



Human-Hippo Relationship in Selected Communities around Kainji Dam in New-Bussa, Niger State, Nigeria

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ABSTRACT: Human-wildlife conflicts have become a significant issue in conservation and land management of a protected area. The study examines Hippo-Human relationship in selected communities around Kainji dam in New Bussa, Niger State, Nigeria. Data for the study was collected through pre tested structured questionnaires and analyzed using descriptive statistics. Findings from the results revealed that male Hippopotamus is the highest with 75.0% and that 37% were 50 years and above. Majority of the respondents had no formal education (42.0%). 79% of the respondents recorded that Hippopotamus was present in the study area while 82.0% have had to encounter Hippopotamus attack. The crops that are mostly grown by the respondents in the study area are Maize, Beans, Millet, Guinea corn, Rice and Groundnut. In which maize is the mostly grown and raided by Hippopotamus. The findings revealed that 69.0% of the respondents state that crop raiding is the major conflict. Various preventive measures undertaken include: fire and smoke, watch guarding, trapping, scare crow, thorn fencing and hunting, with fire and smoke being the most preferred by the respondents. The victims of these attacks are willing to prevent the attacks with fire and smoke as against killing the Hippopotamus, they should be encourage by factoring compensation into conservation policy to promote the conservation of this species in the study area.

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Conflicts in wildlife conservation are those negative experiences that human receives from wildlife animals, with undesirable consequences both for people and their resources, on the one hand, and wildlife and their habitats on the other. Human-wildlife conflicts are escalating and have become a significant issue in conservation and land management of a protected area (Hudson and Cattadore, 2006; IUCN, 2020). According to Kushner and Otieno (2021), some estimates have been made that about 40 fishermen were attacked by Hippopotamus on Lake Naivasha, Kenya in 2020, out which about 14 of them died. Every year across Africa, death toll by Hippopotamus have been put at an estimate 500 people; making this animal the world's deadliest mammal nearly twice as deadly as lion. Although Hippopotamuses are herbivores

and rarely bother other animals, but the males can sometimes become aggressive if they sense danger. Mothers may attack to protect their young. Nearly all Hippopotamus become nervous when anything stands between them and the water where they live, whether man or any other animal. The common Hippopotamus (*H. amphibius*) is the largest semi-aquatic mammals widely distributed and are typically found in social groups in wetlands, rivers and lakes across sub-Saharan Africa. Hippopotamus have been generally regarded as prototypical mega herbivores, obligate grazers and short-grass grazing specialists (Jablonski, 2004; Lewison and Carter 2004; Blowers, 2008). One of the major habitat requirements of Hippopotamus are the aquatic ecosystems that they use as suitable daytime retreat sites. Hippopotamus share their time

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between water during the daytime and land at night while foraging (Eltringham, 1999). Hippopotamus life span is between 35-50 years while the one in captivity live longer. The female hippo reaches maturity at nine to ten years. However Wanyama *et al.*, (2009) reported a 30% decrease in Hippopotamus in the wild over the past decade. Banda *et al.*, (2006) recorded puberty and maturity for female hippopotami at the age of seven and eight years respectively. Due to their large body size, and large habitat and food requirements, hippopotamuses have substantial impacts on wetland vegetation. The damage caused by hippopotamus is often far greater than the other common agricultural pests due largely to their unpredictable raids, more damage per raid, trampling and destroying certain areas of the field Hippopotamus-human conflicts are reported from several countries in Africa. Most records referred to as crop damage or losses, attacks on fishermen by destroying fishermen's nets or attacking their canoes and loss of human life (Mkanda and Kumchedwa, 1997; Eltringham, 1999; Chansa *et al.*, 2011; Admassu, 2007). In Nigeria, many rural people living close to a protected areas depends directly on natural resources wildlife for their livelihoods and food security, while this wildlife causes losses as well as pose threat to man and his livestock. This therefore leads to non-cooperation of the rural people and consequently constant disagreement between the people and the protected area authority. This conflict has been viewed in terms of both lives and economic losses caused by animals. Documenting the conflict

between human and hippo in the study area will not only help in deterring the seriousness of the attack. But will provide a basis for policy action on the species as well as galvanize cooperative synergized action with the locals. Therefore, the objectives of this study therefore is to examine Hippo-Human relationship in selected communities around Kainji dam in New Bussa, Niger state, Nigeria.

METHODS AND METHODS

Description of the Study Area: Kainji Dam is a dam across the Niger River in Niger State of Northern Nigeria. Construction of the dam was carried out by Impregilo (a consortium of Italian Civil Engineering Contractors) to designs by Joint Consultants, Balfour Beatty and Nedeco, and began in 1964 to be completed in 1968. The total cost was estimated at US\$209 million (equivalent to about US\$2.8 billion in 2015 dollars), with one-quarter of this amount used to resettle people displaced by the construction of the dam and its reservoir. Kainji Dam is located at an elevation of 74 meters above sea level, with its coordinates 9°52'0" N and 4°36'0" E in DMS (Degrees Minutes Seconds) or 9.86667 and 4.6 (in decimal degrees). Its UTM position is FL79 and its Joint Operation Graphics reference is NC31-12 (Ehigiator, *et al.*, 2017 Wikipedia, 2020). The occupation of the communities around the dam are farming and fishing as shown in figure 1.

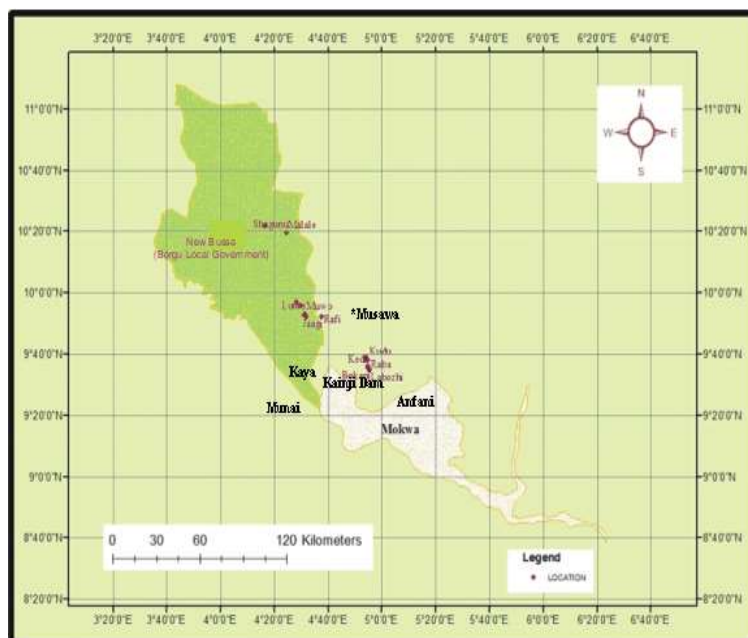


Fig 1: Map of Kainji Dam

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Data Collection:Data for the study was collected through pre tested structured questionnaires and administered randomly to representative farmers of the farming groups in the four communities around the lake which are Anfani, Munai, Wara and Musawa. Twenty-five respondents were interviewed in each community. In all a set of 100 questionnaires were administered to the household representatives.A focused group discussion was used to gather information on how local communities perceived wildlife, especially Hippopotamus, level of tolerance, benefits demanded from the park and suggestions on how to check further conflicts especially crop raiding. Selection of participants was based on those who have lived in the area for a minimum period of ten years. Among them are the adult farmers. The group discussion was conducted with the aid of translators. Data obtained were analyzed using description statistics in form of percentages, frequency of counts, tables and charts.

RESULT AND DISCUSSION

The socio-demographic factors of the respondents in the selected communities as shown in table 1, revealed that 75.0% of the respondents were male while female were 25.0%. This is a clear indication that male are more active in farming activities in the study areas. The nature of the occupation which requires going on canoe on boat appeared masculine in the communities than feminine. 50 years and above were the more prominent in these communities with 37%, followed by ages 41-50 (33%) while age category of 20-30 was the least (10%). Percentage of the respondents without formal education ranked the highest (42%) followed by primary school certificate holder (31.0%) and the least is Tertiary (6.0%).

This is typical of rural settlement where value is not added to education. Farmers who have their farmland less than 200 m to the park were the highest (54.0%).Table 1 also shows that 46% of the respondents had stay for over 20 years in the communities selected while 41% had stay in that community for 11-20 years.Majority of the respondents (79.0%) agreed to the presence of Hippopotamus around the community while 21% did not agree as shown in figure 2. This is further confirm by the result in figure 3 which shows that 82% of the community experience attacks from Hippo while only 18% of the respondents did not. Figure 4 shows that of all the various crops that are grown in these communities, Maize (24.0%) was the highest crop being cultivated and it is also the most raided, followed by Rice (20.0%) and the least was Beans which only 9.0%.

Table 1: Socio-demographic of the Respondents in the Study Area

Variable	Respondents (%)	
Gender		
Male	75	75.0
Female	25	25.0
Total	100	100
Age Group		
20-30	10	10.0
31-40	20	20.0
41-50	33	33.0
50 and above	37	37.0
Total	100	100
Qualification		
No Formal Education	42	42.0
Primary	31	31.0
Secondary	21	21.0
Tertiary	6	6.0
Total	100	100.00
Proximity of farm to the Dam		
<200M	54	54.0
>200M	46	46.0
Total	100	100.00
How Long Have you Been Leaving in the Community		
1-10	13	13.0
11-20	41	41.0
20 and Above	46	46.0
Total	100	100.00

Source: Field Survey, 2018.



Fig 2: Present of Hippo around community in the study area

This result is in agreement with Ertiban, (2016) who found out that 90% of the respondents reported conflicts between hippopotamus and local communities; out which the major problems of hippopotamus were crop raiding (53%), overgrazing (15%) and human and livestock injury (6%). The major conflicts between the respondents and Hippopotamus was factored into the crop raiding (69%), followed by human and livestock injury (20.0%) while overgrazing is the least with 11.0%. this findings corroborate the work of Ertiban, (2016) who also found that most of the respondents (62.73%) complained of destruction to maize than other crops being cultivated. The results from this study further confirm the report of Hoare, (1992) and Eltringham, (1993) which stated that hippopotamus’s crop raids are unpredictable and can causes more damage per raid. The results is in line with the submission of Post

(2000) and Kanga *et al.*, (2011) which stated that Hippopotamus damage crop by feeding and trampling on crops thereby destroying the farmlands. The local community also stated that one of the problems of the hippopotamus is overgrazing and attacks on human and their livestock's. this study further confirm that hippopotamus would graze more on farmland that are closer to water body than farmland father away from water bodies. Thus it is in line with Kendall (2011), which found that factors encouraging hippopotamus crop raiding were distance from the farm to the nearest river, farm size and distance from the farm to hippopotamus access points.

Table 3, shows that conflicts intensify in the study area during raining season with 55.0% occurrence, 30.0% at both season while only 15% during the dry season. This is as result of the fact that during off planting season, there are lesser crops to be raided by hippo, as such nothing to forage on. They will naturally keep off as they could be more endangered since there would also be no vegetation cover for them. According Utele, (2017), Hippopotamus grazes more in areas were the farmland are closer to the river. The implication is that the more crops especially maize they can find near water body to cool off during the day, the more they will frequent such fields to graze. This explains the reason their activities were more pronounced during the rainy season compared to dry season.

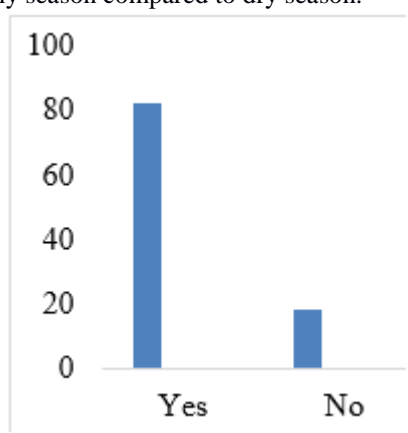


Fig 3: Hippopotamus attack on residents around Dam Site

The various preventive method use by the respondents to prevent hippo conflicts in table 4 shows that fire and smoke were preferred with 24% and watch guarding 21%. Only 5% indicted that hunting down the hippo was their choice way to prevent the attacks of hippopotamus. The respondents have engaged into various means to prevent the invasion of hippo, the methods involve using of smoke and fire, hunting, trapping, fencing. Hippopotamuses are sensitive to fire and any other brightly colored objects.

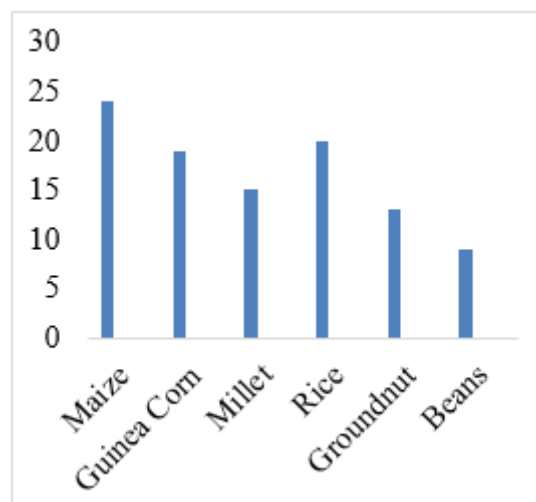


Fig 4: Crops Grown by the Respondents in the Study Area

Table 2: Major Causes of Hippo-Human Conflicts in the Study Area

Problems	Respondents	Percentage (%)
Crop Raiding	69	69.0
Overgrazing	11	11.0
Human and Livestock injury	20	20.0
Total	100	100.00

Source: Field Survey, 2018.

Table 3: Seasons of the year Hippo are most experienced in the study area

Season	Respondents	Percentage (%)
Raining Season	55	55.0
Dry Season	15	15.0
Both Season	30	30.0
Total	100	100.00

Source: Field Survey, 2018.

Table 4: Preventive Measures Taken Against Hippo Invasion

Prevention	Respondents	Percentage (%)
Watch Guarding	21	21.0
Narrow and Deep Furrow at the Edge of Farm	17	17.0
Trapping	11	11.0
Fire and Smoke	24	24.0
Scare Crow	9	9.0
Thorn Fencing	13	13.0
Hunting	5	5.0
Total	100	100.00

Source: Field Survey, 2018.

In the same case it is susceptible to sound and any disturbances. Low fences and ditch can easily deter them from encroaching on cultivated areas. The result is in line with Ertiban (2016) whose study showed that local communities adopted the control measure of fire and smoke (61%) has been the most effective to minimize the problems caused by hippopotamus on cropland at night; as against other measures: kipping crops (19%), thorn fences (15%) and a narrow and deep furrow (5%) at the edge of the land were other

practices. Nostrils, eyes and ears of hippopotamuses placed on the top the skull (Jones, 2008). So that putting fences at the edge of the land and at run way of the hippopotamuses or entering sides of the land used to synchronize the animals from crop. Digging deep and narrow towards the bottom furrow at entering sides of the land and covered it with grasses used as a trap. The animal will not be able to move forward or backwards and cannot come out once enter into the rut due to their large body, massive and inflexible neck and short legs (Eltringham, 1999). This technique is used as a trap to kill the hippopotamus. Similarly, farmers live in and around Lake Victoria used fencing materials like cedar poles and barbed wire and digging of trenches to minimize crop damage by hippopotamus (Post, 2000).

Conclusion: This study has shown that there exist of conflicts between Hippo and Human in the selected communities and major cause of the conflicts being crop raiding and overgrazing. The preventive measures taken against hippo invasion by the respondents are largely by the use of smokes and watch guarding. The victims of these attacks are willing to prevent the attacks with fire and smoke as against killing of the hippopotamus. Awareness education should be organized to bring positive behavioural change among the respondents because they see hippo as their enemy.

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