

CHALLENGES OF WILDLIFE MANAGEMENT IN KAINJI LAKE NATIONAL PARK, NIGERIA

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ABSTRACT

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Challenges of wildlife management in Kainji Lake National Park, Nigeria was studied to determine the constraints to effective management. Based on closeness to the park, ten communities (five from each of the two sectors of the park) were selected from communities bordering the park for data collection. Two sets of structured questionnaires were administered to communities and staff members and additionally, in-depth interview and field observation were carried out. A set of questionnaire was randomly administered to households from selected communities. Another set of Questionnaire was randomly administered to staff members of the park protection unit of Kainji Lake National Park (KLNP). Data collected were analysed using descriptive statistics in form of frequency of counts and percentages while Chi square was used to test for association between years of staff members' experience in KLNP and judgment concerning staff inadequacy. Ranking by staff respondents implicated grazing (95.04%), hunting (95.04%) and fishing (85.11%) as the major causes of conflict in the park. Conflicts occur monthly (47.89%) and more than once in a month during dry season (67.99%) and festive season (55.09%) due to need for money (26.06%), pressing demand for non timber forest resources (23.08%) to prepare for festivals, and easy accessibility to park resources. About fifty percent of the staff respondents considered the number of employees of the park adequate. Chi square test revealed a significant association ($p < 0.05$) between respondents' years of experience with KLNP and rating of staff adequacy ($X^2 = 15.436$). Insufficient infrastructure (94.34%) and inadequate maintenance of equipments (94.34%) were ranked the most pressing challenges of staff respondents in KLNP. The consequences of these challenges include insecurity in the park (73.58%), reduction in management practices (62.26%) and inefficiency (28.30%). Staff respondents have noticed decreases in number of animals (79.25%), though about 40.94% and 39.1% of household respondents perceived that the rate of decrease is low and high respectively. Both staff and household respondents believed that households are aware of the aims of park management; however, they are not involved in the management of the park, and have not been contributing significantly towards effective park management.

Keywords: Biodiversity conservation, Kainji Lake National Park, Wildlife management challenges

INTRODUCTION

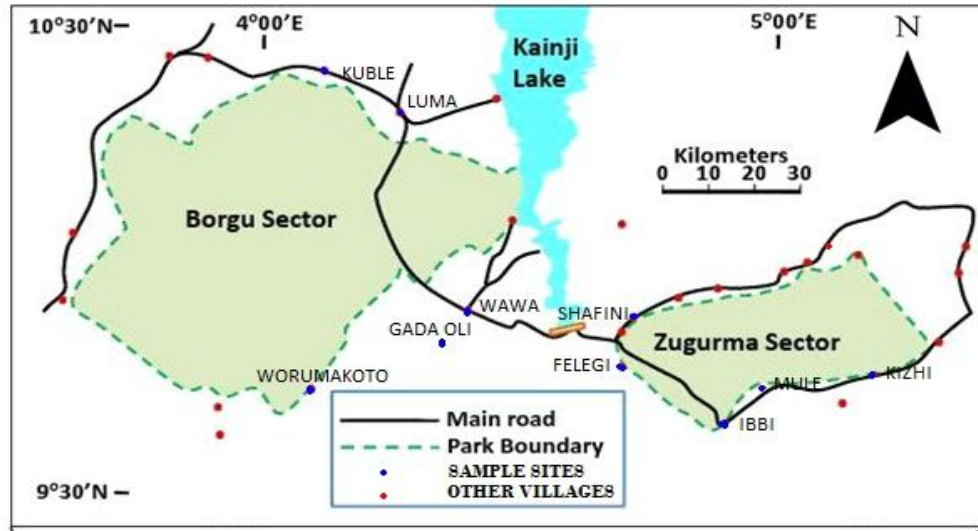
Human beings have seriously encroached into many wildlife habitats and permanently occupied lands formally inhabited by wild animals (Ijeomah and Aiyelaja, 2010). This has led to wanton destruction and emigration of wildlife species (part of our national heritage) to more stable ecosystems. Through creation of wildlife refuges in form of game reserves and national parks rural inhabitants were forced to vacate part of their 'acquired life – dependent' land and other part of environment for wildlife species, in many cases without compensation (Adetoro *et al.*, 2011). But even inside the national parks created purposely for protection of species, game populations still appear to be under threat. Ijeomah and Emelue (2009) reported that many herds of elephant at both the Cross River and Kainji Lake national parks have emigrated to Cameroon and Niger Republic respectively, and populations of some species in these parks have continuously decreased while some endangered species have vanished from the park environment. This is an indication that every game species in Nigeria including those abundant in national parks are under threat especially as owners of parklands are agitating to reclaim their lands in the face of human population explosion and poverty (Ijeomah and Emelue, 2009). The objectives of this research work are to evaluate the factors militating against effective wildlife management in the park and assess the level of community involvement in effective management of the park.

METHODOLOGY

Study area

The study was conducted in Kainji Lake National Park (KLNP). The park is located at Latitude 9° 50' 19" N and Longitude 4° 34' 24" E. It was established in 1979 by the merger of two former game reserves, Borgu game reserve (located in Niger and Kwara States) and Zurguma game reserve (located in Niger State). The two sectors had been gazetted in 1962 and 1971 respectively as game reserves by the then Northern Regional Government.

KLNP is located in the North West central part of Nigeria between Niger and Kwara States. It is a savanna environment with a total area of 5,340.82sq km (Marguba, 2002).



Source: Ijeomah *et al.*, 2013

Figure 1: Map of Kainji Lake National Park

Data collection

Two sets of structured questionnaire, field observation and in depth interview were used for data collection. A set of structured questionnaire was administered randomly to households in selected communities bordering the park. The second set of questionnaire was administered to thirty percent of staff in park protection section of KLNP. In all 403 households and 53 staff members were sampled. The in depth interviews were conducted with households and park officials who have lived in the vicinity for a minimum period of ten years and five years respectively and are therefore quite knowledgeable about the challenges of wildlife management in the park.

Sampling technique

Based on closeness to the park, ten communities (five from each sector) were selected from communities bordering the park. Listing of households was conducted in selected communities using people who are quite conversant with these communities as consistent with Ijeomah *et al.* (2013). Thirty percent of households in the selected communities were sampled as presented in Table 1.

Table 1: Proportional allocation of questionnaire to households in selected communities

Communities	Estimated Population	Thirty percent of population (%)
Ibbi	477	159
Feligi	30	10
Mulea	30	10
Shafini	30	10
Kizhi	20	7
Wawa	477	159
Gada-oli	60	20
Kuble	15	5
Luma	50	16
Worumakoto	20	7
Total	1209	403

Table 2: Causes of conflicts between communities and park officials as in KLNP as identified and ranked by household respondents

Causes of conflicts	Frequency	Percentage	Rank
Grazing of livestock	383	95.04	1
Hunting	383	95.04	1
Fishing	343	85.11	2
Collection of NTPFs	290	71.96	3
Logging	282	69.98	4
Unemployment of indigenes	282	69.98	4
Seed collection	161	39.95	5
Sacred places	121	30.02	6
Mining	105	26.05	7
Water	101	25.06	8

Source: Field Survey, 2011

RESULTS

Factors militating against effective park protection

Results on factors militating against wildlife management are presented in Tables 2 to 5. Hunting and grazing were ranked number one among identified factors that cause conflict between communities and KLNP officials (Table 2). Conflicts occur more frequent in dry season because of easy accessibility to the park (Table 3). About half of the staff respondents considered the staff strength of the park adequate (Table 4). Insufficient

Infrastructure and poor maintenance of equipment were ranked first as the major challenge of the park, while understaffing was ranked second (Table 5).

Table 3: Frequency of conflict occurrence in KLNP as indicated by household respondents

Parameter	Variables	Frequency	Percentage
Rate of occurrence	Weekly	73	18.11
	Monthly	193	47.89
	Yearly	113	28.04
	No response	24	5.96
Season conflicts occurs most	Rainy season	40	9.93
	Dry season	274	67.99
	Festive season	222	55.09
Reasons for occurring most in the stated season	Money	105	26.05
	Accessibility	40	9.93
	Closeness to park	8	1.99
	Weather condition	8	1.99
	Park close down	8	1.99
	More demand	93	23.08
	No response	141	34.99

Source: Field Survey, 2011

Table 4: Assessment of staff adequacy in KLNP by staff respondents

Staff strength	Frequency	Percentage
Adequate	26	49.06
Not adequate	25	47.17
No response	2	3.77

Source: Field Survey, 2011

Table 5: Identification and ranking of challenges encountered by staff respondents in KLNP and effects of challenges on park resources

Parameter	Variables	Frequency	Percentage	Rank
Challenges	Insufficient infrastructure	50	94.34	1
	maintenance of equipment	50	94.34	1
	Short staffed	47	88.68	2
	Logistics	46	86.79	3
	Insecurity	39	73.58	1
Effect of Challenges	Reduced wildlife	6	11.32	4
	Reduced management practice	33	62.26	2
	Makes work difficult	15	28.30	3

Source: Field Survey, 2011

Perceived assessment of population trend of species

Majority of the staff respondents claimed that the population of wildlife species in the park has been decreasing (Table 6). About 40.94% of household respondents, however, claimed that the rate of wildlife losses has been low, while 39.21% rated the losses high (Table 7).

Table 6: Perceived assessment of population status of wildlife species in KLNP by Staff respondents

Population status	Frequency	Percentage
Increasing	0	0.00
indifferent	6	11.32
Decreasing	42	79.25
No response	5	9.43

Source: Field Survey, 2011

Table 7: Rating of the level of wildlife loss in KLNP by household respondents

Rating	Frequency	Percentage
Very high	16	3.97
High	158	39.21
Low	165	40.94
Very low	36	8.93
No response	28	6.95

Source: Field Survey, 2011

Community awareness and involvement in park protection

Majority of the staff (64.15%) and household (83.13%) respondents claimed that households are aware of the aims of park management (Tables 8 and 9). However, majority of household respondents (72.95%) around the park complained that they were not involved in the management of the park, and have not been allowed to make contributions towards effective management of the park (Table 10).

Table 8: Assessment of households' awareness towards wildlife management in KLNP by staff respondents

Parameter	Variables	Frequency	Percentage
Are the communities/households bordering the park fully aware/understand the aims of managing wildlife?	Aware	34	64.15
	Not aware	17	32.08
	No response	2	3.77
Do households in your community/households around the park contribute towards effective management of wildlife in the park?	Yes	2	3.77
	No	46	86.79
	no response	5	9.43

Source: Field Survey, 2011

Table 9: Households' awareness of aims of park protection

Variables	Frequency	Percentage
Aware	335	83.13
Not aware	56	13.90
No Response	12	2.98

Source: Field Survey, 2011

Table 10: Assessment of households' contribution towards effective management of the park

Parameters	Variables	Frequency	Percentage
If households have been contributing	Yes	97	24.07
	No	294	72.95
	No response	12	2.98
Ways of contribution	Working in the park	4	0.99
	Giving Information to the park	16	3.97
	By not poaching	12	2.98
	No response	65	16.13

Source: Field Survey, 2011

DISCUSSION**Causes of conflict**

The major causes of conflict in KLNP are hunting, illegal grazing of cattle, fishing and collection of none timber forest products (Table 2). The fact that conflicts between households and park officials are more frequent during the dry season and festive season implies that utilization of those resources is part of households' livelihood. Besides, KLNP is more accessible during dry season. In the case of Tanzania people encroach into protected areas because of agriculture (including grazing of cattle) and charcoal burning. Thus chemicals in form of fertilizers, herbicides and pesticides used for growing crops and rearing livestock in Tanzania drain into park waters and pollute waters used by wildlife. A notable instance of the hazard of chemical pollution in Tanzania is the disappearance of flamingos in the Embakaai Crater in the Ngorongoro Conservation Area because of endosulfan, an organophosphate (NCAA, 2002). The type of conflict experienced in KLNP with households due to cattle grazing is similar to the report of Mlengeya and Lyaru (Undated) in Tanzania that competition for grazing areas and watering points, especially during the dry season, has become serious in the western Serengeti, where wildlife is always disallowed access to Lake Victoria. Avoidance of the occurrence of such conflicts around Pai River game reserve of Plateau State, Nigeria resulted in the demarcation of grazing corridor for cattle rearers (Ijeomah, 2012).

Factors militating against effective wildlife management in KLNP

The poor maintenance culture of the park affects the durability and functionality of their implements. Vehicles used for park patrol sometimes break down during operation. There was an incident where some park officials in the research unit were to embark on a field work but due to the fact that the approved vehicle was under maintenance the operation was postponed for two days. The parachute used for air patrol has also been abandoned for fear of breakdown while in use. This is contrary to what obtains in Ruaha National Park, Tanzania where aircrafts are more relatively maintained and therefore utilized as frequent as the need arises, for anti poaching patrol (Nahanyo, 2005). Marine patrol is almost not feasible in the park as the boat engines are damaged and permanently parked in Oli camp. Cases where guns failed to fire have also been reported in the park.

Infrastructural facilities in KLNP are inadequate, unevenly distributed, and deteriorating. Ranges are given preferential attention based on the level of tourists they can attract. For instance Kali range post has just a building, which is inadequate to accommodate rangers whereas in Oli there are enough buildings for rangers. This therefore makes Oli to be more protected against poaching than Kali range post. The level of infrastructural deterioration is reflected in poor condition of roads and tracks of the park. Some tracks in Borgu sector are overgrown by grasses and there are also sites where trees have been allowed to constitute canopies. While on hippopotamus monitoring in Borgu sector, a bridge along Gilbert Child track leading to Zaure was discovered to be bad and the movement was hindered as the patrol vehicle could not cross over. It was so serious that the vehicle had to reverse in search of other routes leading to same location. This experience is often severe during rainy season. Nahanyo (2005) obtained similar result in Tanzania.

The absence of a veterinary clinic is another challenge experienced in KLNP. Although there has been no record of severe disease outbreak but should any case arise where an animal sustains injury in the park there is no readily available facility for treating the animal immediately. Sometimes this prompts the rangers to end the life of animals found in critical state. This is contrary to the findings of Ijeomah *et al.* (2006) in Jos Wildlife Park; where injured wildlife species are given immediate veterinary attention due to availability of veterinary experts. An ostrich that sustained injury during introduction in 1997 in Jos Wildlife Park was treated until the state was confirmed too critical for survival before it was helped to die. There has been a case at the Yankari Safari and Wilderness Centre where veterinary experts treated a rescued African elephant that was injured by poachers. About 47.17 % of the respondents claimed that the number of staff allocated to ranges is inadequate (Table 3). Chi square test showed significant association ($p < 0.05$) between rangers' years of experience in KLNP and their perceptive assessment (response) on adequacy of staff per range. This can be ascribed to the fact that the rangers who have spent up to five years in the park have experiences on the level of pressure they are frequently being subjected to, in trying to protect the park against poaching. Administrative records showed that Ayeni recommended 12 rangers per range in the management plan of KLNP prepared in 1983. However, it was not envisaged that the level of pressure being presently mounted on the park by poachers will get to such level. Though that number of rangers can still be adequate but not for all ranges.

Insufficient number of staff in stations and ranges in the park makes it difficult for basic management practices to be effectively carried out and can lead to over utilization of workers, and fear of being outnumbered by poachers. In September 2011, the rangers in KLNP noticed the presence of poachers in a range of the park. With the fear that the poachers might outnumber the rangers in the post (because of how organized the culprits were) the rangers compelled male students from the University of Port Harcourt on industrial attachment (IT) to accompany them to the range for apprehension of poachers. On getting there, indicators of poaching such as fire were seen but the poachers were gone. Involvement of students on industrial training is a clear indication that the rangers were few. Though it could be viewed as a way of training the students against poaching activities, as workers and IT students had in some cases camped inside the forest for days as observed in Old Oyo national park, Cross River national park and Kainji Lake national park of Nigeria but if so, the female students would have been involved (as was previously done) because there is no practical training at first degree level in Forestry and Wildlife Management or park management (in Nigeria) that is clearly gender based. The parks in Tanzania are also facing the challenge of inadequate veterinary officials to curb impeding zoonotic diseases of wildlife which has become a more serious problem and have already affected large tracts of protected areas (Mlengeya and Lyaruu, Undated). Similar challenge of inadequacy of trained conservation staff is experienced in Sarawak (Malaysia) and Kalimantan (Indonesia) cross border protection of Borneo (IUCN, Undated). On the Kenyan side of Amboseli national park, Kenya Wildlife Service provides conservation staff that can only protect the 300,000 acre park (an area undersized by the overall two million acre ecosystem) and rangers employed by the few underfunded non governmental organisation to patrol the much larger Amboseli ecosystem have been few and far between (Big Life Foundation, Undated)

Poor logistics affects the rate at which planned activities are executed. Inadequacy of facilities for coordination, and delays in supplying them can sometime hinder scheduled activities. Some essential facilities such as walkie – talkie for effective communication with protection staff are still lacking or inadequately supplied in KLNP. In the whole of Oli range, it is only the Chief ranger that has a Turaya phone (a high sensitive brand of mobile phone for

Global satellite communication), whereas it is the rangers in Oli that covers patrols in Kuble, where there are no accommodation for rangers. The Chief ranger normally uses the Turaya phone to call either the head quarters in New Bussa or other Chief ranger. Inadequate provision of communication gadgets makes it very difficult for the rangers in Kuble to communicate with the Chief ranger in Oli.

The number of Global Positioning System (GPS) trackers in KLNP is inadequate and sometimes unavailable during patrol. The parachute available in Oli camp has been out of use for patrol for several months due to lack of engine oil. All these equipments are tools that can bring about coordination and general motivation of staff. In East African countries such as Kenya and Tanzania where wildlife is a major sector of their economy, helicopters are even utilized in anti-poaching patrol activities. It was a similar experience that made the Bauchi State Government of Nigeria thought of procuring an helicopter (as a kind of propaganda to convince the public of their preparedness for effective monitoring) when the State was lobbying for the downgrading of the Yankari National Park (then) to a game reserve.

Safety of workers is very important in the general motivation and effectiveness of staff in discharging their duties. Insecurity of rangers is a major challenge to wildlife conservation. The nature of work in national parks subjects rangers to high risk of lives. There was an incident where a ranger was injured in KLNP by a poacher and it took many hours before he could get medical attentions. Cases have also been reported where a ranger was charmed in his attempt to arrest a poacher. The ranger was only freed at last due to intervention from colleagues that threatened the poacher and forced him to release their colleague. Adetoro *et al.* (2011) reported a similar case in Old Oyo National Park where a ranger was killed by a suspected hunter while another ranger got his left hand finger severed and part of his hand slashed. Kemf (1993) also reported of the killing of a park worker by villagers in the Indian Tiger reserve. Ijeomah (2012) reported the killing of a game guard at Pai River game reserve of Plateau State, Nigeria by poachers. Inadequate provision of security facilities demoralize rangers. It also places rangers in a disadvantaged and very risky situation when in contact with poachers. Poachers that operate in East Africa are often equipped with modern security and operational gadgets such as Global positioning system (GPS), night vision goggles and AK-47 brand of gun, and are hardly afraid to shoot at 'anything' whether animals or rangers who attempt to hinder them from accomplishing their mission (African Wildlife Foundation, 2012). Some rangers who are committed and courageous in anti poaching activities in East Africa have been killed by poachers (African Wildlife Foundation, 2012).

These inadequacies in KLNP lead to reduction in animal population (Table 6) to such a level that is noticeable by both park officials and households (Table 7). Though similar reductions in wildlife population is worldwide (Mlengeya and Lyaruu, Undated) but the rangers in Kenya irrespective of the fact that they are facing relatively more encroachment pressure than rangers of KLNP are recording more successes because they are better equipped with safety equipments. For instance, on October 29, 2012 the rangers of Kenya Wildlife Service, while on anti poaching patrol, encountered the gang of four in Meru national park slaughtering an elephant when a gun fight resulted. The rangers succeeded in killing one of the suspects, recovered 3 rifles and 37 rounds of ammunition while three members of the gang escaped with injuries (KWS, 2012a). Also, on 1st November, 2012, in Nyeri County, rangers of Kenya Wildlife Service encountered the gang of two suspected poachers entering the sanctuary known to conserve rhinos, at wee hours and the resulted gun fight culminated in killing of the suspects while a rifle and seven rounds of ammunitions were recovered (2012b). Big Life Foundation, an anti poaching cross border organization operating in Amboseli ecosystem of Tanzania and Kenya has made 627 arrests and confiscated 1630 weapons in 22 months of its inception. The maximum arrest by the rangers in KLNP between 1995 and 2009 was recorded in 2000 as 372 (Ijeomah *et al.* 2013). Though the level of poaching experienced in Amboseli ecosystem is higher than that of KLNP, this figure (1630) excludes the number of arrest made by the rangers of Kenya Wildlife Service, and other anti poaching non governmental organizations that operate within the Amboseli ecosystem.

Households' involvement in effective wildlife management

Awareness of the aims of managing wildlife (Tables 8 and 9) by household respondents does not guarantee total contribution or whole hearted support in managing resources in the park. This can be attributed to the fact that the mandate of KLNP is not in line with households' view of the fate of park resources. Households expected that their means of survival and development would have been factored into the management of the park resources as it obtains in Kenya. Host communities to protected areas in Kenya form conservancies and Kenya Wildlife Service participates in funding host community initiatives towards provision of water, health facilities and training of community rangers from various community conservancies in Kenya. In the address of the Kenya Wildlife Service Director, William Kiprono on October 26, 2012 while commissioning three school projects in Baringo-Koibatek and Keiyo-Marakwet counties constructed through the KWS community fund, he urged communities living along Kerio Valley to conserve wildlife and position themselves to benefit from tourism in the region (KWS, 2012b). He assured the communities that KWS would ensure communities have capacity for sustainable wildlife management and they would reap economic benefits through its enterprise development

strategy. In the trans border (Kenya and Tanzania) anti poaching operation coordinated by the Big Life Foundation in Amboseli national park, all the rangers in about 250 ranger outposts were employed from the local communities since the inception of the organization in October, 2010 (Big Life Foundation, Undated). This beneficial involvement of community members strengthens the relationship between Big Life Foundation and host communities and expands the network of the organization informants.

Though households are not directly involved in the management of the park they claimed that non encroachment of members of the community into the park is enough contribution towards effective management of KLNP. This is because they are aware that effective management of the park can hardly be achieved without the cooperation of the communities bordering the park. It is obvious that the 'federal government presence for protection of biodiversities' in the park alone is a hindrance to their survival due to the fact that most of their livelihoods are tied to various uses of wildlife resources which ranges from food, medicine to cultural heritage and economic benefits. More so, provisions for compensation of farmers whose crops are raided by wildlife species, and humans who are attacked by wild animals are not made for in the policy of the park management. Similar situation where animals destroy households' crops without compensation has been reported in Gashaka Gumti national park (Eniang *et al.*, 2011) and Pandan Wildlife park (Ijeomah and Emelue, 2009). Households of host communities are aware of the aims of KLNP (Tables 8 and 9) but are unhappy that they were not given the opportunity to be part of the management of the park. The households derive relatively insignificant and unsustainable benefits from the park because they are not involved in the management of the national park. Nevertheless, they consistently expect to derive more benefits from the management of the park but the benefits are not forthcoming.

CONCLUSION

There are many and serious challenges facing wildlife management in Kainji Lake National Park. This implies that either the park is underfunded or that those funds are not appropriately utilized. For effective conservation of biodiversity to be achieved in this premier national park of Nigeria, these challenges must be addressed. The park should be adequately funded. Non involvement of host communities in the management of KLNP will definitely generate conflict with time. The management of the park should increase the security status of the park by employing more game guards, procuring security facilities such as firearm and communication gadgets, and imbibe good maintenance culture. One of the best ways of guaranteeing effective and efficient security of the facilities and park resources is through employment of host communities. However, provision should also be made for monitoring the performance of the employed members of host communities.

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