

Full Length Research Paper

Deforestation and endangered indigenous tree species in South-West Nigeria

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Literature is replete with evidence of deforestation of the tropical forest. In Nigeria, studies on deforestation also abound. This report, which is built on the government forests in South West Nigeria attempts to provide a basic linkage between deforestation and endangered indigenous tree species. Endangered indigenous forest trees in South West Nigeria are further threatened by lack of commitment and business as usual. Deforestation is highly severe and this continues unabated. The stock of the forest is depleted by agents such as saw millers and fuel wood gatherers. They constitute 42% of the agents of deforestation. On the scale of threat, *Milicia* species comes first with a level of 26, followed by *Triplochytton scleroxylon* with 20 on the threat incident scale while *Khaya* species and *Mansonia* species comes next with a threat incident level of 17. The ratio of regeneration in general is, one cut to two replenishment but the replenishment is based on coppicing, which limits the power of the forest to replace lost volumes. Deforestation apart from its direct effect on endangered indigenous tree species impacts negatively on food supply, soil and landscape of South West Nigeria. For improvement to be engendered in the Zone, more Education is needed for the entire citizenry on the need to conserve the endangered species as well as making sure that forest policies are well fashioned out and followed to the latter, to safeguard the tree species from extinction.

Key words: Deforestation, endangered species, non-timber forest products, greenhouse, depletion.

INTRODUCTION

In Nigeria, the total value of both the wood and non-wood forest product as well as their environmental functions is enormous though not completely quantifiable (Moormann et al. 1975). Mostly, the forest is underestimated in value within the National reckoning. Nigerian forest and woody vegetation resources include the high Forest, woodland, bush lands, plantations and trees on farms. Each of these various resources contributes to production, protection and conservation functions. Studies have shown that forest reserves occupy about 10 million ha in Nigeria, which accounts for about 10% of a land area of approximately 96.2 million ha (NFP, 2006). Over the years however, the land area identified as forest lands have been decreasing steadily due to industrial and

social development which competes for the same pieces of land upon which the forest stands.

The scenario expressed above was a source of reawakening for conservators to try, under stringent conditions, and establish forest plantations as well as conserve existing forest estates, especially estates of natural forests. Hall 1977, The project therefore sets to evaluate the impact of deforestation on some endangered species in the South-west zone of Nigeria comprising, Oyo, Ondo, Osun, Ogun, Ekiti, and Lagos states. Deforestation has global consequences. This is primarily because of the influence on carbon exchange. A substantial amount of carbon stored in the vegetation in the dry zones averaging about 30 tons per hectare, declines when the vegetation is depleted. Carbon rich soils are found in dry zones hence the destruction of these trees has a very powerful effect on the carbon cycle and boosts the greenhouse effect as a result of the

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Table 1. Distribution of questionnaire.

State	Number of questionnaires distributed	Number of questionnaires retrieved	Percentage retrieval
Oyo	10	10	100
Osun	10	12	120
Ogun	10	10	100
Ondo	10	10	100
Ekiti	10	08	80
Lagos	10	10	100
Total	60	60	Mean = 100

Source: Field survey (2009).

depletion of carbon.

MATERIALS AND METHODS

Sampling method

The research was conducted primarily by the use of the survey research design. Questionnaires were designed to get primary data from each of the State. The questionnaires were distributed according to various categories of respondents in the following manner:

- i) Technical staffers.
- ii) Protection staffers.
- iii) Professional staffers.
- iv) Selected farmers of arable crops and cash crops.

To draw samples from each group, a list of operators in each group was obtained, categorized and a final selection made.

Other sources of information

The following information sources helped, to some measure, to come this far in the research:

- i) Annual reports of the states and situational reports.
- ii) Academic journals, and
- iii) internet materials.

RESULTS AND DISCUSSION

The methods employed in the analysis of data generated in the study area on the subject matter included percentages, frequencies, bar charts form of statistics. The bar charts were drawn to scale. Table 1 shows how sixty structural questionnaires were distributed to respondents in the area of study. The respondents cut across all cadres of the forest management personnel in the state ministries concerned with forestry. Apart from the personnel, other stakeholders such as farmers saw millers as well as users of Non-Timber Forest Products were involved in the study. Ten questionnaires were allotted to each state while retrievals were made subsequently. In Oyo, Ogun, Ondo, and Lagos States, one hundred percent (100%) retrieval was made. In

Ekiti state eighty percent (80%) retrieval was possible while Osun state recorded a retrieval of one hundred and twenty percent (120%). The imitative of the state director of forestry brought about the increase. On the average, total retrieval amounted to one hundred percent (100%) because, the short fall in Ekiti state was compensated for by the twenty percent (20%) increase in Osun state. Severity of occurrence generally is a situation that is very bad or whose impact is very serious in a negative form. Figure 2, Twenty-nine percent (29%) level of highly severe situation was found in the study area. Twenty-six percent (26%) level was severe, moderately severe level was five percent (5%) while there was zero level of Not severe. The implication of this is that deforestation in the States combined together is highly severe. This can only mean one thing; the rates at which forests are exploited constitute a high danger for sustainability in South-western Nigerian forests. Deforestation is not a natural phenomenon, there must be interference with the stock of the forest before the volume is depleted and deforestation pronounced. As showed in Figure 1, Saw millers and firewood sellers accounted for forty-two percent (42%) of agents of deforestation in the study area.

The seemingly lack of alternative source of fuel for power to cook, and to achieve other household fuel needs made the firewood sellers rank among the saw millers. Thirty-one percent (31%) of agents of deforestation in the study area are farmers. Farmers naturally open new land areas to get their lands plow for new farming seasons (Obot et al 1991, UNEP, 1992). In the process of achieving this, they cut down a lot of trees. In most cases, the trees are not even converted to optimum utilization due to the fact that either the farmer is afraid to let outsiders know especially if the tree is legally protected or because of ignorance on the proper use to which the logs of the tree can be put. Wood from such trees fall, out of the object of forest management of any kind. Animal grazers as agent of deforestation accounted for eight percent (8%) in the study area. Most of the animals involved are browsers that will negatively affect the vegetative part of the trees thereby obstructing proper vigour development of the forests. Besides browsing on

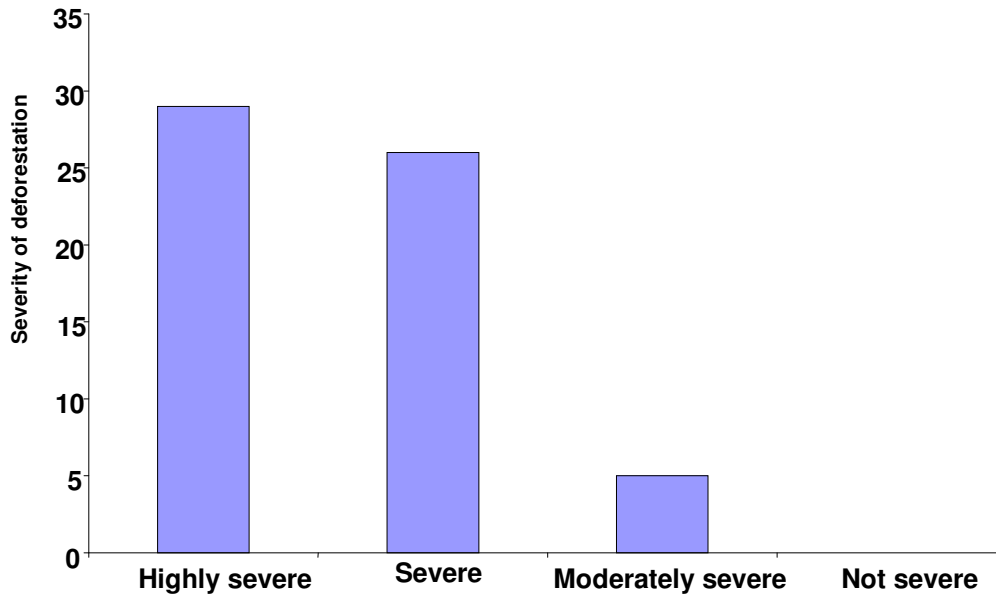


Figure 1. Severity of deforestation.

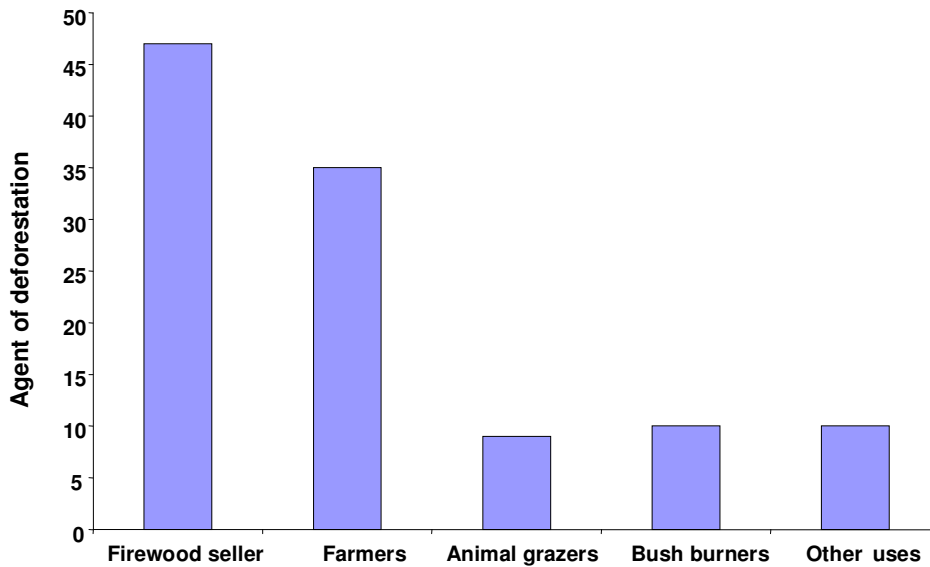


Figure 2. Agents of deforestation in the study area.

the vegetation, trampling and compacting of the forest soils negatively impact on the forest ecosystem. Bush burning that eventually leads to the burning of forestry estates constitutes ten percent (10%) in the hierarchy of agents of deforestation in the study area. Through bush/forest fire can be beneficial to some forest trees, majority of the indigenous forest trees under consideration in this study react negatively to burning.

It results in reverses to vigour in growth and artificial generation of the forest trees. In the same token, other needs in the study area accounted for ten percent (10%)

as agents of deforestation. It is important to mention the area of estate development and mining activities. When a forest tree is endangered, it means that such a tree becomes low in quantity and genetic quality. If at the point of being endangered something is not done quickly, extinction can and will occur.

On the scale of threat, *Milicia exelsa* comes first with 26 level of incidence, *Triplochyton scleroxylon* was next on the level of incidence at 20, *Mansonia* species and *Khaya* species came next at a level of incidence of 17, *Nauchlea diderechi* had 13 on the level of incidence, *Terminalia*

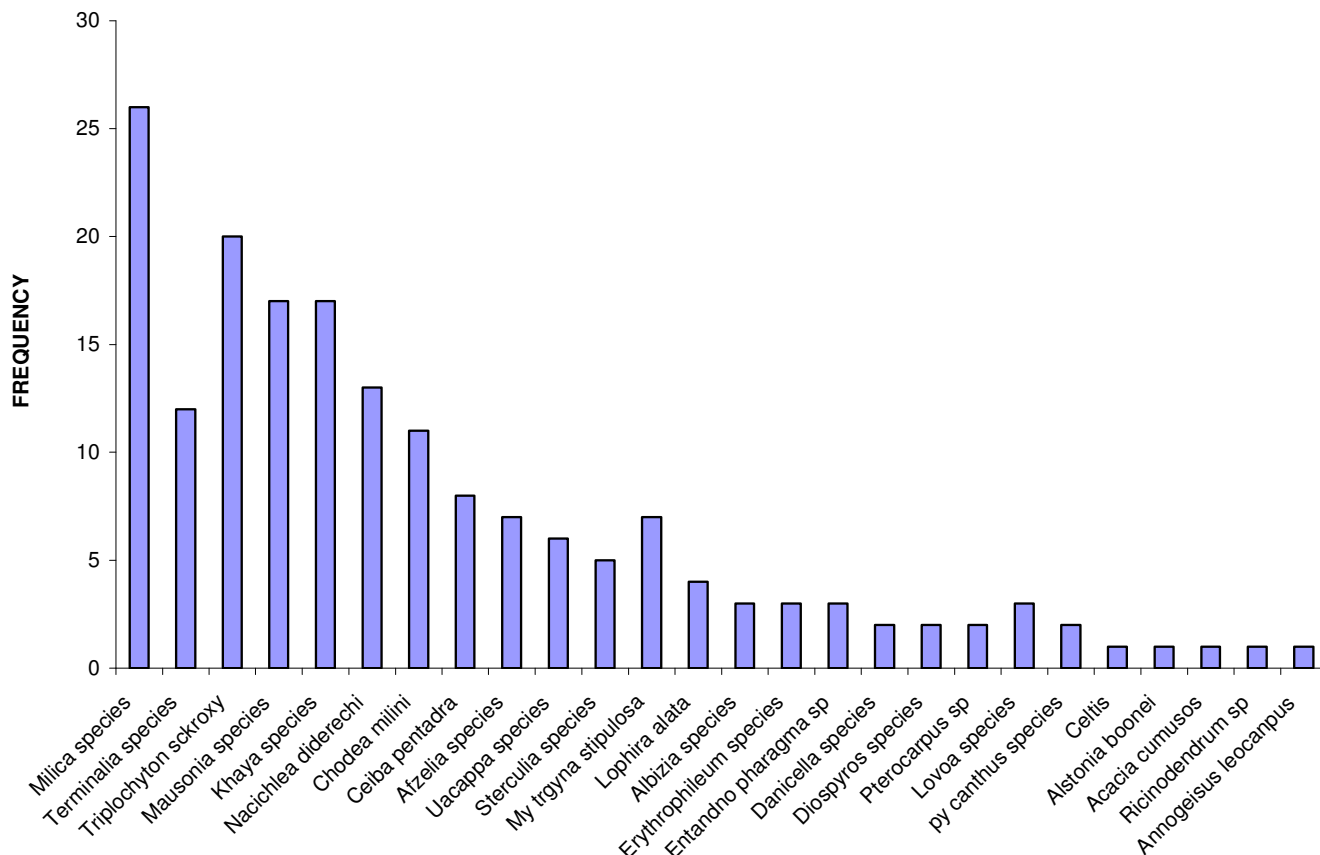


Figure 3. Indigenous, endangered tree species experiencing deforestation.

species was on the level of incidence at 12 and *Chodea milinea* had a level of incidence of 11 (Figure 3). The first set of indigenous tree species above, no doubt, constitute the so called “choice” timber wood in the study area. Apart from good quality in finishing, the trees were a source of pride to the South-west Nigeria in the days of Yore especially as export earners. The following indigenous tree species have values of less than ten (10) on the incidence level: *Ceiba pentadra* (8); *Afzelia africana* (7); *Mytrogyna stipulosa* and *Uacappa* species, (6); *Sterculia* species, (5); *Lophira alata* (4); *Albizia zpygia*, (3); *Erythropheleum* sp, (3); *Entandrophragma* spp, (3); *Daniella Ogea* and *Daiella oloreuii*, (2); *Ptelocapus* spp, *Diosporos* species and *Pychanthus* species, (2).

The following tree species have 1 on the level of incidence in the study area; *Celtis* spp, *Alstonia boonei*, *Acacia cumusos*, *Riccinodendrum* spp and *Annoigesus leocarpus*. A scale of incidence was established for the indigenous trees in the study area. Level of incidence of more than 26 means extinction, that is, the species are either not reckoned with, any longer or that the species have gone beyond the visibility or memory of forest managers and/or other stakeholders. The scale has nothing to do with the preference of use but the level of

deforestation experience. It means therefore, that the higher the tree is on the level of scale, the tendency it is to go into extinction. The ratio of regeneration in the study area cuts across 4 ratio levels. These are ratios 1:1, 1:2, 1:3 and 1:4. That is, a ratio of one tree cut to regeneration of one, two, three or four as applicable. Ten percent (10%) ratio 1:1 of regeneration was established in the study area. Forty two percent (42%) ratio 1:2 of regeneration was found out in the study area. A regeneration ratio of 1:3 made up 26% while a regeneration of 21% accounted for ratio 1:4. It was however observed that most of the regeneration drives were made by coppicing not by direct planting of seedlings/wildings. Regeneration drive therefore is controversial in the study area; in that while only 17% respondents agreed that the regeneration drive is adequate, a whopping 42% of respondents disagreed that regeneration drive is adequate. Others were silent or did not comment on Ratio of regeneration. In the same token, only 15% of respondents agreed that there will be restoration of the volume of endangered species in the study area whereas 39% respondent agreed that there cannot be restoration of the volume of endangered species in the study area (Figure 4).

The need for timber and firewood is very high at 40%. It

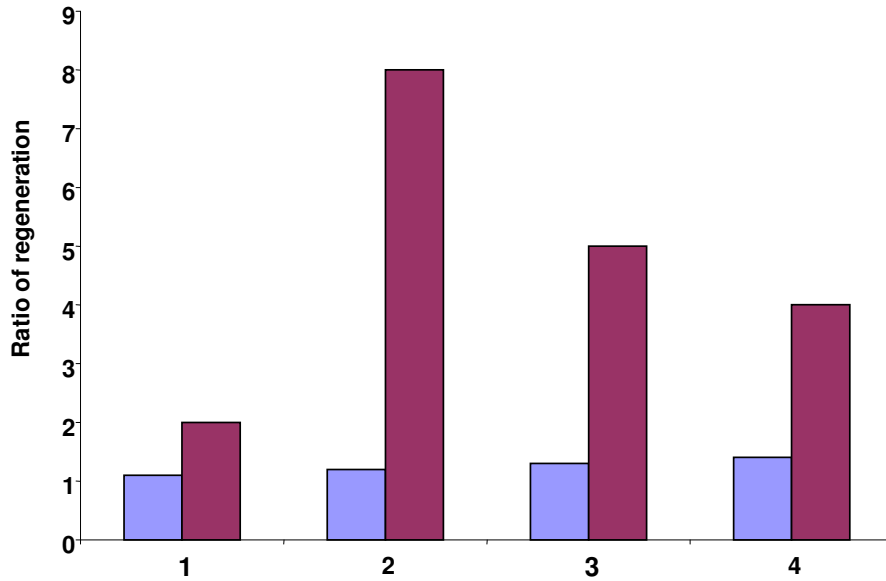


Figure 4. Ratio of regeneration.

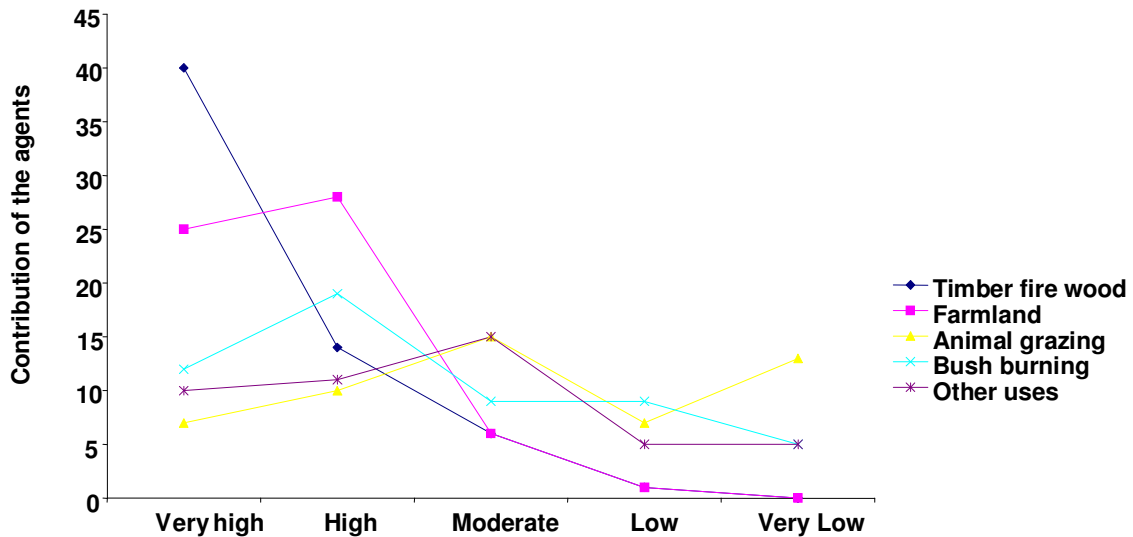


Figure 5. Level of contributions of agents of deforestation.

is also 14% at the level of being high. Saw millers and firewood gatherers affected deforestation moderately at 6% while the low level of effect is just 1%. The need for farmland is very high at 25%, high at 28%, moderate at 6% and low at 1%. It implies that the need for farmland in the study area is not very high but high. The level of contributions of animal grazers in the study area is very high at seven percent (7%), high at the level of 10%, moderate at fifteen percent (15%), low at seven percent (7%) and very low at thirteen percent (13%). The implication of this is that generally, the level of contribution of animal grazers is moderate in the study area.

Uncontrolled bush burning is high at 19% and very high at twelve percent (12%). Furthermore, at nine percent (9%), the level of contribution of bush burners is moderate, low and very low at five percent (5%). The need for other uses to which the available land is put contributed moderately at 15%, it is very high at 10%, high at 11% but very low at 5% (Figure 5).

Conclusively, timber harvesting and firewood gathering contributed, in no small measure, to further compound the problems of endangered indigenous tree species in the study area. The graph shows the level of deprivation that the citizens of the region (South-western Nigeria)

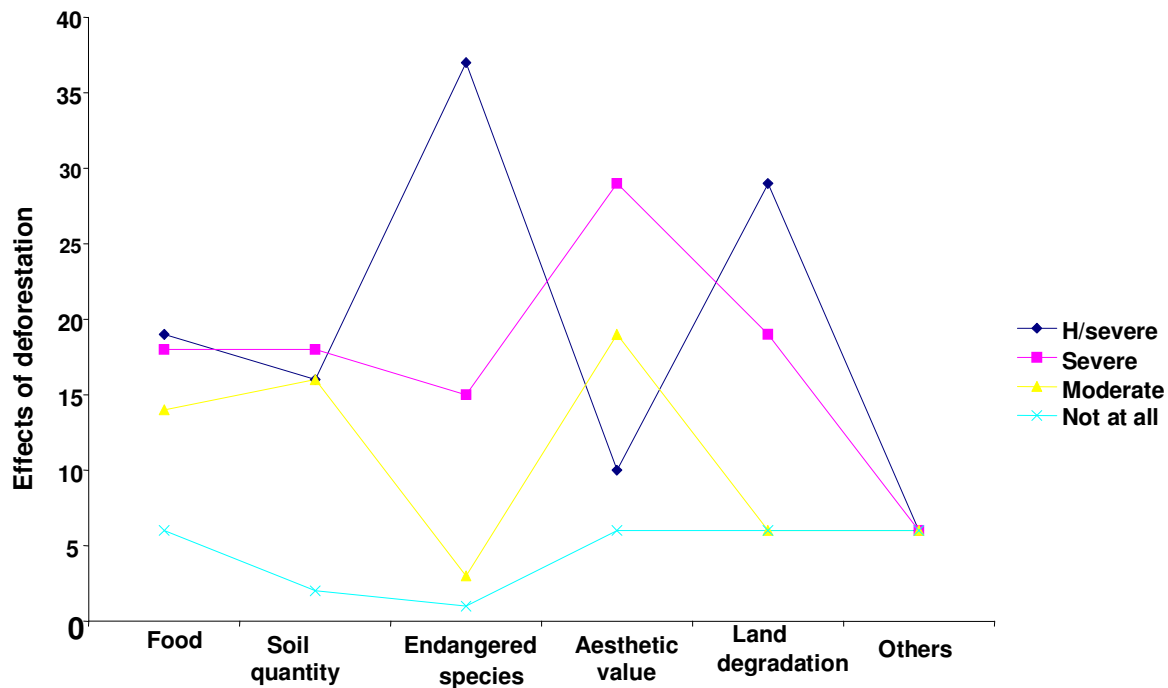


Figure 6. Effects of deforestation on specific needs of citizens.

had been subjected to on food supply and food security, soil quality, endangered tree species found in the area, distortion of aesthetic beautification of their environment and the degradation brought about on their land. Endangered tree species are further stressed in that deforestation is highly severe on them at 37%. High level of Land degradation has a severe effect at 29% while food security is highly and severely affected to the tune of 19%. As showed in Figure 6

Specific needs of the studied states for forest regeneration improvement

The following items will improve the volume enrichment of endangered indigenous tree species in the various States studied:

Oyo State

- i) Timely release of the fund allocated for forestry in each fiscal year.
- ii) School curriculum inclusion of forest conservation studies.
- iii) Public enlightenment through jingles and other enlightenment facilities.

Ekiti State

- i) Seedlings provision to peasant farmers for

incorporation as hedgerows.

- ii) More land should be allocated for forestry development.
- iii) Strict implementation of forest policy.

Ondo State

- i) Hazard allowance provision for foresters.
- ii) Improvement in monitoring of forests and foresters.
- iii) Improvement on logistics for forest operations.
- iv) Timely release of fund allocated to forestry.

Lagos State

- i) More protection activities to deter illegal fellers.
- ii) Discouraging the use of firewood through the provision of alternative energy sources.
- iii) Loans to individuals to encourage private forest estates.
- iv) Employment of more forest officers.
- v) Data collection to be improved upon and made available when needed.
- vi) Complete review of forest law for effective monitoring.

Osun State

- i) Mass mobilization of the citizenry towards forestry development.
- ii) Provision of First aid / medical care facilities for field officers.

- iii) More accommodation for field officers.
- iv) Capacity building for forest officers.
- v) Enforcement of forestry laws.

Ogun State

- i) Improvement in protection activities in forest estates.
- ii) Plowback of a greater percentage of financial resources from the forest.
- iii) Improvement in the conversion techniques with a view to minimizing wastages of off-cuts.

Summary

The study looked at the impact of deforestation on some endangered indigenous tree species in South-west Nigeria. The South Western Zone of Nigeria comprises of Oyo, Ogun, Osun, Ondo, Ekiti and Lagos States. In all, sixty structural questionnaires were administered on the geo political zone for the study. Findings shows that deforestation is impacting severely on existing endangered species in that Twenty-nine percent of severity is recorded. This indicates that despite the fact that the tree species are endangered, over exploitation is still in progress. This is also happening despite the fact that the ratio of regeneration to generation that depends on the plant or tree coppicing, not by direct seedling or seedling/wilding propagation. The citizens of the study area are also losing out fast on food security ladder which is progressively affected albeit negatively by deforestation. The soil upon which they farm is losing its quality while the land is fast being degraded (Isife and Balogun 2001).

RECOMMENDATIONS

Stemming out of the requirements needed for improvement in the forest volume, the following suggestions are proffered:

- i) Education of the populace and the citizenry of the need to conserve the remaining endangered species and the need to increase the ratio of regeneration from the present ratio of one to two to a ratio of one to four, that is, cut one tree and plant four as replacement. Coppicing should not be the major way of enriching the volume of the forest but just a supplement. Direct planting and plantation establishment is of paramount importance.

There should be incentives for research in the area of propagation of the endangered indigenous species; genetic studies that will enhance the research should be adequately funded.

- ii) As of now data collection / collation for proper forest management is not adequate in the study area. Data should be taken and made available to the general public for proper judgement.

- iii) Encouragement should be given to private developers of forests. Incentives could be through free seedling distribution and free land holding.

Forest policies in the states studied were archaic, inadequate or not implemented to the letter. A sustainable policy framework is important to give room for a progressive growth in the forestry industry in the study area.

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