Full Length Research

Bottlenecks Associated with Indigenous Eco-Cultural Approaches for the Propagation and Management of Floral Diversity in Rural Communities of Boki Local Government of Cross River State, Nigeria

Okpiliya, F. I. (Assoc. Prof)[1], Ebu, V.[2] and William, J, J,[1]

[1]Department of Geography and Environmental Science, University of Calabar, Calabar; Nigeria.
[2]Department of Forestry and Wildlife, University of Calabar, Calabar; Nigeria.

Corresponding Author's E-mail: fetiongokpiliya@yahoo.com

The rate at which majority of the floral diversity are going into extinction today in different parts of the world including rural African Communities ultimately calls for its sustenance through indigenous propagation and management. The objective of this study was to examine the indigenous eco-cultural approaches for the propagation and management of floral diversity in rural communities in Boki. In order to generate data on the various strategies for the propagation and management of floral diversity in the study area, three communities were selected for study. They include Borum, Kanyang and Isobendeghe. These three communities are located at the unprotected forest area of Boki since a greater part of the area is protected. Descriptive statistics was used in the analysis. The result of the analysis indicated various strategies for the propagation which included direct sowing, transplanting, suckers and cutting. The management strategies were seen to include restricting access to floral diversity, protecting seedlings, weeding, watering, coppicing and pruning. It was also discovered that weeding constituted the greatest management strategy as 60 respondents (40%) attested to this fact. The least management strategy was pruning as only 10 respondents (7%) used this approach to manage floral diversity. This study finally identified certain major challenges involved in the propagation and management of floral diversity, which include resources, land tenure, traditions and physical factors.

Keywords: Indigenous, Eco-cultural, Propagation, Management, Floral, Diversity, Communities

INTRODUCTION

The relative significance and global commitment towards the propagation and management of floral diversity is generally gaining a wider momentum. This is borne out of the fact there has been an accelerating rate of loss of floral diversity and this tend to have projected negative impacts on mankind. According to Warren (1992), this loss of germplasm on human kind have been eloquently described by a growing number of prominent biological scientist and vegetation ecologists such as Solbrig, Wilson and Peter, Ehrlich and Hoyt. Numerous international agricultural research centres are also adding the power of their collective concern and resolve to deal with the circumstances leading to the

propagation and management of floral diversity; the absence which may lead to the loss of species.

Global awareness of the crisis concerning the management and propagation of floral diversity has been assured following the United Nations Conference on environment held in June, 1992 in Rio de Janairo. There is also the concern of many world citizens on the uncertain status of the indigenous knowledge that reflects many generations of experience and problem solving by thousands of ethnic groups around the world. It is interesting to state here that very little of this knowledge has been recorded, yet it represents an immensely valuable data base that provides human kind

with insights on how numerous communities have interacted with their changing environment including its floral resources.

According to Warren (1992), indigenous knowledge is very crucial to human endeavours. It is a knowledge that is applied universally to every aspect of our socio-economic and cultural being. The management of floral diversity is conceived as a practical application of various techniques as day-to-day operations over extensive area of forest. Essentially, the degradation of floral species is the outcome of both long term and recent processes and events. In soe places, pressures have been building up gradually and almost imperceptible. Where pressures build little by little, people have sometimes have time and opportunity to evolve and adapt management systems. In these cases, signs of scarcity of floral species might have been present for decades, but adaptive strategies such as the protection of valued trees, the encouragement of volunteer seedling and selective thinning may have prevented acute manifestations of complete erosion of floral species. In other cases, however, the loss of floral species has tended to accelerate.

Sustainable development in both national and international level generally takes into consideration public participation in decision making. This is where the idea of indigenous knowledge come into play to add value to the conventional knowledge on issues regarding ecological zones, natural resources and forest management among others (Posey, 1985). Accordingly, indigenous knowledge offers sophisticated models that are both ecologically and socially sound. In any development situation, indigenous knowledge strives for local decision making process at the community level where problems are identified and solutions determined (Warren, 1992). Generally before now, a comprehensive study of indigenous knowledge systems in all spheres of human endeavour has been difficult to come by (Warren, 1989, Slikkerveer, 1989, Jackson, 1987). This may be due to the societal ignorance of the role of indigenous knowledge in the development process as a whole. Recently, there is a reversal of thought among scholars regarding indigenous knowledge especially as it has to do with biodiversity conservation, management and propagation of floral diversity, farming technologies, aquaculture, game management and seed multiplication etc.

In Nigeria local eco-cultural knowledge (indigenous) for the propagation and management of floral diversity has not been popular before now especially during the colonial era. However, in recent times, a greater percentage of scholars, institutions and research organisations are beginning to see indigenous knowledge as part and parcel of the natural resource or development process.

Objectives

(i) To identify the various eco-cultural approaches for the propagation and management of floral diversity in the study area.
(ii) To examine some of the major bottlenecks faced by the rural people of Boki in propagating and managing floral diversity.

The Study Area

Boki Local Government Area lies between latitude $5^{o}45'$ North of the Equator; and longitude $8^{o}25'$ and $9^{o}21'$ East of the Greenwich meridian. It occupies an area of $344.95km^{2}$ and is bounded to the North by Obudu and Obanliku, to the south by Ikom, to the west by Ogoja and to the east by Cameroon Republic. Boki has a tropical climate typified by distinct wet and dry seasons. It has a mean annual temperature range of about 5°C, annual rainfall of between 2000mm to 3,500mm and an average humidity of well over 80%. Rainforest and wetland soils parallel the underlying geology of the area. The soils are composed essentially of sand, sandy loam, loamy sand clay loam. All these environmental conditions have interacted to produce luxuriant vegetation which characterizes the area.

Methods

Boki is essentially divided into two ecological zones - the protected forest area and the unprotected forest area. The focus of this paper was on the unprotected area. It is because thesis where there has been much interaction with the forest ecology by man which automatically guarantees effective management to ensure the sustainability of the floral species. Falling short of a good management strategy, most species of flora may go into extinct – hence, the need for this study. In the light of the above, three rural communities were chosen for this study. They include Borum, Kanyang and Isobendeghe.

A total of 150 copies of questionnaire were distributed to the three communities. The estimated number of households in the three communities were 300 and 150 household heads were served with the copies of questionnaire. Each of the communities had 50 copies of questionnaire. The houses were numbered and copies of questionnaire were distributed at random (every second house) to the household heads. Two sets of questionnaire were used for the data collection. The first was on demographic characteristics of respondents which include sex, age and occupation. The second set of questionnaire was on the challenges as well as the

local strategies in the propagation and management of floral species. Also, the researchers observations as well as interviews to complement the questionnaires in the course of collecting data. Descriptive statistics was used in the analysis of the data (Table 1).

Table 1: Distribution of Respondents by Communities

Communities interviewed	Estimated household heads	Sample size
Kanyang	102	50
Borum	100	50
Isobendeghe	110	50

Source: Authors Field Survey, 2016

RESULTS AND DISCUSSION OF FINDINGS

Table 2 : Age

Age (Years)	Frequency	Percentage
20 – 30	40	27
31 – 40	100	53
Above 40	30	20
Total	150	100

Source: Authors Field Survey, 2016

Table 2 shows that respondents in the age bracket of 20-30 years were 40 (27%), 31 – 40 were 80 (53%), above 40 were 30 (20%). According to Okpiliya (2004), the ages of individuals determine the degree of dependence and interaction with floral diversity for various purposes. Younger and older generations cut down less trees in the forest than those in the productive ages of 30 andabove who constituted collectively 33% of the total sampled population. In the same manner the younger and old generation think less about the propagation and management of floral diversity than those at the productive ages of 30 and above.

The major occupations of the respondents are farming, logging,fuelwood gathering and hunting among others. From table 3, it could be seen that by the nature of their occupation, about 145 respondents (97%) have direct relationship with floral diversity in the area. This invariably means that the propagation and management of floral diversity can be guaranteed by this same group of people as opposed to other respondents such as civil servants who merely depend on the other people for their sustenance.

The level of educational attainment of individuals may influence the degree of interaction or exploitation and management of floral species. A community with most of its people having high level of educational qualification implies that they are knowledgeable and would tend to know the consequences of their acttions on the rich floral diversity of the area if not properly managed.

Table 4 indicated that 64 (43%) of the respondents had no formal education, while 50 (33%), 30 (20%), 6 (4%) of the respondents are secondary school, OND/NCE/HND/B.Sc and Post-graduate students respectively.

The sex of individuals in any location has impact on the propagation and management of floral diversity in that area. Table 5 indicated that 146 (representing 97%) of the respondents in the study area are male while 4 (representing 3%) are female. Both the male and female are involved in the propagation and management of floral species even though not at the same proportion. This high percentage of the male than the female respondents is a good sign for the proper management of floral diversity because the men are more active in this respect than the female.

Table 6 indicated that 15 respondents (10%) argued that they manage floral diversity by restricting access to them. This is seen where individuals and communities exhibit right of ownership to certain species of flora. In this respect too, floral species are not just cut down indiscriminately without taking permission from the community or household heads. Floral species like Iroko are highly preserved in the study area that one cannot just cut them down without due permission from the community or family heads. Also, *Ceiba Pentandra* especially those found within the village shrine is also managed in this manner of restricting access by the Boki people. 30 (20%) respondents attested that they manage floral diversity by protecting and cultivating naturally germinating seeds. In Boki, it is often common to see some floral species being spared by farmers in the course of cultivation or weeding. The farmers even go at length to build fence around some species of flora to prevent them from being eaten by weeds or destroyed by fire. Example of such species are *Irvinga gabonensis* and *Kola nitida*. These species of flora take a very long time to mature and so they are keenly protected.

Another eco-cultural approach for the management of floral diversity identified in the study area is weeding. This eco-cultural practice enables unwanted grasses or shrubs to be removed entirely from the desired species.

Table 3: Occupation

Occupation	Frequency	Percentage
Farming	70	47
Logging	60	40
Fuelwood gathering	10	7
Hunting	5	3
Civil servants	5	3
Total	150	100

Source: Authors Field Survey, 2016

Table 4: Education

Education	Frequency	Percentage
No formal education	64	43
GCE/WAEC	50	33
OND/NCE/B.Sc/HND	30	20
Postgraduate	6	4
Total	150	100

Source: Authors Field Survey, 2016

Table 5: Gender

Gender	Frequency	Percentage
Male	146	97
Female	04	03
Total	150	100

Source: Authors Field Survey, 2016

Table 6: Distribution of Respondents by Indigenous Management Approaches of Floral Diversity.

Local strategies	Frequency	Percentage
Restricting access to tress	15	10
Protecting seedlings	30	20
Weeding	60	40
Watering	20	13
Coppicing	15	10
Prunning	10	7
Total	150	100

Source: Authors Field Survey, 2016

If these unwanted grasses or weeds are allowed to grow in most cases they compete with the desired floral species for space, light and nutrient thereby reducing their level of productivity. In the study area, about 60 respondents (40%) manage floral diversity in this way, and this seem to be the highest way of managing floral diversity generally in the area. Also, 20 respondents (13%) manage floral diversity through constant watering. Observation in the field revealed that watering is done especially in the dry season and the early stage of plant growth. This process also helps in regulating the temperature of the floral species that are planted. Coppicing had 15 respondents (10%) and pruning 10 (7%). Coppicing involves cutting the floral species down to its stump leaving it to re-grow. Pruning has to do with cutting down the unwanted part or branch of the floral species so that the growth can continue.

As shown in table 7, 50 respondents (33%) were of the opinion that the challenges they tend to have in the management of floral diversity is money and land. Money is needed to cover the cost of planting, cultivating, harvesting and even marketing. Also shortages of land may hinder the growth of floral diversity especially in the face of growing population in most rural communities now which has necessitated the parcelling of land into bits. This process of parcelling land does not call for large scale growth of floral diversity.

Land tenure was also identified as one of the greatest challenges in the propagation and management

Table 7: Distribution of respondents by major challenges in the propagation and management of floral diversity.

Constraints	Frequency	Percentage
Resources	50	33
Land tenure	60	40
Traditions	15	10
Physical factor	25	17
Total	150	100

Source: Authors Field Survey, 2016

Table 8: Propagation of some Floral Diversity under different indigenous Approaches

DIRECT SOWING (SEEDS)	Transplanting	Coppicing	Suckers	Cutting
1. *Artocarpus cummunis* 2. *Magnifiera indica* 3. *Irvenger garbonensis* 4. *Gmalina arborea* 5. *Anacardium oscidentalis* 6. *Elaiensis ginensis* 7. *Musanga sacropoides*	*Tectona Grandis* *Gmaliria arborea* *Melisa excelsa* *Parkia bigloposa* *Psiduim guajara* *Diocroides edulis* *Elaeis guinensis* *Cola giganta*	*Gmalina arborea* *Terminalia cattapa* *Tectona grandis* *Psiduim guajara* *Citrus simensis* *Magnifera indica* *Pterocarpus incens* *Irvengia garbonensis* *Bambosa vulgaris*	*Musa parasidieca* *Musa sapientum*	*Bambosa vulgaris* *Arbelia spp* *Buscus microphylla* *Cedrus spp* *Abies spp* *Erica spp*

of floral diversity as 60 respondents (40%) attested to this fact. Land in Boki is either owned by individuals, families or community as the case may be. Those individuals or families who have no outright ownership to these plots of land are denied access to them and so cannot propagate any form of flora for fear of being sent out of the land in the near future.

Fifteen respondents (10%) attested that the period of time that it takes some floral species to mature for consumption constitutes a setback in their cultivation. Some species of flora like *kola nitida* and *Irvinga gabonensis* take more than 10 years to fruit and so except those that grow in the wild, their cultivations is sometimes met with resistance. Finally, physical factors were reported by 25 respondents (17%) as a challenge in the propagation and management of floral diversity. Here, climate and soil were identified as key challenges. Sometimes, the delayance of rain, poor soil condition affects in able 8

CONCLUSIONS

The role of indigenous knowledge in human development cannot be overemphasized as it is seen to complement the action of man regarding his environment. The era that modern man finds himself currently is that of overexploitation of natural resources. It has gone to the level that most of our valuable species of flora have gone into extinction. The conventional methods for addressing some of these challenges may be inadequate in the face of veritable human and capital resources. This is when indigenous knowledge has come to add value to the society by the provision of knowledge on the workability of the environment as well as devising strategies to sustain natural resources. However, this study recommends that governmental organizations and agencies should as a matter of fact place premium on systematizing the indigenous knowledge base become some of the fact that some of these ideas may still be crude. To add to this, some of these ideas could be recommended and stored as a data base for the development process. The establishment of indigenous knowledge network centres may also be encouraged.

Originality

It is obvious that man has been tampering with the rich flora of the rainforest ecosystem of Boki. If this trend continues unabated, then majority of the rich flora of the area will go into extinction. It is in this regard that the role of indigenous knowledge in the propagation of management of floral diversity comes into play. This study therefore documents the various eco-cultural approaches for the propagation and management of floral diversity which include restricting seedlings, weeding, watering, coppicing and pollarding. So, some challenges in the propagation and management of floral diversity were highlighted. They include resources, land tenure, tradition and physical factors.

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