

Rate of timber harvest and the effects of illegal activities on forest conservation in Southwestern Nigeria

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Abstract. Daramola JO, Adesuyi FE, Olugbadieye OG, Akinbowale AS, Adekunle VAJ. 2020. Rate of timber harvest and the effects of illegal activities on forest conservation in Southwestern Nigeria. *Asian J For* 5: 8-16. Availability of accurate data on timber harvest is very important for sustainable forest management. These data are not readily available, making forest management more complex. This study aimed at investigating the rate of timber harvest, illegal activities and its impacts on forest conservation in Osun State Forest Reserves. The selected reserves were Shasha Forest Reserve (SFR), Ago-Owu Forest Reserve (AFR), and Ikeji-Ipetu Forest Reserve (IFR). Data were collected using two sets of semi-structured questionnaires. One for the forest community dwellers and the other for forest officers. Simple random sampling was used to select 120 respondents from the population of concessionaires, saw millers, rural community dwellers, taungya farmers, and the government officers in the study area. Secondary data was collected and compiled from the State Forestry Department to provide results for timber harvested only in SFR from January to July 2019. The results revealed that SFR is under massive timber exploitation as illegal logging and timber processing are the most prevalent driver of exploitation in this area; while AFR and IFR are degraded forest reserves marred with grazing and poaching, and illegal logging, respectively. The impacts of the illegal activities on forest conservation were categorized under economic, social, and environmental impacts. The most exploited species in SFR were *Celtis* spp. (3024 stems), *Ricinodendron heudelotii* (1789 stems), and the least exploited was *Anthocleista* spp. (3 stems). The study showed that many economic tree species that contribute to national development and rural livelihood have been exploited from the study sites and therefore recommend that timber harvesting should be carried out on a sustainable basis.

Keywords: Conservation, illegal activities, timber harvest

INTRODUCTION

The International Union for the Conservation of Nature (IUCN) describes a conserved area as “an area of land and/or sea particularly dedicated to the maintenance and protection of biodiversity, and of cultural and associated natural resources which are managed through lawful or other effective means”. The conservation areas could be in-situ or ex-situ conserved areas. In-situ conserved areas include forest reserves, game reserves, biosphere reserves, strict nature reserves, sacred grooves, national parks, etc., while ex-situ are zoological gardens, forest herbarium, botanical gardens, seed stock or gene banks, etc.

Reservation of Nigerian forest estates started in 1901 with the promulgation of the Forestry Ordinance and creation of a Forestry Department run by conservators of forests (Imasuen et al. 2013). Under most of the forestry laws and edicts, the Federal and State governments are backed by law to conserve and protect the resources of forest estates from illicit exploitation (Imasuen et al. 2013). However, nowadays most of conservation reserves could not be accounted for due to the progression of corruption in the Nigerian government, which has paved the way for people to encroach on the reserves, thereby facilitating uncontrollable rate of logging activities.

The logging activities remained lucrative for some people with its related forest degradation and deforestation

right from the colonial era (Adekunle et al. 2010). It encompasses tree felling, de-branching, skidding, loading, and primary transportation (Adekunle and Olagoke 2010). Each of the above activities has significant impacts on many people's livelihoods (Adekunle and Olagoke 2010) and the impacts are more devastating when logging activities are conducted illegally through unauthorized operations. As a consequence of the illegal actions, the loggers and concessionaires have refused to strictly adhere to the logging policies and laws enforced by the State Department of Forestry. Challenges such as illegal forest activities along with clearance of forest for agriculture, road construction and plantation establishment, uncontrolled exploitation, poor organization and funding of the forestry subsector (Adekunle 2006), population and industrial growth, and advanced civilization and politicization of the traditional laws which have made the traditional rulers abandon the custom and practice of forest, pose a serious threat to forest conservation in the country today (Adetula 2008).

Nigeria once had an extensive distribution of the tropical rainforest, which covers up to 45% of the country's landmass (WRI 2003). Most of this is now lost due to the above-mentioned challenges. This continuous loss of forest lands has led to many biodiversity crises and climatic issues in the nation, even globally. As one of the important components of the tropical forest, tree species are fundamental to rainforest biodiversity (Olawoyin et al.

2020). Hence there is a need to research the rate of timber harvesting and the effect of illegal activities on forest biodiversity and conservation. This research is important to be carried out as causes of frequent loss of forest reserves in the study area were strictly dealt with and the current status of forest conserved areas was made open to the residents of the areas. All of these were tailored towards opening the eyes of the bodies concerned with measures and policies to be taken by them to prevent further loss of forest in conserved areas in Nigeria.

MATERIALS AND METHODS

Study area

This work was carried out in communities located around Shasha Forest Reserve, Ago-Owu Forest Reserve, and Ikeji Ipetu Forest Reserve (Figure 1).

Shasha Forest Reserve (SFR)

SFR is located at 7.0935° N, 4.4182° E with an elevation of 146 m above sea level in Osun State, Southwestern Nigeria. SFR shares boundaries with Omo Forest Reserve on the west. The eastern and northern boundaries are with Oluwa Forest Reserve and Ife Native Authority Reserve in Ondo and Osun States respectively. The total size of the reserve land is currently 23,064 ha. Out of this, about 1,523 ha are under plantation of various species such as *Pinus* spp., *Nauclea diderichii*, *Gmelina arborea*, *Tectona grandis*, and *Terminalia* spp. The remaining 21,541 ha is currently dominated by degraded natural forests characterized by broken canopy. The reserve is subdivided into two major areas: Areas 4 and 5. There are about forty communities within and around the Forest Reserve. Their population ranges from 200 to 2000 inhabitants.

Ago-Owu Forest Reserve (AFR)

Ago-owu forest reserve was one of the functional forests situated under Isokan local Government, Osun State, Nigeria. It is located at 7.1929° N, 4.1207° E with an elevation level of 204 m above sea level. AFR is in a thick forest zone and it consists of 32,116 ha in the high forest area. The land area was originally 30,725 ha, but later approximately 3,522 ha was de-reserved by the then Government of Oyo state to the Coco Development unit, which was named Ago-Owu farm settlement. The working area now remains approximately 27,203 ha. The major occupations of the people in the area are farming, trading, sawmilling, and civil servicing. There are forest adjoining communities in and around the reserve. They include Mokore, Araromi Owu, Ajegunle, Alabameta, Elewe, Alaguntan, and Okodowo, in which the majority of the dwellers are farmers.

Ikeji-Ipetu Forest Reserve (IFR)

IFR is also known as Ikeji Forest Reserve and located at 7.400000° N, 4.933333° E with an elevation of 342 m above sea level. It covers 4849 ha of land. Communities located very near to the reserve include Orisunbare, Apoti, Ayetoro, Ikeji, etc. The major occupations of the people in the area include farming, trading, sawmilling, civil servicing, etc.

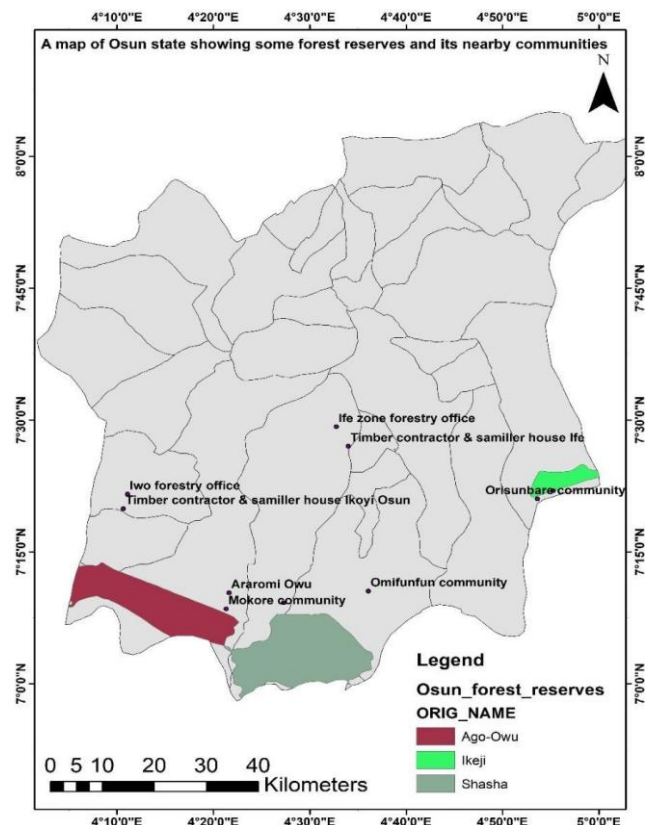


Figure 1. Map of Osun state (Nigeria) showing the forest reserves and the sampled communities

Method of data collection

Three forest reserves, which are SFR, AFR, and IFR, were purposefully selected based on their functionality. Two nearby forest communities were also randomly selected from each of the selected Forest Reserves. During the study, targeted respondents were forest officers of each Forest Reserve, saw millers, timber contractors, and taungya farmers in each selected forest community. To reach the contractors and saw millers that were few in the nearby communities, one closest community to the city (where timber contractors, saw millers and taungya farmers could be reached) was selected from the selected reserves to make a total of nine forest communities. The communities selected from SFR were Omifunfun, Araromi Oke Odo, and Ile Ife; AFR were Mokore, Araromi Owu, and Ikoyi Osun; IFR includes Orisunbare, Apoti Ayetoro, and Ilesa. List of questions is shown in Appendix 1 and 2.

Pre-tested and validated semi-structured questionnaire was used to obtain information from ten (10) randomly selected respondents in each selected Forest Reserves and in each sampled forest community to make a total of one hundred and twenty (120) respondents in the study. Finally, secondary data was collected from Osun State Forestry Department, and compiled to determine the rate of logging in SFR between January to July 2019.

Method of data analysis

Descriptive statistics were carried out on the administered questionnaire using Statistical Package for Social Sciences (SPSS) and Microsoft Excel. The expected results were presented in the form of bar charts, frequency and percentage distribution tables.

RESULTS AND DISCUSSION

Profiles of the respondents

The socio-economic information of the respondents sampled from the selected communities is presented in Table 1, while the cadre of the forest officers sampled from the selected reserves is presented in Table 2.

Table 1. Social-economic information of the respondents sampled from selected forest communities

Variable	SFR		AFR		IFR	
	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)
Age range (Years)						
0-20	1	3.3	2	6.7	1	3.3
21-40	13	43.3	11	36.7	12	40
41-60	13	43.3	12	40	12	40
>60	3	10	5	16.7	5	16.7
Total	30	100	30	100	100	100
Variable Respondents						
Saw miller	5	16.7	4	13.3	7	23.3
Timber contractor	7	23.3	6	20	4	13.3
Taungya farmer	18	60	20	66.7	19	63.3
Total	30	100	30	100	30	100
Variable Experience level (Years)						
0-5	1	3.3	2	6.7	5	23.3
6-10	2	6.7	3	10	13	43.3
11-20	9	30	10	33.3	4	13.3
21-30	12	40	8	26.7	2	6.7
> 31	6	20	7	23.3	4	13.3
Total	30	100	30	100	30	100
Variable Year of residence						
0-5	2	6.7	1	3.3	9	30
6-10	3	10	4	13.3	2	6.7
11-20	6	20	7	23.3	10	33.3
21-30	9	30	4	13.3	4	13.3
>30	10	33.3	14	46.7	5	16.7
Total	30	100	30	100	30	100

Note: SFR-Shasha forest reserve, AFR-Ago-Owu Forest Reserve, IFR- Ikeji Ipetu Forest Reserve

Table 2. Cadre of officers across the sampled Forest Reserves

Cadre	Frequency	Percentage (%)
Principal Forest Superintendent	1	4.5
Senior Forest Superintendent	3	13.6
Higher Forest Superintendent	5	22.7
Forest Superintendent	2	9.1
Forest Ranger	3	13.6
Forester	7	31.8
Forest Guard	1	4.5
Total	22	100

The level of experience of the forest officers across the selected reserves ranges from 1-5 (18.2%), 6-10 (40.9%), to 11-20 (40.9%) years.

Types of illegal activities in Osun State Forest Reserves

Types of illegal forest activities in the communities sampled are presented in Figure 2 and Table 3 respectively. Figure 2 accounts only for the proportion of respondents who claim that each of the illegal forest activities serves as a barrier in the study area, while Table 3 shows percentage of both claims. According to the respondents from the sampled communities, it is obvious that illegal occupation of forest reserve land, grazing, and poaching, and illegal Non-Timber Forest Products (NTFPs) exploitation is common most in AFR with 40%, 80%, and 40% values respectively; illegal timber processing, and illegal logging are also common in SFR with 63.3% and 56.7% values respectively; while timber smuggling is the most rampant in IFR with 43.3% value.

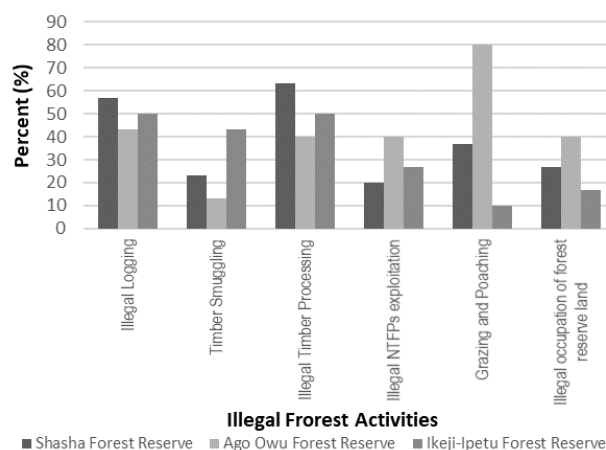


Figure 2. Illegal forest activities across the sampled communities

Table 3. Illegal forest activities common to forest reserves based on forest officers' claim

Illegal forest activities in Osun State	Yes (%)	No (%)
Illegal logging	72.7	27.3
Timber smuggling	18.2	81.8
Illegal timber processing	40.9	59.1
Practices specifically aimed at reducing payment of taxes and other fees	18.2	81.8
Illegal NTFPs exploitation	22.7	77.3
Illegal occupation of forest reserve land	9.1	90.9

Economic, social and environmental impacts of illegal forest activities on forest conservation in Osun State

The result of the economic, social, and environmental impacts of illegal forest activities on forest conservation highlighted by the sampled communities and the forest officers' claim are identified in Figure 3 and Table 4 respectively. Figure 3 accounts only for the proportion of respondents attesting to economic, social, and environmental loss as a result of the illicit forest activities in the study area, while Table 4 shows the percentage of both claims.

Across the communities sampled, it can be inferred that reduction in the revenue generated by the reserves is the most prevalent economic impact of illegal activities across SFR, AFR, and IFR with 53.3%, 43.3%, and 63.3% values respectively. Also, the result of social impacts of illicit forest activities on forest conservation across the communities sampled shows that large scale job losses mostly by the contractors are on the higher rate in AFR with 56.7% value; restricted access by local communities to forest products that provide income for small-scale local business is rampant in SFR with 36.3% value; land-use conflicts stemming from allocation of timber concession was identified most in SFR with 43.3% value; while restricted access to forest materials, including food, that is essential to the welfare of the rural people was rampant in IFR with 40% value.

Furthermore, it can be deduced from the result on environmental impacts of illicit forest activities highlighted by the respondents across the sampled communities that conversion of forest lands to agricultural lands is the most rampant across SFR, AFR, and IFR with 83.3%, 80%, and 60% values respectively, while the least environmental impact across the sampled communities is health impacts and increase in greenhouse gas emission with 6.7%, 20%, and 26.7% respectively.

Family distribution of tree species and their stems number

The family distribution of tree species exploited from SFR from January to July 2019 is presented in Table 5. The total number of families exploited is 17 with Fabaceae and Malvaceae having the highest species number (eight tree species each) and the total number of stems removed being 518 stems and 3272 stems respectively. This is followed by *Annonaceae* with five species (total of 973 stems) and *Moraceae* with four species (total of 364 stems). The total number of tree species exploited during this period was 41 tree species and 12161 stems, excluding trees without botanical names. Also, the tree species exploited most is *Celtis* spp. (3024 stems) belonging to the family Cannabaceae, while the least exploited is *Anthocleista* spp. (3 stems) from the family *Gentianaceae*. The remaining reserves have been exploited.

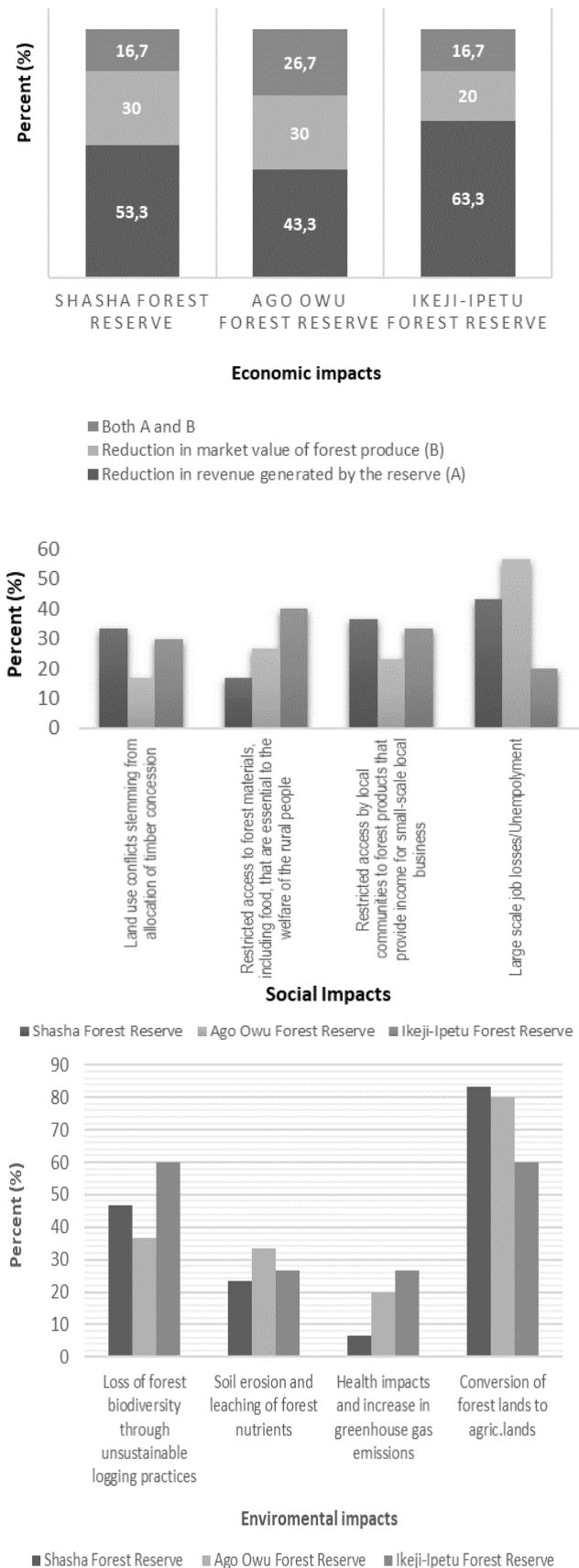


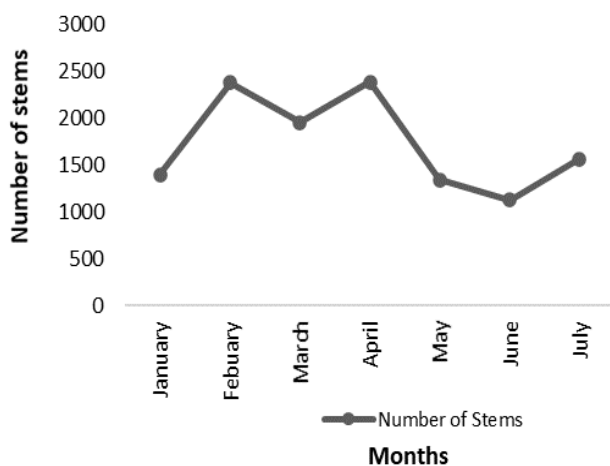
Figure 3. Economic, social and environmental impacts of illegal activities based on the sampled communities

Table 4. Economic, social and environmental impacts of illegal activities based on forest officer's claim

Economic impacts on forest conservation	Yes (%)	No (%)
Reduction in revenue generated by the reserve (A)	68.2	31.8
Reduction in market value of forest produce (B)	22.7	77.3
Both A and B	9.1	90.9
Social impacts of illegal forest activities		
Land-use conflicts stemming from allocation of timber concession	22.7	77.3
Restricted access to forest materials, including food, that are essential to the welfare of the rural people	59.1	40.9
Restricted access by local communities to forest products that provide income for small-scale local business	22.7	77.3
Large scale job losses/Unemployment	13.6	86.4
Environmental impacts of illegal forest activities		
Loss of forest biodiversity through unsustainable logging practices	36.4	63.6
Soil erosion and leaching of forest nutrients	27.3	72.7
Health impacts and increase in greenhouse gas emissions	4.5	95.5
Conversion of forest lands to agriculture. lands	59.1	40.9

Rate of logging in Shasha forest reserve between January to July 2019

The compilation of the total number of species and the total number of stems harvested in SFR for the seven consecutive months in 2019 are given in Figure 4. The number of stems removed is the highest in April, February, and March with 2388 stems, 2380 stems, and 1959 stems respectively.

**Figure 4.** Rate of timber exploitation from January to July 2019 in Shasha Forest Reserve**Table 5.** Family distribution of tree species exploited and their stems number

Family	Tree species names	No. of stands	Total no. of stands
Annonaceae	<i>Cleistopholis patens</i>	438	973
	<i>Monodora myristica</i>	56	
	<i>Alstonia</i> spp.	213	
	<i>Funtumia elastic</i>	262	
	<i>Holarrhena floribunda</i>	4	
Arecaceae	<i>Borassus aethiopum</i>	52	52
Boraginaceae	<i>Cordia millenii</i>	798	798
Cannabaceae	<i>Celtis</i> spp.	3024	3024
Combretaceae	<i>Anogeissus leiocarpa</i>	27	394
	<i>Terminalia superba</i>	367	
Euphorbiaceae	<i>Ricinodendron heudelotii</i>	1789	1789
Fabaceae	<i>Azelia Africana</i>	43	518
	<i>Amphimas pterocarpoides</i>	78	
	<i>Albizia</i> spp.	132	
	<i>Berlinia confuse</i>	47	
	<i>Brachystegia</i> spp.	119	
	<i>Daniellia oliveri</i>	4	
	<i>Erythrophleum</i> spp.	77	
	<i>Parkia biglobosa</i>	18	
	<i>Anthocleista</i> spp.	3	
	<i>Irvingia gabonensis</i>	104	
	<i>Vitex doniana</i>	74	
	<i>Bombax buonopozense</i>	86	
	<i>Ceiba pentandra</i>	136	
Gentianaceae	<i>Cola</i> spp.	407	3272
	<i>Mansonia altissima</i>	21	
	<i>Nesogordonia papaverifera</i>	283	
	<i>Pterygota macrocarpa</i>	278	
	<i>Sterculia</i> spp.	1655	
	<i>Triplochiton scleroxylon</i>	406	
	<i>Entandrophragma</i> spp.	14	
	<i>Khaya</i> spp.	67	
	<i>Trichilia monadelpha</i>	17	
	<i>Antiaris africana</i>	27	
Moraceae	<i>Artocarpus altilis</i>	13	364
	<i>Ficus</i> spp.	292	
	<i>Milicia excels</i>	32	
Myristicaceae	<i>Pycnanthus angolensis</i>	168	168
Rubiaceae	<i>Nauclea diderrichii</i>	25	25
Sapindaceae	<i>Blighia</i> spp.	82	82
Sapotaceae	<i>Chrysophyllum albidum</i>	423	423

Note: *Data source: Department of Forestry, Ife, Osun State.

Discussion

Due to lack of management planning, timber exploitation in the tropical rainforest ecosystem has become deleterious to environmental and biodiversity conservation over the years. The continuous exploitation in this ecosystem has led to an increased rate of timber harvesting, which is detrimental to the achievement of the objectives of sustainable forest management in Nigeria (Adekunle et al. 2010). The findings of this study were based on information provided by the respondents and available official documents, annual reports, and files in the state forestry service between January to July 2019. All the logging data for previous years 2018, 2017, etc. were not precise, since the track record of what is logged in the

forest was not properly kept. However, logging data before the time of data collection (late July) was provided, might be as a result of new policy within the state ministry. The targeted respondent with the most output was the rural community dwellers across the reserves. The cadre of the forest officers from which information was also obtained showed that Forester has the highest number of respondents, while the Principal Forest Superintendent is the least.

The study showed that Shasha Forest Reserve is under massive timber exploitation. Illegal logging and timber processing are the most common drivers of exploitation in this area; while Ago-Owu and Ikeji-Ipetu Forest Reserve are degraded forests reserves marred with grazing and poaching, and illegal logging, respectively. Other illegal forest activities include illegal NTFPs exploitation, timber smuggling, etc. This result conforms with the findings of Adekunle et al. (2010), who reported that illegal logging in many developing countries is very widespread to the point that what is illegally taken from the forest estate may be much more than what is legally extracted. As a consequence of this action, both Ago-Owu and Ikeji-Ipetu Forest Reserve have been overexploited and few scattered trees could only be accounted for in the forest, except for *Gmelina arborea* and *Tectona grandis* that were planted. Although Ikeji-Ipetu Forest reserve is gradually regenerating, thereby has a chance of replacing the exploited trees in the future. Nevertheless, the regenerating trees may not become better-graded timber due to the trees' damage during the felling and transportation of the exploited trees. However, some tree species that are slightly wounded can recover from the stress inflicted during logging (Adekunle, Olagoke 2010).

The economic, social, and environmental impacts of the illegal activities across the sampled communities and selected reserves are in accordance with the work of Callister (1999) that illegal activities in the forestry sector have a range of negative impacts and this can either be economic, social, and environmental impacts. Economic impacts identified in this study involve a reduction in the market value of forest produce and reduction in revenue generated by the reserve, with most emphasis on the latter impact accounts for 63.3%, 53.3%, and 43.3% in IFR, SFR, and AFR. This complements Kaimowitz (2003) findings, who argue that illegal forestry practices deprive the government of a substantial amount of financial resources in tax revenues. According to a World Bank report (2006), it was estimated that illegal timber logging causes a loss of approximately US\$15 billion every year (the legal forest industry loses more than US\$10 billion while governments lose about US\$5 billion in revenues). In a recent report (UNEP/INTERPOL 2012), this value has increased between two folds and 6.7-folds, that is, the economic value of global illegal timber logging, including processing, is now estimated to be worth between US\$30 and 100 billion, or 10-30 % of the global wood trade.

The continuous decline in the revenue generated by the reserve does not seem to stop soon, and this has brought a huge economic loss and a negative impact in Nigeria and across the world due to lack of coherent and consistent

forest policy, excessive bureaucracy in harvest management, poorly defined property rights, non-transparent allocation of concessions, corrupt government officials in charge of log control, over-capacity utilization in some timber industries, use of outdated management practices and inefficient log tracking system and rural poverty (Swan 2013).

Social impacts revealed that restricted access to forest materials including food that is essential to the welfare of the rural people was rampant in IFR while restricted access by local communities to forest products that provide income for small-scale local business and land-use conflicts stemming from allocation of timber concession were mostly common SFR. The restricted access of forest material in IFR and SFR can be as a result of over-reliance of the rural community dweller on provisioning services of the forest (food, raw material, etc.) and timber which if not properly checked can further lead to heavy decline of the ecosystem functioning of the forest and more illegal activities (Obasi et. al. 2015). However, large-scale job losses/ unemployment by the contractors is at a higher rate in AFR. These are all similar to the report of the Department of Forestry and Wildlife (1998) in Cambodia.

The environmental impact of illegal harvest from the result shows that the conversion of forest lands into agricultural lands is ranked highest which is about 59.1%. However, this can be attributed to the problem of food insecurity and reduction in food production caused by poverty in the state. Poverty is seen as a major problem in many developing countries in the world, including Nigeria. It is described as a vicious cycle, causing hunger and malnutrition, and is aggravated by rapid population growth. The causes of poverty have been linked to food insecurity in the state (Fasoyiro and Taiwo 2012). Food insecurity among rural and low-income urban households is 71 % and 79 %, respectively (Orewa, Iyangbe 2010), and such households have limited economic and physical capacity to sustain their present level of wellbeing or cope with economic shocks (IFPRI 2008). As a strategy to survive and to be able to meet the ends, the community dwellers result in the conversion of forest lands into agricultural land. Other identified environmental impacts from these studies include loss of forest biodiversity, soil erosion, and leaching of soil nutrients. The negative economic, social, and environmental impacts of logging are severe. Continuous harvesting without appropriate restoration strategies would result in forests that are structurally and genetically degraded, which are highly difficult and costly to rehabilitate (Adekunle et al. 2010)

A total number of 12,409 stems have been removed across 41 tree species, including stems with no tree species scientific names, in SFR. What has been removed has exceeded the forest's natural capacity to recover and resume its normal functions. The highest number of species exploited, *Celtis* spp., *Ricinodendron heudelotii*, *Sterculia* spp., comply with the argument of Oyagade (1997), that due to the worsening shortages of the primary species like Iroko, Mahogany, etc. lesser utilized species such as *Celtis* spp., *Ceiba pentandra*, *Brachystegia* spp., etc. are now becoming available in the market. Also, the four most

diverse families were Fabaceae (eight stems), Malvaceae (eight stems), Annonaceae (five stems), and Moraceae (four stems), which partly conform with the report by Akinyemi and Oke (2014), that Euphorbiaceae, Moraceae, Papilionaceae and Rubiaceae were the overall diverse families (in terms of species richness) present in the reserve.

Timber harvest was more intense during the dry season. It reduced drastically during the rainy season, which agrees with Adekunle et al. (2010) that loggers take advantage of exploiting more trees due to favorable roads during the dry season. Also, difficulty in having access to the forest during rainy season, due to erosion, flood, and seasonal streams that destroy roads, reduces the rate of exploitation.

Conclusion and recommendations

Tropical forest is the largest source of species biodiversity in the world and is currently faced with challenges when it comes to its conservation. Besides fulfilling various social, ecological, and economic needs, it is a source of livelihood for millions of people who live around it. The investigation of illegal activities in Osun State Forest Reserves and its impacts on forest conservation in this study show that most of the respondents agree that forest illegalities are prevalent in the study area. The activities include illegal logging, illegal timber processing, illegal NTFPs exploitation, timber smuggling, practices specifically aimed at reducing payment of taxes and other fees, illegal occupation of forest reserve land, and grazing and poaching. The illegal forest activities were agreed to have social, economic, and environmental impacts on forest conservation. As a result of the high demand of the people for timber and high extinction rate of economical and durable tree species, tree species with lesser values that can compete favorably in the market and satisfy human wants were harvested the most during the study. As a result of the exploitation of many economic tree species that contribute to national development and rural livelihood from the study sites, the study recommends that timber harvest be carried out on a sustainable basis.

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Appendix 1
FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE, NIGERIA.
DEPARTMENT OF FORESTRY AND WOOD TECHNOLOGY.

Questionnaire for Forestry Personnel

Project Topic: Rate of timber harvest and the effects of illegal activities on forest conservation in Osun state, Nigeria.

Dear Respondent

The purpose of this questionnaire is to gather useful information on the rate of timber harvest and the effects of illegal activities on forest conservation in Osun state, Nigeria.

All information supplied here will be kept confidential and will be used strictly for research purposes. Kindly supply answers correctly to the best of your knowledge. Your cooperation is highly needed and will be appreciated.

Thank you.

Daramola, Joseph O.

Please fill and tick boxes respectively in this questionnaire as appropriate:

Background information

1. Name of Forest Reserve.....
2. Your cadre.....
3. How long have you been working in forestry department
a. 1-5 years () b. 6-10 years () c. 11-20 years () d. 21-30 years ()

Information on problems of forest conservation

4. Please indicate the illegal activities that serve as barrier to forest conservation that does occur in the forest reserve under your jurisdiction.
a. Illegal logging () b. Timber smuggling () c. Illegal timber processing ()
d. Practices specifically aimed at reducing payment of taxes and other fees ()
e. Illegal non-timber forest products (NTFPs) exploitation ()
f. Others.....
5. How will you describe the intensity of the activities identified above on the forest reserve under your jurisdiction?
a. Very high () b. High () c. Moderate () d. Low () e. Very low ()
6. Tick possible reasons for the occurrence of the activities around the forest reserve under your jurisdiction:
a. Clearance for agriculture ()
b. Road construction and urbanization ()
c. Plantation establishment ()
d. Poor organization, management, and funding of the forestry subsector ()
e. Increasing demand for food or high poverty level of the exploiters ()
f. Others.....
7. Indicate from below the economic impacts the illegal activities listed above has on the forest reserve under your jurisdiction:
a. Reduction in revenue generated by the reserve ()
b. Reduction in market value of forest produce due to increased availability of produce from illegal activities ()
c. Others.....
8. Indicate from below the social impacts the illegal activities listed above has on the forest reserve under your jurisdiction:
a. Land-use conflicts stemming from allocation of timber concessions ()
b. Restricted access to forest materials, including food, that are essential to the welfare of the rural people ()
c. Restricted access by local communities to forest products that provide income for small-scale local business ()
d. Large scale job losses/Unemployment ()
9. Indicate from below the environmental impacts the illegal activities listed above has on the forest reserve under your jurisdiction:
a. Loss of forest biodiversity through unsustainable logging practices ()
b. Soil erosion and leaching of forest nutrients ()
c. Health impacts and increase in greenhouse gas emissions ()
d. Conversion of forest lands to agricultural lands ()

Appendix 2
FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE, NIGERIA.
DEPARTMENT OF FORESTRY AND WOOD TECHNOLOGY.

Questionnaire for Community Dwellers

Project Topic: Rate of timber harvest and the effects of illegal activities on forest conservation in Osun state, Nigeria.

Dear Respondent

The purpose of this questionnaire is to gather useful information on the rate of timber harvest and the effects of illegal activities on forest conservation in Osun state, Nigeria.

All information supplied here will be kept confidential and will be strictly for research purposes. Kindly supply answers correctly to the best of your knowledge. Your cooperation is highly needed and will be appreciated.

Thank you,

Daramola, Joseph O.

Please fill and tick boxes respectively in this questionnaire as appropriate:

Background information

1. Name of Community.....
2. Your age range. a. 0-20 () b. 21-40 (v) c. 41-60 () d. 61 and above ()
3. Indicate if you are one of these: a. Saw miller () b. Timber contractor () c. Taungya farmer ()
4. Indicate your level of experience in the above ticked. a. 0-5 years () b. 6-10 years c. 11-21 years d. 21-30 years
5. Educational qualification a. Primary school certificate ()
b. Secondary school certificate () c. Tertiary institution certificate ()
6. Indicate how long you have been living in the community? a. 0-5 years () b. 6-10 years c. 11-21 years d. 21-30 years

Information on problems of forest conservation

7. Please indicate the illegal activities that serve as barrier to forest conservation that do occur in the forest reserve near to your community:
 - a. Illegal logging () b. Timber smuggling c. Illegal Timber Processing ()
 - d. Practices specifically aimed at reducing payment of taxes and other fees ()
 - e. Illegal non-timber forest products (NTFPs) exploitation ()
 - f. Others.....
8. How will you describe the intensity of the activities identified above on the forest reserve near to your community? a. Very high () b. High () c. Moderate () d. Low () e. Very low ()
9. Tick possible reasons for the occurrence of the activities around the forest reserve near to your community.
 - a. Clearance for agriculture ()
 - b. Road construction and urbanization
 - c. Plantation establishment ()
 - d. Poor organization, management, and funding of the forestry subsector ()
 - e. Increasing demand for food or high poverty level of the people ()
 - f. Others.....
10. Indicate from below the economic impacts the illegal activities listed above has on the forest reserve near to your community:
 - a. Reduction in revenue generated by the reserve ()
 - b. Reduction in market value of forest produce due to increased availability of produce from illegal activities ()
 - c. Others.....
11. Indicate the social impacts the illegal activities listed above has on the forest reserve near to your community.
 - a. Land-use conflicts stemming from allocation of timber concessions ()
 - b. Restricted access to forest materials, including food, that are essential to the welfare of the rural people ()
 - c. Restricted access by local communities to forest products that provide income for small-scale local business ()
 - d. Large scale job losses/Unemployment ()
12. Indicate from below the environmental impacts the illegal activities listed above have on the forest reserve near to your community.
 - a. Loss of forest biodiversity through unsustainable logging practices ()
 - b. Soil erosion and leaching of forest nutrients ()
 - c. Health impacts and increase in greenhouse gas emissions ()
 - d. Conversion of forest lands to agricultural lands ()