DEGRADED FORESTS IN PROTECTED LANDSCAPES: PROSPECTS OF BIODIVERSITY REHABILITATION IN URHONIGBE FOREST RESERVE, EDO STATE, NIGERIA.

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Overview

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Introduction

- The spate of Biodiversity loss in forested landscapes is a global phenomenon.

- The Nigerian vegetation is a composite of Mangrove/Fresh water Swamps, Rainforest, Derived Savanna, Guinea/Sudan, Sahel & Riparian. But no part is spared of biodiversity loss.

- Of the total land area of 1.9 million Hectares with >30% designated protected and in 48 Forest Reserves in Edo State (Fig. 1), over 45% had rainforest vegetation after reserve constitution in the 1930s.

- Edo State has a population of 3.4 million (2006 National Census).
Introduction...Cont’d
Intro.... *Cont’d*

- Biodiversity is in custody of indigenous people living in areas with vast genetic resources (Secretariat of CBD, 2004).

- Forest dependent communities engage in farming and land use practices to support their livelihoods - diet diversification, income generation, minimization of risks, production stabilization, maximization of returns under low technology (Warren, 1992; Altieri, 1987).

- Presently, forests under State protection are facing more human induced threats because those controlled by local communities have long been misused.

- TFK is facing the risk of being lost as biodiversity is increasingly eroded.
Objectives:

- examine extant TFK and local conservation practices in communities,

- evaluate relationships between TFK and Biodiversity in the perspective of the local communities, and

- investigate how TFK can drive landscape rehabilitation efforts in Urhonigbe Forest Reserve.
Status of Biodiversity in Protected Areas in Edo State, Nigeria.

- Forest management and timber exploitation predate forest reservation in Nigeria.
- Forest management systems - e.g. Tropical Shelterwood System (TSS) Plantation forestry that were introduced and given blanket application contributed significantly to the ruins in Biodiversity.
- Farming, lumbering, poaching and land use practices - slash & burn agriculture; unsustainable harvest of timber trees, fuel wood, NTFPs etc., responsible for the spate in forest degradation.
Status of Biodiversity in Protected Areas in Edo State.... Cont’d

- Reduced forest integrity and species diversity - change from *Gossweilerodendron-Hylodendron-Guarea* association (Bada, 1984) to *Hylodendron-Annonidium* association (Isikhuemen, 2005).

- Size of forest estate under protection in Edo State declined significantly from 576,944ha to 361,304ha (18%) by end of 2007.
Urhonigbe Forest Reserve (UFR)

- Urhonigbe Forest Reserve (size: 30,791Ha) was constituted in the early 1920s.

- It is located on southeastern fringe of Edo State.

- Reserve lies within rainforest zone; have wet & dry seasons; rainfall pattern is bimodal with 2 peaks - July & September.

- UFR is characterized by sandy and acidic soil.
Urhonigbe F/Reserve...Cont’d

FIG. 2: MAP OF URHONIGBE FOREST RESERVE SHOWING CORE, BUFFER AND TRANSITION
Urhonigbe Forest Reserve.... Cont’d

- Original rainforest vegetation replaced by fire-climax and grass communities.

- Remaining forests now secondary regrowth situate in PSP 82 (size 6ha) & SNR 3 (size 300ha) and characterized by trees carrying damaged/ill formed boles and/or crowns.

- 23 communities live in enclaves or fringes of UFR.
Biodiversity Action Plan Project

- NBSAP - most recent published document on Biodiversity in Nigeria.


- SPDC put machinery in motion for the establishment of BAP project for communities living in enclaves or bordering 2 forest reserves in Edo State - Gele Gele & Urhonigbe FRs.
BAP Project.... Cont’d

- SPDC carried out sensitization/awareness campaigns in respect of BAP project to the domain of stakeholders - Govt. and Communities.

- SPDC provided seed money for BAP in 2006 and facilitated the enactment of Biodiversity Law at the State Parliament.

- BAP project commenced in 2007.
Data Collection and Analysis

- Two Rapid appraisal methods: Key informant and Focus Group Interviews.

- 5 communities - selection criterion based on proximity to SNR 3 (Evbosesi & Urhonigbe) and PSP 82 (Ugo, Obozogbe, Nugu, and Urheheue).

- 2,124 farmers & sundry users of forest resources interact /have contact with the SNR 3 and PSP 82.
Data Collection and Analysis 

Cont’d

- Respondents’ selection: 12 each for Urhonigbe, Evboesi and Ugo; Urhehue - 8 and Obozogbe-Nugu - 6 (2% sampling intensity).

- Questions in 4 thematic areas posed to 50 respondents (mostly elders) - 24 farmers, 8 hunters, 6 loggers, 7 NTFPs collectors/gatherers; and cross checking of responses and across interviews with 4 elders/retirees.

- Information collected on some species requiring special conservation attention were pooled and relativized using simple percentage.
Results and Discussion:

1. **Biodiversity Action Plan Project**

- State biodiversity law passed and assented to by Government.

- Community profiling preceded building of forest management structures - Forest Management Committees (FMCs) and Grass root Consultative Committees (GCCs).

- Biodiversity inventory and delineation of core and buffer zones at two locations - PSP 82 and SNR 3.
Biodiversity Action Plan Project... Cont’d

- Awareness building and training - livelihood support enterprises (5 beneficiaries), disbursement of micro-credits loans (15 beneficiaries).

- Placement of sign posts in strategic locations around the Forest Reserve.

- Establishment of regeneration nursery (Seedlings raised - *Khaya senegalensis*, *K. ivorensis*, *K. grandifoliola*, *Nauclea diderrichii*, *Terminalia ivorensis* and *Tectona grandis*).
2. Lunar and seasonal rhythms and game animals

- Foraging game animals follow moon movement to play safe in the hands of hunters.

- Fruits of *Hannoa klaineana* & *Allanblackia floribunda* are easy lure for Brush tail Porcupine.

- *Hannoa* fruit/seed confer bitter taste on the meat of Porcupine, particularly between December and January.
Brush Tailed Porcupine (Atherurus africanus)
3. **System of Nomenclature & special Characteristics of species**

- The Benins have intimate knowledge of forest and its products (Redhead, 1992).

- *Hannoa* and *Okoubaka* bear names in connection with the myth that trail them.

- The only plant known to grow close to *Okoubaka aubrevillei* is *Myrianthus arboreus*.

- *Young seedlings and saplings of Okoubaka sp.* do not appear to exhibit allelopathic properties.
System of Nomenclature/special Characteristics of species.. Cont’d

Okoubaka aubrevillei
System of Nomenclature/special Characteristics of species ..Cont’d

Hannoa klaineana
System of Nomenclature.....
Cont’d

- Classification of *Guarea* taxa by the Benins was clear and appropriate (Hide, 1943).

- Most terrestrial avi-fauna e.g. Grey Parrot and Crested Hornbill which are dispersal agents of trees in the emergent layer have either migrated or hunted to a critical population level.
Grey Parrot [*Pistttacus erithacus*]
4. Plant phenology, fecundity and regeneration potentials

- Frequency of sighting, flock movement, calls, chirps, as well as droppings and foot prints of sedentary and migratory animals around mature trees - potential indicator of flowering and fruiting.

- Most rainforest species produce many flowers and/or fruits but have very few seedlings in the forest floor.

- Respondents attribute it to the existence of male/female type of plants. Male flowers do not produce fruits.

- Species that have seed year (e.g. *Triplochiton sp.*) and seed rain (e.g. *Irvingia spp.*) are exceptions.
**Farming and Cropping System**

- Livelihoods of BAP Project communities long sustained through subsistence agriculture.

- Number of farmers and frequency of re-entry into fallow blamed for the decline in rotation period and soil fertility.

- Conservation of preferred trees linked to TFK (e.g. *Spondias mombin*, *Amphimas pterocarpoides*, *Newbouldia laevis*, *Blighia sapinda*, *Eribroma oblonga*, *Ceiba petrandra*, *Myrianthus arboreus*, etc.)
Conclusion

- BD laws now operational; BD inventory result applied for delimitation of core, buffer & transition zones; rehabilitation activities are being undertaken through participatory process – 33ha planted in 2007 and 28ha in 2008; loan repayment in progress.

- Constraints identified – depleted soils, derelict trees, prevalence of fire-climax and grass communities, as well as apathy from communities.
Conclusion......Cont’d

- TFK - an essential instrument for biodiversity rehabilitation.

- Pressure on biotic environment correlates positively with dependence of the poor on subsistence and biomass-based farming and other practices.

- Forest landscape degradation (deforestation) - a major driver of Climate Change.
Recommendations

- Enlarge the scope of BAP project and consider scaling-up rehabilitation activities beyond the frontiers of protected areas.

- Step up efforts to tackle rural poverty by giving special attention to alternative sources of livelihoods as poor peasants would care less about biodiversity if their condition remains unchanged.
Recommendations....Cont’d

- Intensify awareness campaign for communities to embrace BAP project wholeheartedly.

- The myth surrounding Okoubaka aubrevillie should be probed; also consider artificial regeneration for this and other critically threatened species.

- Investigate the phytochemical property contained in the seed of Hannoa klaineana which is purported to confer bitter taste on the meat of Brush Tailed Porcupine (Atherurus africanus).
Recommendations .... Cont’d

- Incorporate agro-ecological and incentive driven farming practices into BAP project.

- Consider artificial regeneration of indigenous choice timber, fuel-wood and fruit trees for the rehabilitation work as well as for use in home gardens, wood lots, etc.
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