ISBN: 2141 – 1778

EVALUATION OF THE CONTRIBUTIONS OF IKERE FOREST RESERVE TO SUSTAINABLE LIVELIHOOD OF ADJOINING COMMUNITIES IN EKITI STATE

Olujobi, O. J.
Department of Forestry, Wildlife and Fisheries Management
Ekiti State University, Ado-Ekiti, Ekiti State, Nigeria
E-mail: olujobioj@yahoo.com Mobile: +2348038079501

ABSTRACT

The use of forest products in the recent times has involved provision of employment opportunity, provision of food and provision of health care delivery for the rural people. This study examined contributions of Ikere forest reserve to adjoining communities in Ekiti-State. Ninety pre-tested questionnaire were administered to forest products collectors in adjoining villages. Data obtained were analyzed using descriptive statistics. Twenty five (25) different products were collected from the reserve with timber having the highest frequency of mention by respondents (67), followed by Fuelwood (62), Oil palm (58), Chrysophyllum albidum (40), Mushrooms (35) and Irvingia gabonensis (35). The study revealed that 97.8 % of the respondents have over 10 years of collection experience, with 61.1 % of them visits the reserve every day. The study also showed that 81.1 % of the respondents engaged in other business for means of livelihood, while 84.1 % of the respondents obtained permit to enter the forest. The results show that picking and plucking were the major harvesting method, while lack of storage facility constitutes a major problem for collectors of products. Consequently, it is recommended that these products should be artificially raised in nursery for plantation establishment to ensure production in perpetuity.

Key words: Ikere forest reserve, forest products, sustainable livelihood, adjoining communities and Ekiti State

INTRODUCTION

Forests are major source of livelihood for many people particularly in developing countries, providing numerous benefits to human beings. These benefits may be direct (i.e provision of food and timber products) or indirect through their services and contributions to production process (i.e. protection of agricultural land), they may also be intangible (cultural values) (Popoola, 2002). Forestry sector is one of the main pivots on which the nation's welfare is built. Thus it serves as resource base for many forest industries; providing one of the highest revenue and employment generating sectors. The importance of forest to mankind cannot be over emphasized. Abu and Adebisi (2002) stated that the traditional uses of forests are basically for income generation, environmental protection and socio-cultural values. Agbogidi and Eshegbeyi (2008) also maintained that forests play an important role in contributing to carbon sequestration and other global ecological services.

Forest reserves are portions of state lands under reservation where commercial harvesting of wood products is controlled in order to capture elements of biodiversity. They allow people to experience and understand how forest ecosystems function when timber and other wood products that are normally extracted for human use remain in place. Agbogidi and Okonta (2003) stated that a large proportion of rural population

earn their livelihood from the extraction and sales of forest products thereby improving the quality of life and standard of living of rural population living near forest lands.

Forest products encompass a wide range of natural resources. It consists of any useful material, substance and/or commodity obtained from a forest. This includes timber, game animals, nuts, seeds, berries, mushrooms, oils, foliage, medicinal plants, fuel wood, and forage (Chikamai *et*. *al*., 2009). Forest outputs are broadly classified into Timber and Non-Timber Forest Products (NTFPs). NTFPs in particular, highlight forest products which are of value to local people and communities but have been overlooked in the wake of forest management priorities. In recent decades, interest has grown in the area of using non-timber forest products as alternatives or supplements to forest management practices. In some forest types, under the right political and social conditions, NTFPs have been managed to increase forest products diversity and, consequently increase biodiversity and potentially economic diversity (Diaw *et*. *al*., 2002). Timber components on the other hand have been widely acknowledged as great contributor to both national and local economies.

Millions of people throughout the world make extensive use of biological products from the wild (Koziell and Saunders 2001 and Lawes *et. al.,* 2004). These items, commonly termed forest products are harvested for both subsistence and commercial use, either regularly, or as a fallback during times of need. They added to people's livelihood security, especially for forest-dependent people (Cocks and Wiersum 2003). Collection, marketing and utilization of forest products create new opportunities for entrepreneurial development, and employment opportunities to the poor rural population. In Nigeria, forest resources are being depleted at alarming rate as people living in these forest communities and even beyond depend on it for a variety of goods and services. The strategic location of Ikere forest reserve between three towns makes it so important to the people as far as collection and utilization of forest products is concern. With the recent increase in population and demand for forest products (especially non-wood products) in these communities, there is pressure of exploitation on the forest reserve.

Therefore, with such a huge population and extensive dependence pattern, excessive exploitation and unsustainable harvesting regimes can potentially degrade the forest. To ensure the sustainable management of this forest: inventory of the various products harvested from the forest reserves, an evaluation of the harvesting method for each product as well as the various uses and marketing approaches for these products are required. This will provide information to policy makers and development planners for posterity.

METHODOLOGY

The Study Area

The study area (Ikere forest reserve) is located in the southern part of Ekiti State, southwest Nigeria. Ekiti State is located between longitude 4° 5′ and 5° 45′ East and latitude 7° 5′ and 8° 5′ North. The forest estate covers an area of 19.66km^2 and is of the West Africa monsoonal type with dry and wet seasons. The dry season normally starts from November through March and is characterized by the cold wind of harmattan. The rainy season normally start from late march through October with occasional strong wind and thunder storm, usually at the onset and the end of the raining season. The annual rainfall ranged from 1,200 mm to

1,500 mm. Temperature ranges from 21^0 C to 32^0 C throughout the year. Annual average relative humidity is about 90 % at 7.00 am and 65 % at 4.00 pm. The topography is hilly with large numbers of hills of various sizes surrounding the towns. The vegetation type is rain forest.

Sample Size and Sampling Technique

The study covers the three adjoining towns sharing boundary with the study site (Ikere forest reserve). Thirty (30) respondents in each of the town were randomly selected for interview (Table 1). The selected respondents were interviewed at the gate of the reserve since each of the town has entrance to the forest reserve. The sample size was purposively determined.

Pre- tested semi-structured questionnaire which sought questions on products collected from the forest, uses of the products, harvesting practices and problem associated with the collection of the products among others were administered to the respondents. Administration of the questionnaire was by personal interview since few of the respondents cannot read or write. In most cases researchers' observation were used to deduce applicable answer to some questions such as sex and distance of the town to the forest.

Data analysis

Data collected were analyzed using descriptive statistics to produce frequency tables and percentage.

Data collection

Table 1: Distribution of respondents in the study area

S/N	Towns	Respondents
1	Ikere -Ekiti	30
2	Ilawe- Ekiti	30
3	Igbara-odo- Ekiti	30
Total	**3**	**90**

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents.

Results on sex, age, marital status, family size and educational background of the respondents are presented in Table 2. While information on the sex of respondents showed that 66.7% and 33.3% of the respondents were male and female respectively. Age distribution and marital status showed that 88.3 % of the respondents were above 30 years with 75.5 % of them married. Thus the middle aged and agile

persons were responsible for the collection of forest produce in the area; perhaps responsible for the provision of the immediate needs of their family. This corroborates assertions by Oyun, (2009) and Olujobi, (2012). The result on family size distribution and educational background (Table 2) showed that majority of the respondents; 67.8 % have family size of 6 members and above, and only 13.2 % of the respondents were graduates of higher institutions. The low literacy level among the respondents may perhaps explain the fairly large family size observed among them.

Table 2: Demographic information on the respondents

Sex	**Frequency**	**Percentage (%)**
Male	60	66.7
Female	30	33.3
Total	**90**	**100**
Age		
<30	8	8.9
31-50	52	57.8
>50	30	33.3
Total	**90**	**100**
Marital status		
Single	5	5.6
Married	68	75.5
Divorced	2	2.2
Widow	15	16.7
Total	**90**	**100**
Educational background		
No formal	29	32.2
Primary	31	34.5
Secondary	18	20
Post secondary	12	13.3
Total	**90**	**100**
Family size		
1-5	29	32.2
6-10	54	60
>10	7	7.8
Total	**90**	**100**

Common products collected by respondents in the forest reserve

The result in Table 3 presents 25 different wood and non-wood products that were collected by the respondents in the study area. The timber products has the highest number of frequency of mention by the respondents (67) followed by fuelwood (62), oil palm (58), *Chrysophyllum albidum* (40), Mushrooms (35), *Irvingia gabonensis* (35), and *Senecio biafrae* (30). Other products with frequency of collection up to twenty includes; (28*)* Pole, Snail (25) and Maize (20). The large number of products collected from this forest reserve is a proof that the reserve has positive

impact on the livelihood of the people in the adjoining communities as they meet their economic and household needs. This corroborate earlier assertion by Aiyeloja and Ajewole, (2006) that forest reserves provide wide range of product simultaneously and at different time for rural population for their immediate house hold needs.

As presented in Table 3, the intensive exploitation of timber, fuelwood and poles from the forest with 11.1 %, 10.2 % and 4.6 % respectively is an indication that the forest is rich in timber products. This probably is responsible for the growth of sawn mill industry and pole market in the adjoining communities, which invariably provide employment to the youths and women in the area. The harvesting of food crops such as yam, cassava, maize, cocoyam and plantain from the reserve is an indication that agroforestry is practised within the forest reserve. This is evident by the presence of farm plots within the reserve especially in the open or logged areas. The usual practice here is "taungya" a system whereby State Forest Department allocate land to farmers to plant their crops; while seedlings of trees are planted on the plots by the forester for regeneration. The farmers then tend the trees together with their crops for two to three years before they are allocated to a new plot.

Table 3: List of products collected/harvested in the forest reserve

	Products	**Frequency**	**Percentage (%)**
1	Yam	13	2.1
2	Cassava	10	1.7
3	Maize	20	3.3
4	Wild pepper	10	1.7
5	Mushroom	35	5.8
6	Palm wine	58	9.6
7	Cocoyam	15	2.5
8	Fuelwood	62	10.2
9	Timber	67	11.1
10	Cocoa	7	1.2
11	Okra	5	0.8
12	Plantain	15	2.5
13	Vegetable (water leaf)	17	2.8
14	*Chrysophyllum albidum*	40	6.6
15	Pole	28	4.6
16	*Irvingia gabonensis*	35	5.8
17	Mango	8	1.3
18	Pawpaw	12	1.9
19	*Bridelia ferreginea*	11	1.8
20	Snail	25	4.1
21	*Parkia biglobosa*	18	3.0
22	*Senecio biafrae*	30	5.0
23	*Tetracarpidium conophorum*	10	1.7
24	*Thaumatococcus danielli*	29	4.8
25	*Xylopia aethiopica*	25	4.1
	Total	**605***	**100**

*Multiple responses

Forest products Harvesting/collection practises by respondents in Ikere forest reserve.

The result presented in Table 4 shows 52.3 % of the respondents, falls within 11-20 years, of forest products collection in Ikere forest reserve and 61.1 % of the respondents visit the reserve every day. Information from the study also shows that 84.4% of the respondent obtain permit to enter the reserve, while 60% of the respondents have their permit for collection renewed annually. These observations point to the fact that people in the adjoining communities of Ikere forest reserve value its livelihood potential immensely. The fact that majority of the people (81.1 %) (Table 4), are part-time collector who despite their engagement in other jobs, still find time to visit the reserve at least once in every two weeks, further proof its immense livelihood benefits to the people. This assertion had similarly been reported by Agbogidi and Eshegbeyi (2008).

Result in Table 5 showed that plucking and picking were the most common harvesting method employed by the respondents in exploiting products in the reserve. This is an indication that the people are applying sustainable approaches in harvesting products in the reserve, and this may ensure their continuous availability. Result on period of harvesting (Table 6) shows that availability of some products is seasonal. For instance, products like Discorea spp (yam), *Senecio biafrae, Irvingia gabonensis* and mushrooms are harvested or collected during the rainy season, while products like fuelwood, timber, pole and *Thaumatococcus danielli* are harvested through the year. The production capacity of the forest throughout the year makes it a sustainable boost to the economy of the people.

Table 4: Respondents collection practices

Year of involvement	**Frequency**	**Percentage (%)**
1-10	2	2.2
11-20	47	52.3
21-30	27	30
31-40	12	13.3
>40	2	2.2
Total	**90**	**100**
Harvesting status		
Part-time	73	81.1
Full-time	17	18.9
Total	**90**	**100**
Permit		
Yes	76	84.4
No	14	15.6
Total	**90**	**100**
Visitation to the forest		
Every day	55	61.1
Weekly	15	16.7
2 Weeks	15	16.7
Monthly	3	3.3
Not specified	2	2.2
Total	90	100

Table 5: Respondents method of harvesting/collecting products from Ikere forest reserve

S/N	Products	Harvesting/ collection method
1	Yam	Digging of tuber
2	Cassava	Uprooting
3	Maize	Cutting/plucking
4	Wild pepper	Plucking
5	Mushroom	Uprooting
6	Palm wine	Tapping
7	Cocoyam	Digging
8	Fuelwood	Cutting and gathering
9	Timber	Cuttingwith chain saw
10	Cocoa	Plucking
11	Okra	Plucking
12	Plantain	Cutting
13	Vegetable (water leaf)	Cutting
14	*Chrysophyllum albidum*	Picking and plucking
15	Pole	Cutting
16	*Irvingia gabonensis*	Plucking and picking
17	Mango	Plucking and picking
18	Pawpaw	Plucking
19	*Bridelia ferreginea*	Debarking
20	Snail	Picking
21	*Parkia biglobosa*	Plucking and picking
22	*Senecio biafrae*	Uprooting and plucking
23	*Tetracarpidium conophorum*	Picking
24	*Thaumatococcus danielli*	Plucking and cutting
25	*Xylopia aethiopica*	Plucking and picking

Table 6: Period of harvesting/collection of products from Ikere forest reserve

S/N	Products	J	F	M	A	M	J	J	A	S	O	N	D
1	Yam												
2	Cassava												
3	Maize												
4	Wild pepper												
5	Mushroom												
6	Palm wine												
7	Cocoyam												
8	Fuelwood												
9	Timber												
10	Cocoa												
11	Okra												
12	Plantain												
13	Vegetable (water leaf)												
14	*Chrysophyllum albidum*												
15	Pole												
16	*Irvingia gabonensis*												
17	Mango												
18	Pawpaw												
19	*Bridelia ferreginea*												
20	Snail												
21	*Parkia biglobosa*												
22	*Senecio biafrae*												
23	*Tetracarpidium conophorum*												
24	*Thaumatococcus danielli*												
25	*Xylopia aethiopica*												
Seasons		**Dry**			**Wet**							**Dry**	

Respondents' uses of the products from ikere forest reserve and marketing operations

The result collected by adjoining communities of Ikere forest reserve from the reserve is presented in Table 7. These uses are in consance with the findings of Agbogidi and Ofuoku (2006). The result in table 8 shows that 56.7 % of the respondents sell their products in the city while only 3.3 % sells at the reserve gate. The results also shows that 16.7%, 77.8% and 5.5 % of the respondents transport their products by motorcycle, vehicle, and carrying on head respectively. Lack of storage facility (53. 3 %) constitutes the highest problems faced by the respondents in the study area, this was followed by spoilage and transportation with 22.2 % and 15 6 % respectively. The reason why majority of the respondents sells their products at the city market could be because these products are widely accepted by the urban dwellers that have no opportunity of going into the forest. Another reason adduced for the movement of the products to the city was that the products sells fast even at higher price in the urban area than the local market, since most of the people in the village equally have access to the products at little or no cost. Also the perishable nature of most of the products coupled with lack of storage facility makes the respondents to take their collections to the city in a chartered vehicle.

Table 7 Products and their uses

S/N	Products	Parts used	Specific uses
1	Yam	Tuber	Food
2	Cassava	Tuber and leaf	Food and soup
3	Maize	Fruit and tassel	Food and medicinal
4	Wild pepper	Fruit, leaf and root	Food and medicinal
5	Mushroom	Strip and pileus	Food
6	Oil palm	Palm wine, palm oil, palm frond and palm kernel	Beverage, for cooking, broom for sweeping, for basket weaving, animal feed and vegetable oil
7	Cocoyam	Corm and leaf	Food and wrapping
8	Fuelwood	Tree branches	For cooking
9	Timber	Log	Planks for construction, roofing and furniture; mortar and pestle, fire wood and charcoal
10	Cocoa	Seed and leaf	Juice, beverages and leaf for wrapping
11	Okra	Fruit	Soup
12	Plantain	Fruit and leaf	Food and wrapping
13	Vegetable (water leaf)	Leaf	Soup
14	*Chrysophyllum Albidum*	Fruit	Food
15	Pole	Trunk	Fencing pole, electricity pole, construction pole and others.
16	*Irvingia gabonensis*	Fruit, leaf and bark	Food, medicinal and soup
17	Mango	Fruit, leaf and bark	Food and medicinal
18	Pawpaw	Fruit and leaf	Food and medicinal
19	*Bridelia ferreginea*	Bark	Medicinal and food
20	Snail	Meat and shell	Meat for food, shell for calcium, cultural uses
21	*Parkia biglobosa*	Seed	Food and medicinal
22	*Senecio biafrae*	Leave	Food
23	*Tetracarpidium conophorum*	Seed	Medicinal as anti-poison and food
24	*Thaumatococcus danielli*	Leaf, fruit and straw	Leave for wrapping, fruit for food and straw for making mat
25	*Xylopia aethiopica*	Bark, leaf and fruit	Medicinal

Table 8: Respondents' marketing operations

Selling point	**Frequency**	**Percentage(%)**
Reserve gate	3	3.3
Village market	27	30
City area	51	56.7
Other states	9	10
Total	**90**	**100**
Means of transportation		
Motorcycle	15	16.7
Vehicle	70	77.8
Carrying on head	5	5.5
Total	**90**	**100**
Problems encountered		
Transportation	14	15.6
Storage	48	53.3
Spoilage	20	22.2
Poor capital base	5	5.6
None	3	3.3
Total	**90**	**100**

CONCLUSION

Result from this study has revealed that different products which consist of both wood and non-wood products were harvested or collected from the forest reserve by the people in adjoining communities. The study revealed that these products are collected or harvested at different times of the year thereby provide employment opportunities for the people in the area. The products harvested are used for different purposes such as food for home consumption, craft, and medicine; cultural and traditional values. Also the study revealed that most of the products are sold in the city market to generate income for the people, thereby improve their livelihood economically. It was recommended that collectors and the consumer of the products should be educated on sustainable harvesting/utilization practices to ensure sustainable livelihood. Also, more research should be conducted into how these

products can be artificially raised in the nursery for plantation establishment.

REFERENCES

Abu, J. E. and Adebisi, L. A. (2002). A review of traditional forest uses. In: Popoola, (ed). Proceedings of a national workshop organized by FANCONSULT and Edo State chapter of FAN held in Benin City, Edo State between 5th and 6th of September, 2002. Pp. 42-50

Agbogidi, O. M. and Eshegbeyi, O. F. (2008). Forestry development for a safe environment. In: Onykwelu, J. C., Adekunle, V. A. J. and Oke, D. O. (eds). Research for development in forestry, forest products and natural resources management. Proceedings of the 1st national conference of the forests and forest products society of Nigerian (FFPN) held at the Federal University of Technology, Akure, Ondo State between 16th-18th April, 2008. Pp. 95-98

Agbogidi, O. M. and Okonta, B. C. (2003). Role of women in community forestry and environmental conservation. In: Akindele, S. O. and Popoola, L. (eds). Community forestry and stakeholder participation in sustainable development. Proceedings of the 29th annual conference of the Forestry Association of Nigeria (FAN) held in Calabar between 6th-11th October, 2003. Pp. 159-165.

Agbogidi, O. M. and Ofuoku, A. U. (2006). Biodiversity conservation and poverty alleviation in the Niger Delta area of Nigeria. *Agriculture conspectus scientifiucs* 71 (3). 1-10

Aiyeloja, A. A. and Ajewole, O. I. (2006). Non-timber forest products marketing in Nigeria. A case study of Osun State. *Educational Research and Reviews* 1 (2). 52-58.

Chikamai, B. Tchatat, M. Julius, C. T. and Ndoye, O. (2009). Forest Management for Non-wood Forest Products and Services in Sub-Saharan Africa. *Discov. Innov.* 21 (1). 50-59.

Cocks, M. L. and Wiersum, K. F. (2003). The significance of plant diversity to rural households in the Eastern Cape Province of South Africa. *Forest Trees and Livelihood* 13; 39-58.

Diaw, K., Blay, D. and Adu-Anning, C. (2002). Socio-economic survey of forest fringe communities: Krokosua Hills Forest Reserve. A report submitted to the Forestry Commission of Ghana. 86pp.

Koziell, I. and Saunders, J. (2001). Living off biodiversity: Exploring livelihoods and biodiversity in natural resources management. IIED: London. U.K. 36pp.

Lawes, M., Eeley, H., Shackleton, C. M. and Geach B. S. (2004). Indigenous Forests and Woodlands in South Africa: Policy, People and Practice. University of KwaZulu-Natal Press: Pietermaritzburg. 863pp.

Olujobi, O. J. (2012). Assesment of non-timber forest products in Ekiti State forest reserves. *International Journal of Agriculture,* 4 (2), 121-128.

Oyun M. B. (2009). The role of non-timber forest products on the livelihoods of fringe communites of Idanre forest

reserved Nigeria. *Forests and Forest Product Journal*. 2: 69-75.

Popoola, L. (2002). Prevalence of, and conservation strategies for non-timber forest products in the Sudano-Sahelian zone of Nigeria. *Nigerian Journal of Ecology*. 4 (1), 24-33.