

Information Sheet on Ramsar Wetlands (RIS) – 2006-2008 version

1. Name and address of the compiler of this form:

Prof. O.O. OGUNKOYA
Department of Geography,
Obafemi Awolowo University, Ile-Ife, Nigeria
olayinkaogunkoya@yahoo.co.uk +234 803 348 6428

FOR OFFICE USE ONLY.

DD MM YY

--	--	--

Designation date

--	--	--	--	--	--

Site Reference Number

Dr. Anthony DAMI
Department of Geography
University of Maiduguri, Maiduguri, Nigeria
tonidamy@yahoo.co.uk +234 805 533 4965

2. Date this sheet was completed/updated:

November 2007

3. Country:

Nigeria

4. Name of the Ramsar site:

Lower Kaduna-Middle Niger Floodplain

5. Designation of new Ramsar site or update of existing site:

This RIS is for:

a) Designation of a new Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

7. Map of site:

a) A map of the site, with clearly delineated boundaries, is included as:

- i) a hard copy
- ii) an electronic format (a JPEG image)

b) Describe briefly the type of boundary delineation applied:

The boundary of the site starts in the north from Wuya (bridge), and the road. It then follows the topography (extended river bed?) to the south until the river arrives in the Niger river. From there, the boundary follows the floodplain (glw-raster) on the south part of the Niger River and sometimes the road, and the vegetation, topography and floodplain on the north part

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

8°51'N 5°45'E (Latitude 8,86 and Longitude 5,76 in decimal degrees)

9. General location:

The wetlands, resembling an inverted 'T' in ground plan, are located on the extensive floodplain of the mid-section of River Niger (in Nigeria) and the lower course of one of its main tributary, R. Kaduna. The wetlands extend from Jebba (9⁰⁰1'N 4⁵⁰1'E; population: 22411) to Baro (8³⁵1'N 6²⁵1'E; population: 6059) along the Niger, and from Wuya Bridge on the R. Kaduna, along the Jebba – Bida (9⁰⁰1'N 6⁰⁰1'E; population: 1788400) road downstream to Pategi (8⁴⁵1'N 5³⁷1'E) on the south bank of the Niger, opposite to the town of Muregi, at the confluence with R. Kaduna. All the portion of the wetlands north of the River Niger is in Niger State (2007 population: 4082558), while all the portions adjoining the south bank of the Niger is in Kwara State (2007 population: 2591555).

10. Elevation: (in metres: average and/or maximum & minimum)

130 m.a.s.l

11. Area: (in hectares)

229054.34 hectares

12. General overview of the site:

The Lower Kaduna-Middle Niger Floodplain is an alluvial extensive wetland in the Southern Guinea Savanna. Cretaceous sediments, the Nupe Sandstones, underlie the wetlands.

The floodplain is studded with pools, lakes, shifting river courses and sand banks and is inundated annually by floodwaters. Prior to dam construction upstream of the wetlands between 1968 and 1984, the wetlands were fully inundated between August and December.

The wetland is comprised of of the recurrently (annually) flooded wetlands (*fadama* in Hausa) within the extensive floodplains of the River Niger and its main tributary in western central Nigeria, River Kaduna. It is fully defined by the abrupt change in vegetation from riparian species of the Southern Guinea Savanna biome to upland woodland species.

The construction of dams at Kainji (MCM) and Jebba (MCM) on the Niger, and at Shiroro (MCM) on the Kaduna, apart from numerous smaller upstream dams in the two catchments, has led to a loss through desiccation and siltation of vast tracts of wetlands. The significant and extended climatic variability in West Africa between 1970 and late 1990s further heightened the desiccation. A consequence is the loss of fish spawning grounds and a reduction of fish species in the wetlands (Ita, 1993). Desiccated and exposed areas have become colonized by terrestrial Guinea Savanna species e.g *Tephrosia elegans*, *T. pedicelata*, *Indigofera bractiolata*, *Cassia mimosoides* and *Mimosa pigra*.

The fadama is intensively cultivated (rice, sugar cane) resulting in the degradation of the *Mitragyna* swamp forest.

The wetlands constitute an important breeding area for the Rosy bee-eater (*Merops malimbicus*). The Greater honey guide (*Indicator indicator*), which is a brood parasite of the bee-eaters, is a common visitor to *M. malimbicus* colonies. Fadama farming activities, harvesting of wild resources, and river regulation and attendant unseasonal flooding of sandbanks, are significant threats to the sustainability of the wetland ecology.

13. Ramsar Criteria:

1 • 2 • 3 • 4 • 5 • 6 • 7 8 • 9

14. Justification for the application of each Criterion listed in 13 above:
Criterion 3:

The Lower Kaduna-Middle Niger floodplain is a large wetland biodiversity hotspot in central Nigeria. It has more than 20 bird species resident or breeding there, including nationally uncommon birds such as *Ciconia episcopus* (Woolly-necked stork), *Pteronetta hartlaubii* (Hartlaub's duck) and *Nettapus auritus* (African pigmy goose). It is a main breeding ground in Nigeria for the Rosy bee-eater (*Merops malimbicus*) with colonies of over 15 000 birds seen in 1989 and 1996 on the lower Kaduna River. Ten of the 42 bird species whose distribution is largely or wholly confined to the Sudan-Guinea Savanna biome and that occur in Nigeria have been recorded at this site. These are: *Poicephalus senegalus*, *Musophaga violacea*, *Merops bulocki*, *Coracias cyanogaster*, *Lybius dubius*, *Hypergerus atriceps*, *Estrilda troglodytes*, *Petronia dentate*, *Lamprotornis purpureus* and *Ptilostomus afer*. In addition, four species of the Guinea-Congo forest biome have also been recorded here: *Pteronetta hartlaubi*, *Merops malimbicus*, *Tockus fasciatus* and *Ceratogymna fistulator*. *Glareola cinerea* and *Sterna albifrons* breed in this area (Augustine U. Ezealor, 2001). These contribute significantly to the maintenance of the biodiversity of the region.

As noted by Ita (1993), the large number of fish species caught in the area and the non-dominance of carnivorous species indicate that the fish comes from the floodplain rather than the main river channel. In general, the wetlands support the element of biodiversity (including the *Mitragyna* swamp forest) that is characteristic of such wetlands in the Guinea savanna woodland of Nigeria.

Criterion 4:

The site is an important breeding area for *Merops malimbicus* with colonies of over 15,000 birds, seen near Tamaworo on the lower Kaduna River. Other nationally uncommon birds include *Ciconia episcopus*, *Pteronetta hartlaubii* and *Nettapus auritus*. Over 100 *Pluvianus aegyptius* (Egyptian plover) and more than 150 *Glareola cinerea* (Grey pratincole) have been counted. *Glareola cinerea* breeds in the wetlands, as does *Sterna albifrons* (Little tern), while several *Merops nubicus* (Carmine bee-eater) colonies occur in the eroded riverbanks. *Indicator indicator*, brood-parasites of the bee-eaters, are common visitors to the *M. malimbicus* colonies (Augustine U. Ezealor, 2001).

15. Biogeography

a) biogeographic region:

Southern Guinea Savanna.

b) biogeographic regionalisation scheme:

Keay R.W.J. (1959a). An outline of Nigerian vegetation. Lagos: Government Printer

Keay R.W.J. (1959b) Derived savanna: derived from what? Bulletin de l'Ifan 21: 427-438

Keay R.W.J. (1960) An example of Northern Guinea Zone vegetation in Nigeria. Nigeria Forestry Information Bulletin No 4. Lagos: Government Printer

16. Physical features of the site:

The wetlands are on alluvial floodplains developed on Cretaceous sediments in the western arm of the Niger Benue Trough. The sediments, the Nupe Sandstones, consist of quartzose gravel, conglomerate, and clayey sandstones. Recent – Tertiary alluvial deposits of sandy clay, clayey sand, lateritic clay and gravelly clay have overlaid the Sandstones. The alluvial deposits constitute the main ground water storage elements. The area is so gently inclined that it appears almost horizontal.

Hydromorphic soils (pH: 6-7) manifesting mottling and reduction colours have been developed on the wetlands. The gley soils have humic topsoils with relatively high organic matter content. Water logging results in low decomposition rates of organic matter and thus relatively high Cation Exchange Capacity in surface horizons. There is some degree of Fe²⁺ toxicity in the soils.

Riparian vegetation has been cleared and land converted to agricultural use in the more densely settled areas [Jebba–Rabba–Shonga in the west, Pategi-Muregi in the mid-section, and Eggan-Baro in the east]. The main field crops are rice, maize, yams, sorghum, and cassava. Large-scale irrigated sugar cane farms are found in the western part of the wetlands.

The River Niger arm of the wetlands attains maximum water level in September/October consequent upon rainy season infows from upstream catchments. This inflow is termed the ‘White Flood’ on account of the high sediment load. The annual draw down commences with the onset of the dry season in November. But a secondary water level peak is attained between December and February (the ‘Black Flood’ – because its waters are desilted and clearer). This flood is caused by rains of the same rainy season at the headwaters of the Niger in Guinea and Sierra Leone, but arrive late in Nigeria due to flow retardation in the inland delta on the Niger in the region around Timbuktu, Republic of Mali. The water level falls from February to its lowest levels in July. Peak water levels are attained late in September in the Kaduna arm. ‘Back water’ effect could however raise water levels in the confluence zone of the Kaduna arm, during the Black Flood.

There was a large flood plain lake, Lake Tatabu or Lake Ndakolowu (area: 1200 ha), 24 km NE of Jebba (and accessible from the Jebba-Bida road) in the western end of the wetlands. The serial damming of the Niger at Kainji and Jebba, and the recent climatic variability probably more badly affected the lake than the other parts of the wetlands. The lake dried up in 1988 leaving a few small ponds, and the entire lakebed was covered by terrestrial vegetation. Attempts have since been made to divert flood flow from the River Niger into the area and this has brought some degree of restoration to the earlier ecology (Awachie, 1976; Daddy et al., 1989).

The climate is the Koppen’s A_{w1} (i.e. humid tropical wet and dry climate with almost equal length of rainy season and dry season) with a clearly marked dry season extending from November to April and a rainy season during the remainder of the year. Mean annual rainfall decreases generally from W–E, but not consistently from S–N. Jebba in the west receives an annual rainfall of 1065 mm, while Bida towards the east and north of the wetlands receives 1212mm. Rainfall distribution during the rainy season is normally unimodal, but a bimodal distribution with peaks in July and September is not uncommon. The single peak occurs in August/September. Mean temperatures range from 26°C during the Harmattan to 35°C during the hot months of March, April and May. The dry season is dominated by dusty, northeasterly Harmattan winds. The inter-season period is one of intense heat and high temperature.

17. Physical features of the catchment area:

The wetlands cover an area of 500,000 ha in western central Nigeria, and receive drainage from the sub-catchments of the River Niger upstream of the wetlands (area: approx. 140,000 km² in Nigeria) and the whole of the River Kaduna catchment (66300 km²). The drainage area is of diverse topography and ecology; extending from the Jos Plateau through the plains of the Niger-Benue trough to the Yoruba Hills of southwestern Nigeria, and from the Sudano-Sahelian ecology of the area straddling the Nigeria-Niger border to the Rain Forest of southwestern Nigeria.

18. Hydrological values:

The nature of the surficial geology ensures ground water recharge during high water. The village communities within the wetlands depend on ground water and rainfall for potable and domestic water supply.

There is annual siltation in the wetlands during the 'White Flood'. This annually augments soil fertility. Farmers take advantage of this and the soil water regime through drawdown irrigation far into the dry season.

19. Wetland Types**a) presence:**

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

b) dominance:

O, Tp, P, Xf, Ts

20. General ecological features:

The wetlands are fully submerged (subject to wetness of the rainy season and degree of flow regulation) during the White Flood (August – October). Sections of open water are covered by *Nymphaea lotus*, *Echinochloa pyramidalis*, *Echinochloa stagnina*, *Cyperus procerus*, *Vossia cuspidata*, *Polygonum senegalense* and *Brachiolaria* sp. These are usually driven by winds to the more distal and strand zones. Floodwaters detach and float them downstream. Swamp vegetation is dominated by *Mitragyna* forest, but also includes *Cyperus* sp, *Phragmites karka*, *Ipomoea aquatica* and *Sacciolepis africana*.

The area is intensively farmed and large areas of wetland have been converted to rice paddies and sugar cane fields, resulting in the degradation of the *Mitragyna* swamp forest. Timber harvesting, and fisherfolk, who gather fuelwood for drying fish, aggravate the damage. Harvesting of wild resources, and river regulation and attendant unseasonal flooding of sandbanks, are other significant threats to the sustainability of the wetland ecology.

The wetlands constitute an important breeding area for the Rosy bee-eater (*Merops malimbicus*). The Greater honey guide (*Indicator indicator*), which is a brood parasite of the bee-eaters, is a common visitor to *M. malimbicus* colonies. The wetlands are intensively

fished. Commercial species in order of catch dominance include *Tilapia*, *Synodontis*, *Labeo*, *Citharinus*, *Schilbe*, *Mormyrus*, *Bagrus*, and *Alestes* spp.

21. Noteworthy flora:

These include *Nymphaea lotus*, *Echinochloa pyramidalis*, *Echinochloa stagnina*, *Cyperus procerus*, *Vossia cuspidata*, *Polygonum senegalense*, *Brachiolaria* sp. and *Mitragyna* sp. These vegetation impede fishing activities.

The climatic variability of the 1970s to late 1990s and river regulation have promoted the dessication of the wetlands and the replacement of swamp vegetation by terrestrial Guinea Savanna vegetation (including *Daniella oliveri*, *Parkia biglobosa*, *Terminalia* sp. and *Elaeis guineensis*). The recent apparent return to more pluvial times should occasion a reversal in the trend.

22. Noteworthy fauna:

Many bird species visit, breed or are resident in the wetlands. These include *Merops bulocki* (Red-throated bee eater), *Poicephalus senegalensis* (Senegal parrot), *Musophaga violacea* (Violet turaco), *Petronia dentate* (Bush petronia) and *Estrilda troglodytes* (Black-rumped waxbill).

Economically important fish caught in the wetlands include *Gymnarchus* sp, *Clarias* sp., *Lates* sp., *Heterotis* sp., *Chrischthys* sp. Other species in the wetlands include *Auchenoglanis*, *Clarotes*, *Malapterurus*, *Heterobranchus* and *Distichodus*.

Fadama farming activities, harvesting of wild resources, and river regulation and attendant unseasonal flooding of sandbanks, are significant threats to the sustainability of the wetland ecology.

23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

The local people depend on the site for fishing, collection of wild resources and floodplain irrigation agriculture. There is commercial sugar cane and rice farming.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box and describe this importance under one or more of the following categories:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

It is a site where the ecological character of the wetland depends on the interaction with the indigenous peoples and river regulation authorities.

The site, through grazing, farming and harvesting of wild resources supports community and regional livelihood and if community activities are not regulated, and river regulation enabled

to be more in tune with ecological sustainability, the ecological character of the wetland may be permanently impaired.

24. Land tenure/ownership:

a) within the Ramsar site:

Though Federal and State Laws alienate the communities, the people operate as *de facto* owners of the wetlands and adjoining territory. The current land tenure in the area is a mixture of customary and institutional holding. Resident communities through the traditional institutions (and the Emirate Councils) control all lands (subject to Federal/State intervention when the land is required by government). Each land component (fadama, pond, lake) is under the control of families, with this control depending on historical annexation and approval of the community leader.

b) in the surrounding area:

Federal Land Use law has provisions that enable government to dispossess families or individuals of such wetland if it is needed for public purpose, as in theory all land belong to the Federal/State Government. Similar tenure arrangements also apply to fishing rights in water bodies.

25. Current land (including water) use:

a) within the Ramsar site:

Fadama/drawdown irrigation farms cultivated to rice, sugar cane, onions, yam and maize. Fishing constitutes a major occupation of the communities within and around the wetlands. Fishing gear include gillnet, cast nets, clap nets, hook and line, and assorted local traps and fish fences. There are also game hunting (mainly birds) and harvesting of wild resources.

b) in the surroundings:

Surrounding areas are extensively cultivated to sorghum, maize, yam, and cassava. Wild resources including timber are harvested from the Guinea Savanna woodlands. The Jebba Dam and associated hydroelectric works (600 MW) are at the western end of the wetland.

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

a) within the Ramsar site:

The declining trend in rainfall between 1970 and the late 1990s in the catchments tributary to the wetlands, and upstream dam construction have promoted wetland desiccation and loss of fish spawning grounds. Commercial and artisanal fadama and drawdown irrigation farming are altering wetland ecology. Intensive fishing has aggravated decline in fish species diversity and population.

b) in the surrounding area:

River regulation (Kainji, Jebba and Shiroro dama) and unseasonal flooding of sandbanks, and intrusion by community members are reported to threaten bee-eater breeding and colonies (BirdLife IBA Factsheet NG012, 2007).

Extensive farming, annual bush burning, and attendant wood land degradation are promoting accelerated erosion of the surrounding areas and siltation of the wetlands.

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

As important as the wetlands are, they are totally UNPROTECTED.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?

NO.

NCF (Nigerian Conservation Foundation) developed a management plan for the Park, including the island in 1992. The overall goal remains to maintain a biodiversity levels and ecosystem functions for the benefit of the local people, the nation and future generations.

d) Describe any other current management practices:

28. Conservation measures proposed but not yet implemented:

None

29. Current scientific research and facilities:

Important Bird Area (IBA) Survey

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

Very minimal and unappreciable

31. Current recreation and tourism:

Not noticeable.

32. Jurisdiction:

Niger State, Minna

Kwara State, Ilorin

Gbako Local Government, Badegi, Niger State

Pategi Local Government, Pategi, Kwara State

National Institute for Fresh Water Fisheries Research, New Bussa, Kwara state

33. Management authority:

The Director, Niger State Department of Forestry, Minna, Niger State
Ministry of Environment, Minna, Niger State
Ministry of Agriculture and Natural Resources, Minna, Niger State

The Director, Department of Forestry, Ilorin, Kwara State
Ministry of Environment, Ilorin, Kwara State
Ministry of Agriculture and Natural Resources, Ilorin, Kwara State

34. Bibliographical references:

- Augustine U. Ezealor, 2001, Nigeria.** Pp 673-691 in L. D. C. Fishpool and M. I. Evans, eds. Important Bird Areas in Africa and associated islands: Priority sites for conservation. Newbury and Cambridge, UK: Pisces Publications and Birdlife International (Birdlife Conservation Series No. 11).
- Awachie, J.B.E.** (1976) Fish culture possibilities on floodplains of the Niger-Benue drainage systems. CIFA Tech Paper No. 4 (1), 256-281
- Bello, A.A. and V. Makinde** (2007) Delianation of the aquifer in the southwestern part of the Nupe Basin, Kwara State, Nigeria. *Journal of American Science* 3(2), 36-44
- BirdLife International** (2007) BirdLife IBA Factsheet NG012. BirdLife's online World Bird Database: the site for bird conservation. UK: BirdLife International
- Chude, L.A.** (1979) Fish and fisheries of Lake Ndakolowu, a floodplain downstream of Kainji dam. Kainji Lake Research Institute Unpublished Report.
- Daddy, F., M. Wari and A. Mohammed** (1989). Wetland studies: natural resources evaluation of Tatabu Floodplain and the restoration of Lake Tatabu (Ndakolowu), Niger State, Nigeria. NIFFR Annual Report, p50-60
- Ezealor A.U ed.** (2002) Critical sites for biodiversity conservation in Nigeria NCF, Lagos, Nigeria
- Hughes, R.H. and J.S. Hughes** (1991). A directory of Africam wetlands. IUCN, Gland, Switzerland.
- Keay R.W.J.** (1959a). An outline of Nigerian vegetation. Lagos: Government Printer
- Keay R.W.J.** (1959b) Derived savanna: derived from what? *Bulletin de l'Ifan* 21: 427-438
- Keay R.W.J.** (1960) An example of Northern Guinea Zone vegetation in Nigeria. *Nigeria Forestry Information Bulletin* No 4. Lagos: Government Printer
- Ita, E.O.** (1993). Inland fishery resources of Nigeria. CIFA occasional Paper No. 20, Rome, FAO. 120p
- Ita, E.O.** (1994) Aquatic plants and wetland wildlife resources of Nigeria. *CIFA Occasional Paper* No. 21. Rome, FAO. 52p

