

SURVEY OF AFRICAN FOREST ELEPHANT (*Loxodonta cycloptis*) IN IDANRE FOREST RESERVE, ONDO STATE, NIGERIA

***WAHAB, M.K.A. AND MUDASHIRU, G.O.**

Department of Wildlife and Ecotourism Management, Osun State University, Osogbo, Nigeria

*Corresponding author: munir.wahab@uniosun.edu.ng

Abstract

The study was undertaken to assess the trends and status of forest elephants decline in Idanre Forest Reserve. Reconnaissance survey was conducted prior to data collection from the site. Data collection was carried out with a structured questionnaire, which was administered to 120 respondents at the study area. Analytical techniques were employed by random sampling techniques; the data were analysed descriptively to determine the statistical distribution test. Observation reveals that occurrence of forest elephant in the study area is declining. Respondents that sighted either an elephant or its signs are 42.5% while 57.5% neither sighted an elephant nor their signs. It was recorded that out of the 42.5% respondents (n= 51) that sighted the elephant or their signs are those that sighted the animals physically (9.8%), those that heard the call of the animal (2.0%), those that saw the animal faecal droppings (7.8%), Those that heard their presence from other people (9.8%), those that sighted their footprints (23.5%) while those that sighted the carcass of the animals are 47.1%.The study reveals that there is a scaling down in the trend and conservation status of the elephant population index in the forest reserve, as recorded since 1994 to 2019. This is in line with the study conducted in 2018 and 2019. The findings suggest that habitat management, human anthropogenic activities and migratory routes of the forest elephants should be identified by the forest management. Strict regulations should be promulgated for the protection of these wild animals to maintaining their endangered species list in the study area.

Key Words: *Habitat management, Conservation, Forest elephants, Anthropogenic activities*

Introduction

The forest elephant is an ecological flagship species that deserve great conservation attention. This wild animal is an important keystone and umbrella species for conservation, research and eco-destination tourism. Due to their essential role in ecology of forest and savanna vegetation influencing the structure of both plants and animal

communities, which dominates the biomass of the habitat occupied. This species population has been declining due to illegal hunting and habitat destruction. Lack of knowledge on the population size and conservation status of the forest elephant is a major obstacle in measuring the appropriate conservation needs and measures in the

area where they are found as corroborated by Ikemeh (2009).

Traces of forest elephants still exist in Forest reserves and other protected area within the rain forest ecological zone of the country. This ensures the survival of the remaining elephant population which requires updates and adequate information. African forest elephants have deep ecological differences from savanna elephants. They are frugivorous (Blake *et al.*, 2009) and thus play an important role in one of earth primary carbon sequencing forest (Campos-Arceiz and Blake, 2011). Emphasis on the role played by forest elephants cannot be over emphasized because they move great quantities of large seed away in kilometres from their parent trees and thus maintain forest structure and diversity (Blake, 2009).

Modern African elephant densities are based on data up to 2007, recently shown to be correlated with human factors rather than ecological factor (de Boer *et al.*, 2013). The elephant sub-population of central Africa which include some population in Chad and northern Cameroon, were recognized in 2008 as an endangered species by the IUCN (Blank, 2008). The African elephant action plan drawn up by all of the African elephant range state, ranked poaching and illegal trades of elephant products as the top threats to elephants across the continent (CITES, 2010). The proportion of elephant carcasses found that had been killed illegally in 2010 was the highest on record (CITES, 2010) only found to be surpassed by 2011 levels (Milliken *et al.*, 2012).

Elephant meat is an important by-product, but its ivory is the primary reason for elephant poaching (Stiles, 2011). Based on this, elephants in general and mainly, the elephants of central Africa are under serious threats (Burn *et al.*, 2011). As a result of this poaching since 2011, which had been at

high rate had made elephant population to be in net decline (CITES, 2012). It is critical that a broader assessment need to be provided to understand the range and demographic trend on elephant population status (CITES, 2012). Anthropogenic activities pressure, continue to be a threat on large mammals in the world tropics along all the protected zones due to difficulties in surveying the forest habitat and the scale of forest elephant decline become difficult to be quantified (Maisels *et al.*, 2013).

Conversely, the forest elephant population status and distribution assessment are required to gather basic information needed for effective conservation management as suggested by IUCN (2008). These data will serve as basis on which IUCN assess the conservation status of the species and ensure conservation policy makers and managers to decide on the management strategies which best serve the forest elephant assessment in question (IUCN, 2012)

Materials and Methods

The Study Area

The study was undertaken at the Idanre forest reserve located in Idanre local government council of Ondo state, Nigeria. The forest reserve has a Landmass of about of 527.1km² although official compartment maps estimated it to be 540.45km². The coordinates of the forest reserve are 6° 45' and 6° 45' 32" North of latitude and 4° 59' 15" and 5° 12' 4" East of longitude (Figure 1). The forest reserve is a lowland rain forest with an altitude ranging between 10-400 m above sea levels. Inside the Idanre forest reserve there are inselbergs and hilly forest spread across the entire area.

Respondents in eight (8) communities' areas of the study site administered data collected. Systematic

random sampling method of data collection was adopted in each community. This involves on spot data collection from the willing respondents with fifteen (15) questionnaires allocated to each community. The vegetation of the ecosystem in Idanre forest reserve is of mixed deciduous forest and this is a mixture of rain forest and derived savanna due to presence of human anthropogenic activities in the forest reserve. The forest reserve is blessed with both fauna and flora wild resources but threatened by

environmental degradation as a result of human anthropogenic activities in and around the forest enclave. The major activities are farming, hunting and logging. Conversely, activities such as fuel wood harvesting, collection of flora leaves and indiscriminate burning of the flora species are part of anthropogenic. The climate of the forest reserve is characterized with a distinct dry season of about 3-4 month (November – February) and it's of wet season (between March – October) and with a mean annual rainfall of 165mm.

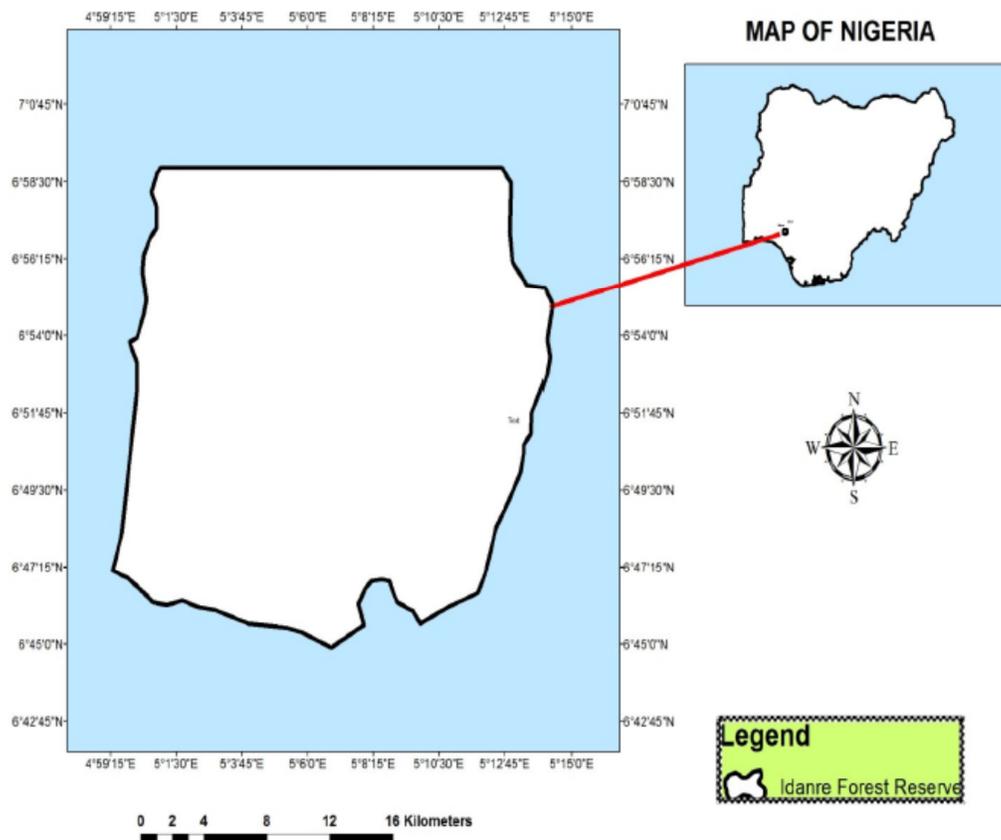


Fig. 1: Map of Idanre Forest Reserve, Ondo State.
Source: Awoku and Ogunjemite (2017)

Data Collection

Questionnaires were administered in those selected communities' areas around the (buffer zone) boundary of the forest reserve. Prior to the administration of questionnaire, the survey of

surrounding villages in the eight (8) communities' areas are visited for a formal introduction and interaction with the heads of the communities (District head/Baale) who serve as linked persons. During the visit, a rough

estimated number of households in each community are selected to determine questionnaires need to be given in each area. One hundred and twenty questionnaires (120) were randomly distributed, fifteen (15) in each

community selected to allow equal opportunity for every person being chosen to react independently (Table 1). The tools used in the analysis were descriptive statistics such as means, frequencies and percentages.

Results

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

Variabes	Categories	Frequency	Percentage
Age	21- 30	13	10.8
	31-40	36	30
	41- 50	37	30.8
	51-60	20	16.6
	Above 60	14	11.6
Gender	Male	90	75
	Female	30	25
Educational Status	Tertiary Education	23	19.2
	Primary/Secondary	54	45
	No formal education	43	35.8
Occupation	Farming	56	46.7
	Logging	22	18.3
	Hunting	39	32.5
	Traditionalist	3	2.5
Marital status	Married	104	86.7
	Single	16	13.3
Religion	African Traditional	37	30.8
	Christianity	31	25.8
	Islamic	52	43.3
Tribe	Yoruba	93	77.5
	Others	27	22.5

The respondents were of various age groups, occupations, religious denominations and educational background with their tribes. Mostly, the questionnaires explained to the respondents with the help of pictures design. The respondents were allowed ample time to complete the questionnaires. Questions in the questionnaires were translated to local languages found in the survey site (Yoruba, Hausa/Fulani) by the interviewers and further notes were recorded alongside with the structure questions.

Results

The respondents, (75%) of which were males covered a wide range of age groups with youngest being 16 years old and the oldest claimed to be 80 years (not confirmed). The dominant age group (30.8%) was between 41 – 50 years old, while 11.6% were above 60 years old. The finding shows that (35.8%) of the respondents lacked formal education, but as many as 45% of them had both primary/secondary education; while (19.2%) of the respondents had received tertiary education. During the study, observation revealed that farming (46.7) was the dominant occupation, followed by

hunting (32.5%) while traditionalist (2.5%) was also found at the boundary communities closer to the forest reserve. Majority of the respondents (43.3%) were of Islamic religion, followed by African traditional religion (30.8%) while the least (25.8%) are of

Christianity religion. The majority of the respondents (86.7%) were married while those that are single are equally represented. It was recorded that majority of the respondents (77.5%) were Yoruba by tribe while others tribe were equally represented (Table 1).

Table 2: Distribution of respondent's sightings

Elephant sight/sign	Frequency	Percentage
Yes	51	42.5
No	69	57.5
Total	120	100

The findings recorded that (57.5%) of the respondents did not sighted the elephants nor their signs while the rest (42.5%) of them sighted them and the signs during the study (Table 2). Also, it was observed that (47.1%) of the respondents had the highest sightings of

the Elephant carcass, (23.5%) of them had moderate values on their foot prints sighting, (9.8%) of the respondents had the actual observation of the species while other variables based on the animal indices were equally represented (Table 3).

Table 3: Distribution of respondent's based on Elephant indices

S/N	Variables	Frequency	Percentage
1	Foot print	12	23.5
2	Feecal dropping	4	7.8
3	Actual observation	5	9.8
4	Heard their call	1	2.0
5	Carcass	24	47.1
6	Heard from other people	5	9.8
Total		51	100

The trend of the animal from 2012 to 2019 is presented in Figure 2. A fluctuating increase in the abundance of the animal was observed and in 2019, the

animals were not sighted. The abundance was peak in 2017 and least in 2019.

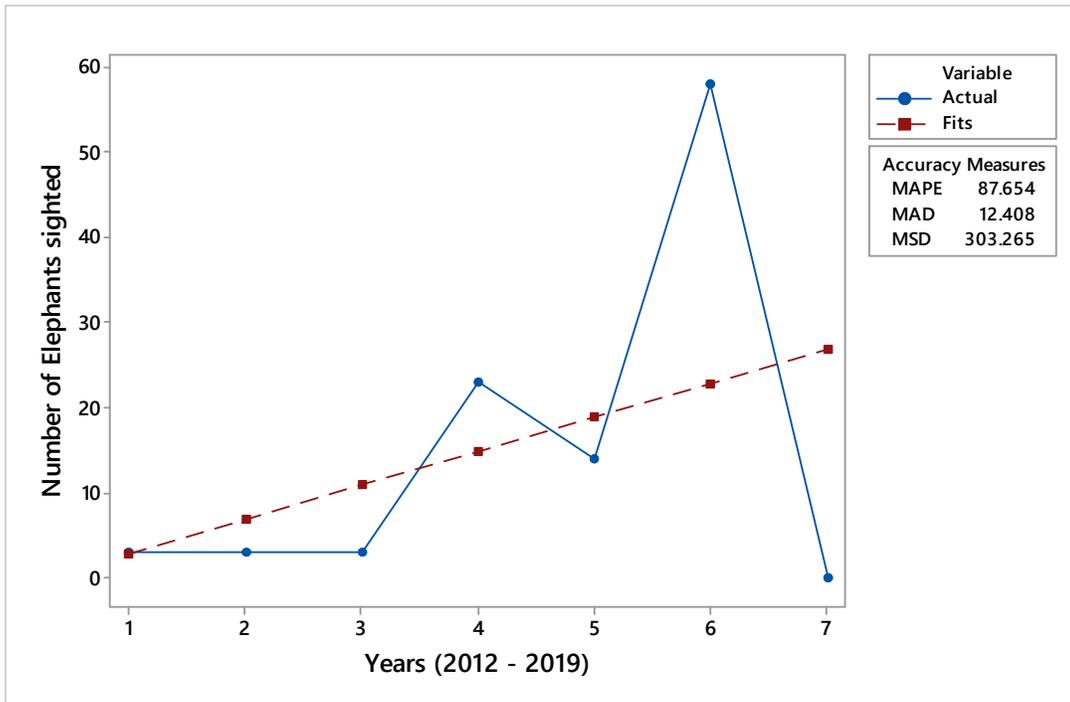


Fig. 2: Trends of Forest elephants over year 2012-2019

Discussion

The study reveals information on the occurrence of forest elephant in Idanre forest reserve through field survey and questionnaire administration to the respondents based on their proximity to the study area. During the study, twelve (12) compartments of the study area were randomly selected for physical observation of the wild animal.

Observations reveal that, biodiversity of Idanre forest reserve is under threat of human anthropogenic activities. These anthropogenic pressures have caused adverse effect on the occurrence of the forest elephants due to their habitat destruction. These was revealed by de Boer *et al.* (2013) that modern African elephant density are based on data up to 2007 as recently been shown to be correlated to human factors rather than ecological factors.

Also, the trends of forest elephants in the study area declined due to migratory nature of the elephant, anthropogenic pressures on them as corroborated by

Amusa *et al.* (2011) signifies a major factor in the decline trend. Conversely, sightings of the animal revealed that the status of the forest elephant is at risk of becoming exterminated due to killing of elephant in 2018 by a poacher. Nonetheless, these findings revealed that decline in population of the forest elephant from the year 1994-2019 are caused by anthropogenic activities as corroborated by the findings of Amusa (2016).

Conclusion

Investigation on the occurrence of forest elephants in Idanre forest reserve is at decline rate, and the animal status is at risk of becoming exterminated. The decline index was observed during the field survey and based on the record from the inhabitants living closer to the reserve. Also, anthropogenic pressures play a major role in the decline index of the species, which lead to the migration of the animals to the nearby forest reserve that are undisturbed.

Recommendation

The following recommendations were made based on the finding from this survey:

1. There is need to improve the animal home range habitat as this will curtail their migration.
2. There is need for government to enforce and implement new regulations on the protection of forest elephants in the study area, since they are in endangered species list of IUCN conservation.
3. The management of the Idanre forest reserve in Ondo state needs to identify the animal migratory route and ready to protect the species for their state and nation at large for benefit of ecotourism development.
4. There is need for conservation awareness campaign to the people living around the boundary of the forest reserve on values of conservation.
5. Advocacy enlightenment campaign on importance of wildlife conservation and its protection on natural resources should be a watch word to the communities at the study area.

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