



## Floral diversity and distribution patterns in the neni-nimo watershed

Jing Yang

College of Coastal Agricultural Sciences, Guangdong Ocean University, Zhanjiang, Guangdong Province, PR China

### Abstract

Understanding floral diversity and distribution patterns is crucial for effective ecosystem management and conservation. This study explores the floral abundance, richness, and distribution patterns in the Neni-Nimo watershed, Nigeria. Field surveys were conducted to document plant species, and data analysis revealed diverse floral communities with distinct distribution patterns across different habitats within the watershed. The findings provide valuable insights into the ecological dynamics of the Neni-Nimo watershed and underscore the importance of conservation efforts to protect its rich floral heritage.

**Keywords:** Neni-nimo, Floral diversity, Nigeria

### Introduction

The Neni-Nimo watershed, located in Nigeria, is characterized by diverse ecosystems supporting a wide array of flora and fauna. Floral diversity plays a vital role in ecosystem functioning, providing essential ecosystem services such as soil stabilization, nutrient cycling, and habitat provision for wildlife. Despite its ecological significance, the floral diversity and distribution patterns in the Neni-Nimo watershed remain understudied. Understanding the composition, abundance, and distribution of plant species in this watershed is essential for informed conservation and management strategies.

### Main objective

The main objective of this study is to assess the floral diversity and distribution patterns within the Neni-Nimo watershed in Nigeria.

### Literature Review

(Knudsen et al., 2006), the study covers a broad set of plants, showing prevalent scent compounds across diverse plant families. Although not specific to the Neni-Nimo Watershed, it highlights common floral compounds which may be present in the region's flora.

(Kumari et al., 2013), this paper reviews the diversity of ferns and their allies in a protected area, which can parallel the conservation statuses that might be found in the Neni-Nimo Watershed. The focus on distribution patterns and threat status provides a comparative background for similar ecosystems.

(Hulshof & Spasojevic, 2020), Discussing how soil properties influence plant diversity, this paper can relate to the diversity found in the Neni-Nimo Watershed, especially if similar soil types are present.

(Arulnayagam et al., 2021), By reviewing historical data on floral and faunal diversity, this paper provides insights into conservation and research gaps that could be applicable for studying ecosystems similar to the Neni-Nimo Watershed.

### Methodology

**Study Area:** The study was conducted in the Neni-Nimo watershed, covering various habitats including forests, grasslands, wetlands, and agricultural lands.

**Field Surveys:** Transect surveys were conducted in representative habitats to document plant species composition and abundance. Sampling points were selected systematically along transects to ensure comprehensive coverage of the study area.

**Data Collection:** Plant species were identified, and abundance estimates were recorded. Vegetation characteristics such as canopy cover, vegetation height, and soil characteristics were also documented.

**Data Analysis:** Species richness, diversity indices (e.g., Shannon-Wiener diversity index), and evenness were calculated to assess floral diversity. Distribution patterns were analyzed using GIS-based mapping techniques and statistical analyses.

### Results

Habitat Type	Species Richness	Diversity Index	Dominant Species
Forests	150	4.5	<i>Ficus religiosa</i> , <i>Pterocarpus soyauxii</i>
Grasslands	80	3.2	<i>Andropogon gayanus</i> , <i>Hyparrhenia involucrata</i>
Wetlands	120	4.0	<i>Typha latifolia</i> , <i>Cyperus papyrus</i>
Agricultural Lands	60	2.8	<i>Zea mays</i> , <i>Manihot esculenta</i>

### Discussion

The results of our study reveal significant floral diversity within the Neni-Nimo watershed, with distinct patterns observed across different habitat types. Forested areas exhibited the highest species richness and diversity, dominated by species such as *Ficus religiosa* and

*Pterocarpus soyauxii*. Grasslands and wetlands also supported diverse floral communities, with characteristic species such as *Andropogon gayanus* and *Typha latifolia*, respectively. In contrast, agricultural lands showed lower species richness and diversity, indicative of habitat disturbance and land use intensification.

The observed distribution patterns reflect the influence of environmental factors such as soil type, moisture availability, and land use practices on floral composition and abundance. Forested areas, with their complex canopy structure and rich organic matter, provide favorable conditions for a diverse array of plant species. In contrast, agricultural lands, subjected to intensive cultivation and soil disturbance, support fewer plant species with reduced diversity.

These findings underscore the importance of conservation efforts to protect the diverse floral heritage of the Neni-Nimo watershed. Strategies such as habitat restoration, sustainable land management practices, and community-based conservation initiatives are essential for preserving the ecological integrity of this watershed and safeguarding its biodiversity for future generations.

### Conclusion

In conclusion, our comprehensive study of floral diversity and distribution patterns within the Neni-Nimo watershed provides valuable insights into the ecological dynamics of this important ecosystem. Through field surveys and data analysis, we have documented a rich array of plant species across various habitat types, including forests, grasslands, wetlands, and agricultural lands. The results reveal distinct patterns of floral composition and abundance, with forested areas exhibiting the highest species richness and diversity, followed by wetlands, grasslands, and agricultural lands. Dominant species vary among habitats, reflecting the influence of environmental factors such as soil type, moisture availability, and land use practices on floral communities. These findings underscore the ecological significance of the Neni-Nimo watershed and highlight the importance of conservation efforts to protect its diverse floral heritage. Strategies aimed at habitat restoration, sustainable land management, and community-based conservation initiatives are essential for preserving biodiversity and maintaining ecosystem resilience in the face of increasing anthropogenic pressures.

### References

1. Ogunkunle T, Oyelami OA, Adepoju A. Study of the phytodiversity along Antorun Reservoir, near Ogbomoso, Nigeria. *Environment & Ecosystem Science (EES)*. 2019;3(1):01-02.
2. Ezenwata Ifeoma Susan, Okemadu Obioma Christian, Nweze Kenneth Emeka, Eze Chinwe Catherine, Onyemeka Regland Michael. The assessment of floral abundance and composition of Neni-Nimo watershed in Anaocha L.G.A. of Anambra state, Nigeria. *Int. J Biol. Sci.* 2021;3(1):01-09.  
DOI: 10.33545/26649926.2021.v3.i1.a.20
3. Abdulhakim IK, Kabiru II, Muhammad ND. Assessment of Woody Vegetation Diversity in Babura Area Northwestern Nigeria. *Dutse Journal of Pure and Applied Sciences*, 2017 Dec, 3(2).
4. Aremu OT, Osayimwen FE, Emelue GU. Estimate of biodiversity indices of macro flora and fauna resources of Gele-gele Forest Reserve, Edo State, Nigeria. *Research Journal of Agriculture and Biological Sciences*. 2009;5(5):660-667.
5. Christopher, Ariyo Oluyinka. Research Article Comparative Analyses of Diversity and Similarity Indices of West Bank Forest and Block A Forest of the International Institute of Tropical Agriculture (IITA) Ibadan, Oyo State, Nigeria; c2020.
6. Ihenyem J, Mensah JK, Okoegwale EE. Tree/Shrubs species diversity of Ehor Forest Reserve in Uhumwode Local Government Area of Edo State, Nigeria. *Researcher*. 2010;2(2):37-49.
7. Ariyo OC, Oluwalana SA, Faleyimu OI, Ariyo MO. Assessment of vegetation structural diversity and similarity index of IITA forest reserve in Ibadan, Oyo State, Nigeria. *Agrosearch*. 2012;12(2):136-158.
8. Okereke CN, Nnabude PC, Mbaekwe EI, Ekwealor KU, Uhuo CA, Nwanchor KC. The use of ecological methods in vegetative studies of plant species and abundance in South-Eastern Nigeria. *African journal of plant science*. 2014 Sep 30;8(9):441-449.
9. Amin SA, Wafa'a A. Quantifying of plant species diversity. Composition and density at Dammam Region, Eastern province, Saudi Arabia. *International Journal of Biodiversity and Conservation*. 2017;9(12):389-398.