

Mammal Species Composition in Ini Local Government Area, Akwa Ibom State, Nigeria

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Abstract

Ini Local Government Area (ILGA) is the home of biodiversity, rich in many species of fauna and flora. However, anthropogenic activities carried out by the inhabitants of this area have been a threat to the ecosystem, thereby exterminating the wildlife resources. The data for this study were collected from in-depth interviews with hunters, bushmeat markets, bushmeat sellers, indirect and direct wildlife survey methods, and a semi-structured questionnaire was employed for the household survey. A multiple sampling technique was adopted. A stratified random sampling technique was utilized to stratify the study area into six strata (clans). A proportional sampling technique was used to select 11 villages. In contrast, 60 household heads were randomly selected for questionnaire administration. The study revealed seventeen (17) species of mammal, which accounted for four orders, with Rodentia being the highest (47%). Most species (94%) had the conservation status of Least Concern (LC) based on the IUCN Red List of Threatened Species. Furthermore, illegal hunting and deforestation for agriculture and infrastructural development in the area have led to the loss of wildlife habitats. Thus, a great need for conservation and management practices to protect these vulnerable mammals and their habitats is needed. Hunting laws, afforestation, and reforestation programs should be implemented.

Keywords

Habitat, Ini LGA, Mammal, Wildlife Conservation, Species

1. Introduction

There are about 4600 species of animals today called mammals; despite an astonishing diversity of form and habitat, they all share a long list of characteristics

not found in any other organisms [1]. Nigeria is rich in wild fauna resources and can boast high biodiversity. According to Nigeria's Fourth National Biodiversity Report [2], there are 247 mammal species in Nigeria. The diversity of Nigeria's wild animals can be attributed to its tropical location, size, and ecosystems [3]. Mammals are good bio-indicators of environmental conditions due to their rapid turnover rate, high biotic potential, ability to invade reclaimed areas, and sensitivity to ecological disturbance [4]. Hunting has become an all-comers affair with greater acceptance of bushmeat in Nigeria's urban centers and poverty in rural areas. This consumption in Akwa Ibom State has rendered almost any wildlife species liable to be consumed [5]. New genomic tools provide an unprecedented view of past and present population processes and add much more than simply improving the detection and understanding of the expansion [6].

Globally, wildlife is faced with severe challenges of endangerment as well as extinction due to habitat destruction and over-exploitation as a result of vast growth in human population and its significant rise in urbanization and high demand for food, especially in the rural areas where animal protein is their primary source of protein [7]. Activities such as excessive hunting and habitat destruction/degradation explain virtually all the impact of humans on endangerment and extinction [8].

This situation has posed a threat to Ini Local Government, where uncontrolled hunting activity has been going on for decades. This worsens due to a lack or poor enforcement of hunting and environmental laws to regulate poaching activities, thereby endangering the species in the habitats. This situation provided the impetus for this study, which aimed to examine the existence of mammalian fauna for proper conservation strategies for the remnant species.

2. Materials and Methods

2.1. Study Area

The study was conducted in Ini Local Government Area, Akwa Ibom State, Nigeria. ILGA is one of the 31 local government areas of Akwa Ibom State. Ini Local Government Area is located approximately between latitudes 5°20' and 5°31'N and longitudes 7°38' and 7°53'E. It is classified among the lowland areas in South-Eastern Nigeria, lying below 200 m [9]. Ikono bounds it, Obot Akara Local Government Areas, and Abia State (see **Figure 1**). It has a landmass of 320,451 sq.km. Its natural resources include limestone, clay, gravel, fine sand, crude oil, and iron ore. Additionally, the forest region provides timber and firewood. Because of the land expanse of the area, the people are predominantly farmers, producing such food items as rice, palm produce, cassava, cocoa, and banana, among others. Ini Local Government Area is recognized as the food basket of Akwa Ibom State. Therefore, there are good potentials for Agricultural expansion in the area. Hunting is also practiced by the people who are mainly of Ibibio stock.

Ini Local Government Area comprises six clans: Ikpe, Itu Mbonuso, Nkari,

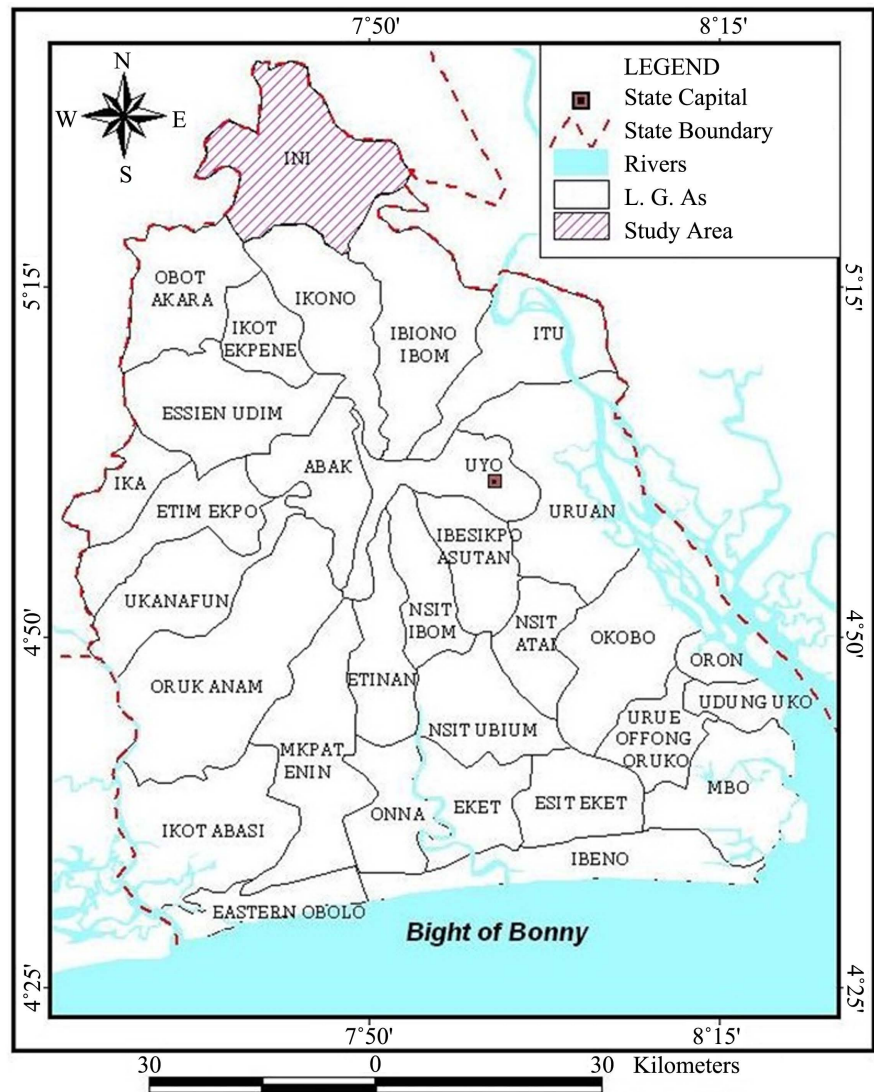


Figure 1. Map of Akwa Ibom state showing the study area. Source: Office of Surveyor-General, Akwa Ibom State.

Iwere (who make up Ini proper), Ukwok, and Odoro Ikono. There are 93 villages in the Local Government Area [10]. There are two seasons: rainy (April-October) and dry (Nov-March). It has a tropical climate with a maximum annual rainfall of 2000 mm, while monthly temperatures range between 26°C and 28°C. The area's vegetation is typical tropical rainforest though humans have modified a more significant portion of it into secondary forest. It is subdivided into dry land and freshwater swamp (moist) rainforests. The dry land or lowland rainforest is shrinking rapidly in the area and currently exists as a riparian forest along rivers and streams, numerous in the area [9].

2.2. Methods

The study adopted both primary and secondary methods of data collection. A multiple sampling technique was adopted. A stratified random sampling tech-

nique was utilized to stratify the study area into six strata (clans). A proportional sampling technique was used to select 11 villages. Overall, 60 household heads were randomly selected for questionnaire administration. Simultaneously, an in-depth interview with hunters, bushmeat markets, and sellers and indirect and direct wildlife survey methods were also employed. The Hunters in the communities were also consulted and interviewed, different bushmeat markets and sellers were consulted to know the species of animal they sell. Data collected were analyzed using simple descriptive statistics.

3. Results

The survey found 17 mammal species in the study area. The order Rodentia had an abundant number of species and accounted for the greatest order of species in the study area (47%), followed by Artiodactyla (29%) and Carnivora (18%). In comparison, the order Primates had the least (6%). The different mammal species of Ini Local Government Area, Akwa Ibom State, are presented in **Table 1**.

Table 1. Mammalian fauna found in Ini local government area and Their Conservation Status based on IUCN red list of threatened species [11].

Order	Family	Species	Common name	Local name	Conservation status
Artiodactyla	Bovidae	<i>Hippotragus equinus</i>	Roan Antelope	Edop	LC
Artiodactyla	Suidae	<i>Potamochoerus porcus</i>	Red River Hog/Bush Pig	Edi Ikot	LC
Artiodactyla	Tragulidae	<i>Hyemoschus aquaticus</i>	Chevrotain	Esoh	DD
Artiodactyla	Bovidae	<i>Philantomba monticola</i>	Blue Duiker	Aso	LC
Artiodactyla	Bovidae	<i>Tragelaphus scriptus</i>	Bush buck	Okoyo	LC
Carnivora	Viverridae	<i>Genetta poensis</i>	King Genet	Atan	LC
Carnivora	Viverridae	<i>Civettictis civetta</i>	African Civet	Ikiko/Ebua Ikot	LC
Carnivora	Herpestidae	<i>Crossarchus obscurus</i>	<u>kusimanse</u> or <u>dwarf mongoose</u>	Nkukwa	LC
Primates	Galagidae	<i>Galagoides demidovii</i>	Dwarf Galago	Nte-Eboh	LC
Rodentia	Thryomyidae	<i>Thronomys swinderianus</i>	Grass cutter/Cane rat	Ineh	LC
Rodentia	Sciuridae	<i>Xerus erythropus</i>	Ground squirrel	Uneneh	LC
Rodentia	Nesomyidae	<i>Cricetomys gambianus</i>	Gambian Pouched Rat	Oyot	LC
Rodentia	Muridae	<i>Rattus rattus</i>	Rat	Ekpu	LC
Rodentia	Hystricidae	<i>Atherurus africanus</i>	African brush-tailed porcupine	Ebiong	LC
Rodentia	Sciuridae	<i>Anomalurus</i> spp.	Flying Squirrel	Ife	LC
Rodentia	Sciuridae	<i>Funisciurus</i> spp.	Tree Squirrel	Adua	LC
Rodentia	Muridae	<i>Mus musculus</i>	Mouse	Usine	LC

LC, Least Concern; DD, Data Deficient.

4. Discussion

4.1. Mammal Species

Based on the oral interview with different hunters in the study area, Ini Local Government Area used to harbor many mammal species. However, a large proportion of forest is being depleted and used for many activities like agriculture, and construction, among others. Additionally, hunting of mammal species is ongoing at an unsustainable level because the people in the study area have considered bushmeat to taste good and generate revenue to sustain their living. Because there is no enforced control, all sizes of mammals are hunted with various guns, traps, even dogs by professional and non-professional hunters. Furthermore, the pressure imposed on the animals and their habitat by villagers as they continue to cut down trees for timber, firewood, stakes, and to clear the land for agriculture, construction, and other infrastructural developments, have caused most of the mammal species that were once common in this study area to become either low in diversity or extinct. Most of the species in the study area are Least Concern (LC); only one species has the conservation status of Data Deficient (DD). This shows that most species are at a lower risk and do not qualify to be categorized under a high-risk category. It also shows that the area does not harbor any of the “Threatened Species,” *i.e.*, Critically Endangered, Endangered, and Vulnerable. The study area is rich in rodents, carnivores, artiodactyla, and very few species of primates. The study results are consistent with the Akpan *et al.* [12] survey on the Abundance of Mammal Species in Akwa Ibom State.

4.2. Habitat Descriptions

In the simplest form, an organism’s habitat is where it lives [13]. A habitat is an ecological or environmental area inhabited by a particular species of animal, plant or other types of organism. The habitats of the mammal species found in the study area include;

- Terrestrial habitat: Terrestrial habitat has to do with those animal species found on land. Mammal species found in the study area that live on land include; Roan Antelope (*Hippotragus equinus*), Red River Hog/Bush Pig (*Potamochoerus porcus*), King Genet (*Genetta poensis*), Bush Buck (*Tragelaphus scriptus*), Grass Cutter/Cane Rat (*Thryonomys swinderianus*) (Figure 2), African Civet (*Civettictis civetta*), African Brush Tailed Porcupine (*Atherurus africanus*), Rat (*Rattus rattus*), Ground Squirrel (*Xerus erythropus*) (Figure 3), Gambian Pouched Rat (*Cricetomys gambianus*) (Figure 4), Blue Duiker (*Philantomba monticola*), Mouse (*Mus musculus*). Most of these species are found in burrows, primarily those in the order Rodentia; examples include Rat, Gambian Pouched Rat, and African Brush Tailed Porcupine. These Animals are mostly nocturnal, *i.e.*, they mainly operate at night.
- Arboreal: Many species are arboreal, spending most of their time in the forest canopy. Mammal Species found in the study area that belong to this category include Tree Squirrels (*Funisciurus* spp.) (Figure 5), Kusimanse, or Dwarf

Mongoose (*Crossarchus obscurus*), Flying Squirrel (*Anomalurus spp*), Dwarf Galago (*Galagoides demidovii*).

- Some of these species are found both on land and in the forest canopy; for example, kusimanse or dwarf mongoose (*Crossarchus obscurus*) is found in trees (palm trees) and anthills.



Figure 2. *Thryonomys swinderianus*.



Figure 3. *Xerus erythropus*.



Figure 4. *Cricetomys gambianus*.



Figure 5. *Funisciurus* sp.

4.3. Factors behind the Disappearance of Many Species in the Study Area

Most of the hunters interviewed in the study area attributed the disappearance of many species that were once common in the study area to the following factors; overexploitation, habitat destruction and fragmentation, agriculture, and other anthropogenic pressures.

Significance of these Species in the Study Area.

Bushmeat is the main source of protein in most rural areas. People in the study area love eating bushmeat; they use them in preparing a meal. Also, there are cultural uses of some of these species parts. For example, most people in the study area said that the spines of African Brush Tailed Porcupine (*Atherurus africanus*) are used to plaiting women's hair. Furthermore, most hunters noted that hunting is their source of livelihood, which has contributed immensely to the disappearance of many species because the animals are hunted heavily. Although most of the species are currently classified by the IUCN [11] as of "Least Concern," if the current trends continue, most of these species' status may eventually decline to threatened status as it disappears from large parts of their current range due to poaching and loss of habitat to agriculture and infrastructural developments.

5. Conclusion

Anthropogenic activities have been responsible for the extinction of many wildlife species through habitat destruction and unsustainable exploitation of natural resources. For example, the survey showed the mammalian species of Ini Local Government Area, Akwa Ibom State, Nigeria. Most species were found in the order Rodentia, and the absence of many species in this area is attributed to several factors like hunting, habitat destruction, agriculture, and infrastructural development; sequel to these, there is, therefore, a great need for conservation and management practices to protect these vulnerable mammals and their habitats.

6. Recommendations

Based on the findings of this study, the following recommendations are of importance;

- Hunting laws should be enforced to prevent poaching or illegal hunting activities.
- Afforestation and reforestation programs should be timely carried out to rehabilitate degraded ecosystems.
- Suitable areas should be reserved to form a sanctuary for the mammalian fauna of the area.
- The populace should be enlightened about the importance of wildlife.

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Conflicts of Interest

The authors declare no conflicts of interest.

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