



## **Attitudes to Bush Meat Trade and Wildlife Conservation at a Market Town in Lowland Rainforest, Rivers State, Nigeria**

**M. Aline E. Noutcha<sup>1</sup>, Alfred I. Omenihu<sup>1</sup> and Samuel N. Okiwelu<sup>1\*</sup>**

<sup>1</sup>*Department of Animal and Environmental Biology, University of Port Harcourt, Nigeria.*

### **Authors' contributions**

*This work was carried out in collaboration between all authors. Authors MAEN and SNO designed the study. Author AIO undertook the field work under the supervision of author MAEN. Author MAEN managed the literature search and wrote the first draft of the manuscript. Author SNO produced the final draft of the manuscript. All authors read and approved the final manuscript.*

### **Article Information**

DOI: 10.9734/JSRR/2016/28255

#### Editor(s):

- (1) Robert G. DelCampo, University of New Mexico, Anderson School of Management, New Mexico.  
(2) Mario A. Pagnotta, Department of Science and Technologies for Agriculture, Forestry, Nature and Energy (DAFNE), Tuscia University, Italy.

#### Reviewers:

- (1) Paul Andre DeGeorges, Tshwane University of Technology, Pretoria, South Africa.  
(2) Rodrigo Vargas Pêgas, Universidade Federal do Rio de Janeiro, Brazil.  
Complete Peer review History: <http://www.sciencedomain.org/review-history/16531>

**Original Research Article**

**Received 12<sup>th</sup> July 2016**  
**Accepted 20<sup>th</sup> September 2016**  
**Published 13<sup>th</sup> October 2016**

### **ABSTRACT**

**Aims:** The study was undertaken to investigate the attitudes of residents (involved and not involved) to the bush meat trade and conservation at a market town in rural lowland forest, Rivers State, Nigeria.

**Methodology:** Against the background of meteoric rise in and alarming increase in the number of endangered and threatened mammalian species in Nigeria, studies were initiated at the main bush meat market town, Omagwa, in Rivers State, Nigeria. Questionnaires were administered to a number of respondents: 103 (not involved in the trade), 42 (Vendors), 37 (Hunters), 08 (Middle men).

**Results:** Although some of the hunters had been in the trade for many years, more than 50% entered the occupation within the last 10 years. Nearly 70% of them were involved in other occupations before they became hunters; only 30% were unemployed before they ventured into hunting. More than 35% of vendors were civil servants. The attitudes of those not involved in the trade were diverse, but nearly 50% thought it was a threat to wildlife. With regards to conservation,

\*Corresponding author: E-mail: [okiwelu2003@yahoo.com](mailto:okiwelu2003@yahoo.com);

nearly 50% offered very positive suggestions on wildlife management. Among hunters, about 60% suggested ways of conserving wildlife, although they were of the view that to enhance the trade, hunting needed to be intensified. Vendors were totally in support of conservation by different means.

**Conclusion:** All 190 respondents, with the exception of an individual not involved in the trade, were keen to ensure that future generations would have too many opportunities to behold the diversity of wildlife at Omagwa. It was therefore clear that they were interested in sustainability, one of the main goals of conservation, despite some contradictory statements. Suggestions on wildlife management policies are presented, beginning with enlightenment on the concepts of conservation, sustainability, wellbeing, etc., and other inter relationships.

*Keywords: Attitudes; occupation; bush meat trade; wildlife conservation; Nigeria.*

## 1. INTRODUCTION

The IUCN published its World Conservation Strategy (WCS) in 1980. It was prepared with financial backing from UNEP and the WWF and benefiting from comments by FAO and UNESCO. The WCS had a clear practical objective: "to stimulate a more focused approach to the management of living resources and to provide policy guidance on how this can be carried out [1]. Conservation has three main objectives: To maintain essential ecological processes and life-support systems, to preserve genetic diversity and to ensure the sustainable utilization of species and ecosystems. The sustainability concept has been extensively discussed [1-5]. The number of animal species listed as threatened or endangered has increased from 1700 in 1988 to 3800 in 1996, to 5400 in 2000 [4]. A recent IUCN Red Book of threatened Animals reported that about 25% of all known species of animals are at risk of extinction [6]. The terms: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) are degrees of threat. Critically Endangered is a species that faces extremely high risk of extinction in the wild in the immediate future. Endangered, refers to a species that faces very high risk of extinction in the wild in the near future. Vulnerable is when a species faces high risk of extinction in the wild in the medium-term future [7]. There are several reasons for the conservation of endangered or threatened species: utilitarian (Importance in Medicine, Agriculture, Industry, Ecotourism, etc.); maintaining the functions of ecosystem and the biosphere, justification (biological diversity adds to the quality of life, providing landscapes that can appeal to some people); moral justification (based on the belief that species have a moral right to exist, independent of our need for them) and cultural justification (specific species are of great importance to "indigenous people") [4]. Humans have become an important cause for

the alarming increase in endangered and threatened species. This occurs in several ways: through intentional hunting or harvesting (for food, commercial purposes, sport or to control a species that is considered a pest), through disruption or elimination of habitats, through pollution of the environment, and through introduction of exotic species, including new parasites, predators or competitors of some native species.

The numbers of threatened mammalian species in Nigeria rose from 26 in 1996 to 29 (Endangered- 13, Vulnerable -16) Animals [6]. In Nigeria, there has been no update of the 1993 Endangered Species Decree. The non-enforcement of Conservation laws and the unrestricted entry into the commercial Bush meat trade are threatening wildlife in Nigeria. More than 1.2 metric tonnes of bush meat, excluding elephants are harvested in a month in Nigeria [7]. Of the eleven primate species listed that occur in Nigeria, 81.82% were threatened by hunting and 18.18% were affected strictly by habitat destruction [8]. It was against this background that studies were initiated at the main bush meat market town, Omagwa, in Rivers State. Results from earlier studies include information on species composition, abundance, cost and the resilience of the Greater Cane Rat, *Thyromys swinderianus* [9-11]. The present study focuses on attitudes of residents (involved and not involved in the trade) to the trade and wildlife conservation.

## 2. MATERIALS AND METHODS

Similar to this study's setting, Stromayer and Ekobo [12] placed active hunting communities in the dense humid lowland forests of South Cameroon into three categories: (i) villages on the highway, (ii) people living along logging roads leading to the main highway, and (iii) people living in defunct logging towns. The bush meat

market town, Omagwa, 4°98'N, 6°91'E, is in the first category of the Stromayer and Ekobo [12] grouping. It is situated on the busy interstate highway that connects two State capitals, Port Harcourt (Rivers State) and Owerri (Imo State). It is located in rural, lowland rainforest with no industries, major businesses, etc. The Port Harcourt International Airport is at the periphery of the town.

Questionnaires were administered across all villages at Omagwa; 390 were administered but only 190 responded. They were administered over a 6-month period (February-July) to cover both the dry and rainy seasons and ensure adequate coverage. Those not involved in the trade were 103, while those involved were: Hunters (42), Vendors (37), Middlemen (8). Responses were sought on educational qualifications, occupation, previous employment, ways of improving the trade, attitude to conservation, the need for future generations to see the diversity of wildlife at Omagwa, etc.

### 3. RESULTS

The past employment profile of those (Hunters, Vendors, Middlemen) involved in the bush meat trade at Omagwa was very diverse. Among the eight middlemen, their previous employment chart was: unemployed, 1 (12.5%); Civil servants, 2 (25%); Students, 2 (25%); Taxi driver, 1 (12.5%); Restaurant supervisor, 1 (12.5%); Bus conductor, 1 (12.5%). Among the vendors, the previous employment profile was: 4 Engineers (10.81%); 13 Civil servants (35.14%); 7 Traders (18.92%); 2 Bankers (5.41%); 3 Clergy (8.11%); 1 Welder (2.7%); 2 Drivers (5.41%); 1

Health professional (2.7%); Caterer, 1 (2.7%); 1 Farmer (2.7%); 1 Auto mechanic (2.7%); and 1 Bicycle mechanic (2.7%). The hunters stated that they had been in the business for several years: 2 for 20 years and above (4.76%), 16 for 10-19 yrs (38.1%), 22 for 2-9 yrs (52.38%), and 2 for <2 yrs (4.76%). Fourteen (33.3%) of the hunters were unemployed before entry into hunting, while 28 (66.67%) were in diverse occupations prior to their entry into commercial hunting. Among the 103 residents of Omagwa not directly involved in the bush meat trade, all but one were interested in their children's children being in a position to enjoy nature's gift of diverse wildlife at Omagwa. In respect of attitude to the bush meat trade, views were diverse (Table 1).

In response to suggestions on how to restore dwindling wildlife populations, those not involved in the bush meat trade were virtually split: approximately 50% had no suggestions, other than to ascribe the trade to the non-availability of job opportunities and the other group had very useful suggestions on the conservation of wildlife (Table 2). In response to the need for conservation, the hunters offered a variety of views. The majority view was positive (Table 3). In the community, the vendors were the most conservation-conscious group, as reflected in their responses (Table 4). They were resolute in their beliefs that future generations should see the wildlife diversity at Omagwa. The 8 middlemen were unanimous in the view that future generations should have the opportunity to view the diverse wildlife in the forests at Omagwa. Their views on avenues to improve the trade were concentrated on increased sales.

**Table 1. Attitudes of residents not involved in the bush meat trade**

Responses	Numbers/Percentages
1. Gift of nature	20 (19.42%)
2. Tradition of community	2 (1.94%)
3. Resulting from unemployment (Alleviating poverty)	26 (25.24%)
4. Good but threatens wildlife	34 (33.01%)
5. Threatens wildlife	17 (16.5%)
6. Abhor the trade	4 (3.88%)

**Table 2. Attitudes of residents not involved in the bush meat trade to wildlife conservation**

Responses	Number of respondents
Bush meat trade is a job opportunity and thus the Government should not interfere	49
Conserve wildlife populations, selective hunting, reduce deforestation and bush burning, Government should establish reserves, enforce existing environmental laws, prosecute those involved in the trade, enlightenment, Government should establish forest management committees	51

**Table 3. Responses of hunters to the need for conservation to forestall wildlife extinctions**

Responses	Numbers
Hunt only mature wildlife, enforce laws, enlightenment, stop bush burning, governments should protect forests	27
Need for loans to change occupations to save wildlife	8
No extant laws against hunting	7

**Table 4. Responses of vendors to the need for conservation to prevent wildlife extinction**

Responses	Numbers
Enforce existing conservation laws	20
Afforestation/reduction in bush burning	8
Selective hunting	7

#### 4. DISCUSSION

Although some of the hunters were in the network for nearly two decades, more than 50% ventured into the occupation within the last decade, probably because of the certainty of steady, modest earnings. Only 33% of the hunters were unemployed, before their entry into hunting, indicating that hunting had always been an integral aspect of life at Omagwa and environs. This was in contrast to the Mount Cameroon area, Cameroon, where most people considered hunting as a degrading way to make a living [13]. Many hunters, vendors and middlemen were of the view that they would love to see future generations, their children's children behold the amazing diversity of wildlife at Omagwa and environs. Sustainability is a major goal of conservation [4]. This view was championed by the vendors, the employment profile with the highest proportion of secondary (high school) graduates.

Surprisingly, nearly 50% of residents not involved in the trade were of the view that the trade was a genuine way to make a living and therefore Government should not intervene, a view also held by most of the hunters who advocated intensified hunting to enhance the trade. Studies have shown that the bush meat supply is usually greater in secondary forests and forest-farm-fallow mosaics [14], typified by Omagwa and

environs. However, as Lang et al. [15] stressed, open access harvesting has never been sustainable. Since virtually all residents were of the view that they wanted their children's children to behold nature's gift to Omagwa in wildlife diversity, they were apparently on the same trajectory as Brundtland's sustainability [1], which states "meets the needs of the present without compromising the ability of future generations to meet their own needs" [1]. Although some have described Brundtland's definition as vague, it has the character of a moral principle and reminds us of the limits of the planet's resources, a forceful argument for conservation to achieve sustainability. Based on the findings in this study, a vigorous enlightenment campaign should be inaugurated that explains in simple terms the concepts of conservation, sustainability, abundance of bush meat and their interrelationships. The guidelines for bush meat management policies advocated by Cowlshaw et al. [16] for Ghana are applicable in Nigeria, with some modifications. These are:

- ✚ Initiatives that permit the sustainable hunting of robust species, but also protect vulnerable species, will allow communities to continue benefitting from the bush meat trade whilst protecting biodiversity and its associated ecosystem services.
- ✚ Agricultural "farmbush" landscapes have the potential to provide a significant and sustainable supply of bush meat. These areas may be important components of bush meat management policies.
- ✚ Management attention should focus primarily on those markets where vulnerable species (slow reproducers) are still being traded, since these species are likely to face rapid local extinction in the absence of effective regulation.

1\* The World Commission on Environment and Development was created as a consequence of General Assembly Resolution 38/161 adopted at the 38<sup>th</sup> Session of the United Nations in the fall of 1983. The Secretary General appointed Mrs Gro Harlem Brundtland of Norway, then leader of Norwegian Labour Party as chairman [http://www.un/documents.net/Our\\_Common\\_future.pdf](http://www.un/documents.net/Our_Common_future.pdf). formerly known as the World Commission on Environment and Development (WCED), the mission of Brundtland Commission was to unite countries to pursue sustainable development together. [https://en.wikipedia.org/wiki/Brundtland\\_commission](https://en.wikipedia.org/wiki/Brundtland_commission).

- ✚ Management interventions in the bush meat commodity chain will be most effective when all interest groups are involved. This approach is most important when no single group controls the market, but it will be beneficial in all market conditions.
- ✚ All regulatory frameworks developed for the sustainable management of the bush meat trade must be supported by effective law enforcement”.

In addition to the sustainable hunting of robust species and protecting vulnerable species, sustainable hunting methods should be exclusively used. In West and Central Africa, 177 species have been documented as hunted and 17% listed as threatened [17]. Snaring, using wire cable or tough plastic snares is probably the most widespread method [18]. It is wasteful and non-selective of species. In fact 27% of snared animals are lost to decomposition and scavenging. Nocturnal hunting with shotguns is practiced commonly when hunting duikers, because they freeze to torchlight; nets are also used [19] (1991). Hunting with guns facilitates more selective and efficient hunting of large-bodied and arboreal animals [20]. Off take rates should be below replacement rates to ensure sustainability. This implies working with local hunters to monitor their off takes – such as increase/decreased catch per unit of effort, distance increase/decrease from village that they must go to make hunting successful, increase/decrease in mature vs. immature harvest all by species, etc.

Conservation in the 20<sup>th</sup> century was dominated by attempts to reserve places for nature (Parks, Sanctuaries, etc.) and separate humans from other species; opponents labeled this strategy as “fortress conservation” or “fences and fines” [21]. By the 1990s, this approach was challenged by the community-based strategy [22]. One of the major drawbacks of the protected area system was the ineffectiveness of law enforcement. These laws did not feature the communities in formulation and implementation. Hutton et al. [23] contrasted the two narratives. Two of the strongest proponents of community-based wildlife management or natural resources management generally are De Georges and Reilly [24]. They argue that enforcement of existing laws will alienate traditional hunters by considering them as poachers. They state

convincingly that law enforcement can only work when the local community, especially the resource users, i.e: fishers, hunters, sawyers, wild medicine/food collectors, etc. become the eyes and ears of the game wardens. The game/natural resource laws need to be reviewed and written in a manner that makes these resource users part of the solution, instead of the problem by integrating them into the monitoring of off takes to assure sustainability. The revised laws should empower local communities/ resource users to stop outsiders from entering their conservation areas, turning colonial/ government laws that created Open Access Resources, back into Common Property Resources. The achievements of community-based natural resources management in Africa has been dubbed the 3E (Empowerment, Economics, Environment) [25]. Based on data from socio-economic demographic studies, coupled with the pervasive positive attitude in the community to conservation, the authors have recommended Community-based Wildlife Management [26]. Five community-based wildlife management projects have been identified in Nigeria; the major projects are the Hadeija-Nguru Wetlands Conservation project and the Gashaka Gumti National Park Management Project [27].

## 5. CONCLUSION

The community's pervasive positive attitude to conservation and sustainability, coupled with the advocated enlightenment campaign and incorporation of the modified policies advocated by Cowlishaw et al. [16] should provide a springboard for Community-Based Natural Resource Management (CBNRM) [23]. Community Wildlife Management (CWM) programs have been adopted in Nigeria; they include: The Hadeija-Nguru wetlands conservation program, the Okomu River National Park- Ouwango Division, the Bonny Island integrated conservation project, the Gashaka Gumti National Park. The Hadeija-Nguru Wetlands Conservation program and the Gashaka Gumti National Park Management project are the two major initiatives [27].

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. WCED. Our Common future, Oxford University Press, Oxford; 1987.
2. Reid D. Sustainable Development: An introductory guide. Earthscan publications Ltd London. 1995;261.
3. Holmberg J. Policies for a small planet. IIED. Earthscan Ltd. London. 1994;361.
4. Botkin DB, Keller EA. Environmental Science. John Wiley & sons Inc. USA. 2003;668.
5. Okiwelu SN, Noutcha MAE. Sustainability: The over-Arching concept in environmental science and development. Ann Res Rev Bio. 2016;9(6):1-10.
6. Animal Info & Endangered Animals. Animal Info-Nigeria; 2016.  
Available:<http://www.animalinfo.org/country/nigeria.htm>
7. Ape Alliance. The African bushmeat - A recipe for extinction; 2010. Available:<http://www/4apes.com/Bushmeat/report/Bushmeat.pdf>
8. Lee PC, Thornback J, Bennett EL. Threatened primates of Africa. The IUCN Red data Book, IUCN, Gland Switzerland and Cambridge, UK; 1999.
9. Okiwelu SN, Ewurum N, Noutcha MAE. Wildlife harvesting and bushmeat trade in Rivers State, Nigeria I species composition, abundance and cost. Scientia Africana. 2010;9(2):1-8.
10. Okiwelu SN, Akpan-Nnah PM, Noutcha MAE, Njoku CC. Wildlife harvesting and bushmeat trade, Rivers State, Nigeria II resilience of the greater cane rat, *Thyonomis swinderianus* (Rodentia: Thyronomidae). Scientia Africana. 2010; 9(2):18-23.
11. Nzeako SO, Uche AO, Umoren P, Ezenwaka C, Nzeako MM. Inventory of harvested wildlife sold at the Omagwa bush meat market, Rivers State, Nigeria, Annals of Biological Research. 2016;7(6): 12-19.
12. Stromayer KAK, Ekobo A. Biological surveys of southeastern Cameroon. EU, ECS. New York, USA; 1991.
13. Gadsby EL, Jenkyns PD. Report on hunting in the proposed Etinde forest reserve. Limbe Botanic Garden & Rainforest. Genetic Conservation Report, Cameroon; 1992.
14. Robinson JG, Bennett EL. Having your wildlife and eating it too: An analysis of hunting sustainability across tropical ecosystems. Animal Conservation, The zoological Society of London; 2004.
15. Lang S, Kimpel N, Albrechtsen L. No new recipes for bush meat. Forum. Oryx. 2002; 36(4):330.
16. Cowlshaw G, Mendelson S, Rowcliffe M. Managing the bush meat trade in Ghana. Conservation. id21 Natural resources highlights #2; 2006.  
Available:[www.id21.org](http://www.id21.org)
17. Taylor G. Synthesizing bush meat research effort in West and Central Africa. A new regional database. Biol Conserv. 2005;181:199-205.
18. Mallon DP, Hoffman M, McGowon PK. An IUCN situation analysis of terrestrial and freshwater fauna in West and Central Africa. Occasional paper of the IUCN Species Survival Commission. 2016; 54.
19. Wilkie DS, Curran B. Why do Mbuti hunters use nets? Ungulate hunting efficiency of archers and net-hunters in the Ituri Rain forest. American Anthropologist. 1991;93(3):680-689.
20. Kumpel N. Impact of gun-hunting on diurnal primates in continental equatorial Guinea. Int J Primatol. 2008;29:1065-1082.
21. Brockington D. Fortress conservation: The preservation of the Mkomazi game reserve, Tanzania, Oxford- James Curry; 2002.
22. Adams WM, Hulme. Conservation and communities: Changing narratives, policies and practices in African conservation. In Hulme and Murphree eds. 2001;9-21.
23. Hutton J, Adams WM, Murombedzi JC. Back to the barriers? Changing narratives in biodiversity conservation. Forum for Development Studies. 2005;2:341-370.
24. De Georges PA, Reilly BK. The realities of community-based natural resource management and biodiversity conservation in sub-Saharan Africa. Sustainability. 2009;1:734-788.
25. Roe D, Nelson F, Sandbrook C. Community management of natural resources in Africa-impacts, experiences and future directions. IIED. 190; 2009.
26. Noutcha MAE, Omenihu AI, Okiwelu SN. Socio-economic demographics of

residents at a bushmeat market town, Rivers State, Nigeria. Resources and Environment. Scientific & Academic Publishing. 2016; 6(3):63-65

Available:<http://journal.sapub.org/re>

DOI:10.5923/j.re.20160603.03

27. Zeba S. (Ed) Community wildlife management in West Africa. A regional review. Evaluating Eden Species. Working Paper No 9. 1998;117.

© 2016 Noutcha et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*

*The peer review history for this paper can be accessed here:*

*<http://sciencedomain.org/review-history/16531>*