



Hunting, Trade and Utilization of Non-human Primates in Support Zone Communities of Kainji Lake National Park, Nigeria

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Abstract

Non-human primates are important to tropical biodiversity and many ecosystem functions, processes, and services. They are our closest living biological families, revealing crucial insights into the evolution of man's biology and behavior, serving a vital role in the cultures, habits, religions and other societal relevance. The study addressed hunting, trading of different species of non-human primates, their uses for food, medicinal and magical purposes, and identified their sex, age structures, part used and socio-economic values of these primates. A well-structured questionnaire guide, personal interview and market survey were used to collect data from the study areas. Purposive Sampling Techniques were used in the study; ten communities were used for the study base on proximity to the Kainji Lake National Park. Hunters, wild animals-based medicine traders were interviewed in each of these communities; Wawa, Malale, Woro, Babana, New Bussa, Ibibi, Sabon Pegi, Kulho, Fanga and Zugurma, to estimate the use values of these different primate species and their products, questions related to their origin, trade and their uses were asked from hunters, animal-based medicine traders and traditional healers. Data collected were analyzed using descriptive statistics (bar chart and pie chart). The results revealed that three (3) different species of diurnal primate, *Papio anubis*, *Erythrocebus patas* and *Chlorocebus aethiops tantalus*, were hunted and used for food (meat), medicinal and spiritual purposes. The average market price of non-human primate carcasses in the study areas ranges from ₦ 4,400 to ₦ 8,500 naira, although it depends on the parts or size of the species. Non-human primates are usually hunted in and outside the park, and the instrument used for hunting, include; firearms (Dane guns and others), ammunition, bows and arrows, wire traps, nets, pitfall etc. The hunting, trade and socioeconomic uses of the primates have affected the animal population in the study areas. The uses and trade can expose people to zoonotic diseases from any of these studied primates to man. More awareness and advocacy programs should be organized within these communities on the need to preserve non-human primates from local extinction.

Introduction

Primates are considered sacred in some cultures and are also referred to as supernatural creatures of crafty and skilful nature. They are great crop pests for most of the world's small-scale farmers living to these primates (Alves and Rosa, 2013).

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Their role in folk practices has been recorded in different socio-cultural contexts worldwide. Various studies have addressed the conservation concerns arising from using medicinal products from primates, especially because many of them are threatened species (Ahmed, 2001). The importance of primates in the traditional folk medicine of different ethnic groups in Benin has frequently been overlooked, despite widespread anecdotal evidence for their use as medicine.

Such uses represent important threats to certain primate populations. There are established facts of diseases spread from meat of these primates that are been eaten and traded by man. There is therefore a need to improve our limited understanding of the importance of these primates and the specific impacts of these practices and to formulate some recommendations regarding the public health risk, as it is well-recognized that numerous infectious diseases can be transmitted from animals to humans (i.e. zoonotic), especially within the primates order (Wolfe and Fuentes, 2007; Adepoju, 2023). However, many species of wildlife are threatened by unsustainable harvest and trade. The unfeasible usage of this wildlife creates a risk for biodiversity conservation and local livelihoods.

Over time, depletion of wildlife resources may compromise economic and livelihood opportunities associated with them (Okiwelu, *et al.*, 2009). It was observed that some wildlife species have been marketed for medicinal and decorative purposes. Animal parts like Gorilla skull, Lion's head, Buffalos' heads, and the skin, feather and furs of animals have been traditionally kept as trophies in many Nigerian communities. The daily increase in demands for wild animal meat as a source of income, cultural and other socio-economic values have made it trade with economic activities for those that are living in both local and urban areas. There is a great change from the trend of hunting bush meat primarily for household utilization as source of protein to a network of coordinated commercial hunting for income nowadays (Okiwelu, *et al.*, 2009). International wildlife trade is seen as one of the leading threats to biodiversity conservation (Sutherland *et al.*, 2009). The selling of primates alive as a whole or in parts for meat has been a major threat to primate conservation (Cowlshaw and Dunbar, 2000, Mittermeier *et al.*, 2009). This study was conducted to assess the hunting, trading and utilization of primates' species in the support zones communities around Kainji Lake National Park, Nigeria and its implications on the conservation of these species of primates.

Materials and Method

Study Area

The research was conducted in communities around Kainji Lake National Park (Fig. 1). The park comprises two formal game reserves, Borgu and Zugurma, which were established in 1979 under decree 46 of 29th July 1979; it the first National Park in Nigeria (Ayeni, 2007). It is located in the North Western and central part of the country between latitude 9°45'N and 10°23'N and longitude 3°40'E and 5°47'E. The National Park occupies a land area 5,340.825q (Ayeni, 2007). The climate of the park comprises the wet and dry seasons, which vary from year to year. The wet season extends from May to November, while the dry season commences from December to April.

Method of data collection

A well-structured questionnaire, personal interview guide and market survey methods were deployed to gather data in the study areas. Eighty (80) questionnaires were deployed for the study. In each community, eight (8) respondents were involved. Purposive Sampling Techniques were used in the study to contact each respondent. Five communities from the two sectors, were used for the study based on a reconnaissance survey and their proximity to the park boundaries. The communities are Wawa, Malale, Woro, Babana, and New Bussa, for the Borgu sector, while Sabo Pegi, Kulho, Ibibi, Zugurma and Fanga for the Zugurma sector to estimate the use values of the different primate species. Questions related to their origin, trade and uses were asked. On the market day, each of these communities was visited to interview wild animals-based medicine traders. Hunter in each community was interviewed through the help of the village heads from their association representatives, traditional healers were interviewed to discover medicinal and magical uses of the primates and individuals who consume primate meat, and also the animals for one reason or the other were interviewed in each community. Data collected were analyzed using descriptive statistics (tables and bar charts).

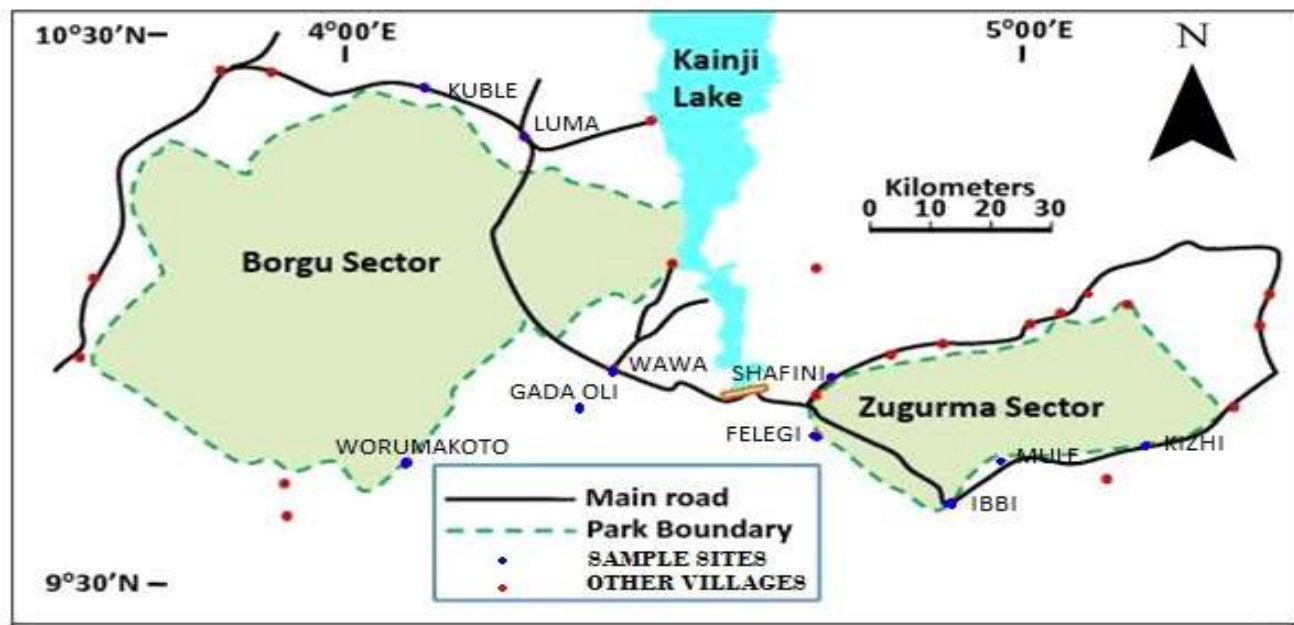


Fig 1: Map of Kainji Lake National Park (Source: Ayeni, 2007).

Results

Table 1 indicated that the majority of the respondents were of the male gender with 95%. The majority of the respondents fall between the age group 31- 40 (46.3%), with 51.3% married people and 45% of the Islamic religion. Table 2, all the respondents alluded to the fact that each of the primates' species were used as pets, food, medicinal and magical purposes. Table 3 revealed that Olive Baboon, Red Patas Monkey and Tantalus Monkey's average prices were based on their size and parts, varying from

8,500, 5,500 and 4,400, respectively. In Table 4, 78.8% of the respondents were involved in hunting, while 21.2% used the primates for food, medicinal and magical purposes. More so, 85.7% of the respondents became hunters by inheritance while 14.3% through training. Table 5 shows that forty per cent uses Dane gun as for hunting while 11.3% uses bow and arrows which is archaic and the least In Table 6, dry season has the highest with 55% hunting expedition and the lowest was the wet season with 18.8%.

Table 1: Demographic characteristics of the respondents

Demographic	Variables	Frequency	Percentage (%)
Gender	Male	76	95.0
	Female	4	5.0
Age Group	21-30	5	6.2
	31-40	37	46.2
	41-50	29	36.3
	50 and Above	9	11.3
Marital Status	Married	41	51.2
	Single	11	13.8
	Widowed	23	28.8
	Divorce	5	6.2
Religion	Islam	36	45.0
	Christian	29	36.2
	Traditional	15	18.8
Total		80	100

Source: Field Survey, 2021.

Table 2: Socioeconomic values of the studied primates in the Study Areas

Common Name	Scientific Name	Part Use	Sex Used	Uses
Olive Baboon	<i>Papio anubis</i>	Liver, Legs, Head, whole body and skin	Both sex	Pets, food, medicinal and magical purposes
Tantulus Monkey	<i>Chlorocebus aethiops tantalus</i>	Skin, head, whole body and skull	Both sex	Pets, Medicinal and magical purposes
Red Patas Monkey	<i>Erythrocebus patas</i>	Whole body, head, skin, eyes and hands	Both sex	Pets, Food, Medicinal and magical purposes

Source: Field survey, 2021.

Table 3: Average Market Price of Primate in the Study Areas

Common Name	Scientific Name	Average price
Olive Baboon	<i>Papio anubis</i>	~~₦~~ 8,500
Tantulus Monkey	<i>Chlorocebus aethiops tantalus</i>	~~₦~~ 4,400
Red Patas Monkey	<i>Erythrocebus patas</i>	~~₦~~ 5,500

Note: The price depends on the parts or size of the species. Source: Field Survey, 2021.

Table 4: Involvement of Respondents in Non-Human Primates Hunting

Variables	Respondents	Frequency	Percentage (%)
Hunting	Yes	63	78.8
	No	17	21.2
	Total	80	100
How did you become a hunter	Inheritance	54	85.7
	By Training	9	14.3
	Total	63	100

Source: Field Survey, 2021.

Table 5: Instruments used for hunting in the study areas

Instrument	Frequency	Percentage (%)
Dane Gun	32	40.0
Bow and Arrow	9	11.2
Wire trap	10	12.5
Nets	14	17.5
Pitfall	15	18.8
Total	80	100

Source: Field Survey, 2021

Table 6: Hunting Seasons of the study areas

Seasons	Frequency	Percentage (%)
Dry season	44	55.0
Wet season	15	18.7
Both season	21	26.3
Total	80	100

Source: Field survey, 2021.

In Tables 7, most of the respondents (66.2%) affirmed that the animal population had decreased drastically in the areas. Table 8, 52.5% of the respondents alluded to the fact that Park protection strategies is so stringent which has made hunting difficult for some of the hunters. While 30% established that wild animals population had reduced drastically with 6.2%

saying hunters number has reduce in each of those communities. Table 9, 76.2% of the respondents revealed that primates are kept in their communities as pets with the Red Patas Monkey *Erythrocebus patas* recorded the highest population of 50.8% of the primates' species conserved ex-situ in each of these support zones communities.

Table 7: Perceived Status of Studied Primates in the Study Area

Variables	Frequency	Percentage (%)
Increase	8	10.0
Stable	19	23.8
Decrease	53	66.2
Total	80	100

Source: Field Survey, 2021.

Table 8: Perception of Respondents on Reasons for Scarcity of the studied Primates

Variable	Frequency	Percentage (%)
Wild Animals population have reduced	24	30.0
Demand for wildlife has increased	9	11.3
Hunters are now very few	5	6.2
Park protection is more strict	42	52.5
Total	80	100

Source: Field Survey, 2021.

Table 9: Ex-situ Conservation of the Studied Primates

Variables	Frequency	Percentage (%)
Did you keep non-human primates in your communities		
Yes	61	76.2
No	19	23.8
Total	80	100
Species of Non-human primates kept and use		
Baboon	24	39.3
Tantalus monkey	6	9.9
Patas monkey	31	50.8
Total	61	100

Source: Field Survey, 2021.

Discussion

The study revealed that Most of the respondents were males, reflecting that males play a major role in hunting and trading activities of non-human primates with most of them being in their active age (Fig. 2). This is in agreement with the study of Orimaye, *et al.*, (2018) who reported that 81% of hunting of wild animals in the Ekiti State, Ise Forest Reserve, was done by people between the age ranges of 21-40 years. As reported by the respondents, non-human primates served as a source of food and use for treatment of diseases in the study area. This was in accordance with Brodie, *et al.*, (2009) that reported that 76% of local populace utilized non-human primates' species for folk medicine. Alawa and Eniang, (2019) reported the trading of Red Patas Monkey, Olive Baboon and Mona Monkey in non-human primates market study conducted in Rivers State in Nigeria, and Chabi, *et al.*, (2019) reported that Red Patas Monkey, Olive Baboon and other primates are being offered for sale by 50% of traders for traditional medicine in Southern Republic of Benin. The implication of these active age group in hunting, trade and utilization of these primates, if not control could lead to the local extinction of the present population of these species in the park. Three (3)

species of studied primates are hunted and utilized in the study area. This is in agreement with study of Ajayi, *et al.*, (2019) which identified these three different species of the diurnal non-human primates in the study areas. Red Patas Monkey is the most hunted and utilized species among the non-human primates in the study area. Primates are one of the groups most closely associated with the history of medicine. They are mostly used as experimental animals to evaluate efficacy of drugs due to their close associate with human race. This revealed the importance of the medicinal use of these primates from a conservationist perspective, even though this form of exploitation is not the main threat to most of the species of primates used in traditional medicine (Ogunjemite, 2017). This is an additional factor that increases pressure on exploited species. Also large number of the respondents also uses non-human primate as food especially Patas monkey due to their involvement in crop raiding of farm produce. (Isbell *et al.*, 2009, Ajayi, *et al.*, 2019) reported that they serve as a major source of protein for human populations around the world and also consumption of non-human primate meat is often intertwined with cultural or medicinal beliefs

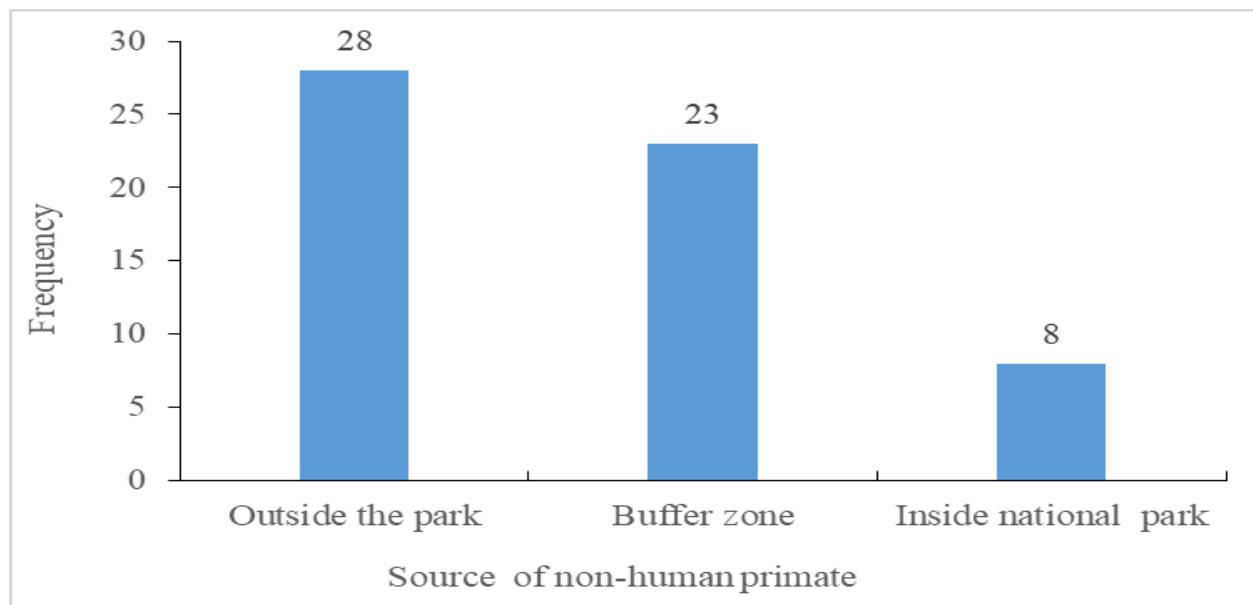


Fig. 2: Sources of the studied Primates

Source: Field Survey, 2021.

The average income that the sellers of non-human primates makes in the area ranges from ₦4,400 - ₦ 8,500 per species, based on the size, which is a good source of income to the people. This income generated from non-human primate trade is contributing to household and national economy but had equally impacted negatively on population. According to (Taylor, *et al.*, 2014) a hunter can earn approximately \$300-\$1000 annually-significantly more than the average household income in any region of Africa. Hunting and bush meat trade in the regions is increasing, and this trend, if not controlled, is not sustainable (Oyegbami, *et al.*, 2017). The population of the primates decreases due to human harvesting may be due to the direct physical removal of these animals or due to collection techniques that destroy the habitats used by the respondents' for different human activities especially farming (Ajayi, *et al.*, 2018). Harvesting each animal from the wild for small or large scale uses and medicinal values has been seen as a factor that reduces certain species. Most people agreed that they are not getting non-human primate resources in large quantities again in the study area. This was in line with (Alawa and Eniang, 2019) that stated that the population of primates in the world are affect by the use of these animals for economic gains, social, cultural, traditional, medicine demands, hunted due to crop raiding and amongst other uses or reasons which serves as challenges, with varying impacts based on the species exploited and the culture associated with their exploitation. Ajayi, (2021) study on the population diurnal primates of the Kainji Lake National Park reported a steady decline in the number of each species in the various ranges of the park. Medicinal resources reduction not only present a problem for conservation but also stand as a serious threat to the wellbeing of many human communities, and efforts to stabilize the status of these species are important not only to conservationists but also to millions of people whose health depends on traditional remedies. Wildlife is carriers of these diseases, especially primates meaning that they can transmit the illness without experiencing symptoms. Ebola, Severe Acute Respiratory Syndrome (SARS outbreak in 2002-2003-SARS-

CoV), Human Immunodeficiency Virus (HIV-1920-till date) and Coronavirus disease 2019 (COVID, 2019) was characterized as a pandemic by the World Health Organization (WHO) in March, 2020. Scientists identified the virus in bats and similar versions in other wildlife. All these diseases in human can be traced to the handling and consumption of infected wildlife carcasses, especially primates (Adepoju, 2023). Dane gun is one of the common firearms use in hunting of these primates. This is in accordance with the report of (Bukie, *et al.*, 2019) that hunters uses Dane guns to kill guenons despite the law protecting the primates and other primates which exist in the sanctuary. This may be due to lack of stringent enforcement of the laws. More so, most hunters purposely kill the animals for economic gains, i.e., sell to those that use it for medicinal, pets, magical, and meat purposes.

Conclusion

The findings indicate there is a lot of trading of non-human primate in the study areas, the three species of diurnal primates that are mostly found in the areas are traded for food, pets, medicinal, research, education and magical purposes which have leads to the decrease in population presently. The continue trade of these primates can lead to the spread of zoonotic diseases in the study areas. Hence, the management of the hunting, trade, culture, societal, and traditional importance of these primates are essential in other to establish a management plans directed toward sustainable use of these primates in the study areas to avoid diseases outbreak through human direct contact with infected primates and local extinction of the population, if the rate of poaching and trading of these primates in the study areas is not reduced to the barest minimum.

Recommendations

Awareness should be created more in these studied communities on the needs to discourage trade, uses of primates' parts medicinal and purposes to safe the people from possible transmission of zoonotic diseases from these animals. Conservation benefits of non-human primates should be emphasized more among

people. The marketer of non-human primates should be educated, if need be they should be encourage to change their line of business by empowering them, with basic skills, with grants to establish a new line of business that would be nature friendly. Orthodox medicines should be promoted as the best alternative to the use of primates' body parts for traditional healing treatments of their diseases in the areas.

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