



Impact of human-wildlife conflicts on the livelihood of local communities in Oba Hills National Park, Osun State, Nigeria

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INFO

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ABSTRACT

Human-wildlife conflict is a major challenge in biodiversity conservation. This study exposed the occurrence and impact of this conflict on the livelihood of rural dwellers in communities' adjoining the Oba Hill National Park, Osun State, Nigeria. A semi-structured questionnaire with group discussion were employed in evaluating the impact of human-wildlife conflicts between September to November 2023. A total of five (5) villages (Akinleye, Olota, Olori, Keyeseni and Obamoro) were purposively sampled with 110 respondent. The results revealed that the loss of crops to wild animals, majorly primates, has severely impacted the villagers' means of livelihood and the Park officials has played a significant role in keeping the conflicts under control. The source of the villager's livelihood, type of loss incurred, and the distance of the villages to the Oba Hills National Park all have significant impact on the rate at which villagers experience these conflicts ($\chi^2 = 96.957$, $P = 0.000$; $\chi^2 = 103.085$, $P = 0.000$; $\chi^2 = 3.918$, $P = 0.048$; respectively). Conflicts between the local communities and wildlife is common in villages located 1 to 2 km from the boundaries of the National Park. The study recommended that, to reduce the intrusion of the villagers into the Park, conservation area management of Oba Hills National Park must maintain distinct boundary demarcation and manage practices that support the Park's ecological integrity and the welfare of the villagers. Development and implementation of compensation scheme for villagers who suffer losses can also be considered.

RESUMO

Impacto dos conflitos entre seres humanos e animais selvagens na subsistência de comunidades locais no Parque Nacional Oba Hills, Estado de Osun, Nigéria

O conflito entre seres humanos e animais selvagens é um grande desafio para a conservação da biodiversidade. Este estudo investigou a ocorrência e o impacto desse conflito na subsistência de moradores rurais em comunidades vizinhas ao Parque Nacional Oba Hills, no estado de Osun, Nigéria. Para avaliar o impacto, foram utilizados questionários semiestruturados e grupos de discussão entre setembro e novembro de 2023. Um total de cinco vilarejos (Akinleye, Olota, Olori, Keyeseni e Obamoro) foram selecionados intencionalmente, com 110 entrevistados. Os resultados revelaram que a perda de lavouras para animais selvagens, principalmente primatas, impactou severamente o meio de subsistência dos aldeões. Os funcionários do Parque desempenharam um papel significativo em manter os conflitos sob controle. A fonte de subsistência dos aldeões, o tipo de perda sofrida e a distância dos vilarejos ao Parque Nacional Oba Hills tiveram um impacto significativo na taxa de ocorrência desses conflitos ($\chi^2 = 96.957$, $P = 0.000$; $\chi^2 = 103.085$, $P = 0.000$; $\chi^2 = 3.918$, $P = 0.048$; respectivamente). Os conflitos entre as comunidades locais e a vida selvagem são comuns em vilarejos localizados de 1 a 2 km dos limites do Parque Nacional. O estudo recomenda que, para reduzir a intrusão dos aldeões no Parque, o manejo da área de conservação do Parque Nacional Oba Hills deve manter uma demarcação clara dos limites e gerenciar práticas que apoiem a integridade ecológica do Parque e o bem-estar dos aldeões. O desenvolvimento e a implementação de um esquema de compensação para os aldeões que sofrem perdas também podem ser considerados.



INTRODUCTION

Human-wildlife conflicts within protected areas exert significant repercussions on the economic well-being of border communities. These conflicts often arise from human encroachment into wildlife territories and are exacerbated by the legal and social structures that govern human-wildlife interactions (Woolaston, 2022). Habitat degradation and shrinkages forces wildlife into closer proximity to human settlements, leading to issues such as crop damage and other confrontations (Teshome, and Girmay, 2017). The creation of the Oba Hills National Park in Osun State, Nigeria has also sparked disputes over the utilization and control of resources among communities in its vicinity (Isiugo and Obioha, 2015).

Local communities grapple with the dual challenges of dealing with the impacts of wildlife spillage from the Oba Hills National Park and safeguarding the Park's wildlife and natural resources from threats like habitat degradation, over hunting, and illegal poaching (Wahab, 2016). Anthropogenic activities, have notably affected the diversity and abundance of wildlife species within the Park, with the introduction of non-native species and a decline in their populations (Asifat and Hill, 2019). Recognizing the significance of understanding the perspectives and concerns of citizens, especially in rural areas where agricultural losses are considerable, is underscored (Tampakis et al., 2023). There is a growing necessity for dialogue among various stakeholders including landowners, hunters, and authorities to tackle these conflicts effectively (Fentaw and Duba, 2017).

Implementing management strategies such as community-based conservation approaches and financial assistance programs is imperative to mitigate these impacts and ensure the sustainability of rural livelihoods (Sotolu et al., 2017). Addressing these challenges requires proactive measures from both governmental and non-governmental agencies, including involving support zone communities in wildlife management and providing alternative livelihood options (Wahab, 2016). Thus, the study aims to gauge the extent of Human-wildlife conflicts and its impacts on the livelihoods of local communities adjacent to the Oba Hills National Park in Osun State.

MATERIALS AND METHODS

Description of Study area

Oba Hills National Park (Figure 1) which was formally a Forest Reserve, is among the ten (10) National Parks that were established in 2020 by the Nigeria Government. Oba Hills National Park covers a land area of about 52.50 km², and it is situated inside the Guinea-Congo Forest biome between latitudes 7° 33' and 7° 5' N and longitudes 4° 02' and 4° 18' E (Adewumi et al., 2022). Oba Hills National Park as derived savannah vegetation with a mixture of agricultural lands, Teak plantations, woodland and fragments of degraded riparian forests. Oba Hills National Park is also defined by five (5) hills. Oba Hills National Park is home for some fauna species like: Chimpanzee (*Pan troglodytes ellioti*), bushbuck (*Tragelaphus scriptus*), Blue duiker (*Cephalophus monicola*), and Patas Monkey (*Cercopithecus erythrocebus patas*) (Adewumi et al., 2022), Oba Hills National Park is blessed with both fauna and flora resources but is threatened by environmental degradation due to anthropogenic activities in and around the Oba Hills National Park. The major activities at the site are farming, logging, hunting, and grazing.

To examine human-wildlife conflicts, a systematic random sampling approach was adopted, with five (5) villages selected based on their proximity to Oba Hills National Park. A structured and semi-structured questionnaire was designed and administered to obtain primary data from each village, focusing on willing respondents with prior approval from the village heads. The questionnaires are divided into two sections, each containing both flexible and fixed-response questions, with the goal of gathering information primarily about the experiences and losses caused by wildlife and their impact on the respondent's livelihood, as well as the perceptions and hostile actions of local communities toward park species and conservation.

Collected data were subjected to descriptive statistics (frequency, percentage and cross tabulation) and Chi-square analysis using the SPSS software version 22.0. The cross tabulations that involves a chi-square (χ^2) tests was used to establish whether responses on the source of the villager's livelihood, type of loss incurred, and the distance of the villages to are dependent and/or independent on the rate at which villagers experience these conflicts in Oba Hills National Park. All the tests were considered to be significant at $P \leq 0.05$.

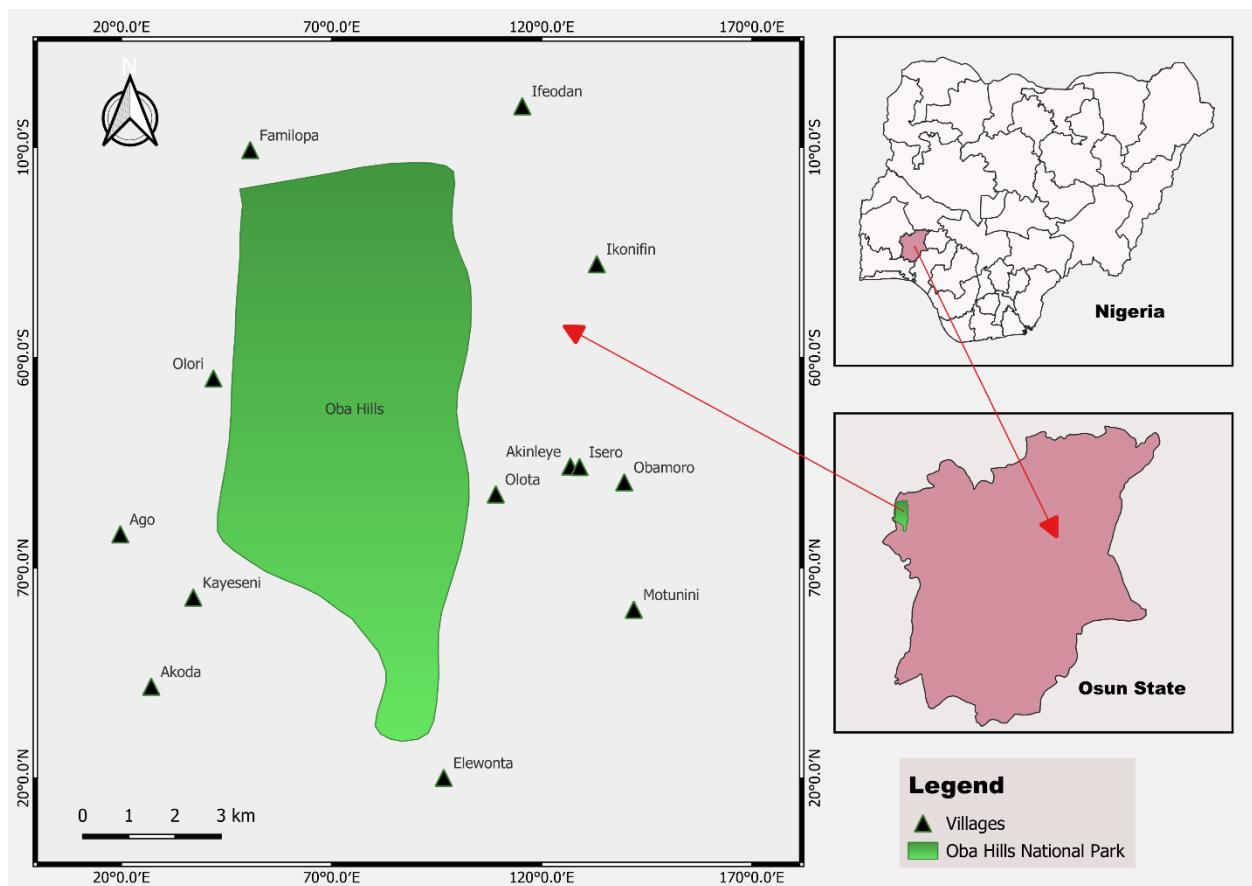


Figure 1: Map of Oba Hills National Park and some of its neighboring villages

RESULTS AND DISCUSSION

Out of the one hundred and fifty questionnaires allocated to all the villages, only one hundred and

ten questionnaires were used (see Table 1) as some of the villagers showed no interest in taking part in the survey.

Table 1: Respondents distribution across the adjoining communities of Oba Hills National Park.

Variables (N=110)	Frequency	Percent
Akinleye	27	24.5
Olota	20	18.2
Olori	20	18.2
Keyeseni	23	20.9
Obamoro	20	18.2

Respondents from the Akinleye community were only 3.6% higher than those from Keyesin, while the remaining three villages had the same percentage of responses. 110 individuals from all five villages expressed an interest and willingness to provide knowledge about human-wildlife conflict based on their diverse experiences. Table 2 in-

dicates the respondents' socio-demographic characteristics, with farmers accounting for significantly more than the average number. According to Yan et al., (2022), agricultural loss is the most direct impact of wildlife on humans. In this study, the HWC experience particularly relates to crop loss in farmer households caused by wildlife (see Table 3).

Table 2: Socio-demographic Characteristics of the respondents

Variables (N=110)	Frequency	Percent
Gender		
Male	86	78.2
Female	24	21.8
Age		
Below 30	5	4.5
30-40	17	15.5
41-50	69	62.7
above 50	19	17.3
Marital Status		
Single	23	20.9
Married	81	73.6
Separated	3	2.7
Divorced	3	2.7
Education		
Primary	12	10.9
Secondary	45	40.9
Tertiary	32	29.1
No formal	21	19.1
Occupation		
Business	4	3.6
Civil Servant	7	6.4
Farming	85	78.2
Hunting	2	2.8
Student	6	4.5
Teacher	6	4.5
Distance		
1km-2km	63	57.3
3km-5km	47	42.7

The data were collected from 110 households, consisting of 78.2% males and 21.8% females. Their age distribution varied from below 30 years to above 50 years. Above that half (62.7%) of the respondents were from 41-50 years of age and 30-40 and above 50 years covered 15.5% and 17.3%, respectively. About 4.5% were below 30 years of age. Above average (51%) of the respondents were between ages 36 to 50 years while the respondents between ages 18 to 35 and 51 to 71 years covered 26.3% and 22.7%, respectively. 19.1% of the respondents do not have a formal education and 40.9% of them could read and write, 10.9% had a primary school education and the rest (29.1%) attended Tertiary institutions. Majority (73.6%) of the respondents are married and almost half (40.9%) of them had secondary school certificate. Among the surveyed households, 57.3% were dwelling within the range of 1km-2km distance

from Oba Hills National Park boundaries whereas 42.7% stays 3km-5km far from the Oba Hills National Park. Farming is reported to be the major occupation of 78.2% of the respondents while hunting carried the least percentage (2.8%) which is an indicator that hunting is prohibited in the study area. The distance of these villages to Oba Hills National Park is also indicated of how much they are likely to be experiencing the Human-wildlife conflict, (HWC).

The result in table 3 shows that all the respondents are aware of the relevance of Oba Hills National Park and the incidence of HWC. Majority of the respondents, (91%) indicated that they have experienced one or two losses from conflicts with wildlife species. Majority of the respondents (96.3%) reported that some of the conflicts they experience are damage of crops, livestock depredation and sometimes, attacks on humans. Damage of

crops and livestock predation were the most frequently mentioned problems facing the respondents. Crop damage was the most prevalent with 91.8% while livestock predation incidence was rated to be very low with 4.5%. The majority of the

villagers, 60.9% stated that the Primates were a problematic species with significant annoyance and were viewed as a pest that destroy farmers' investment on crops and/or means of subsistence.

Table 3: Respondent Awareness and experience of Loss from HWC

Variables (N=110)	Frequency	Percent
Are you aware of the relevance of Oba Hills National Park		
Yes	110	100
Are you aware of human wildlife conflicts in the area		
Yes	110	100
Have you ever experienced any loss from wildlife conflicts		
Yes	91	82.7
No	19	17.3
Which Loss		
Crop depredation	101	91.8
Livestock depredation	5	4.5
No loss experienced	4	3.7
Wildlife species caused the loss		
None	18	16.4
Primate	67	60.9
Other wildlife species	3	2.7
Giant pouched rat	22	20
Are you aware of the relevance of Oba Hills National Park		
Yes	110	100

The result revealed that conflicts between people and wildlife species have been on the increase in and around the Oba Hills National Park. Conflicts with wildlife are a common occurrence near protected areas (Megaze et al., 2017), particularly for populations whose primary source of income is agriculture, as is the case with those who live next to the Oba Hills National Park. In the study area, livestock rearing and crop cultivation are essential to the local people, they are also extremely susceptible to damage by wildlife. Most of the respondents reported experiencing damage to crops by wildlife, which had negative impact on the villagers' livelihoods. This statement of fact resonate with the report of Kabuusu et al. (2018), which stated that, the

worst kind of conflicts between humans and wildlife, is crop destruction. Crop damage impacts a farmer's capacity to provide for their family as well as their monetary income, health, nutrition, education, and, eventually, development (Haylegebriel, 2015). Primates were the primary and most frequent animals that raided crops due to their high population in Oba Hills National Park.

The Pearson correlations in table 4 revealed how significant the impact of variables such as the distance between the siting of the villages to the national park, type of loss experienced, and the major source of livelihood of the respondents are related to the loss experienced by each respondents and household.

Table 4: Influence of dependent (Experience of loss from wildlife conflicts) variable on Independent variables (Species responsible, type of loss and village distance)

Dependent		Source of Livelihood (Independent)				X ²	df	p-value	r
Experience loss	Livestock rearing	Farming	Hunting	others					
Yes	0	65	22	3		96.957	3	0.000	0.93
No	18	2	0	0					
Type of loss									
Experience loss	None	Crop depredation	Livestock depredation	Human attack	Destruction of property	X ²	df	p-value	r
Yes	0	83	5	2	1	103.085	4	0.000	0.96
No	18	1	0	0	0				
Village Distance to the Oba Hills National Park									
Experience loss	1km-2km	3km-5km				X ²	df	p-value	r
Yes	56	35				3.918	1	0.048	0.2
No	7	12							

Key: X² = Pearson Chi Square; df = degree of freedom; P Value = level of significance; r = relationship

Evidences from this study proved that the proximity of the villages to Oba Hills National Park have a great impact on the prevalence of human wildlife conflicts. It further revealed that the source of respondents' livelihood, typically their farming activities, significantly influence (X²= 96.957, P= 0.000) the loss experienced from wildlife conflicts, while strong positive significant (r=0.93) relationship was found between experiences of loss from wildlife conflicts and the source of livelihood. Similarly, the type of loss/conflicts experienced by the respondents, especially crop destruction significantly impact (X²= 103.085, P= 0.000) the loss experienced from wildlife conflicts, while strong positive significant (r=0.96) connection was examined between experiences of loss from wildlife conflicts and the type of loss/conflicts. Still, the respondents Village Distance to the Oba Hills National Park, particularly villages between 1km-2km to the Oba

Hills National Park significantly influence (X²= 3.918, P= 0.048) the loss experienced from wildlife conflicts, and weak positive significant (r=0.2) relationship was revealed between experiences of loss from wildlife conflicts and the respondents Village Distance to the Oba Hills National Park.

Effective management of human-wildlife conflicts protects communities, prevents conflicts from increasing, fosters conservation trust, and avoids reprisal against wildlife. Understanding how much the national park has tried to control the occurrence of conflicts, as well as respondents' knowledge of these efforts, is an important factor in the development and adjustment of strategies that seek to balance people's needs with park conservation goals. Table 5 shows how much effort the parks have made to mitigate the consequences of human-wildlife conflict, as well as how much change has occurred over time.

Table 5: Contribution of Oba Hills National Park to Mitigating the Incidence of HWC

Variables (N=110)	Frequency	%
Extent to which the Park has helped control the conflicts		
Very great extent	57	51.8
Great extent	31	28.2
Low extent	22	20
Have you observed any changes over the years		
Yes	87	79.1
No	23	20.9

While 20% of respondents acknowledged that the Park has not assisted in controlling the conflicts, the majority of villagers have noticed changes in the conflicts over time, and a high proportion (51.8%) of respondents stated that Oba Hills National Park officials have been working extremely hard to ensure the control of the incidence and impact of HWC to a very great extent.

While the villagers are aware of the significance of the Oba Hills National Park and the importance of wildlife, Majority of them has positive attitude towards it but some of the villagers still hold unfavorable opinions which drive them to murder the animals and ruin their habitats. Those that rely exclusively on one means of subsistence are especially likely to be hostile towards wildlife because they may be more vulnerable to the negative effects of HWC.

Despite the many challenges of coexisting with wildlife, most locals support wildlife conservation, which increases the likelihood that human-wildlife conflicts can be prevented and mitigated and that negative interactions between humans and wildlife will be reduced (Teshome & Girmay., 2017). However, a few of the locals' unfavorable opinions have a terrible impact on efforts to conserve wildlife because they encourage revenge killings and ignorance of the issue.

CONCLUSION AND RECOMMENDATION

The research noted that the well-being of both humans and wildlife is evidently and significantly impacted by human-wildlife conflicts and it is likely to continue as long as crop farming remain the major source of livelihood the villagers neighboring the Oba Hills National Park, Osun State, Nigeria. Thus, it is critical to safeguard livelihoods of the local communities, lessen their susceptibility, and balance out losses with gains from wildlife and also promote the ecological integrity of the study area through effective management practices. In order to reduce the intrusion of the villagers into the Park, conservation area management of Oba Hills National Park must maintain distinct boundary demarcation between them and the neighboring villages. Development and implementation of compensation scheme for individuals who have lost their crops as a result of the activities of the wildlife will also be of great contribution.

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