DESG. DATE : 02/10/00

1. **Date**

   2nd March 2000

2. **Country**

   Nigeria

3. **Name of Wetland**

   Nguru Lake (and Marma Channel) complex.

4. **Geographical coordinates**

   Longitudes $10^0 10'$ and $10^0 35'$N 10°22'N
   Latitude $12^0 35'$ and $12^0 57'$E 012°46'E

5. **Altitude**

   Between 340 & 345 meters a .s.l.

6. **Area.**

   58,100 ha

7. **Overview**

   It is a sahelian floodplain wetland comprising of the floodplain of a non–returning channel that empties into a lake. It supports a wide range of migratory and resident water fowl as well as fish species. There is a large rural population that pursue livelihood systems involving the cultivation of the floodplain, pastoralism and the harvesting of wild resources such as fuelwood.

8. **Wetland type.**

   It is an Inland Wetland that falls under Categories M and O in the Ramsar Classification of wetland Types (Permanent Rivers/Stream, as well as Permanent Fresh Water Lake} There is also an element of category N (intermittent streams).

   They can be ranked in the order of dominance: O, M, P, & N.

9. Ramsar Criteria/ Reason for inclusion

The site qualifies on three of the several criteria used for identifying wetlands of international importance. These are:

a) 1a - It is a particularly good representative example of a natural or near natural wetland, characteristic of the biogeographical region (Sahel).

b) 3a - It regularly supports 20,000 waterfowls.

c) 4a - It supports about 1% of Nigeria's inland fresh water fisheries (Jimoh 1989), and is believed to be home to an endemic sub- specie of fish, locally known as 'disc Tilapia'(Lafiagi 1997), which is representative of wetland benefits and/or values, and thereby contributes to global bio-diversity.

The most significant criterion applicable to the site is 3a. that is, it regularly supports over 20,000 waterfowl, and is the main fowl refuge in the Hadejia-Nguru Wetlands at the peak of dry season.

10. Map of site. (find attached)

Four maps are enclosed as follows:

1. A map showing the location of the Hadejia- Nguru Wetland in Nigeria.
2. A map showing the location of the Ramsar site in the HNWs.
3. A map showing the hydrological features of the Ramsar site.
4. A map showing the ecological features of the Ramsar site.

5. Name and address of compiler.

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6. Justification of criteria selected under point 9

1a-This wetland is a particularly good representative of a natural or near natural wetland, characteristic of the appropriate biogeographical region. This is because this wetland embodies all the diverse flora and fauna of both the Sahel and Sudan in a single limited location. It is a critical staging ground for passerines, as well as being a critical wintering ground for palaeartic migrants. It is part of the most critical dry season refuge for pastoralists from Sahelian regions of Nigeria, Niger, Cameroun , Chad and Mali (Adams, 1993). It supports the livelihoods of about 200,000 people (Kimmage & Adams, 1992).

3a - It regularly supports 20,000 or more water fowl. The tables below of past bird survey results illustrate the point.

January Bird Survey Records of Nguru Lake and Marma Channel , 1996-2000

Species	1996	1997	1998	1999	2000
Ruff (*Philomachus pugnax*)	38,250	40,423	22,296	2,048	373
Garganey (*Anas querquedula*)	34,000	95,499	122,367	15	34,106
White face whistling duck (*Dendrocygna viduata*)	33,199	45,240	19,544	40,521	21,328

4a - It supports a significant proportion of indigenous fish subspecies which are representatives of wetland benefits. This is because about 65 species from 17 families, constituting 37 genera were identified during a biodiversity inventorying exercise of the site conducted by IUCN-HNWCP in 1997 (Lafiagi, 1997). This represents 20% of the fish variety in the Lake Chad Basin, and accounts for about 1% of all the fish caught in inland fresh water bodies in Nigeria (Jimoh, 1989). It is also believed to be home to an endemic subspecies of Tilapia locally known as the 'disc Tilapia' (Lafiagi, 1997)

7. General Location

Nguru Lake Complex is a part of the Hadejia Nguru Wetlands, which are located in north-eastern Nigeria, some 220km. North-east of Kano City, and on the southern fringes of Nguru town. The distance by road from Kano is about 300km Kano, with a population of over three million, is the largest city in northern Nigeria, and is the capital of Kano State. Nguru, with a population of about 90,000, is the headquarters of Nguru Local Government Council. Two thirds of the site to the south-west lies inJigawa State, while the remaining one third to the north-east lies in Yobe State.

8. Physical Features

The site, which occurred naturally, is underlain by permeable sedimentary rocks of Chad formation but successive years of clay deposition has formed a film of impervious layer at the buttom of the water body which checks percolation. The relief around the site is characterised by monotonously low lying surfaces that gently slope north-eastward towards Lake Chad.

Between 1992 and 1997, the lowest inflow through the Marma Channel was 75 million cubic metres, while the highest inflow was 240 million cubic metres. In a very

wet year the maximum amount of water lost in the channel and the lake through evaporation is 83 million cubic metres, leaving a balance of 157 million cubic metres. The average depth of water in the Marma Channel is 2.5 meters, while the deepest point in Nguru Lake is 7 meters at the peak of floods in a very wet year.

In average years about 60% of the water in the Lake and in the channel is retained through out the year.

The soils of the site and its surroundings are weakly developed halomorphic soils of alluvial origin. They are relatively deep (up to 1.5m), hydromorphic, and possess high water retention capacity (Kolawale, 1991).

Conductivity measurement to determine water quality along the Nguru Lake indicated relatively low but increasing conductivity? In certain locations along the channel it was consistently high (up to 690 microns) may be as a result of intensive application of chemical fertilizers. The mean pH value for the site is 6.5

The site itself ia about 581 km2 in area, but it's catchment is 700 km2, excluding the upstream origins.

Like in most parts of Nigeria, the climate is characterised by distinct wet and dry seasons, and it is mainly controlled by the cyclical migration of the Inter-tropical Convergence Zone (ITCZ). Rainfall in the area, which averages 500mm per annum , starts in most years in May and extends to September or October, with a long break of up to a month between the first and second rain. Drought, however, has been the major cause of designation in the wetlands. Records show that rainfall has been below average for the last two decades, (Hollis met-al, 1993), although it seems to be picking up in the last two years.

Temperatures in the area vary with the time of the year, usually reaching a maximum of about 45^0C between April and May, and a minimum of 190^C during the harmattan season (November to February).

Relative humidity is quite high during the rainy season, but usually very low during the dry season, and the evapotransporation rate is very high.

9. Hydrological values

The floods associated with this wetlands have been demonstrated, through the monitoring of piezometers, to play critical roles in the recharge of ground water in the area. The communities that form a string of settlements along the channel and the lake are dependent on this ground water. The same floods also supply nutrients to fadama farms through the annual deposition of alluvium. The aquatic vegetation also improves the quality of the water for raw consumption by detoxifying it.

16. **Ecological Features**

About seventy percent of the site remain wet throughout the year. As a result of this the vegetation is dominated by a mat of Echinochloa, Nymphae, Limnophyton and Typha species. The Typha is an invasive whose alarming dominance has been growing in the last decade.

Larger plants including Doum palm (Hyphaene thebaic), Tamarinds (Tamarindus indica) also obtain on intervening uplands and the edges of the site. Other significant introduced/cultivated large species are the mango and guava, which obtain in large numbers in orchards bordering the site.

17 **Note worthy flora**

The mat of Echinochloa, Nymphae and Ceretophyllum, which provides feeding grounds for varieties of waterfowls, is significant. Sedge grass, whose rhizome is exploited commercially, is growing in importance. Wild rice, which used to be an important source of wild fowl during lean years, is threatened and therefore important.

10. Noteworthy fauna

The diverse birds life found in the site are the main noteworthy fauna. These includes, in January, over twenty thousand Garganey (*Anas querquedula*), a Palaearctic duck which uses the area as a wintering site. There are other Palearctic water birds such as the Northern Pintail (*Anas acuta*) and Shoveler (*Anas clypeata*) which are occasionally found in the site, though in smaller numbers. The site is also home to a species of Tilapia, locally known as disc , which are believed to be endemic.

11. Social and Cultural values

The site is significant for educational research, having been the focus so far of two completed PhDs, two ongoing PhDs, ten completed MSC. Dissertations and the study site for field courses in two tertiary institutions. It is also the focus of eco-tourism development efforts by institutions and communities. Both values are being tapped sustainably. Other values of the site, which used to be tapped quite sustainably but are now tending towards non-sustainability due to management problems, include grazing, cultivation and fishing. All the communities in the area depend directly or indirectly on the wetland for their water supply. This had so far been exploited sustainably even though with spark points emerging now.

12. Land Tenure /Ownership

The land tenure in the area is an admixture of customary and institutional holding. All land belongs to resident communities, but each component is under the control of families, with this control depending on historical annexation and the approval of the community leader. The Land Law, however, has provisions to enable government to dispossess families or individuals of such land if it is needed for public use, as in theory all land belongs to the Federal Government. Similar tenural arrangements apply to fishing rights in water bodies also.

As far as the ownership of the wetland site is concerned, communities have a sense of ownership over fishing rights in specific portions of the water body, while some other portions are common fishing property. The water itself as resource for potting or industrial use is common property. On the flood-plains families and individuals own farming rights over some parcels after floods have receded or if the plots are not flooded.

13. Current Land-use

There are over 200,000 people living in the immediate vicinity of the site, 90,000 of whom are in Nguru town, while the rest are in villages forming strings along the site.

Most of the rural people are farmers, who double as livestock keepers, and some times fish as well. Most of the people in Nguru also fall into this category. The edges of the wetland are irrigated in both the dry and the rainy season for vegetables and rice, respectively. The rural communities use the water as potable water, while large number of livestock are watered especially during the dry season. There is a State Forest Reserve at the north-eastern edge of the site. A lot of fuel-wood is harvested from here illegally, and from the site as well. The site is fished through out the year. For most of the people the site is the source of their livelihood.

The surrounding uplands are grazed by livestock belonging to the same communities, and are also cultivated for millet and sorghum. Whenever the upland farms and range-lands fail due to climatic downturns it results in the exertion of more subsistence pressure on the site.

14. Adverse factors affecting the ecological character of the site:

The operation of upstream dams, although quite regularised, determines the annual flooding of this wetland. In the event that a series of dry years were to occur, the floods might be controlled in order to maximise the amount of water for human consumption.

The presence and spread of Typha grass, an invasive species, is a major problem, as it is taking over potential flood rice and cassava fields, as well as blocking river channels, and undermining fisheries.

15. Conservation measures taken:

Apart from an Open-Area-Protection status accorded by Yobe and Jigawa Wildlife Departments to the site, the site is not gazetted. These two Departments have their guards posted to police the area, but with little effectiveness. The concerned States and Local Governments also have Edicts and Bye-laws for controlling the mesh sizes of fishing nets, but this is not well enforced. There is one gazetted state forest reserve bordering the site to the north-east (Dumsai), and another one bordering it to the south-east (Adiani).

16. Conservation measures proposed but are not yet implemented:

A proposed guideline on the wise use of the site's resources and the management of nearby protected areas has been developed by HNWCP in collaborations with Government institutions in the area, and officially accepted by them as a working document.

Also the Jigawa State Government has started working on how best to exploit the eco-tourism potential of the site.

17. Current Scientific Research and Facilities:

The IUCN-Hadejia Nguru Wetlands Conservation Project completed a biodiversity survey of the site and other nearby wetlands in 1997. The Project also provides a guest house, vehicles, boat, and library facilities for research on the site and on nearby wetlands.

18. Current Conservation Education

The IUCN-Hadejia Nguru Wetlands Conservation Project operates an Information Center which is open to students, researchers and tourists in search of information on the site and on the other wetlands in the area . The Project also has developed an instructional material for use in nearby secondary schools for teaching courses on wetlands and has trained concerned teachers on the use of this material. The Project also hosts conservation clubs from nearby post primary institutions. The site is also regularly visited by students from all levels of educational institutions for their field course

19. Current Recreation and Tourism:

There is a thriving community-operated eco-tourism project based on the site (Dabar Magini). It was catalysed by HNWCP, and it is based on boat rides. This attracts visitors from all over Nigeria, especially the expatriate population. About 500 people visited the site last year. It is an all-year round event which peaks up with festivities (Christmas & Sallah).

The Government of Jigawa State is planning to invest in the development of eco-tourism at the site and in other nearby wetlands in the near future.

20. Jurisdiction:

(a) Jigawa and Yobe States share territorial jurisdiction over the site.

(b) The Wildlife Departments of Jigawa and Yobe States are the ones with functional jurisdiction for conservation purposes.

(c) Nguru Local Gocernment Council in Yobe State, the Birniwa and Guri Local Government Councils in Jigawa State, collect fish revenue from the site.

4. Management Authority:

Department of Wildlife Conservation of Jigawa State, Jigawa State Environmental Protection Authority, and Yobe State Wildlife Department in the Ministry of Animal and Forest Resources are the bodies responsible for the direct local conservation and management of the wetland.

Nguru Local Government Council (Yobe State), Birniwa and Guri Local Government Councils (Jigawa State) are involved in regulating fishing gears and collection of revenue.

5. References:

There is no specific report on the site. Below, however, are some general publication on the Hadejia Nguru Wetlands, which encompasses the site, all of which were produced by IUCN-HNWCP,

(a) Water Management Options for the Hadejia-Jam'are-Yobe River Basin (1999).
(b) Biodiversity of the Hadejia Nguru Wetlands: Report of a Survey (1997).
(c) Pastoralists, Grazing Reserves & Stock Routes in the Hadejia Nguru Wetlands (1999).
(d) Carrying Capacity of the Hadejia Nguru Wetlands (1997).
(e) Guidelines for Wise Use of Hadejia Nguru Wetlands (1998).

(f) The Dynamics of Livelihood Systems and the Resources Base in the Hadejia Nguru Wetlands (1999).
(g) Environment, Economy and Sustainable Development of a Sahelian Flood-plan Wetland (Adam & Hollis, 1993).

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Hollis, G.E., Penson, S.J. Thompson, J.R. & Sule, A.R. (G.E. Adams, W.M. and Aminu-Kano, M. (eds) The 1993) ''Hydrology of River Basin.'' In Hollis, G.E. Adams, W.M. and Aminu-Kano, M (eds) The Hadejia Nguru Wetlands: Environment, Economy and Sustainable Development of a Sahelian Flood-plain Wetlands. IUCN, Gland, 19-39.

Jimoh, M.A. (1989) Fuelwood and Fishery Activities in the Hadejia Nguru Wetlands. Report to HNWCP, Nigeria.

Kimmage, K. and Adams, W.M. (1992), ''Wetland Agriculture in River Basin Development in the Hadejia-Jam'are Valley, Nigeria.'' Geographical Journal, 158, 1-12.

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