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Illegal Logging in Rural Southeast Nigeria: Implications for Environmental Crime and Ecological Sustainability

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ABSTRACT

In Nigeria, illegal logging in the rural areas is more complicated with the weak legal frameworks on environmental laws and crime, which lacked specificity and clear implementation strategies. Illegal logging in the rural Southeast Nigeria, though not visible to the international community, is much escalating following the level of poverty and ignorance among the population. Although a number of studies have scratched the issue of illegal logging at least, in Nigeria, however, the complex nature of the issue in Southeast Nigeria is yet to reflect on the current literature. In view of the aforementioned, this study investigated the public perception of environmental crime and involvement in illegal logging in southeast Nigerian rural communities. The study applied survey design involving 1080 adults (18+) living in rural communities in the region. Data were collected with questionnaire and analyzed using descriptive and inferential statistics. According to the findings of the study, majority of the respondents (88%) indicated observing frequent logging activities in the rural communities in Southeast Nigeria. Knowledge of environmental law involving community forest reservation was predicted by education, occupation, duration of residency, ecological knowledge, etc. ($p < .05$; $R^2 = 52.4$), while frequent logging in the southeast rural communities can be predicted by age, education, knowledge of traditional use of economic trees, frequency of government visitation to the communities, knowledge of forest laws, etc. ($p < .05$; $R^2 = 61.8$). The study concludes that concerted efforts in including the rural population in the ongoing global ecological sustainability of forest and economic trees among the developing nations will go a long way in changing the current narrative in forest and economic tree conservation.

Keywords: Environmental law, illegal logging, green crime, rural-Southeast Nigeria, social ecology

Introduction

Human relationship with the natural environment ought to be biocentric as opposed to the current anthropocentric disposition. While the natural environment in its harmonious existence provides man with the necessary facilitation for life, such as a conducive atmosphere, harmonious coordination between the biosphere and the unfriendly planets, food crops, etc., pro-environmental communities sustain the natural environment through pro-environmental behaviors that can save the natural environment from activities of man to safeguard against pollution (Center for Biological Diversity, 2020; Congressional Research Service, 2016; Diaz et al., 2019; Kaye, 2013). While the sustainability of the natural environment is increasingly at the mercy of human population, much of the activities endangering the health of natural environment are dependent on the extent of knowledge of the ecosystem and ecological harmony among the human population (Gómez-Baggethun et al., 2013; Aswani et al., 2018). More importantly, understanding of the extent of contribution of natural environment to the survival of man depends on the knowledge of the realities of social ecology and framework of human behavioral control among humanity (Janmaimool & Khajohnmanee, 2019; Jurdi-Hage et al., 2019; Mifsud, 2011; Okafor et al., 2023).

From communities around the world, human behavioral disposition toward the natural environment has been observed as a salient factor to the shift in the occurrences of natural events signaling gradual degradation of the lithosphere, hydrosphere, and the atmosphere in their sustaining capacity to the inhabitants (Ahn et al., 2016; Searchinger et al., 2014; Vollan, 2019; Williamson et al., 2018). While the shift in the natural environmental occurrences has been reasonably blamed on the emergence of industrialization (Mgbemene et al., 2016; Sarkodie et al., 2020), the micro-anti-environmental activities among communities and individuals

have proven to be one of the worst challenges to biodiversity and ecological sustainability across the globe (Pyhälä et al., 2016; Reyes-García et al., 2016, 2017; Rondelli et al., 2014). Although the developmental divide between the global north and the global south has soft-pedaled the pace of the supposedly ecological disaster in our geological time-scale due to continuous research and workable environmental policies among the developed nations (OECD, 2012), the rate of the occurrences of the destruction of flora and fauna species among the developing nations due to poverty, ignorance of the essence of ecological balance, and obsolete/uninformed environmental policies has been on the increase (Fukuda et al., 2016; International Labor Organization, 2011; Zhao, 2019).

Among the developed nations as can be found in Europe and North America, the protection of the flora and fauna species for biodiversity/ecological balance has found its way into the regular health and environmental policies, with the popular support of the masses (Howes et al., 2019; Šoja et al., 2016). Courtesy of informed policies, the approach has made the population, at least, knowledgeable of human existence as well as the obtainable environmental/conservation crimes domestically and internationally (Amoah & Addoah, 2021; Khalid, 2015; Latifa et al., 2015; Omara et al., 2013). Notwithstanding, the dearth of scientifically informed policies and definitional issues with the local and international criminological framework on environmental/ecological crimes in the developing nations has continued to fuel anti-biodiversity behaviors among the developing nations (Nellemann et al., 2014, 2016). This is exhibited in the ignorance of the extant environmental laws as well as policies among this population with undesirable consequences.

Nigeria, as one of the sub-Saharan African nations in the mapping of global floras and faunas for ecological sustainability, is captured as one of the nations with complex cases of illegal logging as well as the history of anti-biodiversity behavior (Lin et al., 2021; Oso & Babalola, 2018). According to Food and Agriculture Organization (FAO) (2005), Nigeria has been recorded as one of the countries with the highest rate of deforestation in sub-Saharan Africa, from 31.2% to 3.12%. Between 2002 and 2020, Nigeria lost about 14% of its primary forest through logging, timber exportation, subsistence agriculture, and collection of wood for fuel (Bösch, 2021; United Nations Department of Economic and Social Affairs, 2021). Before its independence in 1960, Nigeria had a massive forest reservation, amounting to about 23,850,117.2 acres of land, representing 27% of the total forest cover; 10% of the total land area was reserved as a protected area. While 66% of the forest reserves lie in the Savannah region of the country, 20% fall within the humid tropical zones in southern Nigeria and 4% are fresh water and mangroves of the coastal south (UNEP REDD Program, 2016). According to the Nigeria Conservation Foundation (NCF, 2018), Nigeria has lost over 96% of its natural forest cover, and the deforestation rate is at an alarming rate of 11.1% per annum.

While domestic use of forest products such as timber is suspected to be fueling deforestation at a high rate in Nigeria, research has shown that Nigeria is among the sub-Saharan African nations through which high-profile illegal logging products find their way into the international market (FAO, 2020). Equally, the problem of deforestation and logging in Nigeria has been discovered to be highly connected to the high demand for certain species of woods and other forest products from Nigeria in the American, European, and Asian markets (FAO, 2020). For instance, according to the Environmental Investigation Agency (EIA, 2021), by 2018, wood products exported from Nigeria to European, American, and Asian markets were as follows: China ($290,451,892),

Vietnam ($40,138,792), Poland ($14,681,969), India ($14,560,798), and Lebanon ($11,233,433), respectively. More importantly, while there has been a concern about the extent of deforestation and illegal logging, especially among the regions of the country where there are significant amounts of forest reserve, in Southeast Nigeria, with relatively insignificant forest reserve, there has been evidence of much deforestation activity. According to FAO (2001), deforestation by region across Nigeria was as follows: 48% in the North-central, 7% in the North East, 60% in the North West, 53% in the South East, 13% in the South-South, and 12% in the South West. Much of the deforestation and tree logging in the Southeast Nigeria has been on the communal and local basis involving economic trees and communal forests. However, in recent times, the majority of these trees and forest reserves have been logged without any traditional procedure or rather with outright compulsion of the elders of families and communities by the agents of wood merchants to give their consent to incessant logging of this class of ecological materials.

Traditionally among the inhabitants of the rural communities in Southeast Nigeria, popular opinion among the people dominates the minority when it comes to certain issues such as cutting down ancestral trees and trees in communal forests; this is dependent on their knowledge and perception of the issue at hand. As a matter of research and policy interest, the present study was designed to investigate the public knowledge and perception of ecological crime and logging of communal/family economic trees among the rural communities in Southeast Nigeria and how these are connected to the ongoing logging of ancestral and communal economic trees. According to UNEP (2016), "Although the definition of 'environmental crime' is not universally agreed, it is most commonly understood as a collective term to describe illegal activities harming the environment and aimed at benefitting individuals or groups or companies from the exploitation of, damage to, trade or theft of natural resources, including, but not limited to serious crimes and transnational organized crime" (p. 17).

In Nigeria, ecological/environmental crime through environmental policy has been available for decades with minor or no recognition at different levels across the nation such as the federal, state, and local government levels. The first Forestry Act was enacted in 1937, which established a forest reserve system under the regional (state) governments. There was an establishment of a somewhat all-encompassing forest management law in the year 1956 by the then regional government of the eastern Nigeria; the law catered for the preservation and management of forest reserves in Eastern Nigeria. However, keen observation showed a lack of clarity in the specific responsibilities of the three tiers of government. State governments are empowered with the management of forest resources and the coordination of forest development activities with local communities. With the pressing need for the understanding of public knowledge about environmental crime in relationship with the perception of family/communal economic tree logging in Southeast Nigeria, the present study focuses on answering the following research questions:

I.   What is the attitude of people toward ancestral and communal economic tree logging among the southeastern Nigeria rural population?
II.   What is the level of enforcement of environmental law against illegal logging in rural Southeast Nigeria?
III. What are the predictors of knowledge about environmental crime among the population?

IV.   What are the predictors of involvement in ancestral and communal economic tree logging among the rural population in Southeast Nigeria?

Material and Methods

There are five states in the Nigerian southeast geopolitical zone, which are also made up of local government areas and local communities; this can be seen on the map of the five states in Southeast Nigeria (Figure 1). The local government areas are made up of rural and urban settlements; however, the bulk of the local government areas is made up of rural communities. The focus of this study was on the rural communities located within the local government areas. The rural communities were chosen for the study owing to the fact that ancestral/communal economic tree logging in this part of the world takes place in the rural communities with rural forests. Equally, among these communities, economic trees making up the majority flora in the region are embedded in the traditional lives of the rural dwellers such that families and communities have ancestral forest reservations, which are sacred in most cases. Apart from the government efforts in setting up forest reservations across the nation, among the rural dwellers in the Southeast Nigeria, majority of which are Igbo, the culture of family and communal forest reservation has been practiced for centuries. However, in recent times, there is a gradual retrogression in this culture, which appears sometimes as the evidence of capitalism overtaking the hitherto rural communities running on the nature-friendly philosophies as it has to do with conservation.

Although the global community and the Nigerian government in particular, in principle are working against deforestation and destruction of faunas and floras, the rate at and temerity with which the loggers perpetuate the environmental crime in the region point to an illicit collaboration between individual/group syndicates in Nigeria and corporate bodies elsewhere. Much more important to the present study is the observation over time that this environmental crime is committed by few individuals who disguise themselves as championing for civilization and sometimes using Christian religious practices and conceptions that these trees located in different community settings and forests are being inhabited by demons and need to be cut down in order to deliver the families and communities involved. Apart from convincing the few elders in the families and communities who are custodians of the culture of conservation, they collaborate with the ignorant members of the communities to compel the elders resisting the move or even sometimes go behind to cut these trees without informing the elders.

The study applied the Taro Yamane formula in developing the sample size for the study. This is expressed as:

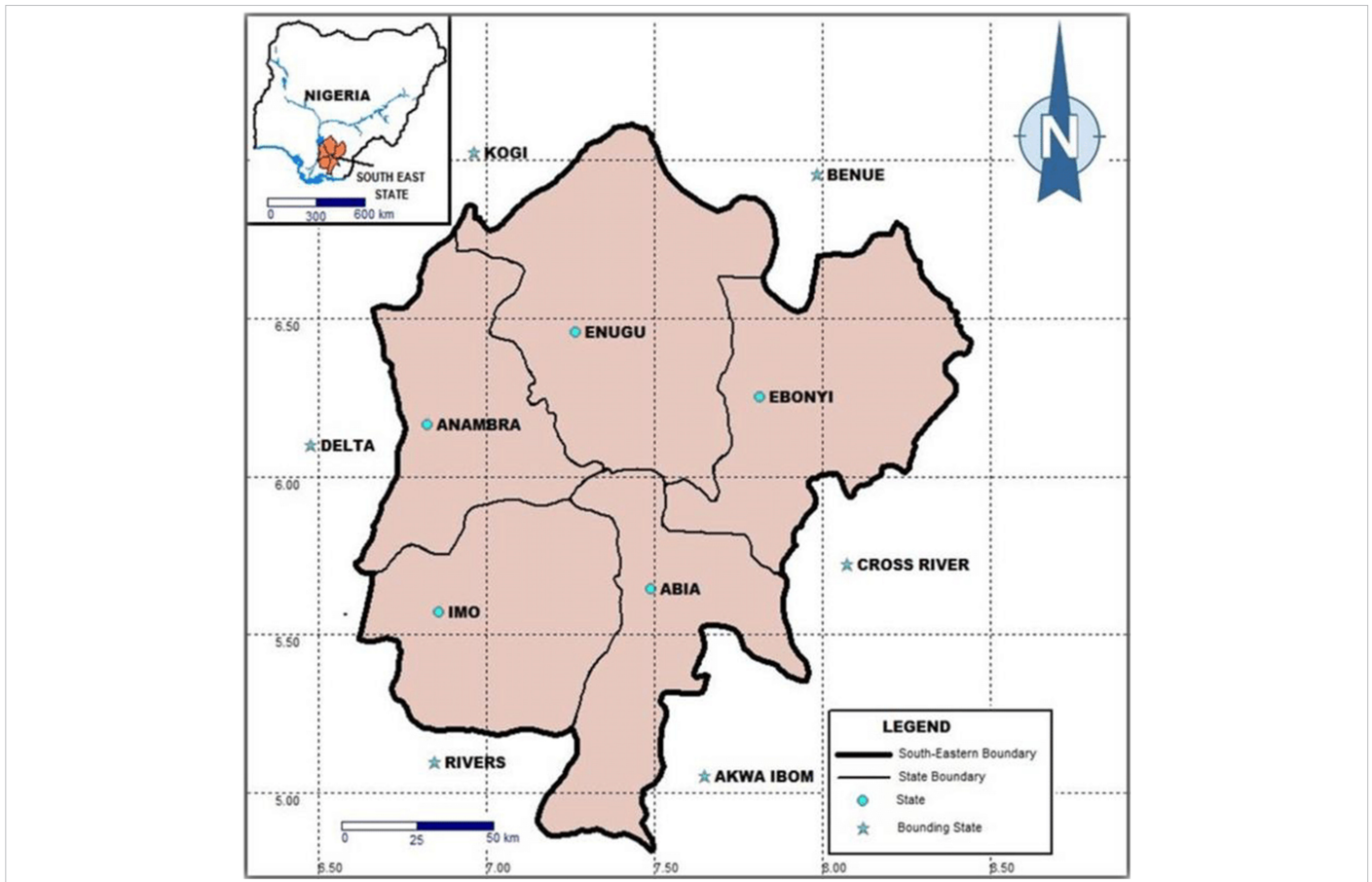$$N = \frac{N}{1 + N(e)2}$$

where N = sample size

1 = constant

Figure 1.
Map showing the five administrative states in Southeast Nigeria, the area of the study.Kayode et al., 2019

N = the finite population

e = level of significance (or limit of tolerance error).

From the five states in the Southeast Nigeria, three states were randomly selected for the study. Within the three states selected for the study, four local government areas were selected from each of the selected states, making a total of 12 local government areas for the study. However, in each of the selected states, a random sampling technique (balloting) was adopted to select four local government areas from the list of the local government areas. Simple random sampling (balloting technique) was applied to select three communities from each of the randomly selected local government areas, making them 36 local communities for the study.

The study narrowed down to the electoral wards before the selection of the households. At electoral wards, the study selected 5 electoral wards from each of the selected communities, local government areas, and states bringing together 180 electoral wards for the study. From the electoral wards selected for the study, 3 households were selected, while two respondents were selected from each of the households using purposive sampling technique. A total of 1080 adult males and females from 18 years and above were selected from the 540 households, 180

electoral wards, 36 local communities, 12 local government areas, and three states from the region using inclusive criteria such as individuals who have, at least, lived in these rural communities for 15 years or more.

The instrument for the study was a survey questionnaire developed on nominal and ordinal scales with specific focus on the indices of individuals' and group perception of environment-related crimes, with a specific focus on predisposition to knowledge about environmental crime and logging of economic trees in the rural communities. The data collected were coded and analyzed using Statistical Package for the Social Sciences Statistics, version 23 (IBM SPSS Corp.; Armonk, NY, USA), while the research questions guiding the study were answered with descriptive and inferential statistics such as correlation and linear models.

Results

Table 1 presents the sociodemographic information of the respondents. According to the table, the majority of the respondents (63.1%) are males, while 36.9% are females. In the age categorization, 15.7% of the respondents are within the age bracket of 18–23, 31.7% are in the age category of 24–29 years, 31.5% are in the age category of 30–35 years, 10.6% are in the age category of 36–41 years, while 5.3% are in the age categories of 42–47 and 54 years and above, respectively. Of

Table 1.
Sociodemographic Information of the Respondents

Variables		N	Percentage (%)
Respondents' gender	Male	682	63.1
	Female	398	36.9
Respondents' age	18–23	170	15.7
	24–29	342	31.7
	30–35	340	31.5
	36–41	114	10.6
	42–47	57	5.3
	54 years and above	57	5.3
Respondents' education	Primary/secondary	397	36.8
	NCE/diploma	456	42.2
	HND/degree	170	15.7
	Masters and above	57	5.3
Respondents' religious affiliation	Christianity	740	68.5
	Islam	114	10.6
	Traditional religion	226	20.9
Respondents' occupation	Unemployed	170	15.7
	Artisan/trader	284	26.3
	Civil servant	285	26.4
	Self-employed	341	31.6
Duration of residency in the rural community	Less than ten years	227	21.0
	Up to ten years	455	42.1
	Up to 15 years	114	10.6
	More than 15 years	284	26.3
Total		1080	100.0

Note: HND = Higher National Diploma; NCE = National Certificate in Education.

the respondents, 36.8% are educated to the level of primary/secondary school, 42.2% are educated to the level of National Certificate in Education (NCE) and Diploma, 15.7% are educated to the level of Higher National Diploma and degree, while only 5.3% were educated up to masters and above. On the religious affiliations of the respondents, the majority of the respondents (68.5%) are Christians, 20.9% are adherents of African Traditional Religion, while 10.6% are Muslims. Of the respondents, 15.7% indicated to be unemployed, 26.3% are artisans/traders, 26.4% are civil servants, while 31.6% are self-employed.

Twenty-one percent of the respondents have lived in the rural communities for less than ten years, 42.1% of the respondents have lived in the rural communities for up to ten years, 10.6% have lived in the rural communities for up to 15 years, while 26.3% have lived in the rural communities for more than 15 years.

Table 2 showed other substantive variables of the study. According to the table, 21.1% of the respondents indicated that they had very poor knowledge of traditional use of economic trees, 21% had fair knowledge of such, 15.8% had good knowledge, while 42% indicated that they had excellent knowledge of traditional use of economic trees. On the availability of communal and family mini forest and economic tree reservations, 68.3% of the respondents indicated that they had family/communal economic trees and forest reservations, while 26.4% indicated otherwise. On the knowledge of ecological harmony involving the trees and the animals, 10.6% of the respondents indicated that they had very poor knowledge of social ecology, 26.4% had fair knowledge, 57.9% had good knowledge, while only 5.2% had excellent knowledge of social ecology. Majority of the respondents (58.1%) had poor or no knowledge about environmental laws involving forest and tree reservation, 5.3% had fair knowledge, 31.5% had good knowledge, while 5.2% indicated having excellent knowledge of the environmental laws involving forest and tree reservations.

According to the distribution above, 15.8% of the respondents strongly disagreed as well as disagreed, respectively, that indiscriminate destruction of faunas and floras can constitute a crime, 36.9% agreed, while 31.5% strongly agreed. On the frequency of indiscriminate cutting of trees in the rural communities, 10.5% of the respondents indicated the absence of such in their families and communities, 31.7% indicated the rare occurrence of such in their families and communities, 26.3% indicated that they sometimes are involved, while 31.6% of the respondents indicated regular involvement in the indiscriminate cutting of economic trees. Among the rural communities in Southeast Nigeria, 21.1% of the respondents indicated that people secretly sell and cut down economic trees without due consultations, 78.9% indicated that cutting down economic trees from the family and community forest reservations was done through family and community agreement; 68.5% of the respondents indicated that the environmental law agents do not visit their communities at all, 15.8% witness such visitation rarely, while 15.6% witness such visitation sometimes. In any case, there is no frequent visitation of the rural communities for environmental updates by the environmental law agents. On the perception of involvement of the government in the management of economic trees, 42.2% of the respondents strongly disagreed, 21.1% disagreed, 5.3% agreed, while 31.4% strongly agreed. Some factors are pushing people into indiscriminate cutting of trees in rural communities, which includesmaking money and wealth out of them (57.9%), destroying demons' abodes (26.4%), and because the trees being considered causing danger to Christianity and development in the rural communities. Meanwhile, only 26.4% of the respondents indicated that there is replacement of trees when they are cut down in their communities, while 73.6% indicated otherwise.

From Table 3, a number of factors do encourage as well as hinder the knowledge about environmental laws. Knowledge about environmental laws is anchored on a number of factors from the result below such as education of the respondents, religious affiliation, duration of residency in the rural community, and frequency of visitation by the government environmental law agency to the rural communities; knowledge about environmental laws can be altered or hindered by the gender, age, occupation of the respondents, ecological knowledge, and the perception of involvement of the government in the management of economic trees in the rural communities.

Environmental crime, as tested in the model on Table 4, can be predicted by a number of factors domiciled with the rural population in the Southeast Nigeria. Among other things, environmental crime involving indiscriminate cutting of trees can be predicted or rather encouraged by educational levels among the people, religious affiliation, duration of residency in the communities of the rural areas, knowledge of the traditional use of economic trees, and the extent of visitation by the government environmental agencies. However, environmental crime can be discouraged by such factors as gender, age, occupation, ecological knowledge, and knowledge about environmental laws.

Discussion and Conclusion

There is evidence of poor or no knowledge about environmental laws involving forest and tree reservation from the study; this, in view of the major thrust of the study, revealed the lacuna in the policy development and implementation, as it involves the rural dwellers and the forest management. The problem is mostly connected to the awareness of the extant environmental policies and forest laws, which are the specific responsibilities of the government to keep the population posted on the existing policies. Among other things in the developing nations, environmental issues involving plants and animals are unconsciously avoided. While the policy issues such as obsolete policy framework and weak policy implementation are held responsible for this lacuna in policy management (Okafor et al., 2022a), the overall issues of seeing the environmental elements as inanimate objects or lacking rights for protection are equally invoked here (Lynch, 1990, 2020; White, 2008). Things that receive attention by any government have a way of becoming public agenda, while things that are technically and unconsciously ignored by the government are relegated to the background (Ruggiero & South, 2013; Walter, 2010; White, 2010). For instance, 68.5% of the respondents indicated that they are not aware of the activities of the environmental law agents who ought to be visiting and familiarizing the local population with the current information on environmental management in the local councils from time to time. This situation is mostly responsible for the ignorance of the population about the extant laws and duties of keeping the environmental resources such as economic trees because of their contribution to the overall ecosystem. The absence of the environmental protection agents automatically keeps the population in the dark in terms of awareness of their relationship with the fauna and flora as well as their expected responsibilities in maintaining the ecological harmony, which is one of the main aims of forest and economic tree reservation and preservation. This affirmed other studies, which discovered that environmental crime in most settings and developing nations is the function of public perception and understanding of the position of the floras and faunas in the symbiotic relationship between man and nature (Amoah et al., 2021; Okafor et al., 2023). From the findings of the

Table 2.
Other Substantive Variables of the Study

Variables		N	Percentage (%)
Knowledge of traditional use of economic trees	Very poor	228	21.1
	Fairly	227	21.0
	Good	171	15.8
	Excellent	454	42.0
Family and community economic trees and forest reservations	Yes	738	68.3
	No	285	26.4
	Don't know	57	5.3
Knowledge of social ecology	Very poor	114	10.6
	Fairly	285	26.4
	Good	625	57.9
	Excellent	56	5.2
Knowledge about environmental laws involving forest reservation	Very poor	627	58.1
	Fairly	57	5.3
	Good	340	31.5
	Excellent	56	5.2
Perception of ecological crime	Strongly disagree	171	15.8
	Disagree	171	15.8
	Agree	398	36.9
	Strongly agree	340	31.5
Frequency of involvement in indiscriminate cutting of trees in the communities for money	Not at all	113	10.5
	Rarely	342	31.7
	Sometimes	284	26.3
	Often times	341	31.6
Protocols in selling and cutting of the family and community trees	By individual secret bargaining	228	21.1
	Through family/community agreement	852	78.9
Frequency of visitation to the communities by the environmental law agents	Not at all	740	68.5
	Rarely	171	15.8
	Some times	169	15.6
Public perception of involvement of government in the management of family and communal economic trees	Strongly disagree	456	42.2
	Disagree	228	21.1
	Agree	57	5.3
	Strongly agree	339	31.4
Reasons for the cutting of family and communal economic trees	Making money and wealth out of it	625	57.9
	Destroying demons' abode	285	26.4
	Trees are causing danger to Christianity and development	170	15.7
Replacement of the trees when they are cut down	Yes	285	26.4
	No	795	73.6
Total		1080	100

study, one of the factors pushing people into indiscriminate cutting of trees in the rural communities is making money and wealth out of them according to 57.9% of the respondents, while more than one-quarter of the respondents (26.4%) indicated that indiscriminate cutting of trees is because of the trees being considered, causing danger to Christianity and development in the rural communities. These are indices of developmental capacity of the people in the rural communities in this region qualitatively and quantitatively. Developmental level in Nigerian international outloook, which has sharp contradiction with socioeconomic realities on ground is mostly reflected on the knowledge and attitude to climate change related issues such as the use and protection of forest resources. Following the concept of qualitative development,

Table 3.
Logistic Regression on Knowledge about Environmental Law Involving Community Forest Reservation

	B	SE	Wald	df	Significance	Exp (B)
Gender	−0.556	218	6.517	1	.011	574
Age	−0.172	100	2.967	1	.085	842
Education	0.353	113	9.789	1	.002	1.423
Religious affiliation	1.396	191	53.420	1	.000	4.041
Occupation	−1.010	181	31.062	1	.000	364
Duration of residency in the rural community	777	130	35.581	1	.000	2.176
Knowledge of traditional use of economic trees	202	132	2.347	1	.125	1.224
Ecological knowledge	−0.870	273	10.155	1	.001	419
The frequency of government visitation to the communities	2.455	232	111.532	1	.000	11.644
Constant	−4.223	908	21.614	1	.000	015

Note: N = 1200; overall percentage classified = 84.8%; goodness-of-fit test = 0.243; χ^2 value = 373.1 (df9); Cox & Snell R^2 = 36.7; Nagelkerke R^2 = 52.4.

the population is still lacking in the current global practice in the management of human population and the flora and fauna, which is the product of environmental research informing sustainability policies that capture human preservation of the forest resources (Ahn et al., 2016; Eman et al., 2009). More importantly in connection with this finding, environmental crimes such as logging of trees and indiscriminate deforestation are much practiced in the rural communities, where ignorance of the ecological harmony and poverty dominate the atmosphere over the population according to the findings of other studies (Gómez-Baggethun, 2013; Okafor et al., 2022a). While the specialized knowledge of the flora and fauna is a more complex thing to the rural population in this part of the world, the common understanding of these elements is embedded in the local content of their possession of landed properties, which includes the communal ownership of lands, economic trees, family, and communal forests. From the findings of the study, 57% of the respondents indicated that cutting down the forest and economic trees in the region is connected to socioeconomic poverty, and more

than 70% of the respondents indicated that the trees being cut down are not replaced in any form, showing that the population is invariably out of tune with the global concern on the impacts of deforestation on the climate change. Also from the findings, knowledge of the use of forest resources is more or less connected to the traditional knowledge of the use of economic trees among the population, which in any case, is the activities involving community deities, ancestral counting of the men who have passed through a lineage, and more recently, collaboration with timber merchants in the selling and cutting of economic trees as means of making wealth; this is supported by the fact that more than one-fourth of the respondents (26.4%) accepted that cutting down forest and economic trees was in an effort to destroying demons' abode and considering these trees as causing danger to Christianity and development in the rural communities. The finding supported other earlier studies, which captured the belief and traditional dimensions of deforestation especially in Africa (African Forest Forum, 2019; Duguma et al., 2018).

Table 4.
Logistic Regression on Illegal Logging in the Southeast Rural Communities

		B	SE	Wald	df	Significance	Exp (B)
Step 1[a]	Gender	−0.332	175	3.597	1	.058	718
	Age	−0.041	074	301	1	.000	1.042
	Education	.0044	103	181	1	.000	1.045
	Religious affiliation	0.055	148	137	1	.712	1.056
	Occupation	−.289	138	4.372	1	.000	1.336
	Duration of residency in the rural community	0.264	098	7.335	1	.000	1.303
	Knowledge of traditional use of economic trees	0.200	108	3.456	1	.000	1.222
	Ecological knowledge	−0.423	208	4.135	1	.000	655
	The frequency of government visitation to the communities	1.205	165	53.597	1	.000	3.337
	The necessity of consulting government before the cutting of family and communal economic trees	−0.030	186	025	1	.874	971
	Knowledge about environmental laws	1.128	143	62.128	1	.000	324
	Constant	−3.428	735	21.782	1	.000	032

Note: N = 1080; overall percentage classified = 76.7%; goodness-of-fit test = 0.234; χ^2 = 598.27 (df11); Cox & Snell R^2 = 43.2; Nagelkerke R^2 = 61.8.

As a region lacking forestation (official government forest reserve), the tree shades in the region and mini forests obtainable in the region are the by-products of communal and family reservations for boundary, religious, and lineage/ancestral activities. Among the population, about 68% indicated that they maintained family- or community-owned forest reserves, which, in any case, are liable to communal and family decision when demand arises to cut these trees down for socioeconomic purposes. Although this is not observed and utilized by the government as a sustainable alignment to maintain economic trees and forest reserves, the belief system and local tradition among the people remain unexploited opportunities in the move for environmental sustainability. This aligns with the findings of Gómez-Baggethun et al. (2013) and Khalid (2015) whose studies showed the importance of traditional knowledge and belief system among the population to the overall environmental sustainability. From the findings of the study, the majority of the respondents (68.5%) indicated that they had no knowledge and contact with the local environmental protection agency who were supposed to be visiting the local communities for awareness and updates. This showed the structural weakness of the public institutions saddled with environmental responsibilities such as policy awareness, implementation, and feedback to the system. The environmental laws and policies guiding the use and maintenance of forest and economic trees in the region are very weak and lack consistency in implementations and evaluations due to attending manpower gaps and laxity. While on the side of the government, ecological consciousness has been overtaken by corruption and maladministration among the local, regional, and federal government, the local population is trapped ignorance of the extant policies and the population's responsibilities in effecting these policies. As a matter of fact, government agents' visitation to the communities and public perception of government involvement in the management of forest and economic trees were significant predictors of illegal logging of the forest and economic trees among the local population in the region.

More than 78% of the respondents indicated that they involve in the cutting of economic and forest trees through family/communal agreement, while more than 63% of the respondents indicated that they disagree that government should be involved in the cutting of economic and forest trees in their families and communities. The above scenario affirmed the lacuna between the government and the local population, which is the function of corruption and manpower failure in the local councils that cannot meet up with the basic responsibilities of familiarizing the population with the current approach to the management of forest and economic trees. Although government has the power to make and implement environmental policies, the inclusion of the population through awareness campaigns and familiarization visits cannot be overemphasized. In the early 1980s and 1990s in Southeast Nigerian region, there was constant visitation by the government environmental inspectorspopularly known as "sanitary" who in their government capacities visited the local communities to inspect the environment both domestic cleanliness and general environmental outlook. Within this period, the sanitary did mark trees to be cut down when they were in dangerous positions toward the buildings and public places. Equally, the environmental inspectorswere consulted before economic trees were cut down though certain documentations; the failure of this system due to corruption eventually affected the public perception of government involvement in the management of forest and economic trees. The findings of the study affirmed the earlier studies by Okafor et al. (2022a, 2020b), which revealed the essence of government engagement with the rural and urban communities in the sustainable management of the environment and promotion of pro-environmental behavior among the local population.

Knowledge about environmental law among the population, which seems to be strategically relevant in drawing the population to the indices of the global ecological sustainability agenda, is anchored on education of the respondents, religious affiliation, duration of residency in the rural community, knowledge of the use of economic trees, and frequency of visitation by the government environmental law agency to the rural communities. Education plays a role in the coordination of socioeconomic policies among the rural population, like in the case of knowledge of the extant environmental laws. However, to a greater extent, this avenue is not properly utilized by the government institutions saddled with environmental protection responsibilities; for instance, a majority of the respondents (58.1%) indicated that they have no or little knowledge about environmental laws in the locality, showing the gap in communication of this information (environmental laws) through the educational institutions since education has wide coverage among the population, as more than 60% of the respondents have been educated up to NCE level and above. Duration of residency in the area as a significant predicting factor to knowledge about environmental laws in this context points to the fading shadow of the earlier formidable local environmental agents who, by regular interactions with the local population, created an atmosphere of consciousness about pro-environmental behavior. The older generation of the local population seems to have a remnant of this impression, which seems to have faded off. In Southeast Nigeria, there is a tradition of acculturating people into the old tradition that has lasted for years, especially when it has to do with the government and the local population. However, this consciousness and the accompanying elements can fall into disuse when there are no agents of sustainability to the consciousness itself.

Involvement in the indiscriminate cutting of economic trees is predicted by factors such as educational levels among the people, religious affiliation, duration of residency in the communities of the rural areas, knowledge of the traditional use of economic trees, the extent of visitation by the government environmental agencies, and perception of government involvement in the management of economic trees. Education as a factor here indicated that within the rural communities, the level of literacy among the population is being fed on by the few educated. Family and communal economic trees as well as forest trees in this locality are logged by individuals who are informed educationally and are trusted by the families and communities as making some better decisions for them. As such, some educated fellows have used this as a cover to compel families and communities to go into selling of economic and forest trees sometimes on the account of development projects and casting out suspected deities living in these trees. Equally, religious affiliation represented the growing challenge of deception by the few who used the excuse of destroying demons' abodes and development to bring the elders in the communities to agree to the indiscriminate cutting of trees ostensibly to make money from the available family and communal trees and forest reserves. Other studies by other scholars have shown the nexus between education among the local population and involvement in tree logging, thereby pointing out the relevance of educational institutions in environmental management (Pyhala et al., 2016; Reyes-García et al., 2016). This is affirmed in this study, as the findings show the interwoven relationship between education and other factors of tree logging in the region.

Indiscriminate cutting of trees, as they are obtainable in this locality, constitutes an ecological crime as they occur without a particular pattern aimed at replacing these trees and protecting the endangered species among these trees. Although the policies and extant laws regarding the right of the fauna and flora, as well as the legal implication of ecological balance to the local population, are not strong presently, the poor attitude of the

local population toward the natural environment, such as indiscriminate cutting of forest and economic trees, constitutes a crime against the fauna and flora and a crime against the voiceless, as critical victimology thesis captured it (Eman, Mesˇko & Fields, 2009; Lynch, 2020). The overall impression and image of ecological crime in the rural communities in Southeast Nigeria point to the lacuna in the implementation of environmental policy among the rural communities in Nigeria, which is connected to the larger crime framework in Nigeria lacking any substantive approach. While the general crime analysis in Nigeria lacks any consistent commitment by the federal, state, and local government areas, the specialized ecological crime appears to be worse off, as the crime against the flora and fauna seems to be totally unnoticed among the population, reflecting the position of green criminology and critical victimology, which captures the flora and fauna as the victims of the ongoing environmental crime.

Recommendations

From the findings, the study recommends that government should harmonize the synergy between the local communities and government environmental management institution in order to create a sustainable platform of awareness about government environmental and forest policies; forest and environmental education should be embedded in the basic educational curriculum to harmonize the environmental citizenship education among the population; local community leaders should be incorporated in the environmental policy implementation, as a strategy of maintaining a holistic environmental surveillance in the region.

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