Mammals of the Niger Delta, Nigeria

Developed from materials left by Bruce Powell (†) and Kay Williamson (†) and incorporating updated field materials and analyses.

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New preface

This document is intended as an overview of the mammals of the Niger Delta in Nigeria, a region that has been little-studied by biologists, in part due to chronic insecurity in the region. In some ways this is ironic, since the intensity of oil exploration and the attendant requirement for Environmental Impact Assessments (EIAs) should mean that it is well-studied. However, the absence of reference documents such as this and of field guides, has meant that most such documents are a mine of misinformation, which may actually suit commercial interests.

The core information in this book was collected by Bruce Powell (†)[1], a distinguished zoologist who worked for some thirty years in the Niger Delta, based first at the University of Ibadan, then at the University of Benin, moving to the University of Port Harcourt and latterly in the Rivers State University of Science and Technology. He began as a biologist specialising in crustaceans, extended his work into fish and mangrove ecology and began working on mammals in the last stage of his career. Regrettably, he died of cancer in 1998 before much of his most important work was published. The maps and scientific text in this book were prepared for a report submitted to Environmental Affairs Department, Shell Petroleum Development Company of Nigeria Ltd. (SPDC) in December 1995. There is no evidence that they were ever used and no copy of this report appears to exist in Nigeria at present. Powell's irritation at the inaccuracy of many previous reports is given a short section in itself.

One of Bruce Powell's collaborators was Professor Kay Williamson (†), herself a long-term Nigeria resident and often called 'The Mother of Nigerian Linguistics' in characteristic eulogies. Kay urged Bruce to collect vernacular names for all the fauna named by hunters encountered on his collecting trips. Indeed, she herself had a long-term interest in ethnoscience and it was through the descriptions of Ijọ hunters of the pygmy hippo that residual populations of this rare animal were first identified. Bruce's lists of names were organised by collecting location rather than language, and Kay organised for the typing of these into the computer.

I first began to visit Nigeria as part of my Ph.D. research in 1979 and encountered both Bruce and Kay during this period, and began to get an idea of the excitement generated by the possibility of working on natural history in conjunction with linguistics. Over the years I became a regular visitor to Port Harcourt although it was quite far from my own research area in the north. Kay and I became regular academic collaborators. When Bruce Powell died, we made plans to develop a publication from his work, but this came to nothing in part because of the heavy demands on Kay's time made by the University administration. Kay herself fell sick in December 2003 and eventually died in Brazil in January 2005.

Kay Williamson's will provided for funds to be used for the promotion of Nigerian languages and ethnoscientific studies and this has been used to establish the Kay Williamson Education Foundation (KWEF) which is providing funding to re-edit this material and prepare a publication. I decided to re-edit Bruce Powell's original text with the vernacular names, sorted and edited by language family and with a commentary. However, closer examination showed that the report had numerous internal contradictions, in particular maps for which there was no text and some species, such as the manatee, the lorisids and the rodents, inexplicably omitted. This has required calling on specialists to write new text. I have also borrowed images of numerous species from the web, although it rapidly becomes clear that not all images are correctly identified and minor species such as some of the squirrels are not represented by a single image. In addition, where information on local knowledge or belief has been published, I have added this to the overall description. As far as possible, the resulting book should be of value both to local people interested in wildlife and the scientific community. It would be agreeable to think those involved in EIAs would also make use of it, but experience shows that they have managed very well without such information to date.

I cannot tell what Bruce would have thought of the use to which this information has been put; but at any rate it has not been lost. Given the continuing destruction of the Delta environment in the years since this information was collected, the maps may represent a historical record of its fauna.

[1] Obituary by Kay Williamson (2003) in *Crustaceana*, 75: 1275-1278.

A dynamic version of this data is also being posted on the web; should a new generation of biologists arise then corrections and additions can be made. I would hope that there might also be some direct interest in the Niger Delta itself; one serious gap is the absence of photographs of animals actually taken within the region.

Roger Blench
For KWEF
18 August 2007

Bruce Powell's original executive summary

This study was a combined literature and preliminary field survey to assess the needs and direction for any substantive work in the wildlife component of SPDC (E)'s Niger Delta study.

It was found that published knowledge of Niger Delta wildlife is negligible, and in no way provides the local information normally needed for EIAs. A retrospective review of seven past industry environmental reports showed the consultants collectively mentioned two of the 17 nominally endangered mammals believed to be present in the particular project areas. They tended to overlook locally well-known species while listing, without comment, unexpected birds and animals belonging to other geographic zones.

The field survey increased to about 60 the number of 'larger mammals' definitely known from the SPDC(E) area, compared to a previous estimate of 45 species based on standard literature (Happold, 1987). Many of the finds made in this survey are important new records for the Niger Delta or Nigeria as a whole, *vis* two antelopes, five small carnivores and a few monkeys and squirrels. Hunters described many additional and yet-unidentified 'mystery' species.

The distributions of 30-odd key species are mapped. Their distribution patterns reveal several distinct faunal zones and species -assemblages within the SPDC (E) area (Figure 1, page C-2).

Overall, the SPDC (E) area contains more species of global concern (12 or more 'Vulnerable' or 'Endangered' on the IUCN Red List) than any other part of Nigeria; and it contains all the 3-4 larger mammals more or less endemic to Nigeria. There is no known 'Red-Listed' bird (but the tiny and little-known Anambra Waxbill could be present). The only Red-Listed reptiles present are the Slender-snouted Crocodile and an undetermined number of marine turtles which nest on beaches.

Some of the Red-Listed species are more common and widespread than previously realized. Others survive only in small relict populations very susceptible to extinction through habitat destruction.

The main recommendation is to complete the species inventory for the different faunal zones (especially vis-vis the 'mystery' species) to provide the basic information needed in support of routine EIA work. It must be emphasized that this is long-term work, depending on the luck of the hunt for rare and localized species, and that environmental contractors can hardly be expected to work to so-called 'international standards' in the absence of local reference literature and experienced manpower.

Particular attention needs to be given to E & P activities near endangered relict populations and isolated forest blocks (which themselves should be identified with imagery and, inventoried). This includes seismic exploration, and road and canal construction, all of which may promote hunting and forest-clearing opportunities, and cause 'sub-clinical habitat changes to which some species are sensitive.

The species most in need of conservation attention are, in order of decreasing priority:

Nigerian or Heslop's Pygmy Hippo - found solely in SPDC (E) area, virtually extinct.
Delta Red Colobus monkey - new to science, in Apoi-Ekeremor area.
Relict populations of Chimpanzee, Elephant and Hippopotamus.
Red-tailed or Sclater's monkey - national endemic, between Niger and Cross Rivers.

Bruce Powell's original acknowledgements

The research programme of which this survey is part, owes its start to the enlightened approach of Alhaji A.R.K. Saba, Executive Secretary of the now defunct Natural Resources Conservation Council (NARESON), who approved what was at the time an open-ended survey of a remote and unknown area.

The information and specimens, which form the basis of this report, were provided by numerous hunters and community members. Those whose specimens proved to be new species records for the Niger Delta are Mrs Vida Amassomaowei of Sampou-APOI, Deputy Chief Wilfred Amini of Opu-Ogbogolo, Chief Stephen Joel of Okoroba, Chief Emmanual Ojogbo of Gbanraun-APOI, Mr John Okenya of Udoda-ENGENNI and Mr Gabriel E Pabai of Azama-APOI.

Drs Peter Grubb, Harry van Rompaey and Daphne M Hills confirmed the identity of voucher specimens, gave comments on problem cases and helped with specialist literature. The overseas transport of voucher specimens and literature was helped by Nick Ashton-Jones, Oronto Douglas, Philip Hall, Miriam Isoun, Leventis Stores, Struan Simpson, Zena Tooze, Lodewijk Werre and Kay Williamson.

Naru Gbolakoro and Hanson Uyi partook and helped in many field trips and interviews. Elijah Leh, Alvin Doumu and Rev Gunn Dimogu helped with contacts. The Niger Delta Wetlands Centre helped in final production of the report.

SPDC staffs J P van Dessel, Dr Amadi Amadi and Dr N E Attah were successively involved in scoping, supervising and facilitating the study. The management of SPDC's Eastern Division deserves special kudos for its initiative in stepping in to sponsor surveys such as this, filling large gaps in knowledge of the fauna and ecology of the Niger Delta and creating new research and conservation agenda for the area.

Project team

C B Powell – Project Leader
Dimie Otobo – Field Assistant/Supervisor

Organisations and Agencies etc.

CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora. An international convention to control and monitor trade in endangered species. Decree 11 of 1985 is meant to fulfil Nigeria's obligations as a signatory to the convention.

FEPA. Federal Environmental Protection Agency, Abuja.

IUCN – The World Conservation Union (formerly the International Union for the Conservation of Nature). Rue Mauverney 28, CH-1196 Gland, Switzerland.

IUCN/SSC – The Species Survival Commission of the IUCN, made up of volunteer Species Specialist Groups.

NARESCON. Natural Resources Conservation Council, The Presidency, Abuja. (now incorporated into FEPA)

Red List – The *IUCN Red List of Threatened Animals* which categorizes the status of animals threatened with global extinction. It is updated every four years, based largely on information from the IUCN/SSC.

SPDC (E). Shell Petroleum Development Company of Nigeria Limited, Eastern Division, Port Harcourt.

WCMC – The World Conservation Monitoring Centre, 219 Huntingdon Road, Cambridge CB3 0DL, UK. Tel +44 1223 277314; fax +44 1223 277136. A joint venture between IUCN, the World Wide Fund for Nature (WWF) and the United Nations Environment Programme (UNEP), maintaining a global conservation database (species, habitats, conservation sites).

Glossary: Animal species and specimen terminology

Endangered Species. An often very loosely used term to suggest the species is under some danger of eventual extinction. The term has explicitly defined meanings when used in the context of particular regulations, schedules or formal lists such as the IUCN Red List (global) or national Red Lists, or Decrees backing CITES agreements etc. See further under Appendix 2. The species may be endangered locally but not globally (say, if good populations exist in another area).

Endemic Species. A species which is found uniquely in the geographic area under consideration. Its presence suggests there are possibly other unique features about the area's ecology or biodiversity.

Genus (plural genera). The unit of zoological classification which groups similar species. Similar genera, in turn, are grouped into Families. Common English and vernacular animal names often are the approximate equivalent of genera or families (e.g. rat, squirrel, genet, antelope). The first word in a species; binomial name is the genus name. Therefore changes in opinion about the species; grouping causes an automatic change in its binomial name. E.g. the name of the common forest duiker (so-called 'hare') is *Cephalopus maxwelli* or *Philatomba maxwelli* depending on whether it is grouped in the same genus as other duikers (*Cephalopus*) or considered to be significantly different from them.

Mystery Species. A term of convenience used in this report for animals of uncertain identity, known only from hunters' descriptions and vernacular names. They may or may not eventually prove to be distinct or new species.

Prospective subspecies. A population which there is reason to believe might be confirmed as a distinct subspecies after an appropriate comparative study. This is often the case with geographically isolated and unstudied populations.

Reference specimen. A specimen to be used for study and comparison, to ascertain similarities or differences in populations between different areas etc.

Species (singular; same spelling for plural). A distinct type of animal, different individuals of which can or could normally interbreed and produce fertile offspring. Each species usually has its own distinct geographic range, behaviour and habitat preferences etc. Abbreviated as sp. (singular) and spp. (plural).

Subspecies. A geographic variety of a species. In the case of geographically isolated or disjunct varieties, it is often a matter of opinion whether they are distinct enough to be considered distinct subspecies or different species. Abbreviated as ssp. (singular) and sspp. (plural).

Totem Species. Species of cultural or traditional importance to certain families or clans which have taboos against killing or eating those species.

Voucher specimen. A specimen which constitutes proof of a claimed identification and/or distribution record.

Habitat types

Farmbush. The vegetation/habitat type comprising a mosaic of farm and secondary re-growth. The fauna includes some invasive 'savannah' species (e.g. Ground Squirrel, Egyptian Mongoose) and lacks specialized high-forest species.

Swampforest. A collective term for forests which are regularly flooded or have waterlogged soils. They have biological species compositions different from that in typical lowland rain forest. In this report, the terms flood-forest and marsh-forest are used for two general types of swampforest (see Section C.2). Other common types in the area are raphia forests and (along rivers and streams) riparian forests.

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UNGULATES (HOOFED MAMMALS)

1. Introduction

This study was planned as a review of knowledge of wildlife of SPDC's eastern operational area, with limited field reconnaissance, to guide scooping of the substantive wildlife component of SPDC(E)'s Niger Delta Study. It followed preliminary work sponsored by NARESCON along the western boundary of the SPDC(E) area, which had led to the discovery of a new monkey and suggested industry-sponsored environmental studies were overlooking important species and distribution patterns (Powell, 1993).

It soon became evident that the SPDC(E) area contains significant species of wildlife – antelopes, monkeys, carnivores – not previously expected to occur in the Niger Delta or even in Nigeria as a whole. As a result the study undertook increased fieldwork aimed at establishing a basic species list of larger mammals for the area and at getting an outline of the faunal zones.

Overall, this book provides;

(a) the basic annotated species list as of June 1995 (Section B).
(b) a provisional outline of faunal zones (Section C.2; Fig.2).
(c) maps for important species including ecological indicators and 'mystery species' (Section C.3).
(d) accounts of major species of interest (Section D).
(e) summaries of aspects of special interest *viz* endemic, endangered and dangerous species (Section E).
(f) review of some past studies (Section F).

Scope of Coverage and Literature

This work covers those mammal groups, which typically feature in pocket guides, and animals (mammals or not) of conservation concern as defined by inclusion in the 1994 ICN Red List of Threatened Animals (Groombridge, 1993) and the World Conservation Monitoring Centre's synopsis *'Nigeria. Conservation of Biological Diversity'* (WCMC, 1988). In essence, this means all mammals excepting bats, shrews and murids (true mice & rats) and a few larger reptiles and birds.

For mammals the literature baseline is taken as Happold's (1987) *The Mammals of Nigeria*. For non-mammalian groups there is no such summary of Nigerian records. For all groups there is no specific literature on the distribution of species in the eastern half of the Delta, except for limited primates surveys in the Taylor Creek and Oguta areas. (Anadu & Oates, 1988; Oates, 1989; Werre, 1991; Oates et al., 1992). The localities of literature records are shown in Table A.1 and Figure 1.

Localities with reliable literature records of larger mammals

(number of species in parentheses).

a. Localities listed in Happold (1987):-

Oguta (1)	5°42'N, 6°48'E	Owerri	(10)	5º29'N, 7º02'E
Aba (6)	5º07'N, 7º57'E	Amaku	(1)	5º09'N, 7º07'E
Ihia (1)	5º10'N, 6º57'E			
Elele (12)	5º06'N, 6º49'E	Ihie	(4)	5º01'N, 7º19'E
Ahoada (1)	5º05'N, 6º39'E	Omoku area (1)	(1)	5º21'N, 6º39'E
Agberi (2)	5º14'N, 6º24'E	Sabagreia	(1)	5º05'N, 6º23'E
Degema (1)	4º45'N, 6º46'E	Bakana	(1)	4º44'N, 6º58'E
Okrika (1)	4º44'N, 7º05'E			

b. Other localities, not listed in Happold (1987)

Taylor Creek area – between Nun & Orashi Rivers, 5º10' – 5º20'N.
Akri 11 location, on border Imo & Rivers States, 5º42'N, 6º48'E.
Port Harcourt – 4º46'N, 7º01'E.

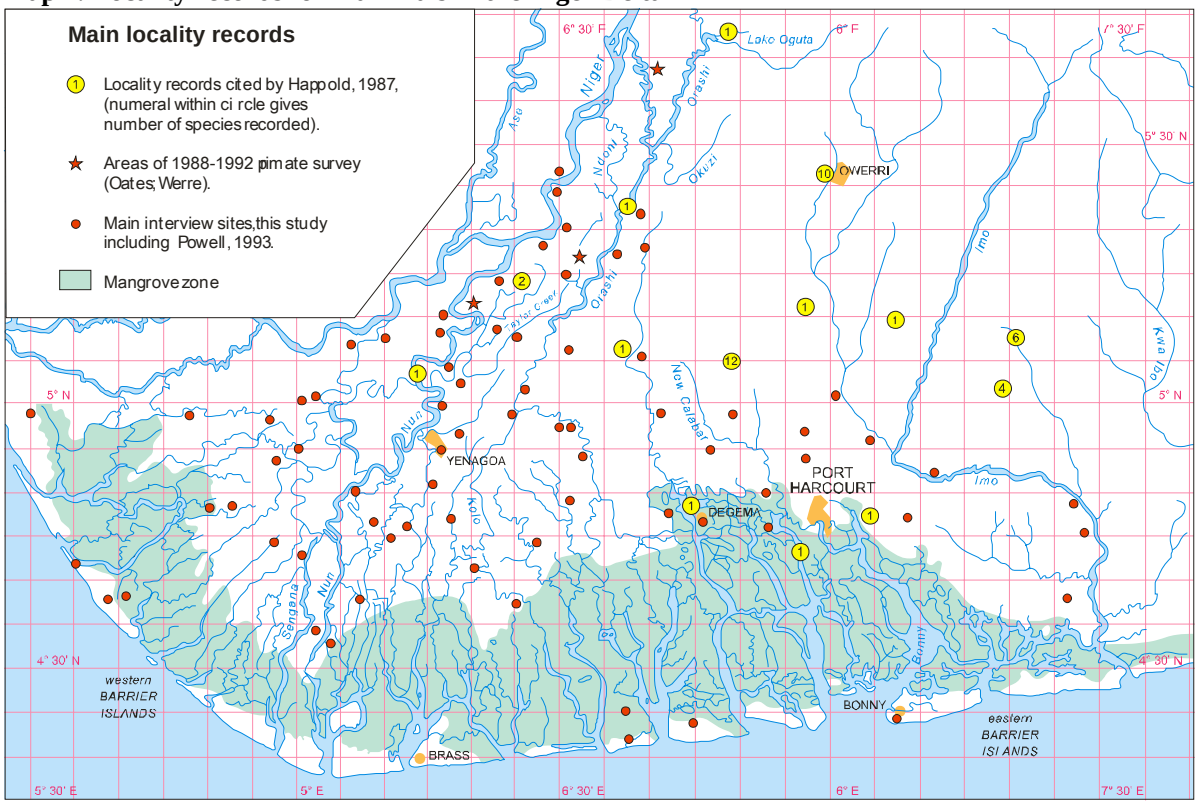
Field Survey

The field survey was exploratory, steered by intuition and opportunities as they arose. Hunters in target areas were located mainly through prior personal contacts, and in the first instance they were asked to give account of the variety of local animals using vernacular names. These names are most often generic, covering several similar species or even whole families. Colour plates of animals (Dorst & Dandelot, 1970) were always available but for several practical reasons they were rarely useful for species-level identifications.

Much effort was made on arrangements to get specimens for identification of uncertain species and to build up a demonstration collection for subsequent interviews. To obtain specimens, other than the most common species, during a broad survey is difficult and time-consuming. Only by near the end of this work was a moderately basic collection assembled; this improved interviews at least in regard to being able to show hunters the key differences between similar species so they know what to watch for in future.

Map 1 shows the main sites from where interview information is available, and Table A.2 lists the sites with their map coordinates. Results were uneven depending on the number and lengths of visits, and the experience of informants. Altogether about 140 trips were made from 15th Sept. 1993 (Trip CBP-43) to 14th June 1995 (Trip CBP-184).

Map 1. Locality records for mammals in the Niger Delta



Localities of wildlife interviews and new records

1. Imo River System

1. Umuechem, 5º01-'N, 7º02'E, on right (west) bank of Otamiri River
2. Igbo-Etche, 4º57'N, 7º05'E, on west bank of Otamiri River about 18 km NNE of Port Harcourt P.O.
3. Imo River Village, 4º53'N, 7º10+'E, on left (north) bank of lower Imo River.
4. Obete, 4º49-'N, 7º30-'E, on right (west) bank of Imo River.
5. Yae 4º45+'N, 7º28.5'E, at headwaters of Masea Stream on right (west) bank of lower Imo River.
6. Ebubu, 4º46.8'N, 7º08.8'E.
7. Baen 4º38'N, 7º27.5'E, 22 km ESE of Bori.

2. New Calabar-Sombreiro sector

1. Aluu, forest NE of Aluu Central and north of Shell pipeline, ca. 4º57'N, 6º57-58'E. (Aluu is about 20km NNW of Port Harcourt).
2. Rumuekeni 4º53'N, 6º56.5'E (forest NE of village).
3. Ibaa 4º58'N, 6º49'E, north of Rumuji.
4. Rumuodogo 4º55'N, 6º47.5'E about 3 km SE of Rumuji.
5. Okporowo-Ogbakiri 4º50'N, 6º54'E on west side of New Calabar River, about 15 km NW of Port Harcourt.
6. Ikiri 5º17.5'N, 6º42+'E on west bank of Sombreiro River, 16km SE of Omoku.
7. Odiaje, 5º05.54'N, 6º41.1'N, on east bank of Sombreiro River slightly upstream of Ahoada.
8. Rumuekpe approx. 4º59'N, 6º41'E on east side of Sombreiro River.

3. Orashi sector

1. Omoku 5º21'N, 6º39'E.
2. Kreigani on east bank of Orashi River, 5º18'N, 6º37'E.
3. Odieke ca. 5º01'N, 6º27'E, east bank of Orashi ca. 3 km S of Mbiama.
4. Okarki 4º59-'N, 6º26-'E, west bank of Orashi River at mouth of Kolo Creek.
5. Udoda (Okolobiama) ca. 4º58.5'N, 6º30'E on right (south) bank of River Orashi.
6. Ozochi (Abessa) ca. 4º57'N, 6º32'E on right bank of River Orashi.
7. Opu-Ogbogolo on west bank of Orashi Rive, ca. 4º54.2'N, 6º33.9'E.
8. Akara-Olu, 7.5 km NE of Mbiama. Approx. 5º06'N, 6º30.5'E.

4. Ogbia-Odual sector

1. Otuokpoti, 8km south of Yenagoa, est.4º51'N, 6º15.5'E.
2. Anyama-Ogbia 4º45.5'N, 6º14-'E (or 4º46'N, 6º14'E) on west bank of Ekole Creek, 18 km S of Yenagoa.
3. Otuaka 4º47+'N, 6º19-'E, on Otuaka Creek, between Ekole & Kolo.
4. Opume 4º39.6'N, 6º21'E, SW of Ogbia town and 15 km NNW of Nembe.
5. Okoroba 4º37.7'N, 6º25.5+'E, 11km NNE of Nembe
6. Kugbo 4º43'N, 6º28'E.
7. Emelego 4º49-'N, 6º30.5+'E, approx. 33km SSW of Ahoada.

5. Yenagoa-Epie

1. Swali, southeast side of Yenagoa, ca. 4º54'N, 6º15'E.
2. Yenizue-Epie 4º56-'N, 6º18-'E.

6. Lower Niger/Upper Nun River

1. Obiofu, east bank of River Niger at 5º25'N, 6º29'E.
2. Umuolo, west bank of River Niger at 5º26'N, 6º30'E.
3. Elemebiri 5º21 'N, 6º31'E, east bank of lower Niger, 30 km W Omoku.
4. Samabri, east bank of lower Niger, 5º19'N, 6º28.5'E.
5. Agberi east bank of River Nun, 5º14'N, 6º24'E.
6. Odi, west bank of River Nun, approx. 5º10'N, 6º15+'E.
7. Kaiama, west bank of River Nun, 5º07'N, 6º18'E.
8. Tombia/Gbarantoru, on east bank of River Nun between Yenagoa and Taylor Creek entrance, approx. 5º00'N, 6º15'E. 15-21 Sept'93.
9. Tungbo on east bank of Sagbama Creek, 4km SW of Sagbama/Forcados confluence, 10.5km SSSW of Patani Bridge, 5º7.4'N, 6º10.2'E.

7. Taylor Creek floodplain

1. Biseni 5º14.5'N, 6º32.5'E.
2. Lake Isemu 10 km ENE of Kaiama, 3.5 km E of Sampou, 3-6 km upstream of Okoso/Powei bridges, west of Taylor Creek. 5º8-9'N, 6º23-24'E.
3. Okordia on Taylor Creek north of E-W road, approx. 5º08'N, 6º27'E.
4. Okolobiri on left/east bank of lower Taylor Creek, 5º02.5'N, 6º19.5+'E.
5. Aseingbene ca. 5º05'N, 6º19'E, west bank of lower Taylor Creek.

8. Marsh forest (non-*epieni* zone)

1. Azuzuama, on east bank of Middleton River (between Apoi & Ikebiri Creeks). 4º43+'N, 5º57'E.
2. Emette, 4º44+'N, 6º11+'E, east bank of creek between Ipirigbene (on Seibiri Creek) and Odobio (on Ekole Creek).
3. Kanyanbiri 4º45-'N, 6º10'E, 11 km SE Oporoma, 3 km NNE Opuama (formerly Seibiri).
4. Diebu, 4º37.5'N, 6º07.5'E, on south bank Diebu Creek, east of Peremabiri.
5. Ologbobiri, 4º42-'N, 6º02'E, west bank of River Sangana.
6. Angiama 4º49.5'N, 6º06.5+'E, east bank Nun River upstream of Oporoma.
7. Oyeregbene 4º32.5-'N, 6º04'E, east bank of Nun River downstream Peremabiri
8. Igbematoro, 4º33'N, 6º02-'E, on east bank of River Sangana (+ Igbematoro II on west bank, high forest).

9. Marsh forest (*epieni* zone)

1. Gbanraun-APOI, 4º47.5'N, 5º53.5'N, on right (northwest) bank of Pennington River.
2. Azama-APOI (Aziama on maps) 4º53'N, 5º59.5'E on west (north bank of Apoi Creek, Niger Delta.
3. Sampou –APOI 3.5 km NNE of Azama and ca. 4º55-'N, 6º00+'E. On creek from Azama to Fotorugbene & Toru-ibeni (Torugbene), about 12km SW of junction of Sagbama & Egbedi Creeks.
4. Eriama 5º00.5+'N, 5.59.5'E on right (north) bank of seasonal creek leading westward to Norgbene.
5. Okunbiri 5º01'N, 6º03'E west bank Sagbama Creek, 29 km SW of Patani.
6. Bulou-Orua 5º06+'N, 6º07'E, west bank Sagbama Creek, ca. 15 km SW/SSW of Patani
7. Ogbosuari 4º58.5-'N, 5º56.5-'E, on left (south bank of seasonal creek leading to Norgbene.
8. Norgbene 4º59+'N, 5º47'E on south bank of Amabulu Creek.

10. Coastal barrier islands

1. Ogbotobo 4º59.3'N, 5º31'E between Ramos and Dodo estuaries.
2. Foropa 4º36+'N, 5º39+'E between Pennington and Digatoro estuaries.
3. Kula 4º20.5'N, 6º38.5+'E between Santa Barbara & San Bartholomeo estuaries.
4. Abissa 4º24'N, 6º46'E between San Bartholomeo & Sombreiro estuaries.
5. Finima 4º24.5'N, 7º08.6'E near Bonny.

11. Mangrove (all sites also include freshwater forest habitat)

1. Gbanraun-APOI 4º47.5'N, 5º53.5'N on right (northwest) bank of Pennington River.
2. Foropa 4º36+'N, 5º39+'E, (see above under Coastal barrier islands).
3. Ogonokom-ABUA 4º47+'N, 6º42+'E west side of Sombreiro River between Abua and Degema Hulk.
4. Degema 4º45'N, 6º46'E and Usokum (=Kala-Degema) 4º47'N, 6º46+'E
5. Bukuma 4º46'N, 6º54-'E, 4km NE of Buguma.
6. Belema ca. 4º25'N, 6º39'E between Santa Barbara & San Bartholomeo estuaries.

Scientific Identifications

Routine and preliminary identifications have been done from standard texts *viz* Dorst & Dandelot (1970), Haltenorth & Diller (1977), Happold (1987), Rosevear (1969, 1974) and Kingdon (1997). Because of the critical zoogeographic position of Niger Delta (see Section C), questions of species-or subspecies-level identity surround many animals reported or collected during the work. Voucher – and study-specimens are being deposited in one or other of two museums with comparative collections from West & Central Africa viz. the Natural history Museum (London) and the Royal Central African Museum (Tervuren – Brussels). The currently active specialists, studying the material are Dr Peter Grubb (primates and hoofed mammals), Ms Daphne Hills (squirrels) and Dr Harry van Rompeay (small carnivores).

Background to the zoogeography of the Niger Delta

The Niger Delta has played an important role in the global economy (through the slave trade, palm oil trade and now fossil fuels) since 1600, has escaped close biological scrutiny. The first systematic surveys of the delta's flora and fauna were conducted during the past decade, and revealed several species previously not known to occur in the delta, including the Niger Delta red colobus (*Procolobus badius epieni*) which was new to science. These surveys also indicate that the forests and animal populations of the delta are under severe threat. Nigeria's second most important timber species, abura (*Hallea ledermannii*), once common in the delta, has been removed by extensive logging since the late 1950's. Pressure on the delta's remaining forests comes from a growing Nigerian population, and improving infrastructure that makes it easier to access remaining areas of swamp forest. There are no protected areas in the delta and the rapid rates of destruction paint a bleak picture for the future of its habitats and species.

Location and General Description

The Niger Delta Swamp Forests ecoregion [5] is contained in a triangle with the town of Aboh on the Niger River being the northernmost tip. The Benin River forms the western boundary of the ecoregion where this ecoregion merges into the Nigerian Lowland Forest ecoregion. The Imo River forms the eastern side where this ecoregion merges into the practically vanished Cross-Niger Transition Forests ecoregion. Along its southern side the Niger Delta Swamp Forests is separated from the Atlantic Ocean by a band of mangroves, which can reach up to 10 km inland. In front of the mangrove belt and close to the sea are ephemeral coastal barrier islands often clothed in transitional vegetation. The ecoregion's total area of approximately 15,000 km^2 is contained within three states, Rivers, Bayelsa, and Delta, of the Nigerian Federation.

The Niger Delta is the product of both fluviatile and marine sediment build-up since the upper Cretaceous, and its low relief is responsible for the meandering and frequent shifting of the Niger and its tributaries. Over time, the decreasing slope gradient of the Niger River bed and associated lower stream velocities has resulted in an increase of tidal activity in the exits of the numerous Niger distributaries, resulting in the formation of the Coastal Barrier Islands (NEDECO 1961).

The soils of this ecoregion are all of fluviatile origin, except for the Coastal Barrier Islands that consist of marine sand overlain with an organic surface layer. The continuous movement of the delta's creeks has resulted in a mosaic of soil types. Remnants of old levees consist mostly of water permeable sand and loam. The soil of the depressions behind them (backswamps) consist mostly of water-logged heavy clay covered by peat, while higher lying sections consist of silty loam and clay (NEDECO 1961).

The climate of the Niger Delta is characterized by a long rainy season from March-April through October. Precipitation increases from the north of the delta (with an average of 2,500 mm) to the coastal area where mean annual rainfall averages around 4,000 mm, making it one of the wettest areas in Africa. The wet season peaks in July, and the only dry months are January and February. However, even during this dry period an average monthly mean of 150 mm rainfall is recorded in the delta. Relative humidity rarely dips below 60% and fluctuates between 90% and 100% for most of the year. During most of the rainy season cloud cover is nearly continuous resulting in 1,500 mean annual sunshine hours and an average annual temperature of approximately 28° C (Barbour *et al*. 1982).

The most important determinant of biological variation in the delta is its hydrology. In addition to precipitation, the major variation in the hydrological regime comes from the Atlantic Ocean's tidal movements and the Niger River flood. This flood begins toward the end of the rainy season in August, peaks in October, and tapers off in December. Some fluctuation in flow is determined by the yearly variation in rainfall, but after the completion of the Kainji dam on the Niger at Bussa in 1968 the timing and level of flooding is also determined by the opening and closing of the dam's sluices.

The swamp forest can be further subdivided into three zones based on hydrological variation (Powell 1995). Each zone appears to support its own floral and faunal assemblage. The first zone is the flood forest. This

zone shows strong seasonal variation. During the dry season the soil is dry save for the seasonal flood channels, a few permanent creeks, and some lakes. During the rainy season water levels slowly rise, eventually leading to complete inundation during the Niger River flood, which lasts generally from October through December. Some of the more common tree species here are; *Lophira alata, Pycnanthus angolensis, Ricinodendron heudelotii, Sacoglottis gabonensis, Uapaca spp., Hallea ledermannii, Albizia adianthifolia, Irvingia gabonensis, Klainedoxa gabonensis, Treculia africana*, and *Ficus vogeliana*. The oil palm (*Elaeis guineensis*) is common, and the understory is often dominated by rattans (e.g. *Calamus deerratus*). The second zone is the eastern delta flank, which is shrinking relative to the western flank (NEDECO 1961, 1966). Some lowland forest non-swamp species are found here (e.g. Ogilby's Duiker *Cephalophus ogilbyi* and Sclater's Guenon *Cercopithecus sclateri*). The third zone is the central backswamp area of the delta, crossed by old creek levees. This area is not often flooded and is not influenced by the tides, and hence relatively stable. Most of the forest here is always waterlogged. The only systematically collected data for the Niger Delta's vegetation comes from this zone (Werre 2000). The distribution of tree species in the forest is determined by hydrology with drier remnants of levees being more diverse than the waterlogged back swamps. The forest is dominated by the following tree species: Euphorbiaceae (*Uapaca* spp., *Klaineanthus gaboniae, Anthostema aubreyanum, Macaranga* spp.) Annonaceae (*Xylopia* spp., *Hexalobus crispiflorus*) Guttiferae (Symphonia globulifera, Pentadesma buteraceae), Rubiaceae (*Hallea ledermannii, Rothmannia* spp.), Myristicaceae (*Coelocaryon preussii, Pycnanthus marchalianus*), and Ctenolophonaceae (*Ctenolophon englerianus*). Average tree height (20-25 m) is relatively low for rain forest, and emergents, which can reach heights of 35 to 40 m, occur at low densities. In drier sections the most common emergents, *Lophira alata, Sacoglottis gabonensis, Irvingia gabonensis*, and *Klainedoxa gabonensis*, while in the wetter sections Alstonia boonei and Ctenolophon englerianus dominate. The middle story also shows variation determined by hydrology with *Klaineanthus gaboniae* dominating in the drier areas, and Raphia spp. in the wetter areas (which can, in the western part of this zone, form large single-species dominant forests). In some sections of this zone small single-species stands of *Oxystigma mannii* (Ceasalpinioideae) can also be found. The shrub layer is dominated by *Diospyros preussii* augmented with *Ouratea* spp., *Massularia acuminata, Monodora myristica, Homalium* spp. and *Alchornea cordifolia*. The forest floor number is covered by a number of small palms (*Eremospatha* and *Podococcus* spp.) and by members of the Marantaceae and Zingiberaceae.

Biodiversity Features

Presently there is little information available on the species composition of this ecoregion. Wildlife surveys in the delta were not conducted until the late 1980's (Oates and Anadu 1982, Oates 1989, Werre 1991, 2000, Powell 1993, 1995, 1997, Bocian 1998). A number of species that were not known from the delta, and new for Nigeria were discovered as recently as the 1990s (Powell 1995).
The Upper and Lower Guinean biota, which was once considered to be separated by the Dahomey Gap, overlaps in the delta. The Delta's floral assemblage appears to be unique, although endemic plants are not known. The presence of two endemic animal subspecies, the Niger Delta or Pennant's red colobus (*Procolobus badius epieni*, EN) and the Niger Delta or Heslop's pygmy hippopotamus (*Hexaprotodon liberiensis heslopi*, CR), supports Grubb's (1990) suggestion that the Delta is a small center of endemism. Although the Niger presents a zoogeographic barrier to some degree, the situation in reality is far more complex since the narrower distributary delta channels allow species to move from one side of the Niger River to the other (Happold 1987, Powell 1995, 1997).

There are no endemic animal species in this ecoregion, but there are two threatened endemic mammal subspecies, the Niger Delta red colobus and the Niger Delta pygmy hippopotamus. There are also two near-endemic species of monkeys, the white-throated guenon (*Cercopithecus erythrogaster*, EN), and Sclater's guenon (*Cercopithecus sclateri*, EN). A number of other species have been recently discovered in the Niger Delta that are either new to Nigeria or had not been observed west of the Cross River, such as black-fronted duiker (*Cephalophus nigrifons*), pygmy scaly-tailed flying squirrel (*Idiurus* sp.), and small green squirrel (*Paraxerus poensis*). This suggests that more endemic subspecies may be present (Powell 1997).

The African elephant (*Loxodonta africana*), chimpanzee (*Pan troglodytes*), Sclater's guenon, white-throated guenon, and crested genet (*Genetta cristata*) are all classified as endangered (Hilton-Taylor 2000). There is

evidence indicating that chimpanzees in Nigeria and western Cameroon may be a different subspecies from those in the west and south. Moreover, it may even be that there is a significant difference between populations in western and eastern Nigeria, with the Niger Delta forming a meeting point. Further research on these chimpanzee populations is an urgent priority, because if these populations are distinct at the subspecies level they will be critically endangered (Gonder *et al*. 1997, Gonder 2000). Of this ecoregions other endemic subspecies the Niger Delta pygmy hippopotamus, if it indeed survives, would be critically endangered while the Niger Delta red colobus is considered endangered (Hilton-Taylor 2000).

Current Status

Although the Niger Delta is wedged between two of Africa's most densely populated areas, for a while it escaped some of the habitat destruction associated with these areas due to its relative inaccessibility. Roads stop at the delta's boundaries and further travel is either by dug-out canoe, or for those who can afford it, by motorized boats. As a result the delta used to support low population densities and little socioeconomic activity other than fishing, some farming in the drier sections, and the collection of forest products. Two events, which happened to occur at about the same time, changed this. In the 1950's oil was discovered in the Niger Delta and the associated activities (road and canal building) opened large sections of remote delta habitat up for exploitation. The second event was that abura (*Hallea ledermannii*) had become the most important timber species after *Triplochiton scleroxylon*. In 1938 there were no abura exports from Nigeria but as of 1949 it became the second most important income earner and by 1951 export volume had increased more than five times from 626,133 to 3,497,549 logs (Rosevear 1954). Most of the abura came from the swamp forest situated between the Nigerian Lowland Forests [] ecoregion and the mangrove belt, which were soon depleted. As a result loggers started to focus more on the delta where exploitation was at the same time facilitated by increasing oil exploration efforts. Presently there are few abura left in the delta and logging has shifted to other species that float, a requirement in an area where transportation is restricted to waterways.

There are no effectively protected areas in the Delta. A number of forest reserves exist, but these areas are under control of forest department and are generally exploited for their timber. In addition, nine of these forest reserves have only been proposed. The three existing forest reserves are Upper Orashi, Nun River, and Lower Orashi, all in Rivers State, which comprise a total of 239 km*2*. The only effective habitat protection is found in sacred groves protected by communities. However, these areas are never very large. Other forms of community protection are restricted to certain species of wildlife. In a number of lakes crocodiles receive protection and in one area, Nembe, chimpanzees receive protection (Bocian 1998).

Types and Severity of Threats

The Niger Delta provides a small-scale representation of many of Africa's problems. A growing population, conflicts between different ethnic groups, national political instability, unsustainable exploitation of natural resources; all of these factors play a significant role in the problems the delta is presently facing. The single most pressing problem facing the delta presently is a lack of development, despite most of Nigeria's revenues coming from the oil found in this area. There is electricity only in a few of the delta's towns and fresh water and health care facilities are basically absent. Rightfully or not, the delta's inhabitants hold the oil industry responsible for this situation, and dissatisfaction has now reached such levels that the seizure and destruction of oil company property, as well as the kidnapping of oil company personnel, has become a common occurrence. As a result it has also become extremely difficult to engage in research or conservation activities.

At the same time the human population of the Niger Delta is growing rapidly, with the result that most of the natural resources (*e.g*., fish, timber) there have either been reduced to a level where they are insufficient to meet the local needs, or, as in the case of abura, have been depleted altogether. Buying fish now requires money, and as a result the delta's population has been forced to focus more and more on activities that provide cash. The oil industry, which is not labor intensive, provides only a very small number of jobs and, therefore, provides no alternative for government supported development. As a result the only local large-scale economic activities that provides cash come from the exploitation of the delta's other natural resource; trees. This is a significant departure from the barter system that up to not long ago was the most important form of economic exchange.

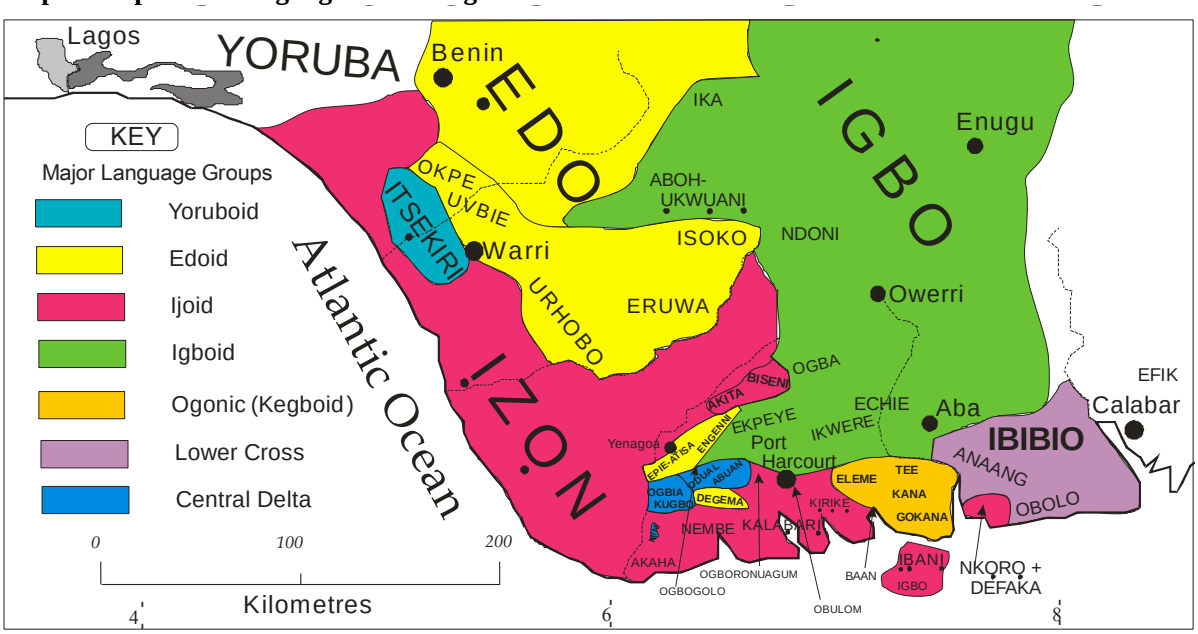
The inhabitants of the densely populated ecoregions next to the delta have depleted most of their wildlife and fish, with the result that they have started looking elsewhere for protein sources. The improving infrastructure in the delta has now made it possible for its inhabitants to transport more fish to the surrounding area, but also for outsiders to travel into the delta. The areas to the northeast and west of the Niger Delta harbor two of Nigeria's three largest ethnic groups, the Ibo and Yoruba. This southern part of Nigeria has reached one of Africa's highest population densities - 20 years ago already between 200 and more than 400 persons/km^2 (Barbour *et al*. 1982). This means that the demand for smoked fish and timber is high, and most these commodities now come from the delta. A good indicator of the human pressure on the Niger delta is that people from as far as Ogoni, located more than 50 km to the east of the delta, come to its central area for part of the year to fish. Overfishing is the result, fish populations are declining, and frozen marine fish is now for sale in the larger towns of the delta. Tension between different ethnic groups, but also within the same ethnic groups, is now resulting in an increase of communal clashes, which often result in the deaths of people and halts all human activities (*e.g*., fishing, farming) in the involved communities' vicinity. Recent surveys of the delta, especially the central part, have shown that small logging efforts have had a devastating cumulative effect on animal populations, through both loss of habitat and increase in localized hunting. This situation is growing worse as outsiders move into the Delta and hunting pressures grow.

Justification of Ecoregion Delineation

The swamp forests of the Niger Delta comprise the second largest swamp forests on the continent after the Congolian swamp forests. This ecoregion is based on the 'swamp forest' vegetation mapped by White (1983). However, the southern boundary has been modified based on reference to a classified AVHRR 1km satellite image of the continent (Loveland *et al*. 2000). The swamp forests is biologically distinct as it harbors endemic mammal subspecies, Pennant's red colobus (*Procolobus pennantii epeini*) and Heslop's pygmy hippo (*Hexaprotodon liberiensis heslopi*).

Ethnolinguistic background

Map 2. Peoples and languages of the Niger Delta



2. Inventory of wildlife species

Happold (1987) on the basis of current knowledge, expected 45 species of larger mammals to occur in the forest zone between the Niger and Cross Rivers; he cites actual records for about 23-26 species in the area

south of a line joining Oguta, Owerri and Aba. Almost entirely due to the present work, the confirmed number in the SPDC (E) area is now about 60 species.

An additional 20-30 unidentified 'mystery species' were reported by hunters during interviews. Some will be false leads, or represent animals so rare that years and great luck will be required to obtain a specimen or other proof. Table 1 summarizes the increase in species counts for the more popular groups, and shows this study has increased the confirmed numbers by about 50 percent so far. Given the preliminary nature of the survey and the number of unconfirmed hunters' reports, it is fairly certain that several species of mammals, including new-to-Nigeria and maybe endemic forms, still remain undetected in the eastern Niger Delta.

Table 1. Changes in species numbers of major mammal groups in the eastern Niger Delta

	Numbers of Species				
Previous authors	**Antelopes**	**Monkeys**	**Carnivores**	**Squirrels**	**TOTALS**
Happold (1987)	6*	3*	7*	8*	24*
Others to 1992	-	2	-	-	2
THIS WORK					
Confirmed new records	2	3	6	2	13
Hunters' reports incl. Mystery species	4	3	5	5	17
TOTALS	(12)	(11)	(18)	(15)	(56)

* = number of species listed by Happold (1987) as present or expected in forest zone between Niger and Cross Rivers.

Table 2 gives a full list of confirmed and 'mystery' species of mammal, with coded annotations on their conservation rankings and status, priorities for attention in environmental studies, and indications on the reliability of 'mystery species'. Details on the more important species and their distribution are given in Sections C, D and E. Tables Table 3 and Table 4 similarly list reptiles and birds of conservation interest in the area. Only common English names are given in Table 1; corresponding scientific names and classification are given in Appendix 1. Species are grouped by family and the family-groups are listed in conventional zoological order.

Table 2. Mammal Species known or possibly present in the eastern Niger Delta

Species		**Conservation Status**			
	Possible ssp	**IUCN**	**WCMC**	**Dcr11**	**Priorities**
Notes (1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Dwarf Galago		-	-	2	
Allen's Galago		-	-	2	
Needle-clawed Galago		-	-	2	
Angwantibo		V	?	1	
Potto		-	-	2	
!? Drill (short-tail *alum*)	??(rpt)	E	Ex	1	**SR
Red-Capped Monkey		V	-	1	* EIA
Mona Monkey		-	-	2	
White-nosed Guenon		-	-	2	
! White-throated Guenon		E	E	2	EIA
Sclater's Guenon		E	-	2	* SR
! Tantalus Monkey		-	-	2	
! Delta Red Colobus		E/V	Ex	1	**SR
! Olive Colubus		V	?	1	* EIA
Chimpanzee		V/E	E	1	**SR Tm

Species	Possible ssp	Conservation Status			
		IUCN	WCMC	Dcr11	Priorities
Notes (1)	(2)	(3)	(4)	(5)	(6)
?'Dwarf Monkey'	?(rpt)				**SR
! Giant Panolin	??(rpt)	-	-	1	**SR
Tree Pangolin		-	-	1	
Long-tailed Pangolin		-	-	1	EIA
Crawshay's hare	?(Owerri)	-	-	-	
Beecroft's Flying-Squirrel		-	-	-	
Derby's (Fraser's) Flying-Squirrel		-	-	-	
!?Pel's Flying-Squirrel	(rpt)				* SR
!?Dwarf Flying-Squirrel	(rpt)				EIA
?'Yellow Flying-Squirrel'	(rpt)				EIA
Geoffroy's Ground Squirrel		-	-	-	
Redless Tree-Squirrel		-	-	-	
Fire-footed Tree-Squirrel		-	-	-	
Orange-headed Tree-Squirrel		-	-	-	
! Small Green Squirrel		-	-	-	
Red-legged Sun-Squirrel		-	-	-	
Giant Forest Tree-Squirrel		-	-	-	
!?'Ogbia Black Squirrel'					* SR
! Pygmy Squirrel	(rpt)	V	-	-	* EIA
Gambian Giant Rat		-	-	-	
Emin's Giant Rat		-	-	-	
! Savannah Gerbil		-	-	-	
Common Afr. Dormouse		-	-	-	
Huet's Dormouse		-	-	-	
Brush-tailed Porcupine		-	I	1	
! Crested Porcupine	??(rpt)	-	I	1	SR
Greater Cane-Rat		-	-	-	
?'Short-tail Cane-Rat'	??(rpt)				* EIA
! Side-striped Jackal	?(rpt)	-	-	2	EIA
! Cape Clawless Otter		-	I	1	EIA
! Spot-necked Otter	(rpt)	-	I	1	EIA
?'Small Black Otter		-	I	1	EIA
?'Striped Otter'	?(rpt)	-	-	-	* SR
!?Forest Ratel	??(rpt)	-	-	-	* EIA
! Crested Genet		E	-	2	EIA
! Large-spot Genet		-	-	2	EIA
Forest Genet		-	-	2	
!?African Linsang	??(rpt)	-	-	-	* SR
Two-spot Palm-Civet		-	-	2	
African Civet		-	-	2	

Species	Possible ssp	Conservation Status			
		IUCN	WCMC	Dcr11	Priorities
Notes (1)	(2)	(3)	(4)	(5)	(6)
! Egyptian Mongoose		-	-	2	Tm
! Long-nosed Mongoose		-	-	2	* EIA Tm
Marsh Mongoose		-	-	2	Tm
!?White-tailed Mongoose	??(rpt)	-	-	2	* EIA
Cusimanse		-	-	2	
?' Big Cusimanse'	??(rpt)	-	-	2	*
!?Golden Cat	??(rpt)	-	I	1	* SR
Serval	?(Sapele)	-	I	1	* SR
Leopard		-	I	1	* SR Tm
Manatee		V	I	1	* EIA Tm
! African Elephant		V	I	½	**SR
Western Tree-Hyrax		-	-	-	
! Giant Forest Hog	??(rpt)	-	I	1	* SR
! Warthog	??(rpt)	-	-	2	SR
! Bushpig	??(rpt)	-	-	-	* EIA
Red-River-Hog		-	-	-	
Heslop's Pygmy Hippo		Ex	-	1	**SR Tm
! Hippopotamus		-	-	2	**SR Tm
Water Chevrotain		-	I	1	EIA
African Buffalo		-	-	2	SR
Sitatunga		-	E	1	EIA
Bushbuck		-	K	-	
Maxwell's Duiker		-	V/I	-	
! Black-fronted Duiker		-	-	-	* SR
!Ogilby's Duiker		V	I	-	**SR
! Bay Duiker	?(Ibeku-Umuahia)	-	E	-	EIA
! Red-flanked Duiker	?(Amaku)	-	R	-	
Yellow-backed Duiker		-	E	1	* SR
Bates'-Dwarf-Antelope		-	E	-	EIA
?'Large Black Duiker(s)	(rpts)				**SR
? *buruwan*/Necklaced Duiker	?(rpt)				**SR
?'*akure* Duiker' (Ijo)	(skull)				* EIA
E-wan-gha (Ijo)	?(rpt)				* EIA
? enata-ezogh (Odual/Ogbia)	?(rpts)				* EIA

Explanatory notes on numbered column headings

(1) '!' denotes mammal species not expected from forest zone east of Niger acc. to Happold (1987). '?' indicates a 'mystery' species, reported by hunters to be present but not identifiable as any known species.

(2) '?' indicates presence is not certain '??' = remotely possible).
For listings not supported by specimens or convincing evidence, the basis for the listing is given in parentheses as name of nearest known locality or 'rpt' meaning hunters' reports.

(3) IUCN – International Ranking in 1994 IUCN Red List – see under (4).

(4) WCMC – National Ranking in WCMC's 1988 Nigeria Biodiversity Report.
IUCN/WCMC Rankings:
Ex = not located in wild in past 50 years.
E = endangered; V = vulnerable; R = rare.
I/K = known (I) / suspected (K) to be in E or V or R categories.

(5) Dcr11 = Ranking in Federal Endangered Species Decree NO. 11 of 1985.
Schedule 1 – absolute prohibition; Schedule 2 – licence required.

(6) Explanation of symbols.
* = Species needs conservation attention in SPDC (E) area (also **).
** = Species of highest importance, usually in small isolated populations which should be protected 'at all costs'.
SR = important easily identified species to encourage SPDC/contractor staff to report; also require attention in EIA's.
EIA = species requiring attention in EIA's (see also SR category).
TM = Totem species, under traditional protection in some localities.

Table 3. Reptiles of conservation interest known or possibly present

Species Family/Species		Conservation Status IUCN (3)	WCMC (4)	Dcr11 (5)	Priorities (6)
Varanidae					
Nile Monitor		-	I	I	Tm
Forest Monitor		-	-	-	Tm
Boidae					
Royal Python		-	I	I	Tm
Rock Python		-	I	I	Tm
Elapidae					
Black Cobra		-	-	-	Tm
Crocodylidae					
Slender-snouted Crocodile		V	?	-	*SR Tm
Nile Crocodile		-	I	I	SR Tm
Dwarf Crocodile		-	I	I	
Pelomedusidae					
W.Afr. Black Forest Turtle		-	-	-	Tm
W.Afr. Mud Turtle		-	-	-	Tm
Trionychidae					
African Softshell turtle		-	-	-	
Testudinidae					
Serrate Hinge-back Tortoise		-	-	-	Tm
Home's Hinge-back Tortoise		-	-	-	Tm
Chelonidae					
Loggerhead	?	V	-	-	SR
Green Turtle	?	E	-	-	SR
Hawksbill Turtle	?	E	?E	-	SR
Olive Ridley		E	?E	-	SR
Dermochelyidae					
Leatherback		E	-	-	SR

Table 4. Endemic, officially endangered and culturally important birds in SPDC (E) area

Species		Conservation Status			
Family/Species	**Residence Status**	**IUCN**	**WCMC**	**Dcr11**	**Notes**
		(2)	(3)	(4)	
Pelicanidae:					
Pelicans	Migr.	-	-	2	Now rare
Ardeidae:					
Herons, Egrets & Bitterns	Res./Migr.	-	-	2	
Scopidae:					
Hammerkop	Res.	-	-	2	(1)
Ciconiidae:					
Storks	Migr.	-	-	2	Now rare
Aegypiidae:					
Vultures	Res./	-	-	2	
Falconidae:					
Eagles, Falcons, Kites etc.	Res./Migr.	-	I/K	1	
Palm-nut Vulture	Res.				(1)
River Eagle	Res.				(1)
Laridae:					
Damara Tern	Migr.	R	?	-	Prob. present
Psittacidae:					
Parrots	Res.	-	I/K	1	
Musophagidae:					
Blue Plantain-eater	Res.	-	-	-	(1)
Cuculidae: Cuckoos & Coucals					
Senegal Coucal	Res.	-	-	-	(1)
Estrildidae: Estrildine Weavers					
Fawn-breasted (Anambra) Waxbill	Endemic	K	K	-	No record
(1) Bird species for which there are scattered local traditions against killing or eating.					

'Nigerian Animals that don't exist'

The above heading is the title of an article by Rosevear (1948a) about the use of wrong English names in Nigeria for Nigerian animals. Several of the reviewed reports used only such 'local English' names, which properly refer to animals (usually European or South American ones) very different from what is intended. The use of these names will cause confusion or consternation if the reports are seen abroad. Table 5 shows such names, which occurred in the reviewed reports, and some other common ones in circulation.

Table 5. Comparison of some local and standard English animal names

Local English	Standard English	Probably species	S/N of Rpts
*hare	Duiker/dwarf antelope	Maxwell's Duiker	37, 54
Iguana	Monitor lizard	Nile Monitor	34, 37, 54,
Alligator	Dwarf Crocodile	Dwarf Crocodile	37
Boa constrictor	Python	Rock Python	37
Rabbit	Giant or Pouched Rat		
Fox	Mongoose		
*Gorilla	Chimpanzee		
Beaver or bear	Otter		
*Hippopotamus	Manatee		
Ostrich	Goliath Heron		

* Note: - true hares, true gorilla and true hippopotamus also occur in Nigeria, but only two in the SPDC (E) area: hares in derived savanna and hippopotamus along the coast.

One report (#37) listed synonymous local English and standard English names (*viz* iguana, Nile monitor lizard) as if they were two separate species. This conundrum is not unique but has also been seen in a report for a different oil company by a different consultant. The solution is to require the use of either scientific or vernacular names.

3. The distribution of species

3.1. Zoogeographic Background

The Niger Delta occupies a zoogeographically critical position, which gives special interest and significance to the identity and distribution of species within it. It is in the zone of transition or overlap between the Upper Guinea (West African) and Lower Guinea (Central African) rainforest faunas. It also contains disjunct outlier populations of a few species from each of those faunas, and is a minor centre of endemism on its own accord (Grubb 1990). Being a part of the Niger system, the delta also figures in the traditional view of the Niger River as a distributional barrier to supposed west-of-Niger and east-of-Niger species (listed by Happold, 1987:246-249, Tables 15.1-15.3). When questions of boundaries arise in this regard, it has been customary , for lack of anything better, to draw an arbitrary line dividing the Delta into western and eastern halves (e.g. in Happold, 1987; Grubb, 1990). Not surprisingly the actual situation is more complicated. The present work is starting to map species boundaries, and some of these indicate the existence of previously unrecognised faunal zones within the Delta.

3.2. Faunal zones within the Delta

The distribution of animals normally corresponds to the distribution of suitable habitat types. The freshwater zone of the Niger Delta is usually classified as undifferentiated 'swamp forest' and there has been a corresponding assumption that the fauna is likewise undifferentiated. The unpublished NARESCON/FEPA report (Powell 1993) proposed and recognized two faunal or forest zones within the freshwater sector of the central axis of the Delta, based initially on the mutually exclusive distributions of two large endemic mammals:-the 'Flood Forest' zone with the Nigerian Pygmy Hippo and the 'Marsh Forest' zone with the newly discovered Delta Red Colobus monkey. The differences were attributed to different hydrological regimes. The present study confirms the distinction as concerns the fauna, and suggests additional zones as summarized below and shown in Map 3. This scheme is tentative, based on limited data. It is put forward as a model to guide, and be modified by, future work. Many boundaries will in any case be more intricate including extensions and outliers in adjacent zones, e.g. along river channels and on old levees.

a. LOWLAND FOREST ZONE – the well-drained area east of the Orashi River (which forms the eastern boundary of the Niger floodplain). It is largely deforested by agriculture except riverine

swamps. It is characterized by the Dwarf antelope, and a few species which extend more westward into the Eastern Flank zone (Ogilby's Duiker, Sclater's Guenon and Allen's Galago).

b. NIGER FLOODPLAIN or FLOOD FOREST ZONE – the forest area which is inundated by the annual Niger flood and which dries out in the dry season except for numerous flood channels and floodplain species which evidently spread along the flood distributaries e.g. the Tantalus Monkey and the Large-spotted Genet.

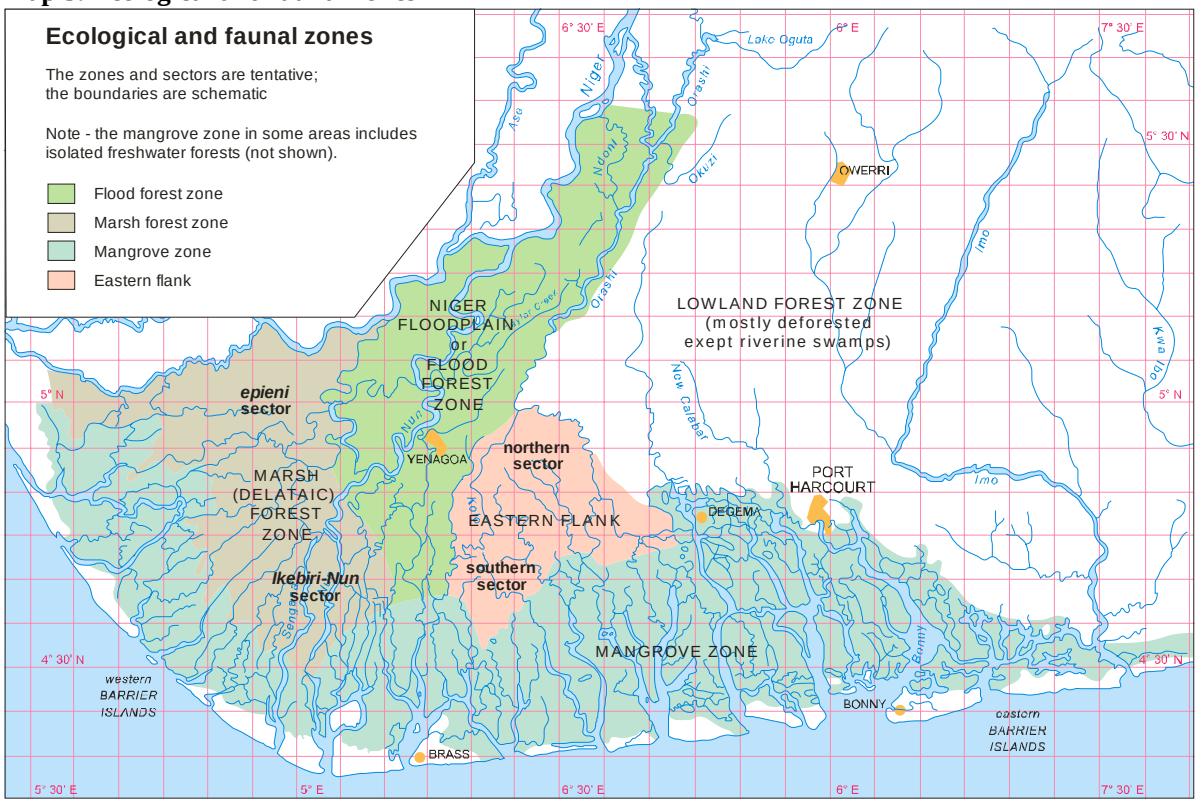
c. EASTERN FLANK – the area between Kolo Creek and the Orashi River down stream of Okarki. This zone was probably typical 'Flood Forest' long ago when the Orashi was a major distributary of the Niger. It still has the Pygmy Hippo and Large-spotted Genet, but also several Lowland Forest non-swamp species (notable Ogilby's Duiker and Sclater's Guenon).The southern sector has several species of special interest (chimpanzee, the black squirrel, and mystery species like the *ezinekpe* cat, drill-like ground monkey *alum* and *enata-ezogh* antelope. Some may be endemics; others may be relict populations of true lowland species now extinct in the rest of the Niger-Cross interfluvium.

d. **Marsh (Deltaic) Forest Zone** – this occupies the tidal freshwater sector where the tidal influence dampens the amplitude of the Niger flood and maintains a high water table in the dry season. The zone is characterized by the Black-fronted Duiker and the absence of otherwise widespread mammals like the Angwantibo, Giant Rats, Cusimanse mongoose and Bushbuck, and also the Pygmy Hippo.The north-west sector encompassed by Apoi and Bomadi Creeks, which receives little if any of the Niger flood and so has even less seasonality, is characterized by the Red Colobus monkey.

e. **Mangrove zone** – the mammal fauna of the mangrove zone was listed by Rosevear (1947) as Mona monkey, Sitatunga, Speckle-throated Otter and Marsh Mongoose. During the present study hunters widely reported clawless Otters and unidentified Genets also as regular mangrove inhabitants. Some sectors of the mangrove zone include islands of freshwater forest which need investigation, both for their fauna and also for the role they play in supporting the mammal fauna of the surrounding mangrove forest.

f. **Barrier Islands** – these support freshwater swamps with a fauna, like the Marsh Forest zone, generally lacking burrowing mammals. Otherwise they vary a lot. Some retain scarce relict populations of major species (elephant, hippopotamus, maybe leopards and chimpanzees), and some lack pigs.

Map 3. Ecological and faunal zones



3.3. Distributions of individual species

The known distribution of the more important species (listed in Table C.1) is indicated on Maps 1 to 32. For species with distinct patterns, the map often shows only records which help define the distributional limits; the overall distribution is then explained in the upper-left box. The meaning of the symbols as used on the maps are explained further below. Except for 'New Record' which always refers to a specific specimen, it is often difficult to decide on the most appropriate category for a record, or whether it warrants mention at all. Of the species not mapped, some are too common and widespread to be of particular interest (e.g. Mona Monkey, Red-legged Squirrel, Civet, Palm-Civet, Maxell's Duiker). For others, the records are too few and/or indefinite to be useful at this level (e.g. Allen's Galago, Long-nosed Mongoose, Otters and Pangolin species).

Map legends

Literature Record – published localities, not necessarily based on specimens or direct observations. Most are cited in Happold (1987) and most are several decades old.

New Record – localities substantiated by specimens collected or sighted (as bush meat) during the author's 1992-1995 surveys.

Reliable Report – localities where reports from hunters or trappers are strong and/or numerous enough to make it likely that the species is actually present.

Other Report – localities where reports are less 'reliable' than defined above, but at least strong enough to deserve further investigation in critical cases. Some reports, which would otherwise be classed as reliable, of legendary animals like Leopard and Pygmy Hippos are put here; details are given under the species accounts in Section D.

Locally Extinct – localities where hunters or trappers know the species but consider it to be extinct, usually in the past 10 to 30 years.

Absent- localities where hunters or trappers report the animal to be unknown in the area in living memory. In many cases some of the same hunters know the species from their experience hunting elsewhere.

Table 6. Species Distribution Maps			
PRIMATES			
Angwantibo	Map 01	Red-capped Mangabey	Map 02
White-throated Guenon	Map 03	Sclater's Guenon	Map 04
Tantalus Monkey	Map 05	Olive Colobus	Map 06
Delta Red Colobus	Map 07	Chimpanzee	Map 08
Unidentified Monkeys	Map 09		
RODENTS			
Ground Squirrel	Map 10	Giant Rats	Map 11
Black Squirrel	Map 12	Squirrels described by hunters	Map 12
CARNIVORES			
Crested Genet	Map 13	Large-spotted/Forest Genets	Map 14
Egyptian Mongoose	Map 15	Cusimanse	Map 16
Leopard	Map 17	Unidentified Carnivores	Map 18
UNGULATES (HOOFED MAMMALS			
Tree Hyrax	Map 19	African Elephant	Map 20
Pygmy Hippopotamus	Map 21	Hippopotamus	Map 22
Water Chevrotain	Map 23	African Buffalo	Map 24
Sitatunga	Map 25	Bushbuck	Map 26
Black-fronted Duiker	Map 27	Ogilby's Duiker	Map 28
Yellow-backed Duiker	Map 29	Bates' Dwarf Antelope	Map 30
Unidentified Antelopes I	Map 31	Unidentified Antelopes II	Map 32

4. Accounts of major species

4.1 Galagos and Lorisids

4.1.1 Dwarf Galago

4.1.2 Allen's Galago

4.1.3 Needle-clawed Galago

Photo 1. Needle-clawed Galago

Angwantibo *Arctocebus calabarensis*

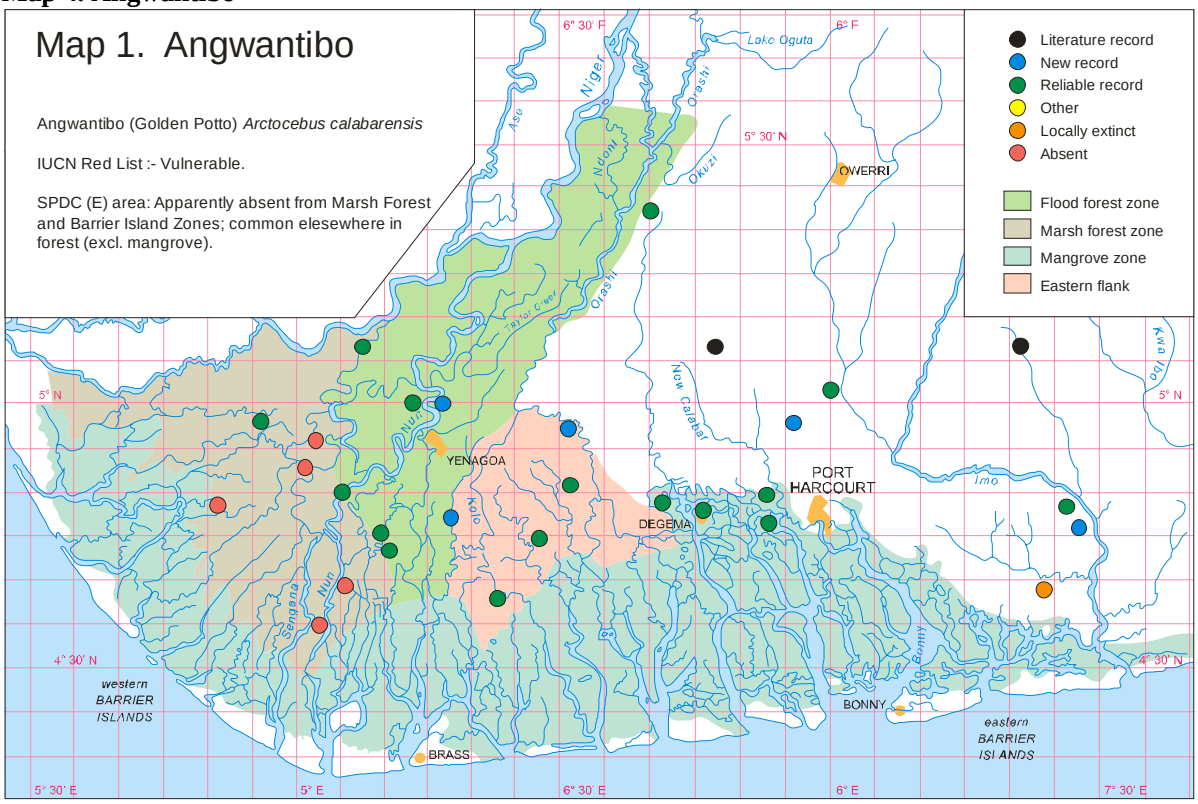
Photo 2. Angwantibo

The name of the Angwantibo is borrowed from Efik, the language spoken around Calabar, and the angwantibo is confined to south central and east Nigeria and adjacent Cameroun (Kingdon 1997:xx). Map 4 shows the recorded distribution in the Niger Delta. Essentially the angwantibo is common in all types of forest but is not found in mangrove areas or swampy forest.

Vernacular names

Almost none of the vernacular names distinguish clearly between the common potto, *Perodicticus potto*, and the angwantibo. The exception are some of the Central Delta languages such as Kugbo and Odual, which have **idoni** for the potto and **ekidi** for the angwantibo. However, it is the **ekidi** root which is generalised in the Delta, showing up as **ékidi** in Nembe (Ijoid), **ekedi** in Degema, **ikiri** in Echie (Igboid) and **ikiri** in Gokana and other Ogomic languages.

Map 4. Angwantibo



Potto *Perodicticus potto*

Photo 3. Potto I

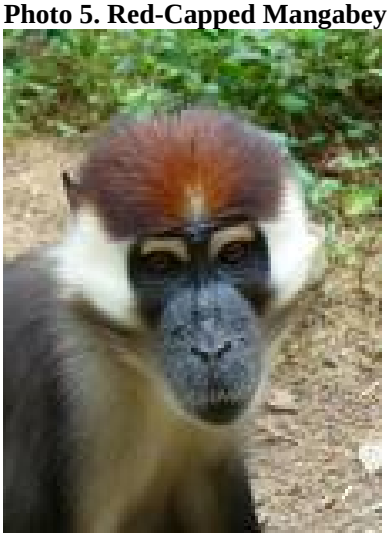
Tropical forest belt of west, central and east Africa; the northern border of rainforest is apparently the northern limit of distribution. From Sierra Leone across the forest zone to the Mau Forest, western Kenya. In east Africa in almost all moist forest areas of Uganda and west Kenya and in the lower montane forests of Elgon and Ruwenzori (Kingdon, 1971; Jenkins, 1987). According to Sanderson (1940), in the assumed distribution area of *P. p. potto* there is a gap in the forest cover extending to the shore which causes an almost complete rainforest faunal break (see also enclosed map of rain forest cover and faunal barriers). Between this break and the distribution area of *P. p. edwardsi* forms in some regard intermediate between *P. p. potto* and *P. p. edwardsi* have been found (Osman Hill 1953; Jenkins 1987). *P. p. juju* has been regarded as distinct or as such an intermediate form (Jenkins 1987).

Photo 4. Potto II

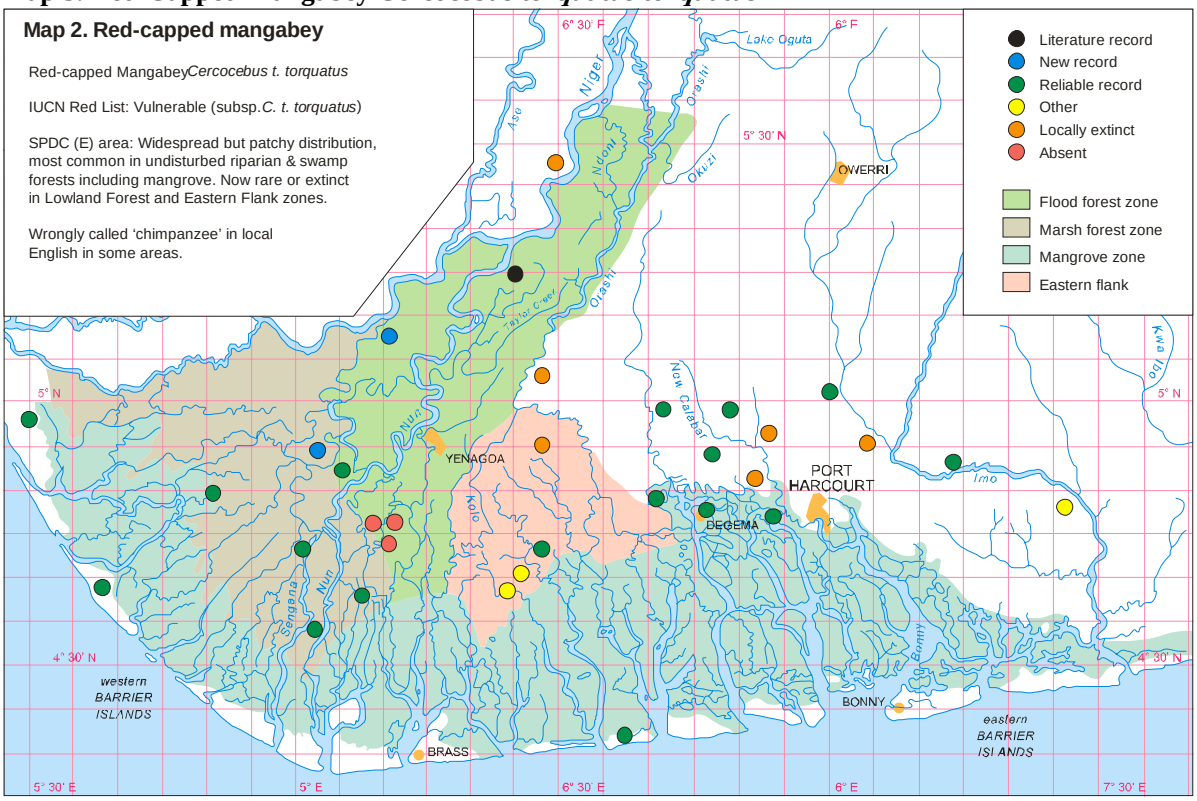
4.2 Monkeys and primates

4.2.1 Red-Capped Mangabey *Cercocebus torquatus torquatus*

Photo 5. Red-Capped Mangabey

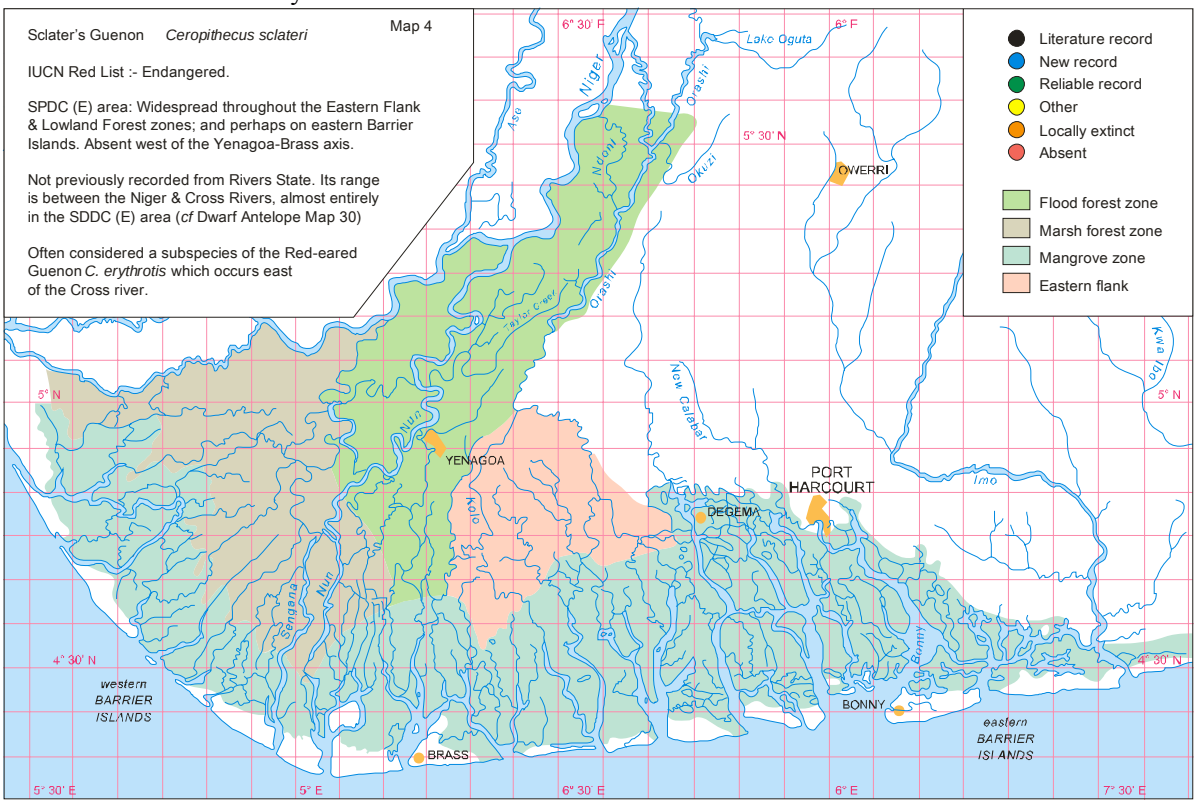


Map 5. Red-Capped Mangabey *Cercocebus torquatus torquatus*



Sclater's Guenon – *Cercopithecus sclateri*

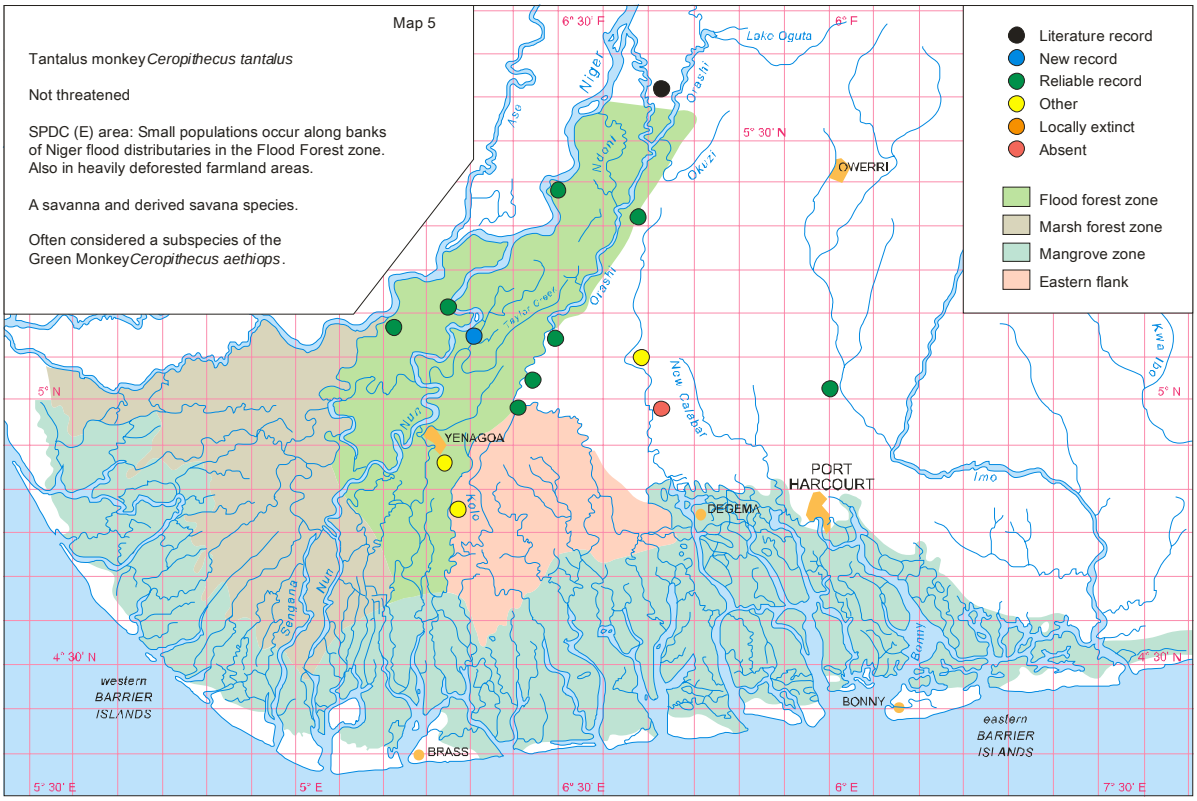
This is a national endemic species (or subspecies of *C. erythrotis*) previously known from only a few areas between the Niger and Cross Rivers northeast of the SPDC (E) area, viz. some Igbo villages where it is traditionally protected, the west bank of the Cross River including the Stubbs Creek area, and the Niger-Orashi floodplain corridor north of Ndoni Creek (Oates et al. 1992). South of Ndoni Creek it is replaced by the White-throated monkey.



The species is now known to be present and in places common in the SPDC (E) area, from east of Mbiama south to Ogbia and eastwards including the already-gazetted Upper Orashi Forest Reserve which seems a prime choice for a conservation area. It is not known to occur in any other conservation area, except the Stubbs Creek reserve which apparently is not undergoing the expected development.

Tantalus Monkey *Cercopithecus tantalus*

Photo 6. Tantalus monkey



White-throated Guenon – *Cercopithecus erythrogaster*

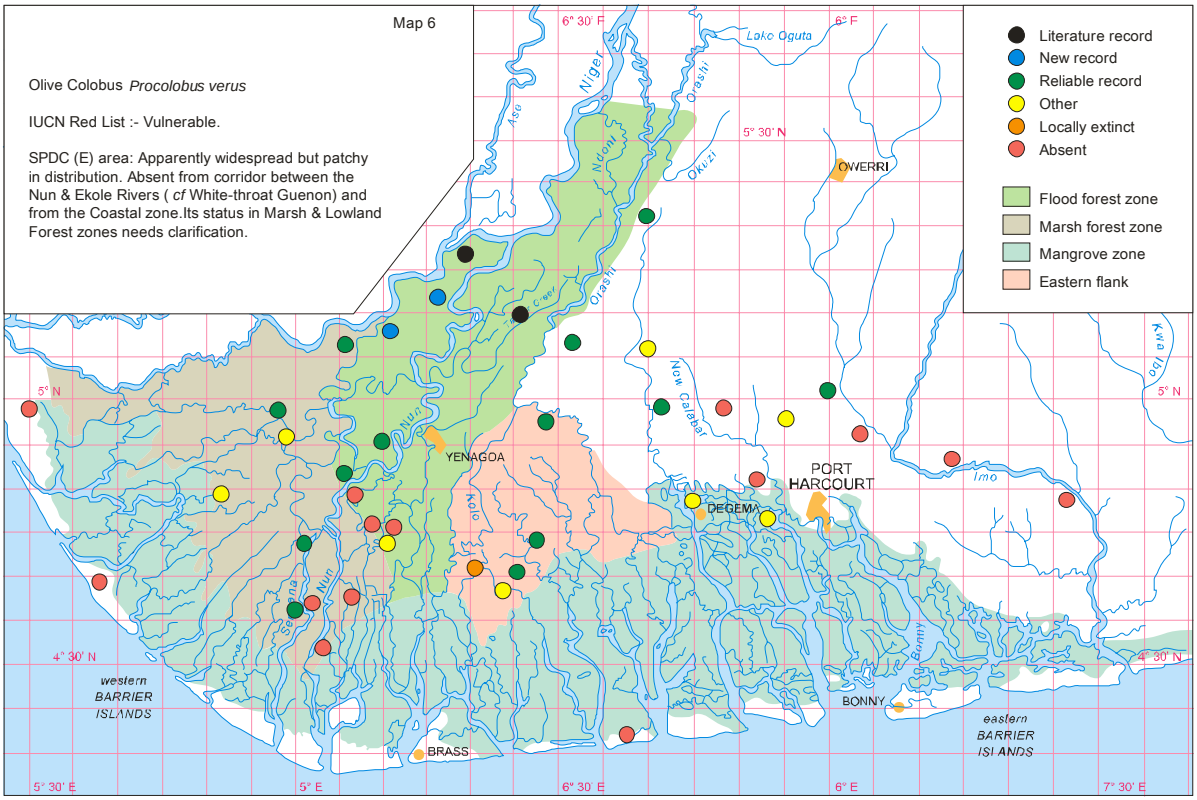
Photo 7. White-throated Guenon

This is a traditional 'west-of-Niger' species (e.g. Happold, 1987; Inahoro, 1992), which however has been found to occur further east, in the Taylor Creek area of the Nun-Orashi floodplain corridor south of the Ndoni creek (Oates, 1985, 1989). Its eastern boundary is uncertain. At the least it runs southward from Mbiama, well east of the Nun River. There are probably populations further east within the range of Sclater's Guenon; a headless skin from Opu-Ogbogolo (eastern Upper Orashi Forest Reserve) appear to be from a White-throated guenon, and there are unconfirmed hunters' reports from the lower Imo River. If these prove true they will either represent the first instance of co-occurrence of White-throated and Sclater's guenon, or indicate a complicated boundary between the two species.

Olive Colobus – *Procolobus verus*

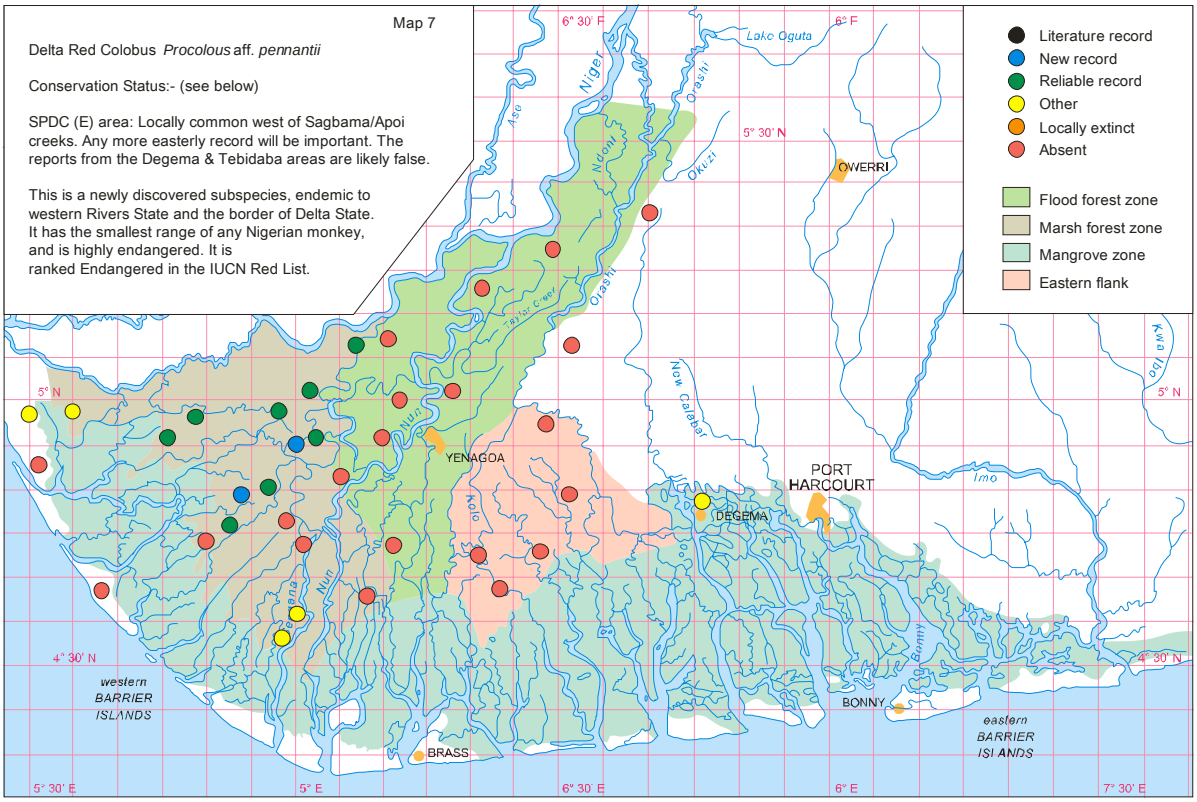
Photo 8. Olive colobus

The Nigerian isolate of this Upper Guinea species was first reported in 1970, ca. 60 km SE of Niger-Benue confluence (Menzies 1970). It is fairly widespread, if not always common, in the northern 'flood-forest' zone of the Delta (Williamson, 1971; Anadu and Oates, 1982, 1988); Anadu and Oates also had reports of it, maybe extinct, in the Omo Forest Reserve in Ogun State. The species seems especially common in the Odi-Tungbo sector where it is commonly killed by hunters. It occurs eastward in the Upper Orashi Forest Reserve and there are unreliable reports of it further east in the Sombreiro and Imo valleys. It seems rare or absent from the southern 'marsh-forest' and barrier island zone, but at least in some areas (E.g. the Azama-Ogbosuwari-Orua sector) its range overlaps that of the Red Colobus. The differences between the Upper Guinea and Nigerian populations have not been studied.

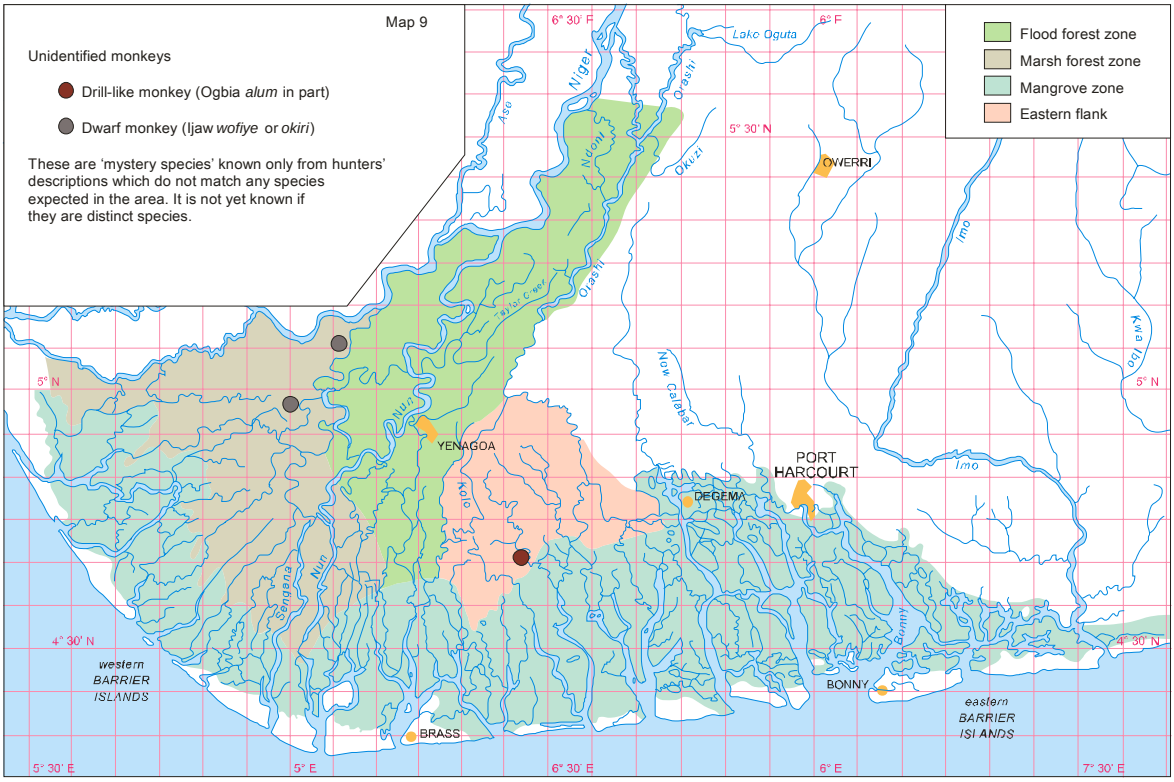


Red Colobus Monkey – *Procolobus* cf. *pennantii*

This large leaf-eating monkey was only recently found in the Niger Delta area, in the 'marsh-forest' zone between the Forcados and Sagbama/Apoi channels where it is locally well known to indigenes (Powell, 1993). It is unknown elsewhere in Nigeria (Happold, 1987). The nearest populations are on Bioko Island (sp or ssp *pennantii*) and in the Cameroon border area (ssp *preussi*). The Niger Delta population is being described as a new subspecies, which will add to the list of animals endemic to the Niger Delta (Grubb and Powell, in prep.).

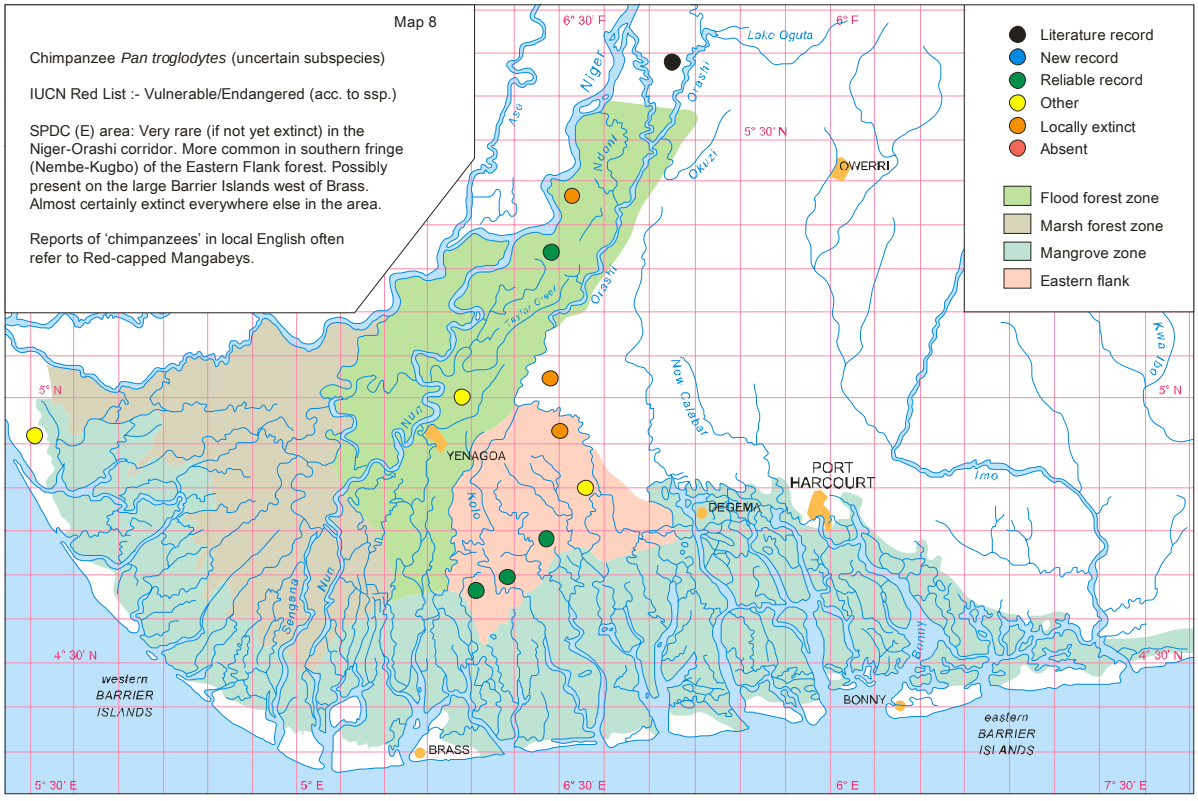


Mystery monkey species



Chimpanzee *Pan troglodytes*

The West African 'black-faced chimp' (subspecies *verus*) is ranked as more endangered than the typical subspecies troglodytes (1994 Red List) and may be distinct enough to be reproductively isolated (Moris et al., 1994). The taxonomic status of the Delta populations however is not clear. Happold (1987) and Grubb (1990) class Nigerian chimps as an isolate of *P.t. verus*. The 1994 Red List, by not listing *verus* for Nigeria, implies Delta populations belong to *P.t. troglodytes.*



Previously recorded localities for chimps in the Delta are the defunct Ogbede Forest Reserve (Heslop, 1935: south of the Ahoada-Mbiama road, now extinct), Kpakiama (Happold, 1987: extant), the Taylor Creek Reserve area (Oates, 1989; Were, 1991; Powell, 1993: extant but rare) and the Ramos-Dodo barrier island (Powell, 1993). Chimps are commonly reported in lower Ogbia between Akipela/Etiama on the east and Kugbo/Idema/Agrisaba on the west. This area is partly in the proposed Okoroba/Edumonon forest reserve. Hunters estimate there are 5-10 family groups remaining, which would mean a total population probably not exceeding 50 individuals. In general, chimps are treated with limited respect through most of the 'riverine' parts of the Delta. Biseni indigenes (Taylor Creek area) traditionally do not kill chimps unless necessary in which case the corpse is given a traditional burial. At Kugbo (Ogbia there is reportedly a highly protected and somewhat tame population. But in Ogbia and Kpakiama hunters have killed chimps in the past few years as acts of bravado. In Ogbotobo it appears natives treat chimps with indifference. Anadu and Oates (1982:14) obtained no records in recent sightings of chimps in their Bendel State interview sites. Likewise in Rivers State, interviews indicate that chimps are extinct in numerous remote areas (Powell, 1993). Significant populations may exist unreported on barrier islands between the Escravos and Ramos rivers.

4.3 Pangolins

Black-bellied Pangolin *Manis tetradactyla*

Over most of southern Nigeria, this species is very rare compared to the White-bellied Pangolin. Happold (1987) listed it as "very rare; recorded from only one locality in 1939" (Ohusu Forest Reserve, north of Benin). Shodeinde and Adedipe (1994) had none in a sample of 142 pangolins from southwest Nigeria including the Omo Forest reserve; one of the 10 hunters they interviewed reported once having caught a specimen. Anadu and Oates (1982) listed the species from all their forest zone interview sites in Bendel State but without any direct evidence; in my experience, hunters are generally unable to distinguish the two species until shown the differences on specimens, not from pictures. In eastern Nigeria, Cozens and Marchant (1951) listed only the White-bellied species from Owerri Province. Gadsby (1990) recorded no specimen (but nine of *M. tricuspis*) in her bushmeat survey in Cross River State. Rosevear (1937), writing when the British Cameroons was a part of Nigeria, gave no record, saying, "its exact range is not known".

The only possible direct evidence for the Black-bellied pangolin, apart from the Ohusu record, which I can trace in print is Oates; (1989:20) sighting of "*Manis* sp., probably *tetradactyla*" in the Niger floodplain at Iberu northwest of Oguta. In fact it is about equally common as the White-bellied species in the floodplain between the Orashi and Nun rivers (4 voucher specimens at hand) and probably throughout the swampforest zone. The species; rarity outside the Delta is probably due to a preference for swampforests, and its diurnal habits which make it more susceptible to capture.

4.4 Otters

Speckle-throated and Clawless Otters

Otters are missing from mammal lists for Ondo State (Agbelusi, 1994), Bendel State (Anadu and Oates, 1982) and Owerri Province (cozens and Marchant, 1951). Happold (1987) found no forest-zone records for Nigeria except east of the Cross River. Clawed and clawless otters – *Lutra* and *Aonyx* –are both common or abundant throughout freshwater and Mangrove creeks of the Delta. Fishermen know them as daily pests, which remove fish from traps, but they are difficult to catch which accounts partly for the lack of records. Only two species are to be expected on the basis of published knowledge but local descriptions and the numbers of local names at single sites give some suggestion of a third species.

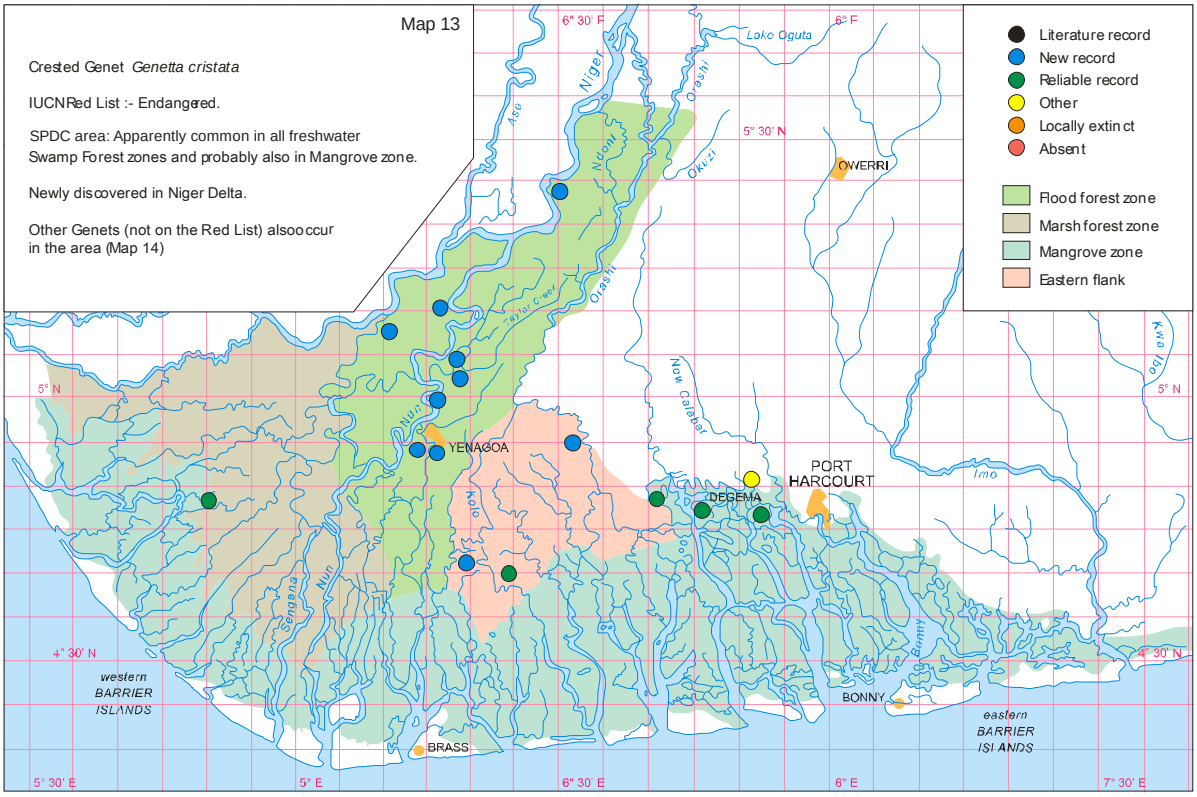
Heslop (1935) was almost certainly aware of the existence of otters in what he termed 'Region A' (eastern Niger Delta) of the old Owerri Province but he evidently assumed they were otter-shrews. His text reads: "Otter-shrew (*Potamogale velox*). This is the species usually known as "Mangrove otter," though of course it has no relationship whatsoever with the Otters. It appears to occur throughout the distribution of this most interesting and entertaining species." Rosevear (1947) explicitly listed the Speckle-throated Otter for mangrove swamps in Nigeria but in the present study hunters indicated it is the Clawless Otter which is the typical mangrove species.

4.5 Genets

Crested Genet *Genetta cristata*

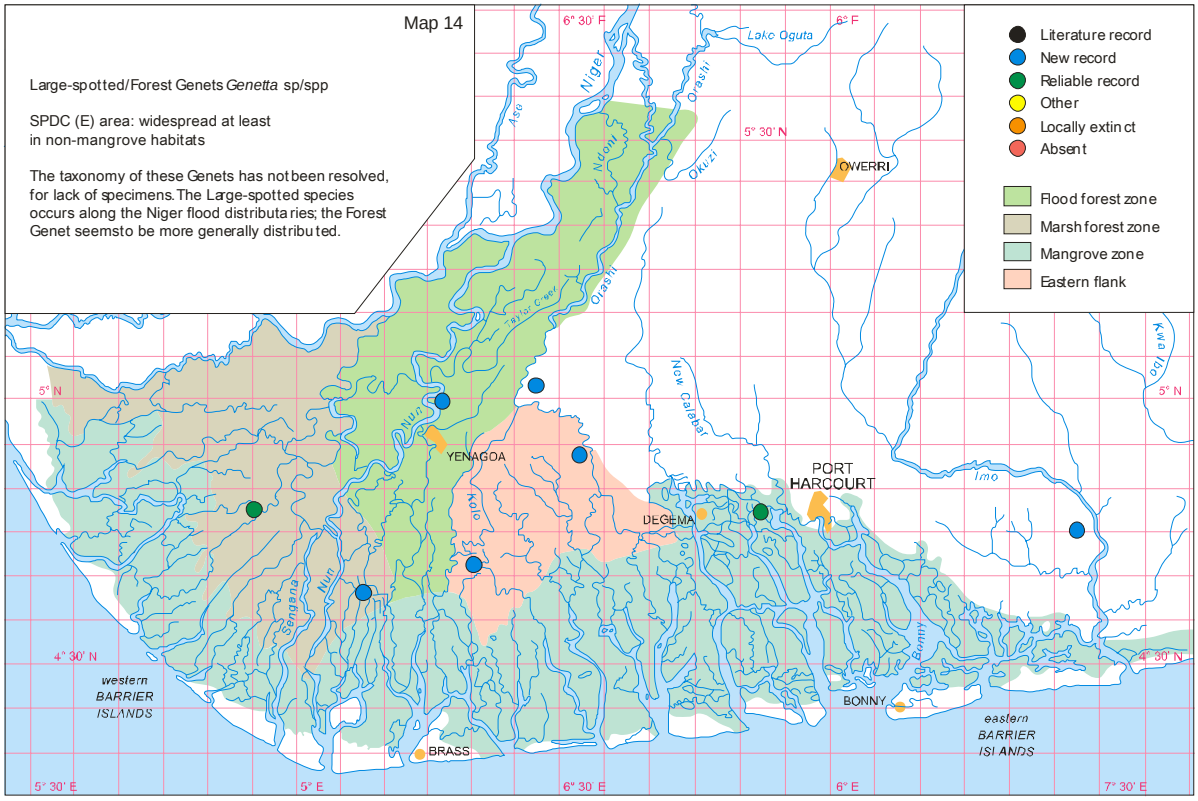
This is an endangered species (1994 IUCN Red List) previously known only from the Mamfe and Oban areas of the Nigeria-Cameroon boundary (Heard and Van Rompaey, 1990). It was reported from the Nun

sector of the Delta by Powell (1993) tentatively as *Genetta bini*, a closely similar species described by Rosevear (1974) from a single specimen from Ohusu FR north of Benin and not discovered since.



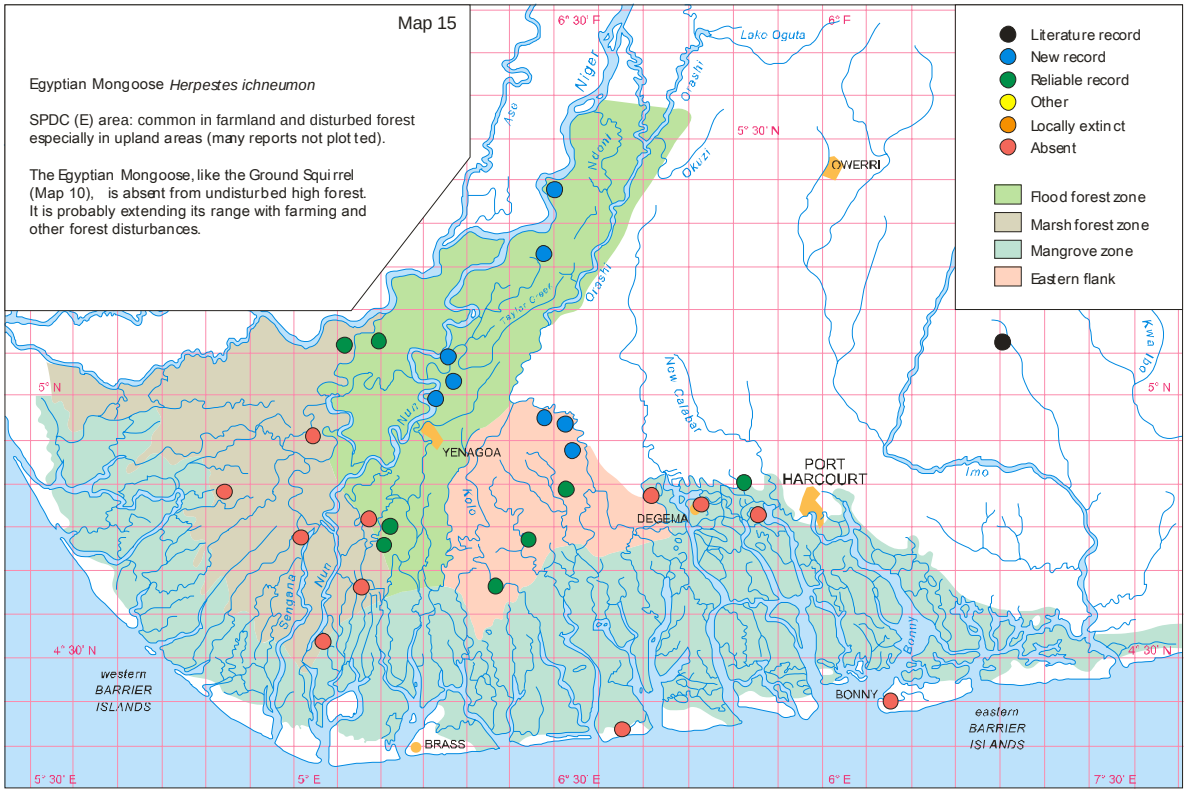
The Crested Genet is now known also from the Upper Orashi Forest Reserve and seems to be common where it occurs. It remains to be seen whether it is distinct or disjunct from the Oban-Mamfe population, or the wet-of Niger 'Benin Genet'. The expectation is that it should range across the Delta and will prove to encompass the Benin Genet. However Anadu and Oates (1982:14) found no evidence of the Benin Genet in their survey of Bendel State. Unfortunately the treatment of genets in Happold (1987), based on then-available literature, is badly muddled and odes not permit identification of the Benin or Crested Genets.

Other genets *Genetta spp.*



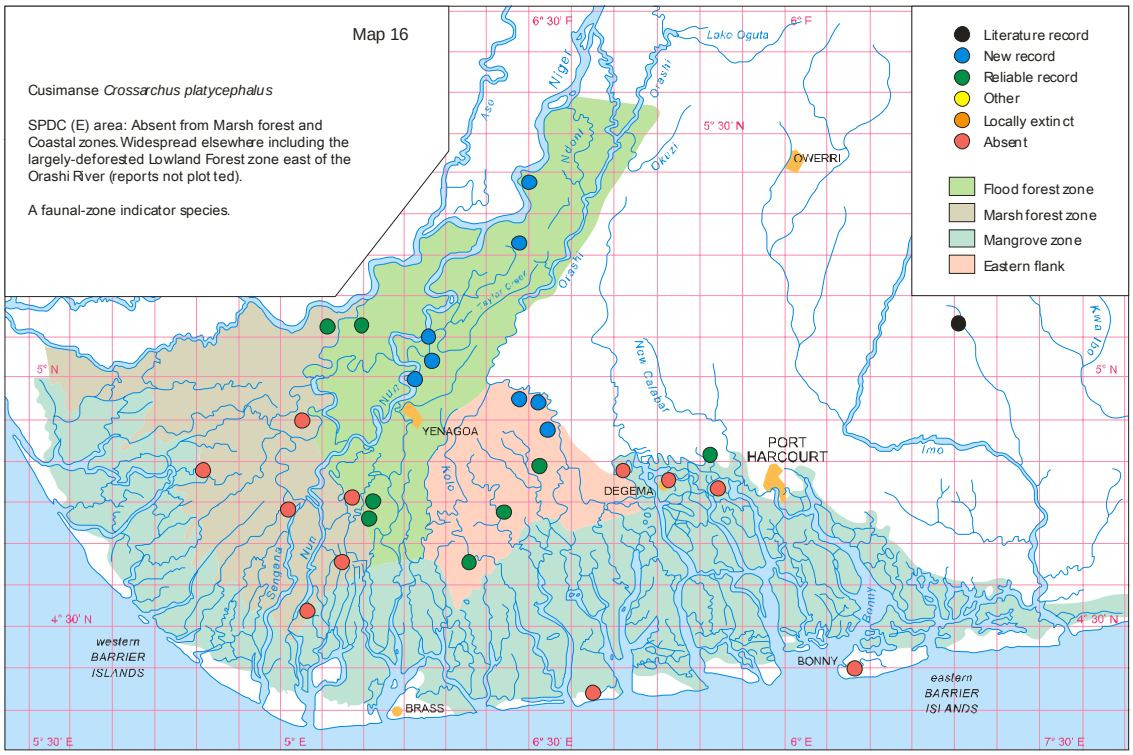
4.6 Carnivores

Egyptian mongoose *Herpestes ichneumon*



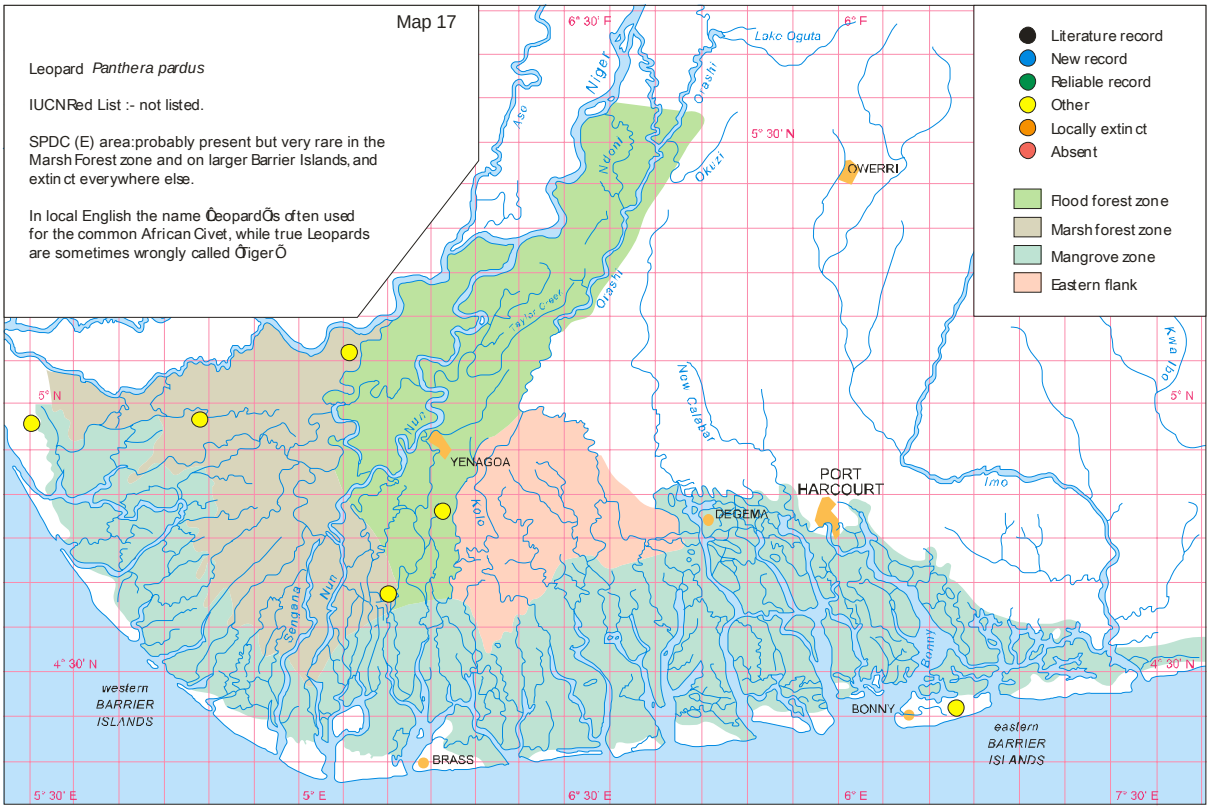
Cusimanse *Crossarchus platycephalus*

Photo 9. Cusimanse

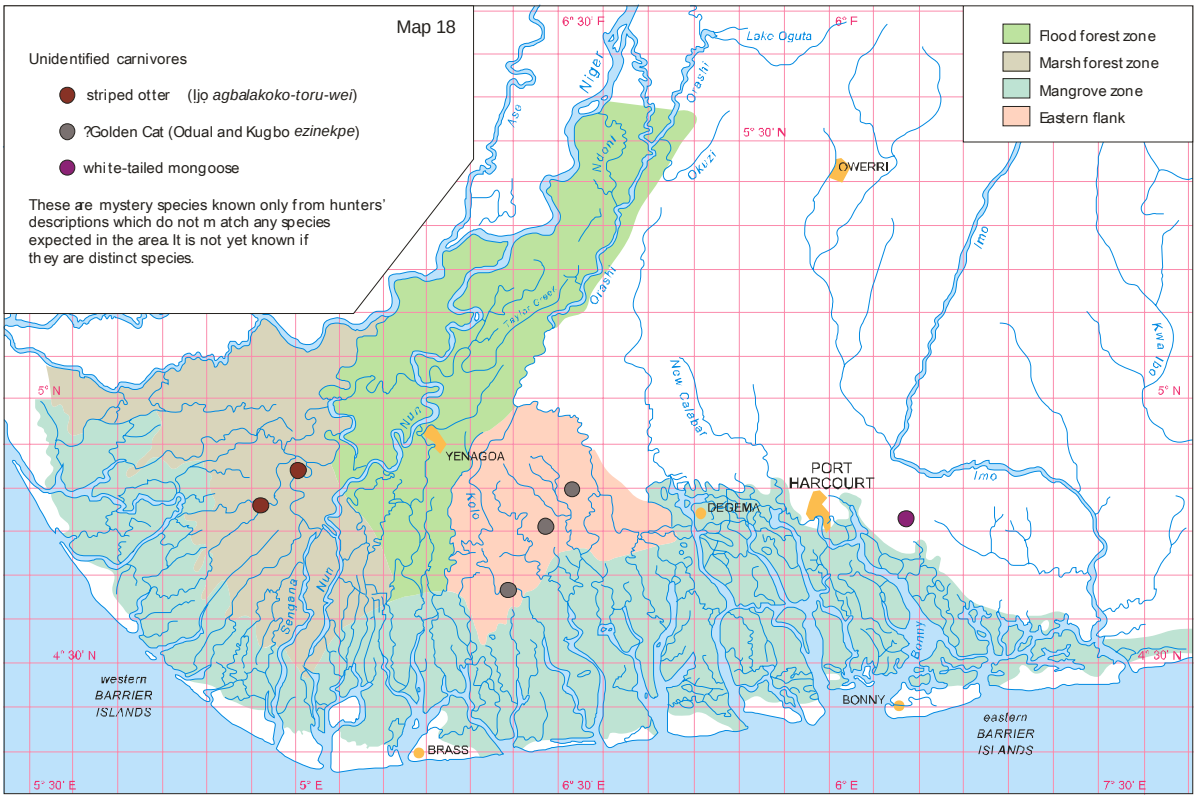


Leopard *Panthera pardus*

Some fairly reliable reports of occurrences come from remote road-less areas of Rivers State (Powell, 1993; this report). These include the Agge-Dodo barrier island (sightings by Gilbert Murumuru of Ogbotobo), Bolou-Orua's Kada-Ogba forest (southern SALGA) and Oyeregbene south of Peremabiri. The species is probably widespread but very rare through the southern tidal-freshwater zones and on some barrier islands. The species is likely extinct in more inland areas. Anadu and Oates (1982) also concluded there was no evidence for survival of leopards in their survey sites including the Kwale area between the Ase and Niger Rivers and the Taylor Creek and Nun River reserve areas. Throughout the riverine area generally, the killing of a leopard gives prestige to the hunter and is often accompanied by ritual ceremonies. No report of any recent killing has been received. The killing of leopards is taboo in Otuaka north of Ogbia, but the species is nevertheless locally extinct. A leopard-like animal (*seri*), also taboo to kill, is reported in Kula (Santa-Barbara/San-Bartholemew barrier island) but its existence and identity remain to be confirmed.



Unidentified carnivores

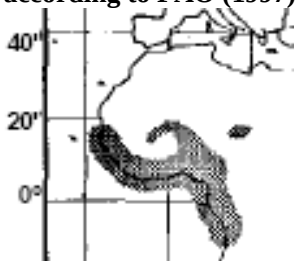


4.7 Manatee

Manatee *Trichechus senegalensis*

West African manatees have rounded, paddle-like tails. The head shape is similar to that of the West Indian manatee, but the snout is blunter, and the small eyes stick out more. There are stiff bristles on the lips. As in other manatees, the flippers are paddle- like; and there are nails on the upper surface. The skin is wrinkled, with a sparse covering of short hairs. The body of West African manatees is greyish brown; and the hairs are white. There are 5 to 7 functional teeth in each tooth row. These are replaced from the rear by newly erupting teeth. Newborn animals have 2 vestigial incisors, which are later lost.

Figure 1. Distribution of African manatees according to FAO (1997)



There appears to be no published record of manatees in the Delta proper (Happold, 1987; Shodeinde, 1993; J A Powell, pers. comm.). However the species is widespread throughout the Delta including mangrove creeks, and most common in the tidal freshwater zone where bankside-floating grass is present all year (Powell, 1993). Abundance is difficult to assess but in some seasonal creeks in the lower Orashi system, up to 3-6 specimens are killed yearly as they migrate in or out to the all-year channels. They are also reported to be present in the lower Imo River where they are known as 'hippopotamus' in local English.

Photo 10. Manatee

The manatee is traditionally protected against hunting at Aboh area on the lower Niger. Elsewhere it is widely killed or hunted. A very few specialist manatee hunters operate seasonally with harpoons and special entangling nets; some of the hunters are northerners who come down the Niger or visit the lower Imo river for the purpose. In the flood-forest zone manatees are trapped in cross-channel fish traps in seasonal creeks. In the tidal freshwater zone, large cage-traps are sometimes constructed (photo in RPI/NNPC, 1985); more often in this zone the only hunting pressure is from occasional migrant hunters.

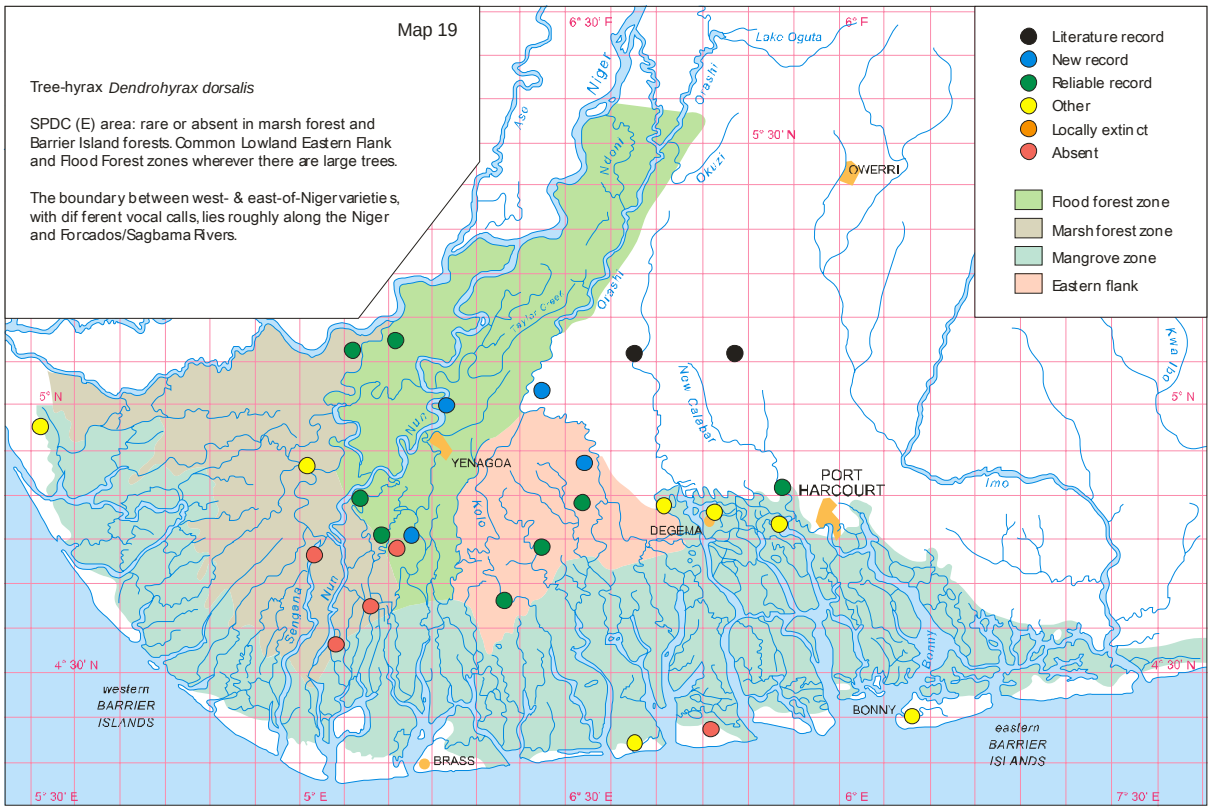
Photo 11. Manatee II

4.8 Elephants and hyraxes

Tree hyrax *dendrohyrax dorsalis*

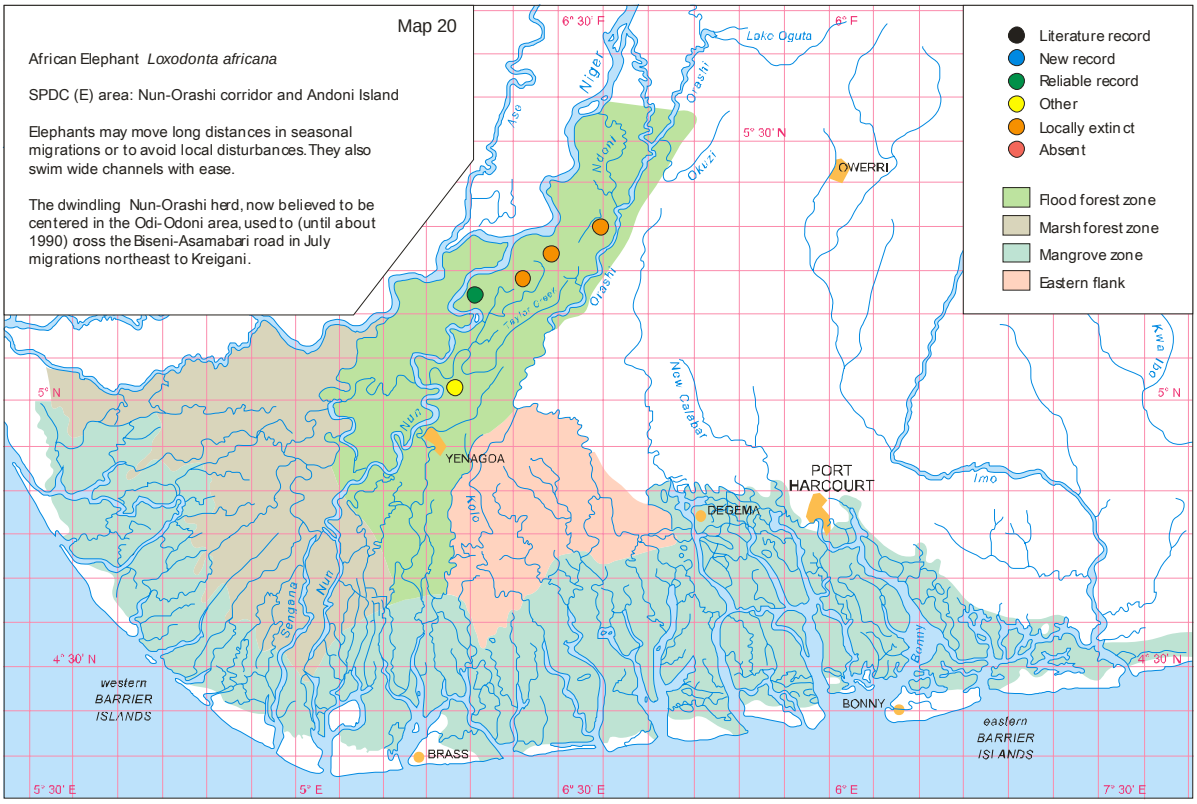
Photo 12. Tree hyrax

Photo 13. Tree hyrax II



Elephant *Loxodonta Africana*

NARESCON's 1991 'Elephant Conservation Action Plan for Nigeria' indicates no known herds in the Delta and Happold (1987) considers elephants to be extinct there for lack of recent reports. In fact two herds are well known in Rivers State. The largest is that on Andoni Island, examined by Dr Chris Thouless in August 1993 following the death of a seismic crewmember. His experienced estimate was that "judging from the size of Andoni Island and the number of sightings it seems very unlikely that there are more than 50 elephants". The once-large Taylor Creek herd collapsed in the 1960's and local estimates put the number at about 15-20 specimens centred south of Odoni opposite Odi (Were, 1991; Powell, 1993). Probably more have been killed in the meantime and the area is now being traversed by OMPADEC's Sampou-Samabri road under construction. The herd used to migrate north towards Kreigani in the early rainy season (July, when tracks could always be sighted crossing the Biseni-Samabri DFFRI road) but no longer does so. Other herds may conceivably exist in Bendel State on barrier islands between the Escravos and Ramos rivers, and (Anadu and Oates, 1982) between the Ase and Niger rivers.



4.9 Hippos

Pygmy Hippo *Hexaprotodon (Choeropsis) liberiensis*

For lack of recent reports, the 1994 IUCN Red List ranked the Nigerian Pygmy Hippo (*Hexaprotodon liberiensis heslopi*) as Extinct (see also Eltringham, 1993b). There is indeed a consensus, based on hunters' accounts, that the Pygmy Hippo did become extinct or practically so in the 1960's in some areas: the Niger-Orashi floodplain corridor, the Taylor Creek conservation area, and the Yenagoa and the Okoroba areas (Oates, 1989; Were, 1991; Powell, 1993; pers. comm., Ashton-Jones). A few reports, consistent with a lone vagrant specimen, have been received in the Odi-Sampou area in the early 1990's.

Photo 14. Pygmy hippo

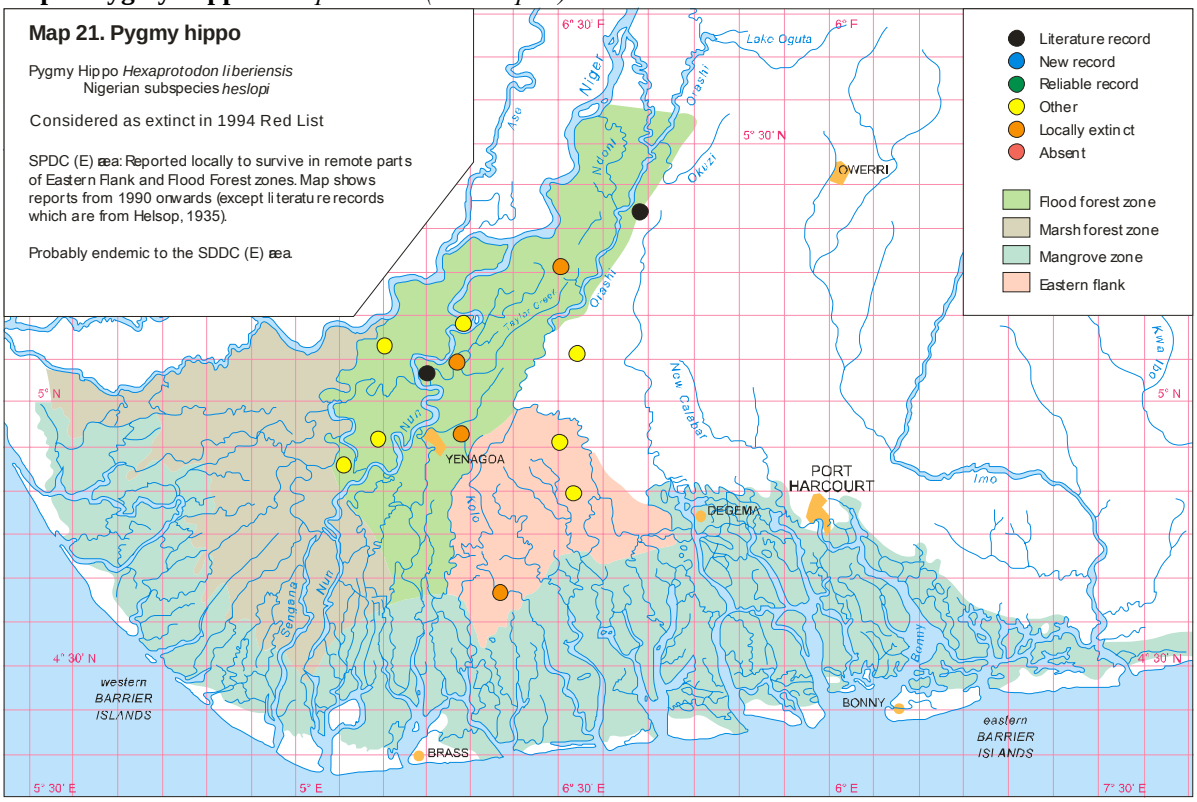
In two other areas, not visited by earlier workers, there are local reports that the Pygmy Hippos survives. These are southeast of Tungbo in the proposed Egbedi Creek Forest reserve, and more especially the Upper Orashi Forest Reserve. The reports mostly concern the sighting of tracks or evidence of disturbance to water and vegetation in ponds and lakes in the dry season when such waters are fished. None concerns mothers with young. Hunters and bush fishermen in the two areas take the species as rare and limited to the most remote areas.

Photo 15. Pygmy hippo II

The historical distribution of the Pygmy Hippo appears limited to

the 'flood forest' zone. It can be traced by local knowledge of its name, which persists among hunters due to the animal's legendary spiritual powers and associated rituals required on killing a specimen (*odufiowei, abein* or *ebei* in Ijo-group languages; *agumagu* or *ogomogu* in Igbo-group languages). It appears the species' western limit ran along the Niger-Forcados-Sagbama Rivers, and the eastern boundary was along the Orashi system. The southern limit ran from Bomadi or Sagbama south almost to Oporoma then southeast to the Ogbia area. Anadu and Oates (1982) could not obtain evidence for the animal's existence at any of their interview sites.

Map 6. Pygmy Hippo *Hexaprotodon (Choeropsis) liberiensis*

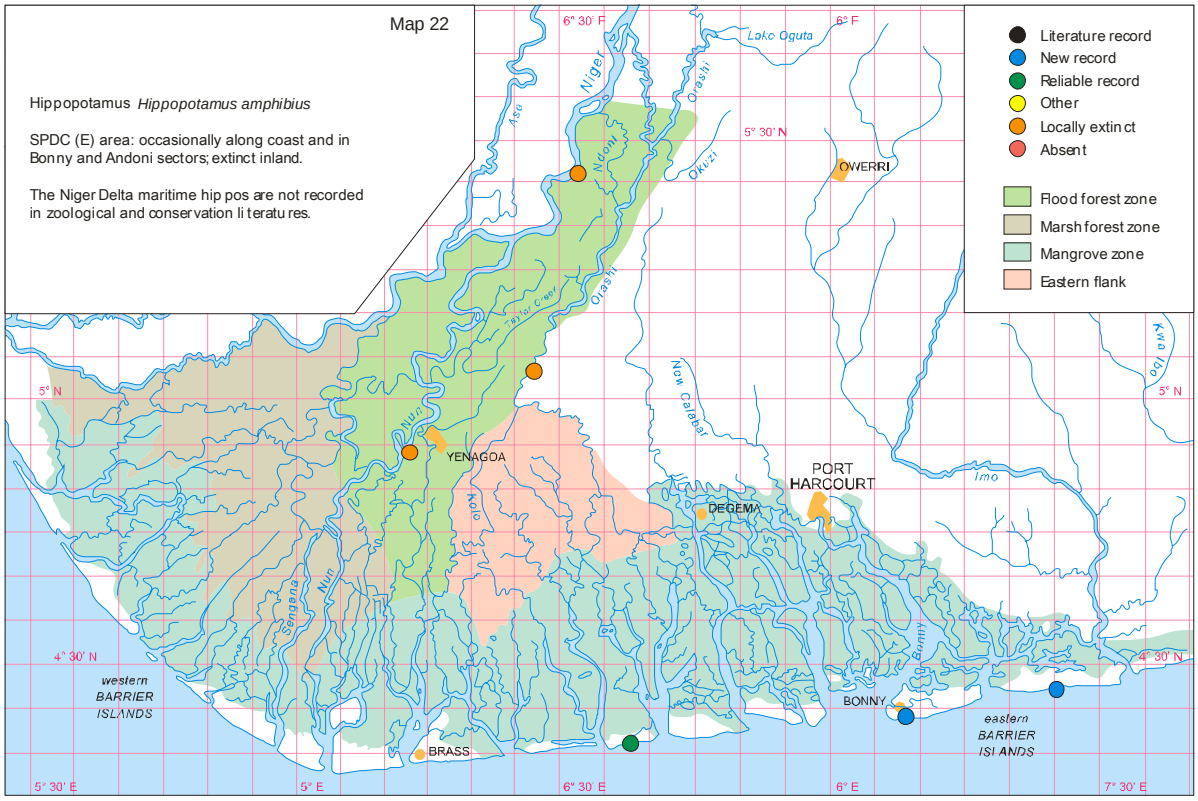


The main treat to the species survival appears to be habitat destruction and general disturbance from logging and similar activities especially in the Upper Orashi Forest Reserve. Although a few living hunters are known to have killed specimens, the average local hunter is unlikely to do so. For instance one common superstition in the Upper Orashi reserve area is that anyone who kills an *ebein* will become mentally deranged, see his colleagues and other humans as bush-meat and start macheting them etc.

Hippopotamus *Hippopotamus amphibious*

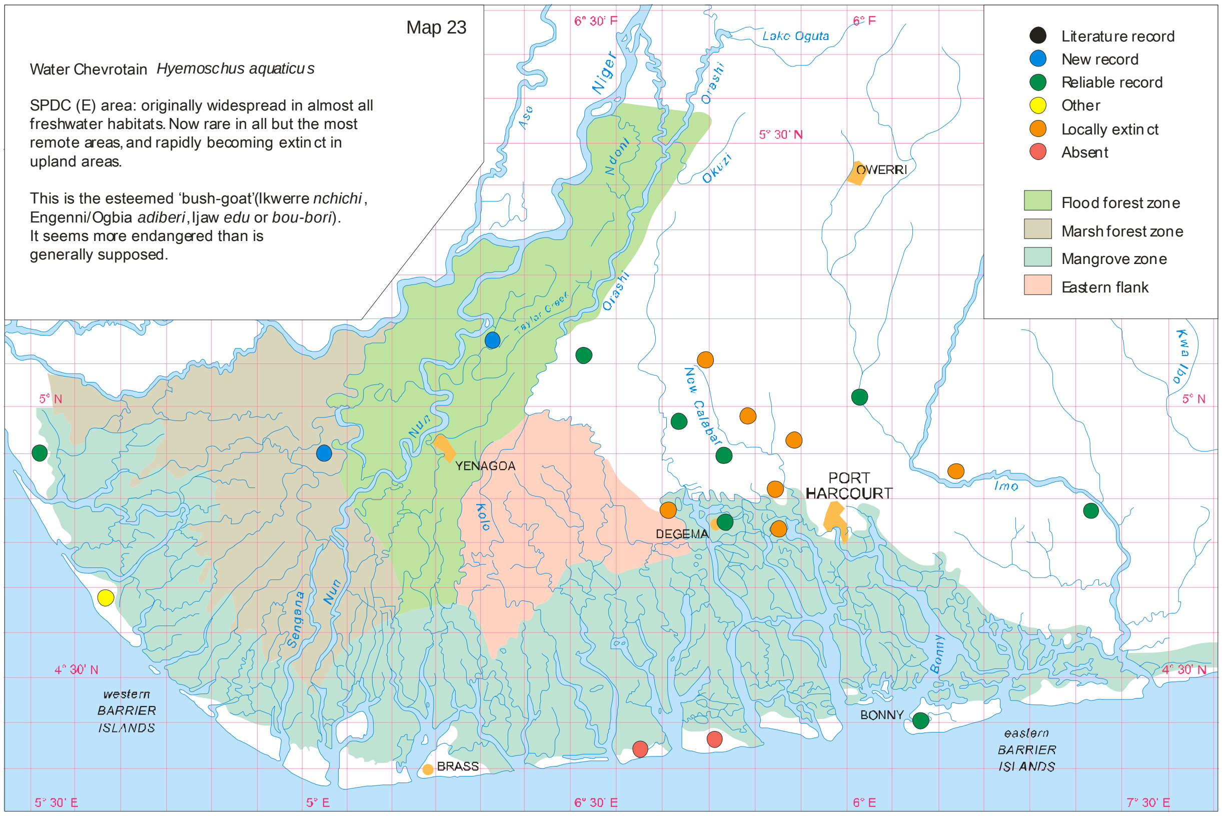
Hippos are now extinct in freshwater sector of the Niger Delta. Although not mentioned in major reviews (Happold, 1987; Eltringham, 1993a), small numbers survive along the seacoast in the Andoni-Bonny sector where they have some degree of traditional protection. Usually they are reported in shallow coastal water or on beaches. One group spends the day in a freshwater swamp between Finima and the coast. Scattered reports are heard of single animals or small groups elsewhere along the coast. The Finima group may number about 10 (estimate of Finima hunter Festus Brown). They are probably endangered by imminent nearby developments (Mobil terminal; LNG plant) and by the partial collapse of traditional protection. One was shot in the mid-1970's by a then State Governor; tow more were claimed to have been killed by a licensed hunter because they disturbed his camp. A report of hippos at Kula, cited in Powell (1993), is partially correct. Kula natives report that a group of 5-7 hippos appear on the coast for a short time I the

flood season in some years, and claim that they are seasonal migrants from Bonny. The general belief among coastal people is that the main site for hippos is Andoni island, but no details are available (e.g. ANON., 1988). The Andoni hippos deserve attention in connection with development of the proposed Andoni Game Reserve.

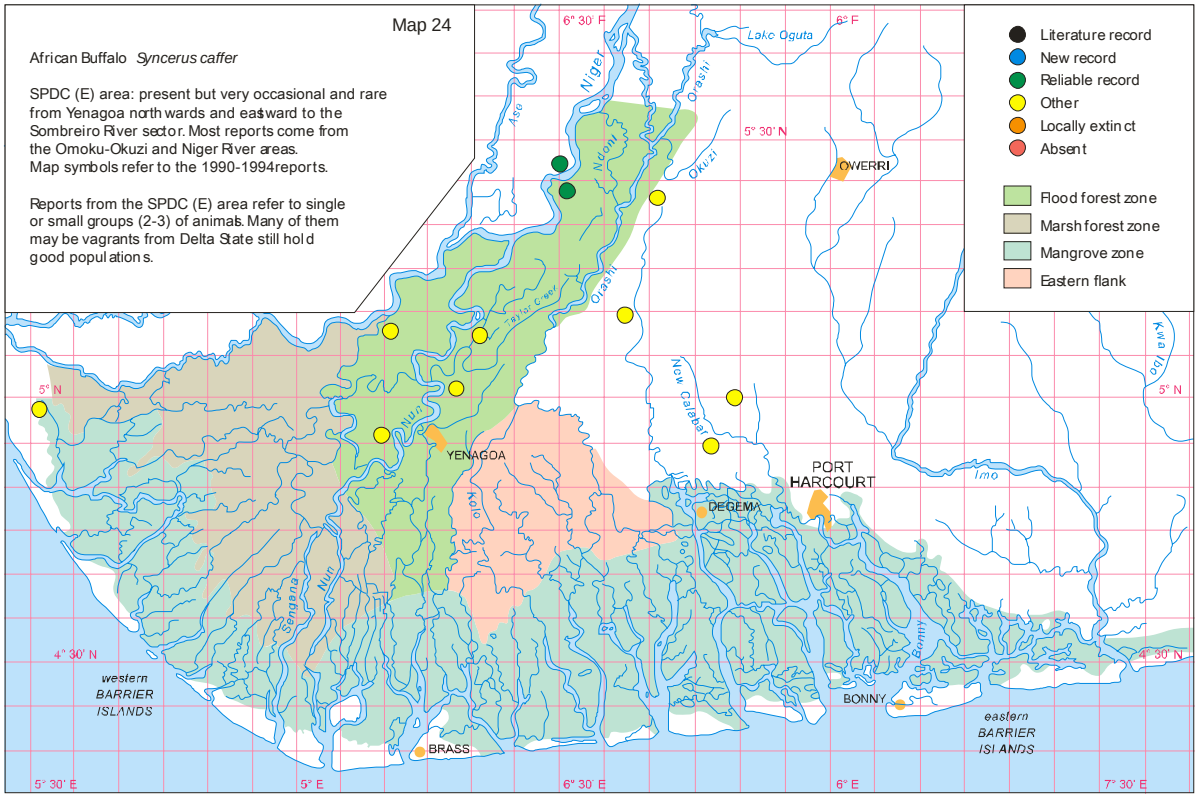


Water chevrotain *Hyemoschus aquaticus*

Photo 16. Water chevrotain


Map 23
Water Chevrotain *Hyemoschus aquaticus*
SPDC (E) area: originally widespread in almost all freshwater habitats. Now rare in all but the most remote areas, and rapidly becoming extinct in upland areas.
This is the esteemed 'bush-goat'(Ikwerre *nchichi*, Engenni/Ogbia *adiberi*, Ijaw *edu* or *bou-bori*). It seems more endangered than is generally supposed.
Literature record
New record
Reliable record
Other
Locally extinct
Absent
Flood forest zone
Marsh forest zone
Mangrove zone
Eastern flank
Lake Oguta
Niger
Aso
Ndoni
Orashi
Okuzi
Taylor Creek
New Calabar
Nun
Kolo
Sengana
Imo
Bonny
Kwa Ibo
OWERRI
YENAGOA
PORT HARCOURT
DEGEMA
BONNY
BRASS
western BARRIER ISLANDS
eastern BARRIER ISLANDS
5° N
5° 30' N
4° 30' N
5° 30' E
5° E
6° 30' E
6° E
7° 30' E

African buffalo *Syncerus caffer*



4.10 Antelopes

4.10.1 Duikers

Ogilby's Duiker *Cephalophus ogilbyi*

This species, previously known in Nigeria only east of the Cross River, is now known to occur in the 'upland' area of Rivers State (including a few relict forests around Port Harcourt) and along the northern edge of the Upper Orashi Forest Reserve. Its local range extends west across to near the Mbiama-Yenagoa Road where it is now extinct or nearly so. It is absent west of the Mbiama-Yenagoa road and in the central Delta including the Taylor Creek, Egbedi Creek, Nun River and Apoi Creek reserve areas. The species is ranked as endangered nationally (Anadu and Green, 1990) and vulnerable internationally (1994 Red List). The CITES sheet for it gives "Wild Populations; No data available, but total number estimated not to exceed 2000 individuals", and "Captive Population; No data available" (Sheet Code A-119.009.009.011. 1984(1)).

The Delta population is in critical danger from uncontrolled hunting as well as habitat destruction. In the words of Simon Dan Odon of Yenizue-Epie, the first hunter to describe it in interviews, the species is " almost finished this side;…very stupid, doesn't escape well." The IUCN/SSC Action Plan (East, 1990:169) gives the following comments: "This duiker occurs in moist lowland forests from …… It appears to be rare and localized through out most of its range and is one of the least known forest duiker species. Its populations are retreating in the face of widespread forest destruction and uncontrolled hunting. Protection of sufficient undisturbed forest habitat to support viable populations is essential to ensure this species; long-term survival."

Yellow-backed Duiker *Cephalophus silvicultor*

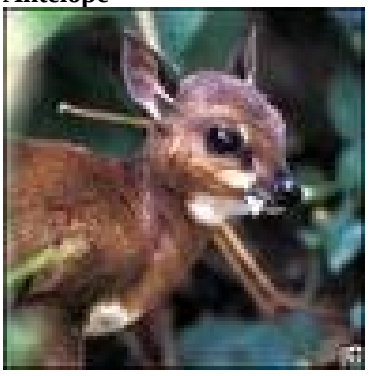
This is the largest duiker in Africa and is nationally endangered (Anadu and Green, 1990). It has always been considered rare and local. It often appears in species lists but with no indication of whether it is still extant. In most of the 'flood forest' zone of Rivers State (Taylor Creek, Nun River sectors) hunters agree it has declined to the point of virtual extinction. According to Mr Simon Dan Odon of Yenizue-Epie is reason is the ease with which the animal is caught: it "constructs a road it runs along. People used to set traps on the roads – that has finished it this side. Can hide briefly in bush but will come back to its road – can be cut off and ambushed by hunters." The Upper Orashi FR is the only area where we have accounts of recent kills and skulls are commonly seen in hunter's houses. It (or a similar to-be determined species) has been reported as still present also on the Ramos-dodo barrier island and in the Ogbosuwari-Orua sector between the Forcados and Sagbama rivers.

Black-fronted Duiker *Cephalophus nigrifrons*

This duiker, like the Red Colobus monkey is a 'marsh-forest' species not previously recorded from Nigeria. Also like the Red Colobus it is unknown to hunters in the northern 'flood-forest' of the Delta. The Delta population is a western range extension for the species and is disjunct from the nearest population in the Cameroons. The Black-fronted Duiker is common or abundant throughout the range of the Delta Red Colobus, and probably it extends much further eastwards and westwards in swampy zones. A P Leventis (pers.comm.) identified a specimen for sale between Sapele and Ologbo in the early 1970's, and a red duiker (Ogoni *Koo*) reported by hunters in the proposed Lower Imo Forest Reserve possibly also belongs to this species.

Bates' Dwarf Antelope *Neotragus batesi*

Photo 17. Bates' Dwarf Antelope



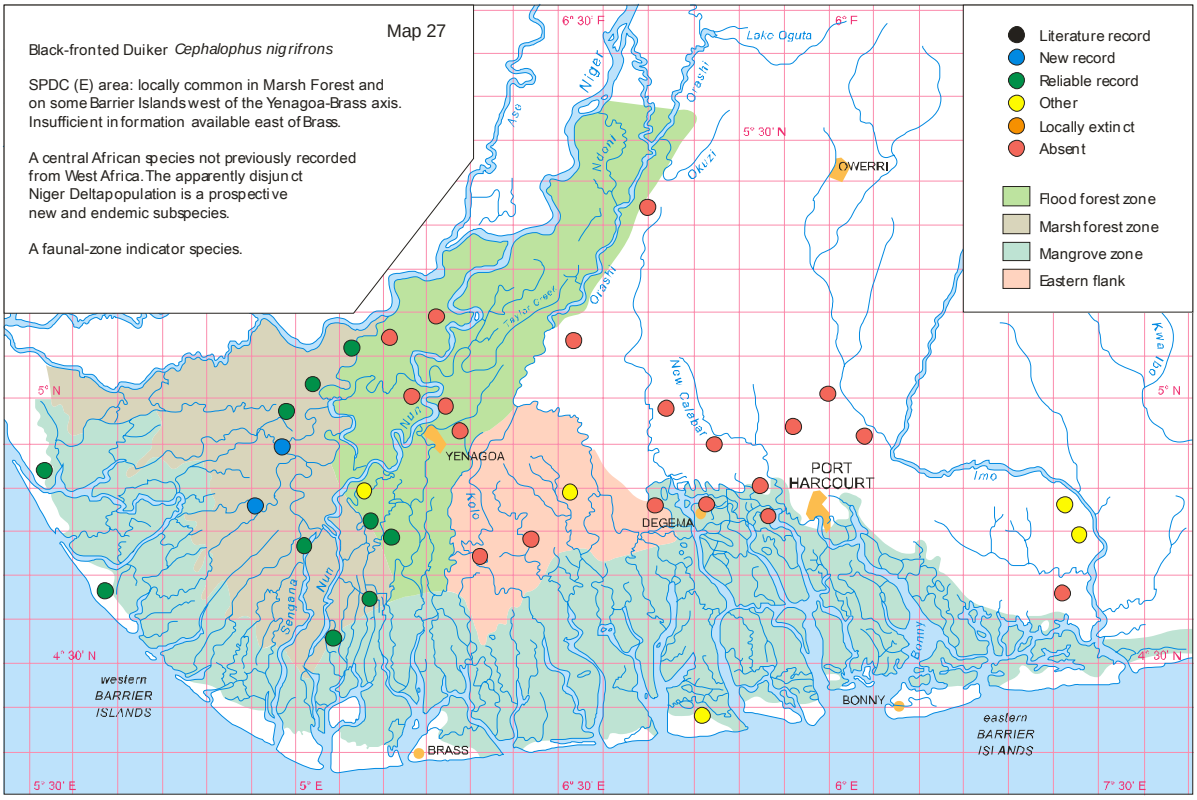
The Nigerian population of this Lower Guinea species occurs, like Sclater's Guenon, only between the Niger and Cross Rivers. The next nearest population is south of the Sanaga River in Cameroon (Lamarque et al., 1990). The taxonomic distinctness of the two populations, separated by 300km and two major river barriers, has not been studied due to the lack of Nigerian specimens. Published information on the Nigerian population is limited to reports on the few available specimens (Rosevear, 1948; Cozens, 1951; Cozens and Marchant, 1951). Heslop (1935, followed by Happold, 1987) lists the species from Nembe and Oloibiri based on reports of (in vernacular English) 'hares' at those localities; but the name 'hare' is also used for the common duiker. The species is listed as nationally endangered, and is considered "definitely scarce" and " threatened by uncontrolled hunting and habitat destruction" (Anadu and Green 1990). Bates' Dwarf Antelope formerly ranged westward to the Orashi River where it is now very scarce or extinct. It is unknown to hunters west of the Orashi-Kolo creek axis, i.e. in the Niger-Orashi floodplain corridor and in the range of the White-throated Guenon.

The species is reportedly fairly common around Yae in the proposed Lower Imo River Forest Reserve, and present but fast declining in other parts in Ogoni- and Ikwerre-land where forests remain (e.g. Ebubu), and probably along the Imo river valley. Unconfirmed reports indicate it or a similar but larger species may occur on beach-ridge forests between Kula and Bonny.

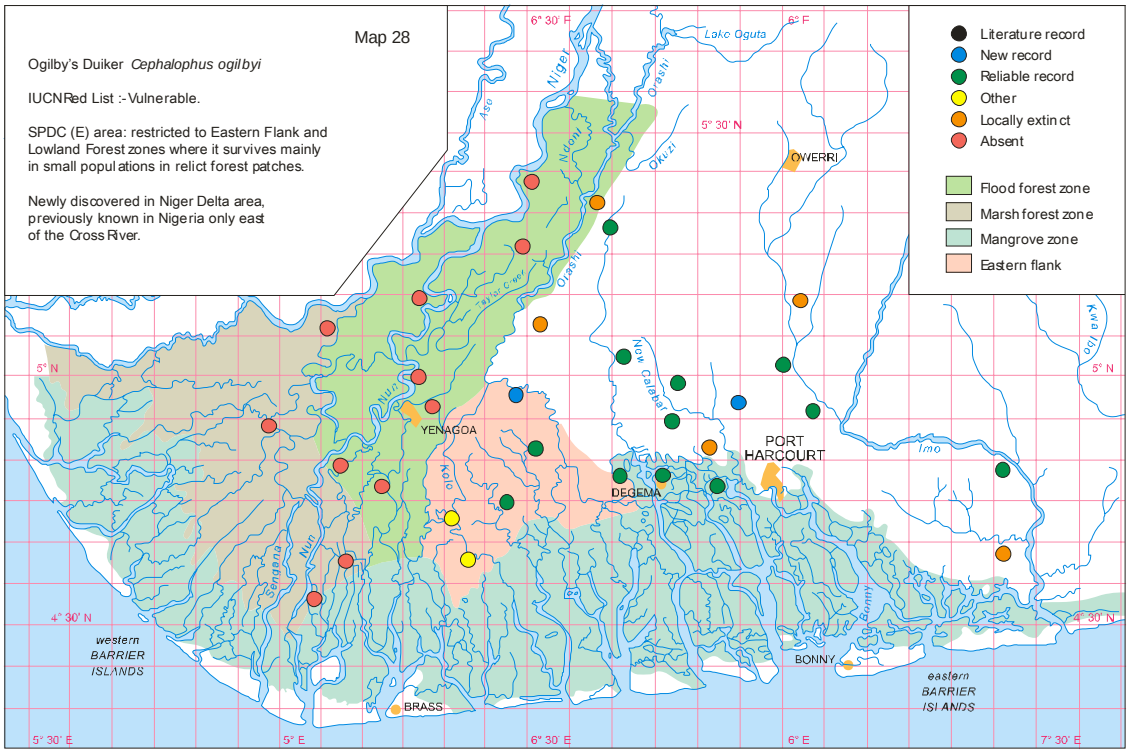
Maxwell's Duiker *Cephalophus Maxwelli*

Black-fronted Duiker *Cephalophus nigrifrons*

Photo 18.Black-fronted Duiker

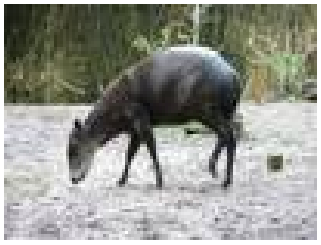


Ogilby's Duiker *Cephalophus ogilbyi*



Yellow-backed Duiker *Cephalophus silvicultor*

Photo 19. Yellow-backed Duiker



Sitatunga *Tragelaphus spekii*

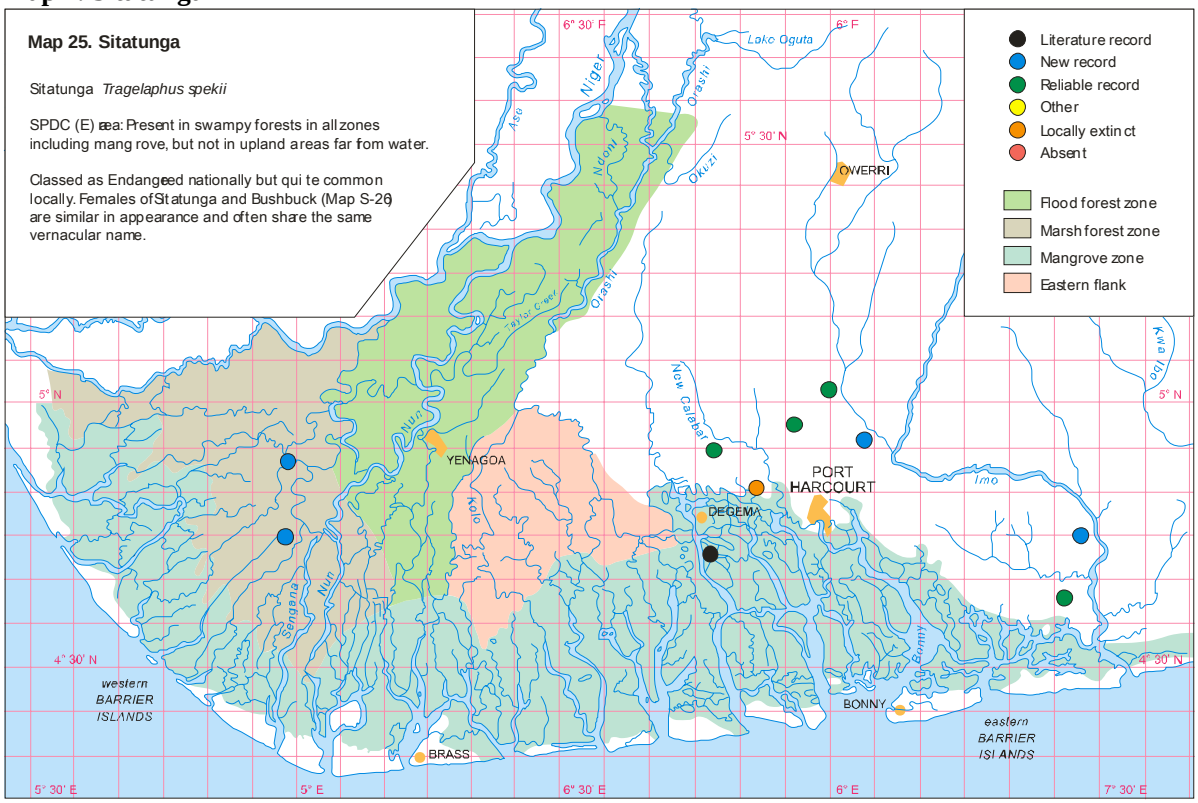
Photo 20. Sitatunga *Tragelaphus spekii*

The sitatunga (Photo 20) is adapted to living along rivers and in marshes and its main centre is the basin of the Zaire river, although residual populations are spread as far as the basin of the Senegal River (Kingdon 1997). In the Niger Delta, it appears to be present in all zones, including mangrove areas and can be common locally, although nationally it is listed as an endangered species.

Vernacular names

The vernacular names of the sitatunga are nearly always the same as those for the bushbuck, and it is often not easy to distinguish the females. The typical Ijọ name, *ụtụ́bàra*,

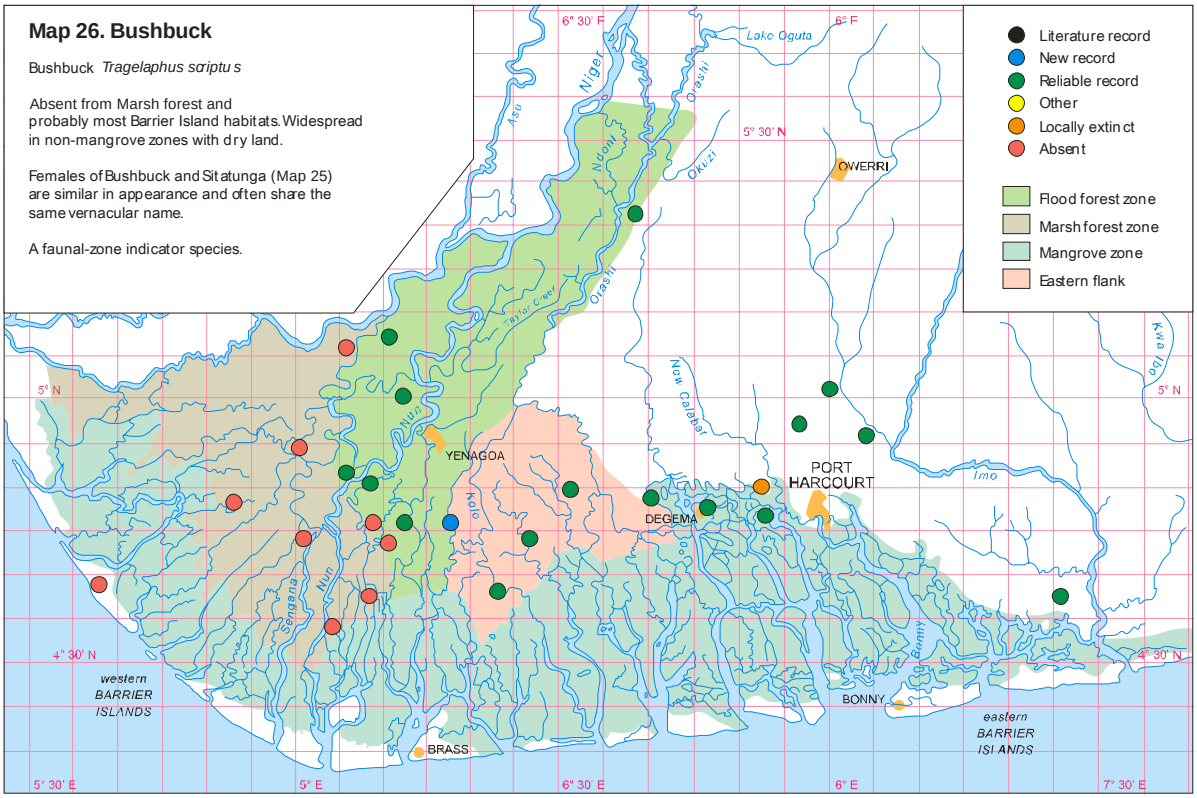
Map 7. Sitatunga



Bushbuck *Tragelaphus scriptus*

Map 8. Bushbuck

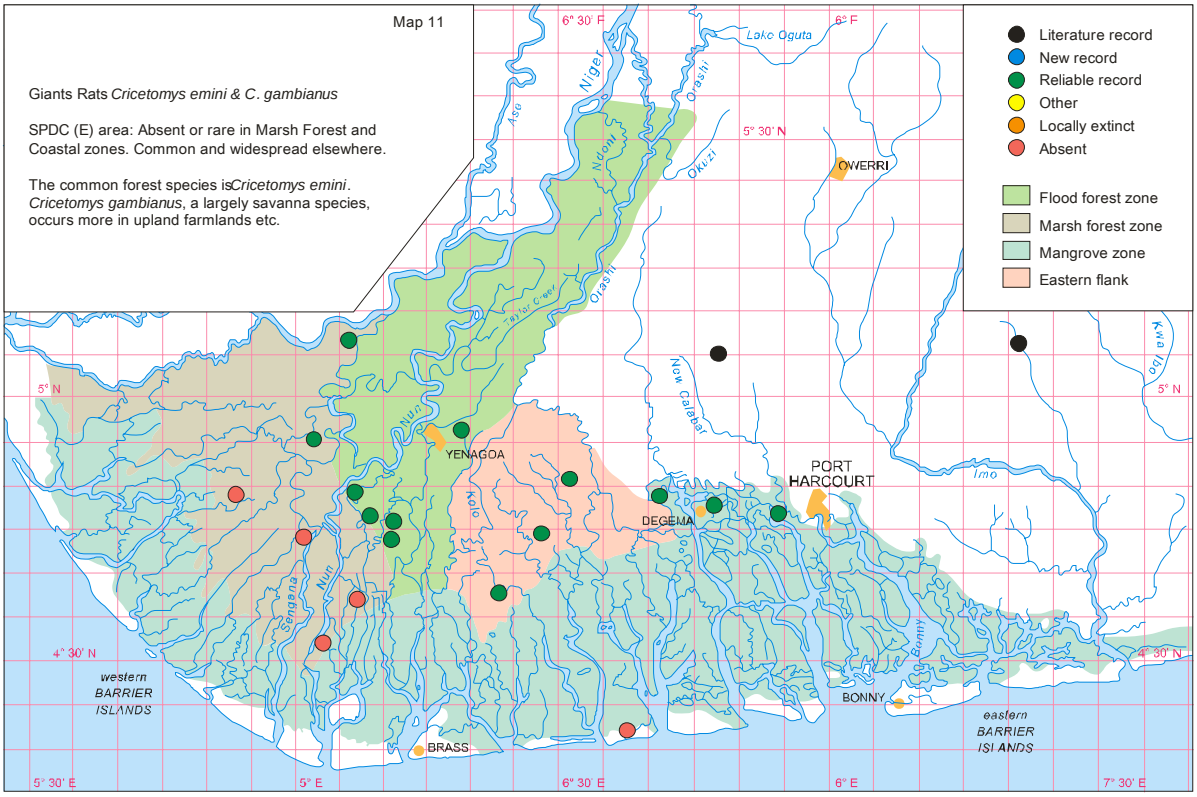
Photo 21. Bushbuck *Tragelaphus scriptus*



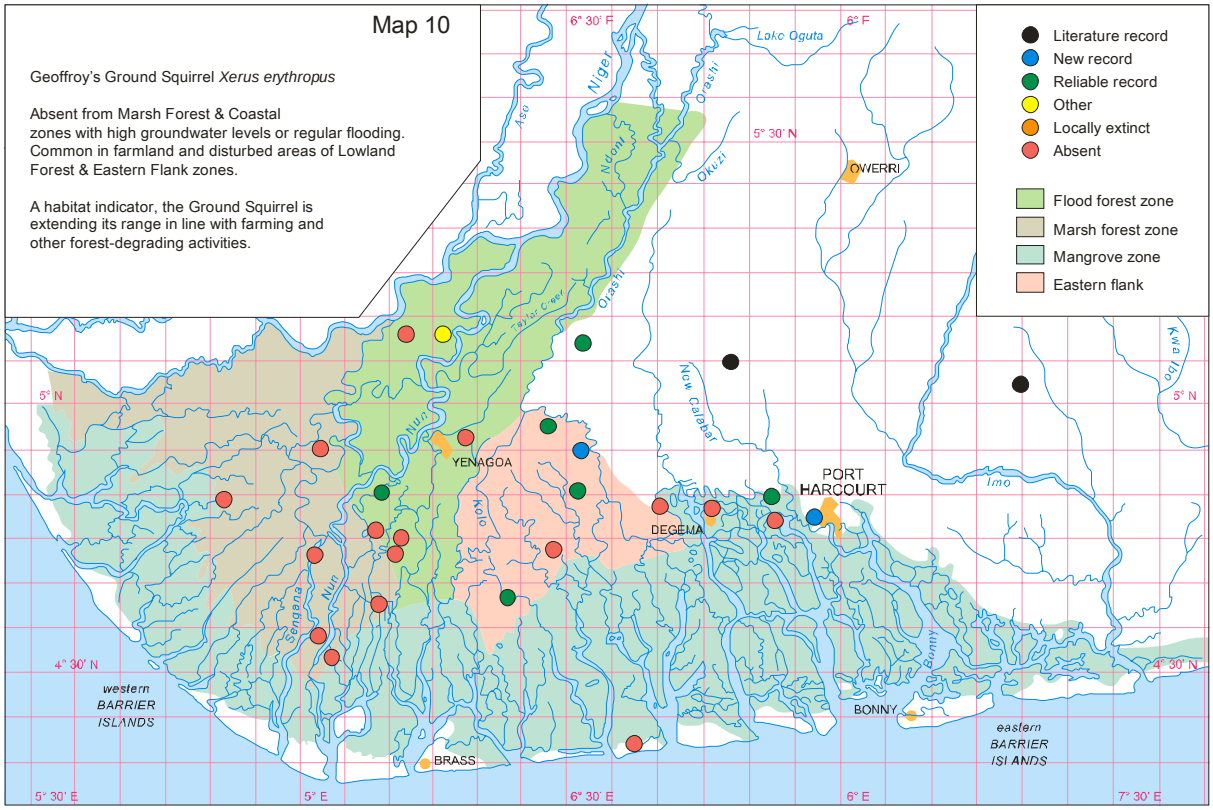
African Buffalo *Syncerus caffer*

4.11 Rodents

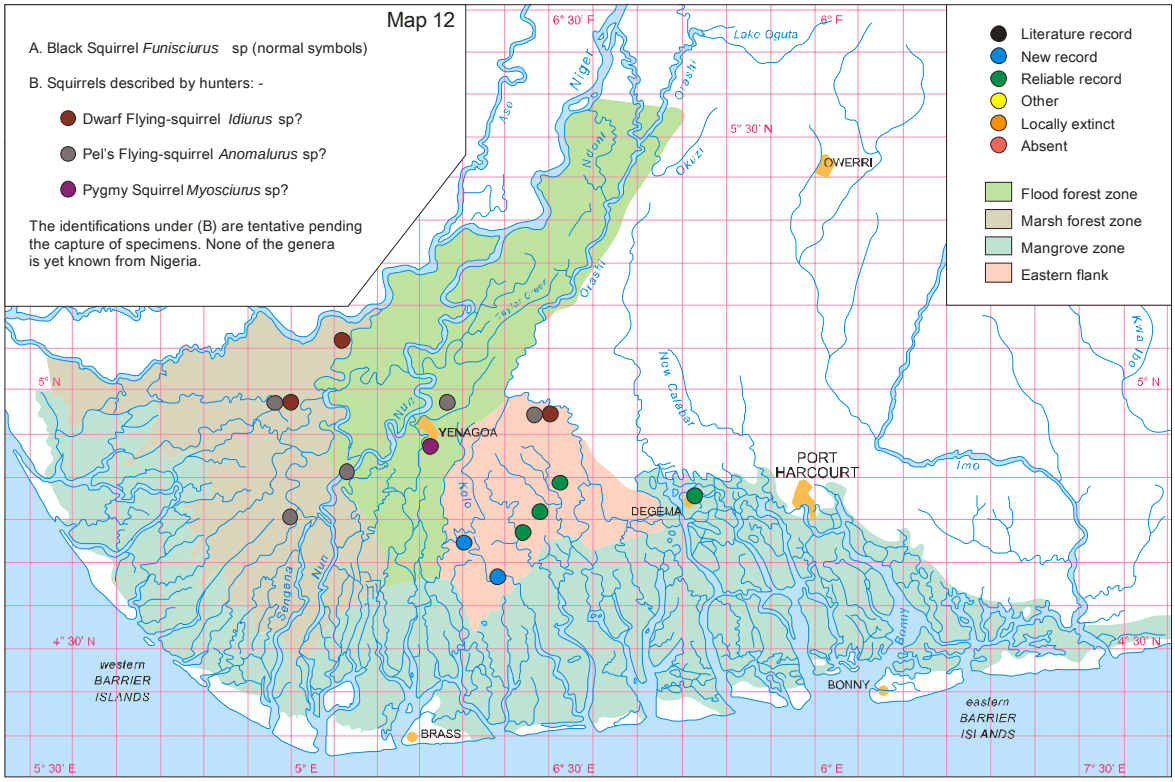
Giant rats *Cricetomys emini* & *C. gambianus*



Geoffroy's ground squirrel, *Xerus erythropus*



Black squirrel *Funisciurus sp.*



5. Special aspects

5.1 Endemic species

5.1.1. Reptiles

None of the listed reptiles is endemic to Nigeria. The Delta's fauna of smaller reptiles, mostly snakes and lizards, is unstudied; there is no strong a *priori* reason to expect endemic species except maybe forest geckos, chameleons and worm snakes.

5.1.2 Birds

Two birds are considered endemic to Nigeria :- the Ibadan Malimbe (*Malimbus ibadanensis*) in western Nigeria and the Fawn-breasted or Anambra Waxbill (*Estrilda poliopareia*) around Onitsha. The waxbill is a small sparrow-like bird which may be expected along the Niger/Nun River and flood channels eastward to the Orashi River, in seasonally flooded areas with tall grass.

5.2 Mammals

The standard literature (e.g. Stuart et al., 1990) lists three mammals more-or-less endemic to southern Nigeria, and only one of them (Nigerian Pygmy Hippo) as present in the SPDC (E) area. Actually the area contains all three national endemics plus at least four more prospective endemics, listed below. Because of the shortage of research specimens from the area, their status remains to be studied and confirmed. Generally, endemism is only at the level of subspecies.

1. The White-throated monkey (*Cercopithecus erythrogaster*) occurs as far east as the Orashi River, and perhaps further. Previously, it was assumed to be found only west of the Niger, extending to southern Benin and Togo.
2. Sclater's monkey occurs in forests from the Orashi and Kolo channels east to the Imo River. It was previously known from only north and east of the SPDC (E) area (Oates et al., 1992), between the Niger and Cross Rivers.
3. The Delta Red Colobus monkey occurs in the central Delta between Nikorogha Creek and Sagbama/Apoi Creeks. It is probably the only Red Colobus in Nigeria and is being described as a new subspecies.
4. An unidentified Black Squirrel, known only from the Ogbia-Odual sector, may be a new species but remains to be studied.
5. Heslop's Pygmy Hippo (*Hexaprotodon liberiensis heslopi*) is known only from Rivers State (disregarding a record of skulls from records since the 1930's) but local reports indicate that it survives the Upper Orashi Forest Reserve, in the area between Sabagreia and Tungbo, and perhaps also behind Otuan, behind Ikibiri and around Odi.
6. Black-fronted Duiker, not previously known from Nigeria, occurs in the tidal freshwater zone. The Delta population, isolated from the rest of the species in central Africa, could possibly be a new subspecies.
7. Dwarf Antelope, present between the Orashi and Cross Rivers, is also isolated from the rest of the species in central Africa, and is likely a distinct subspecies.

Additional endemics may occur among other species with disjunct populations in the Delta (e.g. Olive Colobus, ?Pel's Flying-squirrel) or among the mystery species.

5.3 Summary of status of 'Endangered Species' in SPDC (E) area.

Species of national conservation concern are arranged below by their status within the SPDC (E) area. The area hosts nearly all the Global 'E'- Class animals present in Nigeria; the only others are the Drill (Cameroon and Cross River) and Wild Dog (pan-African savanna). The 'mystery species', some of which may be real and endangered, are not considered here.

Species	Status outside Niger Delta		Distribution
	Global	National	
Critically Endangered, reduced to isolated relict populations			
Chimpanzee	V/E	E	Akpede, Kugbo-Ogbia, ?Ramos-Dodo
Elephant	V	I	Andoni; Odoni-Odi area
Nigerian Pygmy Hippo	Ex/E	-	?UpperOrashi FR; ?Orua-Tungbo sector
Hippopotamus	-	-	Andoni Island, Finima (Bonny)
Crested porcupine	-	-	?Bukama (maybe extinct in area)
Possibly Critically Endangered			
Delta Red Colobus	(E)	(E)	South-central Delta forests
Very rare and dispersed			
Leopard	-	I	Marsh and coastal forests
Buffalo	-	-	?Niger-Orashi Floodplain corridor
Yellow-back Duiker	-	E	Lowland forest
Reported widely as declining in numbers or as locally extinct			
Red-capped Mangabey	V	-	Swamp forests and mangrove
White-belly Pangolin	-	E	Forests
Black-belly Pangolin	-	E	Forests, especially swamp forest
Manatee	V	I	Brackish and freshwater channels esp. freshwater tidal sector
Water Chevrotain	-	I	Freshwater swampforest
Ogilby's Duiker	V	I	East-of-Niger lowland forest
Dwarf Antelope	-	E	East –of-Niger lowland forest
Plus all species in relict populations, see above			
Locally common, but with limited distributions nationally			
White-throated Guenon	E	E	Freshwater riverine part of Niger Delta
Sclater's Guenon	E	?	Forests west of Orashi-Kolo axis
Olive Colobus	V	?	Swamp forest, northern sector
Black-belly Pangolin	-	E	Flood and Swamp forests
Spot-necked Otter	-	I	Remote swamps, mangrove
Cape Clawless Otter	-	I	Large waterways, mangrove
Crested Genet	E	-	Swamp forest, ?mangrove
Long-nosed Mongoose	-	-	Probably widespread in forest of area
Sitatunga	-	E	Freshwater swamp forest, mangrove
Black-fronted Duiker	-	-	Freshwater marsh forest
Status very uncertain			
Slender-snouted Crocodile			Swampy riverine areas
Cheloniid sea Turtles			Sea beaches throughout

7. Recommendations

7.1 Continuation of species inventory.

This is of the highest priority as the yet-unidentified 'mystery' species are likely to include those of highest concern i.e. the rarest and/or most localized species. Also full inventories represent base-line data not obtainable in quick EIA's.The inventory requires long-term, and sometimes widespread, monitoring of hunters' catches in the various zones and sectors. The exercise would be more effective if there was liaison

with field crew and staff at flowstations to help report easily identified target species. ('SR' priority in Table B.2).

7.2 The status of prospective endemics needs to be assessed

For this, study specimens need to be put at the disposal of taxonomic specialists. The species involved include the Black-fronted Duiker, the Dwarf Antelope, and several of the mystery species.

7.3 Distribution boundaries and zonation.

Knowledge of faunal boundaries shortens the list of species needing attention in individual EIAs, and indicates areas and species of concern. Normally, species distributions correspond to habitat types and physical barriers. Hence, areas of potential occurrence can sometimes be obtained directly from imagery, especially where it concerns isolated habitat blocks like relict forests, and riverine swamps. The main exception is for major species like chimpanzee, elephant, hippopotamus, pygmy hippo and buffalo.

7.4 In-house activities and priorities

7.4.1 Critical wildlife sites and habitats

Great attention need be given to identify, and safeguard, critical wildlife habitat. These include relict forest blocks in Lowland Forest, isolated freshwater forests in the mangrove zones, areas susceptible to impact from changes in hydrological regimes due to slot and road construction. Also at stake are isolated populations of highly endangered species. To this end, preliminary in-house EIA's should be done prior to the seismic exploration stage. A fair amount can be gleaned from suitable imagery. Also at this stage information on locally protected and sacred areas should be obtained.

7.4.2 Effects of E & P activities

Anecdotal reports of effects need to be collated from local sources, especially by field crew. The main categories are (i) species which are slow to return to an area after disturbance by seismic activities, (ii) utilization of cut lines by hunters and trappers, (iii) ditto for animals and (iv) instances of oil spills impacting wildlife.

7.4.3 Routine environmental studies.

Each environmental study needs site-specific wildlife scoping, depending on the faunal zone involved. Studies should include information based on interviews with local trappers and hunters etc. using vernacular names. Special attention should be given to animals given 'EIA' and 'SR' priority in Table B.2, to any discrepancies with this report and to identifying critical habitats. Quantitative transect surveys are rarely useful in short-term work, except in special cases e.g. relative comparisons within the study.

7.4.4 Preparation of wildlife information literature

The lack of available and suitable literature for the identification of wildlife is a major problem encountered by consultants. Even when they can be obtained, the information relating to the Niger Delta area is (due to this study) now out of date. Provision of simple guides might help improve work quality, and will certainly be a public service to the local education system and to encourage interest in the living environment of the Niger Delta.

7.4.5 Conservation areas

In any environmental public service activity considered by SPDC, support for conservation areas should rank high. At present the Niger Delta has no conservation area even though it probably holds more endangered and national endemic species than other parts of the Nigeria.

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Appendix 1. Scientific names of species listed

Table 7. Mammals	
ORDER PRIMATES	
Family Lorisidae	
Potto (= Bosmann's Potto	*Perodicticus potto* (Muller 1766)
Angwantibo (= Golden Potto	*Arctocebus calabarensis* (Smith (1860)
Family Galgidae (bushbabies)	
Needle-clawed Galago	*Euoticus elegantulus* (Le Conte 1857)
Allen's Galago	*Galago alleni* Waterhouse 1837
Dwarf Galago	*Galagoides demidovii* (Fischer 1808)
Family Cercopithecidae (monkeys)	
Red-capped Mangabey	*Cercocebus torquatus* (Kerr 1792)
Mona Monkey	*Cercopithecus mona* (Schreber 1775)
Putty-nosed Guenon	*Cercopithecus nictitans* (Linnaeus 1766)
White-throated Guenon (= Red-bellied Guenon)	*Cercopithecus erythrogaster* Gray 1866
Sclater's Guenon	*Cercopithecus sclateri* Pocock 1904
Tantalus monkey (= Green Monkey	*Cecopithecus tantalus* Ogilby 1841
Olive Colobus	*Procolobus verus* (Van Beneden 1838)
Delta Red Colobus	*Procolous* of *pennantii*
Family Pongidae (apes)	
Chimpanzee	*Pan troglodytes* Bumenback 1779
ORDER PHOLIDOTA	
Family Manidae (scaley anteaters)	
Black-bellied pangolin (= Long-tailed Pangolin)	*Manis tetradactyla* Linnaeus 1766
White-bellied Pangolin (= Tree Pangolin)	*Manis tricuspis* Rafinesque 1820
ORDER LAGOMORPHA	
Family Lepridae (hares & rabbits)	
Crawshay's hare	*Lepus crawshayi* de Winton 1899
ORDER RODENTIA	
Family Anomaluridae – (scaley-tailed flying squirrels)	
Beecroft's Flying-squirrel	*Anomalurus beecrofti* Fraser 1852
Derby's Flying-squirrel	Anomalurus derbianus (Gray 1842)
Family Sciuridae – (True Squirrels)	
Red-legged Sun-squirrel	*Heliosciurus rufobrachium* (Waterhouse 1842)
Redless Tree-squirrel	*Funisciurus anerythrus* (Thomas 1890)
Orange-head tree-squirrel	*Funisciurus leucogenys* (Waterhouse 1842)
Fire-foot Tree-squirrel	*Funisciurus pyrrhopus* (Cuvier 1833)
Giant Forest Tree-squirrel	*Protoxerus stangeri* (Waterhouse 1842)
Small Green Squirrel	*Paraxerus poensis* (A.Smith 1834)
Geoffroy's Ground Squirrel	*Xerus erythropus* (E Geoffroy 1803)
Family Cricetidae (Pouched Rats)	
Savanna Gerbil	*Tatera valida* (Bocage 1890)
Emin's Giant Rat	*Cricetomys emini* Wroughton 1910
Gambian Giant Rat	*Cricetomys gambianus* Waterhouse 1840
Family Muscardinidae	
Huet's Dormouse	*Graphiurus hueti* Rochebrune 1883
Common African Dormouse	*Graphiurus murinus* (Desmarest 1822)
Family Hystricidae	
Crested Porcupine	*Hystrix cristata* Linnaeus 1758
Brushtailed Porcupine	*Atherurus africanus* Gray 1842

Family Thryonomidae	
Grater Cane Rat	*Thryonomys swinderianus* (Temminck 1827)
ORDER CARNIVORA	
Family Canidae	
Side-striped Jackal	*Canis adusta* (Sundevall, 1846)
Family Mustelidae	
Cape Clawless Otter	*Aonyx capensis* (Shinz 1821)
Spot-necked Otter (= Speckle-throat Otter	*Lutra maculicollis* Lichtenstein 1835
Family Viverridae – (Civets and genets)	
African Civet	*Civettictis civetta* Schreber 1778
Two-spot PalmCivet	*Nandinia binotata* (Gray 1830)
Forest Genet	*Genetta ?poensis* Waterhouse 1838
Large-spot Genet	*Genetta ?pardina* I Geoffroy 1832 s.l. (or ? *genettoides* Temminck 1853) (or ? *rubiginosus* Pucheran 1855 ssp. *fieldiana* Du Cahillu 1860)
Crested Genet	*Genetta cristata* Hayman, 1940
African Linsang	*Poiana richardsonii* (Thompson 1842)
Family Herpestidae	
Egyptian Mongoose	*Herpestes ichneumon* (Linn. 1758)
Long-nosed Mongoose	*Xenogale naso* (de Winton 1901)
Marsh Mongoose	*Atilax palidunosus* (G Cuvier 1777)
Cusimanse	*Crossarchus platycephalus* Goldman, 1984
Black-legged Mongoose	*Bdeogale nigripes* Pucheran 1855
Family Felidae	
Golden Cat	*Profelis auratus* (Temminck 1827)
Serval	*Felis serva*l Schreber 1776
Leopard	*Panthera pardus* (Linnaeus 1758)
ORDER SIRENIA	
Family Trichechidae	
Manatee	*Trichechus senegalensis* (Link 1795)
ORDER PROBOSCIDEA	
Family Elephantidae	
African Elephant	*Loxodonta Africana* (Blumenback 1797)
ORDER HYRACOIDEA	
Family Procaviidae	
Western Tree-hyrax	*Dendrohyrax dorsalis* (Fraser 1854)
ORDER ARTIODACTYLA	
Family Suidae	
Common Warthog	*Phacochoerus africanus* (Pallas 1766)
Red River Hog	*Potamochoerus porcus* (Linnaeus 1758)
Giant Forest Hog	*Hylochoerus meinertzhageni* Thomas 1904
Family Hippopotamidae	
Hippopotamus	*Hippopotamus amphibious* Linnaeus 1758
Pygmy Hippopotamus (Nigerian or Heslop's Pygmy Hippo – subspecies *heslopi* Corbet 1969)	*Hexaprotodon liberiensis* (Morton 1849)
Family Tragulidae	
Water chevrotain	*Hyemoschus aquaticus* (Ogilby 1841)
Family Bovidae – Subfamily Bovinae	
African Buffalo	*Syncerus caffer* (? 1779)
Bushbuck	*Tragelaphus scriptus* (Pallas 1766)

Sitatunga	*Tragelaphus spekii* Sclater 1864
Family Bovidae – Subfamily Cephalophinae	
Maxwells' Duiker	*Philatomba maxwelli* (H Smith 1827) ?= *Philatomba monticola* (Thunberg 1789)
Bay Duiker	*Cephalophus dorsalis* Gray 1846
Black Duiker	*Cephalophus niger* Gray 1846
Black-fronted Duiker	*Cephalophus nigrifrons* (Gray 1871)
Ogilby's Duiker	*Cephalophus ogilbyi* (Waterhouse 1838)
Red-flanked Duiker	*Cephalophus rufilatus* Gray 1846
Yellow-backed Duiker	*Cephalophus silvicultor* (Afzelius 1815)
Family Bovidae – Subfamily Antilopinae	
Bates' Dwarf Antelope	*Neotragus batesi* de Winton 1903

Table 8. Reptiles	
Family Varanidae	
Nile Monitor	*Varanus niloticus niloticus* Linn., 1766
Forest Monitor	*Varanus niloticus ornatus* (Daudin)
Family Boidae	
Royal Python	*Python regius* (Shaw 1802)
Rock Python	*Python sebae* (Gmelin, 1788)
Family Elapidae	
Black Cobra	*Naja melanoleuca* Hallowell 1837
Family Crocodylidae	
Slender-snouted Crocodile	*Crocodylus cataphractus* Cuvier, 1824
Nile Crocodile	*Crocodylus niloticus* Laurenti 1766
Dwarf Crocodile	*Osteolaemus tetraspis* Cope 1861
Family Pelomedusidae	
West Afr. Black Forest Turtle	*Pelusios niger* (Dumeri & Bibron, 1835)
West Afr. Mud Turtle	*Pelusios castaneus* (Schweigger 1812)
Family Trionychidae	
African softshell turtle	*Trionyx triunguis* (Forskal 1775)
Family Testudinidae	
Serrate Hinge-back tortoise	*Kinixys erosa* (Schweigger 1812)
Home's Hinge-back tortoise	*Kinixys homeana* Bell 1827
Family Chelonidae – sea turtles	
Logger head	*Caretta caretta* (Linn. 1758)
Green Turtle	*Chelonia mydas* (Linn 1785)
Hawksbill Turtle	*Eretmochelys imbricata* (Linn. 1758)
Olive Ridley	*Lepidochelys olivacea* (Eschscholtz 1829)
Family Dermochelyidae – leatherback turtle	
Leatherback	*Dermochelys coriacea coriacea* (Linn 1758)

Table 9. Birds

Palm-nut vulture	*Gyphoierax angolensis* (Gmelin, 1788)
River Eagle	*Haliaetus vocifer* (Daudin 1800)
Damara Tern	*Sterna balaenarum* (Strickland 1852)
Grey Parrot	*Psittacus erithacus* Linn., 1758
Blue Plantain-eater	*Corytheola cristata* (Vieillot 1816)
Senegal Coucal	*Centropus senegalensis* (Linn., 1766)
Fawn-breasted Waxbill (= Anambra Waxbill)	*Estrilda poliopareia* Reichenow, 1902

Appendix 2. Conservation Rankings and Legal Status of 'Endangered Species

IUCN or Global Listings (IUCN Red List)

The conservation status of animal species is carried out mainly by Species Groups (SSG's) of the IUCN's Species Survival Commission (SSC). The SSGs compile regional summaries with country-level rankings, and also global rankings which are compiled 4-yearly into the international 'Red List of Threatened Animals'.

Not all species are well enough known to be ranked. The 1994 Red List (p.x) estimates the following coverage:-

Birds – virtually all species assessed
Mammals – more than half of all species assessed
Reptiles – 20% of all species assessed
Amphibia – 12% of all species assessed
Fishes – under 10% of all species assessed

The categories used (Ex, E, V, T, R, I, K, T) are defined as follows (pp. xxix-xxx):

Extinct (Ex): Species not definitely located in the wild during the past 50 years. (Criterion as used by the Convention on International Trade in Endangered Species of Wild Fauna and Flora.)
N.B. On a few occasions, the category Ex? Has been assigned; this denotes that it is virtually certain that the taxon has recently become extinct.

Endangered (E): Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included are taxa whose numbers have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction. Also included are taxa that may be extinct but have definitely been seen in the wild in the past 50 years.
Vulnerable (V): Taxa believed likely to move into the Endangered category in the near future if the causal factors continue operating. Included are taxa of which most or all the populations are decreasing because of over-exploitation, extensive destruction of habitat or other environmental disturbance; taxa with populations that have been seriously depleted and whose ultimate security has not yet been assured; and taxa with populations that are still abundant but are under threat from severe adverse factors throughout their range.
N.B. In practice, 'Endangered' and 'Vulnerable' categories may include, temporarily, taxa whose populations are beginning to recover as a result of remedial action, but whose recover is insufficient to justify their transfer to another category.
Rare (R): Taxa with small world populations that are not at present 'Endangered' or 'Vulnerable', but are at risk. These taxa are usually localised within restricted geographic areas or habitats or are thinly scattered over a more extensive range.

Indeterminate (I): Taxa known to be 'Endangered', 'Vulnerable' or 'Rare' but where there is not enough information to say which of the three categories is appropriate.

Insufficiently known (K): Taxa that are *suspected* but not definitely known to belong to any of the above categories, because of lack of information.

Threatened (T): Threatened is a general term to denote species which are 'Endangered', 'Vulnerable', 'Rare', 'Indeterminate', or 'Insufficiently known' and should not be confused with the use of the same term by the U.S. Office of Endangered 'Species. In previous volumes it has been used to identify taxa comprised of several sub-taxa which have differing status categories.

Brian Groombridge (ed.), 1993. 1994 IUCN Red List of Threatened Animals. IUCN Gland, Switzerland and Cambridge, UK. lvi +286 pp. ISBN 2-8317-0194-5.

National Listings

The conservation status of species within Nigeria is covered by:

a) regional 'Action Plans' compiled by SSGs of the IUCN's Species Survival Commission. Several exist which cover Nigeria.
b) Databases maintained by the World Conservation Monitoring Centre (WCMC) in collaboration with the Species Survival Commission. The WCMC's last summary for Nigeria was in 19988 (IUCN, 1988).

IUCN, 1988. 'Nigeria. Conservation of Biodiversity'. World Conservation Monitoring Centre, Cambridge, UK.

c) A slightly more recent summary by Drolet (1990)

Drolet, C A, 1990. Biological Survey of Nigeria. A program development submitted to the IUCN. Final Report. Pp ix + 49 (23-37 photos). C A Drolet, Canadian Wildlife Service, Quebec City.

The reliability of national listings depends on the availability of local information, which is very low for Nigeria's forest fauna.

'Decree 11' – The Endangered Species (Control of International Trade and traffic) Decree No. 11 of 1985.

This decree was made in respect of Nigeria's obligations as a signatory to the 'Convention on International Trade in Endangered Species of Wild Fauna and Flora' (CITES). It lists species in which international trade is either prohibited (Schedule I species) or allowed only under licence (Schedule II species).
Decree 11 prescribes fines and imprisonment (six months, compulsory on second offence) for the mere possession of the listed species, some of which are locally quite common and hardly endangered at all.

Oryx 29(2): 71-73. Ninth Meeting of the Conference of the Parties to CITES. Fort Lauderdale, November 1994.

Summary of the main results of the Ninth Meeting of the Conference for the Parties to CITES. TRAFFIC. Cambridge, UK, November 1994.

CITES Update No.31. US Department of the Interior, December 1994.

Table 10. Account of Major Species

Sclater's Guenon	D-1	White-throated Guenon	D-1
Red Colobus Monkey	D-1	Olive Colubus	D-2
Chimpanzee	D-2	Black-bellied Pangolin	D-3
Otters	D-3	Crested Genet	D-4
Leopard	D-4	Manatee	D-4
Elephant	D-5		
Pygmy Hippo	D-5	Hippopotamus	D-6
Ogilby's Duiker	D-6	Yellow-backed Duiker	D-7
Black-fronted Duiker	D-7	Bates' Dwarf Antelope	D-8

6. Review of wildlife in past SPDC (e) environmental reports

Reports of seven past SPDC (E) studies were reviewed to identify weakness etc. for remedial action in the planning of new studies. The studies represent only three of the faunal zones and are listed in Table F.1 with serial numbers (S/N) used for identification hereafter.

Table 11. Faunal zone placement of SPDC (E) reports reviewed

S/N	Faunal Zone	Type	Short Title	Year	Contractor/consultant
35	Lowland forest	EIA	AGG Grid (Land)	1951	OASONS/Abere
49	Lowland forest	EES	Rumuekpe-Bomu	1993	UNICALC./Ntukidem-Afaide
54	Eastern flank	PIAS	Enwhe Field	1993	ECOSPHERE/Amubode
34	Mangr/East.flank	EIA	Soku Gas Plant	1992	IPS/-?-
40	Mangr/East.flank	EIA	Nembe Ck F/L's	1993	GEO-GROUP/-?-
11	Mangrove	BEDA	Belema F/S	1993	EDO-SU/-?-
37	Mangrove	EIA	AG project (swamp)	1994	OASON/Abere

Evidence of relevant background knowledge

None of the write-ups made reference to any wildlife literature or unpublished reports, not even basic texts and guides (Booth, 1960; Dorst and Dandelot, 1970; Haltenorth and Diller, 1977; Happold, 1973 and 1987) or the sources for the species identifications. To go a step further, three reports (#11, 34, and 40) did not even indicate the identity of the person(s) responsible for their own wildlife sections. As shown further below, none of the consultants seemed to know what fauna was normal or important in his project area. This is not surprising insofar as wildlife training and research in Nigeria is largely savanna-based and local literature is almost non-existent. One project team (~49) did include someone with relevant local experience, namely the author of one of the very few local studies (Ewa Ita, 1984) which was done only a few miles form the SPDC project site. Ironically, he was not placed under wildlife studies, yet his old study included local endangered species completely overlooked by all seven SPDC reports reviewed.

Methods

Five studies (34, 35, 37, 49, 54) claimed to involve observers walking along transects in a bid to estimate densities of different species through sightings of animals and signs of their presence. This is a standard method in open habitats and for some groups (e.g. monkeys and birds) but for several reasons was not very useful in the present studies. An exception is study ~54 where it was used to compare relative numbers in different impact zones. Other studies had the opportunity to use their data for meaningful comparisons between habitat types (e.g. mangrove vs freshwater swamp, farmland vs bush) but failed to do so, or to give information on location and habitat-type of the transect. Most studies claimed to include interviews with local persons, but the results do not include distinctive local species, which would have been mentioned by any knowledgeable local hunter. Such species are marked with a single asterisk on Table F.2.

'Endangered' species

The studies were collectively mentioned only two of the 17 endangered mammals actually known or suspected to occur in the areas in which the studies were carried out (Table 12). Among the overlooked species are four of the globally endangered species ('E' on IUCN Red List) and many with distinctive local names, which would have been mentioned by local hunters etc. Obviously such animals should have been targeted in EIA's (~34, 35, 37 and 40) and any attempted species inventory.

Table 12. Representation of endangered mammals in reviewed reports

Species	Conservation Ranking			S/N's of studies, within species range, in which the species is:	
	IUCN	WCMC	D-11	Listed	Not Listed
White-throated Monkey	E	E	II	--	40? 54?
Sclater's Monkey	**E		II	--	35 49 54
Crested Genet	E	-	II	--	11? 34 35? 37? 40? 49 54
*Heslop's Pygmy Hippo	**E/Ex	?	I	--	54
Angwantibo	V		I	--	35 49 54
*Red-capped Mangabey	V	-	I	11	34 37? 40? 45
Olive Colobus Monkey	V	?	I	--	54
*Manatee	V	i	I	--	11 34 40?
*Ogilby's Duiker	**V	i	-	--	35 49 54
Sitatunga	-	E	I	34 49	11 35? 37? 40? 45 54
*Yellow-backed Duiker	**-	E	I	--	49? 54
*Bates Dwarf Antelope	**-	E	-	--	35 49
White-bellied Pangolin	-	-	I	--	35 40? 49 54
Black-bellied Pangolin	-	-	I	--	34 40? 49 54
Cape Clawless Otter	-	i	I	--	11 34 35? 37? 40? 45
Spot-necked Otter	-	i	I	--	11 34 40? 54
*Water Chevrotain	**-	i	I	--	34 35? 40? 49? 54

Legend:-

* = species easily identified by species-specific vernacular names.

** = species which should have received extra attention because of their local conservation status or habitat-dependence.

IUCN = IUCN 1994 Red List (Groombridge, 1993);

WCMC = MCMC, 1998;

D-11 = Decree 11 (Endangered species…) or 1985. Schedules I & II.

E = endangered, Ex = extinct; V=vulnerable, i = insufficient information

Records of unexpected species.

Most reports (#11, 34, 35, 37, 49, 54) listed species not expected in the Niger Delta (Table 13). As they were not remarked upon, it is possible they were misidentifications and the consultants did no know what fauna was normal for the project areas. The other report (#40: Nembe Creek) only mentioned general signs of wildlife ("monkey, rodents and snakes") without species identifications except for the statement "Grasscutter, snail, bushbuck and red-flanked duiker are among those commonly served during meals"/ The Red-Flanked Duiker is a savanna species not yet known from Rivers State and the Bush buck was probably also absent from the actual project area; the common antelopes there are the Sitatunga and Maxwell's Duiker.

Table 13. Extra-limital species recorded in reviewed reports

Species	S/N of Report
Savanna species	
(Roan antelope) *Hippotragus* sp	#37
Red-flanked Duiker	#40
Red Patas Monkey	#37
Green Monkey – *Cercopithecus aethiops*	#37 #49
Swallow-tail Kite – *Elamus riocourii*	#37
White-breast Cuckoo-shrike – *Coracina pectoralis*	#37
Yellow-fronted canary – *Serinus mozambicus*	#37
Swamp Flycatcher – *Musicapa aquatica*	#37
Brown-backed woodpecker – *Ipophilus obsoletus*	#37
Yellow-bellied parrot – *Poicephalus senegalus*	#37
Hoopoe	#54
Senegal Wood-hoopoe	#54
Non-Nigerian Species	
Palm squirrel – *Epixerus ebii* (Upper Guinea	#34 #35 #37
Sun-squirrel – *Heliosciurus punctatus* (Upper Guinea)	#11 #49
Ducks (Central, east & south African species) African Polchard – *Aythya erythorphthalmus* Red-billed duck – *Anas erythrorhynchus* African Black Duck – *Anas sparsa*	#54
Moor Frog – Rana arvalis (European)	#49
Mountain-country Species	
Otter Shrew – *Potamogale velox*	#11
(Oriole Finch) - *Linurgus olivaceus* (From Cameroun, Obudu Plateau, Fernando Po, in forests of 1800-9000 ft elevation)	#34

Miscellaneous comments

a. Animal classification

Two reports listed bats (which of course are flying mammals) in list of bird species (#37, 49). Two others listed snails and reptiles under mammals (#34, 54).

b. Ordering of species in lists

For all animal groups there is a conventional 'phylogenetic' order in which species-groups are usually listed. In most of the reports reviewed, there was no discernible order whatsoever in the lists; even different species of monkeys or rodents or antelopes were not grouped together.

c. Contradiction between English and scientific names

African Civet (large carnivore) given as *Cryptomys zechi* (a rare subterranean savanna rodent (#49)

Mona Monkey (*Cercopithecus mona*) given as *Cercopitheaus petaurista* (the Upper Guinea equivalent of the White-throated Guenon C. erythrogaster) (#37)

Spot-nosed Monkey (presumably *Cercopithecus nictitans*) given as *Cercopithecus erythrogaster* (white-throated Guenon)(#11)

West African Ground Squirrel (*Xerus erythropus*, a savanna and farmland species) given as *Epixerus* sp. (a rare high-forest genus) (#37)

Red River Hog (*Potamochoerus porcus*) given as *Potamochoerns aethiopicas* (*aethiopicus* is the specific name for the Warthog) (#34)

d. Probably misidentifications

In several cases the reports listed rare-or absent species but failed to mention look-alike species, which were certainly present and probably quite common.

Fish Eagle but not Palm-nut Vulture (#11 #34 #37)
Wood Ibis but not any white egrets (#34)
Rhynchops sp. and *Pelecanus* sp. but not kingfishers and hammerkops (#11)

e. Use of indicator species

Several reports (#34, 35, 49) list the Gambian Giant Rat which is a savanna and farmland species. Actually in forest habitat it is replaced by Emin's Giant Rat, which was not mentioned in any report but was probably present in all the study areas. Although in this example it is not easy to distinguish the two species without specimens in hand, other similar examples exist and it seems that the consultants generally were not attuned to drawing ecological conclusions from the presence or absence of particular species.

f. "A checklist of mammalian fauna in some forest reserves and proposed game sanctuary in Rivers State". The Soku report (#34) contains this attractively titled Table, which however has more errors than can be expediently listed.

Appendix IV. Wildlife species which may be dangerous in the field

The greatest risks would seem to be incidents in which members of crews may :-

1) Encounter snared animals and try to intervene. Trapped and /or wounded pigs are locally notorious killers.
2) Encounter the newborn young of powerful animals in a situation which provokes the mother's aggression.

Elephant:

Conditions of danger:
When elephant does not sense the approach of humans until after they are too close (well under 200 metres).
When mother elephant fears for safety of her baby.
When an elephant has been shot and wounded in the area recently.

Geographic areas:
Andoni Island
West bank of Nun River between Odoni and Sampou, opposite Odi (note these animals, the remnant of the Taylor Creek herd, might have moved due to human activity and construction of OMPADEC road from E-W Highway to Samabri)

Signs of presence:
Abundance of biting flies (also a sign for pigs).
Sound and smell of farting, loud and frequent.
Fresh dung, footprints, vegetation damage, noise of elephant breaking vegetation

Precautions:
Read protocol prepared by Dr C Thouless (meeting of 1st Aug 1993).
Before entering the area, check with local hunters on recent elephant activity.
Once in the area, make enough noise to ensure elephants are aware of your presence from a distance.

Pigs

Conditions of danger:
Trapped specimens, and also females defending their young, are more aggressive.
Most deaths occur when hunters try to deal with snared specimens.

Geographic areas:
All forests (except mangrove and a few barrier islands) but including 'islands' of freshwater forest within the mangrove zone.

Signs of presence:
Abundance of biting flies (also a sign for elephants).
Noise and disturbed ground from the struggling of snared pigs.

Precautions:
If a live trapped pig is encountered:
Do not approach or interfere, even if the animal may appear weak or unconscious.
Withdraw from the area, and make arrangements for appropriate persons to safely kill the animal.
If there is evidence of a pig having very recently escaped wounded form a snare.
Withdraw with great caution, following the original path of entry. (Some hunters claim that wounded pigs lie in wait for the hunter/trapper to return, to attack and kill him.)
iii Field staff should not hunt or trap big game, nor join locals in it.

Buffalo or bushcow:

Conditions of danger:
When an animal has been wounded or is attacked.
Geographic areas:
Generally absent from SPDC (E) area except for rare lone individuals or pairs in the northern half (north of Yenagoa and more generally north of the East-West highway). Highest incidence of reports is around Omoku between Orashi and Niger Rivers; and eastward to the Sombreiro River north of Ahoada and northwest of Elele.
Common in some areas on west bank of Niger in Delta State.
Signs of presence:
Cow-like footprints; usually the presence of a bush cow is well known to local woodsmen and often also farmers.
Precautions: as for Pigs

Crocodile:

Conditions of danger:
When intruders approach a nest or young hatchlings, the guarding mother may attack.
Geographic Areas:
Around large rivers and lakes in remote areas, especially where crocodiles have traditional protection (sacred lakes etc.).
Signs of presence:
Nests of this species are covered holes dug in bare ground, e.g. along the back edge of sandbanks.
Nests are not normally detectable, unless by presence of fresh eggshells after hatching or destroyed by small predators.
Tracks of guarding female may be present around nest.
Precautions:
Check for abundance of Nile Crocodiles in areas of activity.
In such areas in the nesting season (see below), avoid likely nesting sites.
Nesting is expected in the dry season, incubation lasts 2-3 months with young hatching in the early rains.

Other local crocodiles viz. the Dwarf Crocodile ('alligator', max. length 2 meters) and Slender-snouted Crocodile (max. length 4 meters nest in mounds constructed of vegetal matter etc.

Hippopotamus

Conditions of danger:

When hippos are attacked or provoked.
Hippos are known to capsize small local craft (canoes, dinghies)
Geographic area:
Andoni Island; Finima; vagrant individuals elsewhere along coast
Signs of presence:
In back shore areas, footprints and the animals' trackways
Precautions:
Check with local residents about hippo presence and activity
Stay clear and do not disturb any animal which may be sighted

Note: the Niger Delta coastal hippos are highly endangered, surviving only due to traditional protection afforded by landlord communities.

Other large wildlife

Chimpanzees (locally called 'gorilla') and leopards (in some areas called 'tigers') have intimidating vocalizations but are not considered as dangerous to adult men provided the animals are not attacked directly. Pygmy hippos (*abein* or o*gumogu*) are considered dangerous locally but only through their spiritual powers if killed; they are virtually extinct and nay evidence of living animals should be reported.