RESOURCE DEVELOPMENT AND MARKET VALUE FOR NON-WOOD FOREST PRODUCTS OF THE BANYANG-MBO SANCTUARY OF NGUTI, CAMEROON

Abstract

The research begins with a brief economic history of the Banyang-Mbo Sanctuary of Nguti, its demographic and geographic dispersion. Next, we aim to identify and analyze the various non-timber forest products, which range from plants, animals, birds and marine species.

With the aid of write-ups from the Wildlife Conservation Society (WCS) Cameroon, the spatial distribution of these products, vis-à-vis their proximity to surrounded villages is presented. Effort is equally made to know the activities of the villages and other environmental factors that affect the growth and existence of these products. Three objectives and three hypotheses were formulated to give direction to the study. Convenient and purposive sampling techniques was used in the study with the help of questionnaires for data gathering. The population of the study comprised 141 households in Nguti vicinity and a sample size of 105 respondents obtained with the use of Yaro Yamen's formula. The statistical tools used for data analysis were frequency, mean and percentages tables to organize the data collected. Frequency and Percentage were used to organize the demographic data of the respondents while mean was used to analyze the responses to the research question. The instrument was validated by three experts and reliability justified by a coefficient. The study recommends that the education on the development of non-wood forest resources should be practically oriented as this will help to improve the villagers' creativity and innovativeness towards these resources on which they depend.

Keywords: non-wood forest products, participatory rural appraisal, market value, and yaro yamen formula

1. Introduction

1.1) Background to the Study

The Banyang-Mbo Sanctuary of Nguti Subdivision began as a traditional native community forest in 1936 and its evolution progressively changed status until 1996 when it was finally named as a Sanctuary with a responsibility of sustaining the resource and conserving protected species and empowering the local people to manage the area sustainably.

Non-Wood Forest Products (NWFPs) include foods (nuts, fruits, mushrooms, honey, game, gums); food additives (spices, herbs, flavorings, sweeteners); fodder; fibers (furniture, clothing, construction); fragrances for perfumes; ornamental pods and seeds; resins; oils; plant and animal products with medicinal value. Some of the non-wood forest products exploited are: Ivringia spp (Bush mango), Ricinodendron spp (Njangsa), Gnetum spp (Eru / Okok), Piper guineensis (Bush pepper), Hacosperma secondiflorum (Monkey kola), Garcinia cola (Bitter cola), Kola accuminata (Kola nut), Scorodoploeus zenkeri and Afrostyryx cameroonensis (Achu-soup spice), Pandanus spp (screwpine) and Elaeis guineensis (Oil palms).

Non-wood forest products are composed of a broad variety of products of plant or fungal origin extracted from forests (Chamberlain et al. 1998). The products have been used and valued by communities across generations, but many of the products lack systematic research or quantification of the values they provide (Alexander et al. 2001). Controversies over timber harvests on public lands, and other external factors, sparked new interest in research on the management and market values of these products as an alternative income source from forests, beginning in about the 1990s (Alexander and McLain 2001, Robbins et al. 2008, Frey et al. 2018a). As interest increased, researchers faced challenges of informality and secrecy, which are typical of many non-wood forest product markets (Alexander et al. 2002b, McLain et al. 2008). Harvesters, dealers, and other market players may not trust outside groups and may have an economic interest in keeping harvest locations and methods secret, because of the difficulty in keeping others from encroaching (Greenfield and Davis 2003, Burkhart 2011, Frey et al. 2018b). Furthermore, there is no consistent national data tracking by public or private entities of most products, so the studies that have been conducted on non-wood forest management and values are generally limited to a small set of products, a single point in time, and/or a narrow geographic location (Chamberlain et al. 2017).

Specific products are highly valued for cultural or spiritual purposes. This may be particularly true among indigenous peoples in Nguti Subdivision, who have longstanding traditions of non-wood forest products collection and deep connections to the landscapes where they are found (Carroll et al. 2003, Lake et al. 2018). Other non-native communities of people may also have cultural connections to species and products found in the Bayang-Mbo Sanctuary, which in some cases have similarities to those found in their countries of origin (Lake et al. 2018). These native and non-native communities can have traditional and local ecological knowledge about non-

wood forest product species that can inform production and management (Hummel and Lake 2015, Lake et al. 2018).

Past research has indicated that non-wood forest products can be integral in subsistence livelihoods (Emery 2001, Pilz et al. 2006), and that their commercial sales are valuable sources of income for people, seasonally or during times of economic distress (Schlosser and Blatner 1995, Bailey 1999, Pierce and Emery 2005, Frey et al. 2018b). The diversity of non-wood forest products makes them difficult to study as a group, or to analyze and synthesize in a universally applicable way (Alexander 2001, Alexander et al. 2001).

It should be noted that although many and varied users harvest, trade, and consume non-wood forest products, relatively little is known about their management and market value in terms of the benefits they provide to individuals and the community at large. This paper researched on the development and market value of non-wood forest products in this sanctuary found in Nguti. We endeavored to describe formal and informal markets for non-wood forest products, and the extent to which and reasons why many of the details of these markets remain unknown to researchers and decision makers. We provided examples of the market values of some species and identified information gaps and research needs to improve resource development and market value.

Among the findings of the study were lack of interest in developing non-timber resources, lack of sufficient time allocated to develop non-timber resources, lack of innovation, lack of creative skills, poor attitude of villagers towards practical lessons on resource development, and poor use of facilities available in resource development.

Furthermore, education by the Government, NGOs and Sustainable forest management Projects should provide more practical lessons that involve participation of villagers, practical materials should be made available and accessible to users by the local council and should provide incentives for villagers who develop non-wood forest resources for likelihood or for easy access to the business world. Among many others are the factors that will improve the resource development skills and available defined markets for the villagers.

1.2 Statement of the Problem

Non-wood forest products contribute to the likelihood of individuals and communities in varied ways. There is a common understanding of the overall non-wood forest products, markets, and dispersion; but, there is limited understanding of market value and influencing factors. In addition, there is a general belief that harvesters, buyers, and companies engaged in the wood

industry are not willing to share detailed information. This is because no single classification scheme or data source adequately summarizes production of this sector and combining data from different sources creates gaps and inconsistencies. The lack of information distorts the ability to provide a comprehensive and dynamic analysis of the market value of forests for the many non-wood products harvested and transacted in formal or informal markets.

1.3 Purpose of the Study

This study aimed to identify the ways of motivating resource development skills amongst the indigenous population. The specific objectives of the study were to identify the resource development skills available for exploiters, identify the factors hindering the acquisition of these skills by the indigenous population and identifying possible factors that could sustain resource development skills in the indigenous population. In order to achieve the above objectives, the following questions were examined.

1.4 Research Questions

- What is the degree of sustainable management of non-wood forest products of the BMSC?
- Why do exploiters of non-wood forest products of the BMSC not attain their market values?
- What can be done to sustain resource development skills amongst the indigenous population?

2. Methodology of the Study

Both the quantitative and qualitative methods were used to assess the involvement and use of the forest products by the local people.

2.1 Choosing the villages

Participatory Rural Appraisals were conducted in all the 54-project villages to select those that used non-wood forest products from the Sanctuary. From the 54, 4 villages comprising a range of ethnic groups, eco-zones, impact on the sanctuary and dominant economy were selected as sample villages.

2.2 Choosing the households

Community meetings were held in each village to identify non-wood forest exploiters. Group meetings were then held with non-wood forest exploiters to select household representatives based on the range of products used, volume collected, quantity sold and the age and sex of collectors. From this exercise, 25-35 households in each village were selected depending on

village population size and a population of 141 was determined. From this population, a sample size was determined.

2.3 Conservation Attitudes of Local People

The attitudes of local people living adjacent to the Banyang-Mbo Wildlife Sanctuary were assessed using secondary information, direct observation, and informal discussions. Variables of interest included the attitudes of local people towards the sanctuary, the project and technical staff and illegal exploiters on one hand, and how resource use patterns and problems and past interactions with the protected area and technical staff influence these attitudes on the other hand.

3.4 Determination of Sample Size

The sample size for the study was 105 households. This was arrived at through a scientific method where Yaro Yamens formula was adopted. This is mathematically represented thus;

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = sample population

1 = constant

N = population (141)

e = degree of error (0.05)

Substituting:

$n = \frac{141}{1+141(0.05)^2}$ = 104.3 E 105

3.4.1 Sample and Sampling Techniques

This research work adopted convenient and purposive sampling techniques. The reason for adopting convenient techniques was to ensure that all the households have an equal chance of being selected.

5. Instrument for Data Collection

Structured questionnaire was used for data collection. The questionnaire was categorized in four (4) sections; A. B, C, D and E

Section A: Identification data of Respondents.

Section B: Identifying skills and methods used to harvest non-wood forest products.

Section C: Identifying factors that are hindering the acquisition of skills by collectors and non-attainment of market value by collectors

Section D: Identifying possible factors that can sustain the development and sales of these products.

A four point rating scale was used for rating. Thus, Strongly Agreed (SA), Agreed (A), Strongly Disagreed (SD), Disagreed (D): with values 4, 3, 2, and 1 assigned respectively.

5.1 Validation of Instrument

The Instrument was validated by two experts (Marketing Lecturer, and a Conservationist). The contribution of validates reflected in the final draft of the instrument.

5.2 Reliability of the Instrument

Reliability is how genuine, guaranteed, and reliable the instrument used is, for the purpose of the research work. In the period, ten (10) copies of the questionnaire were sampled to ten (10) of our colleagues, this was used as sample collection. Thus, the questionnaire was judged reliable for data collection.

6. Data Analysis Techniques

The statistical tools used for data analysis were frequency, mean and simple percentages (%). Frequency was used to organize the data collected. Percentage (%) was used to organize the demographic data of the students while mean was used to analyze the responses to research question. The mean was calculated by assigning nominal values to the response categories. Strongly agree (SA); Agree (A); strongly disagree (SD); Disagree (D) with values 4. 3, 2 and 1 assigned respectively.

Strongly Agree 4 Agree 3 Strongly Disagree 2 Disagree 1

Hence, the mean was computed as follows:

$$X = \frac{X}{n}$$

$$X = \frac{4 + 3 + 2 + 1}{4} = 10 \div 4 = 2.5$$

To this extent, the cut-off becomes 2.5, any value below 2.5 is regarded as disagree while above 2.5 will be regarded as agreed.

An interval of scale of 0.5 was added to the mean to give 3.00, any response of 3 and above is regarded as agreed while response less than 3.00 is regarded as disagreed.

7. Findings and Discussion

Table 1: Identification data of Respondents

Gender of the Respondents	**Frequency**	**Percentage**
Male	25	23.8
Female	80	76.2
Total	105	100
Level of Study		
No Level	33	31.4
Elementary Level	41	39.0
Secondary / High School	27	25.7
Graduate	4	3.8
Total	105	100
Source: Field survey, 2020		

7.1 Discussion of the Socio-Demographic Characteristics of the Respondents

Table 1 above shows the socio-demographic characteristics of the respondents studied.

The Study revealed that the majority of the households (76.2%) were females while the minorities (23.8) were males. This could be attributed to the fact that most informal harvesters are generally the female folk. This result is in line with Okedi (2012), who stated that majority of households in non-wood forest exploitation in Cameroon are females.

Finally, the majority (39.0%) of the respondents were of the elementary level of education followed by zero level of education (31.4%) and graduates formed a minority (3.8%) of the respondents. This result could be attributed to the fact that as the level of education increases, the households tend to pursue more tertiary jobs. It was only the few (3.8%) of them that remain back in the village and join in non-wood forest exploitation activities

Table 2: Skills and methods used to harvest non-wood forest products

S/N		SA(f)	A(f)	SD(f)	D(f)	SD	Remark	
A								
1	Encouraging only the sustainable and non-destructible harvesting of NTFPs by creating awareness, imparting training	49	20	14	22	2.91	1.20	Accept
2	Facilitating the ecosystem approach to forest management so that the tendency to monoculture is curbed	57	26	10	12	3.23	1.02	Accept
3	Ensuring that the primary harvesters get a reasonable price	65	9	18	13	3.20	1.12	Accept
4	Facilitating small holders' schemes through micro-credits and providing essential linkages.	40	16	34	15	2.78	1.11	Accept
5	Facilitating organic cultivation of medical and aromatic plants on private lands.	56	23	15	11	3.18	1.04	Accept
6	Encouraging the traditional health care practices.	65	16	11	13	3.27	1.08	Accept

Source: Field Survey, 2020

Where:

$$\frac{F}{X} = Frequency$$

= Mean

SD = Standard Deviation

Table 2 above, revealed that out of the six (6) item statement on major skills and methods available for harvesters, all the skills are available for households. The result further revealed that the respondents had a mean range of 2.78 to 3.53 showing that the skills are all available for the households. These findings is in line with Krueger (2000) that stated that forest exploiting is a career that offers and encourages skill acquisition, creativity and training in major areas of life.

Table 3: Factors hindering the acquisition of skills by Home Science students

S/N	**Factors hindering the acquisition of skills in resource development**	**SA (f)**	**A (f)**	**SD (f)**	**D (f)**	**SD**	**Remark**	
1	Poor interest in the activity on the part of the villagers	56	31	10	8	3.29	0.93	Accept
2	Households spend more time looking for white collar jobs	46	30	13	16	3.00	1.09	Accept
3	The financial burden to acquire tools used for exploitation	54	29	17	5	3.26	0.89	Accept
4	Insufficient time allocated to the activity of exploitation	60	20	17	8	3.26	0.99	Accept
5	Poor innovation and creativity by the harvesters	55	31	13	6	3.29	0.89	Accept
6	The harvesters have little knowledge of industrial markets	20	14	29	42	2.11	1.13	Reject
7	The households are ignorant of the financial benefits	9	38	19	39	2.16	1.03	Reject
8	The harvesters have no interest in being self-employed.	39	27	32	7	2.93	0.97	Accept
9	Poor attitude of harvesters towards practical lessons	38	23	36	8	2.87	1.00	Accept
10	Inaccessibility into the areas of	60	20	17	8	3.2	0.99	Accep

	exploitation (No access roads)					6		t

Source: Field survey, 2020

Table 3 above shows that out of ten (10) item statement on the factors hindering the acquisition of skills by households in Nguti subdivision,, respondents with a mean score of 3.29 agreed that they have poor interest in the activity, respondents with a mean score of 3.00 accepted that households spend more time looking for white collar jobs. Respondent with a mean score of 3.26 agreed that there's a high financial burden to acquire tools used for exploitation, insufficient time allocated to the activity of exploitation and no access roads in the forest, respondents with a mean score of 3.29 agreed there's poor innovation and creativity by the exploiters. Respondents with a mean score of 2.11 disagreed that the harvesters have little knowledge of industrial markets and those with a mean score of 2.16 equally rejected that the harvesters are ignorant of the financial benefits of exploitation; respondents with a mean score of 2.93 agreed that the harvesters have no interest in being self-employed. Respondents with a mean score of 2.87 agreed that they have poor attitude towards practical lessons.

From these findings, it is evident that eight out of the ten items were accepted while two items were rejected as factors hindering the acquisition of skills in Home Science. These findings agree with Mgboro (2003) who stated that lack of interest, inadequate practicals, poor use of forest exploitation materials among others are the factors hindering skill acquisition.

Table 4: Measures of improving and sustaining the development and sales products

S/ N		**SA (f)**	**A (f)**	**SD (f)**	**D (f)**	**SD**	**Remark**	
1	The community should get practical lessons and participate in forest management meetings	51	33	14	7	3.22	0.91	Accept
2	The tools for harvesting should be made available and accessible to harvesters	36	37	25	6	2.97	0.93	Accept
3	The council should provide incentives to harvesters for easy access to the business world.	48	37	13	7	3.20	0.90	Accept
4	The council should look for modern markets for harvesters	62	20	16	7	3.31	0.96	Accept
5	Encourage competition of skills	55	24	22	4	3.24	0.92	Accep

	by harvesters in different locations							t
6	Establish workshops for the harvesters to exhibit the skills learnt.	43	31	24	7	3.05	0.96	Accep t

Source: Field survey, 2020

Table 4 above reveals that out of the six (6) item statements listed as the factors of improving entrepreneurship skills among harvesters, all the respondents showed a total agreement, because the mean scores achieved on the item listed as the factors is above 2.50 which is the criterion mean score for this research. Furthermore the mean score ranges from 2.97 to 3.31. These findings agree with Lubert (2001) who stated that attending more meetings and practicals, organizing skill exhibition and workshops, promoting of business ideas among others are the factors of improving resource development skills among non-wood forest harvesters.

Table 5: Strategies to sustain resource development skills amongst the indigenous population

S. No		SA (f)	A (f)	SD (f)	D (f)	SD	Remar k	
1	Harvesters state the goals and objectives of their activity.	22	7	10	66	1.86	1.24	Reject
2	Tools and appliances should be made available and accessible to harvesters	64	19	16	6	3.34	0.94	Accep t
3	The council should provide incentives for harvesters.	56	19	26	4	3.21	0.95	Accep t
4	Promote sales points to harvesters	41	42	15	7	3.11	0.89	Accep t
5	Establish workshops for harvesters to exhibit their skills	43	38	21	3	3.15	0.84	Accep t
6	Create more opportunities for sales to be made	54	32	14	5	3.29	0.87	Accep t
7	Give harvesters orientation on the proper use of harvesting skills	53	29	17	6	3.23	0.92	Accep t
8	Provide activities among	39	46	16	4	3.14	0.81	Accep

	harvesters to create healthy competition							t
9	Encouraging competition of skills acquired among harvesters .	44	35	21	5	3.12	0.89	Accep t

Source: Field survey, 2020

Where:

f = Frequency

X = Mean

SD = Standard deviations

Table 5 above reveals that out of the nine (9) item statements listed as strategies to sustain resource development skills amongst the indigenous population, all the respondents showed a total agreement except item number one with a mean score of 1.86 which was rejected, because its mean scores were below 2.50 which is the criterion mean score for this research. Furthermore, the mean score ranges from 1.86 to 3.34. These findings agree with Lubert (2001 who stated that goal setting, practical oriented courses, promoting of business ideas, skill exhibition among others are the measures of enhancing and sustaining skills in the non-timber forest resources.

8. Conclusion

Non-wood forest products are composed of a broad variety of products of plant or fungal origin extracted from forests and have been used and valued by communities across generations. Exploiters of these products need harvesting skills and markets to become self-employed and independent. The rate of unemployment in the village is very high hence resource development and market value seek to solve problems facing individuals, families and groups in this area. Resource development and market value is capable of solving this problem in the nation by equipping the harvesters with the skills necessary to create jobs, thus reduce the number of unemployed youths. This study was able to successfully identify the resource development skills

of households in Nguti, factors that are hindering the acquisition of skills by collectors and non-attainment of market value by collectors and possible factors that can sustain the development and sales of these products. After having these skills harvesters need to acquire other skills like, communication skills, negotiation skills, planning skills, business plan, etc. to manage their resources and businesses or firms. Factors that are hindering the acquisition of skills can be taken care of by providing more publicity to the importance of resource management and providing incentives for all harvesters. The strategies for enhancing and sustaining the development and sales of these products should be followed judiciously to attain the goal of reaching their full market value. The need to sustainably manage non-wood forest resources is imperative for all the harvesters in the Banyang-mbo sanctuary.

9. Recommendations

Based on the findings of the study, the following recommendations were made;

1) Sustainable resource development should be pursued with vigor by all harvesters.

2) Incentives should be provided for harvesters.

3) Resource development meetings should be practically oriented as this will help to improve harvesters' creativity and innovativeness.

4) Training and re-training programs should be arranged for all harvesters to improve on their effective skills in exploitation.

5) Conferences, seminars and workshops should be periodically arranged for harvesters and as this will assist them to update their knowledge and skills.

6) Small holders' schemes and sponsorships should be encouraged.

7) Markets should be sought at the local, national and foreign levels

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