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HARVESTING METHODS AND UTILIZATION OF SELECTED FOREST FOODS IN BOKI LOCAL GOVERNMENT AREA OF CROSS RIVER STATE, NIGERIA

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Abstract

This study aimed at identifying predominant and economically viable forest foods in Boki Local Government Area of Cross River State, Nigeria. The selected forest foods predominantly common in the study area are Afang (Gnetum africanum), hot leaf (Piper Guineensis) and Bush-mango (Irvingia gabonensis). Eighty (80) copies of well-structured questionnaire were randomly distributed among randomly selected communities in four different council wards of the study area. The questionnaire was divided into four sections; section A: Socio economic characteristics of respondents, section B: common uses and benefits and uses of hot leaf, afang and bush mango, section C: harvesting methods of hot leaf, afang and bush mango, section D: common challenges associated with the utilization of hot leaf, afang and bush mango. The results of this study showed that 31.3% of males in the study area were involved in the collection of selected forest foods whereas 68.7% females are involved in the collection. This implies that the female counterparts are more involved in the collection of NTFPs than the male. Results also revealed that 43.7% out of the total population are more involved in the collection of Non-timber forest products across the selected communities. It was also revealed the 42.5% primary school leavers are involved in NTFPs collection and closely followed by secondary school leavers with 22.3%. From the result, it be concluded that the collection of these forest foods play significant role in terms of poverty alleviation. Also, the results showed that 53.7% obtained these products through uprooting which is a very destructive method particularly as this harvesting method will ultimately will result in the extinction of these economic forest products. Also, the results showed that 53.7% obtained these products through uprooting. Generally, uprooting of forest products is a very destructive method of harvesting as this method without delay will result into extinction of these very important economic products. The collection and sales of these selected forest products have great and positively effects on the standard of living of the rural dwellers; therefore, there should be public enlightenment campaign by government and other relevant stakeholders on forest conservation and management for the sustainability of these forest resources.
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Key words: Non-timber Forest Products, Hot-leaf, Utilization, Afang, Questionnaire

1.0 Introduction

Forest Foods are biological materials other than timber which are extracted from forests for human use with exclusions made for sand, stones, water and ecotourism. Plants with its diverse use products have long played important roles in the emerging progress of human civilization. The explicit study of these plants has proven to be a powerful tool in understanding how different indigenous communities around the globe relate with natural resources notably for medicine, food, shelter, additional income, and fodder (Albuquerque and Hanazaki, 2009). Forest Foods also come in handy in case of emergency situations and hardships such as crop failure, economic crisis, war conflicts and floods as emergency sustenance measures (Sunderlin and Ba, 2005). Uses of various Non-timber Forest Products (NTFPs) have shown significant progress in cultural subsistence, commercial purposes, bio-prospecting and sustainable support to forest biodiversity (Cocksedge 2006).

Majority of rural dwellers in the developing countries including Nigeria fulfill their agricultural, energy, nutritional, and medicinal needs from forest (Cocksedge 2006). Forest resources help rural households to diversify their daily needs with many rural family generating parts of their income from the sale of forest non-timber products. The forests provide sources of varieties of foods that supplement and compliment what is obtained from agriculture. Forest Foods contribute to poverty alleviation through generation of income, providing food and improved nutrition, medicine and foreign exchange earnings. The contributions of non-timber forest products as source of income and food to households cannot be over emphasized; NTFPs are usually for cultural and recreational purposes, biodiversity conservation, and rural economic development (Cocksedge 2006). Forest foods, if prioritized by the government and other related stakeholders can be used to enhance the economic and social well-being of communities living in and around forestlands.

The role of Non-timber Forest Products (NTFPS) in sustainable living and poverty reduction has received increased attention for many years (Shackleton *et al.*, 2007). They play an important part in supporting household livelihoods and therefore can be used to raise the perceived value of forest resources (Arnold, 2002). In many developing countries, including Nigeria, majority of rural household and a large proportion of urban households depend on forest foods to meet some parts of their nutritional, health, construction material and income from selling these products. In economic terms, forest foods contribute substantially to national economic growth and international trade. Jimoh and Haruna, (2007) reported that NTFPs have potentials to contribute around 68% of total monthly household income within Onigambari Forest Reserve, Nigeria. Despite these potential benefits that are offered by non-timber forest products, it has been widely documented that forest still offers little in terms of opportunities for expanding livelihood options and accumulation of wealth and assets required to reduce livelihood vulnerability (John *et al., 2013*). However, information on the absolute harvesting of NTFPs is yet to be deduced conclusively; also, it appears that forest foods are blindly utilized to achieve some desired effect. Furthermore, with proper harvesting methods, NTFPs could go a long way in

solving household income and food security problem. This study is therefore aimed at determining the harvesting methods and utilization of NTFPs in the study in Boki Local Government Area of Cross River State, Nigeria.

2.0 Methodology

2.1 Study Area

Boki is a landlocked Local Government Area of Nigeria bounded by the Republic of Cameroon to the east, Obudu and Obanliku in the north, Ikom and Ogoja in the West and Etung to the south (Peter, 2013). Boki is one of the eighteen local government areas of Cross River State and the second largest in terms of landmass (344,952Km²). It is located between latitudes 5°82 and 6°40N and longitudes 8°50 and 9°00E, (NIMET, 1996). The region is considered to have some of the most rugged terrain in Nigeria and it is almost completely covered by the Cross River Rainforest and the Afi Mountain Ranch (60% of which is inaccessible to vehicles throughout the year) (Nigeria's Tourist, 2014).The area is also prone to mudslides due to frequent high levels of rainfall. Boki local government area is the agricultural hub of Cross River State and one of the largest local government areas in the state surrounded with rainforest; this make the region a viable territory for investment in agriculture. The vast wildlife habitats within the thickly forested vegetation and unique topology of Boki continue to interest environmental activists as well as conservation groups.

2.2 Samplings Techniques and Data Collection

A multistage sampling technique was employed in the collection of data for this study. In the first stage, four (4) wards were randomly selected out of the eleven (11) council wards in the study area. The second stage involved the purposive selection of two (2) villages from the four (4) selected council wards in the study area. Last stage is a selection of ten (10) respondents of forest food collectors from the selected communities. A total of (80) copies of structured questionnaire were randomly administered across the selected communities of (10) respondents each based on the population estimate (NPC, 2006)

Table 1: Selected villages According to Number of Respondents

Wards	Communities	No of Respondents
Abo	Butatung	10
	Abo-Emel	10
Boje	Eso-Ben	10
	Nsadup	10
Buentsebe	Betreku	10
	Ular	10
Bunyia/Okubushi	Okubuchi	10
	Ekatom	10
Total		80

Source: Field survey, 2023

3.0 Data Analysis

Data collected was analyzed using simple descriptive statistics, frequency tables, simple averages and percentages.

4.0 Results and Discussion

4.1 Social-Economic Characteristics of Respondents

The results presented in Table 2 showed that 31.3% of males in the study area were involved in the collection of the selected forest foods whereas, 68.7% females were involved in the collection of these resources. This high percentage clearly shows that women are more involved in the harvesting and utilization of these selected forest foods than their male counterparts in the study area. This is perhaps because most of the women in the rural areas are house wives with little or no monthly salary (Manfre & Rubin, 2012). So, they often depend on the forests for a wide range of activities in order to augment their family income as reported by Okpei, (1996). The low percentage of men involvement in the collection of non-timber products is because they are primarily concerned with farming activities and pay little or no attention in the exploitation of Non-timber Forest Products (Manfre & Rubin, 2012). Generally, the percentage of women involve in forest related activities is one amongst the many reasons why attention to improving the participation of women in decision-making about forest resources has recently gained prominence (Colfer, 2013; Mai *et al.,* 2012) as organizations, researchers and policy makers look to integrate gender strategies and priorities into their research, planning and policy (Manfre & Rubin, 2012). However, improving indigenous women's participation at the local level has proven to be a complicated matter (Webb *et al.,* 2012).

Results in Table 2 also revealed that the age range of 31-40 years with 43.75% out of the total population are more involved in the collection of non-timber forest products, this agrees with the findings of Odebiyi and Ogunjobi (2003). As shown in Table 2 above, widows are those that are more involved in the collection of these selected NTFPs in the study area than any other group with 50% value and this confirms the reports by Jimoh and Adebisi, (2005). It can also be drawn that primary school leavers with a percentage value of 42.5% are more involved in Non-timber Products collection than any other social class, followed closely were the illiterates and secondary school leavers with 23.8% and 22.5% respectively. The results also reveal with a percentage value of 50.4% that farming is the major occupation of the people followed by business with a negligible 25%.

Table 2: Social –Economic Characteristics of Respondents

S/N	Item	Frequency	Percentage (%)
1.	Gender		
	a. Male	25	37.5%
	b. Female	55	62.5%
	Total	80	100
2.	Age (years)		
	a. 10-20	10	12.5%
	b. 21-30	20	25%
	c. 31-40	35	43.75%
	d. 41-50	10	12.5%
	e. 51 above	05	6.25%
	Total	80	100
3.	Marital status		
	a. Single		
	b. Married	10	12.5%
	c. Divorced	12	15%
	d. Widow/widower	18	22.5%
	Total	40	50%
		80	100
4.	Number of children		
	a. 2-4		
	b. 5-6	40	50%
	c. 7 above	26	32.5%
	Total	36	17.5%
		80	100
5.	Level of Education		
	a. Illiterate	18	23.8.5%
	b. Primary	34	42.5%
	c. Secondary	19	22.5%
	d. NCE	40	16.6%
	e. B.Sc.	3	3.75%
	Total	80	100
6	Occupation		
	a. Farming	46	57.5%
	b. Hunting	10	12.5%
	c. Business	17	21.25%
	d. Civil service	7	8.75%
	Total:	80	100

Source: Field Studies, 2023

4.2 Common Uses and Economic Benefits of Hot-Leaf, Afang and Bush-Mango

Results in Table 3 revealed the common uses and economic benefits derivable from the collection of these selected forest foods. Results in Table 3 showed 83.8% that the collection of these selected forest foods contribute immensely in alleviating the poverty level of the rural dwellers through income generation. This again is in line with Odebiyi and Ogunjobi, (2003), who opined that rural communities rely heavily on NTFPs as a means of generating income, sources of food and medicine thereby reducing poverty level of the people. This could ultimately be the reason why greater percentage (43.7%) agreed that the collection of these selected forest products plays significant roles in terms of poverty alleviation and employment of youths respectively. The finding agrees with the report of CIFOR (2013) that NTFPs are utilized for household subsistence, maintenance of culture, spiritual fulfillment and medicinal purposes among others. The findings of this study is in tandem with that of Adebayo and Akindele, (2003), who posited that forests are common property resources that play a united role in rural livelihood.

Results further showed that there is no traditional restriction in the collection, use and sales of these selected forest foods. Again, results in the Table 3 also revealed that 46.2% and 41.2% of the people in the study area are involved in the collection of these selected forest foods majorly for income generation and household consumption respectively which further agrees with opinion earlier made by Odebiyi and Ogunjobi, (2003). The results in Table 3 further revealed that the annual income of the people from selected forest foods ranked the same with income from other source (200,000 Naira). Therefore, these result further buttress the significant economic roles these NTFPs play in the study area and if that resources are sustainably managed, it would likely become the main stay of the people in the study area.

Table 3: Common Uses and Economic Benefits of Hot-Leaf, Afang and Bush-Mango

S/N	Item	Frequency	Percentage (%)
1	Does the collection and sales of these products have any economic benefits	67	83.8%
	a. Yes	13	16.2%
	b. No	80	100
	Total		
2	What role do these resources play in your community?		
	a. Unity among community members		
	b. Infrastructural development	7	8.7%
	c. Employment of youths	10	12.5%
	d. Poverty alleviation	35	43.7%
	Total	28	35%
		80	100

3	Uses of these products		
	a. Household consumption	37	46.2%
	b. For income generation	33	41.2%
	c. For rituals	5	6.2%
	d. Others	5	6.2%
	Total	80	100
4.	Traditional restrictions to the use of these products		
	a. Yes	20	25%
	b. No	60	75%
	Total	80	100
5	Annual Income from these products		
	a. N150,000	15	18.7%
	b. N200,000	38	47.5%
	c. N250,000	20	20%
	d. N300,000	7	8.7%
	Total	80	100
6	Annual Income from other sources		
	a. N150,000	23	28.7%
	b. N200,000	28	35%
	c. N250,000	15	18.7%
	d. N300,000	14	17.5%
	Total	80	100

Source: Field Studies, 2023

4.3 Harvesting Methods for Hot-Leaf, Afang and Bush-Mango

Results in Table 4 revealed the harvesting methods for the selected forest foods in the study area. The result in Table in Table 4 showed that 25% got these selected NTFPs through stem-cutting; this shows that the community has unrestricted access into the forests. According to Okoye and Ebeledike, (2013), as pressures on the agricultural land base increases leading to progressive fragmentation of farm holdings and overuse of arable land, the ability of farm households to achieve food self-sufficiency from their land has been declining widely. Therefore, rural populations are becoming increasingly reliant on farm and non-farm income in order to meet their food and other needs. Forest products activities have repeatedly been found to provide one of the main sources of non-farm income to rural households (Frison, *et al.*, 2011). Also, the results showed that 53.7% obtained these products through uprooting. Generally, uprooting of forest products is a very destructive method of harvesting as this method without delay will result into extinction of these very important economic products. Therefore, efforts must be deliberately geared toward awareness campaign on the dangers that are commonly associated with this destructive method of harvesting to avoid these economic and medicinal plants from going extinction.

It is often said that NTFPs can be harvested without destroying the natural ecosystem. Indeed, collecting fruits, eggs, honey, mushrooms, bark or leaves is less damaging than cutting down entire trees for timber or converting entire forest areas to agricultural land. Although many wild products are extracted without damaging the forest, techniques of collection have different impacts on the regeneration of the species thereby hampering their future availability. However uncontrolled harvesting as well as very low or exceptionally high prices may all cause overharvesting lead to forest degradation and even result in local extinction of species. This finding is in consonance with those of Ogundele *et al* (2012) that genetic resources of most of those species are under intense pressure and that many of them are ecologically threatened, endangered or even extinct in a number of cases. The results in Table 4 further revealed that the demand of the product(s), market price and economic returns are the three major factors that influence the choice of the product to hunt with 37.2%, 26.2% and 25% respectively. This agrees with Arnold, (2002) who posited that rural dwellers in developing countries depend on NTFPs for livelihood. Finally, the results indicated that the collection of the products is seasonal with 68.7%. This implies season may influence product availability and ultimately the annual income generated through the collection of these products in the study area.

Table 4: Harvesting Methods for Hot-Leaf, Afang and Bush-Mango

S/N	Item	Frequency	Percentage (%)
1	Harvesting of methods		
	a. Uprooting	43	53.7%
	b. Stem-cutting	20	25%
	c. Others (picking)	17	21.2%
	Total	80	100
2	Choice of these products		
	e. Highly demanded	30	37.5%
	f. Market price	21	26.2%
	g. High economic returns	20	25%
	h. Availability	9	11.2%
	Total	80	100
3	Sustainable harvesting method(s)		
	a. Yes	50	62.5%
	b. No	30	37.5%
	Total	80	100
4.	How often do you harvest these products		
	a. Seasonal	55	68.7%
	b. All round year	25	31.2%
	Total	80	100

Source: Field Studies, 2023

5.0 Conclusion and Recommendations

5.1 Conclusion

Forest-based as well as other rural livelihoods are undergoing rapid changes. There is a growing tendency among forest-adjacent communities to seek a livelihood strategy which combines forest-based production with farming and off-farm activities. Based on the results of this research work, the roles of these selected NTFPs in people's livelihoods are basically summarized in two folds. Firstly, in remote areas where forest extraction still prevails, the selected NTFPs provide subsistence goods like food, medicines and form a safety cushion in times of economic hardship. Secondly, the increasing incorporation of rural areas into external commercial networks means there is some scope for improving livelihoods on the basis of the selected NTFPs production through the gradual domestication of NTFP species in anthropogenic forest types as well as through the creation of NTFP-related jobs. Such options seem to be promising in particular areas where forests perform essential environmental functions and farmers can develop multifunctional production systems. Although, these general development options have now been well established, there is still the need for location-specific research into the potential of NTFPs production and the conditions under which this potential can be realized. Such research should consider the role of NTFPs production in both rural livelihoods and rural landscapes and take account of the impact of contextual factors which influence access to NTFP production factors and markets. Finally, the collection and sales of these selected forest products have greatly and positively affected the standard of living of the rural dwellers in the study area in terms of poverty alleviation, youth employment,insurance against crop failure and rural infrastructural development.

5.2 Recommendation

There should be public enlightenment by government on forest conservation and management methods and the appropriate methods of NTFPs harvesting in the study area.

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