Contributions of Some Non-Timber Forest Products to Household Income of Rural Dwellers in Onigambari Forest Reserve, Oyo State, Nigeria

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ABSTRACT: The communities surrounding the forest reserve get their daily income from the sales of some of the non-timber forest products (NTFPs) as a means of survival for them and their house hold without proper documentation. The study described the socio-economic characteristics of the rural dwellers in the study area and determined the income made from some of these NTFPs. Data was generated through the use of structured questionnaires administered to 120 randomly selected rural household heads. Data obtained were described using frequency counts, percentages and mean scores; the relationship between dependent variables and independent variables of the study was tested using binomial test and logistic regression. Finding reveal that, non-timber forest products gathering in Onigambari was male dominated (72.3%), 78.1% were married and 38.1% had formal education. Contribution of income from non-timber forest products to total income of respondents in the State was 59.46%. It was concluded that the non-timber forest products contribute significantly to rural household income at Onigambari forest Reserve Area of Oyo State, Nigeria

Non-Timber Forest Products (NTFPs) as defined by Shackleton *et al.,* (2011) is a biological products other than timber (excluding ecosystem services and abiotic products), piled up by humans in a non-artificial ecosystems. Non-Timber Forest Products refer to all the resources/products (other than industrial round wood and derived sawn timber, wood chips, wood based panels and pulp), that may be extracted from forest ecosystem and are utilized within the household or are marketed or have social, cultural or religious significance. It is confirmed that non-timber forest products (NTFPs) has contributed in diverse ways to the well-being of many rural and urban households and populations around the world (Shackleton and Pullanikkatil 2018, Angelsen *et al.,* 2014). Broad patterns, albeit with exceptions, indicate the income contributions are often highest amongst the lowest households and communities, and those in more remote settings Shackleton *et al*, (2015). A growing evidence that local and wider-scale commercialization of NTFPs is at its alarming rate in many regions, providing cash income to numerous households (Welford and le Breton, 2008; Cunningham, 2011). Non-wood forests products consist of goods of biological origin other than wood, derived from forests, other wooden land and trees outside forests (FAO, 1999). Furthermore, a large part of NTFPs have

medicinal properties Van Rijsoort *et al,.* (2000). Non-wood forest products have attracted considerable global interest in recent years because of increasing recognition of their contribution to household economies and food security to some national economies and to environmental objectives such as the conservation of biological diversity. Also, some 80 percent of the population of the developing world use NTFPs to take care of health and nutritional needs (UN, 2002). In 1996 in southeastern Nigeria, 35.7% of the rural population collected NTFPs daily and it accounted for 94% of total income from minor sources (Nweze and Igbokwe, 2000).

MATERIALS AND METHODS

Area of Study: Onigambari Forest Reserve was declared from Ibadan Forest Reserve by a resolution of the Ibadan city council passed in September 1899 (Ajibode, 2002). Two sections were consolidated to form a Forest Reserve in 1953 making a total area of 125.62 km^2 (Ajibode, 2002). Hence tree like Teak (*Tectona spp*), Mahogany (*Khaya ivorences*), and other Agricultural crops like cocoa (*Theobroma cacao*), cassava (*Manihot spp*) with exotic trees and crops were cultivated. The inhabitants of the area are predominantly farmers with relatively low number of hunters (Ajibode *et al*., 2002). Some of

the forestry practice includes; Planting of trees for both timber and fuel wood production; Collection and sales of non-wood products such as leaves and bark for herbs, rattan (cane), etc. The noticeable surrounding areas are Idi Ayunre, Adebayo, Ibusogboro and Mamu. These areas are along the same equatorial belt with the study area. Onigambari area was bounded up with the following villages; Aba-Igbagbo, Gbale-asun, Ajibodu, Lagunju, Akintola, Okeseyi, Akinogbun, Amosun, Olondeige, Olaya, Onipede. Onigambari Forest Reserve lies on latitude $7^o\ 8^1$ N and $7^o\ 3^1$ N longitude $3^o\ 49^1$ E and $3^o\ 22^1$ E (Fig 3.1). The plot lies within 17 km South-east of Ibadan on the Idi-Ayunre-Ijebu-Ode road, Oyo State. It was laid about 2 km away from the nearest road well obscured by some forest fallows in the neighborhood.

Sampling procedure and Data Analysis: Multi-stage sampling procedure, comprising of purposive and random sampling was employed in selecting respondents from the study population.

Stage 1: This involved total enumeration of the three (3) settlements in the area. This was done in order to cover the area of Onigambari.

Stage 2: The three (3) villages were purposively selected based on closeness to forest and high intensity of non-timber forest products gatherers.

The data generated were calculated with the formula as given as (Lohr, 2010)

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$$\frac{Z_{\propto/2}.S^2}{e^2+(Z_{\propto/2}.S^2)/Ni}$$

Where $Z_{\propto/2}$ =1.96; e=0.05; S^2= P (1-P); P = Population of ith stratum to total population ($\frac{Ni}{Nh}$); N_i = Total number of population per ith stratum; N_h= Total population.

Based on the formula, a total of 347 respondents were obtained with response rate of 77.80%.

Stage 3: Simple random sampling technique was used to sample 120 respondents. Thus, a total of 274 respondents were used for this study.
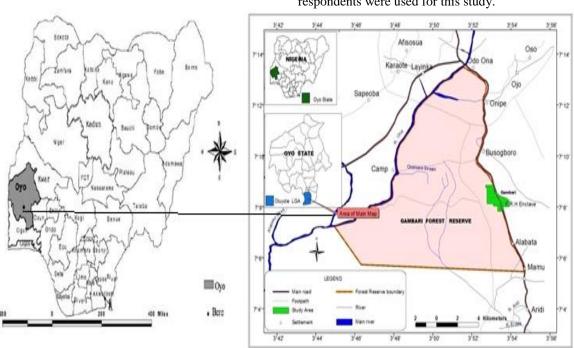

Fig 1: The Map of Onigambari Forest Reserve showing the study sites

RESULT AND DISCUSSION

Socio-economic Characteristics of NTFPs Gatherers: Result in Table 1 shows that majority (72.3%) of the NTFPs gatherers were male in the study area. This shows the popularity of male in non-timber forest product gathering in the study area. The reason for this may be due to the fact that non-timber forest products require energy, time consuming and could be risky especially during hunting and harvesting. The findings conform to the opinion of Mohammad *et al*, (2017) who stated that men tend to take riskier move than women when going into the forest. It is therefore hypothesized that male-headed households are more likely to be more dependent on forest resources than female headed households.

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Table 1 Socio-economic characteristics of respondents in sample stations Igbusoogboro (A); Adebayo (B) Aba-Otun (C)

Variable	A n = 91 F	%	B n = 86 F	%	C n= 92 F	%	Pooled n = 274 F	%
Sex								
Male	68	71	59	71	71	75.5	189	72.3
Female	23	29	28	34	19	22.4	71	24.7
Age								
<= 30	3	3.2	1	1.0	2	3.1	5	2.5
31- 40	4	5.8	6	8.2	4	4.2	15	5.1
41- 50	40	51.1	36	41.5	31	38.1	115	40.1
51 – 60	28	34.5	27	30.2	50	42.4	97	38.1
61-70	6	7	14	12.8	10	12.6	36	13.5
Mean	16.8		16.8		19.4		53.6	
Marital Status								
No response	3	2.1			4	7.2	9	2.1
Married	67	84.3	80	94.7	80	87.4	200	78.1
Widowed	9	5	1	1.1	5	8.2	29	13.1
Separated	2	1.1			1	1.1	2	0.5
Single	1	1.1			1	1.1	2	0.7
Household Size								
<= 4	62	71.9	77	86.5	69	71.4	213	75.9
5 – 6	23	27	7	7.1	22	32.8	58	19.4
7-8	1	1.1	1	1.1	3	3.2	6	1.7
Mean	3		3		3		3	
Educational Qualification								
No response	1	1.1	10	10.4	7	6.4	16	8.7
Non-primary	14	16.8	4	2.4	14	12.9	29	11.7
Primary	34	36	41	51.3	33	34.0	105	39.4
Secondary	43	43.9	35	38.7	37	39.8	109	38.1
Tertiary	1	1.1					1	0.4
Major Occupation								
Non-Response	2	2.2	57	65.6	63	61.7	118	46.0
NTFPs gathering	48	57.2	10	12.8	16	20.1	75	27.5
Farming	28	30.3	17	16.1	6	7.3	46	15.9
Trading	4	4.3	1	1.1	5	5.4	10	5.1

Variable	A n = 91 F	%	B n = 86 F	%	C n= 92 F	%	Pooled n = 274 F	%
Artisanship	1	1.1					1	0.4
Working experience								
<= 10	6	6.7	16	15.4	10	24.3	41	14.9
11 – 20	15	17	5	6	11	11.8	36	14.2
21-30	68	71.2	67	72.5	59	56	189	72.4
Mean	22.1		19.3		19.6		20.3	
Source of credit								
Cooperatives	3	3.5	13	16.2	18	17.0	36	11.4
Personal savings	36	36.1	51	56.0	45	45.7	129	45.1
Family and friend	61	44.2	23	29.5	31	30	111	35.5
Source of labour								
No response	2	2.0	20	25.5	24	28.5	55	17.5
Family labour	21	25	41	44.3	40	32.4	104	35.4
Hired Labour	1	1.1	2	2.2	2	2.2	5	1.9
Self	39	40.1	10	10.6	29	23.5	77	29.2
Mixed	27	27.0	7	5.7	6	5.4	36	13.4
Nature of engagement								
Full Time	43	49.6	57	65.5	50	55.9	114	60.1
Part Time	29	44.8	27	33.0	35	44.5	111	32.4
Membership of Association								
Yes	9	10.0	6	8	2	2.1	21	5.0
Access to ext agent								
Yes	12	9.8	6	7.1	1	1.0	21	5.0
Length of stay								
<= 20	10	10.1	30	31.1	25	25.6	65	21.2
21 – 30	40	35.0	36	41.4	28	34.3	112	34.2
31-40	41	49.5	17	20.1	30	30.5	100	31.0
Mean	32.3		20.7		26.0		26.3	

Source: Computed from field survey data, 2018

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Table 2: Monthly in-come from NTFPs and other sources of the Gatherers

Average earnings from Forest Products	A n = 91		B n = 86		C n= 92		Pooled, n = 274	
	F	%	F	%	F	%	F	%
<= 30000.00	61	68.5	70	80.5	78	83	209	77.4
30001.00 - 50000.00	18	20.2	7	8	9	9.6	34	12.6
50001.00 - 70000.00	6	6.7	8	9.2	6	6.4	20	7.4
70001.00+	4	4.5	2	2.3	1	1.1	7	2.6
Mean	32707.9		28114.9		20393.6		27072.1	
Std. Dev	15970.3		16056.9		18511.4		16846.2	
Average earnings from other sources								
<= 30000.00	68	76.4	81	93.1	79	84	228	84.4
30001.00 - 50000.00	18	20.2	6	6.9	13	13.8	37	13.7
50001.00 - 70000.00+	3	3.4			2	2.2	5	1.9
Mean	21550.7		14000.1		19340.4		18297.1	
Std. Dev	16613.9		13190.1		17410.6		15738.2	
Total income	54258.6		42115.0		39734.0		136107.6	
Contribution of income from NTFPs		60.28		66.8		51.3	59.46	
Contribution of income from Other sources		39.72		33.2		48.7	40.54	

Source: Computed from field survey data, 2018.

Monthly income from NTFPs and other sources of the Gatherers: Result in Table 2 shows that Contribution of income from non-timber forest products to total household income of respondents in the State was 59.46%, while contribution of income from other sources to total income is 40.54%. It was concluded that the non-timber forest products contribute significantly to rural household income in Edo State. Hence, extension workers should intensify training on how to sustainably explore the forest without jeopardizing the environment.

Conclusion: The study concludes that the zones investigated (Igbuso-gboro, Adebayo and Aba-Otun) had good understanding of the forests around them and the produce gotten from them which are non-timber. NTFPs have contributed immensely towards the income of the three communities visited. Household food security is also one of the areas where a Non-timber forest product (NTFPs) has been able to make positive impact on. It has been established that a significant number of rural, tribal and overall forest dependent communities to a large extent, derive a sizable part of their food, nutrition, healthcare needs and their income from NTFPs. Augmenting livelihoods of the forest dependent communities requires some focused intervention on NTFPs.

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