

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

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Designation date

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Site Reference Number

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2. Date this sheet was completed/updated:

November 2007

3. Country:

Nigeria

4. Name of the Ramsar site:

Dagona Sanctuary Lake

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 (e.g. a JPEG or ArcView image) .

b) Describe briefly the type of boundary delineation applied:

The boundary follows the most dense vegetation surrounding the lake as seen on the landsat image (bands 3,4,2)

This lake is a natural, seasonally flooded ox-bow lake, with a surface area that oscillates between 15 ha in the dry season and 150 ha following replenishment by annual flood (Adams, 1993)

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

12°48'N 10°44'E (Latitude 12,81 and Longitude 10,74 in decimal degrees)

9. General location:

The Dagona Waterfowl Sanctuary is an ox-bow lake in the section of the Hadejia-Jamaare River floodplain within the 938 km² Bade-Nguru Wetland Sector (or the Gorgoram-Zurguma Baderi Forest Reserve) of the Chad Basin National Park, in northeastern Nigeria. Its surface area bestrides the Jakusko and Bade Local Government Areas of Yobe State. It is located ESE of Nguru and lies 6km off the Nguru – Gashua Road, and approximately 20 km north of Gorgoram, all in Yobe State. It is in the Sudano-Sahelian ecological zone.

Yobe State has a population of 2,321,591(2007) and a land area of 47153 km². Damaturu (11°45'N, 11°52'E), the state capital has a 2007 population of 275,966.

It is part of the Hadejia-Nguru Wetlands, in that sector bounded by an imaginary parallelogram, the apexes of which are occupied by the towns of Hadejia (population: 111000, Jigawa state) and Katagum (population approx. 50000, Bauchi State) in the south, and Nguru (Yobe, approx. 60000) and Gashua (Yobe, approx. 40000) in the north. Gorgoram (Yobe, approx. 10000) is in the centre.

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

340 metres a.s.l

11. Area: (in hectares)

344.4 hectares

12. General overview of the site:

The Dagona Waterfowl Sanctuary is a large, seasonally flooded ox-bow lake in the northwestern part of the huge floodplain and wetlands created by the anastomosing distributaries of the R. Hadejia and R. Jamaare.

The Waterfowl Sanctuary is one of the most important sites in the Hadejia-Nguru Wetlands for wintering Palaearctic, and inter-African migrant water birds as well as some indigenous species. It was declared a 'Site of Special Conservation Interest' (SSCI) by Prince Philip, Duke of Edinburgh, during his visit as the President of World Wildlife Fund in February 1989, when he officially dedicated and opened the Sanctuary for public patronage. The birds include herons, egrets, shank, geese, stork, crane and pelicans. The lake also supports a wide range of fish species, and is an important source of drinking water for local cattle. The local human communities have planted *Parkia clappertoniana*, *Khaya senegalensis* and *Acacia senegalensis* around the lake.

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 1:

Dagona oxbow lake is a particularly good representative example of a natural wetland, characteristic of the Sudano-Sahel biogeographical region. It is located within a floodplain that contains the diverse flora and fauna of Sudano-Saharan biome in a limited location. It supports a significant number of Palaearctic and Inter-African migrant bird species. The area also contains the *Mitragyna* ground water woodland.

Criterion 3:

Dagona Waterfowl Sanctuary is a distal part of a globally acknowledged biodiversity hotspot, the Hadejia-Nguru Wetlands. The Sanctuary supports a large number of bird species (> 25). It is also reported that a number of wild animal species such as the gazelle (*Gazella sp.*), duiker (*Cephalophus sp.*), jackal (*Canis sp.*) and hyena (*Crocuta crocuta*) persist in the surrounding Gorgoram-Zurguma Baderi Forest Reserve.

The Sanctuary supports the threatened Black-crowned crane (*Balearica pavonina*) (IUCN, 2006), which was once emblematic of the wetland, but is now believed to have disappeared (Blench, 2004, p39).

Criterion 4:

Significant numbers of Palaearctic and inter-African migrant bird species winter, breed and / or reside in the Sanctuary. These include the Grey heron (*Ardea cinerea*, RB**, PM), Eurasian Bittern (*Botaurus stellaris*, PM); Spur winged geese (*Plectropterus gambensis*, RB), Purple heron (*Ardea purpurea*, PM), and Little Egret (*Egretta garzetta*, RB, PM). The site provided refuge during adverse conditions at home range and/or is important for these species at critical points in their life cycles (Fishpool and Evans 2001).

In one recent year, the site had supported over 20 000 water birds. The table below shows the results of some surveys.

January Bird Survey Records of Dagona Waterfowl Sanctuary 1997-2001

Year	1997	1998	1999	2000	2001
No of Waterfowls	881	5916	11495	1948	39587

Source: Hadejia-Nguru Wetlands Conservation Project (2001)

**RB – resident breeder

PM – Palaearctic migrant

15. Biogeography

a) biogeographic region:

Sudano-Sahel

b) biogeographic regionalisation scheme (include reference citation):

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 Dagona Waterfowl Sanctuary is a large, seasonally flooded ox-bow lake in the northwestern part of the huge floodplain and wetlands created by the anastomosing distributaries of the R. Hadejia and R. Jamaare.

Permeable sedimentary rocks of the Chad formation underlie the site, but a film of impervious layer has been formed at the bottom of the water body through successive years of deposition of argillaceous matter. This has significantly impeded percolation. A monotonous low-lying plain that gently slopes northeastwards towards Lake Chad characterizes the relief around the site. River flow is highly seasonal and varies considerably depending on magnitude of annual rainfall, and degree of river regulation at upstream dams in Kano State. The river regime in the area has been affected by river regulation such that peak discharge in the wetland is now in September-October when banks overflow and the area is inundated. Hitherto, peak flow was between late August and September.

The climate is the Koppen's A_{w2} Tropical Wet and Dry or Sudan type climate, with two distinct seasons, a short (May-September) wet season during which period, more than 95% of the annual rainfall occurs, and a longer (October-April) dry season. In some years, some rain may fall in October and April. Mean annual rainfall is 600mm with a unimodal distribution during the rainy season. The peak of the season is between July and August. Rainfall is usually stormy and with high intensity. Dry, dusty, cool North Easterlies (Harmattan winds) are prevalent between November and March. Mean minimum temperature (12⁰C) is in January while the hottest period is in April during the inter-season period with a mean maximum temperature of 40⁰C.

17. Physical features of the catchment area:

The Dagona Wildfowl Sanctuary is an ox-bow lake on one of the distributaries of the Hadejia River in the 938 km² Bade-Nguru Wetland Sector (or the Gorgoram-Zurguma Baderi Forest Reserve) of the Chad Basin National Park, in northeastern Nigeria. The headwaters of the river are in the Jos Plateau.

The area is in the Sudano-Sahelian ecological zone. The nomenclature, Hadejia-Nguru wetlands, should really apply only to the western sector of the vast wetlands. Dagona belongs in the distal northwestern part.

The area lies on sedimentary rocks known as the Chad Formation. The topography exhibits a very low gradient, wide floodplains, numerous oxbow lakes and poorly defined channels. The Chad Formation consists mainly of clays with some sand and gravel horizons, but generally overlain by thick (>100m) sandy drift. The soils incorporate accumulations of organic matter and alluvial clays. Such soils are known locally as 'firki'. The clays promote saturation conditions during the rainy season and the development of the wetlands.

The climate here is characterized by two distinct seasons, the wet and dry seasons. Rainfall is between 500-600mm in many parts of the Hadejia-Nguru Wetlands. Average rainfall in Nguru is about 513mm a year with the rainy season extending over four months (June to September). Temperature is between a mean minimum of 12⁰C during December and January to a mean maximum of 40⁰C in April.

The general vegetation is characteristic of the Sudan Savanna – sparse shrubs and isolated tall trees mostly *Acacia*. Three broad vegetation types are identified; the scrub savanna, which includes the upland farmland and *Acacia* woodlands; the vegetation on the 'tudu' (elevated) lands and sandy ridges, which with exception of scattered, ephemeral ponds are never inundated; and the seasonally flooded marshes and fadama in which the tree *Acacia nilotica* and Doum palm *Hyphaene thebaica* and *Oryza spp* are common. The favourable moisture regime due to high ground water table supports *Mitragyna* ground water woodland and seasonally flooded grassland. The Bade-Nguru Wetland Sector of the Chad Basin National Park used to be annually extensively flooded, but the magnitude and extent of flooding has become severely reduced due to a combination of river regulation and the long-term drought (1970-1990s).

18. Hydrological values:

Studies conducted in the Hadejia-Nguru wetland indicate that there is substantial annual recharge to shallow ground water within the Bade-Nguru Wetland Sector. As shown by Hollis et al. (1993), ground water recharge in the area comes mainly from the inundation of the floodplain and not from the river channels itself. Communities within the floodplains depend on shallow ground water for domestic use and irrigation activities. Also, soils in the wetlands are annually enriched through deposition of organic matter and silt during flooding.

The Dagona oxbow lake is an important source of drinking water for cattle and

wildlife.

Potential evaporation in the area is 2700 mm annually. The water balance is such that soil moisture recharge occurs only during August to October. Water losses are due largely to evaporation, consumption by cattle and birds, and infiltration into the upper zone aquifer of the Lake Chad basin.

19. Wetland Types

a) presence:

It is an inland wetland that falls under categories N and P in Ramsar Classification of Wetland Types (intermittent fresh water lakes as well as intermittent streams)

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

20. General ecological features:

In conformity with other Sudano-Sahelian wetlands, the vegetation is mainly graminoid. Within the vicinity, there are shrubs including *Guiera senegalensis*, *Piliostigma sp.*, trees such as the baobab (*Adansonia digitata*), and *Balanites sp.*, and high soil moisture supported vegetation such as *Mitragyna* swamp and Doum palms, *Hyphaene thebaica*. The local villagers have planted *Parkia clappertonia*, *Khaya senegalensis* and *Acacia senegalensis* around the lake.

The Sanctuary is very important for water birds, particularly Palaearctic, and other inter-African and native species that winter, breed or reside in the area during specific times of the year. The water birds include species of global conservation value such as the Black-crowned crane - *Balearica pavonina* (resident). The other birds include herons - Grey heron (*Ardea cinerea*), Goliath heron (*A. goliath*), Black headed Heron (*A. melanocephala*), and Purple heron (*Ardea purpurea*); egrets - Little Egret (*Egretta garzetta*), and Great White Egret (*E. alba*); Spotted redshank (*Tringa erythropus*), geese, stork, crane and pelicans. Demey et al. (2003) reported a relatively high concentration of an uncommon resident, the Lesser Jacana (*Microparra capensis*). 100 of the species were counted and there were 60 at a single site.

The lake supports a wide range of fish species, and is an important source of drinking water for local cattle. It also supports a wide range of other wildlife e.g. *Gazella rufifrons* (red fronted gazelle), duiker, jackals hyena, mongoose (*Atilax paludinosus*) and civet (*Civettictis civetta*).

21. Noteworthy flora:

The vegetation is characteristic of the Sudan savanna- sparse shrubs and isolated trees mostly of the genus *Acacia*. However, around the lake, other plants particularly *Mitragyna inermis*, Doum palm *Hyphaene thebaica*, *Borassus sp.*, *Anogeissus leiocarpus* and *Combretum sp.*, thrive very luxuriantly due to the favourable soil moisture condition during most part of the year

22. Noteworthy fauna:

Waterfowls are the most important fauna in the Sanctuary. These include Grey White pelican (*Pelecanus onocrotalus*), Grey pelican (*Pelecanus rufescens*), Eurasian Bittern (*Botaurus stellaris*) - a Palearctic migrant, Little Bittern (*Ixobrychus minutus*), Spotted red shank (*Tringa erythropus*), Spur winged geese (*Plectropterus gambensis*) – a resident breeder, Knob-billed goose (*Sarkidiornis melanotos*), Tree duck, African Grey Hornbill (*Tockus nasutus*), Ground hornbill (*Bucorvus abyssinicus*), White faced whistling duck (*Dendrocygna viduata*), Garganey (*Anas querquedula*), Grey heron (*Ardea cinerea*) – a resident breeder/Palearctic migrant, Goliath heron (*A. goliath*) – a resident, Black-headed Heron (*A. melanocephala*) - an African migrant/breeder that migrates to and from Nigeria to breed in Nigeria, Purple heron (*Ardea purpurea*) – a Palearctic migrant, Yellow billed stork (*Mycteria ibis*), Marabou stork (*Leptoptilos crumeniferus*) – a resident breeder, White necked stork (*Ciconia episcopus*), Little Egret (*Egretta garzetta*) – a resident breeder/Palearctic migrant, Great White Egret (*E. alba*), Spoon bill (*Platalea alba*) Sacred ibis (*Threskiornis aethiopicus*), Open bill stork (*Anastomus lamelligerus*).

Wild animals that are found in the surrounding Forest Reserve include Red fronted gazelle, Duikers, Jackals, Hyena, Mongoose, and Civet (Blench, 2004).

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:

Grazing and collection of wild resources, particularly fish and waterfowl, is very common though the Sanctuary is under protection as part of the Chad Basin National Park. The National Park continues developing the site for tourism.

The Hadejia-Nguru Wetlands plays a major role in the regional economy of northern Nigeria. The wetlands support irrigated farming, flood and drawdown farming, fisheries and animal husbandry (Barbier et al., 1991).

Potash is mined in the area around Dagona Waterfowl Sanctuary. It is used as food ingredient, a stomach medicine and an appetite stimulus for livestock. It is traded locally and to southern Nigeria. Products of the Doum palm (*Hyphaene thebaica*) are widely used and traded in the wetlands and provide a source of food, materials and income. The Dried palm fronds are used to make mats, baskets and roofing material. Wild fruits, food and leaves are collected from the wetlands. They come into season during the rainy season and assume enhanced relevance at such a time when food stores are at their

lowest. A large amount of firewood is harvested, particularly during the dry season (Rowley and Winter, 1998).

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:

The site, through grazing, farming and harvesting of wild resources supports community livelihood and if community activities are not regulated, the ecological character of the wetland may be impaired. In reality, all uncontrolled human use in the Sanctuary is banned. The Sanctuary is theoretically under multiple use management, i.e. the local people could make use of the resources under licensed permit. However in practice, grazing, fishing, and hunting of waterfowl continue unabated and without recourse to licensing. These are activities that were in existence before Government came in with the idea of regulation, and the people are yet to fully buy-in into the idea.

24. Land tenure/ownership:

a) within the Ramsar site:

The land tenure in the area (including the lake) was a mixture of customary and institutional holding. All lands belonged to resident communities, under the control of the Emir or the Native Authority (Emirate Council), but each component was under the control of families e.g Sarkin Ruwa – Chief in charge of the lake and fishing, who declares the fishing season open or closed, regulated gears, etc), with this control depending on historical annexation and approval of the community leader. However, current Federal Laws have vested ownership of all lands in the nation on the Federal Government. In reality, *de jure* ownership is the government's, but until formally expropriated for actual use, it belongs to the local community.

b) in the surrounding area:

The surrounding area fully belongs to the Federal Government as vested in the Chad Basin National Park.

25. Current land (including water) use:

a) within the Ramsar site:

The site is fished throughout the year. Agricultural activities include grazing in meadows surrounding the lake and watering of cattle. Platforms have been erected by the National Park for bird viewing. There are also nature trails within the surrounding Forest Reserve.

b) in the surroundings/catchment::

Tomatoes, Pepper, Onions, Carrots are cultivated in the surrounding area. Most of the rural people are farmers, who double as livestock keepers, and fisher-folk. The rural

communities use the water for domestic purposes including potable water, while large numbers of livestock are watered at the site, especially during the dry season. A lot of illegal fuel wood harvesting is taking place in the Reserve. Dagona village is nearby.

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:

Illegal grazing, fuel wood collection and hunting take place on the wetland. Guinea fowl egg-collectors invade the wetland during the species' breeding season.

Collection of wild resources, mainly fish and waterfowl continue unabated.

b) in the surrounding area:

The operation of upstream dams determines the magnitude of annual replenishment and extent of the Lake, and thus the number of waterfowl it can host. In the event that a series of dry years were to occur, as it was within the last 30 years, replenishment will be controlled in order to maximize benefits of river regulation (which do not necessarily include sustainability of downstream wetlands). This is a continuing threat to the integrity of the wetland since the Government (Federal and State) is interested in further development of extensive irrigation schemes upstream. These schemes have already changed the natural flood regime with a resultant reduction of flood peak in the wet season and release of damaging flood surges during the dry season. It is believed that the reduction in flood replenishment and the consequent desiccation of the surrounding wetland has caused a decrease in fish species diversity (Ita, 1993) and a drastic decline in the population of the larger species such as *Lates*, *Gymnarchus*, *Heterotis* and *Heterobranchus*.

Other threats are through the frustration of tree regeneration efforts and the compaction of soils by the increased presence of pastoralists and their animals.

Though part of a National Park, grazing, fishing and collection of wild resource, particularly Doum Palm fronds and fuel wood continue unabated and illegally.

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.

The site is a 'Site of Special Conservation Interest' and a component part of the Chad Basin National Park under the IUCN Category II.

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?

Yes.

The management plan is that developed for the National Park management system in Nigeria (see Nigeria Parks, 1996, National Parks Decree No 36 1991).

Free access to wild resources – wild animals, fish, birds is forbidden but this stipulation is widely disregarded. Under multiple use management, the site is not available for hunting, grazing or fishing. Guards were even on patrol at the site at one time. But with low remuneration, integrity was compromised. Fishing continued unabated in the Sanctuary (Adams, 1993)

The Park is intended to be a tourist haven, with viewing towers and good accommodation facilities. According to a report by Helmut Resch and Babs Coleman (2005) (Report of an annual week-long biking vacation to the Hadejia Nguru wetlands, Yobe State...), 'Chad Basin National Park runs a Camp, which has very good accommodation but is hardly visited and months go by before some tourists find their way there'.

d) Describe any other current management practices:

There are regular public enlightenment campaigns and routine and special anti-poaching patrols

28. Conservation measures proposed but not yet implemented:

There just needs to be a more stringent enforcement of existing laws. But as noted by Adams (1993), it is very difficult to establish Strict Reserves and Sanctuaries if there are existing rights to resources, which have to be extinguished. If such rights can be extinguished '*de jure*', they are hard to extinguish '*de facto*' more so where there is poverty. Only intense policing and severe penalties, difficult propositions under the current realities, could force local people to observe rules preventing them from using available resources.

29. Current scientific research and facilities:

The Hadejia-Nguru Wetlands Conservation Project continues to support studies on the site.

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

The World Migratory Bird Day (WMBD) was celebrated at the Dagona Waterfowl Sanctuary on May 10, 2006. Wings over Wetlands (WoW) organized an educational awareness programme tagged 'Hadejia-Nguru Wetlands, Nigeria: Migratory birds'. There were 500 people in attendance and these included members of the Conservation Club (a students' club) from 3 (three) schools within the Hadejia Nguru Wetlands, teachers, Local Government officials, Community-Based Organization representatives, and Chad Basin National Park staff. Ms. Anu Akinola from the NCF gave a presentation. The programme helped highlight the importance of the wetlands to schools and members of the local communities. The presentation was translated into the local language. There

was a post-presentation Q&A session, and gifts were distributed at the end of the programme.

31. Current recreation and tourism:

‘Chad Basin National Park runs a Camp, which has very good accommodation but is hardly visited and months go by before some tourists find their way there’.
The Sanctuary provides an excellent site for recreation e.g. bird watching.

32. Jurisdiction:

National Park Service, Abuja
Chad Basin National Park, International Airport Road, Maiduguri, Borno State
Jakusko Local Government Area, Gorgoram, Yobe State
Bade Local Government Area, Gashua, Yobe State
Yobe State Government, Dutse

33. Management authority:

Chad Basin National Park, Airport Road, Maiduguri

i. Mr Zanna Alhaji LAWAN

Ag. Director

Chad Basin National Park

International Airport Road

Maiduguri

ii. Mr. Abdullahi ABDULHAMEED

Head Department of Ecotourism

Chad Basin National Park

International Airport Road

Maiduguri

Ministry of Environment, Dutse, Yobe State

34. Bibliographical references:

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- Winter Bird Survey** in the Hadejia-Nguru Wetland (2000, 2001), **HNWCP** Reports

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