Implications of Migrant-Tenant-Farmers and their Livelihood Strategies on Natural Forest in Ondo State, Nigeria

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Abstract
This study investigated the implications of the presence of migrant-tenant-farmers in natural forest reserves of Ondo State, Nigeria. It also examined the contributions of the forest reserves to rural livelihood. To achieve these, multistage sampling technique was used for the study. A well-structured questionnaire was employed to elicit information from 180 household heads. The data collected were analyzed using descriptive statistics analysis. According to the results, the majority of the migrant-tenant-farmers were in their productive age of 41-50 years, most of them had low level of education. Chi-square test ($p<0.05$) confirmed that there is significant association between age and gender of migrant-tenant-farmers and the effects of their livelihood activities on natural forest in the study area. More than 80% of them had been farming for over ten years. And this had positive effects on their productivity. The results showed that majority of the respondents derived their livelihoods from yam, cassava, maize, and cocoa production as well as palm oil and cassava processing. They also collect various types of Non-timber forest products (NTFPs) in the study areas for their livelihoods. The results further revealed that these migrant-tenant-farmers preferred virgin land which are natural forest or abandon land occupied by trees due to its huge deposition of organic manures and the essential soil minerals for crop production. Consequently, it leads to deforestation and fragmentation of forests, loss of unique habitats, biodiversity and atmospheric deterioration of the study areas. The results further showed that on-farm tree, with 37.2% of the respondents was the major method of tree conservation by the migrant-tenant-farmers in the study areas. Practicable suggestions that could reduce the current pressure on this fragile forest such as provision of subsidized fertilizer to boost agricultural productivity, and continuous campaign against deforestation in Ondo State were recommended.

Keywords: Implication, Migrant-tenant-farmers, Livelihood Strategies, Natural Forests.

Introduction

Ondo State is blessed with natural rainforest ecosystem with numerous resources. However, the forest resources base of the State is reducing on daily basis. About 200 hectares of the forest are being destroyed annually through many human activities that include accelerated urbanization and the conversion of forest reserves to farmlands and housing estates (Fuwape 2001). Onyekwelu and Fuwape (2008) also reported that 98.4km^2 area under forest cover in Ondo State is converted into agricultural land on annual basis. This situation will definitely continue to deny the State of a lot of social, economic, ecological, scientific, educational, cultural, recreation and aesthetic benefits of the forest.

Migration is a universal phenomenon that occurs in almost all works and spheres of life. It is influenced by *push* and *pull* factors. The push factors are the reasons why people leave an area. They include lack of social services, lack of safety, high crime, crop failure, drought, flooding, poverty and war (York, 2015 and Afolayan, 2004), while the pull factors are the reasons why people move to a particular area. They include high employment, more wealth, better social services, good climate, less crime, political stability, fertile land and lower risk for natural hazards (York, 2015 and Afolayan, 2004). There has been migration of farmers from one location to the other searching for better lands for improved agricultural production and better livelihood.

Despite the significant socio-economic contributions of the migrant-tenant-farmers in Ondo State, there is a dearth of information on the implications of their activities in the forest estates of the State. Presently, there is food insecurity and many communities are badly affected by the activities of some migrant farmers in southwest, Nigeria. For instance, Fulani herdsmen (nomadic herdsmen) have become threats to many farmers and communities in Nigeria. As a result of the decline in food production in the country, there is a rigorous campaign for everybody to go back to the farm. Because farming is seen by the government to be the only mean of rescuing our economy. The implications of livelihood strategies of migrant-tenant-farmers on forests in Ondo State of Nigeria are therefore examined in this study.

Forest- it is an area of land dominantly occupied by trees for direct and indirect human benefits (Adeyoju, 1995). Forest is exhaustible but renewable natural resources which provide food, timber, shelter and other products as well as providing cover for wildlife and domestic animals, protection of soil and water value and provision of recreation facilities for man (FAO, 1999 and Etikudo, 2000).

Migrant-tenant-farmer is when farmer relocates from one geographical location to another new geographical location or agricultural land to rent a farmland for farming purpose in another man's land or area different from his. Migrant-tenant-farmers according to the name are majorly farmers who derive their livelihoods from the cultivation of different crops and rearing of livestock on area of land different from their own. The returns may be shared between the land owners and the migrant farmers in the form of products sharing, cash sharing or in a combination of both.

Decosas, (1995) and Kandel, (2008) classified migrant-tenant-farmers, according to either those who cultivate farmland released to them for at least one crop year, those who work on existing mature farm (like cocoa, palm oil and kola nut) on agreed terms and conditions of sharing proceeds, those who obtain a lease to harvest defined area of palm forest for specific periods, or those who work on pledge or pawn usually for cash crops e.g. cocoa, kola nut and palms.

Livelihood Strategies are the combination of activities that people choose to undertake in order to achieve their livelihood goals. Livelihood activities on the other hand, include, but not limited to the set of actions through which household gain their means of living (Parrot *et al*, 2006; Cai, 2012).

Deforestation

Deforestation is the removal of forest cover usually through over extraction of forest resources and/or conversion of forests into other land uses such as arable cropping. There is high rate of exploitation of timber and non-timber forest products for food, medicine, oil, fuel, furniture and building materials for daily sustenance even by the migrant-tenant-farmers. Logging and conversion of natural forest to agricultural land is the primary cause of deforestation in the tropics. Deforestation is also driven by rural poverty and basic needs such as food, shelter and fuel.

Land Use and Anthropogenic Activities on the Natural Forest

Natural forest area is severely affected by degradation due to various land use and anthropogenic disturbances. The increasing technological capability, population pressure, urbanization, shifting cultivation, more intensive logging and forest clearance for plantations of trees and arable crops have resulted in serious misuse of the land and rapid disappearance of large tracts of the Nigerian rainforest ecosystem in Nigeria. In the savanna woodland, indiscriminate bush burning, hunting of small games and urbanization have negative ecological impacts on the forest ecosystem. The subsequent implications of these include the loss of plant species and vegetation cover that are valuable to national development and rural livelihood. Also, the rapid increase in human population has increased the pressure on forest area, This has subsequently led to the wanton destruction of forest estates that some important forest resources have gone into extinction.

FAO (1999) reported that tropical countries are losing 127,300km^2 of her forest annually. According to Onyekwelu and Fuwape (2008), Nigeria's tropical rainforest accounts for only 9.7% of the country's land area but is densely populated and source of the bulk of the countries timber resources. It has been heavily exploited, seriously degraded and fragmented, leaving less than 5% of the country's rainforest ecosystems as undisturbed forest (Onyekwelu and Fuwape, 2008). Farming method is the primary cause of habitat destruction in Nigeria as is characterized by vegetation destruction and short fallow period. It also include large scale plantation establishment of fast growing trees like Teak and Gmelina; establishment of cash crop plantation like cocoa, rubber, cola nut and oil palm; as well as food crop production such as cassava, yam and maize. Others are indiscriminate bush burning and over grazing which have led to habitat destruction and cause serious setback to plant and animal species conservation. In view of the great value of the tropical rain forest and the grave consequences of unregulated logging, farming activities and over-exploitation, adopting sustainable management principle has become imperative.

Methodology

Description of the Study Area

The study was carried out in Ondo State in the Western part of Nigeria. Ondo State has eighteen (18) Local Government Areas. It lies between longitude $4^0.30^1$E and $6^0.0^1$E of the Greenwich meridian and latitude $5^0.45^1$N and $8^0.15^1$N of the equator. It has land area of 15,823.31km ^{2} and a population of 4,671,700million in 2016 (NBS web, 2015). Ondo State is bounded by Kwara, Kogi, and Ekiti State in the North, Edo and Delta State in the East, Ogun, Oyo and Osun State in the West, and

Atlantic Ocean in the South (FSD, 1999). The State has tropical climate with two sharp seasons: the raining season and the dry season. The raining season commences in March and ends in October with a peak in July/August, while the dry season occurs between October and March. The temperature varies from 21^0C to 29^0C throughout the year with an average value of 25^0C. There are three major vegetation zones in Ondo State: A mangrove/freshwater forest zone in the south, a tropical rainforest zone at the central, and a derived savanna zone in the north. Though all the vegetation zones are rich in indigenous tree species and also support the growth of some exotic tree species, but the tropical rainforest is richer in tree species than other vegetation belts within the state.

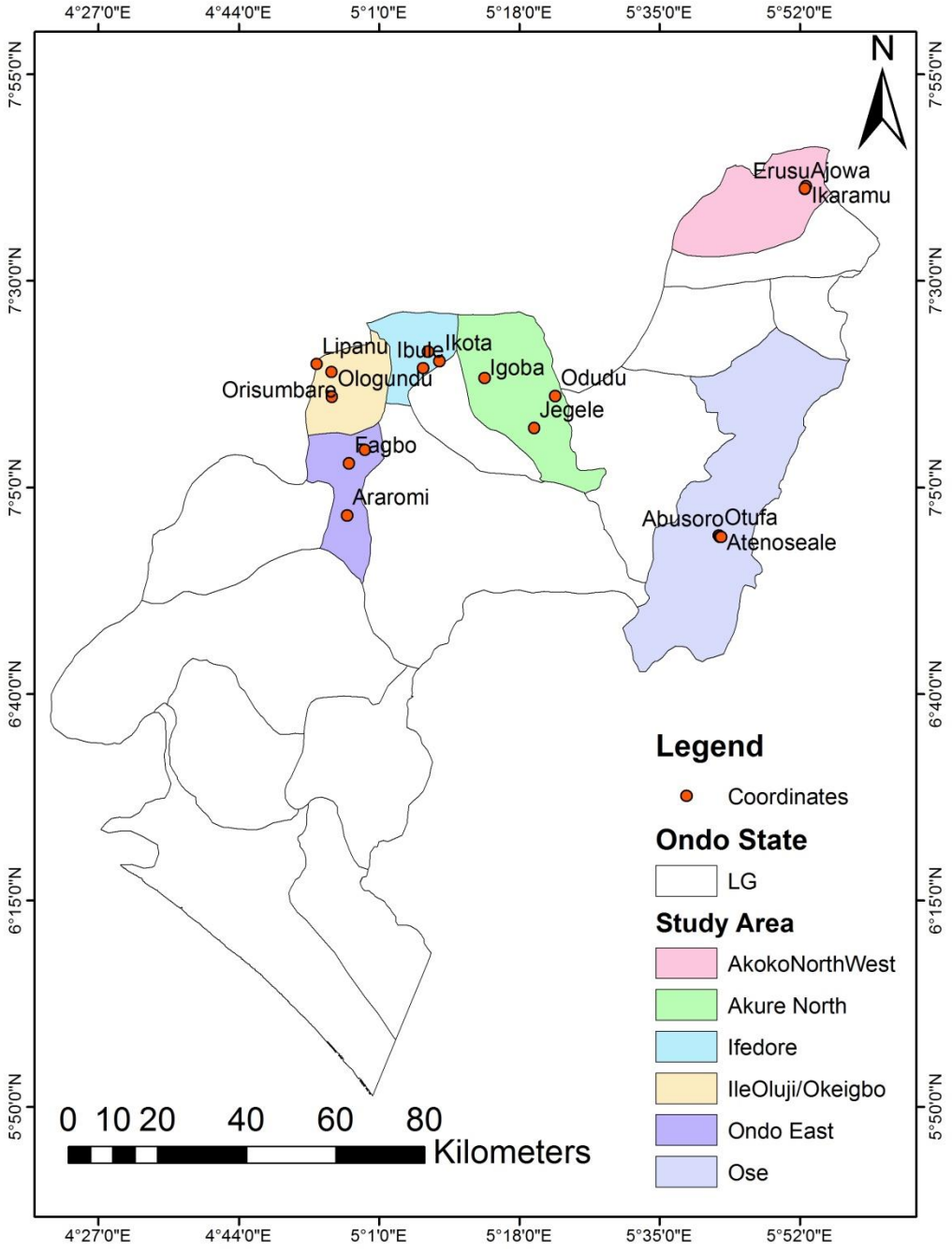

Figure 1: Map of Ondo State Showing the Sampled Communities in the Study Area.

Sampling Procedure and Data Collection

All the migrant-tenant-farmers in the State constitute the population for the study. A multistage sampling procedure was used in the study. The first stage was a purposive selection of six Local Government Areas known with farming activities from the State. The second stage involved a purposive selection of three farming communities dominated by the migrant-tenant-farmers from each Local Government Area. The last stage involved the selection of ten migrant-tenant-farmers from each community. Thus, a total of six Local Government Areas with three communities each were used for the study. They include Akoko North/West (with Erusu, Ajowa and Ikaramu communities); Akure North (with Igoba, Jegele and Odudu communities); Ifedore (with Ikota, Ibule and Ero communities); Ileoluji/Okeigbo (with Lipanu, Orisunbare and Ologudu communities); Ose (with Abusoro, Olufa and Atenoseale communities); and Ondo East (with Bamikemo, Fagbo and Araromi communities) were used for the study. A total of 180 respondents were used for the study. So also, one Key informant was purposely selected from each of the selected community and interviewed. Personal observation of the forest ecosystem was used to examine the implication of the migrant-tenant-farmers and their livelihood strategies on the forest lands in addition to the information provided by the respondents.

Data Analysis

The data obtained were collated and analyzed using descriptive statistics such as frequency table, percentages and bar chart. In addition, Chi-square was used to carry out statistical test on the stated hypotheses.

Result and Discussion

Socio-economic Characteristics of the Migrant-tenant-farmers in the Study Area

Migrant-tenant-farmers in Ondo State cut across all age groups. The results in Table 1 showed that 15.6% of the respondents were below the age of 30 years; the highest percentage, 37.8% of the respondents fell within the active and productive age range of 41-50 years; and 16.7% were within 51-60 years of age while 5.6% were above 60 years. Chi-square test ($p<0.05$) shows that there is significant association between age of migrant-tenant-farmers and the effects of their livelihood activities on natural forest in the study area (Table 2 Hypothesis 1). However, this implies that most of the migrant-tenant-farmers are still young and are within their productive years. And their farming activities have more adverse effects such as cutting and clearing of natural forest for farmland, poaching and indiscriminate cutting of economic trees species in natural forest in the study area.

About 64.4% were male gender while 35.6% belong to the female gender. Chi-square test ($p<0.05$) shows that there is significant association between gender of migrant-tenant-farmers and the effects of their livelihood activities on natural forest in the study area (Table 2 Hypothesis 2). This denotes that male migrant-tenant-farmers who were the majorities in the study area through their farming activities impose greater adverse effects on the natural forest in the study area than the female counterpart.

Data on marital status showed that the majorities (88.9%) were married, 3.9% were single, and 3.3% were divorced while 2.8% were widowed. Also, 3.3% had below 3 household members, 27.8% had 4-6 persons, and 53.3% had between 7-9 household members while 15.6% had above 9 household sizes. Majority of them had more than 1000 inhabitants. For instance, the study revealed that 11 out of the 18 communities (Odudu, Jegele, Igoba, Ibule, Bamikemo, Obada, Fagbo, Ajowa, Erusu, Ologundu, and IKaramu) were above 1000 inhabitants. According to the findings, this is because the settlements had fertile land and they were located very close to major towns like Akure, Ondo, Ile-Oluji, and Ifon, where the migrant-tenant-farmers can easily sell their farm produce.

About 97.8% of the households were headed by the male gender; while 2.2% were headed by female gender (Table 1). It could be deduced that a higher percentage of the family is being headed by the male. Educational indicators revealed that 10.0% had no formal education, 3.3% had primary education, and 47.8% has secondary school education while 8.9% completed tertiary education. It shows that most of the respondents had low level of education. Their low educational level might affect their ability to access productive resources that are necessary to improve their standards of living. More than eighty percent of them had been farming for over ten years. The migrant-tenant-farmers have a wide range of farming experiences; this might have positive effects on their productivity.

Table 1: Socio-economic Characteristics of Migrant tenant-farmers in Ondo State.

Characteristics		n	%		n	%		n	%		N	%		n	%
Age Distribution	<30yrs	28	15.6	31-40yrs	44	24.4	41-50yrs	68	37.8	51-60yrs	30	16.7	>60yrs	10	5.6
Gender Distribution	Male	116	64.4	Female	64	35.6									
Marital Status	Single	7	3.9	Married	160	88.9	Divorced	6	3.3	Widow	5	2.8	Widower	2	1.1
Household size	<3	6	3.3	4-6	50	27.8	7-9	96	53.3	>9	28	15.6			
Household Head	Male	176	97.8	Female	4	2.2									
Farming Experience	<5yrs	0	0.0	5-10yrs	10	5.6	10-15yrs	26	14.4	15-20yrs	64	35.6	>20yrs	80	44.4
Highest Level of Education	No formal Education	18	10.0	Primary School	60	33.3	Secondary School	86	47.8	Tertiary Education	16	8.9			

Table 2: Results of Tested Hypotheses

Hypotheses	Variables	Statistics	Remark
1	Age	χ^2 =28.63; Sig = 0.02	*
2	Gender	χ^2 = 33.25; Sig = 0.01	*

Major Sources of Livelihood in Agriculture

The results showed that farming is the primary occupation of the respondents which also serves as the source of livelihood for their households. The results in Figure 2 showed that the majority (85.0%) of the migrant-tenant-farmers derived their livelihoods from yam and cassava production. Also, 78% of them were producing maize, 55% supplied labour for palm oil processing, while 45% supplied labour for cocoa farms, 27.0% of the respondents engaged in both vegetable and gaari processing. Only 0.5% of the respondents engaged in rearing of domestic animals.

The study established that these farmers engaged mainly in crop production as well as labour supply on the farms. This confirms the assertion of Afolabi (2007) that the major food crops produced by the migrant-tenant-farmers in Nigeria include yam, cassava, and maize. It is also in line with the findings of Iwuchukwu *et al.,* (2008) who affirmed that migrant farmers produce mainly root crops as their major crops. According to Olaniyan *et al.,* (2001), roots and tuber crops are among the most important group of staple foods and are the largest source of calorie for the Nigerian population. Hence it could be said that migrant-tenant-farmers are contributing immensely to national income and the provision of food to feed the teeming population of Nigeria.

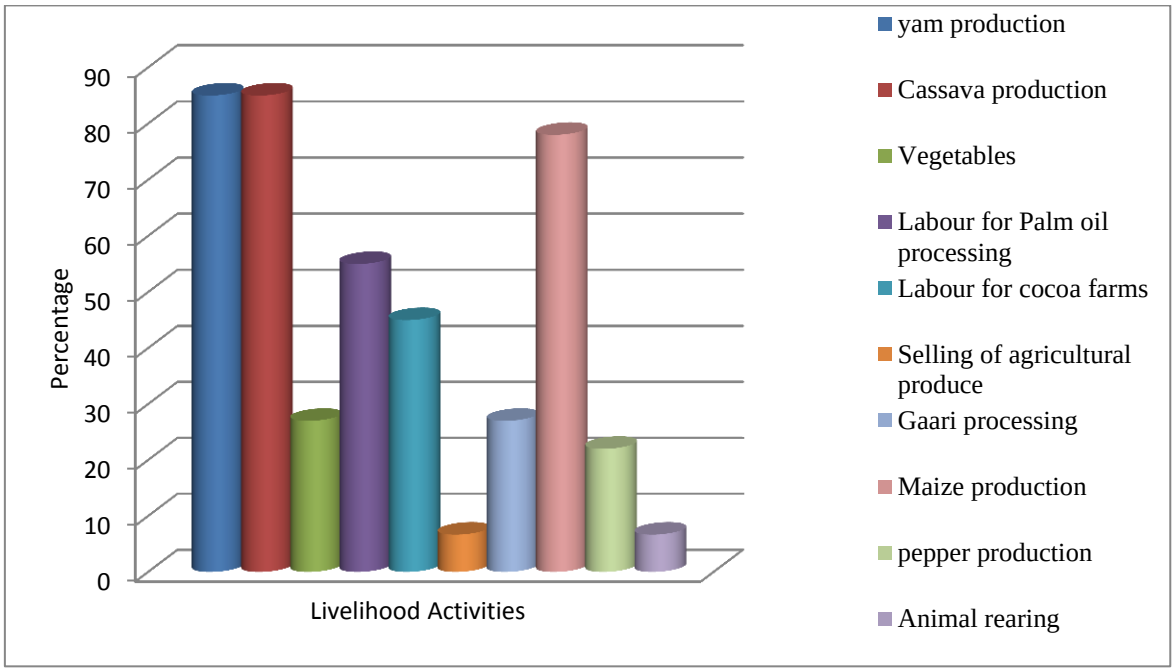

Figure 2: Major Sources of Livelihood of the Migrant-tenant-farmers in Agriculture in Ondo State

Preferred Farmland by the Migrant-tenant-farmers in the Study Area

The farmers preferred virgin land, which in most cases are forests or fallowed lands occupied by trees. According to the respondents (Table 3), 26.7% of the respondents preferred forest land for farming in due to its huge deposition of organic matter and essential soil minerals for crop production. Cultivation of crops in forest lands has led to deforestation which was rampant in the study areas. These forests are cleared of vegetation for the cultivation of both food and cash crops. This is supported by the findings of Geldenhus (1995) that the loss and fragmentation of forests, due to excessive burning and clearing for subsistence and commercial agriculture, contribute to the loss of the unique habitats, biodiversity and atmospheric deterioration. Apart from the logging activities in the study areas, economic trees are cut down,

destroyed and bunts away during land preparation for farming.

Table 3: Distribution of the Respondents on the preferred Farmland in Ondo State.

Preferred farmland	Frequency	Percentage
Fallowed/Abandon Land	60.0	33.3
Natural Forest	68.0	37.8
Forest Reserve	0.0	0.0
Agricultural Farmland	52.0	28.9
Total	180.0	100.0

Implication of Migrant-tenant-farmers on the Forest in the Study Area

The study revealed the impacts of anthropogenic activities of the migrant-tenant-farmers in the study areas. The conversion of hectares of natural forest to the production of food and cash crops in the study areas has led to deforestation. This conforms to the findings of Aigbe and Oluku, (2012) and Falade, (2013) that gradual deforestation of rainforest as a result of agricultural production and forest products exploitation over time has changed the rain forest to derived savannah.

Farming activities in forest estate is a great threat to the conservation of biodiversity in their natural habitats. Some valuable species have disappeared and many are near extinction in the study areas (Table 4). Notably, this is a key factor in extinction, stress to valued ecosystems, and low economic and social values of forest products. This is supported by Falade *et al.,* (2014) that every year, a considerable part of the nation's forest resources are destroyed through industrialization, bush burning and agricultural activities. In addition, other activities of migrant-tenant-farmers in the study areas like hunting and indiscriminate bush burning are not game friendly. Over grazing has led to habitat destruction and cause serious setback to plant and animal species conservation. Table 5 shows some of the wildlife that has gone into extinction in the study areas. The destruction of wildlife habitat reduces the available feed for the animals. The animals will therefore relocate, searching for means of survival. This is a major factor of migration and extinction of wildlife as well as imbalanced ecosystem. Following the cultivation of natural forestland for farming by the migrant-tenant-farmers, Table 4 shows some of the endangered economic indigenous tree species in the study areas.

Table 4: **Some of the Endangered Economic Indigenous Tree Species in the Study Areas**

S/N	Common Name	Botanical Name	Family
1.	Iron wood/ Ekki	*Lophira alata*	*Ochnaceae*
2.	Omo	*Cordia millenii*	Boraginaceae
3.	Mahoghany	*Khaya senegalensis*	Meliaceae
4.	Afara	*Terminalia superba*	Combretaceae
5.	Obeche	*Triplochiton scleroxylon*	Malvaceae
6.	Mansonia	*Mansonia altissima*	Sterculiaceae
7.	Fake Iroko	*Antiaris africana*	Moraceae
8.	Ahun	*Alstonia boonei*	Apocynaceae
9.	Iroko	*Milicia excels*	Meliaceae
10.	Udi	*Terminalia irvorences*	Combretacae
11.	Orogbo	*Garcinia cola*	Guttiferae
12.	Awoopa	*Enantia chlorantha*	Annonaceae
13.	Funtu	*Funtumia elastic*	Apocynaceae
14.	Opepe	*Nauclea diderrichii*	Rubiaceae

Table 5: **Some of the Endangered Economic Wild Animals Species in the Study Areas**

S/N	Local Name	English Name	Scientific Name
1	Esuo	Red Flanked Duiker	*Cephalophus rufilatus*
2	Igala	Bush buck	*Tragerlaphus scriptus*
3	Etu	Duiker	*Cephalophus specie*
4	Imado	Warthog	*Patamacherorus specie*
5	Awo	Guinea fowl	*Numida meliagris*
6	Igbin	Giant snail	*Archanchatina marginata*
7	Oore	Porcupine	*Altherurs africanus*
8	Egbin	Kob	*Kobus kob*
9	Erin	Elephant	L*oxodonta africana*
10	Efon	Buffalo	*Syncerus caffer*
11	Elete	Grasshopper	*Caelifera gregaria*
12	Alepa	Monitor lizard	*Varanus niloticus*

The destruction of vegetation during farming activities by the migrant famers also poses direct and indirect danger to man and his environment. It leads to the destruction of ozone layers by some of the ozone depleting gases to cause global warming. Global warming, which is a critical global challenge, is the increase in the average temperature of the atmosphere, oceans and land masses of the earth resulting from the depletion of the ozone layer by greenhouse gases (Oni *et al.,* 2010). The effect of climate change now has terrible repercussions on water resources, agricultural system and all the other sectors of the economy.

The farming activities of the migrant-tenant-farmers have no doubt affected the conservation of medicinal plant species in the study areas. Some medicinal plant species have been lost from the forest due to tree clearing and cutting, and over-exploitation of NTFPs by these farmers. The collection of barks, leaves and roots as herbs for curing different ailments by rural dwellers has mounted so much pressure on the forest.

Grazing in the forest estate is another anthropogenic activity that is dangerous to forest conservation.

Nomadic pastoralists who engage in random movement of cattle are typical examples of migrant-tenant-farmers in the study areas. They compete for grazing routes with the other migrant-tenant-farmers. According to the respondents in the study areas, the Fulani nomadic farmers with their cattle do not only destroy crop farms but also affect the forest especially during dry season. Table 6 showed the effects of Fulani nomadic farmers on the forest in the study area. According to the table, 44.4% of the respondents reported the grazing activity of the Nomads' herd in forest estates. About 25.6% of the respondents complained of indiscriminate bush burning. This is done to get fresh and succulent pastures for their cattle. Also, 30% of the respondents reported that cattle do trample on forest undergrowth, thereby disturbing forest ecosystem. This is supported by Tona (2002) and Abbass (2012) that Nomadic farmers do set grassland on fire during the dry season in order to get fresh and succulent pastures for their cattle in the following year. It was also reported that the Fulani nomadic do launch attacks on the other migrant farmers and their relatives in the study areas.

Table 6: Activities of Fulani Herdsmen in the Forest

Effects	Frequency	Percentage
Grazing	80.0	44.4
Indiscriminate Bush burning	46.0	25.6
Trampling	54.0	30.0
Total	180.0	100.0

Forest Tree Conservation Methods in the Study Areas

Despite the collection of forest products and the destruction of forest through anthropogenic activities of the migrant-tenant-farmers in the study areas, only few migrant-tenant-farmers are involved in conservation of trees in the study areas. The results in Table 7 showed on-farm tree as the major method of tree conservation as reported by 37.2% of the respondents. Only 12.7% of the migrant-tenant-farmers in the study area planted or retained few economic trees for shelter, windbreak and food production. The trees include *Azadirachta indica,*

Senna siamea, Gmelina arborea, Tectona grandis, Terminalia catapa, Carica papaya, Mangifera indica, Vernonia amigdalina, Anacardium occidentale, Psidium guajava and *Citrus species*. No migrant-tenant-farmers established forest plantation in the study areas, and 50% of them did not conserve trees. This, according to the respondents, was due to the long gestation period of some trees. There is no quick return from them compared to other agricultural crops.

Table 7: Respondent's Methods of Forest Trees Conservation in Ondo State

Conservation methods	Frequency	Percentage
On-farm Tree	67.0	37.2
Forest Plantation	0.0	0.0
Domestication	23.0	12.7
No conservation	90.0	50.0
Total	180.0	100.0

Source: Field survey, 2020.

Conclusion and Recommendation

Conclusion

There are many migrant-tenant-farmers in Ondo State who migrated from different states to their present place of abode. They settled mostly in the suburbs of the capital and major cities where there are large markets to easily sell their farm products. Their livelihood activities revolved round farming and they are experienced farmers in the producing yam, cassava, maize and vegetables. They are source of labour for oil palm and cocoa farms and are also involved in the processing gari and palm oil. Their farming activities had devastated effects on the forest in the study areas as the migrant-tenant-farmers majorly preferred natural forest land for its fertility.

Beside the cultivation of natural forest land, they also engage in the collection and sales of various non-timber forest products (NTFPs) especially, the women. Fulani herdsmen are also migrant-tenant-farmers and they compete with other farmers for grazing routes. The Fulani nomadic farmers, with their cattle, did not only destroyed crops and farms, but they also affect the forest through grazing, trampling and indiscriminate bush burning during dry season. They also launch attacks on other migrant-tenant-farmers and their relatives in the study areas. Very few of the migrant-tenant-farmers are involved in forest conservation in form of on-farm tree and home garden tree domestication.

Recommendations

This study recommends the interventions of government and non-governmental organizations as well as the private individual in providing agricultural inputs in such as fertilizers/manures at subsidized rate to the migrant-tenant-farmers to boost agricultural land fertility for food production and thereby reducing pressure on the fragile forest.

Concerted efforts should be made to create more awareness on the danger of deforestation and the needs to stop it in Ondo State and in Nigeria at large.

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