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ENVIRONMENTAL AUDIT OF THE TUNU/KANBO FORESTS OF THE NIGER DELTA, NIGERIA.

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ABSTRACT

The environmental audit of the Tunu/Kanbo area of the Niger Delta, Nigeria was carried out to assess the impact of logging and timber exploitation in the area. The audit showed a high loss of endangered, threatened and economic forest species in the area; e.g. *Terminalia superba*. The unlawful logging and "forest abuse" common in the area is detrimental to conservation of biodiversity attempts and ideals. It is recommended that regeneration efforts be put in place and intensified so as to eschew the loss of fallen endangered and economic forest species. Similarly, the establishment of 'Failed Environment Tribunal' to monitor and punish those involved in "environmental abuse" would no doubt be a positive development.

INTRODUCTION

The Niger Delta covers an area of about 70,000 km^2 out of which about 1,240 km^2 is currently occupied by Tunu/Kanbo. Tunu/Kanbo is one of the most recent camps/ settlements in the Rivers State.

The vegetation of this area is predominantly mangrove forest with vegetative band 15-45km wide, parallel to the coast. Adjoining the mangrove inland are patches of rainforest and open mass of land probably made for commercial farming. These vegetation communities are currently witnessing one form of disturbance or the other resulting from human activities such as logging, cutting for fuel (fire wood) and timber. Vegetational responses to changes range from shedding of leaves, poor growth performance to death. The most sensitive species may die and eventually become extinct. The effect of human activities world over, has led to a gradual loss of some plant species. Human encroachment is therefore a major disturbance in the stability of ecosystems. Vegetation, for instance, when disturbed leads to migration of animals to more favourable places and the loss of potentially useful plants.

It is in the light of this that the environmental audit of the Tunu/Kanbo forests was embarked so as to provide information on the existing forest stands as well as the status of activities going on there.

METHODOLOGY

Eight transects of 250m in length were cut randomly within the Tunu/Kanbo area. The choice of the transects which were found to contain either aquatic or terrestrial vegetation and sometimes both was taken to represent all possible vegetation of the area. The vegetation within 10m on either side of the transects were studied using the floristic and structural attributes as enunciated by Hall (1977) and Chukwuka (1986). Within each transect, the vegetation of major growth-forms were noted and recorded. Similarly, in each transect, a 10m x 10m contiguous quadrat was measured out and plant species ≥2m in height were identified and listed while unidentified species were collected, pressed and taken to the University of Ibadan herbarium for identification and authentication. Any stand once enumerated was given a mark to avoid double enumeration. Information obtained from the above were used to estimate :

(i) Species diversity (D) = $\frac{N(N-1)}{\Sigma n(n-1)}$

Where D = diversity (Simpson's) Index
N = total number of individuals
n = number of individuals of each species
Σ = sum of.

(ii) Dominance Index (C) = $\Sigma (n_i / N)^2$

Where n_i = number of individuals of each species
N = total number of individuals
Σ = sum.

RESULTS

The vegetation of the Tunu/Kanbo is exemplified by the Mangrove type. This vegetation is currently subjected to biotic disturbance involving logging and commercial farming of *Ananas comosus*. The major growth forms are trees, shrubs, palms as well as graminoids especially in areas that have been reclaimed recently.

The species encountered include : *Rhizophora racemosa, Uapaca staudtii, Terminalia superba, Ceiba pentandra, Alchornea laxiflora, Alstonia boonei, Dalbergia sp., Dryopterus sp, Elaeis guineensis, Mangifera indica , Ananas comosus, Acrostichum aureum , Mariscus longibracteatus* and *Panicum maximum*. The species list with their frequencies are shown in appendix 1.

The species diversity and dominance indices for the Tunu/Kanbo are 2.24 and 0.45 respectively. Dominance by *Rhizophora racemosa* was however recorded. This species contributed about 63.3% of the total species recorded for the area. This is not surprising since the vegetation is predominantly mangrove forest.

DISCUSSION

There is a general uniformity in the forest flora of the Tunu/Kanbo area of the Niger Delta which is mainly mangrove except in the areas recently degraded and reclaimed through cutting, logging and mud-filling. This degraded and reclaimed area is currently dominated by the graminiods, ferns and sedges e.g. *Mariscus longibracteatus, Panicum maximum, Dryopterus sp* and *Acrostichum aureum*. etc. This is a likely state of affairs given that succession of a new or bare area starts with the lower green plants and move in that order progressively until higher angiosperms come in (Slingsby and Cook, 1992).
Parts of this area are currently in a process of succession from mangrove forest to rainforest as observed in the field. Some of the disturbed areas are now used for commercial farming of *Ananas comosus*.

The major species listed in the area include *Rhizophora racemosa, , Uapaca staudtii, Terminalia superba, Ceiba pentandra, Alchornea laxiflora, Alstonia boonei, Dalbergia sp., Elaeis guineensis* and *Mangifera indica*. The diversity and dominance indices of 2.24 and 0.45 respectively were recorded for the area. The low diversity index recorded for the area is not unlikely of a mangrove forest which has the dominance trees as *Rhizophora racemosa* (63.3%). This low diversity index will be further affected by recent changes involving human activities such

as cutting (for farming, domestic use and firing industrial boilers) and logging (for timber). In addition to these, the clearing of a large expanse of mangrove forest in the area may probably be for other uses which *Rhizophora racemosa* could be put to. For example, the numerous roots and stumps are used for preparation of local salts while the bark provides a cheap source of tannin for leather industries(dyeing leathers) and phenolic (adhesives) for plywood industries (Onosode, 1983).

The unlawful cutting and clearing of these vegetation negates the idea of forest conservation and utilization and should be checked. It is therefore suggested that regeneration efforts should be put in place to avoid further loss of species in this area. Also, forestry department should liaise with the Federal Environmental Protection Agency with a view to setting up a monitoring team in this area. For this effort to bring about positive results, some selected community leaders should also be involved. Their involvement at relevant stages becomes significant in view of the fact that they are the real custodian of these natural resources. Their cooperation and interest are inevitable if indeed we do not want a problem-oriented conservation policy for a country like Nigeria.

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APPENDIX 1

Species list in the Tunu/Kanbo area of Niger Delta, Nigeria.

Species name	Number of species
1. *Rhizophora racemosa*	6,037
2. *Uapaca staudtii*	782
3. *Terminalia superba*	43
4. *Ceiba pentandra*	13
5. *Alchornea laxiflora*	1,807
6. *Alstonia boonei*	22
7. *Dalbergia sp*	301
8. *Elaeis guineensis*	524
9. *Mangifera indica*	9
10. *Dryopterus sp*	fern
11. *Acrostichum aureum*	fern
12. *Ananas comosus*	cultivated
13. *Mariscus longibracteatus*	graminoid
14. *Panicum maximum*	graminoid