**ECONOMICS OF SELECTED PROCESSED BUSHMEAT PRODUCTS AMONG RURAL HOUSEHOLDS IN AGBANI AGRICULTURAL ZONE, ENUGU STATE, NIGERIA**

**ABSTRACT**

This research examines economics of selected processed bush meat product among rural households in Agbani agricultural zone, Enugu state, Nigeria. Specifically, it examines the socio-economic effect of bush meat enterprise, level of employment generation by bush meat enterprise activities, it also examines the various dominant bush meat found in the study area, the employment effect of bush meat enterprise and the constraints facing bush meat enterprise. Primary data were collected using well structured questionnaire from one hundred and twenty respondents but only one hundred and eight (108) respondents were used for the analysis due to errors in twelve of the data collection instrument. Data obtained were analyzed using appropriate econometric and statistical tools. The result of the study revealed that majority 51.9% were females and are mostly within the age range of 21-30 years accounting for 41.67% of the respondents. The research also revealed that 87.2% of the respondents had formal education, with a mean experience of 10.9 years in bush meat enterprise. Furthermore, the findings of this study showed that the respondents that sourced their bush meat from hunters were 47%. The research identified that the major problem encountered in bush meat enterprise in the study area as seasonality of production. Added to this constraint include lack of funds, lack of market and limited supply of bush meat. From the findings of this research it is recommended that, there is need for government and financial institutions to put interest in this sub sector (bush meat enterprise) so as to increase employment and income generation from bush meat enterprise.

**Keywords:** Bush meat, hunters, marketers and employment,

**1.0 INTRODUCTION**

There is increasing awareness of the importance of ecosystem services such as the harvest of non-timber forest products (NTFP) for rural communities in developing countries (Soaga et al, 2016). An estimated 1.6 billion people depend partly or fully on forest products to sustain their livelihoods (World Bank, 2014). Where income generation livelihood options are scarce, the sale of NTFPs including bush meat is often the only means to earn cash income according to Arnold et al, (1998 and Nzeh, et.al 2018). This suggests the link between NTFP harvest and human wellbeing, which has recently gained increasing attention in conservation, developing and policy circles (Roe, 2010) and among funding bodies (ESPA, 2010).

Bush meat is an important NTFP throughout sub – Saharan Africa (SSA) worth millions of dollars in trade (Milner-Gulland et al, 2003). Brown et al, (2003) opined that it has many properties favorable to commercialization, such as high price - to - volume ratio and flexible allocation of labor input. Hunters supplying bush meat to traders may exert strong bargaining power within the rural–urban chain commodity chain (Colwlishaw et al, 2015) and can gain incomes comparable to or higher than average local wages (Tieguhong et al, 2019). This suggests a potential role for bush meat in contributing to human wellbeing and poverty alleviation even in Nigeria, Enugu State and study area.

Globally, game animals known also as bush (wild) meat have a potential for meat production and serve as a good source of protein to rural poor in Africa (Fonweban and Njwe, 1990).

The commercial benefits and valuable nutritional sources derived from bush meat consumption plays direct role in the livelihoods of nearly 150 million people in the world (Ampofo et al, 2017). In Central Africa between one to two million tons of bush meat is harvested each year (Brown and Williams, 2003). The consumption of bush meat is currently a common practice in sub–Saharan and urban communities by virtually all classes of people (Tieguhong et al, 2019). Bush meat provides food security, job opportunities and income generation for both rural and urban poor (Ampofo et al, 2017 and Redford 1992).The demand for bush meat has been met through hunting from the wild by the use of guns, cutlasses, chase, dogs, belting with chemicals and bush burning (Oduro and Kankam, 2002).

In literature, many of the studies carried out examined the importance of bush meat at the national level, but no study has been conducted on the socio–economic importance of bush meat trade for rural communities. Few studies have examined quantities hunted by individuals, or the employment generated and the income generated from the sale of bush meat. This notwithstanding, there is very little information known in recent time on the income earned and employment generated from the trade of bush meat.

Consequently, while there is enough information from the market studies to indicate that bush meat is a popular and widely consumed forest product, there is little information to access its income earning and employment generation especially in the study area.

This therefore underscores the importance of this research with the following broad and specific objectives as listed below. The main objective of the work is to examine the economics of selected processed bush meat products among rural households in Agbani agricultural zone, Enugu, Nigeria. The specific objectives are to: (i) examine the socio–economic characteristics of the respondents in the study area; (ii) examine the level of employment generation by bush meat product enterprise in the study area; (iii) identify the source(s) of the various bush meat products available in the study area; (iv) identify the employment effect of these selected bush meat products in the study area and (v) examine the constraints facing the bush meat products enterprise in the study area.

**2.0 METHODOLOGY**

**2.1 Study Area**

The study area is Agbani agricultural zone, which is made up of three local government areas - Nkanu West, Nkanu East and Enugu South. In Agbani agricultural zone, Nkanu West is made up of thirty seven communities (37); as Nkanu East is made up of thirty two communities (32) and Enugu South is made up of nine (9) communities.

Meanwhile, in Agbani agricultural zone just like Enugu state, farming is predominately the occupation of the householders which is done in a small-scale. Prevalent crops are cassava, yam, maize, rice, melon, groundnut, pepper and economic trees like oil palm, cashew, cocoa, oranges, kola nuts, African breadfruit and pears among other trees are found in the state as well as in the study area. There are forests of different density in Enugu state as reported by Nzeh, Eboh and Nweze (2015). Crops farm(s) are usually in small holding of about 1 to 3 hectares, but poultry production is carried out in some parts of the state but strictly on subsistence level, together with goat and sheep production (Chukwuone and Okeke, 2012).

**2.2 Data collection**

In this research, primary data were collected through the use of well-structured questionnaires. Also, secondary data were collected from text books, publications on seminars, conference papers, annual and quarterly reports, journal and past thesis. Data collected were analyzed using relevant econometric and other statistical tools in other to achieve specific objectives.

Meanwhile, for sampling procedure, both purposive and random sampling techniques were employed to ensure a good spread of respondents for the study. In the first stage of the sampling procedure, within Agbani agricultural zone which comprise of three (3) local government areas (Nkanu East, Nkanu West and Enugu South) as earlier mentioned three (3) of them were sampled. In the second stage, four (4) communities from each of the LGAs were selected given a total of twelve (12) communities. Third stage was the selection of respondents (that is, household heads). From the twelve (12) communities, ten (10) household heads that are involve in bush meat enterprises were purposively selected from each of the twelve (12) rural communities, making a total number of one hundred and twenty (120) household heads but during the analysis, only one hundred and eight (108) household-heads were used as twelve questionnaires from different respondents were discarded because they did not give satisfactory information as required.

**3.0 RESULTS AND DISCUSSION**

**3.1 Socio-economic Description of Respondents in the Study Area**

The socio-economic status considered in this study include gender, age, marital status, educational qualification, household size, occupation, religion, experience and the access of households to extension.

***Table 1: Socio economic characteristics of respondents in the study area***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Frequency** | **Percentage** | | **Mean** |
| **Gender**  Male  Female  **Age**  20  21-30  31-40  41-50  50  **Marital Status**  Single  Married  Widowed  Divorced  **Educational status**  No formal education  Primary education  Secondary education  OND/NCE  B.Sc/HND  M.Sc and above  **Household Size**  1-5  6-10  11-15  **Primary Occupation**  Farming  Civil services  Trading  others  **Religious status**  Christian | 52  56  10  45  33  18  2  48  46  9  4  14  10  58  10  14  2  44  59  5  25  11  48  24  104 | 48.15  51.85  9.26  41.67  30.56  16.67  1.85  44.4  42.59  8.33  3.70  40.7  9.3  53.7  9.3  12.96  1.9  40.74  54.63  4.63  23.1  10.2  44.4  22.2  96.3 | | 32      7 |
| Islamic | 4 | 3.7 | |  |
| **Years of Experience**  5 | 17 | 15.7 | |  |
| 6-10 years | 133 | 30.6 | |  |
| 11-15 years | 21 | 19.4 | | 11 |
| 15 years | 37 | 34.3 | |  |
| **Utilization of Bush meat** |  | |  | |
| Sales | 6 | | 14.8 | |
| Consumption & Sales | 92 | | 85.2 | |
| **Assistance from Extension Agent** |  | |  | |
| Yes | 9 | | 8.3 | |
| No | 99 | | 91.7 | |

***Source: Field survey. 2019***

From table 1 above it shows that 51.9% of the respondents are females while the remaining 48.2% are males. The result of the analysis is in support with Soaga et al (2016) that majority of the respondents involved in bush meat enterprise are females.

This implies that females are more involved in bush meat enterprise than males in the study area. The dominating age group was 21-30 with 41.67%, with mean age of 32 years which implies that the respondents were above teenagers and relatively medium and adults.

Furthermore, the same table 1 above shows that majority (44.4%) of the respondents were single as greater number of the respondents (54.63%) falls within the range of 6-10 household. Meanwhile, critical analysis of the results in table 1 show that a greater number (96.3%) of the respondents are Christians and that 53.7% of the respondents in the study area had secondary education a situation indicating low literacy level. The result is in support with Soaga et al (2016) and Wilkie and Carpenter (1999) that majority of the respondents involved in bush meat enterprise had less educational status. Finally, from table 1 above, it shows that average years of experience of those respondents involve in bush meat enterprise were 11 years indicating acquisition of experience over time.

***Table 2: Distribution of Respondents According to their involvement in Bush meat Enterprise***

|  |  |  |
| --- | --- | --- |
| **Variables** | **Frequency** | **Percentages** |
| **Enterprise Activity** |  |  |
| Hunting | 9 | 8.3 |
| Marketing | 15 | 13.9 |
| Hunting and processing | 1 | 0.93 |
| Hunting and marketing | 17 | 15.7 |
| Processing and marketing | 44 | 407 |
| Processing, marketing and hunting | 22 | 20.4 |
| **Total** | **108** | **100** |

***Source: Field survey. 2019***

From table 2 above, it can be seen that majority of the respondents are involved in bush meat enterprise. Also from the same table 2, it shows that 40.7% which is the highest number of respondents is involved in processing and marketing of bush meat. Critically analysis of the table 1 indicated that 8.3% of the respondents in the study are reported that they are hunters as 13.9% confirmed that they are marketers only. Also, table 2 decipher that 0.93% of the respondents constituted hunters and processors, while 15.7% made up hunters and marketers, but only 20.4% of the respondents were involved in hunting, processing and marketing. As can be seen from table 2 above none of the respondents were involve in bush meat processing only. This may be attributed that hunters sell the bush meats fresh to the people who then process and market them.

***Table 3: Distribution of respondents according to level of employment created by bush meat enterprise in the study area.***

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Frequency** | **Percentage**  **(%)** | **Mean**  **()** |
| **Level of employment generated** |  |  |  |
| **≤** 40 | 24 | 22.2 |  |
| 40 – 60 | 30 | 27.8 | 58 |
| 60 – 80 | 50 | 46.3 |  |
| **≥** 80 | 4 | 3.7 |  |

***Source: Field survey. 2019***

Table 3 shows that 46.3% of the respondent agreed that the enterprise contributes 60-80% level of employment status in the study area as its mean value is 58. This indicates that bush meat enterprise may had contributed a lot in generation of employment and other economic activities in the study area.

**Table 3: Distribution of respondents according to their weekly income**

|  |  |  |  |
| --- | --- | --- | --- |
| **Income/week**  **(**N) | **Frequency** | **Percentage**  **(%)** | **Mean**  **()** |
| 5000 | 3 | 2.8 |  |
| 5000-10000 | 9 | 8.3 |  |
| 10000-15000 | 29 | 26.9 | 13000 |
| 15000-20000 | 50 | 46.3 |  |
| 20000 | 17 | 15.7 |  |

***Source: Field survey. 2019***

Table 3 shows the distribution of respondents according to their weekly income. From the table 3, it indicated that most of the respondents 46.3% realize N15000-N20000 weekly with mean income as N13000. This implies that income generated from bush meat at enterprise may be sufficient to take care of some respondents’ critical needs depending on their household size.

***3.2 Some bush meat available in the study area***

***Table 4: list of available bush meats in the study area***

|  |  |  |  |
| --- | --- | --- | --- |
| ***1*** | ***English name*** | ***Common name*** | ***Scientific name*** |
| **2** | Grass cutter | *Nchi* | *Throyonomis swinderianus* |
| **3** | Alligator | *Aghu* | *Alligator sinensis* |
| **4** | Hare | *Egenebe* | *Lepus timidus* |
| **5** | Rabbit | *Ewi ani* | *Oryctolagus cuniculus* |
| **6** | Antelope | *Mgbada/Ene* | *Alsephalus buselaphus* |
| **7** | Monkey | *Enwe* | *Macaca sinica* |
| **8** | Snake | *Eke* | *Python reticulates* |
| **9** | Land Squirrel | *Ulili* | *Spermophilus columbianus* |
| **10** | Quail | *Okwa* | *Coturnix coturnix* |
| **11** | Guinea Fowl | *Ogazi* | *Numida meleagris* |
| **12** | Snail | *Eju* | *Achatina achatina* |
| **13** | Deer | *Atu* | *Varanus albigularis* |
| **14** | Bush Rat | *Oke ohia* | *Rattus fuscipes* |

***Source: Field survey. 2019***

As indicated in table 4 above some of the bush meats that the respondents reported to be available in the study area are which are mostly preferred by their customers include - grass cutter, antelope and squirrel. This shows that there are other bush meats in the study area, but the customers may not prefer them due to none adequate processing and packaging by the traders. The implication of this may be less income and employment generation by this type of non-timber forest products (NTFPs). This agrees with (Nzeh, et. al 2018) that lack of adequate processed NTPFs limits the economic empowerment of rural dwellers especially in developing country like Nigeria.

**Table 5: Distribution of Respondents According to their Sources of Bush meat**

|  |  |  |
| --- | --- | --- |
| **Variables** | **Frequency** | **Percentage** |
| **Source of bush meat** |  |  |
| Direct from the forest | 33 | 30.6 |
| Hunter | 47 | 43.5 |
| Urban Market | 5 | 4.6 |
| Local Market | 8 | 7.4 |
| Wholesalers | 10 | 9.3 |
| Retailers | 5 | 4.6 |

***Source: Field survey. 2019***

As seen from the table 5 above, it can be shown that greater number of the respondents, 43.5% source their bush meats directly from the hunters, whereas 30.6% of the respondents hunt for these bush meats themselves. Also, 4.6% of the respondents were reported to source from urban markets as 7.4% of the respondents said that they purchase from the local markets in the study area. This lower percentage of those that buy their bush meat from local markets can be attributed to the fact that hunters selling these bush meat do not have stalls in the market and only come to market on special markets days like (Eke, Orie, Afor, Nkwo) to trade.

**3.3 Employment effect of bush meat enterprise**

This is to examine effect of bush meat on employment i.e. ways in which it has been able to create both direct and indirect employment among rural dwellers in the study area.

**Figure 1: Distribution of respondent to their patronized customers.**

The result from figure 1 above shows that 27.8% of the patronized customers are domestic users/consumers, which means that greater percentage of the customers purchase bush meat mainly for the consumption only. Furthermore, the same figure 1 indicated that 8.3% of the customers are wholesalers, as only 7.4% of the patronized customers are retailers. Finally, as 18.5% are made up of domestic users/consumers and wholesalers, only 20.4% fell within the category of domestic users/consumers and retailers, but 7.4% were reported to be wholesalers and retailers.

**Table 6: Distribution of respondents according to the constraints in bush meat enterprise**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Constraints** | **SA** | **A** | **D** | **SD** | **Total** | **Mean Score** | **Decision Rule** |
| **1** | Lack of funds | 55 | 30 | 15 | 8 | 348 | 3.2 | Accepted |
| **2** | Lack of market | 45 | 40 | 14 | 9 | 337 | 3.1 | Accepted |
| **3** | Limited supply of bush meat | 30 | 50 | 10 | 18 | 308 | 2.9 | Accepted |
| **4** | Government Policy | 10 | 20 | 50 | 28 | 228 | 2.1 | Rejected |
| **5** | Choice of other | 15 | 20 | 23 | 50 | 216 | 2.0 | Rejected |
| **6** | Seasonality of production | 68 | 25 | 5 | 10 | 360 | 3.3 | Accepted |

***Source: Field survey. 2019***

The table 6 above shows the respondent’s level of acceptability to the constraints stated that affect bush meat enterprise in the study area. The major constraints is seasonality of production with a mean score 3.3 agreeing with Soaga et al (2016), followed by funds with a mean score of 3.2 and also lack of market with a mean score of 3.1. Meanwhile, limited supply of bush meat with a mean score of 2.9 was also recorded to be one of the constraints facing bush meat enterprise. It is observed from the respondents that government policies with a mean score of 2.1 and choice of other meats to bush meat with a mean score of 2.0 have little or no effect on bush meat enterprise. From the table 6, four constraints are regarded and accepted as major predicaments due to decision rule that any figure above 2.5 be taken as such whereas those below 2.5 are taken as minor predicaments and are rejected which are two in number from the above table 6.

**4.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS**

The study examined the economics of some selected bush meats in Agbani agricultural zone of Enugu State, Nigeria. The summary of the study showed that the categories of respondents that are involved in bush meat enterprises are mostly women except for the hunters (males) who are the suppliers of bush meat. The trade arena is dominated by illiterate and semi-illiterate people and few of literates with other primary occupations as means of generating income.

From the study area, major selected lucrative venture of bush meat listed there include but not limited to - grass cutter, antelope and squirrel. The major constraints affecting bush meat enterprise in the study area include – lack of funds, lack of markets and even seasonality of production of the products. The study recommends the need for formation of association or cooperative society by the bush meat enterpriser in the study area. This will attract more demand for bush meat and other NTFPs in the study area and it will help in creating more income and employment thereby reducing poverty profile in the area.

Finally, the study recommends that aadequate credit facilities should be provided by the government to encourage those involved in bush meat enterprise especially in the study area.

**REFERENCES**

Ampofo, H.J; Emenike, B.O; Asenso, J.N; Asare, D.A, Yeboah R, Jarike T.A and Jagun – Jubril A. (2017) *Hunting practices and heavy metals concentrations in the forest and smoked wild meats in Kumasi, Ghana*.

Arnold Jem, Ruiz – Perez M (1998) *The role non – timber forest products in conservation and development in*: WollenbergEk, Ingles A. editors. *Incomes from the forest: Methods for the development and conservation of forest products for local communities.* Bogor: CIFOR: pp. 17 – 41.

Brown D, Williams A (2003) The case for bush meat as a component of development policy: Issues and challenges. Int Forestry Rev 5: 148 – 155.

Chukwuone, N.A. and Okeke, C.A. (2012) “Can non-wood forest product be used in promoting household food security? Evidence from savannah and rain forest regions of southern Nigerian.” Journal of forest policy and economics vol. 25, pp. 1-9.

Cowlishaw G, Mendelson S, Rowcliffe J.M (2015) Structure and operation of a bush meat commodity chain in Southwestern Ghana. *ConservBiol* 19: 139 – 149.

ESPA (2010). Coystems services and poverty Alleviation Programme. Fa. J/E. Peres, C., Meeuing, J. (2002) Bush meat exploitation in tropical forests: An International Comparison. *Conser Biol 16:232-237.*

Fonweban, J.N and Njwe, R.M, (1990). *Feed utilization and life weight gain by African giant rat* (*ristomysgamblanus*, water house) at dischana Cameroon, Tropiculture, 8: 118 – 120.

Milner – Gulland, E. J; Damain, R; Crookes, D.J (2003) A bioeconomic analysis of bush meat hunting

Nzeh, Emeka, Chukwu, Blessing and Nze, Lawrence (2018). Microeconomic Analysis of Marketing Selected Non-Timber Forest Products (NTFPs) in Awgu Agricultural Zone of Enugu State, Nigeria. *Asian Journal of Agricultural Extension, Economics & Sociology, 26(3): 1-9, 2018.* *ISSN: 2320-7027.*<http://www.sciencedomain.org/review-history/25721>

Nzeh, E. C., Eboh, E.C., Nweze, N.J. (2015). Dynamics nature of rural forestland deforestation in Enugu state, Nigeria. Research Journal of Agriculture and Environmental Management. Vol. 4(2), pp. 097-111, February, 2015, Available online at <http://www.apexjournal.org> ISSN 2315 - 8719© 2015 Apex Journal International.

Oduro, W, and Kankam. B. (2002). Environmental and public health hazards of traditional grasscutter (*Thryonomysswinderianus*) hunting (K.a, weildinger (Eds) *proceeding of a workshop on promoting grasscutter production for poverty reduction in Ghana, (2002); Pp 19 – 22.*

Redford, K.H. (1992). The empty forest. *Bioscience 42*: Pages 412 – 422.

Soaga, J.A; Shotuyo, A.L.A; Oduntan, O.O; Fatoki, J.G. (2016) Economic analysis of bush meat trade in Abeokuta, Ogun state. *Journal of Agricultural Science and Environment 14*

Tieguhong, J.C, Zwolinski, J (2015) Supplies of bush meat for livelihoods in in logging towns in the Congo Basins.*J Hort forestry* 5: 232 – 237.

Wilkie, D.S; Carpenter J.F. (1999) Bush meat hunting in the Congo Basin. An assessment of impacts and options for mitigation. *Biodiversity and Conservation* Vol 8.

World Bank (2004) Sustaining forests: *A development strategy*. Washington D.C: World Bank.