

ASSESSMENT OF CROP-RAIDING ALONG THE BUFFER ZONE OF OBA HILLS NATIONAL PARK, NIGERIA

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Abstract

The Conservation and sustainable use of a natural protected area require concerted efforts of conservation managers and the local communities. Crop raiding is a major problem confronting conservationists and communities around the park area. This paper examines crop damage by mammals and birds, the farmers' experiences on crop losses along the park boundary. Data were collected via weekly counts of damaged crops in twenty (20) farmlands in the wet season and thirty-three (33) farmlands in the dry season. The study was conducted in Oba Hills National Park located in Iwo, Iwo Local Government Area of Osun State, Nigeria. A reconnaissance survey (on foot) of the park was carried out to be conversant with the park. One hundred (100) questionnaires were administered to the respondents in six selected communities due to their proximity to the park. Data were analyzed descriptively using the percentage frequency distribution test. Analyses show that the majority (67%) of the respondents at the park boundary are male. Ninety-five percentages (95%) of the damages observed were perpetrated by the wild animals on annual crops. Correlation analysis shows no significant relationship between the farmer's socio-economic characteristics and measures employed to combat and repel marauding wild animals. The study reveals that (82%) of the respondents were on the commercial farming system while (18%) of them were on subsistence farming. The crops of the respondents suffer invasion by wild animals especially the monkeys, throughout the year. On average, farmers record a loss of Three hundred thousand naira (approx. \$600) as a result of farm invasion. Management of crop-raiding, in general, requires an integrated approach involving both the park staff and surrounding communities. This synergy will be surely minimized if not eliminate conflicts arising from crop-raiding by wild animals.

Key Words: Mammal, Human and Wildlife Interaction, Farmers Perception, Crop-raiding

Introduction

Protected areas are confronted with associated crop raiding by wild animals due to their proximity to agricultural lands at the boundary zone. This represents a genuine danger to the adjoining networks whose jobs rely on cultivating exercises

(Mathur *et al.*, 2015). To diminish the monetary misfortune, ranchers take part in an assortment of defensive estimates which contain manual guarding, different sorts of walls, channels, and different gadgets (Metha, 2014). These actions constantly accompany high related

expenses and dangers (Woodroffe *et al.*, 2014; Rangarajan *et al.*, 2010). Wall that is made of wooden shafts and prickly branches hacked in the close-by woodland lands cause annihilation to the timberland while refined current sorts are exorbitant and require support (Karanth *et al.*, 2013).

The consistent decrease and fracture of regular natural surroundings, taking care of the site for untamed life species through man's formative exercises, direct infringement of untamed life populace into the contiguous ranch land to look for food, consequently prompting obliteration of agroforestry trees and harvests (Ayodele *et al.*, 1993). Human-natural life clashes emerge from immediate and backhanded negative communications, prompting financial misfortunes to horticulture through annihilation of harvests, human fatalities and wounds, plunder of animals and retaliatory) the killing of untamed life (Chardonnet *et al.*, 2010). Harvest striking by the wild creature is a predominant type of human-untamed life struggle along with ensured region limits (Naughton-Treves, 1998). The monetary misfortune from crop assaulting can be generally high in agricultural nations since ranchers are poor and seldom made up for their misfortunes (Rao *et al.*, 2002). Such misfortune can make the local area to be adversarial and prejudiced towards natural life, which brings about reprisal killing of issue species just as subverting and hampering protection procedures (Nyhus *et al.*, 2000).

Financial misfortune because of wild creature species is a broad danger to creature preservation because of the sensation of outrage experienced by the worried local area at the limit spaces of the ensured site (Karanth *et al.*, 2012). Remuneration could fill in as a

preservation system to decrease tension on the cradle zone of secured regions, considering the social equity perspective that the administration may acknowledge it as its obligation to repay ranchers' misfortune. This methodology is generally embraced in many parks as an arrangement, which empowers the enduring ranchers to be redressed (Gospalaswamy *et al.*, 2012). Yield striking reason issues in various territories and decreased various types of wild animals, in which not many uses thorough techniques for essential assessment of harm and endeavor to cross-check or approve the strategies. Meanwhile, the lawful standards in the investigation region have no unmistakable rules on the most proficient method to gauge the degree of harm. Visual review and appraisal of harm is made through dealings between the ranchers and the repaying authority. This prompts a genuine continuous struggle among ranchers and park authorities, which achieve an adjustment of assessment of the farmers to recommend a few strategies for harm assessment with regards to rat obliteration (Buckle *et al.*, 2015). Creatures that were once seen to be a piece of nature are presently seen as a property of the recreation center and a reason for the hazard to them. This "your creature condition" is feasible to be more unsafe to protection at the since quite a while ago run than being the genuine harm to crops and the paid remuneration (Watve *et al.*, 2016). The biotic cooperation of human and natural life is unavoidable in upgrading the endurance of untamed life species in the backwoods environment while the cushion zones fill in as a harmony producer between the two clashing gatherings. Cradle zones are squares of land situated between normal

timberlands and developed regions that are planned or intended to decrease or forestall human-untamed life struggle (Madden, 2004). Natural life species do effortlessly adjust to the customary control measures to forestall their experience in the human residences, consequently rehearsing creative techniques that will limit the event of negative connections is basic (Woodroffe *et al.*, 2005).

In a genuine sense, the essential drivers of human-untamed life clashes are segmented, monetary, institutional, and mechanical (UNEP, 1995). Local area individuals at the neighborhood level see natural life as an obligation instead of a financial and societal position of benefit, hence putting forth untamed life preservation attempts are seen as an inconsistency to the financial undertakings of nearby networks, property harm, and hazard to human existence through assault by wild creatures and illness transmission (Shemweta and Kidegesho, 2000).

Methodology

Study Area

The examination was completed in Oba Hills National Park, situated in Iwo, Iwo nearby Government Council. The Park has a landmass of about 52.5 km² of uneven landscape with profound chasms arranged between scope 70° 33' and 70°

45' N and longitude 40° 2' and 40° 71' E. Oba Hills National Park is predominantly of Guinea Savannah however the North-Western and Central part contains significant tree species. The savannah limit is covered with tall and short trees while biomass is grouped and ensnared, making openness and misuse of huge trees troublesome. This made the biological system an appropriate home reach for chimpanzees and primates.

The examination used a multi-stage testing system to choose an example of 100 respondents. At the primary stage, five-country networks (Aba Ayo, Familope, Onju, Ododo, and Olori) encompassing the recreation center and outstanding for rural exercises were haphazardly chosen, and at the second phase of testing, twenty ranchers were arbitrarily chosen from every one of the towns to make an aggregate of 100 respondents for the investigation.

Data Analysis

The information was gathered with the utilization of organized meeting plan and was investigated utilizing clear insights, for example, recurrence tallies, rates, mean, standard deviation, and inferential measurements, for example, Pearson Product Moment Correlation examination to test the connection between chose financial qualities and measures utilized by the respondents.

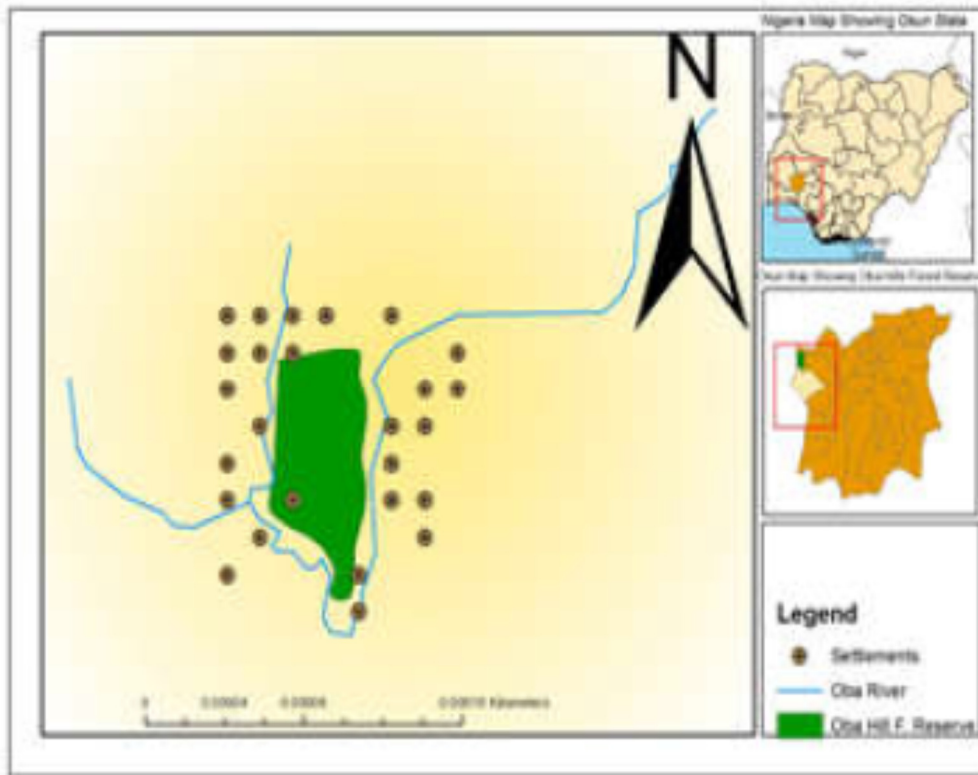


Fig. 1: Map showing Oba Hill Forest Reserve
Source: Akinsorotan *et al.* (2019).

Results

Results in Table 1 showed that most (67%) of the respondents were males and 33% were females. The findings presented that male were more involved in farming than females in the study area. The result supported the findings of Ayansina *et al.* (2018) which says that there is gender disparity in farming activities in the Southwestern Nigeria, in that more males engage in farming activities than females. The age distribution of respondents revealed that the majority (30%) fell within the age range of 31 -40 years, with a mean age of 34.5 years. This implies that most of them are in the middle age category and would be actively involved in farming activities. Farmers in this age range, form a dynamic workforce and tend to make a great impact in agricultural production.

It was observed that the majority (80%) of the respondents were married, (11 %) of them are moderately single while others in the variable are equally represented. The result agreed with the findings of Ajayi *et al.* (2018) that most arable crop farmers are married and Soybo *et al.* (2005) that agriculture is very much practiced by married people to make ends meet and cater for their children. Also, 48% of the respondents are of Islamic religion, moderate percentage (45%) of them are Christian while the least (7%) of the respondents are of traditional religion. Conversely, (55%) of the respondents had around five (5) persons in their household supporting the traditional belief of the usefulness of large family size in farming activities. This finding is in agreement with Ozor and Nnaji (2010) that large family size is an

obvious advantage in terms of farm labor supply. The majority of them (75%) had formal education while others were equally represented. This finding implies that the high literacy level of these farmers would positively influence their production and perception of the effects of crop-raiding. The majority, (57%) of the respondents were farmers, (28%) of them

are moderately in trading while the least of them (7%) are equally represented. The table reveals that the majority, (41%) of the respondents fall in years of farming range class of 21 -30, (35%) of them are in moderate years of farming range class of 10 -20 while the least among them are in the years of farming range class was equally represented.

Table 1: Demographic Characteristic of respondents in the study area

Variables	Frequency	Percentage	Mean
Age			
1 – 20	3	3.00	
21 -30	28	28.00	
31 -40	30	30.00	34.5
41 – 50	26	26.00	
50 and above	13	13.00	
Gender			
Male	67	67.00	
Female	33	33.00	
Marital Status			
Single	11	11.00	
Married	80	80.00	
Separated	6	6.00	
Divorced	1	1.00	
Widowed	2	2.00	
Religion			
Christian	45	45.00	
Islam	48	48.00	
Traditional	07	7.00	
Household size			
<5	55	55.00	
5-10	40	40.00	
>10	05	5.00	
Formal Educational Background			
Yes	75	75.00	
No	25	25.00	
Years of Farming			
10 -20	35	35	
21 -30	41	41	
31 – 40	16	16	
41 -50	6	6	
>50	2	2	
Secondary Occupation			
Trader	28	28	
Farming	57	57	
Engineering	8	8	
Carpentry	7	7	

Farming in the Buffer Zone

The study revealed that farming activities were practiced on a large scale at the boundary area of the park. The majority (82%) of the respondents in the study area

are commercial farmers while few are subsistence farmers, this implying that they have a large income from their source of livelihood (Figure 2).

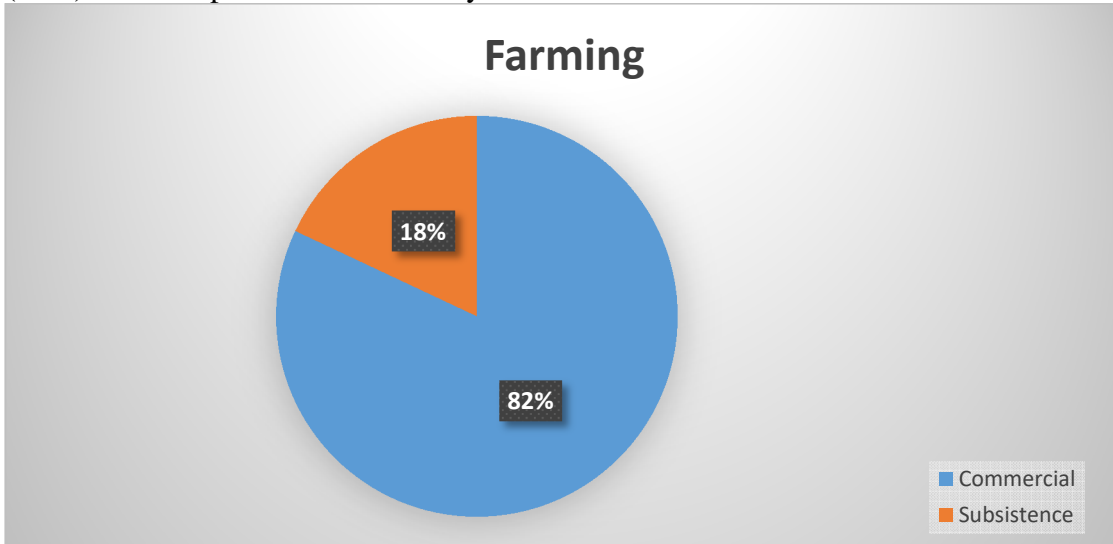


Fig. 2: Showing types of farming in the buffer zone

Destruction of Crops

Crop raiding to farms and the damage caused by the wild animals were observed from the study area. The majority (95%)

of the respondents indicated that their productivity and returns reduce as a result of the maraud mammals (Table 2).

Table 2: Distribution of respondents' level of farm crops affected by wildlife in the study area

Crop affected by wildlife Species	Frequency	Percentage
Yes	95	95
No	5	5

Marauding Wild Animals

The level of invasion by the marauding wild animals was observed at

the study area from different species. The marauding wildlife species on the farm crops damage are shown in (figure 3).

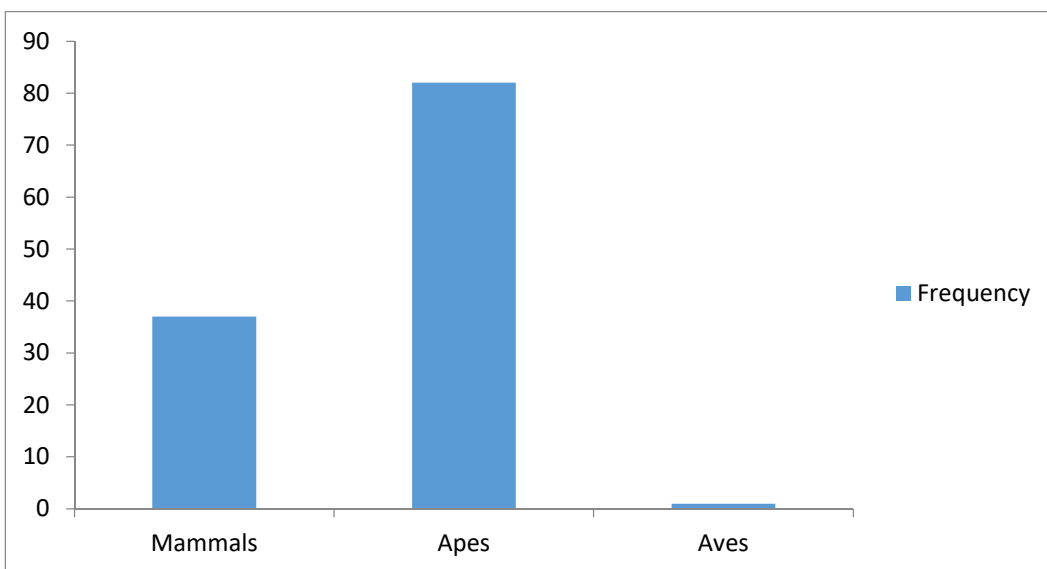


Fig. 3: Maraud wild animals in the study area

Damage to Crops and Livelihoods

The study shows the levels of damage caused by the wild animals to the respondents' farm crops and their effects on their livelihood as represented in Table 3. The majority (35%) of the respondents' experience monetary/profit loss, (27%) of them were moderately affected through

the destruction of their farm heaps and ridges while the least (5%) of the respondents were affected by crop devouring and other variables were equally represented as shown in the (Table 3).

Table 3: Distribution levels of damage caused by wild animals on the respondents' livelihood in the study area

Variables	Frequency	Percentage (%)
Monetary loss/Profit loss	35	35
Destruction of heaps and ridges	27	27
Trampling on seedlings	15	15
Uprooting of seed	10	10
Destruction of tuber	6	6
Food loss	8	8
Crop devouring	5	5

Annual Income Distribution of Respondents

The majority of the respondents (52%) realized between three hundred thousand naira (₦300,000) to four hundred

thousand (₦400,000) naira as their yearly income class range, 23% of them are within the yearly income range of ₦400,000 - ₦500,000 while others in the class ranges were equally represented (Table 4).

Table 4: Distribution of respondents based on their annual income

Yearly Income (Thousand Naira ₦)	Frequency	Percentage (%)
200-300	16	16
300-400	52	52
400-500	23	23
500-above	9	9

Measures Adopted by the Community Against Crop Damage

The mitigation strategies adopted by the respondents over their crop damage by the marauding wild animal were observed during the study. It was revealed that the majority (26%) of the respondents used

trapping, (19.5%) of the respondents used Biocontrol and Bio-fencing moderately, while the least (2.2%) percentage of them were observed on guard and fencing respectively while others were equally represented as shown Figure 4.

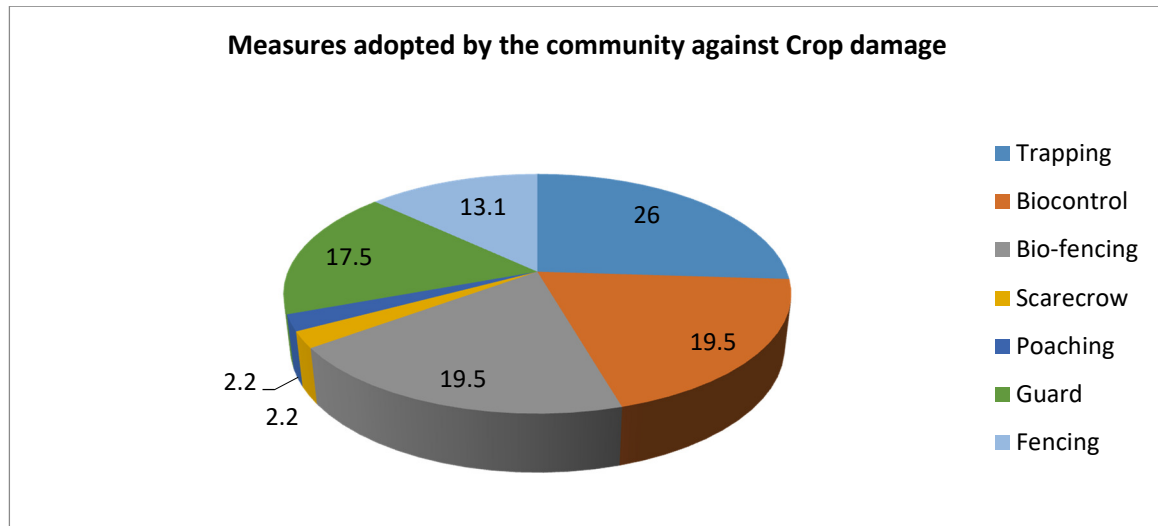


Fig. 4: Measures adopted by the community against Crop damage

Hypothesis Testing

Results of association between the farmers' socio-economic characteristics and measures employed to combat and repel invasive wildlife species

The correlation analysis showing the level of significance on the test of the hypothesis was carried out on the

variables during the study. It was revealed that there was no significant relationship ($P < 0.05$) between the farmer's socio-economic characteristics and the measures they employed to combat and repel invasive wildlife species in Oba hill National Park (Table 5).

Table 5: Correlation analysis showing the relationship between selected socio-economic characteristics and measures employed to combat and repel invasive wildlife species

	Trapping	Poaching	Guard	Scarecrow	Fencing	Bio-control	Bio-fencing
Gender	.136	-.037	.094	.027	.020	.016	.082
	.138	.688	.308	.770	.830	.867	.374
Age	-.097	-.025	-.111	.388**	-.061	.058	-.018
	.292	.789	.229	.000	.507	.526	.848
Marital status	-.018	.000	.030	.121	-.083	.109	-.317**
	.844	1.000	.742	.189	.365	.238	.000
Farming experience	-.111	-.189*	-.152	.279**	-.079	-.072	.067
	.228	.039	.099	.002	.389	.437	.469
Educational background	.110	-.196*	-.131	.555**	-.015	-.020	-.043
	.230	.032	.154	.000	.875	.832	.645
Yearly income	-.048	-.105	-.151	.182*	.118	-.022	-.036
	.606	.253	.100	.047	.201	.809	.695

*Significant (P<0.05)

Discussion

Harvests being the significant objective of striking creatures may not be detached from the way that these pillaging creatures were looking for food. These are in plenitude in the cradle zone space of the recreation center. Primates are generalist feeders while warthogs feed primarily on grains and tubers. This shows why primate species were the fundamental danger to the harvests. Assault on domesticated animals was low because of the lion's and other enormous hunters' decreasing populace in the investigation region. Assaulting exercises of the wild animals (generally the primates) have an adverse consequence on the ranchers and cushion zone inhabitants on the loose. This is upheld by the perspective on Hill (2004) that crop misfortune by wild animals differently affects cultivating families which incorporate high guarding venture, disturbance of tutoring for youngsters who need to help monitor fields, expanded danger of injury from natural life, an expanded danger of contracting sicknesses like jungle fever. Osborn and Hill (2005) further repeated that harvest harm relies

likewise upon the species that are associated with this action. Surely, various species may practice on various sorts of harvest and diverse plant parts or advancement stages. In many detailed instances of wild animals' harm and assaulting exercises, there have consistently been methods of assuaging the people in question (typically ranchers). The structures in which the influenced ranchers could be remunerated in the investigation region incorporate credit (which should be reimbursed on portions), strengthening and free clinical consideration, arrangement of foundation just as getting sorted out strengthening programs. The pay should be never really level of reprisal from the influenced ranchers and support zone inhabitants. Despite the remunerations, a portion of the wild creatures that caused harm through their striking exercises was at times killed, caught, harmed, or shot. This investigation proves with the statement of Siex and Struhsaker (1999) that the proceeded with the negative mentality of networks towards wild creatures emerge from the misfortunes (counting human existence,

property, crops and surprisingly rural land put away for preservation purposes) brought about by wild creatures. At the point when this (assault) occurs, Oba Hills National Park the executives would have to set up a compromise meeting, placating the bothered and arraigining guilty parties (if there is any).

This investigation shows that the administration of Oba Hills National Park should illuminate the locals, through protection instruction and central gathering directing. Wild animals striking exercises ought to be taken care of by exhorting ranchers on planting systems just as encouraging them to avoid the recreation center limits and foundation of preservation clubs. Common agreement and coordinated effort between the park executives and cushion zone networks' chiefs ought to be incorporated into the administration plan report. With the close and heartfelt connection between the parks the board and the cradle zone delegates, the degree of the harm destroyed by striking wild creatures may diminish. The appropriation of a valid and compelling base top methodology in the administration of the park will be a tremendous achievement. Cushion zone can be viably overseen through obvious limit boundary and protection instruction. Alternate approaches to oversee cushion zone are through asset observing and policing This investigation uncovered the administrations of a scarecrow which is an old measure like catching, includes hanging garments, materials; sack, and so on a tree in the ranch that means a rancher remaining to drive away from the trespassers. This embraced methodology of assurance was by the investigation of Lumbonyi *et al.* (2017) who saw that for ranchers to shield their homesteads from wild animals, local area mindfulness,

willful migration, increasing human watchfulness, monitor animals fencing of ranches and utilization of non-cognizant sound must be utilized. This examination is by the perception made by Ajayi *et al.* (2019) who evaluated crop striking by wild creatures in Kainji lake public park, Nigeria; are generally by primates (chimps) and they assaulted throughout the entire year. Then again, this examination portrays the degree of harm caused to the ranch items and loss of profits as far as to pay as being high and that primates (gorillas) are the likely looters of homestead produce as authenticated by Hill (2000) and Adeola *et al.* (2017). This load of accommodation of powerful administration methods of overseeing Oba Hills National Park cradle zone concurs with the assessment of Adeola *et al.* (2017) that the support zone of Kainji-Lake National Park can economically be overseen through edifications, protection instruction, and occasional sharpening of the cushion zone tenants.

At long last, the joint effort between park authority and networks' chiefs has not been sincere and this can present danger to the preservation of sustainable assets in the recreation center and its support zone. The disregard of support zone the board in Oba Hills National Park will accomplish more mischief than anything. Fauna species walk, wander and visit the support zone. True to form, there ought to be a sure degree of control and policing nearby to secure the wandering fauna species.) Total disregard as uncovered in this investigation may prompt the deficiency of some reasonable and significant natural life species which resultant impact may then be negative to the whole fauna species populaces.

Conclusion

The ravaging exercises of wild creatures just as harvest attacking essentially affect the vocations of provincial individuals. It is basic to look at any human-untamed life struggle issue inside the setting of monetary exercises, social and social lives as opposed to a detached wonder that doesn't matter to the lives of individuals outside of their financial exercises. To be compelling, alleviation methodologies and palliative measures should be considered not just on how much exercises of pillaging wild creatures sway crop yields and family financial aspects yet on how and why individuals see crop misfortunes how they do; what (the specific things) they anticipate from any intercession and who (park the board, protection administrators or non-legislative association) they hope to assume liability for the issue.

Conversely, this study assesses the damage by marauding wild animals in the study area. This finding concludes that the marauding animals cause wanton destruction to the crop farmlands, resulting in a significant loss in farm income. Hence, farmers should be discouraged from farming close to the park. A robust relationship between park managers and farmers will go a long way in preventing and protecting wild animals.

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