



## Assessment of Human-Wildlife Conflicts in Idanre Forest Reserve, Ondo State, Nigeria

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### Abstract

Balanced site ecology and favorable socio-economic environment are pertinent to sustainable habitat development for wildlife conservation. The study investigated the causes, levels of livelihood, and levels of human-wildlife conflict and constraints of Idanre forest reserve. Reconnaissance survey was conducted prior data collection to be acquitted and gather information about the forest reserve. The field survey was conducted from October, 2018 to April, 2019 and adapted descriptive survey designs using randomized questionnaire sampling techniques in six selected communities around the boundary areas of the forest reserve. Analytical techniques were employed through random sampling techniques and data were analyzed through descriptive techniques to elicit variables contributing to human-wildlife conflict in the study area. The result showed that 86% of the respondents were illiterate, middle-aged, married, males Christians with an average of four (4) people per household. The study revealed that crops damage were mostly reported as evidence of destruction which lead to human wildlife conflict in a close distance village to the reserve (2-4km). The result revealed that 29.4% of respondents are majorly prone to human-wildlife conflict (lives 1km-2km to the site), 43.1% of respondent are moderately prone to human-wildlife conflict (lives 2km-4km to the site), while 27.5% of respondent are least prone to human-wildlife conflict (lives 5km to the site) due to level of population increase. It is evidence that few respondents had their farm destroyed by wild animals and conflicts arise is taken care off through the forest reserve management. It is suggested that more hands need to be employed for meaningful and effective monitoring of management activities along the boundary areas of the reserve to reduce conflict. Conversely, awareness campaign / advocacy program should be a watch word towards reducing or curbing human-wildlife conflict along the protected areas.



**Keywords:** Conservation, Forest reserve, Human–wildlife conflict, Protection, Sustainable Ecosystem

## Introduction

Human and wildlife conflicts is an issue facing conservationist and protected areas managers (Monney, *et al.* 2010). Notably, Human wildlife conflict is defined as any instance in which the resource demands for humans and wild animals overlaps, which spurring competition for food, space and water and ensuing tension between people and wildlife conservation activities. Human wildlife topologists are well documented and include crop raiding, livestock depredation, human injury or death of wild animal (Gandina *et al.* 2013, McGuinness and Taylor, 2014). Across the globe, conflicts between wildlife and humans has undermine the mutual well-being preponderantly threatening the conservation of many wildlife species involved (Shilongo *et al.* 2018). Though, worldwide occurrence conflicts between humans and wildlife are most intense in the developing countries where greater percentage of the population lives in the rural areas which are mostly characterized by livelihood that centered on livestock holdings and agriculture (de –Boe and Banquete, 1998; Anandy and Radhakrisana, 2017). In these areas, competition between local communities and wild animals for the use of space and natural resources is particularly intense and usually direct (Enianp *et al.*, 2011). As a result of resident human population wildlife are vulnerable to danger and invariably decline (Clarke, 2010). Species most exposed to conflict are also shown to be more prone to extinction as a result of injury and death caused by humans that could either by accidental, such as road traffics or railway accidents, capture in snares set for other species or from falling into farm wells or intentional cause by retaliatory shooting, poisoning or capture (Ogada *et al.* 2003; Lamarque, *et al.* 2009, Distefano 2010).

In Africa, several studies have been carried on human wildlife conflicts and these had been observed to rank among the major threat to biodiversity conservation (Zisadza – Gandiwa *et al.*, 2016; Efiio *et al.* 2018; Eustace *et al.* 2018) and this has become frequent and severe in different part of the continent (Enianp *et al.* 2011; Amaja *et al.* 2011; Bezi Halen *et al.* 2017). Conflicts are more intense in area where both human and wildlife share ecosystem services mainly around protected areas (Ogra and Badola, 2008; Parker *et al.* 2011). Truly, as observed in the rural settings of southern African countries that making a living on the fringe of protected areas happen to be a risky business as the boundary are permeable to various degrees (Henderson *et al.* 2013). Conversely, living near the edges of protected area has often been seen to expose fringe communities to all sort of devastating costs, mainly among crop destruction and loss of livestock to wild predators or disease and often human mortality in a regrettable circumstance (Henderson *et al.* 2013; Matseketsa *et al.* 2018).

The communities that are in close proximity to the buffer zone of the Idanre forest reserve experience crop destruction and loss to their farm produce and this led to serious negative interaction to the forest elephant poaching in the year 2018 as reported by (Komolafe, 2019). However, conflict had been found to be more severe for communities residing in close proximity to protected area housing for large boarded herbivores such as African buffalo (*Syncerus caffer*) common hippopotamus (*Hippopotamus amphibious*) and African elephant (*Loxodonta africana*) and large carnivores likes lion (*Panther leo*), spotted hyena (*Crucuta crucuta*) and leopard (*Panthera pardus*) (Hemson *et al.* 2009) Nonetheless, “visible costs of human wildlife, it’s invariably has less visible effect, such as increase incidence of disease (Thirgood *et al.* 2005) and opportunity cost (Ogra and Badola 2008) which includes children forgoing their school time so as to guide planted feeds (Mackenzie *et al.* 2015; Mhurire – Mashapha



*et.al.*) and hidden social cost such as diminished state of psychological or physical wellbeing (Ogra 2008; Baua *et al.* 2013).

## **Materials and Methods**

### **The Study Area**

This study was conducted in Idanre forest reserve, located in the south western part of Nigeria. Idanre forest reserve is located in Idanre Local Government Area of Ondo State, Nigeria. The forest reserve covers an area of 540.45Km<sup>2</sup> and bordered with Akure -Osofo and Ala forest reserve. The coordinates of the forest reserve are located between latitude 6° 45<sup>1</sup> and 6° 58<sup>1</sup> 32'' N and longitude 4° 59' 15''E and 5° 12'4''E with a lowland rainforest of an altitude ranging between 10- 400 m above sea level. Inside the forest reserve are inselbergs and hilly forest spread across the entire area. The average altitude of the forest reserve is only about 177m above sea levels. The mean annual survey of the forest reserve was carried out to elicit information temperature of the site between 25°C and 26°C while the minimum temperature is 19°C and maximum is 33°C. The annual precipitation is between 1200mm -2200mm. The vegetation of the study area is a mixture of rain forest and derived savanna due to presence of human anthropogenic activities in the reserve. The climate of the site is characterized with a distinct dry season of about 3 -4 months (November – February) and of wet season (March – October) with a mean rainfall of 165mm. The reserve is home to various animals and listed among the forest reserve protected and approved at international level.

### **Method of Data Collection**

Focus group discussion and structured questionnaires were employed for data collection. One hundred (100) respondents were randomly selected from six communities (Ayede, Oniyewu, Alanke, Ilumoba, Olugboji and Imola) with close proximity to the buffer zone of the forest reserve. Twelve (12) respondents were randomly selected from each community.

### **Sampling Technique**

Reconnaissance survey of the forest reserve was carried out to elicit information and acquitted with the forest boundary. Random sampling procedure was employed during data collection. Data collection was administered through survey questionnaire and analyzed using Statistical Package for Social Sciences (SPSS) software.

### **Administration of Questionnaire**

Prior to the administration of questionnaire, the survey of surrounding villages in the six (6) communities' areas are visited for a formal introduction and interaction with the heads of the communities (district head/baale) who served as linked persons. During the visit, rough estimated number of household in each community selected to determine questionnaires need to be given in each area. One hundred questionnaires (100) were randomly distributed, twenty (12) in each community selected to allow equal opportunity for every person being chosen to react independently. Focus group discussion was organized with the village stakeholders to determine the level of interaction and examine the reasons for poaching on elephants as reported in 2018.

### **Statistical Analysis**

The data from the study will be analysed using descriptive statistics such as means, frequencies and percentages.

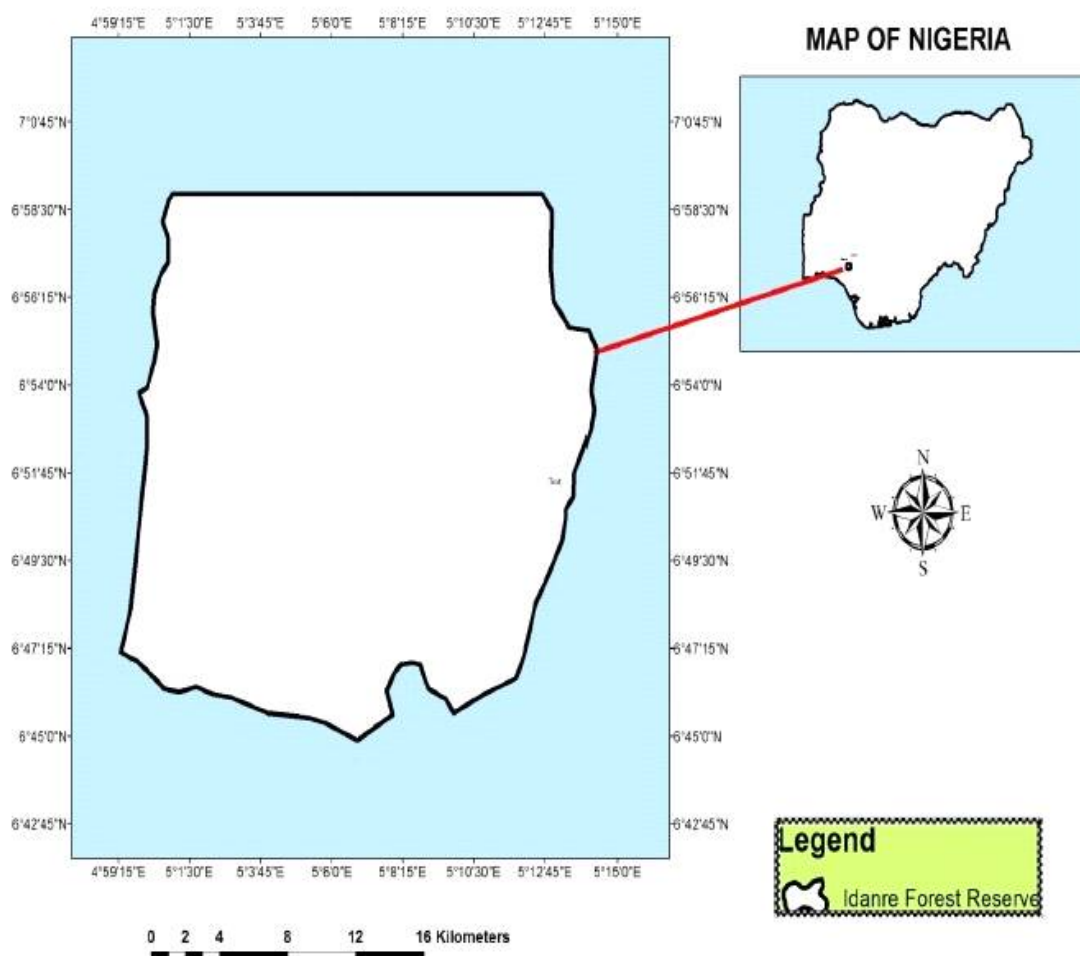


Figure 1: Map of Idanre Forest Reserve

## Results and Discussion

### Demographic characteristics of respondents in the surrounding villages

The respondents, 64% of which were male covered the wide range of the age group 21years old and the oldest claimed to be 90 years old (not confirmed), The dominant age group was between the 41-50 years with a mean age of 44.5 years while only 12% were above 50years of age. About 12% of the respondents lacked formal education, but many as 60% had tertiary education, while 28% of them acquired primary and secondary education. Farming was the dominant occupation (47%), followed by hunting expedition (36%) around the buffer zone and encroached boundary area of the forest reserve, while 17% of the respondents claimed to have been involved in one or more secondary occupation. Majority of the respondents (67%) were married while single were represented equally. In addition, 47% of the respondents were Muslims, while Christians and African traditionalist were equally represented. However, 53% of the respondents had less than seven persons in their household size (Table 1).

**Table 1:** Demographic characteristics of the respondents in the surrounding villages

Variables	Categories	Frequency	Percentage %
Age	21-30	20	20
	31-40	30	30
	41- 50	38	38
	Above 50	12	12
	Mean age = 44.5		
Gender	Male	64	64
	Female	36	36
Educational Status	Tertiary education	60	60
	Primary/Secondary	28	28
	No formal education	12	12
Occupation	Farming	47	47
	Hunting	36	36
	Artisan	5	5
	Logging	6	6
	Fuel wood harvesting	6	6
Marital status	Married	67	67
	Single	33	33
Religion	African Traditionalist	13	13
	Christianity	40	40
	Islamic	47	47
Household size	< 5	35	35
	5-7	53	53
	8-10	12	12

Source: Field Survey, (2019).

### Community Interaction around the Forest Reserve

The interaction of human wildlife living around the forest reserve was observed. Majority of the respondents (43%) were found living between 3-4 Kilometers to the reserve, followed by (29%) of them at 1-2 Kilometers while (28%) of the respondents are at 5 Kilometers away from the reserve boundary. The respondents, 84% reveals optimal increase in human population trends while 16% of them depicts decrease trends of human population. About 28% of the respondents shows that there are threats of wildlife to human population, but as many as 72% of the respondents revealed that wildlife is not a threat to human population. Majority of the respondents, (92%) agreed that wild animals should be prevented against human population while 8% of them disagreed with the protection (Table 2).

### Destruction cause by wild animal

The level of destruction and types of wild animals responsible for the causes was also revealed. During the investigation, 41% of the respondents revealed that their farm had been destroyed while 59% of them shows that there had been no destruction to their farm. The respondents (23%) depicted the destruction to their farm is annually, followed by as many as 68% of them revealed others, while 9% of the respondents shows the monthly duration of destruction to farm. Majority of the respondents(48%) revealed that there is destruction to their Cocoa farm, followed by 36% of them depicts destruction to their yam farm, 7% of the respondents shows that Maize farm were also destroyed, while 10% stated destruction to others farms were equally represented. Majority respondents (52%) shows that other wild animals are responsible for farm damage, followed by 30% of the respondents revealed that damage to



farm destruction are caused by the elephant, while 10% responsible by Buffalo and 8% by Baboon were equally represented (Table 3). Conversely, human –wildlife interaction due to close proximity to the buffer zone of the protected area revealed destruction to farm produce and extermination of the fauna resources (elephant) in 2018 by a poacher (Amusa,2016; Komolafe, 2019).

**Table 2:** Human wildlife interaction according to respondents

Variable	Frequency	Percentage %
Distance away from the Reserve boundary	28	28
5 KM		
3-4 KM	43	43
1-2 KM	29	29
Human population		
Increases	84	84
Decreases	16	16
Wildlife is a threat to human population	28	28
Wildlife is not a threat to human population	72	72
Wild animals should be prevented from human population	92	92
Wild animals should not be prevented from human population	8	8

Source: Field survey, (2019)

**Table 3:** Destruction of farm products by Wild Animals

Variables	Frequency	Percentage
Farm ever been destroyed	41	41
Farm not ever destroyed	59	59
<b>Duration of time destruction</b>		
Annually	23	23
Monthly	9	9
Others	68	68
<b>Types of crops destroyed</b>		
Maize	7	7
Yam	36	36
Cocoa	48	48
Others	10	10
<b>Animal responsible for damage</b>		
Elephant	30	30
Buffalo	10	10
Baboon	8	8
Others	52	52

Source: Field Survey (2019).

The respondents, (34%) of which agreed that conflict occurred while majority (66%) of the respondents did not agreed to human-wildlife conflict occurrence. Majority of the respondents, (48%) shows that human –wildlife conflict is caused as result of competition for the natural resources, followed by 40% of the respondents which revealed that expansion of agricultural activities lead to causes of human- wildlife conflict while 12% of others was also represented. On the specific loss due to occurrence of human –wildlife conflict, 56% of the respondents showed a specific loss to their farm crops while 44%)of them revealed their specific loss to livestock. Mitigation measures adopted on the damage caused by human –wildlife against wild animal was revealed. Majority (70%) of the respondents shows that the use of traps was good measures adopted against the wild animal to reduce occurrence of human – wildlife conflict,





followed by 21% of the respondents agreed in hunting down of the animal while 9% of the respondents on others approaches on measures were equally represented. Actions taken against animal invasion during human –wildlife occurrence was investigated. The respondents (40%) of which were taken killing of the wild animals whenever there was wild animals' invasion in their farm, followed by 30% of the respondents that shows reporting to local authority whenever there is invasion by the animals while 17% of the respondents and 13% of the respondents were equally represented (Table 4). Observation reveals that biodiversity of Idanre forest reserve is under threat due to human - wildlife interaction which made them to be declining as corroborated by Amusa *et al* (2011).

**Table 4:** Occurrence of human-wildlife conflicts

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
Conflict do occurred	34	34
Conflict did not occurred	66	66
<b>Causes of Human –wildlife conflict</b>		
Competition for Natural resources	48	48
Expansion of agriculture	40	40
Others	12	12
<b>Specific loss</b>		
Crops	56	56
Livestock	44	44
<b>Measures adopted against wild animal</b>		
Use of Traps	70	70
Hunting down the animal	21	21
Others	9	9
<b>Action taken against animal invasion</b>		
Report to Local authority	30	30
Killing the animal	40	40
Chase the animal away	13	13
Report to the Forest Reserve management	17	17

Source: Field Survey, (2019)

### **Resolution of conflicts**

The respondents, 51% of which believed that the best approach to prevent wild animal against conflict resolution is by decreasing the animal population in the forest reserve, followed by 32% of the respondents revealed that building fence round the forest reserve while 17% of the respondents on others was represented. It was observed that 86% of the respondents agreed to the effective ways of resolving conflict while only 14% of the respondents disagreed to the effective approach of resolving conflict resolution. In addition, the trends of conflict resolution were examined during the study. The respondents (64%) revealed drastic decrease trends in wildlife conflict while 36% of the respondents shows minimal increase trends of wildlife conflict as represented in (Table 5).

**Table 5:** Conflict resolution according to respondents

Variable	Frequency	Percentage
<b>How best will you prevent wild animals</b>		
Build fence round the reserve	32	32
Decrease the animal population in the reserve	51	51
Others	17	17
<b>Effectiveness of approach</b>		
Agree to the approach	86	86
Disagree to the approach	14	14
<b>Trends in Wildlife conflict</b>		
Increasing	36	36
Decreasing	64	64

Source: Field Survey, (2019)

## Conclusion

These findings suggest that habitat management, human anthropogenic activities and migratory routes of the fauna resources should be identified by the forest management. The human –wildlife interaction that led to conflicts which should be addressed towards reduction of fauna population and destruction of crop farm produce in the study area. Strict regulations should be promulgated for the protection of wild animals to maintain their natural habitat and humans should sensitized to move away from the buffer zone of the protected area. This study observed that Idanre forest reserve has good potentials of flora and fauna biodiversity component to be a national eco-destination center. In a broad scope, it inhabits diverse components of natural resources conservation outfits, a cultural practices and a good landscape which could promote internal income revenue generation for the state and national economy. It will as well provide employment opportunities to the support zone community. If this forest reserve is given proper support of all necessary inputs and outputs such as funds, infrastructural development and adequate publicity by upgrading to National Park status, it could be a suitable site of attraction for those inspiring to enjoy the natural beauty of nature and cultural heritage features of the country. It could as well serve as an open laboratory research center, in-situ conservation areas as well as recreation center in this part of the country.

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