

Survey of Pangolin Availability and Trade in Selected Southern States of Nigeria

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Abstract

The study on the survey of Pangolin availability and trade in some selected southern states in Nigeria was carried out within a period of three (3) months, from October to December, 2019. These states were Ekiti, Ondo and Edo states. Nine (9) communities were sampled for the study with five (5) in Ekiti, two (2) each in Ondo and Edo states. Each of these communities was purposively selected due to their involvement in the trade in wild animals' meat especially Pangolins. Field survey was conducted in all these states. Questionnaire was administered as interview guide to seventeen (17) accessible marketers of wild animals (bush meat). Personal visits and observations were made, while discussions and interviews were conducted to obtain information on the availability and trade in pangolin in the study areas and their mode of operations as regards the trade in pangolin. Camera was used to obtain the photography's of the Pangolins and other wildlife products sold by the traders were also captured. Data collected were subjected to descriptive statistics (frequency count and percentage). The results revealed that all the marketers were married women, with most of them between the age ranges of 35-54 years having 59% of population respondent. The level of education shows that 41% of the women had primary and secondary education each. Forty seven point two percent (47.2%) of these women had 1-10years business experiences while 17.6% of the women have 31-40 years business experiences. Almost all respondents (94%) alluded to the fact that the population of the animal had drastically reduced in the wild bases on the flow of supply from their dealers. The price ranges from ₦5,000 – above base on it size. The study also revealed that there was an unrestricted trade in this endangered animal especially the White-bellied Pangolin species *Phataginus tricuspis*. Twenty one (21) species of wildlife were identified to be traded by these marketers which include; 71% mammals, 10% Avian, 14% Reptiles and 5% Mollusca. From the list of the traded wildlife 38% are endangered species, 14% are threatened, 38% are rare and 10% are least concern. The implication of this trade in pangolin species will surely spent doom to the already endangered population of these animals in the country and the world at large. Proactive steps should be taken by relevant stakeholders to stop or reduce the unrestricted trade in pangolin, through stringent legislation, intensive conservation education and provision of alternative sources of livelihood to both the hunters and marketers in these study areas.

Key Words: Pangolin, Survey, Trade, Marketers and Southern States

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I. Introduction

Pangolins are the most illegally trafficked mammals in the world. Over the past decade, over one million pangolins are believed to have been illegally trafficked. They are listed on the international Union for Conservation of Nature (IUCN) Red List of Threatened species as endangered (IUCN, 2019). Pangolins are the only mammals with large, protective Keratin scales covering their skin. Mammals are classes of vertebrate; air breathing animals whose females are characterized by the possession of mammary glands, while males and females are characterized by the sweat glands, hair/fur and a neocort region in the brain. There are a total of two hundred and ninety (290) mammals' species in Nigeria (IUCN, 2007). In Nigeria the population of the Pangolins is reducing due to various human activities in their natural habitats (IUCN, 2019). Pangolins are unique mammals that are active at night. They live in hollow of trees or burrows, depending on the species, feeding only on termites and ants (Nowak, 1999). Pangolins belong to the Order Pholidota. The one (1) extant family, Manidae is divided into three (3) genera with eight (8) species distributed evenly between Africa and Asia continents; each continent has four (4) different species of Pangolins. According to (Gaudin, Emery and Wible, 2009) African Pangolins are classified into two genera: *Phataginus* (African Tree Pangolins) genus and *Smutsia* (African Ground Pangolins) genus. The African pangolins species include *Phataginus tetradactyla* (Black-bellied pangolins), *Phataginus tricuspis* (White-bellied pangolins), *Smutsia gigantean* (Giant ground pangolins) and *Smutsia temminckii* (Temminck's ground pangolins) (Maurice, Ebong, Fuashi, Godwill and Zeh, 2019; Challender and Waterman, 2017 & Gaudin, *et al.*, 2009). Among the four (4) species of African origin three (3)

has been identified to be domicile in Nigeria, hereafter referred to as Nigerian Pangolins. These include *Phataginus tetradactyla* (Black-bellied pangolins), *Phataginus tricuspis* (White-bellied pangolins) and *Smutsia gigantea* (Giant ground pangolins) (Challender and Waterman, 2017; Sodeinde and Adedipe, 1994). According to (Ashokkumar, Valsarajan, Suresh, Kaimal and Chandy, 2017) pangolin are also referred to as anteaters with respect to their preferred food that include ants and termites. They also have a large hardened overlapping plate-like and protective keratin scales that make the animal to be mistakenly for a reptiles. The scales only cover their dorsal side and tail, but their ventral side are soft covered with few hairs and their head and limbs are hardened structure (Maurice, *et al.*, 2019). In Nigeria pangolins inhabit natural forest; primary and secondary rain forest, moist tropical lowland and secondary growth forest, dense woodlands, especially along water courses or riverine and swamp forests dominated by palms bamboo forest, forest savanna-cultivation mosaic habitats (IUCN, 2007). Pangolins can adapt to some degree of habitat modification (Challender and Waterman, 2017). According to (Sodeinde and Adedipe, 1994) their population in Nigeria recently has been limited to forest and biosphere reserves. They are mostly found around their preferred prey such as termites and ants. The most common among the Nigeria pangolin is the *Phataginus tricuspis* (White-bellied pangolins or tree pangolin). It is swiftest and smallest of the three other species. It is distributed across South East, North Central, South West and South-South ecological regions of Nigeria. The second most common Nigerian pangolin is *Phataginus tetradactyla* (black-bellied pangolins). It is confined to the South-South geo-political/ecological region of Nigeria (Challender and Waterman, 2017). Pangolins in Nigeria are vulnerable animals, because of their various important local, national and international utilizations. The demand for these animals is daily and the population is decreasing daily. According to (Challender and Waterman, 2017) the animals are listed in Schedule 1 of Nigeria Decree (Law) No. 11. This schedule gives protection to the animals listed in this category against over-exploitation through national and international trade and are protected by law (Sodeinde and Adedipe, 1994). But, in 2016, Convention on International Trade on Endangered Species of Wild fauna and flora (CITES) her conference of Parties meeting in Johannesburg, 2016, transferred all eight (8) species of Pangolin including all species in Nigeria such as *Phataginus tetradactyla* (black-bellied pangolins), *Phataginus tricuspis* (white-bellied pangolins) and *Smutsia gigantea* (giant ground pangolins) from Appendix II to Appendix I (Challender and Waterman, 2017). The implication of this decision is that species in Appendix I comprises of over 1,200 species that are threatened with extinction. So trade in Wild-caught specimens of these species is illegal (permission is only granted in exceptional licensed circumstances), with full assurance that importing state should be able to care to for the specimen adequately before it trade can be allowed. According to (IUCN, 2019) Pangolin Specialist Group assessment of Africa Pangolin species White-bellied Pangolin (*Phataginus tricuspis*) and Giant Pangolin (*Smutsia gigantea*) are endangered. The Temminck's ground Pangolin (*Smutsia temminckii*) and Black-bellied Pangolin *Phataginus tetradactyla* are vulnerable. According to (Morenikeji, 2020) Nigeria is a useful hub for traffickers because of its porous borders and poor enforcement. Chinese buyers will pay anywhere between \$3 and \$20 for a pangolin- a relative fortune for local bush meat traders. Traffickers can get as much as \$250 for the scale from one Pangolin in market in Asia, according to the (UNOD'CS World Wildlife Crime Report, 2016). According to (Uwagbale, 2020) Nigeria already has a penalty of ₦2.70 fines (for a first-time offense) for hunting or selling a pangolin. It is viewed as being highly inadequate as a deterrent measure for a global trafficking hub. This is especially true when compared with other African countries with less trade volume. However, more need to be done on wildlife policies. This policy will provide the definite reference points and the systematic and coherent view and action Programmes to attain greater heights in wildlife management according to (Adeyoju, 1975). This implies that without it the wildlife sector is bound to drift and this will have adverse effect on each of the species of wildlife in our nation especially the pangolin. This study is out to survey the trade in Pangolin in some selected Southern states in Nigeria and possible implication of it trafficking to it conservation in Nigeria presently that needed an urgent and proactive attention from all relevant stakeholders in the country.

II. Materials And Methods

Study Areas

This study was carried out in three (3) Southern states of Nigeria. These states comprises of Ekiti, Ondo and Edo states. Ekiti state is in the Southwest region of Nigeria. It was created on 1st of October, 1996 with its capital in Ado Ekiti. It has 16 Local Government areas with a Coordinate of 7^o40¹N 5^o15¹E. It has a total land areas cover of 6,353km² and a population census of (2006) with 2,210,957. In Ekiti state five (5) communities were sampled which include Ilawe-Ekiti, Ogotun- Ekiti, Odo-uro in Iyin-Ekiti, Igede -Ekiti and Igbara- Odo Ekiti.

Ondo state is also in the Southwest region of Nigeria. It was created on 3rd February, 1976 with its capital in Akure. It has 18 Local Government areas with a Coordinate of 7^o10¹N 5^o05¹E. It has a total land areas cover of 15,500km² and a population census of (2006) with 3,460,877. In Ondo state two (2) communities were sampled Emure-ile and Owena Bridge.

Edo state is in the South south region of Nigeria. It was created on 27th August, 1991 with its capital in Benin City. It has 18 Local Government areas with a Coordinate of 6^o30¹N 6^o00¹E. It has a total land area covering 17,802km² (Uwe, 2000). Two (2) communities were also sampled which include Owan River and Uwa market in Benin City.

Study Methods

The study was in three (3) months from October to December, 2019. Each of these communities was purposively selected due to their involvement in the trade in wild animals' meat especially Pangolins. Field survey was conducted in all these communities listed above. Questionnaire was administered as an interview guide to seventeen (17) accessible marketers of wild animals (bush meat) in shops and stalls of the marketers in the study areas. Personal visits and observations were made, while discussions, and interviews were conducted to obtain information on the study areas and their mode of operations as regards the trade in pangolin. Camera was used to obtain the photographs of the Pangolins and other wildlife products sold by the traders were captured. Data collected were subjected to descriptive statistics (frequency count and percentage).

Study Limitations- Some of the Bush meat traders did not respond to our questions especially in Emure-ile and Benin City. This affected the numbers of traders that were available for the study samples.

III. Results

The results are shown in each of the tables below. In table 1, the demographic characteristics of traders in the study areas, all the marketers were females. Most of these people that dominate the business falls between the ages of (35-54 years) with 59% and the least were women that falls between the ages of 55-74 years. All the respondents were all married women with most of them with primary, secondary and tertiary education with 41%, 41% and 6% respectively. The percentage of the women that had a least 1-10 years business experience is 47.2% while others had experiences of 11-20 years, 21-30 years and 31-40 years with 17.6% each respectively. From the results in table 2 the respondents showed clearly a reduction in the population of the animals with (94%) alluding to the fact that the animal population had reduced greatly in the study areas. The sources of acquisition of Pangolin in the study areas according to table 3 revealed that 76% of the supply to the marketers comes from the bush meat dealers and buying from other markets accounted for 12%. While, hunting from the wild and other sources each recorded 6% respectively. According to table 4, 65% of the marketers also alluded to the fact that they belong to an association while, 35% says they did not belong to any association. Most of the communities where people did not belong to any association were as a result of the fact that there was no existing structure for the marketers to work with. The study also revealed that 71% of the marketers did not have a link with the any hunters associations even if it existed and 29% of the marketers revealed that there was an existing link with hunters association which aid their acquisition of the animals (Pangolins) and other wildlife products that they trade in. Majority of the marketers 94% interviewed revealed that they had an experience of one (1) to ten (10) years in pangolin trade. Forty seven percentage (47%) admitted to the fact that pangolin are more abundant in both seasons of the year while 41% and 12% reported that the animals were available in dry and wet season respectively in table 5. It was reported from the study that majority of the animal sold to the marketers are dead (59%), while 35% reported that they purchased both live and dead animal and the least report was that live animals are more available in their transaction of the animal which 6% respondents. The price of the animals ranges between five thousand to ten thousand naira only (₦5,000 - ₦10,000) which is 82% according to the respondents. It was only 18% of the respondents reported that pangolin price sold between eleven thousand naira only (₦11,000-above) especially the very big stock in table 6. The age structure of pangolin sold in the study areas revealed that 59% of the marketer sells both young and adult pangolin and 41% of marketers sell adult pangolin. None of the people reported selling only young animals possibly due to their size and demand which may be relative to their price according to table 7. The species of wild animals displayed by the marketers revealed that a list of twenty one (21) according to table 8. These classes of animals show that Mammals are (71%), Aves (Birds) are (10%), Reptiles are (14%) and least is Mollusca with (5%) according to table 9. The conservation status revealed that from the animal species list on display for sell, it shows that endangered, threatened, rare and least concern as the following percentage, 38%, 14%, 38% and 10% respectively according to table 10. The conservation implications of this trade in the study areas revealed that majority (52%) of the species of animals killed and sold openly in those markets should be discouraged based on their current status to save those species from future extinction and for posterity sake.

RESULTS

Table 1: Demographic Characteristics of Marketers in the study Areas

Demographic (%)	Frequency	Percentages	Modal Class	Variables
Gender				
Male	0	0		Female
Female	17	100		
Age				
15-34	6	35		
35-54	10	59		35-54
55-74	1	6		
75- Above	0	0		
Marital Status				
Single	0	0		
Married	17	100		Married
Widow	0	0		
Level of Education				
Primary education	7	41		Primary
Secondary education	7	41		Secondary
Tertiary education	1	6		
Non-Formal	2	12		
Business Experience				
1-10years	8	47.2		1-10years
11-20years	3	17.6		
21-30years	3	17.6		
31-40years	3	17.6		

Table 2: Marketers Perception of Pangolin abundance in the study areas

Perceived status	Frequency	Percentage (%)
1. increasing	1	6
2. Decreasing	16	94
Total	17	100

Table 3: Marketers sources of acquisition of Pangolin in the study Areas

Variable	Frequency	Percentage (%)
1. Buying from the Market	2	12
2. Supply from dealers	13	76
3. Hunting from the wild	1	6
4. Other sources	1	6
Total	17	100

Table 4: Marketers Association Operational Structure

Marketers Association existence	YES (%)	NO (%)	Total
	11 (65)	6 (35)	17(100)
Marketers belonging to Association			
	YES (%)	NO (%)	Total
	11 (65)	6 (35)	17 (100)
Marketers Link to Hunters Association			
	YES (%)	NO (%)	Total

5 (29) 12 (71) 17(100)

Table 5: Marketers experience on Pangolin trade in the study areas

Marketers involvement Pangolin trade YES (%) NO (%) Total			
	16 (94)	1 (6)	17 (100)
Pangolin price per seasons Dry (%) Wet (%) Both (%) Total			
	7 (41)	2 (12)	8 (47) 17 (100)
Pangolin sale & utilization taboo YES (%) NO (%) Total			
	3(18)	14 (82)	17 (100)

Table 6: Mode of sale and cost of Pangolin in the study areas

Mode of sale	Live (%)	Dead (%)	Both (%)	Total
	1 (6)	10 (59)	6 (35)	17 (100)
Pangolin Price	(₦5,000-₦10,000)	(₦11,000-above)	Total	
	14 (82)	3 (18)	17 (100)	

Table 7: Age and Species of Pangolin sold by the Marketers in the study areas

Ages structures	Young (%)	Adult (%)	Both (%)	Total
	0 (0)	7(41)	10 (59)	17 (100)
White-bellied	2(12)	10(59)	5(29)	17(100)
Black-bellied	0 (0)	2 (100)	0(0)	2(100)

Table 8: Species of wild animals Traders display for sale in the study Areas.

Wild animals	Scientific name	Class of Animals
1. white-bellied Pangolin	<i>Phataginus tricuspis</i>	Mammal
2. black-bellied pangolins	<i>Phataginus tetradactyla</i>	Mammal
3. Nile Crocodile	<i>Crocodylus niloticus</i>	Reptile
4. African Grey Parrot	<i>Psittacus erithacus</i>	Avian (Bird)
5. Bushbuck	<i>Tragelaphus scriptus</i>	Mammal
6. Cane rat	<i>Thryonomys swinderianus</i>	Mammal
7. Giant Rat	<i>Cricetomys gambianus</i>	Mammal
8. Red flanked Duiker	<i>Cephalophus rufilatus</i>	Mammal
9. Tree hyrax	<i>Dendohyrax arboreus</i>	Mammal
10. Red River hog	<i>Potamochoerus porcus</i>	Mammal
11. Giant forest hog	<i>Hylochoerus meinertzhageni</i>	Mammal
12. African Civet cat	<i>Civettictis civetta</i>	Mammal
13. Francolins	<i>Francolins bicalcarabus</i>	Mammal
14. Giant land snail	<i>Archachatina marginata</i>	Mollusca
15. Monitor Lizard	<i>Varanus niloticus</i>	Reptile
16. Porcupine	<i>Hystrix cristata</i>	Mammal
17. Rock hyrax	<i>Procavia capensis</i>	Mammal
18. Helmeted Guinea Fowl	<i>Numida meleagris</i>	Avian (Bird)
19. Giant land Tortoise	<i>Chelonoidis nigra</i>	Reptile
20. Red flanked duiker	<i>Cephalophus rufilatus</i>	Mammal
21. Scrub Hare	<i>Lepus capensis</i>	Mammal

Table 9: Classes of animal Species Traders display for sale in the study Areas.

Conservation status	Frequency	Percentage (%)
Mammals	15	71
Aves (Birds)	2	10
Reptiles	3	14
Mollusca	1	5
Total	21	100

Field survey, 2019

Table 10: Conservation Status of Species of Wild animals Traders display for sale in the study Areas.

Conservation status	Frequency	Percentage (%)
Endangered	8	38
Threatened	3	14
Rare	8	38
Least Concern	2	10
Total	21	100

Field survey, 2019

IV. Discussion

The study revealed there was an unrestricted trade in wildlife especially in communities not very close to our protected areas in southern region of Nigeria. The result of marketers in the southern states of Nigeria revealed that hundred (100%) percentage of the people involved in the trade were female and no male was involved in the course of the study. This was in agreement with the report of (Falconer, 1992) in Ghana who reported the involvement of female in the trade in Kumasi, Ghana. (Shotuyo, *et al.*, 2017; Oyegbami, *et al.*, 2017) study in Nigeria also came up with the same findings. This was in contract with the finding of (Ojo, *et al.*, 2019) report on contribution of bush meat trade to livelihood of bush meat traders in Maiduguri bush meat market in Borno state who reported than bush meat trade was male dominated with 86% male and with 14% female. This may be as a result of the beliefs of the northern Nigeria, who did not allow their women to engage much in economic activities for religion and cultural reasons. The age ranges that dominate the business in these southern states were women between the ages of 35-54 with 59%. This was in agreement with the report of (Infield, 1988; Shotuyo, *et al.*, 2017; Oyegbami, *et al.*, 2017 & Ojo, *et al.*, 2019) in which the dominate age ranges were male and female between 31-40 and 41 and above with 68% and 24% respectively. This is a clear indication that the categories of people involved were youth, mostly male and female in their active year with little or no involvement of teenagers and elderly people. All the marketers interviewed were all married women (100%) but (Ojo, *et al.*, 2019) reported 90% married men and women with 10% never married. The level of education for marketers involve in bush meat trader in those southern states was dominated with primary and secondary education with both (41%) and (41%) respectively. But from the study of (Ojo, *et al.*, 2019) 58% of the traders had only Quranic education with only 22% and 4% having both primary and secondary education respectively. This point to the fact that the level of awareness and involvement in education before choosing a trade is more in the southern region compare to the northern region of Nigeria. The marketers had about 1-10 years business experience with 47.2% of the respondents, other having between 11-40 years experiences with total percentage of 52.8%. This shows that the culture of trade in wildlife resources especially pangolin had been with us for a very long time (Heather, 2016; Agboola and Adeyanju, 2017). The rate of harvest of pangolin from the perception of the marketers revealed that the population of the animal are reducing drastically in the wild this corroborate the report of (Wilkie and Carpenter, 1999; Taylor, *et al.*, 2014 ;). The sources of acquisition of Pangolin in the study revealed that the animal were gotten indirectly (dealers 76%) and directly (24%) from the wild with a structure marketing link with hunters through their existing association that aid there acquisition of the animals by the marketers. Most of the pangolins were sold dead to the marketers. The women in almost all the states of study confirm the purchase of pangolin by the Chinese on regular bases. Considering the small size of the species of pangolins in the study areas and it demand both from local and foreign buyers the price ranges from ₦5, 000 - Above. The high price of the animals is as a result of the demand which is mostly below the supply from the wild, since the animals cannot be easily domesticated to multiply under ex-situ conservation arrangement. So, the need to sustain the wild population is very urgent to avert local extinction in the country. Twenty one (21) species of wild animals were identified to be openly display by these marketers in the study areas. The class of these animals ranges from Mammals, Aves, Reptiles and Mollusca, with the following percentages, 71%, 10%, 14% and 5% respectively this similar to the reports of (Oyegbami *et al.*, 2017 & Shotuyo *et al.*, 2017).while, Orimaye, *et al.*, (2018) reported species wild animals hunted in Ise Forest Reserve to include primates, ungulates, reptiles and birds with the following percentages, 3.7%, 74.1%, 18.5% and 3.7% respectively. These twenty one (21) species of wildlife on display in the study areas, 38% is endangered, 14% is

threatened, 38% is rare and 10% is least concern from their (IUCN, 2019) conservation rating. All these figures are sending negative signal to conservation effort of both the national and international organization to reduce the volume of trade in endangered and threatened species. This study had a total percentage of 52% of Wildlife trade in species that are vulnerable in the study areas and this trend is unsustainable and should be discouraged.

V. Conclusion

Pangolin is a unique mammal that had successfully attracted attentions of people especially illegal traffickers all over the world, due to various uses the animal is subjected to in the world. The results of the study show that there is an unrestricted trade in pangolin and its population is on the decrease and vulnerable with its level of exploitation in Nigeria, which 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 favourably 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 engaging in this unsustainable trade and trend which had a negative effect on the animal population. The major stakeholders (Community leaders, Hunters and Marketers) especially the community leaders should be properly educated so that they can create awareness among their subject to reduce this trade. The hunters and marketers should be given an alternative means of livelihood to discourage them from engaging in these illegal activities in the region and stringent legislation should be put in place at both state and national level to punish offenders.

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