

Status of Endangered Tree species in Savannah Landscape, Nigeria: Causes and Restoration possibilities

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Abstract

Savanna biome is well known with high temperature, low humidity, and loose sandy soil. Among common species in this area are *azadirachta indica*, *dalbergia sissoo*, *phoenix dactylifera*, *Balanities egyptiaca* and *Eucalyptus camadulensis*. These tree species have great potentials in Northern Nigeria in terms of adaptability, economics, and environmental values. Recent research proof that the tree species such as *Adansonia digitata*, *tamarindus indica*, *parkia biglobosa*, *vitellaria paradoxa*, *hyphaene thebaica*, *faidherbia albida*, *khaya senegalensis* and *Borassus aethiopica* were the most commonly exploited and endangered economic tree species which were used for different purposes. Some of these species had been used for afforestation programs and research purposes. Among the causes of species endangerment are human activities such as Deforestation, mining and urbanization, other factors are growing population high-cost hydrocarbon products, exploitation of natural resources. Sustainability of forest resources is achievable when carefully planned conservation programs are put in place. Therefore, a way forward in achieving sustainability in resource conservation is through the full participation of the stalk holders, including local communities, indigenous people, and the sustainable management of natural resources. According to scientist, biodiversity can be conserved through ex-situ conservation. Furthermore, environmental education proved to be best in a discovery. Some of the most important available tools for conservation are habitat conservation and law-enforcement. Re-introduction technique is also a supportive mean of conserving tree species. Seed and plant collection was the least out of the methods. Failure to take the necessary actions will lead to environmental problems. Therefore, all stakeholders at different levels must involve in meaningful conservation and sustainable development efforts.

Keywords: Endangered; Tree species; Savannah landscape; Causes; Restoration

Introduction

The three major zones of savanna in Northern Nigeria (Sudan, Sahel, Guinea and Derived) cover an area of 75,297km² (8; 9) [1] observed that the tropical rainforests are vulnerable to deforestation and degradation. This area is also characterized with high temperature, low rainfall, low humidity and loose sandy soil. High temperature is prevalent during the dry season. This raises the rate of evaporation and dries the soil to considerable depth. Among common species in these areas are *azadirachta indica*, *dalbergia sissoo*, *phoenix dactylifera*, *Balanities egyptiaca* and *Eucalyptus camadulensis*. Some of these species had been used for plantation and research purposes (4:10). These species have great potentials in Northern Nigeria in terms of adaptability, growth, economics, and environmental values especially neem and eucalyptus which have great importance as sources of industrial raw materials in Nigeria. Trees are of great importance to the people of Jigawa State. Wood is used to make farming and cooking utensils, for food preparation and as construction material. Palm branches are used for roof construction, beverage preparation and in traditional ceremonies. Fruit, medicinal flowers and nuts are a few of the many other non-timber products uses of trees in the area [2], shows that the tree species such as *Tamarindus indica*, *Adansonia digitata*, *parkia biglobosa*,

Vitellaria paradoxa, *hyphaene thebaica*, *faidherbia albida*, *Khaya senegalensis* and *Borassus aethiopica* were the most commonly exploited and endangered economic tree species which were used either as fuel wood, timber, mortar and pestle, medicinal purpose, local house furniture, and thus, are considered to be a threat to sustainable environmental and ecosystem management in the study area. With the level of tree importance to the populace, the act of planting a tree on your farm field is rarely done. The reason has to do with land tenure. The objective of this analysis is to determine the status, causes and remedies of endangered tree species in savannah landscape of Nigeria.

Causes

Plant diversity is currently being lost to the effect of human activities and increase in population which lead to decrease in ecosystem services [3]. There is an increase in global concern on continues destruction of the environment by human activities for search of wild fruits, vegetables, and edible insects from the forests for household consumption and/or commercial purpose. Pressure anthropogenic activities is largely causing the loss of plant diversity with about a third of the world's vascular plant species facing threat of extinction [4]. Due to population growth, exploitation of natural resources in the developing countries of the world is growing significant rate. Deforestation is one major cause of environmental problems. Earlier researchers have shown that about 80% of the inhabitants of Africa use woods for cooking, timber, house/farm fencing and medicinal purposes. On this point, Nigeria is the most populous nations with 170 million people the overwhelming majority of Nigerian citizens destroy their own environment simply to survive [5]. Forest degradation is usually accompanied by species extinction, reduction in biodiversity and decrease in primary productivity [6].

Conservation and Strategies

Sustainability is a term used for forest management system such that the forest resources are used in such a way it continues to be available in perpetuity [7]. Therefore, a way forward in achieving sustainability in resource conservation is through the full participation of the stalk holders [8], including local communities and indigenous people and the sustainable management of natural resources. The primary goal of sustainability is to generate solutions that are ecologically sustainable, viable and socially acceptable [9]. The maintenance of viable and self-sustainable population of wild species in their natural state should be encouraged; since habitat destruction is inevitable, endangered species need to be preserved before they become extinct, according to [4], biodiversity can be conserved through ex-situ conservation, which literally means, offsite conservation. This involves removing part of the population from threatened habitat and placing it in a new location, which may be wild area or within the care of human. Environmental education proved to be best in a discovery. Re-introduction technique is also a supportive mean of conserving tree species. Seed and plant collection were the least out of the methods. Some of the most

important available tools for conservation are habitat conservation, ex-situ conservation and law-enforcement [10].

Recommendations

In order to attain the strategies of preventing endangered tree species in the northern states, the following methods must be taken.

- a) The best strategy (output) from the research must be conveyed to the state government (Ministry of Environment or Forestry) through proposal significant.
- b) Government should provide cheap alternative sources of energy to discourage most Nigerians from using fuel wood as a source of energy which has caused the reduction of forest resources over the years.
- c) Sufficient awareness of the endangered economic tree species should be done so that the general public can also help in their protection and conservation [11,12].
- d) Substantial replanting programs by both government and private individuals to check the effect of climate change and environmental degradation which is responsible for loss of biodiversity should be encouraged.

Conclusion

Growing in human population and poverty level call for the high demand of insufficient renewable resources like trees in the region. Over-dependent on this resource (timber) lead to the depleting of some important tree species such as *tamarindus indica*, *Adansonia digitata*, *parkia biglobosa*, *vitellaria paradoxa*, *hyphaene thebaica*, *farderia albida*, *khaya senegalensis* and *Borassus aethiopica*. Environmental education, proper law enforcement and sustainable methods are the preferred to restore and improve endangered tree species. Therefore, all stakeholders such as individuals, non-governmental organizations and Government at different levels must involve in meaningful conservation and sustainable forestry development efforts.

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