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# Human Settlement Encroachment in Kainji Lake National Park, Nigeria

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## Abstract

Land encroachment is severely degrading and destroying many of Nigerian protected area as a result of high population pressure caused by high population growth and immigrations trends. Therefore, this study aimed at assessing human settlement encroachment in Kainji Lake National Park in order to established the extent to which this threat have been upheld and therefore call for park management to seek for proper approaches to deal with it. Data for this study were collected through the administration of questionnaire to the villages adjacent to Borgu sector of Kainji Lake National Park. Seven (7) randomly selected villages, namely Luma, Kuble, Audu Fari, Kali, Malale, Leshegbe and Gada Oli were surveyed. The result indicates gender of respondents where 65.09% of the responses were received from males while 34.91% from females suggesting that responses are the views from both gender parties who are mostly (33.96%) within the age range of 31–40 years and are predominantly farmer (43.42%). 88% of the respondents' indicated that increased need of land for developments are the major causes of encroachment around the park while other human activities such as farming, deforestation and grazing of domesticated animals, by encroaching to protected areas have led into competition over natural resources. It is also established by 92% of the respondents agree that migration of people for livelihood support has led to increased competition between people and wildlife hence, this increase in population has consequently led to encroachment into the park as attested by a whopping 100% of the respondents. Kainji Lake National Park management need to do more in sensitizing the local communities on importance of wildlife conservation as most (54%) locals disagreed to awareness of conservation education and engages in intense vigilance against encroachment into the park land.

**Keywords:** encroachment, human activities, population pressure, protected area, resources

## 1. Introduction

Protected areas have long been recognized as the single most important method of conserving wildlife and preserving biological diversity [1]. They protect the fertility and stability of soils, play a key role in watershed management, and are the habitats of countless species of wildlife. Hence, it is important as a result of its significant contribution to economic and social status of their host country. Protected areas are

popularly associated with large areas of 'undisturbed wilderness' [2]. Many of these protected areas including the parks and game reserves especially in the developing countries are affected by degradation of the ecosystem which involves hunting, logging, livestock keeping, cultivation, wildfire and this has led to establishment of conservation programmes for sustainable management of these protected areas [3]. Another view sees protected areas as social spaces; that is, they are socially conceived and preserved [2]. For instance National park concept involves the exclusion of people from wildlife areas apart from visitors and employees concerned with management [4], it also conserve many of the world's habitats and species. Despite the high productivity of National Parks, and provision of many benefits, it has been found that these protected areas natural features have been destroyed everyday as a result of encroachment [5, 6]. Human encroachment, especially in the tropics, is severely degrading and destroying many of these areas [7] as a result of high population pressure caused by high population growth and immigrations trends [3].

Encroachment on public property is defined as: "the existence of any structure or item of any kind under, upon, in, or over the project lands or waters and/or the destruction, injury, defacement, removal or any alteration of public property including natural formations, historical and archeological features, and vegetative growth [8]. It also "denotes an illegal activity as one where the person who encroaches is not deemed to have any legal right to do so" [9]. The above two definitions suggest that encroachment results when there is an unlawful activity/entry on forest (gradually and without permission).

Encroachment in the protected areas is one of the major causes of degradation of ecosystem in many parts of the world [10]. Human encroachment into wildlife areas, which has increased almost exponentially over the past few decades, has usually resulted in the elimination of the larger species, particularly the large mammals (e.g. [4]).

Destruction of wildlife habitats through human encroachment has remained the leading threat to biodiversity. This destruction, taking different forms, for example degradation, fragmentation or outright loss, is a function of the growing human activities prompted mainly by such factors as poverty, demographic factors, land tenure systems, inadequate conservation status, development policies and economic incentives [1].

The park could be subjected to encroachment through physical development which poses problems to sustainable resource utilization [11] and this may be connected to their importance to the livelihoods of local communities, especially indigenous people who live and/or depend on the resources available in the park for their survival [12]. However, the problem of encroachment caused by economic development and other human activities will exert pressure on biodiversity, resulting in the interference in the wildlife management approaches and make it difficult to protect Nigerian National Parks.

Therefore, this study assessed human settlement encroachment in Kainji Lake National Park in order to established the extent to which this threat have been upheld and therefore call for park management to seek for proper approaches to deal with it.

## **2. Materials and method**

### **2.1 Study area**

Kainji Lake National Park is located in the North central part of the country lies latitude 9'45 and 10'23 N and longitude 3'40 and 5'47E. It is made up of

Villages	Population size (households)	Sample size (10% of each households)
Luma	365	37
Kuble	50	5
Audu fari	66	7
Kali	71	7
Malale	308	31
Leshegbe	70	7
Gada oli	139	14
Total	1069	108

*Source: Modified from [14] report.*

**Table 1.**  
*Sampling population and size.*

two sectors (Borgu and Zugurma) situated in Borgu and Kaima/Baruten Local Government Area of Niger and Kwara State respectively. It covers a total land area of 5,340.825q [13].

## 2.2 Method of data collection

### 2.2.1 Sampling techniques

The administration of questionnaire for this study was restricted to the villages adjacent to Borgu sector of Kainji Lake National Park. Seven (7) randomly selected villages, namely Luma, Kuble, Audu Fari, Kali, Malale, Leshegbe and Gada Oli were surveyed.

### 2.2.2 Household questionnaire and interview survey

To obtain information questionnaire will be prepared to correspond all the aspects of the study. Interviewing method will be used to collect information. Randomness will also be strictly ensured for better output (**Table 1**).

### 2.2.3 Data processing and analysis

Available data were processed, analyzed using Special Package for Social Science (SPSS 17) and interpreted to find the result of the study. After completion of data collection the responses to the questions of livelihoods in the study area were transferred to a master sheet to facilitate tabulation. The analyzed data were then represented through tabular and graphical form.

## 3. Results

### 3.1 Demographic characteristic of the respondents

**Table 2** indicates gender of respondents where 65.09% of the responses were received from males while 34.91% of the responses were from females suggesting that responses are the views from both gender parties. The age groups of respondents fall between  $\leq 20$  years with 3.77%, 21–30 years with 40.57%, 31–40 years with 33.96% and  $\geq 40$  are 21.70%.

Demographic	Categories	Frequency	Percentage (%)
Sex	Male	69	65.09
	Female	37	34.91
	Total	106	100
Age	≤ 20	4	3.77
	21–30	43	40.57
	31–40	36	33.96
	≥ 40	23	21.70
	Total	106	100
Year of residing in the area	1–10	56	52.83
	11–20	20	18.87
	21–30	13	12.26
	31–40	8	7.55
	40 Above	9	8.49
	Total	106	100
Major occupation	Civil servant	9	11.84
	Farming	33	43.42
	Trading	15	19.74
	Artisan	4	5.26
	Fishing	15	19.74
	Total	76	100

**Table 2.**  
*Demographic characteristic of the respondents.*

Majority (52.83%) of these people have been residing in these areas between 1 to 10 years while small fractions of 7.55% of the respondents were occupant for 31–40 years. The bigger (43.42%) percentages of respondents was farmers, and therefore are likely to require land for settlement and agriculture. Other occupations prominent in the area are fishing (19.74%), trading (19.74%), civil service (11.84%) and artisan (5.26%).

### 3.2 Causes of human encroachment into wildlife corridors

From the **Table 3**, 88% of the respondents' indicated that increased need of land for developments are the major causes of encroachment around the park. It is also revealed that 74% of the respondents agreed that human activities such as farming, deforestation and grazing of domesticated animals, by encroaching to protected areas have led into competition over natural resources. The study also indicates that most respondents 83% do agree that natural factor like drought had led to encroachment in the study area. All these are indicators that there exist encroachment activities around Kainji Lake National Park as a result of competition for limited resources (**Table 3**).

### 3.3 Perceived indicators of human population increased and its impact on human-wildlife conflicts in wildlife corridors

**Table 4** shows parameters that were used to evaluate indicators of human population increased and its impact on wildlife corridors. The result shows that

Variable	Strongly agreed		Agreed		Neutral		Disagreed		Strongly disagreed		Means	Std. Dev.
	f	%	F	%	F	%	F	%	f	%		
Need of land for human development	63	59	31	29	0	0	8	8	4	4	4.52	0.412
Impact of human activities such as farming, deforestation and grazing	48	45	31	29	19	18	0	0	8	8	4.54	0.408
Search of water for domestic purpose	27	26	38	36	27	26	9	9	5	5	4.05	0.090
Natural factor like drought that push human to wildlife corridor	4	4	36	34	13	12	8	9	41	42	2.50	1.416

**Table 3.**  
*Causes of human encroachment into wildlife corridors.*

Variable	Strongly agreed		Agreed		Neutral		Disagreed		Strongly disagreed		Means	Std. Dev.
	F	%	F	%	F	%	F	%	F	%		
Migration of people for livelihood	67	63	31	29	0	0	8	8	0	0	4.45	0.454
Encroachment into protected area	106	100	0	0	0	0	0	0	0	0	5.00	0.000
Emergence of towns and trading centre next to park	98	92	8	8	0	0	0	0	0	0	4.93	0.090
Difficult to catch up with poachers whenever they strike due to high population	0	0	35	33	8	8	10	9	53	50	2.24	1.362

**Table 4.**  
*Perceived indicators of human population increased and its impact in Kainji Lake National Park.*

human population contributes a lot in competition of resources between human beings and wildlife. 92% of the respondents agree that migration of people for livelihood support has led to increased competition between people and wildlife. The increase population has also led to encroachment into protected area is factor



Variable	Strongly agreed		Agreed		Neutral		Disagreed		Strongly disagreed		Means	Std. Dev.
	F	%	f	%	F	%	F	%	F	%		
Community awareness and education	12	12	16	15	20	19	5	5	52	49	2.37	1.51
K.L.N.P has developed voluntary relocation program for affected people	14	13	32	30	14	13	9	9	37	35	2.78	1.51
There is intense human vigilance by K.L.N.P ranger against attack by wild animals.	0	0	47	49	10	10	15	16	24	25	2.17	1.28
K.L.N.P has intensified its fencing to bar wild animals from freely moving to human habitat	0	0	10	9	24	23	5	5	67	63	1.78	1.10
K.L.N.P has corporate social responsibility/ community enterprise for the to prevent encroachment	71	100	0	0	0	0	0	0	0	0	5.00	0.000

**Table 5.**  
*Approaches in management of human encroachment in Kainji Lake National Park.*

that a whopping 100% of the respondents agreed. Emergence of trading centres always attracts people close to it for essential services and as per the findings; most people (92%) agree that the growth of the centres next to Kainji Lake National Park has contributed to wildlife management challenges. Catching poachers in a crowded area has not pose a serious challenge in the study area as 50% and 9% of respondents strongly disagreed and disagreed respectively with any difficulty in this regard.

### 3.4 Approaches in management of human encroachment in Kainji Lake National Park

The results in **Table 5** show that KLNP need to do more in sensitizing the local communities on importance of wildlife conservation as most (54%) locals disagreed to awareness of conservation education.

Most respondents also disagreed and strongly disagreed (44%) to any voluntary relocation programmes for the affected people by the Park and 49% agreed to intense vigilance against encroachment into the park land though 100% respondents strongly agreed that KLNP has corporate responsibility to the affected communities.

## 4. Discussion

From the study, majority of settlers around Kainji Lake National Park are farmers, and therefore are likely to require land for settlement and agriculture may encroaches into protected area. Socio-economic factors has compel people to abuse the use of National Parks Adelakun et al. [15] and this may result to conflict because of the human overlap with wildlife requirements resulting in costs to both native residents and animals [16].

Increased need of land for developments are the major conflict agent between human and animal as well human activities such as farming, deforestation and grazing of domesticated animals, by encroaching to protected areas have led into competition over natural resources. This is consensus with Kate [17] who reported that human activities such as farming infrastructure development and tourism can radically alter wildlife habitat.

Increased human population on wildlife corridor and protected areas has influenced conflicts in the study area because conflict is most acute in areas in which a wide range of wildlife species co-exists with high density human populations [18].

Human population increased in wildlife corridors had earlier being envisaged [19]; that population increase may be witness as result of marital status in the study area and this will mount more pressure on the park resources. This study also reflected that people migration for security reasons as well as emergence of trading centres always attracts people close to it for essential services. This study further revealed that human settlement encroachment contributes a lot in competition of resources between human beings and wildlife hence leading to conservation challenges corroborates the Ijeomah and Akosim [20] who was of the assertion that there is a relationship between population growth and resource conservation.

Approaches in management of human settlement encroachment show that KLNPN need to do more in sensitizing the local communities on importance of wildlife conservation as most locals disagreed to awareness of conservation education. This contradicts Akosim et al. [19] who reported that the park authority has expended a great deal of efforts in educating the local residents. Morrison et al. [21] pointed out that conservation strategies can be addressed using the proactive or reactive measures. Proactive measures are the same as preventive measures, these measures are crucial in wildlife conservation, reducing encroachment of park land and coming up with strategies to minimize these challenges. An example of a preventive measure is the education and awareness programs. These strategies increase the tolerance level towards wildlife, and can help improve the resource conservation. Studies have earlier shown that when fringe communities of protected areas are forced to absorb living with wildlife, local support for conservation may be seriously undermined [22]. In another report, Muller and Albers [23] confirms ecologically valued lands as economically valuable and so in the absence of development interventions that would provide the residents with alternative means of livelihood, illegal activities, which undermine wildlife conservation, would continue.

## 5. Conclusion

The research shows that Kainji Lake National Park has been encroached due to need for human settlement and farming which subsequently lead to wild animal raiding communities. Anthropogenic activities such farming, hunting, and fishing are the main activities responsible for the encroachment in the protected area. Human population contributes a lot in competition of resources between human beings and wildlife as people migrating towards protected area for livelihood support. These have



led to increased competition between people and wildlife. Emergence of trading centres such as markets have also attracts people close to park for available and probably affordable essential services which consequently leading to encroachment and hence contributed to wildlife conservation challenges in the study area.

## **6. Recommendations**

The following recommendations were made from the study:

With the manifestation of encroachment activities, Kainji Lake National Park needs to consider reviewing its policy for the minimization of human activities in and around the park; for instance enforcement of regulations and legislation on the safe distance on community settlement from the Park.

National Parks should re-strategies on the new ways of mitigating human encroachment and settlement through surveillance and monitoring of people from illegal entry to the park.

Farmers being the most affected in terms of farming activities in the park, the government should come up with an alternative way of livelihood that suits the farmers living around Kainji Lake National Park to ease competition over resources.

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