bush meat marketers and hunters in six states in three vegetation belt of Nigeria. The studied states include; Niger and Kwara in the Guinea Savanna, Oyo in the Derived Savanna, Ekiti, Ondo and Edo states in the Rain Forest zone of the country to elicit information on pangolin availability and conservation in areas sampled.

Thirty seven (37) practicing hunters and pangolin marketers were interviewed across Niger, Kwara and Oyo State. Six (6) hunters were interviewed at Kishi, nine (9) at Agbonda, fifteen (15) at Kemenji and seven (7) at Kaiama. Only two (2) marketers were encountered at Kemenji and three (3) at Kishi. While twenty five (25) respondents (hunters) were encountered in Ekiti state spreading through three (3) communities which

include; Ogotun- Ekiti, Ilawe- Ekiti and Igede- Ekiti with (12), eleven (11) and two (2) respectively. Also, nine (9) respondents were interviewed on wildlife products marketers in four (4) communities namely Ilawe-Ekiti, Igbara odo-Ekiti, Igede-Ekiti and Iyin-Ekiti with three (3), two (2), three (3) and one (1) respectively.

In Edo state six (6) women trading in wildlife product (marketers) in Uwa market in Benin and Owan river community outskirts of Benin with five (5) and one (1) respectively were interviewed. In Ondo state two (2) women trading in Wildlife product (marketers) in Emure-ile and Owena-bridge communities were also interviewed. In Edo and Ondo state hunters were not available for interview during the period of the study which may be due to the nature of their activities and the unwillingness of the marketers to link us with the those hunters. The study was done in five Months (August-December, 2019).

Table I: Encounter Rate of Pangolin Hunters and Traders in the Study area

State	Number of Hunters	Number of Marketers
Niger	22	9
Kwara	16	0
Oyo	6	3
Ekiti	25	11
Ondo	0	2
Edo	0	6
Total	69	31

Data Analysis

Information gathered from the research surveys were subjected to descriptive statistics and results are presented in tables and figures.

Results

Sex of respondents as presented in Table 1 revealed that all respondents

trading on pangolin bush meat in all the states visited were of female gender, more than half (56%) were within the age bracket of 35 to 54 years. Most of them were married except few that were widows. Most of them had only primary or secondary education (89%). Years of experience shows that more people joined the trade in recent time with experience less than ten years. Hunter profession due to its nature was dominated by male gender. Table 2 revealed that all respondents trading on pangolin bush meat in all the states visited were of male gender, majorly (58%) within the age bracket of 35 to 54 years. The survey revealed (Table 3) that 42% of the hunters interviewed were living below poverty line as defined by the World Bank : \$1.9 / ₦684 per day (World bank Group, 2020) based on their monthly income. The results in Table 4 indicate that the price range for a matured pangolin in the areas falls between the ranges of 5,000-9,999 as reported by many (68%) of the respondents.

In Table 5, 45% of the respondents agreed that they used pangolin for traditional, food and medicinal purposes in their culture. Some (27%) respondents relished pangolin as favorite bush meat while 14% used pangolin for traditional and medicinal purposes. Results in table 6 revealed that the meat of pangolin is generally accepted by all respondents across five major tribes within the studied states without any taboo attached to its consumption. This has put pressure on the poaching of the animals in all its location in the country.

In table 7 the Marketers reported the availability and distribution of pangolin in the study areas with 70% of them alluding to the fact that the animals are available for sale in the areas of study. Majority

(59%) of respondent were of the view that pangolin were available for harvest all year round while some of them held the view that the month of January (17%), April (13%), and September (9%) tend to favoured the harvest of pangolin. Results in Table 8 indicated that most of the Pangolins (73%) encountered under this research were Terrestrial while few (27%)

of them were Arboreal. It is a reflection of the species that is common in each of the study areas. From the results in Tables 9 the responses of both the hunters and marketers showed clearly that there is a reduction in the population of the animals in the study area with 73%, and 82% respectively.

Table 1: Socio-demographic characteristics of pangolin marketers in Nigeria

Demographic Variables	Frequency	Percentages %	Modal Class
Gender			
Male	0	0	
Female	27	100	Female
Age			
15-34	9	13	
35-54	15	56	35-54
55-74	3	11	
75- Above	0	0	
Marital Status			
Single	0	0	
Married	25	93	Married
Widdow	2	7	
Level of Education			
Non-Formal Education	2	7	
Primary Education	17	63	Primary
Secondary Education	7	25	
Tertiary Education	1	5	
Business Experience			
0-10 years	10	37	0-10 years
11-20	9	33	
21-30	4	15	
31-40	4	15	

Table 2: Socio-economic characteristics of hunters in the study Areas

Demographic Variables	Frequency	Percentages %	Modal Class
Gender			
Male	67	100.0	Male
Female	0	0.0	
Age			
15-34	6	9.0	
35-54	39	58.0	35-54
55-74	19	28.0	
75- Above	3	5.0	
Marital Status			
Single	9	13.4	
Married	45	67.2	Married
Widower	13	19.4	
Level of Education			
Non-Formal Education	19	28.3	
Primary Education	25	37.3	Primary
Secondary Education	13	19.4	
Tertiary Education	10	14.9	
Business Experience			
0-10 years	13	19	
11-20	24	36	11-20
21-30	18	27	
31-40	9	13	
41-50	3	5	

Table 3: Estimated monthly income of hunters in Pangolin sales in the study Areas

Variable	Frequency	Percentage (%)
11.Less than 10,000	28	42
10,000-49,000	19	28
50,000-149,000	5	8
150,000-200,000	15	22
200,000- Above	0	0
Total	67	100

Table 4: Prevailing Price of Pangolin and mode of sale by Marketers

Variable	Frequency	Percentage (%)
1,000-4,900	5	23
5,000-9,999	15	68
10,000-above	2	9
Total	22	100
Live	7	32
Preserved	15	68
Total	22	100

Table 5: Various Forms of Pangolin Utilization in the Nigeria

Variable	Frequency	Percentage (%)
Traditional Purposes	3	14
Food	6	27
Medicinal Purposes	3	14
All of the above	10	45
Total	22	100

Table 6: Taboo Associated with Pangolin Utilization in the South-west Nigeria

Tribe	Frequency		Percentage (%)
	NO	YES	
Yoruba	30	0	100 % (NO)
Edo	10	0	100 % (NO)
Nupe	2	0	100 % (NO)
Boko- Baru	17	0	100 % (NO)
Tiv	3	0	100 % (NO)
Hausa/ Fulani	5	0	100 % (NO)

Table 7: Sale of Pangolin in the study areas

Responses	YES (%)	NO (%)	Total
	19 (70)	8 (30)	27 (100)

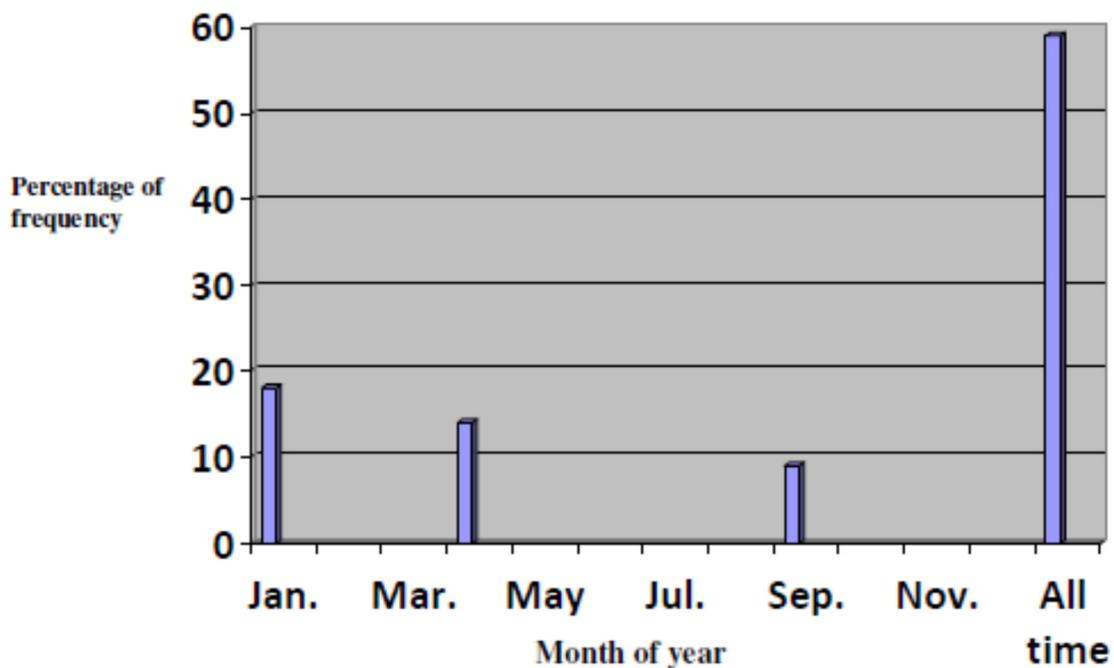


Fig. 2: Month of year when Pangolin were mostly harvested in Nigeria

Table 8: Habitat Preference of Pangolin in Nigeria

Preferred Habitats	Frequency	Percentage (%)
Arboreal	2	3
Terrestrial	49	73
Burrow	16	24
Total	67	100

Table 9: Hunters and Marketers Perception of Pangolin Abundance in Nigeria

Perceived status by	Frequency	Percentage (%)
Hunters		
Increasing	18	27
Decreasing	49	73
Total	67	100
Marketers		
Perceived status by	Frequency	Percentage (%)
increasing	4	18
Decreasing	18	82
Total	22	100

Discussion

Wildlife trading activities in Nigeria were dominated by female. All respondents trading on pangolin bush meat in all the states visited were of female gender, majorly in their middle ages. All were married except few that were widows. Most of them had only primary or secondary education. Years of experience showed that more people joined the trade in recent time with experience less than ten years. Hunter profession due to its nature was however dominated by male gender. Respondents hunting pangolin in all the states visited were male, comprises young adults that were singles and married men in their middle ages. The implication of this information is that both genders played different but critical roles in the exploitation and marketing of Pangolin and both gender must be included in any plan to conserve the animal to have a comprehensive success. Most of the hunters interviewed in this study earned below poverty line as defined by the World Bank. This observation is similar to

the finding of Noutcha *et al.* (2016) who recorded that 60% of hunters in bush meat market in River State were poor. The financial condition of hunters in the study areas was very low compare to average living standard in Nigeria and this is capable of fuelling their appetite for illegal trade of pangolin.

Almost half of the respondents agreed that they used pangolin for traditional, food and medicinal purposes in their culture. Some respondents relished pangolin as favorite bush meat and for traditional purposes. Pangolin’s meat was generally accepted by all tribes in the studied states without any taboo attached to it consumption. This has put pressure on the poaching of the animals for food in all its location in the country. This finding agrees with Morenikeji (2016) who posited that pangolins are hunted for their meat. Bush meat is a delicacy in most part of Nigeria. This culture of hunting which is often fueled by pleasure derived in hunting exercise (Sporting) and relative scarcity of animal protein in the country is taking its toll on the ecosystem. Many

wildlife species passed for bush meat in Nigeria with just few species that may be spared in some specific locations or culture due to an associated taboo about them. Unfortunately, Pangolin is one of the most preferred wildlife species used as bush meat and this has decimated the population of this unique animal in their natural habitats in many parts of the country.

Marketers agreed that pangolin were available for sale in all the areas of study. Majority of respondents were of the view that pangolin were available for harvest all year round while some claimed that pangolins were more commonly found in January, April, and September. Results indicated that most of the Pangolins reported by hunters in this study were encountered on the ground indicating that they are terrestrial. This observation agreed with Wang, (2016) who posited that most of the pangolins are terrestrial and they dig burrows or live in other animal's deserted dens for nesting and shelter. The rest of the pangolins were arboreal, living in hollow of trees or on tree branches. However, the distinction between them is not absolute, the terrestrial pangolins also climb tree sometimes while the arboreal species can also be sometimes found on the plain ground. This outcome reflected common pangolin species in the study areas. All respondents, both the hunters and marketers observed clearly that there were reductions in the populations of pangolin in the wild. Goode, (2015) reported that Pangolins populations are threatened by uncontrolled exploitation and massive deforestation of their habitats. They have been ranked as the most trafficked mammals in the world.

Conclusion

Pangolin is a unique mammal that had successfully attracted attentions of people for various purposes it is subjected to in Nigeria and all around the world. The animal is vulnerable with its level of exploitation in Nigeria, that did not commensurate with its reproductive ability. This has made its population to reduce drastically in its natural habitats. To avoid possible extinction of the animal in the wild, where it can easily thrive, intense conservation education and awareness campaign should be targeted toward the major stakeholders that are in both the rural and urban communities, to discourage them from continuing in the ugly trends of the past that had impacted negatively on the animal population in the wild. Major stakeholders; youth, including males and females should be considered for alternative means of livelihood to discourage them from this illegal activities in the country. Availability of alternative livelihood will engage the youth and thereby reduce the new recruits into pangolin hunting and bush meat trading in Nigeria.

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