Effects of Indiscriminate Logging of Indigenous Tree and Tree Sustainability in Ifedore Local Government Area, Ondo State

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ABSTRACT

This study investigated the effects of indiscriminate logging of indigenous trees and tree sustainability in Ifedore Local Government Area of Ondo state. Purposive sampling technique was used to select five communities from Ifedore local government. Data were collected through administration of semi-structured questionnaire and interview on one hundred (100) community residents and ten (10) forest officials in the study area. Data were analyzed using descriptive statistics and ranked using percentage mention. Majority (58.0%) of the community resident are male while the highest percentage (50.0%) of the residents are between age 41 and 50 years. Majority (70.0%) are married, and there is high level of awareness of indiscriminate logging, as 50.0% of the community residents reported very frequent occurrence of indiscriminate logging. Poverty ranked 1st among causes of indiscriminate logging by community residents. Timber contractors dominated (70.0%) the categories of people involved in indiscriminate logging. While, limited resources ranked 1st (80.0%) among the challenges faced by forest officials in preventing indiscriminate logging. Climate change ranked 1st (95.0%) among the impacts of indiscriminate logging on the sustainability of indigenous tree species. Provision of employment ranked (98.0%), and and creation of awareness on sustainable forest management (100.0%) ranked 1st respectively by community residents and forest officials as ways of mitigating indiscriminate logging activities. Consequently, it was suggested that urgent efforts should be directed at raising more effective awareness on the adverse effects of indiscriminate logging activities and also the need for sustainable management of the forest.

Keywords: Ifedore, indigenous trees, indiscriminate logging, tree sustainability.

INTRODUCTION

Forest according to [11] include natural forest consisting of indigenous floral, and tree plantation of exotic trees with canopy cover of more than 10% and area of more than 0.5 ha in-situ which play a crucial role in the Earth ecosystem. About 1.095 to 1.745 billion people globally depend on forest to a varying degree for their livelihood [10], while over 200 million of local communities are almost entirely dependent on forest for various products such as fuel wood, construction material, medicine and food [15]. The forest will continue to serve as good source of food, income, ecological resources, socio-cultural features, and provide essential habitat for wildlife to survive, protecting watersheds, soil and coastlines, providing natural products for use on a sustainable basis and supporting tourism and recreation [16] when sustainably managed. The principle of sustainable forest management (SFM) allows multiple objectives and needs to be met separately or simultaneously without degrading the forest resources [14] and jeopardizing the needs of future generations. However, the greatest challenge to sustainable forest management (SFM) in Nigeria today is the increasing rate of indiscriminate logging and forest encroachment. With respect to various degrees of benefits derived from the forests, little attention is given to the conservation of these natural habitats. Trees are indiscriminately logged for financial reasons irrespective of other advantages that are associated with tree cover. According to [22], the rapid population growth and urbanization rate in Nigeria, coupled with escalating unemployment, persistent poverty, have driven many youths to explore opportunities in forest-related businesses in both legal and indiscriminate

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manner. Indiscriminate logging occurs when timbers are harvested, transported, bought and sold in contravention of laws and regulation of harvest [8]. Report from Nigeria Federal Department of forestry in year 2010 indicated that the Nigeria's forests are depleting at the rate of 3.5% annually. Consequently, the land covered area estimated to be about 20% has greatly reduced to about 10% due to indiscriminate logging [3]. He further reported that indiscriminate logging activities has contributed more to deforestation in Nigeria. However, deforestation does not only affect fauna and flora, it is detrimental to the survival of people who depends on forest products for their livelihood [9]. Most purportedly illegal wood harvesting is regarded as an informal logging, carried out by lots of people as a basic survival strategy [5].

Ifedore local government Area of Ondo state like other parts of Nigeria's natural forests is faced by growing pressure from indiscriminate logging practices. There occurs a persistence problem of indiscriminate logging of indigenous tree spices such as Iroko, Obeche, Afara etc. Even though there are efforts worldwide to prevent indiscriminate logging, Ifedore Local Government still struggles with significant issues related to forest damage due to harmful logging practices. Several loads of logs are hauled daily out of the communities within the local government area. The forests which were once expansive with indigenous tree have significantly depleted due to factors ranging from indiscriminate and unsustainable logging methods, agricultural expansion, to urban development [2]. This decline in indigenous tree cover due to indiscriminate logging does not only jeopardizes biodiversity but also threatens the livelihoods of people who rely on forest resources for their survival [4] in communities within the local government area. The availability of various tree species with different age gradation during indiscriminate logging operations may cause grave harm to residual stands [13].

The sustainability of the indigenous tree population is seriously jeopardized by this indiscriminate activity which have resulted into ecological imbalance, and if unchecked, can lead to conversion of forests to grassland and the diminution of certain plant and animal species [23]. Thus, rare plants and animals may become threatened [22]. Therefore, in order to ameliorate the menace of this indiscriminate act in Ifedore Local Government area of Ondo state it became imperative and relevant that the assessment of indiscriminate logging in natural forest of communities be conducted. This study identified the causes of indiscriminate logging among residents; examined the frequency of indiscriminate logging and assessed ways of mitigating the effects of indiscriminate logging activities and recommended practical solutions to alleviating these negative impacts to foster the long-term sustainability of trees in the communities.

METHODOLOGY

The Study Area

The study was carried out in Ifedore Local Government located in the central part of Ondo State, Nigeria. There are ten towns under the Ifedore Local Government area namely Igbara-oke, Ijare, Ilara, Ipogun, Ibule, Isarun, Ero, Ikota, Owena and Olo-gbo. The Local Government with its headquarters in Igbara-oke shares boundaries in the east with the town of Igbara-Odo in Ekiti State, in the south with Ipetumodu town in Osun State, in the north with Akure South Local Government and in the west with Owena/ Bolorunduro, Ondo State. It covers an area of about 295 km^2 and a population of 176,327 at the 2006 census. The Ifedore local Government lies between Longitude 5^0 6' 30" East and Latitude 7^0 20' 35" North of the equator. The climate of the study area is with two distinct seasons of rainy season and the dry season. The dry season normally start from November to March and is characterized by dry cold wind of harmattan. The rainy season normally start from April to October with strong wind and thunderstorm, usually at the beginning and ending of the rainy season. The vegetation type is rainforest. A great number of people in the local government both indigenes and settlers are farmers cultivating cocoa, orange, pineapple, plantain, oil-palm, cassava, yam, etc. all these in commercial quantities.

Sampling Techniques

Purposive sampling technique was used to select communities and respondents in the study area. Five out of the ten communities in Ifedore Local Government were selected based on the abundance of indigenous tree species and continuous extraction of logs in forests around the selected communities. The five communities selected are Igbara-oke, Ibuji, Ero, Isarun and Ipogun. In each community selected, twenty (20) residents and Ten (10) forest officers in the local government area were randomly selected, Thus, a total population of one hundred and ten

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(110) respondents were selected for the study.

Data Collection

Data were collected using semi-structure questionnaire and personal interview. Data were collected on respondents' socio-economic characteristics; respondents' perception on causes, and impacts of indiscriminate logging and mitigation of indiscriminate logging effects on the communities.

Data Analysis

The data collected were analyzed using descriptive statistics such as frequency distribution table and bar charts generated by Microsoft Excel 2019 [16]. Percentage mention as used by [6] was adopted to rank;

i. Causes of indiscriminate logging activities in the study area,

ii. Impacts of indiscriminate logging activities on sustainability of indigenous trees in the study area.

iii. Ways of mitigating the effects of indiscriminate logging activities in the study area.

$$\boldsymbol{Percentage\ Mention} = \frac{NTVM}{NIC} X \frac{100}{1} \quad \text{..... (Equation 1)}$$

Where NTVM = No of time a variable was mentioned

NIC = No of Interview conducted

RESULTS

Socio-Economic characteristics of respondents in the Study Area

The socio-economic characteristics of the respondents presented in Table 1 showed that 58% of the community respondents were male, while 42% were female. For forest officers, 80% were male while 20% were female. The result also showed that the highest percentage (35%) of community residents had their age between 41-50 years, this is followed by those between 51-60 years with 30% while the least (6%) were below 20 years. For forest officers, 50% have their age between 41-50 years and 50% also have their age between 51-60 years.

Furthermore, the result also showed that majority of community residents and forest officers were married with 70% and 90% respectively. 18% of community residents were single, 8% were widowed while 4% were divorced. For forest officers, 10% were widowed. The result also showed that 41%, 10%,13% and 36% of community residents have no formal, primary, secondary and tertiary education respectively. For forest officers, majority (70%) have tertiary education while 30% have secondary education. The result also showed the occupation of respondents in the study area. It shows that the highest (57%) of community residents are into farming, this is followed by trading with 21%, this is followed by artisans with 12% while the least (10%) were civil servants. For forest officers, all the respondents were civil servants.

Table 1: Socio-Economic Characteristics of Respondents in the Study Area

Variable	Community Residents		Forest Officers	
	Frequency (n=100)	Percentage (%)	Frequency (n=10)	Percentage (%)
Gender				
Male	58	58.0	8	80.0
Female	42	42.0	2	20.0

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Total	**100**		**10**	
Age (Years)				
<20	-	-	-	-
21-30	6	6.0	-	-
31-40	20	20.0	-	-
41-50	35	50.0	50	50.0
51-60	30	30.0	50	50.0
>60	9	9.0	-	-
Total	**100**		**10**	
Marital Status				
Single	18	18.0	-	-
Married	70	70.0	9	90.0
Widowed	8	8.0	1	10.0
Divorced	4	4.0	-	-
Total	**100**		**10**	
Educational Background				
No Formal	41	41.0	-	-
Primary	10	10.0	-	-
Secondary	13	13.0	3	30.0
Tertiary	36	36.0	7	70.0
Total	**100**		**10**	
Occupation				
Farming	57	57.0	-	-
Trading	21	21.0	-	-
Artisan	12	12.0	-	-
Civil Servant	10	10.0	10	100.0
Total	100		10	

Source: Field Survey, 2024

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Forest official's years of working experience

Figure 1 presents the years of working experience of forest officials in the study area. The result showed that majority (50%) had between 11-20 years of working experience, this was followed by 21-30 years with 30%, while 20% had between 1-10 years of working experience.

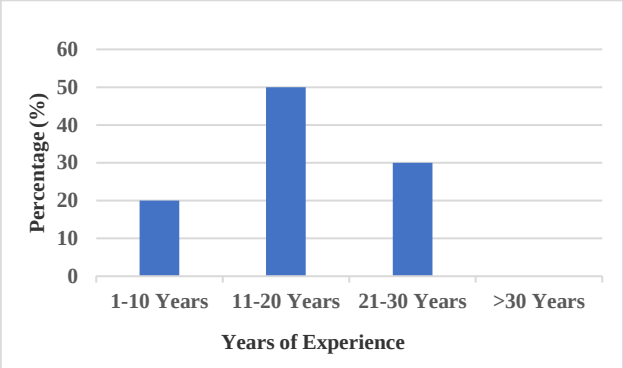

Figure 1: Years of Experience of Forest Officers in the Study Area

Causes of Indiscriminate Logging in the Study Area

The causes of indiscriminate logging activities in the study area are presented in Tables 2 showed that poverty ranked 1st with 56%, lack of awareness about environmental consequences ranked 2nd with 37%, insufficient alternative livelihood options ranked 3rd with 26%, while weak law enforcement ranked 4th with 20%.

Table 2: Identified Causes of Indiscriminate Logging Activities by Community Residents

	Community Residents		
Variables	**No of Time Mention****	**Percentage (%) Mention**	**Rank**
Poverty	56(100)	56%	1st
Lack of awareness about environmental consequences	37(100)	37%	2nd
Insufficient alternative livelihood options	26(100)	26%	3rd
Weak law enforcement	20(100)	20%	4th

****** Multiple response

Source: Field Survey, 2024

Awareness of the Effect of Indiscriminate Logging Activities in the Study Area

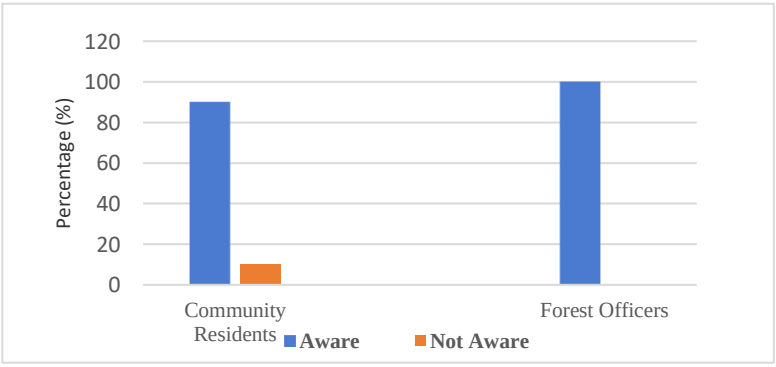

Figure 2: Level of Awareness of Effect of Indiscriminate Logging in the Study Area

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Figure 2 presents the level of awareness of the effects of logging activities in the study area. The result revealed that 90% of the community residents were aware of the effects of indiscriminate logging activities while 10% were not aware of the effects of indiscriminate logging activities. For forest officers, 100% were aware of the effects of indiscriminate logging activities in the study area.

Occurrence of Indiscriminate Logging Activities in the Study Area

The occurrence of indiscriminate logging activities in the study area is presented in Tables 3. The result showed that majority (50%) of community residents said indiscriminate logging occur very frequently, this is followed by frequently with 30%, this is followed by occasionally with 15% while the least is rarely with 5%. For forest officers, 100% reported that indiscriminate logging occurred very frequently in the study area.

Table 3: Occurrence of Indiscriminate Logging Activities in the Study Area

Occurrence	**Community Residents**		**Forest Officers**	
	Frequency (n=100)	**Percentage (%)**	**Frequency (n=10)**	**Percentage (%)**
Very Frequent	50	50.0	10	100.0
Frequent	30	30.0	-	-
Occasional	15	15.0	-	-
Rare	5	5.0	-	-

****Multiple responses

Source: Field Survey, 2024

People's involvement in indiscriminate Logging Activities in the Study Area

The result on the categories of people involved in indiscriminate logging activities in the study area is presented in Tables 4 The result showed that majority of both community residents and forest officers said the people involved in indiscriminate logging activities were timber contractors with 70% and 60% respectively, this was followed by sawmillers with 15% and 30% respectively. The least are government agencies with 4% and 0% respectively.

Table 4: Categories of People Involved in Indiscriminate logging in the Study Area

Variables	**Community Residents**		**Forest Officers**	
	Freq. (n=100)	**Percentage (%)**	**Freq. (n=10)**	**Percentage (%)**
Saw Millers	15	15.0	3	30.0
Timber Contractors	70	70.0	6	60.0
Government Agent	4	4.0	-	-
Private Individuals	11	11.0	1	10.0
Total	**100**		**10**	

****Multiple responses

Source: Field Survey, 2024

Impacts of Indiscriminate Logging on Sustainability of indigenous Trees in the Study Area

The impacts of indiscriminate logging on the sustainability of indigenous trees in the study area is presented in

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Tables 5 presents the impact of indiscriminate logging on the sustainability of indigenous tress by community residents. The result revealed that climate change ranked 1st with 95.0%, vulnerability ranked 2nd with 90.0%, loss of cultural heritage and depletion of forest products ranked 3rd and 4th with 75.0% and 60.0% respectively, while weakens social gathering ranked 7th with 30.0%.

Table 6 presents the impacts of indiscriminate logging on the sustainability of indigenous trees by forest officers. The result revealed that climate change ranked 1st with 100.0%, vulnerability ranked 2nd with 90.0%, loss of cultural heritage and depletion of forest products ranked 3rd and 4th with 70.0% and 60.0% respectively, while weakens social gathering ranked 7th with 20.0%.

Table 5: Notable impacts of indiscriminate logging on the Sustainability of indigenous Trees by Community Residents

	Forest Officers		
Variables	**No of Time Mention**	**Percentage (%) Mention**	**Rank**
Change in Climate	10(10)	100%	1st
Vulnerability of Indigenous Trees Species	9(10)	90%	2nd
Loss of Cultural Heritage	7(10)	70%	3rd
Depletion of Forest Products	6(10)	60%	4th
Loss of Biodiversity	5(10)	50%	5th
Reduction in the Values of Trees Species	3(10)	30%	6th
Weakens Social Gathering	2(10)	20%	7th

**Multiple responses

Source: Field Survey, 2024

Table 6: Notable impacts of Indiscriminate Logging on the Sustainability of indigenous Trees by Forest Officials

	Forest Officers		
Variables	**No of Time Mention**	**Percentage (%) Mention**	**Rank**
Change in Climate	10(10)	100%	1st
Vulnerability of Indigenous Trees Species	9(10)	90%	2nd
Loss of Cultural Heritage	7(10)	70%	3rd
Depletion of Forest Products	6(10)	60%	4th
Loss of Biodiversity	5(10)	50%	5th
Reduction in the Values of Trees Species	3(10)	30%	6th
Weakens Social Gathering	2(10)	20%	7th

**Multiple responses

Source: Field Survey, 2024

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Identified ways of Mitigating Indiscriminate Logging Activities in the Study Area

Table 7 and Table 8 presents the ways to mitigate indiscriminate logging in the study area by community residents and forest officials respectively. The result revealed that provision of employment opportunities for youth ranked 1st with 98.0%, raising awareness on sustainable forest management ranked 2nd with 85.0% while educate the publics on sustainable forest management and strengthen law enforcement ranked 3rd and 4th with 80.0% and 60.0% respectively.

However, the forest officers revealed that raising awareness on sustainable forest management ranked first with 100.0%, government should resist the use of political thugs as task force ranked 2nd with 90.0%, employment opportunities for youth and educate the publics on sustainable forest management ranked 3rd and 4th with 80.0% and 70.0% respectively, while technology utilization ranked 5th with 50.0%.

Table 7: Ways of Mitigating Indiscriminate Logging Activities in the Study Area by Community Residents

	Community Residents		
Variables	**No of Time Mention**	**Percentage (%) Mention**	**Rank**
Provision of employment opportunities for youth	98 (100)	98.0%	1st
Raising awareness on sustainable forest management	85 (100)	85.0%	2nd
Educate the publics on sustainable forest management	80 (100)	80.0%	3rd
Strengthen law enforcement	60 (100)	60.0%	4th

****Multiple responses

Source: Field Survey, 2024

Table 8: Ways of Mitigating Indiscriminate Logging Activities in the Study Area by Forest Officers

	Forest Officers		
	No of Time Mention	**Percentage (%) Mention**	**Rank**
Raising awareness on sustainable forest management	10 (10)	100.0%	1st
Government should resist the use of political thugs as task force	9 (10)	90.0%	2nd
Employment opportunities for youth	8 (10)	80.0%	3rd
Educate the publics on sustainable forest management	7 (10)	70.0%	4th
Technology utilization	5 (10)	50.0%	5th

****Multiple responses

Source: Field Survey, 2024

DISCUSSION

The age profile of the respondents in the study area showed that the majority (91.9%) of the respondents (Table 1) were still active and fall within the employable and retirement age range of 21 to 60 years. This is an agreement with the findings of [12] and [20] who identified the active and productive dominant age of Nigerians as being

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between 21-50 years. Additionally, the study by [1] highlighted that younger individuals have a higher tendency to participate in indiscriminate logging, compared to older individuals indicating an inverse relationship between age and dependence on forest resources. It was observed that 60.0% of the respondents were male. This suggests that indiscriminate logging is mostly perpetuated by men who are equally married (71.8%) indicating a level of emotional stability [20]. These men typically head households of 4 to 8 people, showing their responsibility for providing food, shelter and other necessities for their dependents. This finding contrasts with [6] study, which found that women are generally the main caregivers responsible for supplying food, fuel, and fodder for their families and sick relatives.

The results on level of education indicated that indiscriminate logging is independent of educational background. However, the higher proportion (63.90%) of respondents with formal education suggests that these individuals are more likely to adopt conservation practices if informed. This aligns with [18] who noted that higher education levels can lead to reduced extraction of forest resources and provide alternative employment opportunities, thereby diverting people from indiscriminate logging. The majority of respondents identified as Christians (79.10%), which contrasts with [19], who found more Muslims than Christians in Osogbo. Additionally, the data shows that Yorubas (90.9%) are more dominant in the study area compared with other ethnic groups.

Farming (51.8%) and trading (19.1%) were the primary occupations of the respondents. Others were engaged in other occupation such as artisans and civil servants. This indicates diversification of different means of livelihood in the study area. Timber contractors (69.10%) constituted the major challenge to indiscriminate logging because, in most cases they fell more than what is ascribed to them. The millers, private individuals and government agents are culprits. The result also showed a high level of awareness of indiscriminate logging as reported by the respondents.

The main causes of indiscriminate logging (Table 2) as rated by the respondents indicated that poverty was rated 1st, which implies that those involved are desperate at getting means of livelihood at all cost. This report is in agreement with the findings of [21], that reported how economic hardships and the "get-rich-quick" mentality contribute to illegal logging in Nigeria. It shows that poverty and the lack of alternative livelihood options push locals to engage in indiscriminate logging to support their families.

Moreover, the result also showed that the various indiscriminate logging perpetrated in Ifedore local Government by the people has resulted into loss of biodiversity, change in climate, reduction in the availability of forest product, loss of cultural heritage, reduction in the availability of indigenous tree species, reduction in the value of tree species and weakening of social gathering.

The respondent's narratives in the study area revealed that in Nigeria, where unemployment rate has increased to 5.3% in first quarter of year 2024. People would depend on all available means of sustenance. Therefore, indiscriminate logging can be mitigated by creating job opportunity for youths, because an idle hand may become a working tool of the devil. Raising awareness campaign on sustainable forest management and the danger attached to tree removal without replacement. Forest regulation should strengthen and adequately enforced on offenders. Monitoring of forest by use of technology should be adopted rather than depending on forest officials who are vulnerable to threat and attack by the illegal loggers.

CONCLUSION

This research focused on the assessment of effects of indiscriminate logging on tree sustainability, the factors that promote their occurrence as well as ways of mitigating the effects of indiscriminate logging in the study area. Based on the findings, it is evident that the area is significantly impacted by indiscriminate logging activities. The forests are not being managed sustainably primarily due to the active presence of indiscriminate loggers who exploit these resources without regard for environmental regulations or conservation practices. Despite a high level of awareness about the negative impacts of indiscriminate logging among the respondents, young people and men are predominantly responsible for these activities. Proper monitoring and supervision are limited by inadequate resources and equipment, insufficient manpower and a lack of coordination among government agencies. If this menace is unchecked the future of our indigenous trees remains bleak.

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RECOMMENDATIONS

Based on the result of this finding, the following recommendations are hereby suggested.

1. Government should provide job opportunities for youth to reduce the level of unemployment in order to alleviate indiscriminate logging in the study area.

2. Raising awareness on sustainable forest management and the effect of indiscriminate logging on the environment.

3. Government and non-governmental organizations should educate the public on sustainable forest management and provide tree seedlings to encourage tree planting.

4. Governments should ensure that task forces responsible for forest protection composed of qualified personnel rather than being influenced by political considerations.

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