FOREST COMMUNITIES CITIZENS' ATTITUDE TO TRADITIONAL AFRICAN COMMUNITIES' BIODIVERSITY EXPLOITATION LAWS AND REGULATIONS IN EDO STATE, NIGERIA

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ABSTRACT
This study was therefore undertaken to examine the citizens' attitude to traditional African societies' management of biodiversity in Edo State, Nigeria. Multi-stage sampling procedure was used to select respondents which comprises of the Community Leaders of four forest communities from three Local Government Areas that were selected from each agricultural zone. Primary data were collected from these community leaders with the use of a well-structured questionnaire and interview schedule. Most of the community leaders were more of females with an average of 56.67% and males with the average of 43.3% and both with an average age of 60 years and many (38.33%) of them had Secondary School Education. They had a mean monthly income of ₦35000 (US$ 1= ₦350). Most of them had no contact with environmental (Forest extension) agent monthly. It was found out that all the laws and regulations instituted to control biodiversity exploitation were important to them as they all beat the cut-off mean of 2.50. Most communities created fine and other punishments for violation of laws and regulations supporting biodiversity conservation and these were evaluated on their merit and implementations. The result revealed an adherence index of 0.76 implying that 78% of the biodiversity regulations were adhered to. However, prohibition of bush burning (mean=2.74) was the least adhered to. The perceived benefits derived from regulations of exploitation influence among others, appreciation of nature better. There was significant correlation between penalties and adherence to biodiversity regulation. Age, gender, education and income contributed to the level of adherence to biodiversity exploitation regulatory laws. It was recommended that more extension agents should be trained and employed specially for extension education dissemination to rural dwellers; the communities should sustain enforcement of biodiversity exploitation control laws.
Keywords: African Traditional Community; Biodiversity exploitation; forest exploitation laws and regulations; rural community government; community leaders; forest community citizens; attitudes to natural resources.

INTRODUCTION

Biodiversity also known as biological diversity embraces all plants, animals, microorganisms' species, the ecological systems and processes of which they form components (Ikomi, 2005). Ogbe (2005) conceptualizes biodiversity to be the variety and large population of species, their genetic constitution and the ecosystem where they occupy. Biodiversity encompasses every form of the life existing on the earth, which serves to provide the building blocks for our existence (Olele and Agbogidi, 1999) and survival. It forms our future heritage. It gives stability, health and productivity to forest ecosystem (Thaman, 2005) and aquatic ecosystem.

Land and forests (natural resources) management in Nigeria and Edo State in particular existed before the country and the state. Like it happened in other nations, Lowry (2003) points to the fact that Nigeria's land use and forest management went through a series of stages. Until 1990s, Nigeria passed through three regimes of land and forest management policies. These regimes include status law regime; colonial regime and post – Rio earth summit regime. The modus operandi of these policy regimes involves two familiar approaches. They are the top – down approaches.

In the first approach, as stated by Hanna (1995); Sutinen and Kuperan (1999) decision making was done at the central, state level with the exclusion of communities from the process of decision making, as such, the communities who are the users of land and forests experience the imposition of regulations in the wielding of authority from the top to down. Hanna (1995) articulated bottom – up management as when communities (users) and other stakeholders possess a very high degree of involvement in the process of decisions – making.

World Bank (1997); World Bank (2000) reveal that after the Rio Summit of 1992, the international community called for liberalization and democratic decentralization of land and forest use decision – making in developing countries, as a panacea for environmental stability in such nations. The participatory approach to management of land and forests in the developing countries is considered as a good means of reducing poverty. It was argued by Anderson (2002); Cavendesh (2003); Ribot (2004) that participation of people in government and management of natural resources at grassroot level is very crucial to alleviation of poverty.

Like many developing countries, as stated by Larson (2004); Ribot (2002), Nigeria, right from the inception of 1990s, has honoured the suggestion for liberalization and decentralization. The forests sector in Nigeria and Edo State in particular has experienced innovative ideas such as forest law restructuring which was done in 1995 and adoption of the new policy on forest use also in 1995 (Ribot, 2004). The transfer of forests management powers and responsibilities to local communities is very prominent among the legislative innovations (Haverkot, 2005). It is at this time imperative to, in this situation study the forest management regime of traditional African Societies as it affects biodiversity.

Traditional African Societies are the indigenous African people, most of who are found in rural settlements. Traditional African Societies have their local traditional governments. These traditional local governments, at village level are headed by the eldest men in such respective settlements. The cabinets are formed by the inclusion of his chiefs and the most senior chief is the reagent. These communities, because of the growing concern of the environment have focused their attention on protection of terrestrial and aquatic biodiversity (Ofuoku and Agbodigi, 2006). This was prompted by their observations on endangered plant and animal species and resort to indigenous knowledge as regards human and animal health and nutrition.

Apart from the afore mentioned facts, as a result of the indigenous cosmovision that are known to be related to natural resources, many African Societies have interest in their forest protection. Harverkost (2005); Ofuoku and Agbogidi (2008) explained cosmovision as how people view the world they live in.

In numerous cosmovisions, the people hold nature as sacred. This articulated in concepts such as mother earth, sacred trees, sacred mountains, sacred animals, and sacred rivers. Rivers, trees, animals, are more often than not linked with spiritual world and therefore should be treated with respect (Ofuoku and Agbogidi, 2006).

A catalogue of similarities was observed among the indigenous perspective of rural dwellers in Africa, Latin America, and Asian in the midst of differences, by partners who participated in the compass workshop in Bolvia (Haverkost and Hiemstra, 1999 as cited by Ofuoku and Agbogidi, 2006).

In every country of the world, enormous changes have occurred with respect to economy, technological innovations, and demographic exposure to mass media and degradation of ecological resources. These are leading to erosion of indigenous cultures, knowledge and cosmovision. In the presence of such development, the community leadership is expected to rise up to the challenge of protecting the traditional heritage tied to the ecosystems in their areas.

The Niger Delta Region of which Edo state is a part is rich in biodiversity since it features a good number of rivers, forests and abundant aquatic organisms (Flora and Fauna) and wildlife (Ofuoku and Agbogidi, 2006). These biological resources have made significant contributions to human welfare especially in the rural areas. The rural people depend on the biological diversity for their food, medicines, crafts, and fuel wood. As a result of population expansion, there is increased demand for timber, fuel wood, game meat, herbs, craft materials, fish and other aquatic organisms of edible value. A steady depletion of these biodiversity resources is expected in this situation of population explosion or rise.

If this exploitation trend is not controlled, the biodiversity of the terrestrial and aquatic habitats will be depleted to the extent that the consequences will not be in favour of humans, the environment and balanced existence of biological diversity. In spite of the legislation put in place by leaders of traditional societies, exploitation of forests is on uncontrolled because of the attitude of the workers of the relevant agency (Ofuoku and Emuh, 2011). It is reported by Ofuoku and Emuh (2011) that, rural dwellers are involved in illegal exploitation of their surrounding forests for fuel wood, timber and wildlife.

Since the mid-1980s, conservation-oriented NGOs have committed increasing efforts and monetary resources to village-level projects in developing countries to reveal links between conservation and sustainable development. Most of these moves have been defined as pilot or exhibition projects in acknowledgment of their novel approaches, limited funds and modest scale. But very few of these projects have so far been able to demonstrate significant improvements in biodiversity conservation which are attributable to, or even connected with, improved local economic opportunities. Explicitly thriving and credible examples where local peoples' development needs have been efficiently reconciled with biodiversity conservation remain intricate to find. It has become apparent that community-based conservation represents a very difficult mission which has so far generated few clear successes (Oldfield, 1988; Sayer, 1991; Wells & Brandon, 1992, 1993). The question that comes to mind is related to the attitude of the community citizens in relation to the local laws put up by the traditional government of the respective rural/ forest communities.

This study was thus conceptualized to determine the influence of traditional governments' regulations on the altitude of rural dwellers towards biodiversity exploitation in the Edo State, Nigeria. Specifically the study is to examine the socioeconomic characteristics of the forest communities' citizens; identify the laws and regulations and penalties put in place for regulation of biodiversity exploitation; ascertain the extent to which the citizens adhere to laws and regulations; determine how the rural communities have benefitted from biodiversity management; and ascertain the influence of the penalties on the extent to which the communities citizens adhere to regulations. It was hypothesized the penalties for flouting the regulations on biodiversity exploitation do not influence the citizens' level of adherence to the laws and regulations. Secondly, socioeconomic characteristics of the forest community citizens do not influence the level of adherence to the laws and regulations guiding biodiversity exploitation.

LITERATURE REVIEW

The assessment offered by Wells (1995) suggests that biodiversity conservation and sustainable economic development projects are not likely to be successful unless they embrace among others, participation of local people in all aspects of project consultation, identification, design, implementation and evaluation, including calculated daily management; access to and reliance on indigenous knowledge and technologies. Others according to Wells & Brandon (1993) are encouragement of local ownership of and dedication to projects, and inspiration of emergence of local leaders and organizations to protect project activities.

Forest management in Edo State of Nigeria, like what obtained in other developing countries in has previously been attributed by broad state concern with small appreciation of the prospects for achieving encouraging long-standing sustainable forest management, development and use through the participation of local communities. As a substance of truth, the Nigerian Government Forest Policy of 1979 was an extensive account of guideline goals that was not definite on orientations or instruments for attaining the goals (Bisong *et al*, 2007). It expected public participation in the development of the forest resources without providing an encouraging environment for this.

After the introduction of the state-owned Forest Park concept in the 1950s and the Forestry decree of 1979, which gave overall power and authority to the state over the national forest resources, the local people that claimed traditional ownership of adjoining forests started to develop a sentiment of isolation which at the end resulted in their reluctance to be concerned with the safeguard and management of what they used to call their forests (Bisong *et al*, 2007).

For the fact that the communities do not anymore view the forest as their own, they started to see all their deeds in the forests as 'illegal' with the result that forest use practices became progressively more damaging (Mfon, 2011). This action was further promoted by the control oriented Forest Regulations. Predictably the forest resource base of the country and state continually deteriorated because of a dearth of public concern and a rise in population demands and illegal deeds.

The forestry workers who were principally involved in forest safeguard in agreement with the forest laws were seen and considered to be assuming the role of a policeman and were feared and detested by a considerable section of the local communities (Bojang and Reeb, 2012). Hence their technical advice on forestry matters was not heeded with any iota of seriousness by the target communities.

Conclusively, this institutional structure dispossessed the rural populace of their conscientiousness for forest management, though the community was the most affected by deforestation. While the forestry administration was entrusted with a mandate it could not accomplish because of the apprehensive relationship with the people and also due to dearth of human and material resources (Mfon, 2011). In actuality, forest assets became 'ownerless' and open to the elements to systematic exploitation, generating substantial devastation and wastage. While all and sundry would recognize forest devastation and was alert of its penalties, the extant and unaccepted institutional arrangement was preventing any capable exploit Mfon, 2011).

In the mid-1980s, more knowledge had been gained about the condition of the forests and the prospects of natural forest management, it became obvious that the Government was not and never in a position to manage, on its own, the forest resources countrywide, and that a new approach would have to be adopted to save the remaining forest canopy, they resorted to embracing the idea of involving the people (Onyeanusi and Akinyemi, 2012). Thus the communities had their forests returned to them (Bojang and Reeb, 2012). In that situation, the traditional governments of the forest communities instituted their laws mainly dwelling on prohibition of actions that are inimical to biodiversity rejuvenation (Onyeanusi and Akinyemi, 2012). The question that emerges on one's mind is as to whether the people have changed attitudes towards forest resources usage now that they have succeeded in retrieving what they regard as their own in the midst of local laws instituted by the traditional government.

Theory

Rogers' revised Protection Motivation Theory (PMT) (Rogers, 1983) is a foremost psychology theory meant to explain the cognitive conciliation process of behavioral alteration in terms of danger and coping judgment. Plotnikoff and Trinh (2010) state that the PMT's threat appraisal constituent involves the

person's estimation of the severity of the danger situation (perceived severity) and his or her estimation of the option of facing the dangerous situation (perceived vulnerability). The PMT further states that the emotional condition of fear provocation determines the attitudes and behavior change direction indirectly through the judgment of the harshness of the danger. The model's coping evaluation is consists of the individual's expectation that adopting the given recommendations can eliminate the threat (response efficacy) and conviction that one has the capability to implement the recommended line of action successfully (self-efficacy) (Plotnikoff and Trinh, 2010). The danger situation is the penalty awaiting an offender of local laws of biodiversity exploitation control and what he or she has to suffer in the event of extinction of plant and animal species in the biodiversity. Estimation of the option of facing life situations that need extinct species and his or her option of facing punishment before the community arouses an emotional situation of fear of the situation of the dearth of needed species and what he or she has to suffer influences his or her attitude and behavior change towards adherence to the local laws of biodiversity exploitation control as he or she views or make judgment of the unpalatable situation or condition that he or she has to experience. However, his or her expectation that adhering to the local laws is capable of eliminating the threat and conviction that he or she is capable of favourably adhering to and obeying the local laws constitute his or her coping evaluation.

The communities, from history have experienced the consequences of uncontrolled biodiversity exploitation or harvest. Hence they estimated the severity of the threat to their survival and that of their future generations. On estimation of their vulnerability of facing the threat situation they decide to evaluate the option of coping. They evaluate the option of coping by adopting the recommendation of conserving the biodiversity of their forests in order to eliminate the threat of the consequences of uncontrolled biodiversity exploitation. On conviction that they have the capacity to implement the recommended line of action successfully, they established and enforce such laws and regulations.

The PMT hypothesizes that the motivation to protect oneself from danger situation is a function of four cognitive beliefs. These include (i) the threat is harsh; (ii) one is individually susceptible to the threat; (iii) the coping reaction is effectual in preventing the threat; and (iv) one possesses the capacity to carry out the coping reaction. Protection motivation is the proximal determinant of defensive conduct and frequently calculated by or related intent (Norman *et al*, 2005; Plotnikoff, 1994). Thus, the cognitive predictors (severity, vulnerability, response efficacy, and self-efficacy) should have considerable links with intentions, which intervene in their influence on behaviour presentation. Numerous studies have measured self-reported and/or observed behaviour as the consequent factor of protection motivation (Milne,2000). Thus this study revolves around this theory.

METHODOLOGY

The Study Area

This study will be carried out in Edo State of Nigeria. Edo State is one of the states located in the Niger Delta Region. The latitude and longitude coordinates are latitude 6 00'00" East of the Greenwich Meridian and Longitude 6 30'00" North of the Equator. The state is demarcated into Edo North, Edo Central and Edo South Agricultural Zones. The state is rich in both terrestrial and aquatic biodiversity. It is bounded in the South by Delta State, in the North by Kogi State, in the West by Ondo and Ekiti States and in the East, by Anambra and Enugu States.

A lot of forest livelihood and fishing are carried out in the state, particularly in the rural communities of the state. Logging, hunting, herbs collection and micro animals' collection are carried out in the study area.

The population of the study includes all the rural community leaders in Edo State, Nigeria. Multi-stage sampling procedure was used to select the respondents for this study. In the first stage, one (1) local government area were selected from each agricultural zone. In the second stage, four (4) forest communities were randomly selected from each Local Government Area to result to the selection of a total of 12 communities. In the third stage, the community heads, the spokesman (regent) and the secretary were selected from the traditional councils of the communities. Other leaders were selected from Community Development Committees (CDCs) of the 12 selected communities to include the chairman, vice chairman, secretary, Public Relations officer, women's representative, men's representative and youth representative. This translates to 10 respondents from each community. At the end, 120 respondents were selected. At the preliminary survey, Etsako West Local Government area in Edo North Agricultural Zone, Esan Central LGA and Orhionmwon LGA were selected. From Etsako West LGA, Irekpai, Uzairue, Avbiele and Ukpilla were selected. Ugbegun, Opoji, Ibore and Usugbenu were selected from Esan Central LGA, while Idu, Ogan, Evbosi and Oloten were selected from Orhionmwon LGA. These communities were finally used for the study.

Primary data were collected for this study. The information were obtained from the selected respondents by the use of questionnaire and interview schedule. The questionnaire was used to collect data from the respondents with reasonable level of formal education, while interview schedule was used to collect data from those with little or no formal education.

The data treated to the following statistical tools which utilized in analyzing data to achieve the specific objectives of this study. Objective 1: determine the existence of biodiversity regulations: this was achieved by the use of frequently counts and percentages. Objective 2: identify the laws and regulations and penalties put in place for regulation of biodiversity exploitation: this was met by the use of mean derived from 4 – point Likert - type scale of strongly agree (4), agree (3), disagree(2) and strongly disagree(1). The cut-off score is 2.50. Meaning that ≥ 2.50 = agree, < 2.50 = disagree. Objective 3: ascertain the extent to which citizens adhere to the laws and regulations: this was achieved through the use of means derived from 4 – point Likert – type scale of highly adhered to (4), adhered to (3), fairly adhered to (2), and poorly adhered to (1); with a cut –off mean of 2.50. (>2.60 = highly adhered to, 2.50 – 2.59 = adhered to, 2.40 – 2.49= fairly adhered to, and < 2.40 = poorly adhered to). The overall level of adherence will be determined by computing the adherence index as adapted from Ofuoku (2017). While computing the adherence index, the grand adherence mean was first calculated by dividing the sum of the means with the number of regulations. To arrive at the adherence index, the grand mean was divided by the number of scales. Objective 4: determine how rural communities have benefitted from biodiversity management: this was met with the application of frequency counts and percentages. Objective 5: ascertain the influence of the penalties on the extent of adherence to the regulations: this was achieved through the hypothesis 1.

TESTS OF HYPOTHESES

Hypothesis One (Ho_1)

The penalties for flouting the regulations our biodiversity regulations do not influence the citizen's level of adherence to the laws and regulations: this was tested through the use of Pearson's Product Moment Correlation coefficient.

Hypothesis Two (Ho_2)

Hypotheses 2 was tested with the use of multiple regression analysis model succinctly stated as follows:

$Y = (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, \mu)$

Where:

Y = Adherence to biodiversity regulatory laws (adherence score)

X_1 = Age (years)

X_2 = Gender (Male = 1, Female = 0)

X_3 = Education (number of years of schooling)

X_4 = Marital Status (Married = 1, Otherwise = 0)

X_5 = Household size (Number of persons)

X_6 = Income (Naira)

X_7 = Contact with extension officer (Number of times monthly)

X_8 = Membership of association (Yes = 1, No = 0)

RESULTS AND DISCUSSION

Socioeconomic characteristics of respondents

Table 1 shows that the respondents had an average age of 60 years with more females (56.67%) than males (43.33%), with many (38.33%) of them of them having secondary school education. Most (75.0%) of them were married with average household size of 6 persons. They had a mean monthly income of ₦35,000(US$1= ₦350). Some (55.0%) of them had no contact with environmental extension agents, 37.5% had one contact, while 7.50% had two contacts with environmental (forestry extension) agent monthly.

The average age of 60 years among the respondents implies that most of the young ones have emigrated from the villages to urban areas or have embarked on international migration in search of greener pasture. Ofuoku and Chukwuji (2012), Ekong (2003) found that most rural citizens that embark on migration are young people, further stating that migration in age selective.

The folks left behind in the rural settlements are known, from observations, to be conservative and value natural endowments. This is owing to the fact that they use plants and animals parts to solve their nutritional and medicinal problems. Surprisingly, they believe that the natural resources they rely upon should not be depleted and should be used in controlled manner to ensure sustainability.

That the females are more in population is at variance with Ofuoku and Emuh (2011), who air their study in the Niger Delta Region of Nigeria found that male population is higher than female population. In Edo state, the males migrate from their rural settlements than the females. In the study area, international migration is the order of the day, most of the males may have migrated either to urban areas or other countries in search of better life and income for their families. Females are known to exploit the forests more than males as they extract fuel wood, game meat, herb, honey, fish, mushroom, rope and latex from there. The males extract less items from the forest such as fish, game meats, shelter woods and palm fruits. This indicates that the female have closer relationships with the natural resources than the males. Umar (2004) observes that humans exert much pressure on plant and animal species and their environments, with women putting more pressure on them. Plant gatherers are predominantly women and hunters are predominantly men across the globe (Agboh-Noameshie and Kabore, 2012).

The forest community dwellers with secondary education form the model class in this study. Educational attainment has implications for environmental management. It is expected that the higher the level of education of the citizens, the lesser the likelihood to uncontrollably exploit

biodiversity. Hamidu *et al* (2006) found an inverse relationship between level of formal education and forest education has the likelihood of leading to a unit decrease in the tendency to exploit natural resources indiscriminately. This means education is one of the salient variables that moderates one's attitude towards sustainability of natural resources.

The average household (HH) size of 6 persons means large household sizes among the forest community dwellers. A large HH size implies more pressure on the natural resources. The average HH size warrants seeking alternative measures to cater for the HHs.

The average monthly income is not enough to sustain a large family. Hence, the HHS heads are bound to see an alternative measures for survival. In this process, they will have no alternative but to rely on the forest (Natural) resources to extract, use and sell the products extracted from the forests. Agbogidi and Ofuoku (2006) suggest that as a result of poverty, forest community dwellers in the Niger Delta Areas of Nigeria exploit biodiversity to alleviate their poverty situations.

As most of the forest community citizens do not have contact with extension agents, there is the tendency for them, especially those with little or no formal education to be ignorant of the implications of uncontrolled exploitation of biodiversity. Hamidu *et al* (2006) state that the main person from where afforestation innovation can be accessed is the extension agents. People in some communities in Niger Delta Region exploit the forest uncontrollable because they do not have awareness of the implications from extension agents (Ofuoku and Emuh, 2011).

Since most of the respondents subscribed to membership of associations, it is expected that they will put less pressure on biodiversity. This is because, while seeking alternative means of survival or alleviating their poverty situation, they have the option of accessing credit from these associations for investment in alternative likelihood activities. This will make them to exert less pressure on biodiversity exploitation. Through such associations they also have the benefit of accessing extension agents, as extension services are currently carried out in specialized groups. This development is as a result of the poor ratio of extension agents to farm families. Agbamu (2011) reports a dearth of extension agents in Nigeria. Consequently, extension contact in most times made in groups (Ofuoku, 2017).

Table 1: Socioeconomic characteristics of respondents

Variables	Categories	Frequency	Percentage (%)	Mean/Mode
Age	<30	31	25.83	
	31-50	56	46.67	60 years
	51-70	12	10.0	
	71-90	21	17.50	
Gender	Male	52	43.33	Female
	Female	68	56.67	
Marital status	Single	30	25.00	
	Married	90	75.00	Married
Level of education	No formal	13	10.83	
	Primary	26	21.67	
	Secondary	46	38.33	Secondary education
	Tertiary	35	29.17	
Household size	<3	29	24.17	
	4-6	41	34.17	6 persons
	7-10	50	41.67	
Income per month (Naira)(₦)				
	< 20,000	4	3.33	
	20,000-30,000	45	37.50	₦ 35,000
	31,000- 40,000	58	48.33	
	Above 40,000	13	10.83	
Contact with environmental extension Agent	No contact	66	55.0	
	1 times	45	37.50	No contact
	2 times	9	7.50	
Membership of Association				
	No	44	36.67	Member of Association
	Yes	76	63.33	

Laws and regulation to check biodiversity uncontrolled exploitation

As indicated in Table 2 indicates that all the laws and regulation instituted to control biodiversity exploitation were important to them as they all beat the cut-off mean of 2.50. These include prohibition of falling of live trees, prohibition of bush burning, prohibition of uncontrolled hunting, prohibition of indiscriminate fishing in rivers and streams. Prohibition of the use of chemicals for fisheries and uncontrolled tapping of wide palm trees.

All these regulations have been instituted with the mind of sustaining their communities' biodiversity for future generations. One community Leader had this to say (translated to English): *"If we do not establish these rules and regulations the children not yet born will suffer. If the plants and animals go into extinction, there will be no food, medicine and other benefits to them, so we decided to establish these laws"*

These regulations have been found to be established in many forest communities in West and Central Africa. Obioha *et al* (2012, Thijssen *et al* (2012), Oyono (2005), Oyono (2004), Gug *et al* (2004) found and state that in their various areas of study, forest bearing communities have similar regulations instituted before colonial days, when the management was taken from them by the colonial governments. They further assert that after the exit of colonialist, the indigenous government took over, but they could not do much without involving the communities. Thus the communities became free to manage their natural resources especially biodiversity. They decided to revive the previously existing regulations that guided the usage of biodiversity in the days of their forefathers. As a result of the changing climatic factors and through sensitization by various bodies, various communities have decided to "take the bull" by the horn in order to reverse the trend. From observations, they are so serious with it to the extent that in some communities, land grabbers for agricultural purpose were chased away s their forests were to be brought down, according to them, "for their selfish economic desires to deprive us of the benefits of our own forest!"

Table 2: Laws and regulation to check biodiversity indiscriminate exploitation

Laws and Regulations	SA 4	A 3	D 2	SD 1	Score	Mean
No indiscriminate felling of live tree	91(364)	20 (60)	8 (16)	1(1)	441	3.68
Prohibition of bush burning	82 (238)	32 (96)	2 (4)	4(4)	432	3.60
Prohibition of uncontrolled hunting	68(272)	44 (132)	3 (6)	5(5)	415	3.46
Prohibition of indiscriminate fishing in stream and Rivers	50(200)	34 (102)	17(34)	19(19)	355	2.96
Prohibition of use of chemicals fishing	67(268)	18 (54)	13(26)	22(22)	370	3.08
Uncontrolled tapping of palm tree	71(284)	27(81)	6 (12)	16(16)	393	3.28

Cut-off score= 2.5 (≥ 2.5 = Important law and regulation, < 2.5= not important law and regulation). SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

Punishment for violation of Laws Regulation

The fines and punishment for violation of laws and regulations supporting biodiversity conservation were evaluated on their merits and implementations (Table 3). Most communities applied seizure of products (52.50%) for indiscriminate felling of trees, while some (27.50%) apply combination of fine and seizures of products. In the case of Prohibition of bush burning the most common punishment is payment for damaged crops (45.0%) and in some communities, heavy fine (42.5%), while in few communities, the penalty was heavy fine and payment for damages crops.

For prohibition of uncontrolled hunting, the penalty was payment of heavy fine (53.3%) in some communities and seizure of animal (40.0%) most times when the law is violated. For the prohibition of indiscriminate fishing in stream and Rivers the most applied punishment is payment of fine (57.50%) in many communities and seizure in some communities. For Prohibition of use of chemicals fishing the most applied punishment is fine and payment of damages which account for 56.8% and 41.7% respectively. While on uncontrolled tapping of palm trees the punishment applied is seizure of products and payment of fine 50.0% and 48.3% respectively.

The communities members as a result of these punishments melted on offenders ought to become careful in their access and extraction or exploitation of forest resources. These local laws and regulations are meant to regulate the way people move into the forests to extract any resources from there. These laws are meant for the conservation and sustainability of the forest resources.

The most dangerous practice of using chemicals to kill fish in public or commercial ponds, stream and rivers was very common at a time in many communities. The communities affected saw the effects as aquatic lives were gone for a large period of years before the life gradually came back to these water bodies (Akunyili and Ivbijaro, 2012). Ivbijaro (1998) testifies that lindane is powered by fisherman into streams, lakes and rivers to kill fish, inspite of legislation by the federal and state governments. This means these chemicals are wrongly used. Lindane is a pesticide, but people used it to kill fishes. These chemicals have adverse effects on human health they are known to be very poisonous to the stomach of humans and are lethal (Ivbijaro, 1998). As people overlook the public legislation against it, the various communities learnt from their own and other people's experiences and decided to create these local laws which they very much enforce and create money for the communities women wealth.

Federal Environment Protection Agency (1992); Federal Ministry of Environment (2006),while unveiling data on the status of biodiversity in Nigeria indicate that out of a total number of 5,081 plant species, 8.5 percent are endangered and 0.4 percent, threatened. In the presence of this situation communities will not fold their hands and look on as things get worse. They are the ones most affected as they live on the forests in many ways- nutritionally, medically, socially, biologically and economically. This informed laws and regulations relating to relating to plant and animal species.

Biodiversity's contribution to human life and well being is practical, physical and utilitarian, as well as cultural and spiritual (Olowokudejo, 2012). Throughout human history, the diversity of the natural world remains a frequent source of inspiration dictating traditions and the way our society has gradually evolved. The cultural amenities and spiritual services provided by ecosystems are highly valued by the communities, and play a crucial role in medium and long -term sustainable development methods (Olowokudejo, 2012).

Human beings derive aesthetic and spiritual satisfaction from biodiversity. "My people derive pleasure from biodiversity through leisure activities.

Our emotional well-being is promoted by nearest to natural beauty. The strong bound between man and biodiversity is reflected in the people's religion, traditions and arts of diverse butters of human" (Olowokudejo,2012).

Table 3: Punishment for violation of Laws Regulation

Offence/Penalties	fine	Seizure of product	Fine and Seizure of products
Indiscriminate felling of trees	24 (20.0)	63(52.5)	33 (27.50)
Prohibition of bush burning	51 (42.5)	54(45.0)	15 (12.75)
Prohibition of uncontrolled hunting	64 (53.3)	48(40.0)	8(6.67)
Prohibition of indiscriminate fishing in stream and Rivers	69(57.5)	48(40.0)	3(2.50)
Prohibition of use of chemicals fishing	67 (55.8)	50(41.7)	3 (2.50)
Uncontrolled tapping of palm tree	58(48.3)	60(50.0)	2 (1.67)

4.4 Level of adherence to regulations

Table 4.4 shows that there is high level of adherence to laws and regulation against uncontrolled biodiversity exploitation in communities in Edo state. The result revealed an adherence index of 0.76, implying that 78% of the biodiversity regulations were adhered to. All the regulations were adhered to by most citizens of the study area. However, prohibition of bush burning (mean = 2.74) was the least adhered to.

The levels of adherence to the rules and regulations for biodiversity conservation are high because of the regulations instituted by the communities. Not only that they are instituted such laws and regulations, they also were serious with their enforcement. Foskett and Foskett (2004) suggest that the forest communities are in the best position to manage their forest. Since there interact with the forest frequently.

In such communities with very low population of people, everybody knows everybody most times. In such a scenario, offenders are easily caught and identified. Thus for fear of being caught and facing the penalties, the community citizens becomes motivated to adhere to such laws. The reaction is in Constance with Rogers's protection motivation theory (PMT). PMT was proposed to clarify the understanding of the concept of fear appeals (Rogers, 1975). PMT proposes that one's protection to protect him or herself is driven by four factors such as the perceived severity of a threatening event, perceived probably occurrence or vulnerability, efficacy of recommended preventive behaviour and perceived self-efficacy.

PMT contends that individuals must perceive something to be risky or harmful to be motivated to protect himself or his interest. It is the product of threat appraisal and coping appraisal.

The citizens of the various communities, on remembrance of the penalties awaiting violators and the consequence of their actions if executed, became motivated to protect themselves from such. That is the reason there is high degree of adherence to the laws and regulations.

Table 4.4 Level of adherence to regulations

Regulations	Strictly Adhered to (4)	Adhered to (3)	Fairly adhered to (2)	Not adhered to (1)	Score	Mean
Prohibition of uncontrollable tree falling	60 (240)	20(69)	22(44)	15(15)	368	3.07
Prohibition of uncontrolled tapping of palm trees	77(308)	28(84)	10(20)	5(5)	417	3.46
Prohibition of bush burning	64(192)	30(99)	15(30)	8(8)	329	27.4
Prohibition of uncontrolled hunting	48(200)	44(135)	17(34)	8(8)	377	3.14
Prohibition of uncontrolled fishing	36(156)	38(114)	27(54)	16(16)	340	2.83
Prohibition of uses of chemicals for Fishing	38(164)	38(114)	28(56)	13(13)	347	2.89

Grand adherence mean = 3.02
Adherence index = 0.76

Perceived benefits derived from biodiversity exploitation regulation

Table 5 indicates that the perceived benefits derived regulation of exploitation included improved community economy through inflow of tourist (68.0%) survival of critical plant and animal species (48.33%), and better environment (31.67%) improved spread of conservation education (16.67%) and better appreciation of nature (25.0). theses perceived benefits are of value to the communities because their experienced those that benefits which affected their lives positively.

Though, wide life tourism is underdeveloped in Nigeria, these communities saw the inflow of tourists who went there for some time temporarily. During the visits by tourist, the communities collected small amount of fees and the tourists bought some items that were of interest for them from the community citizens, thereby enriching them .the World Bank (2006) reports that in developing countries like Nigeria, natural capital estimates is put at a quarter of their total wealth, compared to 13 percent in middle income countries and 2 percent in high income OECD countries.

As a result of the regulated use of the forests, the community citizens and visitors appreciated nature better. They comprehended better, the nexus between, man and his natural environment. They saw the strong bond between humanity and biodiversity in various ways. Ash and Jenkins (2007) observe that clear links exist between a large majority of formal religions and religious beliefs systems.

Critical plants and animal species that were endangered have survived as a result of biodiversity management by the communities. Ivbijaro (2012) suggests that as a result of regulated use of forests by indigenous communities, plant and animal species facing extinction have had their population increased and are soon to move out of the endangered species status. This is an indication that management of biodiversity by indigenous communities is effective.

Better environment experienced as part of the beliefs of biodiversity management is not unconnected with the abundance of oxygen for man and prompt utilization of carbon dioxide by plants. In situations like this, the environment becomes cooler. Another reason they said better environment benefit because of the aesthetic value the plants and trees couples with wild animal species added to their communities environment. Allen and You (2002) point out that the environment in which man lives determines his behavioural direction. Olowokudejo (2012) in his suggestions says many people derive value from biodiversity through leisure activities such as enjoying walking in the countryside, bird watching and that our emotional well-being is a function of the proximity to natural beauty. This suggests that the aesthetic values of the natural ecosystems and landscapes make contributions to the emotional and spiritual welfare of the populace.

Table 5: Perceived benefits derived from biodiversity regulation

Option	Frequency	percentage
Improved economy through tourist inflow	60	60.0
Appreciation of nature	30	25.0
Improved conservation education spread	20	16.67
Biodiversity regulation has help in the survival of critical plants & animal species	58	48.33
Environment became better	38	31.67

Note multiple response

Influence of penalties on adherence to rules and regulations of forest exploitation

Table 6 shows that there is a significant correlation between penalties and adherence to biodiversity regulations. This means that a relationship exists between level of adherence to the rules and regulations and penalties associated with floating of such laws. The positive sign indicates that an increase in the enforcement of the laws could lead to an increase in the level of adherence.

The relationship is attributable to avoidance of situations of discomfort among the citizens. In order to avoid the ugly situation that is punishment related, they try as much as possible to abide by the rules and regulations guiding biodiversity exploitation in their various communities. Protection motivation theory suggests that once individuals perceive that something is risky or harmful, they become motivated to protect those (Rogers, 1975).

Table 4.6: Estimation of the influence of penalties on adherence to rules and regulations of biodiversity exploitation

		Penalty	Adherence
Penalty	Pearson Correlation	1	0.632
Adherence	Pearson Correlation	0.632	1

Influence of socioeconomic characteristics of respondents on adherence to biodiversity exploitation regulations

The result in table 7 shows that an R^2 value of 0.623, which implies that 62.30% of the parameter estimates are responsible for the results obtained. Age (X_1), Gender (X_2), Education (X_3) and income (X_6) correlated with adherence to regulations of biodiversity exploitation. Age significantly correlated with adherence to regulations to control biodiversity exploitation. This means that a unit increase in age has the likelihood of leading to a unit increase in the level of adherence to such regulations. With age, people become risk aware and become very conscious of their comfort and images. They are always afraid of anything that will jeopardize their image and comfort, thus they avoid such things. This can also be attributed to that fact that as they age, they become weaker and stop participating in biodiversity exploitation activities. Again, age means experience in life. As man become old, so is his experience with his environment. Past experience make aged to become conservative with respect to their environment. Harthron (1980) found that the older generations of people are more conscious of the conservation of primates in the forest than the younger generations.

Gender also significantly contributed to the level of adherence to the regulations. However, the coefficient bore a negative sign. This indicates an inverse relationship. Indicating that a unit decrease in gender will result to a unit increase in adherence to biodiversity exploitation regulations. This is at variance with *a priori* expectation. This means that women are more likely to flaunt the regulations than men. Women, because of their numerous uses for forest resources may at the time of emergency needs to enter the forest with the mind of 'doing' a quick and smart one in order to attend the needs for which those resources are meant. Howard (2001), Howard (2008) state that since women have more to do with biodiversity resources, they dominate as wild plant gatherers, herbalists, seed custodians, home gardeners, and plants domesticators. The needs they have relating to these activities propel them to flaunt the law as the needs arise.

Level of formal education also contributed significantly to the level of adherence to the regulations, but the coefficient bore a positive sign. This implies that a unit increase in the level of formal education has the likelihood of creating a unit increase in the level of adherence to the regulations. Education moderates people's behaviour as it creates awareness in them. With the awareness on the importance of biodiversity conservation for sustainable livelihood, the educated forest citizens are more likely to adhere to the rules than those with little or no formal education. Education is one of the salient variables that determine consciousness on forest conservation in Nigerian Forest Communities (Hamidu *et al*, 2006).

Level of income of the community citizens also contributed to the level of adherence to biodiversity exploitation regulations. The positive sign born by the coefficient implies a direct relationship. This means that a unit increase in income has the likelihood of leading to a unit increase in adherence level. With increased income level, rural forest community dwellers will depend less on exploiting the forests directly and resort to buying from other forest exploiters. Ofuoku and Emuh (2011) assert that a high income increasing purchasing power of forest community members dissuade the people from forest exploitation and opt to purchase alternatives from other sources.

Table 4.7: Estimation of the influence of forest communi0ty citizens on adherence to rules and regulations guiding forest exploitation

		Unstandardized Coefficients		Standardized Coefficients		
	Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	36.785	6.656		5.526*	.000
	Age	.084	.042	.331	2.018*	.048
	Gender	-2.899	1.055	-.376	-2.749*	.008
	Education	1.278	.556	.284	2.299*	.025
	Marital Status	-2.399	1.610	-.229	-1.490	.142
	Household size	.096	.205	.056	.467	.642
	Income	6.396E-5	.000	.128	1.043*	.031
	Contact with Ext officer	-.211	.729	-.036	-.289	.773
	Membership	-1.210	1.271	-.129	-.952	.345

$R = 0.651$; $R^2 = 0.623$ * Significant at 0.05

CONCLUSION

The forest communities had laws regulating the exploitation of biodiversity which had penalties attached and melted on offenders. The level of adherence to the laws was encouraging and the level of adherence was influenced by the penalties for flouting the laws and socioeconomic variables of age, gender, and formal education and income levels of the forest communities' members. It is therefore concluded that most of the members or citizens of forests communities observed and adhered to the laws regulating biodiversity exploitation in the study are.

RECOMMENDATIONS

i. From the above information, it is recommended that forest communities should sustain the enforcement of such laws regulating biodiversity exploitation.
ii. More extension agents should be trained and employed specially for extension education dissemination to rural dwellers.
iii. Federal, state and local governments should support traditional governments or forests communities in their regulatory laws enforcement to control the exploitation of biodiversity.

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