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GOVERNMENT OF AKWA IBOM STATE, NIGERIA
MINISTRY OF ENVIRONMENT

RECONNAISSANCE SURVEY OF THE WILDLIFE
SANCTUARY OF STUBB'S CREEK FOREST RESERVE,
AKWA IBOM STATE, NIGERIA

FINAL REPORT
PREPARED FOR THE STATE FORESTRY DEPARTMENT

BY

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DECEMBER 2004

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DECEMBER 2004

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Executive Summary

This study was conducted at the instance of the Honourable Commissioner, Ministry of Environment, Akwa Ibom State in realization of the need to assess the potentials of wildlife in the Stubbs-creek forest reserve of Akwa-Ibom State, Nigeria. The terms of reference included, but not limited to provision of information on status of fauna and flora in the forest reserve, bearing in mind the level of human interference that had occurred in the last one decade. Using a combination of standard methods wildlife, vegetation and questionnaire surveys were conducted in and around the forest reserve to obtain information on the status of the major plant and animal lives and the various sources of threat to their sustainable management. Results obtained from the study indicate large-scale disturbance of the biophysical environment (flora and fauna) arising from such human activities as farming, illegal logging, oil prospecting and exploration. These have affected the hitherto rich fauna and flora of the reserve. The study still identified the existence of over 80 important plant species, which include *Alcornea cordifolia*; *Raphia spp*; *Anthocleista nobilis*; *Rhizophora racemosa*; *Gmelina arborea*; *Costus afer*; *Chromolina odorata*; *Kauvovia vomitoria*; *Calamus spp*; *Musanga cercopioides*; *Albizia spp*; *Selaginalea spp*. Species with moderate frequency of occurrence include *Carpolobia lutea*; *Napoleona vogelii*; *Allablackia floribunda*. They were distributed within the natural lowland rainforest, oil palm and raphia bushes and the mangrove. Over 90 animal species including rodents, reptiles, birds and monkeys were encountered. They include *Thryonomys swinderianus*, *Potamochoerus porcus*, *Trangetaphus scripus*; *Python sebae*, *Crocodilus spp*, *Neophron monachus*, *Milvus migrans*, *Streptopelia senegalensis*, *Apus affinis*, *Egretta alba*, *Ardeola ibis*, *Scopus umbretta*, *Neophron monachus*. The potential of the wildlife sanctuary for ecotourism is still quite high particularly with the existence of oil prospecting and exploration concerns that attract heavy human traffic into the area. Also there exist standard hotels within 30km radius of the forest reserve, which will encourage visitors to combine business with pleasure. There is however the urgent need to:

- ✓ secure the boundaries of the sanctuary,
- ✓ carry out a feasibility study and environmental impact assessment with a view to having comprehensive information that will form the basis for re-investment by the State government and also set the template for the development of proposals for donor assistance from international donor/investment agencies,
- ✓ win the confidence of the settlers in the adjoining communities,

- ✓ seek local and external partnerships for the management of the sanctuary and;
- ✓ Finally, the institutional and legal frameworks of the reserve should be clearly spelt out to enhance *sustainability*. The Sanctuary has the potential to boost the *Poverty Reduction Strategy Programme (PRSP)* of the State Government and should therefore be rehabilitated.

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CHAPTER ONE

INTRODUCTION

Conservation is a controversial issue, which has elicited a lot of interests across socio-economic groups in every part of the world. Views held about it however depend on the state of development and the level of awareness in each society of the concept of conservation, the need for it and the past experiences of the society in question. Whichever way it is viewed it emphasizes current concerns about the increasing resource scarcity, wasteful and destructive use of natural resources, particularly forest resources.

Initial resource assessment is very important in natural resource planning and management. This enables planners to obtain first hand information on the available resources and the factors that affect their sustainability with the view to presenting the optimal utilization regime within the carrying capacity of the resource on ground. It is in the pursuance of this axiom that the Department of Forestry of the Akwa Ibom State Ministry of Environment commissioned *Lifelink Ventures* to carry out a reconnaissance survey of the Stubb's Creek Forest Reserve (SCFR) with the following Terms of Reference (TOR):

- i. To estimate the level of stocking of various wildlife species within the Forest Reserve

- ii. To indicate the distribution and abundance of the identified wildlife species above.
- iii. To investigate potential sources of threats to the sustainability of the species.
- iv. To recommend appropriate measures for the sustainability of the forest ecosystem.

Comment on the Terms of Reference

The client listed four terms of Reference. These may appear sufficient. It should however be noted that TORs (i) and (ii) cannot be adequately accomplished in this rapid appraisal/reconnaissance survey. This is because detailed information on wildlife stocking density, population distribution and ecological status can only be obtained after detailed population survey. Similarly, the emphasis should be on the wildlife sanctuary with the view to establishing its status.

Background

According to the Nigerian Conservation Foundation (1992) Stubb's Creek Forest Reserve is the largest gazetted forest reserve in Akwa Ibom State (others, though smaller include Obot Ndom and Ogu Itu Forest Reserves both in Ini Local Government Area of the State). It was constituted into a forest reserve in 1930. Due to pressures from adjoining

communities on the reserve for more land for agricultural activities coupled with increasing population, the order gazetted the reserve was amended in 1941, 1960 and 1962. According to Attah (2000) the reserve is the first and the only officially gazetted mangrove forest reserve in Nigeria. It covers an estimated area of 30,000 hectares and constitutes 3.2% of the total land area of Akwa Ibom State. Ikpe (1997) stated that it represents over 95% of the total constituted forest area of the state.

According to Attah (2000) over 80% of the SCFR has come under serious exploitation and degradation through increasing human activities settlement formation, farming and hunting activities as well as through oil exploration and production operations. Although existing statistics on settlement patterns, farming and hunting activities have not been fully established, those of oil exploration and production activities are very well known. Between 1970 and 1977 Mobil Producing Nigeria Unlimited (MPN) took up a total of three hundred (300) hectares of the SCFR. The Akwa Ibom State Environmental protection agency (1997) also reported that in 1991 part of the forest reserve was also given out for the proposed Qua Refinery by Shell Petroleum Development Company (SPDC) for its on-shore oil exploration. Attah (2000) concluded that the cumulative effects of these desperate and uncoordinated activities are as varied as they are damaging on the SCFR. In fact the NCF(1995) states that the

once abundant species of birds, monitor lizards, alligators, short snouted crocodiles and tortoise are now seriously endangered as some may have become extinct. Valuable tree species such as *Herlia ciliata*, *Uapaca togolensis*, *Piptadeniastrum africana*, *Lophira alata* and *Nuclea diderichii* have been extensively logged. The negative impacts of oil spillage on aquatic and terrestrial lives have also been reported (Akande, 1991; Jumbo, 1997; Ikpe, 1992; NEST, 1992; DPR, 1990 and AKSEPA, 1996).

Within this largely disturbed forest reserve is the wildlife sanctuary, which Caldecott *et al* (1990) described as one of an exceptionally valuable wildlife refuge surviving within an otherwise denuded State-wide landscape. The reserve exhibits a white-sandy beach bordering an intact inland succession of natural vegetation types; a rare combination of features with significance for both conservation and potential tourism development. They however reported that about 30% (or 9000ha) has been so seriously disturbed that it might best be managed by the agriculture, oil industry, fisheries and beach tourism sectors. The nature and potential impacts of such management would, however, be a legitimate long-term concern of the wildlife sanctuary authorities. Between 1990 and now several activities have taken place particularly in

the areas of oil exploration and exploitation with its attendant gas flaring. The situation in the sanctuary may only have got worse.

The need for reconnaissance study to provide some database on the state of the sanctuary has therefore become a pertinent concern. From this, plans can be drawn for the sustainable management of the remaining resources.

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CHAPTER TWO

METHODOLOGY

The field exercise was carried in September, 2004. The following study approaches were adopted for the exercise:

- (i) Assessment of the biophysical environment (ii) Socio-economic survey

The Study Area

This section presents in brief physical settings of the study. The brevity is borne out of the fact that literature is replete with similar information. Stubb's Creek Forest Reserve is located approximately between latitudes 4° 32' N and 4° 38' N and between longitudes 8° E and 8° 20' E (Fig. 1). It shares boundaries with Mobil Producing Nigeria Unlimited and Ntak-Iyang Community in the west while the eastern boundary is with Unyenghe and Okposo communities.

Climate

The climate of the forest reserve is characterized by high temperature with large diurnal and annual ranges. High rainfall and relative humidity and evapo-transpiration typical of coastal mangrove environments are prevalent.

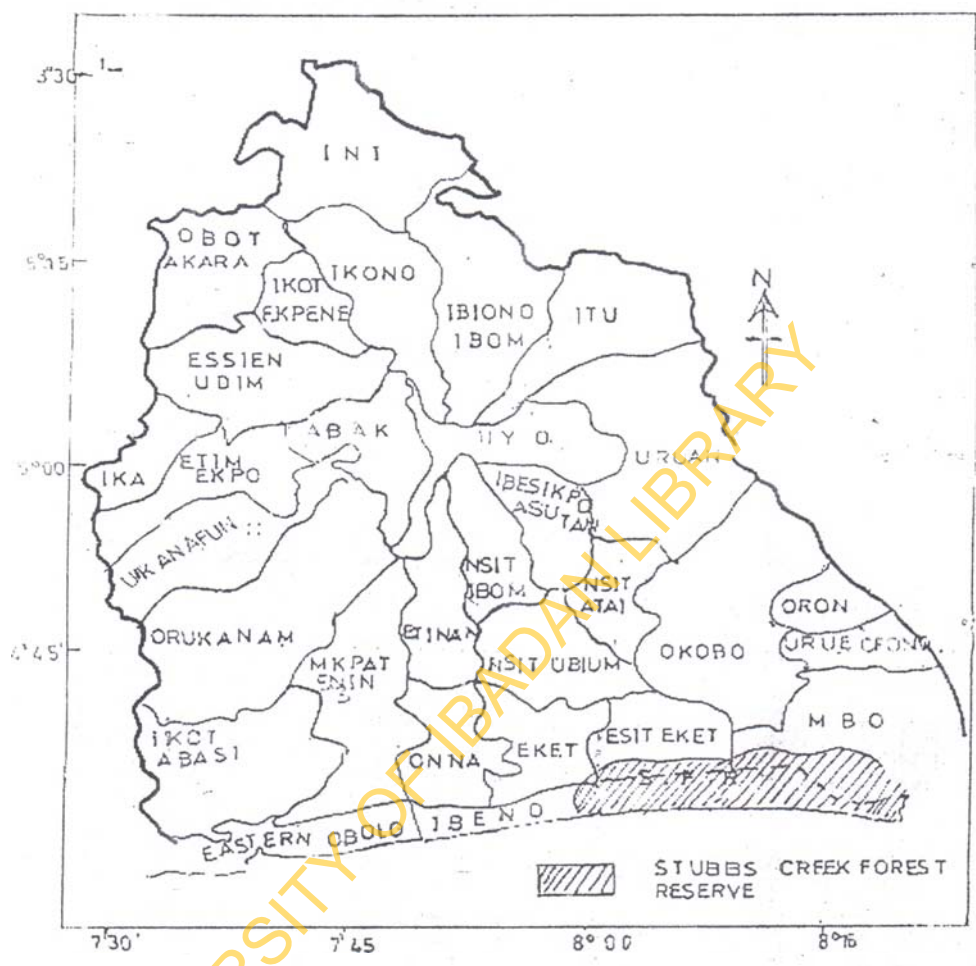


Figure 1. Map of Akwa Ibom State showing the Stubb's Creek Forest Reserve.

Relief

The relief of the area reserve is low-lying sandy beaches with long parallel depressions and low-lying ridges extending inland from the coastal beaches. The reserve is drained by Stubb's Creek; Douglas Creek and Widenham Creek. Other major rivers include Cross River and Qua Iboe River.

Soil

The soil is largely white sand with low pH and low Cation Exchange Capacity (CEC). The soil fertility is therefore very low supporting only limited arable crops such as maize, cocoyam, yam, cassava, vegetables and oil palm trees (AKSEPA, 1995 and Attah 2000).

Vegetation

The vegetation is a combination of mangrove, swamp and lowland rainforest. According to Etukudo (1990), AKSEPA (1998) and Attah (2000), the area of productive forest in the forest reserve is about 195.01km².

Field study

Wildlife Survey

Observations on wildlife population were made by counting/scoring footprints and droppings of animals observed along nature trails. Additional information was obtained through use of questionnaires, focused group

discussions (FGD) and In-depth Interviews (IDI). Direct observations were made on animals and birds using a monocular.

Vegetation Survey

Vegetation survey was conducted by identifying plants species, their physiognomy and life forms along line of transects randomly located to cover the various biophysical features of the conservation area. Key indigenes assisted in plant identification by providing the local names, which were later, identified with their scientific names. Further information was obtained from literature and previous reports.

Socio-economic Survey

With the aid of structured questionnaire randomly selected respondents were interviewed in selected communities adjoining the Wildlife Sanctuary to elicit their opinions in respect of the status of the sanctuary, their aspirations and proposals for its rehabilitation.

CHAPTER THREE

FINDINGS

The vegetation of the forest reserve could be categorized into farm fallows (Plate 1), relics of the natural lowland rainforest, Raphia bush, Mangrove vegetation, Oil palm bush and relics of Gmelina plantation. The structure of the vegetation could be categorized on the basis of the various vegetation types as follows:



Plate 1: A farm Fallow Vegetation.

Natural Lowland rainforest vegetation

This is composed of relics of lowland rainforest community with evidence of previous successional interactions as a result of human activities. This is obvious from the observed presence of such species as

Elaeis guineensis and *Mangifera indica* at various points within the forest reserve. This vegetation exhibits the characteristic of maturing secondary forest with broken canopies and the presence of species such as *Ceiba pentandra*; *Bombax spp.*; *Alchornea cordifolia*; *Senagilnalea spp.*; *Calamus spp.*; *Rauwolfia vomitoria*; *Herlia ciliata*; and *Tabernamontana pachysiphon* (Plate 2).



Plate 2: Relics of Lowland Rainforest at the boundary of the Sanctuary.

Oil Palm Bush

The canopy structure is distinguished into three layers comprising *Elaeis guineensis* (about 90%) and *Anthocleista dijalonensis* (about 10%) within the upper 25m. The middle canopy comprises such species as *Funtumia elastica*; *Harungana madagascariensis*; *Anthonota macrophylla* and younger trees of *Elaeis guineensis* with heights ranging from 10m to

20m. The lower stratum is occupied by species such as *Anthocleista sp.*; *Napoleona vogelii*; *Tabernamontana pachysiphon* and *Glyphea brevis* with heights ranging from 5 to 10m.

Mangrove Vegetation

The dominant species in the mangrove vegetation include *Rhizophora racemosa*; *Rhizophora mangle*; *Alchornea spp*; *Avicinia avicinia* and *Phonix reclinata* (Plate 3).



Plate 3: Characteristic mangrove vegetation along the coasts and creeks.

Raphia Bush

This vegetation formation is dominated with *Raphia* and some woody species. The forest is fully mature with well-differentiated three-layered canopy. The upper canopy is occupied by *Raphia vinefera*; *Raphia*

hookeri and *Herlia ciliata* at the upper 20m of the canopy. Species such as *Cleistopholis patens*, *Uapaca togoensis*; *R. hookerii* and *R. vinefera* occupy the middle storey up to a height of 15m. The lower storey contains wildlings of *R. vinefera*; *Herlia ciliata*; *Dissotus graminicola*; *Dryopteris spp* and *Napoleona vogelii*.

Species Composition

A total of 80 plant species were identified (Appendix 1). This number is by far lower than the 101 recorded by Amubode and Adebisi (1992) and Attah(2000) respectively. This can be readily explained by the continued onslaughts on the ecosystem through legal and extra-legal means. The most frequently encountered plant species include *Alchornea cordifolia*; *Raphia spp*; *Anthocheista nobilis*; *Rhizophora racemosa*; *Gmelina arborea*; *Cosmos afer*; *Chromolina odorata*; *Rauvolvia vomitoria*; *Calamus spp*; *Musanga cercopioides*; *Albizia spp*; *Selaginalea spp*. Species with moderate frequency of occurrence include *Carpolobia lutea*; *Napoleona vogelii*; *Allablackia floribunda*; *Baphia nitida*; *Anthonota macrophylla*; *Combretum spp*; *Cleistopholis patens*; *Herlia ciliata*; *Tabernamontana pachysiphon*; *Alchornea spp* and various species of fern. Other species rarely encountered include *Bamboosa spp*; *Nauclea spp*; *Ricinodendron heudelotii*; *Ceiba pentandra*; *Pipterdeniastrum spp* and *Rhizophora sp*.

Fauna Resources

Faunal resources of the Sanctuary and its adjoining areas can be categorized into three main groups: rodents, reptiles, and birds. Respondent's accounts indicate that before the Nigerian civil war of 1967 to 1970 elephants and lions were a commonplace in the forest reserve. This is however no longer the case. The wildlife species currently found in the area have their populations seriously depleted by poachers and the loss of habitat. Those currently found in the area include *Thryonomys swinderianus*, *Potamochoerus porcus*, *Trangelaphus scriptus* (rodents); *Python sebae*, *Crocodilus spp.* reptiles, *Neophron monachus*, *Milvus migrans*, *Streptopelia senegalensis*, *Apus affinis*, *Egretta alba*, *Ardeola ibis*, *Scopus umbretta*, *Neophron monachus* (birds). A detail list of the wildlife species encountered is contained in appendix 2

Socio – economic characteristics of Stubb's Creek forest Reserve

Thirty villages and settlements surround the forest reserve with fairly large human population. There are also settlements and enclaves within the forest reserve. Community chiefs and elders head the larger communities, while groups of communities come under the administration of Local Governments Authorities. There are four Local Governments bordering the forest reserve. They include: Esit-Eket, Mbo, Eket and Ibuno. The populations of the four

Local Government areas projected from Attah (2000) at an annual growth rate of 2.83% are as contained in Table 1.

The table shows that there is almost an equal proportion of male to female in all the Local Governments Areas. Eket has the highest population figure. But it is a little far from the sanctuary than the other LGAs. The implication of large number of females in the communities adjoining the conservation area may include intensive harvesting of non-timber forest products such as firewood, edible fruits/nuts, leafy vegetables and craft materials such as basket/mat weaving materials from raffia and oil palms.

Table 1: Population Distribution of Local Governments Area adjoining the Stubb's Creek Forest Reserve, 2004

Local Government	Males	Females	Total
Ibuno	42,197	42,878	85,075
Esit-Eket	25,738	26,399	52,137
Eket	56,908	57,827	114,735
Mbo	30,388	30,877	61,266
Total	155,231	157,981	313,213

Source: Projected from the 1996 figures in Attah 2000.

Income Generating Activities

The major occupation of the people living in and around the forest reserve include farming, fishing hunting, palm wine tapping, local gin brewing, timber harvesting, extraction of firewood, production of building materials (from raffia palm leaves) cane furniture making (from raffia fronds) and trading in materials such as fish; farm produce palm wine and local gins. Questionnaire survey indicates that 70% of the inhabitants are involved in farming; palm wine tapping and brewing local gin with either being the major occupation while the other one is a part-time activity. The remaining 30% of the indigenes are engaged in various other activities earlier identified.

It was observed that farming activities are already being carried out within the boundary of the conservation area (sanctuary) particularly at the Ntak-Inyang sector (Plate 4). While the roaring sounds of chainsaw machines are a common occurrence in the reserve. These activities are clearly incompatible with the objective/goal of wildlife conservation in a sanctuary. Animals are scared away either as a result of habitat degradation or sporadic shootings and excessive noise from felling operations.



Plate 4: Cassava farm located in the conservation area at Ntak-Inyang.

Attitude of the people towards conservation

Ninety eight percent of the inhabitants interviewed (Plate 5) expressed pleasure towards the creation of wildlife sanctuary in the forest reserve. They were willing to cooperate with the relevant authorities in the management of the project. They, however, expressed some reservations as a previous intervention by the Nigeria Conservation Foundation ended abruptly without prior discussion with the community people. However, NCF (1992) reported uncooperative attitude from the people of Edo community located in the Northwest of the forest reserve. They were reported to be very aggressive despite all entreaties by the support zone officer and the NCF

project manager. The community had a population of about 500 indigenes as at 1992



Plate 5: The chief of Mbo community with Forest Officers and Lifelink Consultant after a Focus Group Discussion.

Expectations of the community people towards the project

Generally, the people interviewed were full of expectations from the proposed project. Some of the major demands of the people include:

- (1) Provision of good road network especially, the road linking Uquo-Ntak-Inyang, -Ooro Nkot. As also the road to Unyche.
- (2) Immediate commencement of the project and adequate measures taken to ensure project continuity.

- (3) Reinstatement of former NCF indigenous staff who were laid off when the NCF project was discontinued as well as employment of other able-bodied indigenes of the communities in the project.
- (4) Extension of the support zone to provide access to the increasing population.
- (5) Granting of limited use right such as palm wine tapping and local gin production within the conservation area.
- (6) Establishment of primary health centers and Government Technical or Secondary schools at Ntak – Inyang, Odoro-Nkit and Uyehe
- (7) Introduction/intensification of Poverty Reduction Strategy Programmes (PRSPs).

Threats to wildlife conservation and Tourism activities in Stubb's Creek Forest Reserve

Though the Stubb's Creek Forest Reserve has witnessed increasing human interference, it still harbours rich floral and faunal biodiversity. Certain prevailing factors/human activities still pose significant threats to the sustainability of a conservation project in the forest reserve. Some of these factors include:

(1) Encroachment by farmers

The survey revealed that farming activities are already going on within the forest reserve (Plate 4). Arable farms were observed within the boundaries of the sanctuary. These constitute threats to the habitat of the wild animals and may result in species migration.

2) Timber extraction

Illegal timber extraction and *in-situ* conversion of logs were found to be very rampant in the area. The use of powersaw in a conservation area of this nature is highly inimical to the sustainability of the project. The disturbing noise of the powersaw would definitely drive away most wildlife species. Furthermore, felling activities translate to significant degradation of habitats and reduce the beauty of nature in a place meant for tourism development. Sixty percent of the respondents already confirm the disappearance of species such as – elephants, hippopotamus, leopards and lions in the last 40 years. This may be part of the reasons for their migrations or disappearance.

3) Hunting Activities

Evidences of hunting activities such as gunshots, used carbides and bullet casings/ cartridges were noticed within the sanctuary. This is a key that must have contributed significantly to the loss of species within the sanctuary.

(4) Poor communication and road network

Accessibility to the area via road is generally poor as most of the access roads are only seasonally motorable. Plate 6 shows a typical access bridge in the study area. In addition, communication facilities in the area are poor.



Plate 6: Dilapidated bridge linking the conservation area with Uyehe Community

5. Lack of clear-cut boundaries

There are no clear boundaries between the support zones and the sanctuary neither are there any signboards to warn potential encroachers or poachers or illegal loggers of the sanctity of the conservation area. In fact there are evidences of human settlement within the sanctuary (Plate 7).



Plate 7: A settlement located within the sanctuary at Ntak- Iyang.

CHAPTER FOUR

OPPORTUNITIES FOR ECOTOURISM IN THE STUDY AREA

Accessibility

The area is accessible through various roads and navigable waterways including the Stubb's Creek, Widenham Creek, Douglas Creek and the Atlantic Ocean through which visitors from neighbouring states such as Cross River, Abia, Rivers and others; and countries such as Republic of Cameroon (Plate 3), Ghana, Benin Republic, Togo and others can access the sanctuary.

Species Diversity

In spite of the poor state of the reserve it is still endowed with diverse species of mammals, reptiles, avians and particularly apes and monkeys including the endangered *sclater's guenon* (*Cercopithecus sclateri*) as well as the vulnerable redcap Mangabey (*Cercocebus torquatus*). The plant species composition of the forest reserve is also diverse comprising varying types of vegetation formations including high forests, swamps and mangrove that are still largely undisturbed. The reserve is well supplied with natural trails thus making nature watch possible within the serene environment.

The presence of white sandy beaches (Plate 8) and in fact luxuriant natural vegetation in several places around the forest reserve is a great potential for ecotourism activities.



Plate 8: A sandy beach at the Mobil unlimited headquarters.

Hospitality

The people of Akwa Ibom State are generally very hospitable and amiable. Incidences of communal crises are far between. An average citizen is able to communicate at least in *pidgin* (corrupted) English. These are vital factors in ecotourism, which also have the potential of boosting economic activities.

The presence of oil prospecting and exploration companies in and around Eket has influenced the presence of descent lodging places and hotels. This

has the added advantage of encouraging visitors to combine business with leisure and exploring nature in the sanctuary. Some of the hospitality outfits encountered include Royalty Hotels, Sonak Place, Villa Marian Hotel, Belanou Hotel, The Root, The Meridian, Assurance Hotels, Marezi Hotels, Sereneo, Stadium Star Hotel and Psimako Hotels [all in Eket].

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CHAPTER FIVE

RECOMMENDATIONS AND CONCLUSION

The wildlife sanctuary in the Stubb's Creek Forest Reserve still has great potentials in terms of floral and faunal resources in spite of the recent human interferences. To reduce the threats and strengthen the opportunities that abound in the Stubb's Creek's wildlife sanctuary a number of recommendations are made:

- ✓ The boundaries of the sanctuary should be urgently secured. This will involve the deployment of experienced personnel to re-establish the beacons and the boundaries to ensure better planning
- ✓ There is the need to carry out a feasibility study and environmental impact assessment with the view to having comprehensive information that will form the basis for re-investment by the State government and also set the template for the development of proposals for donor assistance from international donor/investment agencies. The consultants will be willing to work in partnership with the client to actualize this.
- ✓ The confidence of the settlers in the adjoining communities will have to be won if the project must succeed. They must be made to recognize the need for the conservation in the sanctuary and must be

properly compensated and/or resettled where the process truly negatively impacts them.

- ✓ Local and external partnerships should be sought in the management of the sanctuary.
- ✓ Institutional and legal frameworks of the reserve should be clearly spelt out to enhance sustainability.

Conclusion

The Stubbs creek forest reserve holds great potentials for development into a wildlife sanctuary of International standard if necessary protective and funding measures are put in place. The forest reserve houses some endemic and endangered wildlife species such as scatter's guenon, mona monkey, leopard, hippopotamus and mangabey. The machinery of enforcing forest legislation is rather weak hence illegal activities such as unauthorized logging; poaching, trapping of animals; raphia palm tapping and even farming take place within the conservation area. Communities around and within the forest reserve are eager and willing to collaborate with relevant authorities for the developments of the forest reserve to a full-fledged tourism center of international repute. The State government should therefore work with possible funding agencies such as Federal Government of Nigeria, Niger Delta Development Commission, Worldwide fund for Nature (WWF), International Union for

Conservation of Nature (IUCN), African Development Bank (ADB) and other stakeholders to achieve this.

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Appendix I

Preliminary Flora Listing of the Stubb's Creek Forest Reserve

1. *Herlia ciliata*
2. *Musanga cercopiodes*
3. *Raphia hookeri*
4. *Raphia vinifera*
5. *Landolphia owerienses*
6. *Phoenix reclinata*
7. *Rauvolvia vomitoria*
8. *Elaeis guineensis*
9. *Avicinia africana*
10. *Alchornea spp.*
11. *Napoleona vogelii*
12. *Anthonotta macrophylla*
13. *Harungana madagascariensis*
14. *Gmelina aborea*
15. *Dryopteris spp.*
16. *Rhizophoria spp.*
17. *Cleistopholis paten*
18. *Tabernamotana pachysiphon*
19. *Chloromolena odorata*
20. *Dacryodes edulis*
21. *Carapa procera*
22. *Zanthoxylum zanthoxyloides*
23. *Piptadeniastrum africanum*
24. *Ricinodendron heudelotii*
25. *Carpolobia lutea*
26. *Alstonia boonei*
27. *Avicenta Africana*
28. *Stereulia oblonga*
29. *Drypetes aframensis*
30. *Smilax icrausiana*
31. *Lurenea lobata*
32. *Calamus sp*
33. *Spondias mombin*
34. *Newbouldia laevis*
35. *Bambusa vulgaris*
36. *Balphia nitida*
37. *Luffa aegyptica*
38. *Triplochiton scleroxylon*
39. *Musa spp*
40. *Panicum maximum*

41. *Phyllanthus amarus*
42. *Triumfelta cordifolia*
43. *Dioscorea alata*
44. *Aspilia africana*
45. *Tridax procumbens*
46. *Ageratum conyzoides*
47. *Combretum racemosum*
48. *Pennisetum purpureum*
49. *Manihot utilisimma*
50. *Colocassia esculenta*
51. *Aspilia africana*
52. *Bohervia spp*
53. *Telferria indica*
54. *Gnetum africanum*
55. *Talinum triangulare*
56. *Sida acuta*
57. *Sida corymbosa*
58. *Costus affer*
59. *Carica papaya*
60. *Pandanos torsiflora*
61. *Lophira alata*
62. *Alstonia boonei*
63. *Cocos nucifera*
64. *Calamus deratus*
65. *Albizia spp.*
66. *Melicia exelsa*
67. *Ceiba pentandra*
68. *Imperata cylindrica*
69. *Naucllea diderichii*
70. *Uapaca togoensis*
71. *Phoenix reclinata*
72. *Solanum melongena*
73. *Abelmoschus esculentus*
74. *Zea mays*
75. *Solenostemon macrostachys*
76. *Aframomum melegueta*
77. *Picralima nitida*
78. *Thema orientalis*
79. *Terminalia catapa*
80. *Sphenocentrum jollyanum*

Appendix 2: Wildlife Species

Grasscutter	<i>Thryonomys swinderianus</i>
Bush Pig	<i>Potamochoerus porcus</i>
Bush Buck	<i>Tragelaphus scriptus</i>
Grey Duiker	<i>Sylvicapra grimmia</i>
Tree Hyrax	<i>Dendrohyrax arborea</i>
Civet Cat	<i>Viverra civetta</i>
Tree Squirrel	<i>Funisciurus pyrrhopus</i>
Moria Monkey	<i>Cercopithecus mona</i>
Mongoose	<i>Mungos mungo</i>
Scatter's guenon	<i>Cercopithecus sclateri</i>
Red-Cap Mongabey	<i>Cercocebus torquatus</i>
Reptiles -	
Python-	<i>Python sebae</i>
Agama lizard	<i>Agama agama</i>
Snakes (Different species)	

Checklist of Birds Around Villages, Farmland And Clearings In Stubbs Creek Forest Reserve

Hooded Vulture	<i>Neophron monachus</i>
African Black kite	<i>Milvus migrans</i>
Vinaceous dove	<i>Streptopelia vinacea</i>
Laughing dove	<i>Streptopelia senegalensis</i>
Senegal coucal	<i>Centropus senegalensis</i>
Yellow wagtail	<i>Motacilla flava</i>
Common bulbul	<i>Pycnonotus barbatus</i>
Village weaver bird	<i>Ploceus cucullatus</i>
Bronze Mannikin	<i>Lochura cucullata</i>
Palm nut eagle	<i>Gypohierax angolensis</i>
Tambourine dove	<i>Turtur tympanistria</i>
Black belled coucal	<i>Centropus grillii</i>
Wood owl	<i>Ciccaba woodfordi</i>
Standard Nightjar	<i>Macrodipteryx longipennis</i>
Little African swift	<i>Apus affinis</i>
White-rumped Swift	<i>Apus caffer</i>
Broad-billed Roller	<i>Eurystomus glaucurus</i>
Yellow-fronted canary	<i>Serinus mozambicus</i>
Senegal Indigo Finch	<i>Vidua chalybdata</i>
Pin-tailed Whydah	<i>Vidua macroura</i>

Senegal Fire –finch	<i>Lagonosticta senegalata</i>
Copper Sunbird	<i>Nectarinia cuprea</i>
Mosque Swallow	<i>Hirundo senegalensis</i>
White throated Bee Eater	<i>Merops albecolis</i>
West African Prinia	<i>Prinia subflava</i>
West African Thrush	<i>Turdus pelios</i>
Grey headed sparrow	<i>Passer griscus</i>

Checklist Of Avian Species Along River Beaches & Open Water Bo In The Stubbs Creek Forest Reserve

Great White Egret	<i>Egretta alba</i>
Cattle Egret	<i>Ardeola ibis</i>
Hammerkop	<i>Scopus umbretta</i>
Common Vulture	<i>Neophron monachus</i>
African Black kite	<i>Milvus migrans</i>
Pied Kingfisher	<i>Ceryle rudis</i>
Senegal Kingfisher	<i>Halcyon senegalensis</i>
Pygmy Kingfisher	<i>Ceyx picta</i>
Yellow wagtail	<i>Motacilla flava</i>
Whistling Teal	<i>Dendrocygna viduata</i>
West African River Eagle	<i>Haliaeetus vocifera</i>
Little African Swift	<i>Apus affinis</i>
White Rumped swift	<i>Apus affer</i>
Usher's spine –tailed swift	<i>Chaetura ussheri</i>
Splendid Sunbird	<i>Nectarinia coccinigaster</i>
African sand martin	<i>Riparia paludicola</i>
Swamp Palm Bulbul	<i>Thescelocichla leucopleurus</i>

Checklist Of Avian Species In The High Forest Areas Of Stubbs Forest Reserve

African Black Kite	<i>Milvus migrans</i>
Palmnut Eagle	<i>Gypohierax angolensis</i>
Green Fruits Pigeon	<i>Treron australis</i>
Tambourine Dove	<i>Turtur tympanistria</i>
Vinaceous Dove	<i>Streptopelia vinacea</i>
Grey Parrot	<i>Psittacus erithacus</i>
Violet Plantain eater	<i>Musophaga violacea</i>
West African Turaco	<i>Tauraco persa</i>
Great Spotted Cuckoo	<i>Clamator glandarius</i>

Lenaillant's Cuckoo	<i>Clamator Levaillantii</i>
African Barn owl	<i>Tyto alba</i>
Palm swift	<i>Cypsiurus parous</i>
Allied Hornbill	<i>Tockus semifascialis</i>
Piping hornbill	<i>Bycanistas fistulator</i>
Swamp Palm bulbul	<i>Thescelocichla leucopleurus</i>
Red-Vented Malimbe	<i>Malimbus scutatus</i>
Crested Malimbe	<i>Malimbus malimbicus</i>
Red-Necked Kestrel	<i>Falco chiquera</i>
West African Goshawk	<i>Accipiter toussenlli</i>
Little Sparrow Hawk	<i>Accipiter erythropus</i>
Ahanta Francolin	<i>Francolinus achantensis</i>
Senegal Wood Doopoe	<i>Phoeniculus purpureus</i>
Hoopoes	<i>Upupa epops</i>
Naked faced barbet	<i>Gymnobucco calvus</i>
Yellow Fronted Timkerbird	<i>Pogoninulus chrysocomus</i>
Cardinal Wood Pecker	<i>Dendrocinclus fusciceps</i>
Splendid Glossy Starling	<i>Lamprolaima splendidus</i>
Splendid Sunbird	<i>Nectarinia coccinigaster</i>
Glossy Backed Drongo	<i>Disyurus adsimilis</i>
African Golden Oriole	<i>Oriolis awratus</i>
Black Headed Oriole	<i>Oriolus branchrhynehus</i>
Grey Crowned Negro finch	<i>Nigrita canicapilla</i>

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