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**ECONOMIC ANALYSIS OF BUSHMEAT TRADE IN
ABEOKUTA, OGUN STATE**

***J.A. SOAGA, A.L.A. SHOTUYO, O.O. ODUNTAN AND J.G. FATOKI**Department of Forestry and Wildlife Management, Federal University of Agriculture,
Abeokuta, Postcode 110001, Abeokuta, Nigeria***Corresponding author: soagaj@yahoo.com**

ABSTRACT

This paper examines bushmeat trade in Abeokuta comprising of Abeokuta north and south LG areas of Ogun State. Forty-five (45) respondents were accidentally selected across the two local government areas. The respondents were involved in bushmeat trade at three different levels. There were hunters (31%), ethno-medicine sellers (49%) and bushmeat sellers (20%). The result of the study revealed that majority (69%) of the traders were female. Also, 87% of the respondents had poor education. Therefore respondents could not keep record of their transactions, but from qualitative and quantitative analysis of the profitability of the business, the trade may be described as profitable (89%). An estimate of average annual profit of the trade in the study area was N453,004. Other benefit though insignificant is that of protein supplement of the family (8%) derived from the trade. Major constraint of the business is the seasonal fluctuation of supply (85%) which affects income of respondents. However, a total of 11 common species of wild animals were traded, therefore it is recommended that conservation policy in terms of educational programme that target hunters and sellers, in order to sensitize them on the danger of indiscriminate harvesting of the animals must be put in place along with improved domestication effort.

Keywords: Bushmeat, hunters, profitability, ethno-medicine, sellers and income**INTRODUCTION**

Wildlife encompasses all living organisms that occur in the wild state with the term normally restricted to animals with backbones (NEST, 1991). Its management and conservation involve projective utilization and active manipulation of wild animals and their habitat for the benefit of mankind (Afolayan, 1986). Wild ungulates and other animals are generally acknowledged as valuable sources of meat and other commodities in many tropical societies, and are widely consumed in many West African countries, as they contribute between an

estimated 20% and 100% of the animal protein consumed (Asibey, 1974; FAO, 1989; Jayeoba *et al.*, 2013). Most wildlife animals consumed by the populace are locally termed "Bushmeat" and are consumed by both rural and urban dwellers with variation in magnitude of its exploitation and consumption (Bifarin *et al.*, 2008). It has been observed that many people find pleasure in exploiting wildlife resources without giving necessary consideration to their conservation and as such leads to extinction of these animals in the wild (Nasi *et al.*, 2011; Heywood, 2013). Onadeko *et al.* (1989) observed that a vast

majority of people are more interested in what to consume than what to conserve, with pressure on bushmeat while the situation is worsened by poverty due to the poor economic condition in most developing countries. As a result of social inequality in wealth and poor income distribution in the society, many people who cannot hunt either because they are urban based, elite, wealthy or lack the technical know-how are willing to pay in order to have a taste of bushmeat. This in turn necessitates the insurgence of buying and selling of bushmeat, otherwise referred to as bushmeat trade. This is, however, contrary to the situation in the Amazon Basin. Rushton (2005) reported that in South America, urban bushmeat consumption is negligible because of the existence of important livestock production systems. This contributes immensely to conservation in the amazon. Furthermore, with increasing 'riches' non indigenous people turn generally to alternate sources of protein Bushmeat have served our material needs for food, bones and hides, a dependence which has played an important role in our cultural and perhaps even biological evolution (Harding and Teleki, 1981; Powell *et al*; 2011). Various benefits of wildlife include sources of protein, game viewing and tourism, revenue from export, aesthetic and heritage value, educational value, wildlife by-products and employment opportunities. Of all these benefits, the use of wildlife animals as sources of protein is widely known among the populace as some rural communities still supplement their diets with bushmeat although estimates of the nutritional dependence are difficult to obtain (Prescott-Allen, 1982; Martin, 1983; Trinca and Ferrari, 2007).

In Nigeria, the consumption of bushmeat is fast becoming an inseparable delicacy from

the diet of all classes of people. According to NEST (1992), fish is a popular source of protein and is being supplemented by bushmeat, which constitutes about 20% of the mean annual consumption of protein in the rural areas of the South. Charter (1970) estimated the value of bushmeat consumed in Southern Nigeria at N20 million while the total value for the entire country was put at N30 million per annum. Today the value of animal protein from wild animals and fresh water fish consumed annually is well over N200 million (Afolayan, 1986; Olaoye, 2010) yet FAO, (2006) categorized Nigeria is a protein-deficient country. While native inhabitants kill, eat or sell wild animals, the rich and affluent customers patronise the grasscutters, snails and antelopes where they are hosted along roadsides or in expensive hotels and restaurants in Nigeria as a demonstration of preference for bushmeat.

From the foregoing, the reliance on bushmeat as a source of protein for consumption and other uses is increasing among the populace and therefore there is a need to focus on its effective trading and marketing. Depending on the available market system, it is important to ascertain the impact of the trade on the wildlife conservation and suggest ways of improving the trade and maintain it on sustainable bases as well as take care of the remaining stock in the wild. This therefore underscores the importance of this study with the following objectives:

- ◆ Describe the socio-economic characteristics of the respondents
- ◆ identify benefits and constraints of bushmeat trade in the study area
- ◆ determine the profitability of bushmeat trade,
- ◆ identify the species of bushmeat offered for sale in the study area.

METHODOLOGY

Study Area

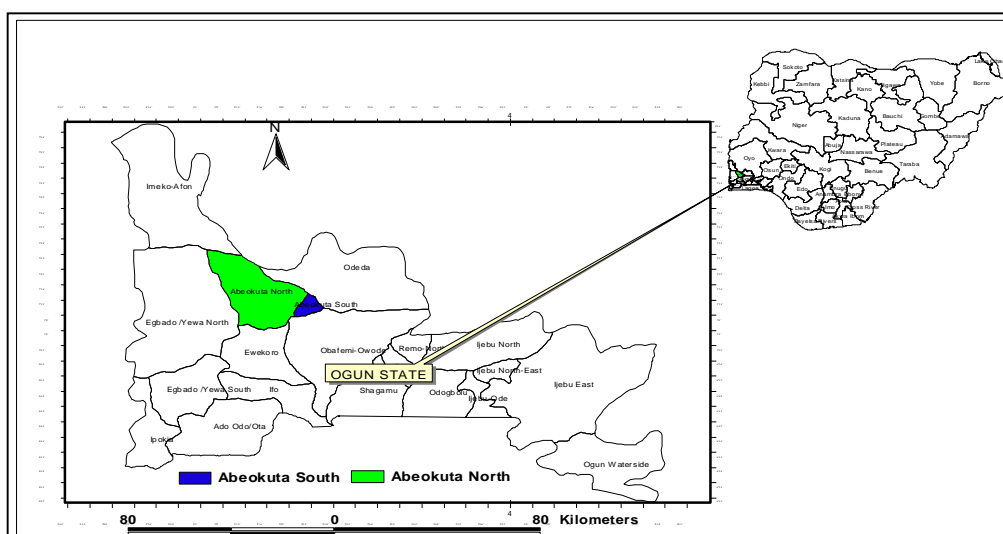
The study was carried out in Abeokuta comprising of north and south local council areas in Ogun State, located between longitude 3° 30' north and 3° 37' east and latitude 7° and 7° 5' north (Awojuola, 2001). The two important rivers in the town (Figure 1) are the Ogun and Oyan rivers both flowing and joining in a confluence north of Abeokuta, the State capital (Popoola, 1990).

The study area lies entirely within the lowland area within altitude of between 0-200m above sea level. The town is characterized by two distinct topographical units: the flat low-lying areas mostly adjacent to the rivers and the uplands which are flat to slightly undulating plateau of the low-elevation terrace and further from the rivers. The areas are not naturally flooded but with high water table due to heavy soil texture and a natural drainage system for evacuating the excess rainfall.

Three rock formations can be identified in the two local government areas: Sedimen-

tary rocks which are more extensive and cover about 69% of the study area; metamorphic rocks which occupy about 20% of the study area; and hydromorphic rocks which are made up of mainly alluvial parent materials and occupy the remaining 11% of the two local government areas. Most soils in the area contain a mixture of coarse alluvial and colluvial deposits and are largely forested. The forest soils generally have low to medium cation exchange capacity and organic matter content, variable base saturation point and mostly acidic reaction with the exception of the gleysoil that lack hydromorphic properties (Ojo, 1990). The vegetative types in the area are derived savanna and southern guinea savanna- grass with tree complexities (Popoola, 1990). Abeokuta has a peri-urban forest (Arakanga forest reserve - 2.39 km²) located in Odeda council area but closer to Akomoje, the headquarters of Abeokuta North Council Area. However, the rising population in Abeokuta brought encroachment and damage to the forest and wildlife population leading to poor animal population in the reserve.

Fig. 1: Map of Ogun State Showing the Study Area



Data collection

The instrument of data collection was questionnaire. Data were collected from ethno medicine sellers, hunters and bushmeat sellers in the study area. A total of 45 respondents were interviewed for this study. Respondents cut across hunters (14) representing 31%, ethno-medicine sellers (22) representing 49% and bushmeat sellers (9) representing 20%. Questionnaire information include the demographic data of the respondents, the species of animals involved, the seasonal fluctuation of the bushmeat as well as marketing trend of bushmeat species in the study area.

Accidental Sampling procedure was used for the study since specific locations were selected where these activities exist. The questionnaire was administered to respondents in local language. Names of animals were also given in the local language, translation was done using Happold (1998) and other field guides.

Data Analysis

Data from the survey were analysed using both de-scriptive statistics and statistical inferential proce-dures. The variables analysed include age, gender, marital status, income and educational background of respondents as socio-economic characteristics of respondents. Profitability of the trade was determined through budgetary analysis based on costs and returns where profit is determined by this expression: $II = TR-TC$ and

- II= Profit; TR= Total revenue and
- TC= Total Cost
- TR= Output x Unit price and
- TC= TFC+TVC
- TFC= Total Fixed Cost and
- TVC= Total Variable Cost

$$TFC = \frac{V - S}{n}$$

V = Value of item

S = Salvage value which is set at 0 initially

n – Expected lifespan in years

On-sight observation of total number of animals sold per day was estimated over a period of 2weeks at the bushmeat market in Olomore, Abeokuta. This was done when it was becoming clear that the respondents were not willing to disclose how much they made per day as well as quantity of wild animals sold per day.

Profitability analysis for the trade was determined with the expression below:

$TR - TC/CS - WC$ (Scarborough and Kydd, 1992): Where

TR- Total Revenue; TC-Total Cost ; CS- Value of capital stock including land and equipment and WC- Value of working capital (This is assumed to be the initial capital invested on animals only).

RESULTS AND DISCUSSION

Socio- demographic characteristics of the respondents

Table 1 shows the socio-demographic characteristics of respondents. The result indicates that 69% were female and 31% were male. This shows that bushmeat trade is female dominated business. This is in line with the findings of Osemeobo (1990) on gender distribution in biological resources. The dominating age group was 31-40 with 53% with mean age of 38years. Thus showing that

respondents were within active age. Majority (96%) of the respondents were married. However, a clear distinction could not be drawn on business category as 80% of the respondents served as both retailer and wholesaler. There is preponderance of respondents with less than ten years experience in the trade as 24% recorded the highest percent of respondents with such experience. However, average years of experi-

ence was 13years indicating acquisition of experience overtime. Most (47%) of the respondents had primary education a situation indicating low literacy level coupled with zero percent tertiary education. This finding is in line with findings of Idumah and Taiwo (2009) that reported on the determinants of consumption of 'Iru' (Dadawa) in Ibadan, Oyo State.

Table 1: Demographic Characteristics of the Respondents

Characteristics	Frequency	Percentage	Mean/Mode
Sex			
Male	14	31	
Female	31	69	Female
Total	45	100	
Age Category			
15-30	5	11	
31-45	24	53	38years
>45	16	36	
Total	45	100	
Marital Status			
Single	2	4	
Married	43	96	Married
Total	45	100	
Business category			
Wholesale	5	11	
Retail	4	7	
Wholesale and retail	36	80	
Total	45	100	
Years of Experience			
<10	11	24	
10-20	9	20	
21-30	6	13	13yrs
31-40	7	16	
41-50	6	13	
>50	6	14	
Total	45	100	
Educational Background			
Primary	21	47	Primary
Secondary	6	13	
Tertiary	0	0	
No-formal edu	18	40	
Total	45	100	

Source: Field Survey, 2011

Benefits derived by respondents

Table 2 shows the benefits derived by respondents from bushmeat trade. Profit with 51% recorded the highest benefit. Therefore majority of the respondents were involved in the trade for profit making with considerable interest on livelihoods. This

indicates that bushmeat is a cash earning commodity in the study area. Protein consumption recorded the next benefit and this is line with the findings of Jayeoba *et al.*, (2013) that noted bushmeat in the local diets of rural populace for centuries.

Table 2: Benefits derived from bushmeat trade

Derivable benefit	Frequency	Percentage
Profit	23	51
Daily income supplement	6	13
Protein consumption	16	36
Total	45	100

Constraints of the Trade

Table 3 shows the constraints to bushmeat trade. Seasonal fluctuation in supply of stock had the highest response with 85%, materials for hunting recorded 11%, while

transportation and storage recorded 2% each with least response. The respondents indicated variation between wet and dry season and noted better stock in the dry season.

Table 3: Constraints of the business

Constraint	Frequency	Percentage
Seasonal fluctuation in supply	38	85
Materials for hunting	5	11
Transportation	1	2
Storage facility	1	2
Total	45	100

Source: Field survey, 2011

Nature of Bushmeat sold

Table 4 shows the form in which the meat were sold in the market. Smoked meat recorded the best preferred meat with 42%. This is perhaps as a result of preservation of

the meat for a short period before consumption. The least preferred is fresh meat (25%) . This is because the meat easily decay within the shortest possible period.

Table 4: Form of Bushmeat sold by the Respondents

Method	Frequency	Percentage
Fresh	11	25
Smoked	19	42
fresh and smoked	15	33
Total	45	100

Source: Field survey. (2013)

Labour

The labour involved in the trade was divided into three that is purchasing, processing and selling. Adult and children were usually involved in the business. Adult respondents generally were involved in all the areas of labour requirement but with more female involvement than male. This explains the higher percentage of female respondents in the study. However, there are overlapping activities such as processing and selling. During processing, the bushmeat may be sold to consumers without taking it to any local niche for marketing. Children, mostly female were equally in-

involved in all areas of labour requirement. They render assistance to adult respondents. Male children respondents were more involved in marketing under the close watch of adult respondents. Thus, the variation of labour involvement in different activities showed dichotomous dominating pattern of wildlife activities. Strenuous work were mostly undertaken by male while female were more involved in marketing and finale sale of product. The breakdown of their involvement is presented in table 5. The figures in parenthesis indicate the percentage population involved in the trade for adult and children.

Table 5: Labour participation in trade

Gender	Purchase (%)		Processing (%)		Selling (%)	
	No.	Percent	No.	Percent	No.	Percent
Adult male	2	(4.4)	1	(2.2)	4	(8.8)
Adult female	3	(6.6)	2	(4.4)	4	(8.8)
Children male	4	(8.8)	3	(6.6)	5*	(11.1)
Children female	13	(28.8)*	11*	(20.0)*	16*	(35.5)

Source: Field survey, 2011 *NB: Multiple response for overlapping activities.

Costs and Return Analysis

The cost and return showed the profitability of the bushmeat trade. The analysis indicated that a net profit of N455,004.00 was made annually per respondent. This therefore indicates that the trade is profitable with profitability rate of 31% which suggests that for every naira invested in the trade, a return of 31kobo will be ensured.

This may however be a pointer to the fact that the bushmeat niches is gradually becoming an established market specifically for bushmeat trade. This is in line with the findings of Lameed and Alade (2013) that noted the existence of well developed bushmeat market in West Africa in both rural and urban areas.

Table 6: Costs and Return

Description	Amount (N)
No. of observation	1
Gross Annual Return (GAR) (Unit price x Quantity)	2,415,888
VARIABLE COST	
Input cost	1,795,733
Tax / Permit	5,000
Transportation cost	156,240
Total Variable Cost (TVC)	1,956,973
Gross Profit (GP)	458,915
FIXED COST (FC)	
Depreciation: Straight line Method	5,911
TOTAL COST: TC = TVC + TFC	1,962,884
NET PROFIT (NP) (GP - FC)	453,004
Ratio Analysis (GP/TC)	0.23
Profitability Rate (%)	
TR – TC/CS – WC = 453009/14,659	31

Average Purchase and Selling Price for the Animals

Average profit per annum based on the profitability analysis of eleven common wild animals sold per day (ceteris paribus) is four hundred and fifty three thousand and four naira.

Table 7 shows an average price of the common animals that were always sold by the

respondents per day. There is variation in the price of the animals based on species, acceptability and social attachment to different species. The least price of N130 was observed with *Francolinus* species and the highest price of N830 was observed with *Cephalophus* species. These animals equally have medicinal value and therefore promotes trade among ethno-medicine sellers. The bones, meat, skin and the entire animal have

specific uses in traditional medicine. This is in line with the findings of Lameed and Alade (2013) that reported on utilization pattern of wildlife biodiversity resources in traditional medicine in Ayetoro, Ogun State.

Table 7: Average cost and selling price of common wild animals sold per day

S/N	Species	Common and Local Name	Average Cost Price (N)	Average Selling Price (N)
1	<i>Thryonomys Swinderianus</i>	*Grasscutter (Ewuju/Oyaa)	281.95	825.00
2	<i>Cricetomys gambianus</i>	Giant Rat (Okete)	110.00	115.71
3	<i>Cephalophus maxweli</i>	Maxwell Duicker (Etu)	573.35	828.00
4	<i>Phyton regius</i>	Snake (Ere)	100.00	185.00
5	<i>Manis gigantea</i>	Pangolin (Aaka)	230.00	287.50
6	<i>Francolinus bicalcaratus</i>	(Aparo)	87.00	130.00
7	<i>Genetta victoriae</i>	Civet Cat (Eta)	150.00	200.00
8	<i>Protexerus strangerii</i>	Ground Squirrel (Okere)	95.00	115.00
9	<i>Lepus capensis</i>	Hare (Ehoro)	162.50	293.75
10	<i>Bitis gabonica</i>	Gaboon Viper (Elebu/Oka)	137.14	265.00
11	<i>Naja melanoleuca</i>	Red necked Cobra (Agbadu pupa)	128.00	140.00
	Total		2,055.44	3,382.46

Source: Field survey, 2011. *NB: Grasscutter -most preferred among bushmeat buyers

CONCLUSION AND RECOMMENDATION

The categories of people involved in bushmeat trade are mostly women except the hunters who are the suppliers of the bushmeat. The trade arena is dominated by illiterate and semi-illiterate people who were more experienced in the business. Most of the traders got into the business through inheritance and therefore started with little or no capital. Though there were numerous benefits of bushmeat trade, its profitability

is the most important. This is affirmed through profitability analysis with a profit of N453,004.00 annually. Even though respondents find it difficult to estimate their sales through record keeping, the traders still remember vividly the cost of each animal sold despite the volume of trade, which further underscores why they do not bother about education. The quantity of animals traded pointed to the impact of the trade on conservation. Ola Adams (1999) postulates that hunting pressure is a single factor that can be

responsible for loss of biodiversity. This is further in line with Stokstad (2013) that noted exploding bushmeat market in Malaysia where hunters arrive in droves to improve the trade. Thus, the influx of people into trading location creates market niches that contribute to encourage trade in bushmeat. Accordingly, Treutt and Truett (1987) reported that such influx contributes to improve the economic structure of the area. However, based on the number of species that were tagged rare in Nigeria according to IUCN red list, it is concluded that the trade is having a negative impact on biodiversity protection of the area and if the trend should continue in this manner, extinction of most of the species may be inevitable (Nasi *et al.*, 2008; Nasi *et al.*, 2011). A conservation programme under wildlife policy of raising awareness about the danger of livelihoods and trade in bushmeat is needed. This can be achieved through effective monitoring and enforcement of game laws in the study area. This will go a long way to sensitise the hunters, sellers and the public on the need for adequate conservation practice in the study area for protection of the gene pool and encourage the resiliency of animals to improve animal population.

REFERENCES

- Afolayan, T.A.** 1986. *Introduction to Tropical Agriculture*. eds. Anthony Youdewe, Ezedinma, F.O.C. and Onazi Ochapa. Longman Pp. 173-182.
- Awojuola, E.** 2001. *Ogun State Investors guide*. Published by Eni-Meg Nigeria Limited in collaboration with Ogun State Ministry of Industries and Social Development.
- Asibey, J.A.** 1974. Wildlife, a source of protein in Africa, South of Sahara. *Biological conservation*. 6(1): 32-39.
- Bifarin, J.O., Ajibola, V.A.J., Fadiyimu, A.A.** 2008. Analysis of marketing of bushmeat in Idanre Local Government area of Ondo State, Nigeria. *African Journal of Agricultural Research*, 3(10): 667-671.
- Charter, J. R.** 1970. The economic value of Wildlife in Nigeria. Proceedings of First Annual Conference, Forestry Association of Nigeria. Dec. 2, 1970.
- FAO** 1989. Food Security Assistance Programmes: Methodology for Preparing Comprehensive National Food Security Programmes, "Second Ad Hoc Consultation with FSAS Donors, Rome, 27 October, 1989.
- FAO** 2006. Year book of Fishery Statistics Summary Tables. www.fao.org/fi/statist.asp
- Happold, D.C.D. (1998): *The mammals of Nigeria*. Oxford Science Publication, U.K. 1356p.
- Harding, R.S.O., Teleki, G.** 1981. *Omnivorous Primates: Gathering and Hunting in Human Evolution*. New York Columbia University Press.
- Heywood, V.** 2013. Overview of agricultural biodiversity and its contribution to nutrition and health. In J. Fanzo, D.Hunter *et al.*, eds *Diversifying food and diets: using agricultural biodiversity to improve nutrition and health issues in agricultural biodiversity*. London, Earthscan. Pp. 35-67.
- Idumah, F.O., Tolawo, O.A.** 2009. Determinants for consumption of Iru (Dadawa) in Ibadan Southwest local government area, Oyo State. *Obeche* 27 (2): 95-99.

- Jayeoba, W.A., Okonkwo, M.C., Omonona, A.O., Oladele, O.N., Suleman, R.A., Ojo, O.S., and Olumuyiwa, S.A.** 2013. Implication and consequences of bushmeat trade on Wildlife population In. Forest industry in a dynamic global environment (eds. Labode P., Idumah, F.O, Ogunsanwo, O.Y and Azeez, I. O). Proceeding of 35th annual conference of Forestry Association of Nigeria (FAN), 11th-16th February, 2013, Sokoto.
- Lameed, G.A., Alade, O.T.** 2013. Assessment of bushmeat and consumers acceptability in Ayetoro, Yewa north , Ogun State, Nigeria In. Forest industry in a dynamic global environment (eds. Labode P., Idumah, F.O, Ogunsanwo, O.Y and Azeez, I. O). Proceeding of 35th annual conference of Forestry Association of Nigeria (FAN), 11th-16th February, 2013, Sokoto.
- Martin, G.H.G.** 1983. Bushmeat in Nigeria as Natural Resources: Environmental Implications. *Environmental Conservation*. 10: 125-132.
- Nasi, R., Brown, D., Wilkie, D., Bennett, E., Tutin, C., van Tol, G. Christophersen, T.** 2008: *Conservation and use of wildlife-based resources: the bushmeat crisis*. Technical Series 33. Montreal/Bogor, Secretariat of the Convention on Biological Diversity/Center for International Forestry Research (CIFOR).
- Nasi, R., Taber, A. Van Vliet, N.** 2011. Is empty forests, empty stomachs? Bushmeat and livelihoods in the Congo and Amazon Basins. *International Forestry Review*, 13(3): 355–368.
- Nigeria's Threatened Environment.** 1991. A National Profile. Nigeria Environmental Study Action Team. Ibadan. Pp. 72-82.
- NEST.** 1992. Challenges of Sustainable Development. Nigeria Environmental Study Action Team. Ibadan. Pp. 19-22.
- Ojo, L.O.** 1990. High Forest Variations in Nigeria, Implication for Management and Conservation. Ph.D. Thesis, Department of Forestry and Wood Sciences, University of Wales, U.K.
- Olaoye, O.J.** 2010. Dynamics of the Adoption Process of Improved Fisheries Technologies in Lagos and Ogun States Nigeria. A Ph.D. Thesis in the Department of Aquaculture and Fisheries Management, University of Agriculture Abeokuta, Ogun State, Nigeria. 337p.
- Ola Adams, B.A.** 1999. Biodiversity Inventory of Omo Biosphere Reserve, Nigeria. A Country Report of the Assessment of Biosphere Reserve for Afforestation in Anglophone Africa. UNESCO Paris and Nigeria National Committee on Man and Biosphere Programme.
- Onadeko, S.A., Adegbola P.O., Oladoyinbo E.O.** 1989. Consumptive Utilization of Wildlife in Oyo State, in Proceedings of Biennial Conference of Ecological Society of Nigeria, FRIN. Ibadan, Oyo State.
- Osemeobo, G.J.** 1990. Poaching in wildlife conservation. The experience in Nigeria. *Journal of Forestry*, 20 (1 & 2): 35-40.
- Popoola, L.** 1990: Economics of Alley cropping of Marginal Land in Ogun State in Nigeria. Ph.D. thesis submitted to the Department of Forest Resources Management. University of Ibadan, Nigeria.

- Prescott-Allen, R.** 1982. What's Wildlife Worth? Economic Contributions of Wild Plants and Animals to Developing Countries. London Earthscan.
- Rushton, M.** 2005. Economic Analysis of Freedom of Expression. *Georgia State University Law Review* 21(3) Spring (2005): 693-719
- Stokstad, E.** 2013. Hunting leads to rapid change in tropical trees. Science Now. [http:// www.sciencenow.com](http://www.sciencenow.com) Retrieved March 15,2013.
- Scarborough, V., Kydd, J.** 1992. Economic analysis of agricultural markets. A manual. Chathan United Kingdom Natural Resources Institute, UK.
- Truett, L., J. Truett, D., B.** 1987. Economics. Mosby College Publishing, USA.
- Trinica, C.T., Ferrari, S.F.** 2007. Use of wildlife animals as sources of protein. *Conservation Biology* 15 (4)

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