

Diversity of Tree Species in Issele- Uku, Delta State Nigeria

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Abstract

This project delves into the intricate interplay of trees in the ecosystem, serving as keystone organisms with multifaceted ecological significance. Executed in Issele-Uku, Delta State, Nigeria, the study meticulously scrutinizes the biodiversity and floras of trees. Researchers conducted comprehensive on-site surveys, documenting prevalent tree species and quantifying their diameter at breast height. A thorough documentation process yielded 300 trees, representing 19 distinct species from 18 families. Predominant among these were *Elaeis guineensis*, *Cocos nucifera*, *Terminalia catappa*, *Areca catechu*, and *Roystonea regia*. Notably, anthropogenic activities, particularly tree felling for infrastructure development, emerged as a looming threat to tree species within the study area. Despite their pivotal environmental roles, these trees face jeopardy, necessitating urgent and sustainable conservation measures for their preservation and the maintenance of ecological integrity. The diameter at breast height spanned from 0 to 3.6 meters, with *Areaceae* standing out as the most abundant (16.67%) and diverse family in the study area. This research contributes valuable biological insights, advocating for the preservation of tree diversity as a cornerstone for resilient and thriving ecosystems.

Introduction

This research studies the flora of Issele-Uku of Delta State, Nigeria. One of the greatest assets of tropical forest is the richness of flora and fauna species. The diversity of tree species is a fundamental component of total biodiversity in many ecosystems because trees are ecosystem engineers that provide resources and habitats for almost all other forest organisms (Huston, 1994). In tropical forests, the diversity of tree species varies by geography, habitat parameters, and levels of disturbance Muscolo et al., (2014). Trees form the major structural and functional basis of tropical forest ecosystems and can serve as indicators of changes and stressors at the landscape scale Altieri et al., (2015). Spatial patterns of species richness have been used extensively to identify biodiversity "hotspots" Tzedakis, P. C. (2009). It is noted that managing areas of high species richness is equal to improved conservation outcomes. Altermatt, F. (2013). (2013) noted that trees, which are important for the sustenance of life and the health of our planet, are disappearing at an alarming rate. Consequently, the need for actions to develop effective strategies to conserve them is receiving considerable attention worldwide.

This research work help us to measure the stability of the Eco system by recording the abundance of tree species in the region of Delta state Nigeria. Trees age are also determined and predicted as it help us fight against indiscriminate felling of endangered species of trees.

Result

Relative frequency of some of the observed trees.

Table 1

COMMON NAME	LOCAL NAME	SCIENTIFIC NAME	FAMILY	FREQUENCY: N(%)
African bread fruit	Ukwa	<i>Antrocarpus altilis</i>	<i>Moraceae</i>	2(0.67)
African pear	Ube	<i>Dacryodes edulu</i>	<i>Burseraceae</i>	23(7.67)
Kola Nut	Orji	<i>Cola nitida</i>	<i>Malvaceae</i>	36(12)
Cashew	Cashew	<i>Anacardium occidentale</i>	<i>Annacardiceae</i>	14(4.67)
Avocado pear	Ube - oyibo	<i>Persea americana</i>	<i>Lavraceae</i>	12(4)
Neem	Dongoyaro	<i>Azardirachta indica</i>	<i>Meliaceae</i>	11(3.67)
Palm tree	Akwu	<i>Elaesis gunensis</i>	<i>Areaceae</i>	50(16.67)
African Melon	Ogbonno	<i>Irvingia gabenesis</i>	<i>Irvinjiaceae</i>	10(3.33)
Mango	Mango	<i>Mongifera indica</i>	<i>Anacardiceae</i>	18(6)
Coconut	Aku - Oyibo	<i>Cocos nucifera</i>	<i>Arecaceae</i>	33(11)
African star apple	Udala	<i>Chrysophyllum albidun</i>	<i>Sapotaceae</i>	7(2.33)
Bitter Kola	Orji	<i>Garcicia kola</i>	<i>Clusiaceae</i>	15(5)
Pawpaw	Orjo	<i>Caica papaya</i>	<i>Caricaceae</i>	21(7)
Castor oil tree	-	<i>Ricinus communis</i>	<i>Euphorbiaceae</i>	5(2.33)
Maquerade tree	-	<i>Polyalthus longifolia</i>	<i>Annonaceae</i>	9(3)
Orange	Olume	<i>Citrus sinensis</i>	<i>Rutaceae</i>	16(5.33)
Guava	-	<i>Psidium guajava</i>	<i>Myrtaceae</i>	6(2)
Tangerine	-	<i>Citrus tangerine</i>	<i>Rutaceae</i>	10(3.33)
Moringa	Okume oyibo	<i>Moringa olifera</i>	<i>Moringaceae</i>	2(0.65)

All data produced where generated by the author by taking tree measurement in several regions of Isele uku, Delta state, Nigeria using tree measuring technique .

Materials and method

This study was conducted in Issele-Uku, Delta State, Nigeria, situated between longitude 6.47599° and latitudes 6.31584°. Issele-Uku is located in the Aniocha North Local Government Area of Delta State and serves as the headquarters of Aniocha-North. The town experiences a tropical climate, characterized by

a humid and partly cloudy dry season, with consistently warm temperatures throughout the year. In Issele-Uku, the average annual temperature is 25.6°C, and annual precipitation is approximately 1807 mm. The driest month is December, with 11 mm of precipitation, while September sees the highest precipitation, averaging 324 mm. March is the warmest month, with an average temperature of 27.4°C, while August is the coldest, averaging 23.9°C. The annual temperature variation is around 3.5°C (Climate-Data.Org, 2019).

Materials Used:

- Measuring Tape: Utilized for reading the length of the string employed in measuring the diameter of the tree.
- Marker: Employed to mark the height of the tree at 4.5 feet from the base before measuring the diameter.
- String: Employed for measuring the diameter, and its length was subsequently read on the tape.
- Calculator: Used for calculating the measured circumference of the tree.
- Biro (Pen): Employed for recording and writing down the measured values.
- Recording Book: Utilized for transcribing and archiving the recorded values.
- Procedure for Measuring Tree Height (Diameter at Breast Height):

Height Measurement:

Using the measuring tape, a height of 4.5 feet was measured up the trunk from the ground.

A marker was used to mark this height on the trunk.

Circumference Measurement:

A tight string was wrapped around the tree at the 4.5-foot mark on the trunk.

The length of the string was measured using the tape to obtain the circumference of the tree.

Diameter Calculation:

The calculator was used to convert the circumference measurement to diameter by dividing the circumference by 100.

Conclusion

In conclusion, this project delved into a comprehensive evaluation of the tree floras within the locale of Issele-Uku, Delta State. Extensive literature review provided a foundation for understanding the existing knowledge on the subject, contributing valuable insights to the current study. The research involved a meticulous on-site visitation to the study area, enabling direct physical observation and documentation of the diverse tree species present. The culmination of this effort is encapsulated in a meticulously

organized table and graph, effectively representing the spectrum of tree diversity within Issele-Uku. This study contributes not only to the academic discourse on tree diversity but also serves as a practical resource for conservation efforts and sustainable management of the rich tree flora in the region.

Declarations

Author Contribution

S.I wrote the mauscript and carried out all field work to get the results

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