

BUSH FALLOWING AND FOREST RESOURCE CONSERVATION IN AKAMKPA LOCAL GOVERNMENT AREA OF CROSS RIVER STATE, NIGERIA

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Abstract

This paper examined the relationship between bush fallowing and forest resources conservation in Akamkpa Local Government Area of Cross River State, Nigeria. One hypothesis was formulated to guide the study. Ex-post facto research design was considered most suitable for the study. Purposive and stratified random sampling techniques were adopted in selecting the 487 respondents sampled for the study. A validated 15 items using a modified four point Likert scale was the instrument used to respond to the instrument. The reliability estimate of the instrument ranged from 0.73- 0.92 using Cronbach Alpha method. To test the hypothesis formulated for the study, Pearson Product Moment Correlation statistical tool was used. The hypothesis was tested at 0.05 level of significance. The finding revealed that there is a significant negative relationship between bush fallowing and forest resources conservation. It was recommended among others that farmers should be adequately and regularly sensitized through environmental extension officers on the need to desist from unsustainable fallowing activities due to its impact on forest resource conservation and management.

Key words: Bush fallowing, Forest resource conservation, Environment, Conservation, Ecosystem

Introduction

Forest provides an array of benefits to human societies above and beyond their pivotal roles as habitat and environmental regulations in natural ecosystems. These benefits are often described as resources that people can draw upon for fuel wood, human recreation, bush meat, raw materials as well as provision of ecosystem services. The concept of forest conservation has emerged as a global phenomenon, owing to its implication in the attainment of sustainable forest conservation at various levels.

According to Food and Agriculture organization (FAO, 2012) of the United Nations, as of 2005 Nigeria had the highest rate of deforestation in the world. Between 2000 and 2005 the country lost 55.7% of its primary forests as a result of human activities such as logging, timber export, subsistence agriculture and notably the collection of fuel wood which remains problematic in Western Africa. Greater part of the country's remaining forest is located in Cross River State has approximately 0.85 million and 0.01 million hectares of tropical rain forest, which constitutes the highest forest area in Nigeria (Cross River State Forest Commission,

2010). The greater part of the forest areas are found in Akamkpa, Boki, Etung, Biase, Ikom, Obudu, Obanliku and Yakurr Local Government Areas.

Conservation of these resources is very important and essential for economic and environmental security of Cross River State in particular and Nigeria as a whole since they contribute to human welfare, ameliorate global warming, provide income, recycle water, oxygen and served as homes to most of the world's flora and faunas. The current trends in human demands for arable land for agricultural activities and other forms of development has resulted in widespread deforestation and loss of vegetation cover. The increasing pressure on the forest and its resources has led to the endangerment and extinction of various species of plants and animals. In the face of increasing climate change and global warming, forest conservation has become imperative in order to protect humans and other organisms from the consequences of climate change. The conservation of forest resources ensures the survival of various plants and animal species through habitat protection and preservation, this will in turn reduces the rate of endangerment and extinction of species.

Bush fallowing constitutes a significant threat to attaining the goals of sustainable forest resources management. Global demands for food and fibres are on the increase and demands expected to grow over 40 percent of the Earth's total lands are already under cultivation, part of this land is now threatened by erosion, nutrient depletion and fragmentation. Forest resources in Akamkpa Local Government Area are being exploited at much faster rates than ever before, and they are fast disappearing due to unsustainable farming practices like bush fallowing. Nigeria, the Federal Environmental Protection Agency FEPA (1992) estimated that 43 percent of the forest land in Nigeria has been lost in 25 years to human activities. Scientific research has also expressed concern on the negative impact of human activities on the environment and it is feared that 50% of the world's flora and fauna are on the path of extinction. The depletion of forest resources in the study area has led to widespread deforestation. This has resulted into numerous environmental crises such as climate change, loss of water bodies, erosion, species extinction and endangerment etc.

Research articles have revealed that after fallowing a piece of land for quite a long time, fire is used to clean and clear a plot that will be cropped for two to five years. After several years of cultivation, soil fertility declines and weeds overwhelm the crop, forcing the farmer to abandon the plot to a bush fallow for 15 to 20 years. Although, most authors have revealed that bush fallowing has positive impact on forest resource conservation. Researchers are yet to ascertained whether this is true or not.

There have been studies conducted and results presented on the relationship between bush fallowing and forest resource conservation. Mikan (2008) asserted that most community farmers practice bush fallowing as a predominant farming activity. Fields are usually cultivated by short periods of cropping (usually 2-5 years) alternating with long fallow period by slash and burning clearing method using less sophisticated implements like hoes and machetes. Some of the adverse effect or consequences of slash and burn cultivation in communities include forest degradation, soil erosion, food and water shed degradation, climate change, global warming, population shift and lose of soil nutrients. Also, leaching, surface run-off and destruction of soil organic matter are the outcome of bush fallowing. This upsets the ecological balance in the system and making rapid restoration of original

vegetation. Bush fallowing was interposed between cultivation in order to allow lands to regenerate its fertility. However, with increased population, fallow duration became shorter. This was contributed immensely to the progressive impoverishment of tropical soils, which has led to an increased demand for virgin forest land by farmers in order to improve their crop yield (Obot, 2010).

Ade (2011) conducted a study on bush fallowing and forest resource conservation in Gboko, Benue State, Nigeria. The researcher designed considered most suitable was survey design and samples of three hundred and twenty one (321) farmers drawn from the study area were used for the study. The questionnaire method of data collection was considered most suitable for gathering relevant information for the study. In analyzing the relationship between bush fallowing and forest resource conservation, Pearson product moment correlation statistical tool was used for data analysis. The result obtained in the study showed that the calculated value ($r=0.086$) was less than the critical value ($r=0.113$) at 0.05 level of significance. This result indicated that there is no significant positive relationship between bush fallowing and forest resource conservation in the study area. This stipulates that bush fallowing does not really promote forest conservation in the study area and should be regarded as a negative farming practice within the area of study.

Bush fallowing is usually discouraged because by cutting down rain forests carbon dioxide remains overhead like a blanket to hold in the sun's heat. Little oxygen is added to the atmosphere for the benefit of the animals and little rain is recycled for more rainfall. Instead, any rain that rushes off the land into the streams carrying topsoil which is necessary for plant growth. Streams are muddied, silted and fishes die. This has resulted in the death of millions of plants and animal species that thrived under the green canopy. The continuous felling of forest vegetation as a result of bush fallowing has led to slow but continuous desertification across various regions of the country (Asu, 2009).

Chukwurah (2011) examined the impact of farming practices on soil conservation in Esan West Local Government Area of Edo State Nigeria. The study used a sample of two hundred and fifty (250) respondents randomly selected from the study area. A twenty five item four likert scale questionnaire was the instrument used for data collection. In testing the hypothesis which states that there is no significant relationship between shifting cultivation and soil degradation; Pearson product moment correlation statistical tool was used for data analysis. The result showed that the calculated r-value of 0.246 is higher than the critical r-value of 0.138 at 0.05 level of significance with 298 degree of freedom. This implies that there is a significant relationship between bush fallowing and soil conservation in Esan West Local Government Area of Edo State.

Edem (2012) saw bush fallowing as an agricultural practice which involves a movement from a piece of land after cropping for a few years on the selected and cleared plots. It is a practice in which a piece of land is cultivated for a few years and is left to fallow to regain its nutrient when the fertility is exhausted for another piece of land (usually a virgin land). This is to enable the cultivated areas to regain their fertility before returning to the same plot of land after a few years. Since fields are always rotated, it may lead to destruction of forested land. The use of slash and burn also contributed to the destruction of vegetation and loss of habitat for most organisms. The use of simple implements reduces the occurrences of soil erosion.

The practice of bush fallowing was encouraged when people were fewer and the demand for agricultural land was low. The rapid growth of human population some decades ago increased the demand for agricultural land.

Oliver (2011) stated that Tropical secondary forests created by Swidden-fallow agriculture covers extensive areas in the humid tropics and yield significant ecological and economic benefits, yet forest fallowing behavior among swidden cultivators remains poorly understood. The researcher reported on a study of forest fallow management among Amazonian peasant farmers in a traditional riverine community, near Iquitos, Peru. Data were gathered through in-depth household interviews (N=36) on farming practices, demographic characteristics, kinship relations and family history, income-expenditures and household wealth. Field visits and interviews allowed the reconstruction of forest fallow histories (n=593 fields) for the period of 1950 – 2004. These histories were combined with information on household land holding and demographic composition, over time, and incorporated into a panel data set for analysis of fallow dynamics at the plot and household level. Our analysis indicates marked variations among households in the area, number and age of fallow holding through time. Tobit regressions suggest that households with better access to land and to both in-house (male) and communal labour hold more land in secondary forest fallow with longer fallow.

Oliver (2011) further reported that overtime, as primary forest lands around the community became increasingly scarce, households increased their holdings of forest fallow but reduced the fallow length. Duration analyses at the plot level indicate that fallow length is influenced primarily by the type of prior crop field, field size and household access to labour as well as primary forest. Poor land households have significantly shorter forest fallows than better-off households. The findings of the researchers pointed out the importance of intra-community variations in non-market mediated access to land and labour and their implications for secondary forest fallow management among traditional peoples in tropical rain forest regions. Bush fallowing is often perceived to be a threat to forests, but it is also central to the culture and livelihoods of millions of people worldwide. Balancing agriculture and forest conservation requires knowledge of how agricultural land uses evolve in landscapes with forest conservation initiatives. Based on a case study from Quintana Roo, Mexico, and remote sensing data, we investigated land use and land cover change in relation to accessibility (from main settlement and road) in search of evidence for agricultural expansion and for intensification after the initiation of community forestry programme in 1986. Intensification was through a shortening of the fallow period. Defining the sampling space as a function of human needs and accessibility to agricultural resources was critical to ensure a user-centered perspective of the landscape. The composition of the accessible landscape changed substantially between 1986 and 2007.

Bush fallowing is a system of farming where a farmer cultivates on a piece of land for a particular year, leaves it for another piece of land for years before coming back to the previous pieces of land for cultivation. Here the farmer leaves such land and moves to a different location with the intention of going back to the land after it has gained its lost nutrients and fertility. He may however, return to the area again by accident. In another dimension of bush fallowing, the farmer cultivates on a piece of land for two or more years and intentionally leaves it for some years to enable the cultivated area grow into bush and regain its lost nutrients before it can be used again. In this system, the farmer may not move away from the area completely but may

rotate his cultivation from one position to another (Barry, 2011). In the past, bush fallowing was made possible due to low population and availability of sufficient land with the increase in human population and man's activities on land such as road construction, building of schools, hospitals, recreational centers, living houses, industries, churches, game reserves, stadium etc. there is hardly enough land to practice this system of farming.

Bush fallowing encourages the spread of deforestation because farmers see the forest as a natural frontiers that contains all they need to meet their needs. They see the forest as a virgin vegetation. That is rich in nutrients they need to improve their crop yields. As a result, bush fallowing constitutes a significant threat to attaining the goals of sustainable forest resources management (Asu, 2010). Environmental stake holders at all level are so concerned about the devastating effect of forest resource depletion because on the average it decreased at the rate of 0.4 million ha per year but the rate of reforestation was put at 0.032 per year. In view of this dismal trend in the forest resources of the country, the need to manage the forests of Nigeria on a sustained yield basis has never been more felt in recent times. Granted that the government of Nigeria founded many vegetation reserves for preservation of vegetations and its resources, it is pertinent to note that these forest areas have been genuinely ignored and gotten practically no change as far as policies, allocation of funds and management are concerned. It is based on this problem the researcher intends to answer a question. Does bush fallowing have any impact on forest resources conservation in Akamkpa Local Government Area of Cross River State?

Methodology

Survey research design was adopted in the study. The area of this study is Akamkpa Local Government Area of Cross River State, Nigeria. Purposive and stratified random sampling techniques were utilized for the study. The sample for the study is 487 farmers drawn from 5 council wards in Akamkpa Local Government Area of Cross River State. The instrument for data collection is a 15 item questionnaire developed by the researcher. The hypothesis was analysed using Pearson Product Moment Correlation statistics at 0.05 level of significance (i.e. 95% confidence interval).

Result and discussion

The result of the analysis is presented in Table 1. The result in Table 1 revealed that bush fallowing is negatively related to forest resources conservation, the calculated r – value of .503** is greater than the critical r -value of .098 at 0.05 level of significance with 485 degrees of freedom. By this result, the null hypothesis which states that, there is no significant relationship between bush fallowing and forest resources conservation is rejected while the

TABLE 1
Pearson product moment correlation of bush fallowing and forest resources conservation

Variable	N	Mean	SD	r-value	Sig.
Bush fallowing	487	16.62	6.10	-0.503**	.000
Forest conservation	487	19.63	16.09		

*significant at 0.05 level; df = 485; critical r value = 0.098

alternate hypothesis is accepted. This implies that, there is a significant inverse relationship between bush fallowing and forest resources conservation. That is, the more bush is fallowed, the less forest resource conservation and vice versa. This result may be because of the assumptions that as farmers move from one piece of land to another, they cut down forest trees in the course of clearing for farming, burn the forest in the course of preparing the land for farming.

The finding of this study supports the finding of Mikan (2008) which stated that most community farmers practice bush fallowing as a predominant farming activity. Fields are usually cultivated by short periods of cropping (usually 2-5 years) alternating with long fallow period by slash and burn, clearing method using less sophisticated implements like hoes or machetes. Some of the adverse effect or consequences of slash and burn cultivation in communities include forest degradation, soil erosion, food and water shed degradation, climate change, global warming, population shift and lose of soil nutrients. Though leaching, surface runoff and destruction of soil organic matter. This upsets the ecological balance in the system and making rapid restoration of original vegetation.

The finding of the study also supports the finding of Asu (2009) which stated that bush fallowing is usually discouraged because by cutting down rain forests carbon dioxide remains overhead like a blanket to hold in the sun's heat. Little oxygen is added to the atmosphere for the benefit of the animals and little rain is recycled for more rainfall. Instead, any rain that rushes off the land into the streams carrying topsoil which is necessary for plant growth. Streams are muddied, silted and fishes die. This has resulted in the death of millions of plants and animal species that thrived under the green canopy. The continuous felling of forest vegetation as a result of bush fallowing has led to slow but continuous desertification across various regions of the country. Bush fallowing encourages the spread of deforestation because farmers see the forest as a natural frontiers that contains all they need to meet their needs. They see the forest as virgin vegetation. That is rich in nutrients they need to improve their crop yields. As a result, bush fallowing constitutes a significant threat to attaining the goals of sustainable forest resources management (Asu, 2010).

Conclusion

The essence of this study was to examine the relationship between bush fallowing and forest resource conservation in Akamkpa Local Government Area of Cross River State, Nigeria. The findings of the study showed that there is a significant negative relationship between bush fallowing and forest resource conservation in Akamkpa Local Government Area of Cross River State. The fact remains that there is no future that can be very worrisome as one in which the living resources, for

example, plants and animals which are fundamental for human survival and advancement are progressively being degraded gradually by man's unsustainable activities. Conservation of forest resources is very important and essential for economic and environmental security since they contribute to human welfare, ameliorate global warming, provide income, recycle water, oxygen and serve as homes to most of the world's flora and faunas.

Recommendation

By virtue of the outcome of this study, it is recommended that farmers should be adequately and regularly sensitized through environmental extension officers on the need to desist from unsustainable fallowing activities due to its impact on forest resource conservation and management.

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