

## Information Sheet on Ramsar Wetlands

1. Date this sheet was completed/updated: 24 September 2000

2. Country: Mauritania

3. Name of wetland: Chat Tboul

4. Geographical coordinates:

16° 30' - 16° 37' North latitude

16° 22' - 16° 30' West longitude

5. Altitude: 0–2 metres above sea level with dunes between 0 and 6 metres in elevation

6. Area: 15,500 hectares (46 per cent of the area is marine or coastal, 38 per cent is continental wetlands and 16 per cent is shifting dunes and dunes with vegetation)

7. Overview: This wetland is the former mouth of the Senegal River on very salty clays (*sebkhas*) up stream from an opening in the coastal dune. It is an environment with lakes and temporary and permanent pools with brackish to hyper saline water. To the south of this opening, there are flood plains with backwaters, pools bordered on the west by live dunes and dunes with Sahelian vegetation. The marine area is made up of tidal lagoons, inter-tidal marshes, and brackish and freshwater backwaters.

8. Wetland type:

Marine/coastal: E, F, G, H, I (seasonal connection)

Continental: Q, R, Sp, Ss

F – Estuarine waters, permanent water of estuaries and estuarine systems of deltas

Q – Permanent saline/brackish/alkaline lakes

G – Intertidal mud, sand or salt flats

R – Seasonal/intermittent saline/brackish/alkaline lakes and flats

Sp – Permanent saline/brackish/alkaline marshes/pools

E – Sand, shingle or pebble shores; includes sand bars, spits and sandy islets

H – Intertidal marshes; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes

Ss – Seasonal/intermittent saline/brackish/alkaline marshes/pools

I – Intertidal forested wetlands; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests

9. Ramsar criteria: 1, 2, 3, 6, 8

Which site best characterizes this site: 2, 6, 1, 8

10. Map of site included? Please tick yes -or- no

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

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12. Justification of the criteria selected under point 9, on previous page:

Criterion 1: Chat Tboul forms the only coastal lagoon in Mauritania south of the Banc d'Arguin, at the former mouth of the Senegal River (the mouth of the Maringouins on older maps). It is formed by plains and deltaic deposits (clays and silt) surrounded by recent sand dunes. The site is characterized by a 1.2-kilometre-wide opening in the coastal dune. Strong surges associated with high tides often (several times per year) break over the barrier beach. In addition, underground seepage continuously replenishes the lagoon system, which is thus continually supplied with water.

Criterion 2: Chat Tboul is the most important West African sub-Saharan site for the *grèbe à cou noir* (*Podiceps nigricollis*). Up to 300 specimens are recorded here each year in January. Populations of *outardes arabes* (*Ardeotis arabs*) are found at Chat Tboul because of poaching in the surrounding area. There is a hunting camp several kilometres from the site. Juvenile *Phoeniconaias minor* have often been observed here since 1998, confirming probable nesting of this species near Chat Tboul, which is the only colony in West Africa. At the site, there are vestiges of floodplain woodlands of *Acacia nilotica* and *Tamarix senegalensis*, areas of *Sporobolus robustus* and *Juncus rigidus* and small populations of *Vetivera nigriflora*. Furthermore, it is one of the few areas in the delta where vigorous regeneration of *gonakier* has been observed since 1994. Two types of mangroves *Avicennia germinans*, growing to 3 to 4 metres have established, at least since 1960.

Criterion 3: Chat Tboul is the habitat for an interstitial filiform dust mite for which Chat Tboul is the fifth area discovered in the world. A new species of *Forcipula* has been identified, for which Chat Tboul is one of fewer than 10 sites known in the world.

Criterion 6: Chat Tboul is the habitat for large concentrations (more than 1 per cent of the world population) of specific groups of birds, *Larus genei* (maximum 800), *Pelecanus onocrotalus* (maximum 1500), *Phoenicopterus ruber* (maximum 2300) and *Recurvirostra avosetta* (maximum 5600). Other concentrations that are significant in relation to the area are the terns *Chlidonias niger* (5000), *Hydroprogne tsegrava* (300) and *Sterna sandvicensis* (1200).

Criterion 8: Chat Tboul plays a key role as a feeding area for important economic species (Mugilidae and shrimp). Lac des Mulets is a breeding and feeding area for Mugilidae (juveniles develop in the brackish ponds).

### 13. General location:

In the wilaya of the Trarza, department of Keur-Masséne, on the edge of the Atlantic Ocean, 175 kilometres south of Nouakchott, 70 kilometres west of Rosso and about 15 kilometres west of the Senegal River.

### 14. Physical features:

There are plains of clays and silt deltaic deposits from the Nouakchottian, surrounded by recent sand dunes. There is a fossil or sub fossil oyster biostrome on the southern edge of Grand Lac. The site is flooded several times a year by high ocean tides. The ground water is hyper saline (approximately 1.5 times the salinity of the ocean), and the water table is at less than 2 metres. Before the construction of the Diama dam (1986) and the dike on the right shore (1991), freshwater came from the flooding of the river (September–October). Since 1991, however, apart from a small contribution of runoff from a groundwater lens under the coastal dune, most of the fresh water is from the flooding of the river in the Diawling National Park. This contribution through the Hassi Baba backwater and the Toumbos South pools is annual. The Chat Tboul water basin, the floodable surface of which is estimated to be about 6000 hectares, has two permanent lakes: (a) Lac des Mulets, located about 300 metres from the ocean, has very little fluctuation in water level (about -0.6 metres IGN) and salinity ( $\approx$  45 grams per litre) in spite of the heavy evaporation. It is probably fed by the ocean, primarily underground.

(b) Grand Lac (an area of at least 200 hectares) has large fluctuations in depth (from -1.80 to -0.9 metres IGN) and salinity (less than 5 to more than 120 grams per litre) depending on flooding (in October), evaporation and contributions from the ocean. The temporary lagoons between Grand Lac and Lac des Mulets are supplied by marine seepage under the dune barrier at times of high tides and at the base of the dunes from freshwater runoff from the water table (forming saline streams) and by rain water. These pools have a large range of salinity (from 0 to more than 100 grams per litre). The flood plains are made up of mostly very salty clay (*sebkhas*) in the deeper strata. Flood water reaches Grand Lac from the south through the Toumbos South ponds and the Hassi Baba backwater, where the difference in elevation is about 0.3 metres IGN separates it from Lake Tichilitt in the Diawling basin. Replenishment (September–October) of the Toumbos South pools and flooding of the nearby floodplain depend on the extent of the flooding. The Toumbos pools first trap freshwater, then brackish water. They then gradually dry up over several months (towards February).

The climate is Sahelian, moderated by the proximity to the ocean, with a rainy season from August to September, a dry cold season from October to February and a warm dry season from March to July. Average annual rainfall is around 200 millimetres, and evaporation is estimated to be more than 1500 millimetres. The average temperature is about 26° C. The climate is affected by secondary precipitation (dew) and hot, dry

winds (harmattan) in the hot season.

#### 15. Hydrological values:

Chat Tboul has a large range of physical-chemical variables (concentrations of ions, temperature, pH, dissolved oxygen, turbidity, traces of *pélite* and organic material), which make it an outstanding site for the study of hydro-geology and geo-chemical processes. This variability is the basis for the ecological importance and the high biodiversity of the area. Restoration of the water regime in the Diawling National Park has made it possible to supply annually the pools of Chat Tboul with fresh water. As a result, it has become the most important of the sub-Saharan West African sites for the *grèbe à cou noir* (*Podiceps nigricollis*) (up to 300 specimens). During years when the flooding reaches Chat Tboul, large populations of international importance of several species (more than 1 per cent of the world population) are regularly observed here, especially *Pelecanus onocrotalus* (maximum of 1500), *Phoenicopterus ruber* (maximum of 2300), *Larus genei* (maximum of 800) and *Recurvirostra avosetta* (maximum of 5600). For other species, large concentrations in relation to the surface are observed; for example, terns *Hydroprogne tschegrava* (300), *Sterna sandvicensis* (1200) and *Chlidonias niger* (5000). Several nesting attempts by rare species were observed in Chat Tboul in 1990: *Gelochelidon nilotica*, *Hydroprogne tschegrava* and *Larus genei*. Juvenile *Phoeniconaias minor* were recorded here in the autumn of 1998 and in September 1999, indicating probable nesting of this species near Chat Tboul (only colony in West Africa).

#### 16. Ecological features:

The plain in the northern part, around Grand Lac, which is Chat Tboul proper, resembles a *sebkha* without vegetation, except in pockets of freshwater runoff at the edge of the dune. A population of mangrove probably occupied this part of the Chat. The dunes to the north of Chat Tboul (the oldest) are covered primarily with *Acacia albida*, *A. tortilis*, *Euphorbia balsamifera* and *Salvadora persica*, with, along the edges and in hollows, occasional specimens of *Acacia nilotica*, *Adansonia digitata* and *Phoenix dactylifera*. The range of salinity found in the northern part of the area suits the groups of waterfowl present seasonally (see attached descriptions, especially Anatidae, Ciconiiformes, Pelecanidae, Phalacrocoracidae, Podicipedae, Sternidae and several forms of *Charadriis*). There are also permanent isolated populations typical of either the valley of the Senegal River (*Arvicanthus niloticus*) or of the mangroves such as crabs (*Callinectes* and *Uca*) and the *mulet* (*Liza falcipinnis*), the adults of which remain in the Lac des Mulets but also in Grand Lac whenever the salinity allows it. Larva and juveniles are found in the small brackish ponds, which makes it probable that these populations of Mugilidae reproduce in the Chat. Freshwater runoff provides water to the land birds in the Chat, allowing hundreds of *Oena capensis* to come to drink in the dry season. In the least degraded dunal areas, several *Cursorius cursor*, *Nomenius phaeopus*, *Otis arabs* and *Pterocles exustus* can still be observed. The diversity of habitats, the supply of material of land and marine origin and high productivity make this area very attractive for fauna (*Canis aureus*, *Erythrocebus patas* and *Phacocheirus aethiopicus*). At the end of the dry season, the permanent lakes along with the area of Ntiallakh are almost the only habitat for waterfowl in all of the lower delta.

The southern area, Toumbos Pools and the flood plain, is characterized in the northern part by halophytic vegetation and farther south by vestiges of woodlands of the flood plain (*Acacia nilotica*, *Tamarix senegalensis*). There are areas of *Juncus rigidus* and *Sporobolus robustus* and scattered populations of *Vetivera nigriflora*. In addition, it is one of the rare areas of the delta where strong regeneration of the *gonakier* has been observed since 1994. Two types of mangroves (*Avicennia germinans*) up to 3 to 4 metres in height has grown at least since 1960, at more than 20 kilometres north of the limit of the daily influence of the tides.

The southern dune area (the oldest) is degraded and has areas of shifting dunes, which are covered by *Acacia albida*, *A. tortilis*, *Euphorbia balsamifera* and *Salvadora persica* with, on the edge and in the hollows, isolated specimens of *Acacia nilotica*, *Adansonia digitata* and *Phoenix dactylifera*. In the least-degraded areas, there are populations of buzzards (*Pterocles exustus*) and *Cursorius cursor*. Recent dunes have very little vegetation (*Cyperus crassipes*, *Ipomoea pescaprae*, *Sporobolus spicatus*).

#### 17. Noteworthy flora:

At the site: *Ipomoea pes-caprea*, *Cyperus maritimus*

In the surrounding area: *Adansonia digitata*, *Nitraria retusa*, *Panicum turgidum*, *Tamarix senegalensis* and *Zygophyllum waterlottii*

#### 18. Noteworthy fauna:

See the annex

#### 19. Social and cultural values:

Little is known.

#### 20. Land tenure/ownership of:

At the site: Governmental. Chat Tboul is an area under the protection of the navy. There are plans to make this a nature reserve under the administration of the navy. It became a nature reserve through ministerial decree.

In the surrounding area: Governmental with protection status. The southern limit of the nature reserve borders on the northern edge of the Diawling National Park. Three kilometres to the east, there are private rice paddies.

#### 21. Current land use:

Apart from the naval guard station, the area of the lakes at Chat Tboul is uninhabited. The area of dunes is sparsely populated by several semi-sedentary Bou Houboynie families and their herds, mainly goats and sheep. Seasonal market garden farms are found several kilometres to the south near two semi-permanent camping spots with a

maximum of 300 habitants. The Sporobolus plains are exploited by women from these camps for the weaving of traditional mats. A fisherman regularly exploits Lac des Mulets. Small-scale salt extraction takes place in the ponds south of Chat Tboul. The Chat is located on the corridor for the transhumance of camel and cattle herds which come down from the dunes of the Trarza towards the plains of the delta. Sedentary and nomadic activities are compatible with maintenance of the site's biodiversity.

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

Chat Tboul is threatened by several projects.

Water quality: A project for the evacuation of waste water from the rice fields (saturated with chemical fertilizers, herbicides and persistent insecticides) throughout the delta (from Rosso up to the rice fields near the Chat) towards Chat Tboul, the lowest point in the delta. In general, intensification of farming threatens water quality of the Senegal River and, therefore, indirectly water from the Diawling National Park, which is taken from the river. Campaigns using pesticides against insects and birds are carried out in the farmland in the delta, and residue from these campaigns can end up in the Chat. In that case, the Chat, an evaporation basin without an exit, would become *ipso facto* a place for the concentration of toxic products just like it is for organic material and salt.

Fishing: With restoration of the natural functioning of the water system, through the creation of a conservation management plan for the Diawling National Park and the surrounding area, fishing will probably increase and could create significant disturbances. Because of small-scale over-exploitation of fishing resources on the northern shore, several projects seek to promote development of fishing on the southern shore, which could lead to additional disturbances. Intensive fishing of shrimp in the ponds and backwaters of the lower-delta to the west of the Diawling National Park and the capture of lobsters on the southern edge of the reserve could also expand farther north. Fishing with fine-mesh nets (20 mm), destroys a large number of juvenile fish.

Encroachment: Between 1989 and 1997, irrigated fields, primarily rice, have expanded from 7 kilometres to less than 1 kilometre from Chat Tboul. The trails to the fields provide access to the Chat with all the risks that this implies in disturbance. Other farming activities are planned for this area in spite of high soil salinity. It is, however, unlikely that irrigated farming could become sustainable in this area. In the conservation plan for the delta of the Senegal River, the Ndiader basin should be a grazing area through creation of grazing areas on the floodplain (comparable to the system of the Bell basin in the Diawling National Park) rather than for growing rice.

Tourism: Several tourist projects (hotels, camping areas) are planned for Chat Tboul. The rehabilitation of the Keur-Macène hunting camp, located less than 10 kilometres from the Chat can pose an additional threat, if hunting rather than ecotourism is emphasized. Already, unmanaged tourism from Nouakchott and Saint-Louis cause disturbances (poaching, creation of rubbish) in Chat Tboul.

23. Conservation measures taken:

No specific measures, except for regulations that apply to all of the territory (forestry code, hunting code). The existence of a naval guard station and frequent visits of research staff of the Groupe de Recherche sur les Zones Humides (GReZoH) and the Diawling National Park permit the collection of ecological data and limitation of harmful activities.

#### 24. Conservation measures proposed but not yet implemented:

A project for a nature reserve has been presented by the navy. This project is very likely to be accepted within the framework of the coastal planning currently being carried out in Mauritania. A management plan for the reserve will be implemented in phase two of the project in cooperation with the Diawling National Park, the biosphere reserve in the lower delta (a proposal is being prepared) and the GReZoH. Implementation of a management plan for the Diawling National Park since 1996 has made it possible to supply Chat Tool with fresh water. Financing has been granted by the FIBA for demarcation of the site, the setting aside of areas of regrowth of ligneous trees and conservation of small islands for the nesting of Laridae and sterns.

#### 25. Current scientific research and facilities:

Completed: Scientific studies of the fauna and flora under the project "Biodiversity of the Mauritanian Coast". Frequent monitoring of the hydrological and ecological evolution of Chat Tboul.

Underway: Programme of frequent monitoring: surveys of birds by the staff of the Diawling National Park and the GReZoH; monitoring of water by the GReZoH.

#### 26. Current conservation education:

The technical departments of the ministries dealing with the coast have visited the area during preparation of the Mauritanian Coastal Management Plan. Training for environmental education was carried out in the Diawling National Park, in which representatives from several technical agencies and local populations took part. A brochure describing Chat Tboul and its ecosystems has been prepared.

#### 27. Current recreation and tourism:

This area is envisaged by several tour operators as a site for tourism and infrastructure. As a military area, any tourism should be strongly discouraged and access should be limited to scientific studies with special authorization. The Chat is a sanctuary: At the end of the dry season, the permanent lakes of Chat Tboul are almost the only sites (along with the area of Ntiallakh farther south) for waterfowl in all of the lower Mauritanian delta. As a result, and because the areas of the lakes are relatively small, visits should be limited in order to avoid disturbance of the bird populations. Ecotourism should be concentrated south of the Diawling National Park and the surrounding area (villages among the coastal dunes to the south of Dar Salam), and hunting be limited to the areas between Keur-Macène and Rosso.

28. Jurisdiction:

Territorial: Willaya of Trarza, moughataa of Keur-Massène, arrondissement of Ndiago

Functional: Navy

29. Management authority:

Direction de la Marine Nationale  
B.P. 5120  
Nouakchott, Mauritania  
Tel.: (222) 252 076  
Fax: (222) 258 340

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## Annex 1

### Outstanding fauna

- Crustacians *Callinectes* sp., *Penaeus notialis*, *Uca* sp.
- Hexapoda *Lobidora* sp., *Forcipula* sp.
- Fish Mugilidae (*Liza falcipinnis*, *Mugil bananensis*)
- Reptiles *Agama boueti*, *Hemidactylus brooki*, *Psammophis*, *phillipisi*, *P. schokari*
- Birds see annex 2 (waterfowl), others: *Ardeotis arabs*
- Mammals

Warthogs (*Phacochoerus africanus*) are abundant, but the *singe patas* (*Erythrocebus patas*) is rare.

Relatively common species: jackal (*Canis aureus*), fox (*Fennecus zerda*, *Vulpes pallida*), wild cats (*Felis sylvestris*), hare (*Lepus capensis*) and the ratel (*Mellivora capensis*)

Small mammals: *Arvicanthus niloticus*, *Crocidura fuscomurina*, *Mastomys huberti*

Also important are the *Genetta genetta* and the probable presence of the *Caracal caracal* (two unconfirmed sightings).

## Annex 2

International surveys at Chott Boul  
Chatt Boul

		Jan.95	Jan.96	Jan.97	Jan.98	Jan.98
<i>Podiceps nigricollis</i>	Grèbe à cou noir	20	48	130	2	162
<i>Tachybaptus ruficollis</i>	Grèbe castagneux					2
<i>Pelecanus onocrotalus</i>	Pélican blanc	3	2	22	9	
<i>Phalacrocorax lucidus</i>	Grand cormoran	3				
<i>Phalacrocorax africanus</i>	Cormoran d'Afrique					2
<i>Egretta alba</i>	Grande aigrette		5	1		
<i>Egretta garzetta</i>	Aigrette garzette	5		1	2	
<i>Egretta gularis</i>	Aigrette des récifs				1	
<i>Ardea cinerea</i>	Héron cendré	10	6		1	
<i>Ciconia nigra</i>	Cigogne noire	2				
<i>Platalea leucoradia</i>	Spatule blanche		373			1
<i>Phoenicopterus ruber</i>	Flamant rose			2	715	
<i>Phoeniconaias minor</i>	Flamant nain					37
<i>Tadorna tadorna</i>	Tadorne de Belon					14
<i>Anas acuta</i>	Pilet		50			12
<i>Anas clypeata</i>	Souchet		30			647
<i>Anas quequedula</i>	Sarcelle d'été					23
<i>Aythya ferina</i>	Fuligule milouin	21	148			
<i>Pluvialis squatarola</i>	Pluvier argenté	2	3	2	4	1
<i>Charadrius hiaticula</i>	Grand gravelot	100	28	6	135	
<i>Charadrius alexandrinus</i>	Gravelot à collier		34	1		
	interrompu					
<i>Charadrius pecuarius</i>	Pluvier pâtre					1
<i>Limosa limosa</i>	Barge à queue noire		190		5	50
<i>Limosa lapponica</i>	Barge rousse	6	4		1	
<i>Numenius phaeopus</i>	Courlis corlieu			2		
<i>Tringa nebularia</i>	Chevalier aboyeur	4	31	8	6	3
<i>Tringa stagnatilis</i>	Chevalier stagnatile	1			3	
<i>Tringa totanus</i>	Chevalier gambette		2	1	4	
<i>Tringa erythropus</i>	Chevalier arlequin		29		2	
<i>Arenaria interpres</i>	Tournepierre		1			
<i>Calidris canutus</i>	Bécasseau maubèche	2				
<i>Calidris ferruginea</i>	Bécasseau cocorli	2	10	8		1
<i>Calidris alpina</i>	Bécasseau variable	52	17	41	4	
<i>Calidris minuta</i>	Bécasseau minute	41	62	328	14	
<i>Calidris alba</i>	Bécasseau sanderling	41	219	136	159	
<i>Philomachus pugnax</i>	Chevalier combattant	51		40	60	
<i>Himantopus himantopus</i>	Echasse blanche		1	44	4	
<i>Recurvirostra avosetta</i>	Avocette	8	1707	170	140	28
<i>Gelochelidon nilotica</i>	Sterne hansel	1		1	38	7
<i>Sterna caspia</i>	Sterne caspienne	14	16		25	20
<i>Sterna maxima</i>	Sterne royale					10
<i>Sterna sandvicensis</i>	Sterna caugek		15		29	66

<i>Sterna hirundo</i>	Sterne pierregarin		8			
<i>Sterna albifrons</i>	Sterne naine	2				25
<i>Chlidonias leucopterus</i>	Guifette leucoptère	1				
<i>Larus ridibundus</i>	Mouette rieuse					14
<i>Larus genei</i>	Goéland railleur			618	166	282
<i>Larus fuscus</i>	Goéland brun	27	211		2	11
<i>Pandion haliaetus</i>	Balbuzard pêcheur	3	7	4	2	2
<i>Haliaëtus vocifer</i>	Aigle pêcheur					1
<i>Circus aeruginosus</i>	Busard des roseaux		1			
<b>Total</b>		422	3258	1566	1533	1422

### Mare de Tumbos sud

		<b>Jan.95</b>	<b>Jan.96</b>
Canard souchet	<i>Anas clypeata</i>	2280	
Héron cendré	<i>Ardea cinerea</i>	36	
Busard des Roseaux	<i>Circus aeruginosus</i>	2	
Grande aigrette	<i>Egretta alba</i>	18	
Sterne Caspienne	<i>Hydroprogne tschegrava</i>	1	
Goéland brun	<i>Larus fuscus graellsii</i>		2
Autour chanteur	<i>Melierax metabates</i>	1	
Balbuzard pêcheur	<i>Pandion haliaetus</i>	2	
Pélican Blanc	<i>Pelecanus onocrotalus</i>		10
Grand Cormoran	<i>Phalacrocorax carbo lucidus</i>		13
Flamant rose	<i>Phoenicopterus ruber</i>		156
Spatule blanche	<i>Platalea leucorodia</i>		545
<b>Total</b>		60	726