International Journal of Advanced Research in Biological Sciences
ISSN: 2348-8069
www.ijarbs.com
DOI: 10.22192/ijarbs Coden: IJARQG(USA) Volume 4, Issue 10 - 2017

Research Article

DOI: http://dx.doi.org/10.22192/ijarbs.2017.04.10.012

Community - Based forest protection: an investigation into forest reserves in Ondo state, Nigeria.

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Abstract

The study was conducted to investigate the level of involvement and participation of Community Development Committees (CDCs) in forest protection in Ondo State, Nigeria. Six local government areas (LGAs) were purposively selected from eighteen LGAs that constitute Ondo State on the basis of two LGAs from each of the three senatorial districts. Eighteen rural communities CDCs were randomly selected on the basis of three CDCs from each LGA earlier purposively selected. Ten respondents were then purposively selected for interview from each of the eighteen CDCs, making a total sample size of one hundred and eighty respondents. Data were analysed both at variate and multivariate levels. Majority of the respondents were fairly educated and they earned well over ₦150,000.00 per annum ($1.26 per day). None of the forest protection activities or campaigns in the communities could be described as effective, mainly due to lack of adequate involvement of the CDCs at planning stages. The main type of conflict in the forest reserves is the one between forest officers and the communities' members who were incessantly accused of aiding and abetting illegal forest exploitation by forest offenders. There were positive and significant correlations between respondents' gender (t = 4.258), age (t = 3.628) level of education (t = 6.148), household size (t = 2.033) and their participation in forest protection programmes and forest extension meetings.
Respondents' income level however, exerted significant negative relationship. It was recommended that the Ondo State government of Nigeria earnestly commences holistic implementation of the "Community - Based Forest Management System" which has been a mere policy paper, haphazardly implemented over the years. There is an imperative need for increased and enhanced annual budgetary allocations to the forestry department to improve its operational efficiency.

Keywords: Community - based forest protection, community development committees, involvement and participation, forest reserves.

Introduction

The forest estate in Nigeria is a highly valuable asset. It comprises of broad vegetation types which provide a lot of tangible and intangible benefits to the teeming population. These benefits include timber, which constitutes the bulk of the raw materials for the wood industries; and non-timber forest products such as edible fruits, bark, exudates, leaves, roots, etc which are either consumed as food or used for cosmetics or medicinal purposes. In addition, the forest estate serves as habitat to a wide variety of wildlife species ranging from mammals to birds. The forest is also a great value in soil conservation by protecting the soil from erosion and rapid moisture loss (Akindele, 2012).

The forestry sector in Nigeria and particularly in Ondo State plays significant role in the rural economy as it provides means of livelihood to several millions of people. Several of the economic activities in the rural communities are forest based. These include gathering and marketing of non-timber forest products, fuel wood collection and sale, charcoal production and trade, supply of unskilled labour to timber harvesting industry, etc. All these activities enhance household income in the rural areas and promote the sustenance of rural livelihood (Adedayo and Ogunsona, 2012).
In Nigeria, the forestry sector accounts for about 2.5% of the GDP and the sector provides employment for over two million people (World Bank, 1997). Furthermore, forests play very important role in mitigating climate change through carbon sequestration. By removing carbon dioxide from the air, forests functions as terrestrial carbon sinks, storing large amount of carbon.

Human beings are increasingly facing livelihood challenges which aggravate their dependence on forest resources for income to meet their numerous needs. Rural communities have consequently been forced to use forest resources in an unsustainable manner. Conversion of forests to intensive agriculture, shifting cultivation, poaching and trade in bush meat together with unsustainable illegal logging all reduce forest cover and destroy biodiversity. Wikipedea, (2011) estimated the rate of deforestation in Nigeria as approximately 3.5% per annum which translates to average loss of 350,000 hectares to 400,000 ha of forest every year.

In the last three decades, focus has been on protecting forests world over. However, in the developing countries and particularly Nigeria, forest security agencies have proved ineffective at protecting the forests due to institutional challenges, most critical among which are insufficient personnel and lack of patrol vehicles. In addressing these challenges and ensuring sustainable forest management, the concept of community -based forest protection which is a grass root based protective option for our forests becomes very imperative.

Community - based forest protection as a sustainable forest management concept emphasises the involvement and participation of community development committees (CDCs) in forest protection, especially forest reserves against reckless and unsustainable exploitation. The community development committees (CDCs) have over the years been a formidable and pragmatic platform for galvanizing the efforts of people to undertake rural development projects in developing countries. It is a group of elected officials of a community charged with the responsibility of coordinating self-help development projects of that community (Ofuoku and Agbogidi, 2006).

Ondo State of Nigeria at its creation in 1976 had sixteen forest reserves adding up to about three hundred and eight thousand hectares. At the moment however, the total size of the forest reserves in the state is about two hundred and fifty five thousand hectares. In fact, two out of the sixteen reserves namely: Irele (3,600ha) and Okeluse (2,809ha) respectively had been completely encroached (MNR, 2015).

Consequent upon the above disheartening development, this study was conceptualized to investigate the level of involvement and participation of community development committees (CDCs) in forest protection in Ondo State, Nigeria with the view to reducing the ongoing rapid deforestation and encouraging sustainable forest management in the State. Specifically, the study aims at determining the socio-economic characteristics of the respondents, investigating forest protection programmes carried out in the forest reserves by the forestry department of the ministry of Natural resources, investigating the level of participation and the reasons for non- participation of respondents in forest protection programmes, investigating the sources and reasons for conflicts in the forest reserves, ascertaining the perceived derived benefits by the communities members for attending forest extension meetings and forest programmes and determining the relationship between respondents' personal characteristics and their participation in forest extension meetings and forest protection programmes.

Methodology

The study was carried out in Ondo State South West Nigeria. Ondo State lies between latitudes 5^0 45' and 8^0 15'N and longitude 4^0 25' and 6^0 5'E. Its land area is about 15,317 square kilometre and population of about 4.6million. Ondo State is bounded on the East by Edo and delta States, on the West by Ogun and Osun States, on the north by Ekiti and Kogi States and on the South by the Bight of Benin and the Atlantic Ocean. The State has the longest coastline in Nigeria with considerable territorial water offshore, rich in aquatic and mineral resources of significant importance. Based on the Keay's (1959) classification of Nigerian vegetation, three distinct vegetation belts

can be identified in the State. These are mangrove in the South, lowland rainforest in the central and derived Savannah in the north. For the study, six local government areas (LGAs) were purposively selected from the eighteen local government areas that constitute the state on the basis of 2 Local Government Areas/senatorial district and based on availability of substantial land mass of natural forest reserves, afforested reserves and contiguity to natural forest reserves. Eighteen rural communities' Community Development Committees (CDCs) were randomly selected on the basis of three CDCs per each selected LGA. Ten respondents were then randomly selected from each of the CDCs, making a total sample size of one hundred and eighty.

Both structural questionnaire and interview schedule were subjected to face validity and pre-tested. A reliability coefficient of (r = 0.95) showed that the instrument was reliable and was thereafter used for data collection. The instrument solicited information on socio-economic characteristics, regular forest protection programmes, sources of conflicts in the forest reserves, types of forest offences often committed, perceived benefits of forest protection programmes/forest extension meetings to the respondents and the relationship between personal characteristics of respondents and their participation in forest protection programmes and forest extension meetings. Data and information were also collected with the instrument from the forestry department of the State Ministry of Natural Resources.

Data were analysed at variate levels using descriptive statistics such as frequency distribution and percentages and at multivariate level using multiple regression to determine the degree of relationship between demographic characteristics of respondents and their participation in forest protection programmes and forest extension meetings.

Results and Discussion

Personal characteristics of respondents: The results, as shown in Table 1, indicate that majority of respondents (85%) were male while only 15% were female. The study shows that majority (78.3% of the respondents were old (≥40 years). This is possibly due to the rural urban migration syndrome of the younger ones in Nigeria as in most developing countries. They preferred moving to the cities searching for white - collar jobs that were difficult to come by than engaging in profitable agricultural ventures in the rural communities. Majority of the respondents (75%) were married while only 10.6% were single and 14.4% were either divorced or widowed. The study also shows that majority of the respondents (81.7%) had a minimum of primary or elementary education while only (8.3%) of them had no formal education. This further confirms Ondo State as one of the educationally advanced states in Nigeria. This also implies that more and more of the rural dwellers are becoming more educated which put them in better position to get involved and actively participate in the community development activities for the development of their communities. Farming is the main occupation (51.1%) of the respondents while the rest are engaged in hunting (16.7%) fishing (13.9%) flitching (12.8%) and petty trading (5.5%) respectively. The level of income of at the respondents shows that only about 19.4% earn less than 150,000 Nigerian Naira per annum (≤$1.26 per day) at approximately ₦325 to a US dollar. This further reinforces the finding of (Adedayo and Ogunsona, 2012) that forest activities enhance household income in the rural areas and promote the sustenance of rural livelihood.

Table1. Respondents Personal Characteristics

Variable	Frequency	Percentage (%)
Gender		
Male	153	85
Female	27	15
Age (years)		
Less than 40	39	21.7
40 – 49	45	25.0
50 – 59	57	31.7
60 – 69	29	16.0
70 and above	10	5.6
Marital Status		
Single	19	10.6
Married	135	75.0
Divorced/Widowed	26	14.4
Household size		
Less than 6	12	6.7
7	28	15.6
8	40	50.0
9	90	22.2
10	6	3.3
11 and above	4	2.2
Level of Education		
No formal education	33	18.3
Primary Education	61	33.9
Secondary education	55	30.6
Post secondary education	28	15.6
Others	3	1.6
Occupation (Main)		
Farming	92	51.1
Hunting	30	16.7
Fishing	25	13.9
Flitching	23	12.8
Trading	10	5.5
Annual Income (₦)		
Less than 100,000	13	7.2
100,000 – 149,000	22	12.2
150,000 – 199,000	50	27.8
200,000 – 249,000	18	10.0
300,000 – and above	14	2.2

Source: Field survey, 2016

Occurrence of forest protection programmes and extension meetings: As shown in table 2, none of the forest protection programmes and forest extension meetings were regularly carried out. These programmes and meetings in order of their occurrences are campaign against bush fire (18.3%), monitoring and control of illegal forest exploitation (15%) involvement of local communities in campaign for sustainable forest utilization (14.4%) forest conservation education and awareness campaign (12.2%), agro forestry practices (11.7%) supply of true seedlings (11.1%). Others are provision of basic infrastructure to the communities (8.9%), training in alternative means of livelihood (3.9%), reforestation awareness (2.8%) and private sector participation in sustainable forest management (1.7%).

Table 2 also reveals that the major means of forest extension is personal contact (62.2%). This is followed by meetings and exhibitions (21.1%) and mass media (radio & television) (16.7%). The frequency of extension contact is mostly quarterly (44.4%) and majority of the respondents (66.7%) claimed that the frequency of contact or occurrence of forest protection programmes and meetings were mostly determined by government alone through the forest extension officers who would only come to notify them of the dates and time. This system is certainty not in consonance with the concept of participation in extension and this also was probably one of the reasons for low attendance of respondents at forest protection programmes and awareness meetings.

Table 2. Distribution of respondents according to how they noticed occurrence of forest protection programmes and forest extension meetings.

Forest Protection Programmes	Frequency	Percentage (%) & Extension Meetings
Monitoring/Control of forest exploitation	27	15
Agro Forestry practices	21	11.7
Reforestation awareness campaign	5	2.8
Conservation awareness campaign	22	12.2
Campaign against bush fire	33	18.3
Practical Involvement of local communities in campaign for sustainable forest utilization	26	14.4
Training in alternative means of livelihood	7	3.9
Private sector participation in forest management	3	1.7
Supply of seedlings to the rural communities	20	11.1
Provision of basic infrastructures to the communities	16	8.9
Methods of Extension contact		
Mass media (radio & television)	30	16.7
Personal Contact	112	62.2
Meetings & Exhibitions	38	21.1
Frequency of contact with Extension Agents		
Fortnightly	5	2.8
Monthly	25	13.9
Quarterly	80	44.4
Yearly	45	25.0
Not at all	25	13.9
Decision Makers in fixing dates & time of forest extension programmes/meetings		
Government in agreement with CDCs members	50	27.7
Government (forestry department alone)	120	66.7
CDCs members alone	10	5.6

Source: Field survey, 2016

Perceived benefits derived from participating in forest protection programmes and forest extension meetings: As shown in Table 3, the most perceived important benefits derived by respondents who attended forest protection programmes and extension meetings are increased income (22.2%), improved farming methods (20.6%), access to soft loans from government micro credit loan agencies (16.7%) and access to improved farming inputs (12.8%). Others are: access to subsidised fertilizer (11.1%), access to farm equipment (11.1%) and access to information about employment opportunities in government agencies (5.5%). These benefits and many more other incentives are supposed to motivate rural communities, particularly farmers in accepting government policies and participating in their execution to ensure their success. This is in tune with the thought of Agbamu, (2005) that agricultural extension workers are expected to help farmers to identify and analyse their production problems, make them aware of the opportunities for improvement in farm yields in order to obtain increased income and attain a better standard of living.

Table 3. Distribution of respondents according to perceived benefits derived from attending forest protection programmes and forest extension meetings.

Variables	Frequency	Percentage (%)
Access to fertilizer	20	11.1
Access to improved farm inputs	23	12.8
Access to micro credit loans	30	16.7
Access to farm equipment	20	11.1
More knowledge of improved farming methods	37	20.6
Increased income	40	22.2
Information about employment opportunities	10	5.5

Source: Field survey, 2016

Reasons for non-participation of respondents in forest protection programmes and sustainable forest utilization awareness campaigns.

Table 4 shows that only few (27.8%) of the respondents had actually participated in forest protection programmes or attended sustainable forest utilization awareness meetings. The reasons for the poor attendance were attributed mainly to wrong timing due to non-involvement of the CDCs when fixing dates and time (50%). About 38.5% of respondents were not even aware of the dates and time of these programmes while 11.5% claimed not to be interested. Further reason for this lukewarm attitude on the part of the communities could also be due to non-regular visitations and non-provision of the very basic infrastructural facilities such as health centres, portable water, access roads, and even subsidised agricultural inputs; particularly fertilizer and agro chemicals to the rural farmers.

Major conflicts and causes of conflicts in the forest reserves: As shown in Table 4, there were two major types of conflicts in the study area

i. ***Conflicts between communities' members*** (86.1%). The causes of this type of conflict were perceived to have ranged from incessant accusation of community members by the forest officers of aiding and abetting illegal forest exploitation (30.3%), bush burning (21.9%), farming in unauthorized forest areas (20%) and unauthorized extraction of non-wood forest products (15.5%) to planting of permanent economic crops in forest reserves (12.3%).

ii. ***Conflicts between the herdsmen and the communities' farmers in the forest reserves*** (13.9%). This type of conflicts involved aggravated browsing of arable crops planted by the communities' farmers by herds of cattle led by the herdsmen (69%), rapping and sometimes with killing of female farmers by herdsmen (18.5%), kidnapping for ransom and sometimes with killing of community heads by the herders (12.5%). Conflicts between herdsmen and rural communities are gradually becoming the most debilitating of the conflicts particularly in the rural areas of forest reserves.

Table 4. Distribution of respondents according to their levels of participation in forest protection programmes and sustainable forest utilization awareness campaigns.

Variables	Frequency	Percentage (%)
If respondents ever participated in forest protection programmes and sustainable forest utilization Campaigns		
Yes	50	27.8
No	130	72.2
Reasons for Non Participation N= 130		
No information/awareness of events	50	38.5
Timing of events not usually convenient	65	50.0
Not interested in events	15	11.5

Field Survey, 2016

Table 5. Distribution of respondents according to major types of conflicts experienced and perceived reasons for conflicts

Variables	Frequency	Percentage (%)
Major types of conflicts		
Conflicts between community members And forest officers	155	56.1
Conflicts farmers and herdsmen	25	13.9
Perceived reasons for conflicts between communities' farmers and forest officers		
Farming in unauthorized areas of reserves	31	20
Bush burning	34	21.9
Planting of permanent economic crops in forest reserves	19	
Unauthorized extraction of non-wood forest products	24	15.5
Incessant accusation of community members of aiding and abetting illegal exploitation of timber	47	30.3
Perceived reasons for conflicts between farmers and herdsmen		
Aggravated browsing of arable crops by herds of cattle	17	69
Rapping and sometimes with killing of female farmers by herdsmen	5	18.5
Kidnapping for ransom and sometimes with killing of community heads	3	12.5

Field Survey, 2016

Relationship between respondents' personal characteristics and participation in forest protection programmes/forest extension meetings: As shown in table 6, multiple regression analysis reveals that there are positive and significant relationships between gender (t = 4.258), age (t = 3.628), level of education (t = 6.148) and household size (t = 2.033). The implication of this is that the male, relatively aged and educated members of the rural communities tend to have more inclinations for attending forest protection programmes and forest extension meetings. The study further shows that while marital status (t = 4.379) and main occupation (t = 2.032) had no significant correlation with respondents' participation in forest protection programmes and forest extension meetings, respondents' income (t = -2.562) reveals negative relationship with their participation. The reason for this could probably be that communities' members with relatively good income felt more comfortable and too important to "waste" their time in community meetings.

Table 6. Relationship between respondents' personal characteristics and participation in forest protection programmes/forest extension meetings (using multiple regression stepwise method).

Variable	Regression Coefficient	Standard error	T-Statistics
Constant	0.0128	0.056	0.213
Gender	0.286	0.037	4.258*
Age	0.262	0.040	3.628*
Marital Status	0.0383	0.049	4.379
Level of Education	0.324	0.045	6.148*
Main Occupation	0.00137	0.06	2.032
Household Size	0.0129	0.054	2.033*
Income	0.188	0.032	-2.562*

R^2 = 0.749, Adjusted R^2 = 0.745, F - Ratio = 183.046**, Significant at 0.05 Levels

Conclusion and Recommendations

Based on the findings of this study, it can be deduced that the success of the concept of community - based forest protection is still very low in Ondo State, Nigeria. The study revealed that community members were not adequately involved in the planning and fixing of dates and time for forest protection programmes and forest extension meetings and this expectedly negatively affected attendance and participation in such programmes and meetings. The major means of extension contacts for forest protection awareness campaigns in the communities are through personal contacts and meetings. The level of extension contact which was found to be quarterly was obviously too low to make any meaningful impact on effective forest protection in a developing country, especially Nigeria where most of the rural communities could not access information through radio and television due to lack of electricity and poor network service. The study revealed that forest extension personnel were grossly inadequate in Ondo State. While extension personnel were been disengaged after reaching their retirement age or attaining the maximum length of service, such personnel had not been replaced through new employment at least, for the past fifteen years. Serious dearth of operational/patrolling vehicles, modern working tools such as binoculars, GPS, etc and lack of regular retraining of forest personnel are other contributory factors to poor level of community-based forest protection in Ondo State. Community members that participated in community based forest protection programmes and forest extension meetings perceived that their annual income significantly increased as a result of their participation and they also had better access to improved farming methods and farm inputs through interactions in such meetings and programmes. Conflicts often arose in the forest reserves between communities' farmers and forest officers mainly due to allegations of perceived complicity between community members and the illegal exploiters of forest products as well as indiscriminate bush burning by the farmers on one hand and conflicts between farmers and herdsmen whose herds brazenly browse on crops, thereby depriving the farmers of means of livelihood. The study reveals positive and significant correlations between respondents' gender (t = 4.258), age (t = 3.628), household size (t = 2.033) and level of education (t = 6.148) and their participation in forest protection programmes and forest extension meetings.

Further to the findings of this study, it is recommended that:

i. The government of Ondo State commences full implementation of the community-based forest management system which has been on paper as a policy for over two decades but at best, haphazardly implemented since then.
ii. There is an urgent need for massive recruitment of forest personnel particularly forest guards to ensure effective forest patrol and monitoring.
iii. Forest officers should consider and in fact, relate with the community members as even greater stakeholders than the forest allottees in the area of forest protection and sustainable forest management. Members of the communities through their CDCs must be adequately involved in the planning and designing of forest protection programmes and forest extension meetings so that they can effectively participate.
iv. The state government must appreciate the importance of forest far beyond the revenues from forest allottees and fines from apprehended forest offenders
v. There must be a very robust and sustained annual budgetary allocations and which must be backed - up with timely cash release to procure forest patrol and monitoring vehicles and equipment.
vi. Forest extension personnel must regularly be retrained and sponsored to attend conferences and workshops on forest extensions and education to make them regularly abreast of the use of modern forest protection equipment, intelligence acquisition and court procedures for prosecuting forest offenders.

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	Website: www.ijarbs.com
Quick Response Code	Subject: Community forestry
DOI:10.22192/ijarbs.2017.04.10.012	

How to cite this article:
Iwala, O.S. and Oladapo, A.. (2017). Community - Based forest protection: an investigation into forest reserves in Ondo state, Nigeria. Int. J. Adv. Res. Biol. Sci. 4(10): 86-94.
DOI: http://dx.doi.org/10.22192/ijarbs.2017.04.10.012