

The IUCN Wetlands Programme

Wetlands Conservation Conference for Southern Africa

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T. Matiza and H.N. Chabwela



Wetlands Conservation Conference for Southern Africa

This One



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The IUCN Wetlands Programme coordinates and reinforces activities of the Union concerned with the management of wetland ecosystems. The Programme focuses upon the conservation of ecological and hydrological processes, in particular by developing, testing, and promoting means of sustainable utilisation of wetlands. It does so in collaboration with IUCN members and partners, in particular those other international institutions with a specific wetland mandate, especially the Ramsar Convention Bureau, and the International Waterfowl and Wetlands Research Bureau (IWRB).

The core of the Programme is a series of field projects which develop the methodologies for wetland management, in particular in the countries of the developing world where wetlands are used intensively by local communities which depend upon these for their well-being. Related strategic and policy initiatives draw upon the results of these projects and present their conclusions in a form useful for government decision makers and planners.

The activities of the Programme are designed on the basis of the concerns and information provided by IUCN members. To facilitate this, the Programme works through IUCN's regional offices. The Programme also works closely with the major development assistance agencies to ensure that conservation considerations are adequately addressed in their projects.

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T. Matiza and H.N. Chabwela

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The status of coastal wetlands in Namibia

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Introduction

Namibia's coastline stretches 1,440 km from the Orange River in the south to the Cunene River in the north. It is bounded by the cold but nutrient-rich Benguela Current in the west, and the hyper-arid Namib Desert in the east. As a place of extremes, it can hardly be beaten; average rainfall is 10 mm per annum in the desert, and temperatures can soar to 45°C during strong easterly berg wind conditions. As the ever-present coastal fog bank moves inland, temperatures may then drop quickly to below 10°C. Few inlets, or sheltered bays exist along what is essentially a continuous sandy beach. There are therefore few extensive coastal wetlands with only 1% of the entire length having been classified as sheltered shallow waters (Williams, 1988). However, several wetlands do occur within this extreme environment, mainly at major river mouths (Orange and Cunene Rivers), near rivers (Kuiseb) which no longer reach the sea e.g. Walvis Bay wetlands, and in the few rocky and sandy spits which do occur (Lüderitz and Sandwich Harbour).

The present paper provides an overview of the five most important areas, based on published and just-completed material, and includes details of each areas' biological activity and conservation status. The main emphasis is on birds since they constitute the main biological component. Other areas of importance are treated by Noli-Peard and Williams (1991). The Orange River mouth and associated wetlands, encompassing 18 km² (Orange River Environmental Task Group, 1990), are not treated because they currently fall under South African jurisdiction.

Methods and study areas

Currently in press is a major national overview of wetlands in Namibia (Simmons *et al.*, 1991) which includes regional summaries and reviews of wetland-specific organisms - including those on the coast (Noli-Peard and Williams, 1991; Williams, 1991; van Zyl, 1991). I have drawn on these accounts as well as previously published material (e.g. Berry and Berry, 1975; Robinson, 1976; Williams, 1987; Hellwig, 1988) to present this overview. Two recent research projects have just been completed that

assess the biological activity at two poorly studied coastal wetlands: Sandwich Harbour's southern mudflats (Simmons, 1991) and the freshwater lagoon system at the Cunene River mouth (Simmons *et al.*, 1991). These data were collected in February 1991 (Sandwich Harbour) and continuously from March to May 1991 at the Cunene mouth.

Alternative methods of counting the large flocks of wading birds on Sandwich Harbour's 20 km² southern mudflats were employed in February 1991. Bird densities were calculated by asking five groups of observers walking 200 m apart (thus spanning 1 km) to count all birds in the block immediately to their north or flying through it. While some species could not be identified at distances greater than 200 m, this proximity to human observers caused most species to fly. Therefore, densities were calculated by taking the maximum figure counted by the southern-most observer around whom most birds eventually flew. The areas covered were 2.2 km² and 2.6 km² in the centre of the mudflats during peak palearctic migrant wader densities. Sampling of invertebrates was simultaneously undertaken.

At the Cunene mouth, daily counts were undertaken of wetland-related organisms, particularly the birds using the lagoon and the turtles and mammals associated with the mouth. Counts were undertaken on a continuous basis by our management and research staff from 22 March to 23 May 1991. These results are augmented with national bird atlas data which record species occurrence by month (C.J. Brown, *in litt.*).

Results

While one might assume that wetlands on the furthest periphery of a hyper-arid desert would be afforded natural protection by their very isolation, this is not so. Three major towns occur in close proximity to three of the areas (Lüderitz, Swakopmund and Walvis Bay), while sea fishing is a major tourist industry along the entire central coast, attracting thousands of anglers every season, and associated pollution. Pressure on coastal fisheries and in particular spawning fish, have recently resulted in the Sandwich Harbour area being closed to fishermen (Lenssen *et al.*, 1991). Below I present and compare data on the main biota of each area along Namibia's Atlantic seaboard.

Lüderitz wetlands

Lüderitz is a small port on the southern coast of Namibia which supports limited inter-tidal wetlands and salt marsh vegetation not exceeding 5 km² (Noli-Pearce and Williams, 1991). Unpublished counts by A. J. Williams show that the area supports at maximum about 7,300 wetland birds, excluding Cape Cormorants *Phalacrocorax capensis*. The wetlands have no protected status and already portions have been reclaimed for housing and other human use. Oyster farming occurs on a limited scale in the sheltered bay. This is the least important and poorest known wetland of the sheltered areas along the Namibian coast.

Cape Cross lagoons

Cape Cross, one of the earliest recorded (15th century) points of contact for European explorers in southern Africa, is best known for its large Cape Fur seal (*Arctocephalus pusillus*) colony numbering about 150,000 animals. To the south of the rocky promontory a sand barrier has formed from the sediments continually washed north from the Orange River. Behind this barrier a series of lagoons occur, some 5 km² in extent, comprising salt flats fed by sea water seepage and high tide washovers (Williams, 1991). In these areas wooden guano platforms were erected in the 1950s to allow cormorants to breed and roost (Rand, 1952). Guano is still harvested today from some 30,000 pairs of Cape Cormorants which nest there (Williams, 1991).

Up to 11,000 individuals of 28 species of coastal birds, including intra-African migrants, palearctic migrants and resident breeders, occur on the lagoons (Williams, 1991). Among those species listed as Red Data birds, over 2,000 individuals of the southern African race of Black-necked Grebe *Podiceps nigricollis gurneyi* may occur in these lagoons. That is about 16% of the estimated world population (Cooper and Hockey, 1981; Williams, 1991). The lagoons also regularly support between 1% and 3% of the southern African subcontinental population of the Greater *Phoenicopterus ruber* and Lesser Flamingos *P. minor* and up to 22% of the coastal population of Cape Teal *Anas capensis* (Williams, 1991). For palearctic migrants, including Curlew Sandpipers *Calidris ferruginea*, total numbers reach 4,200 individuals, and Cape Cross ranks about eighth in importance for these birds along the Namib coast (Williams, 1991). Cape Cross seal colony falls within a national reserve and only limited disturbance occurs in the lagoons due to their inaccessibility. The area, therefore, suffers no current threats.

Cunene River mouth

As the most isolated major wetland along the Namib Desert coast the Cunene mouth and its freshwater lagoon was expected to be a major staging post for palearctic migrants. While Little Stints *Calidris pusilla* number up to 1,500 birds during peak migration times, these were the only birds seen in any numbers. Other species of interest were small numbers (<300) of flamingos, a 'resident' pair of Ospreys *Pandion haliaetus*, and up to 52 Grey-headed Gulls *Larus cirrocephalus* - a Red Data species in Namibia. Nevertheless, it is a species-rich wetland compared with other coastal wetlands and supports at least 14 Namibian Red Data species. As such it is of some importance among coastal Namibian wetlands.

On occasion during the migration of the near endemic Damara Tern *Sterna balanearum*, about 2,000 of these birds are present at the river mouth. These endangered and diminutive desert-breeding birds have recently been found collecting in huge flocks comprising most of the world population about 180 km south of the Cunene mouth; such spectacular congregations number about 5,000 individuals, of a world population put at 7,700 individuals (Braby *et al.*, in press).

Other fauna of note at the Cunene mouth are the southern most population of Nile Soft-shelled Turtles *Trionyx triunguis*, a species usually found in West African waters

(Griffin and Channing, 1991) and a healthy population of about 300 Green Turtles *Chelonia mydas* (M. Griffin, pers. comm.), a species on Appendix I of CITES. This animal is known to haul out onto the beach but it has only once been found egg-laying in this area (Tarr, 1987). Nile crocodiles *Crocodylus niloticus* breed on the islands at the mouth and occur along the length of the Cunene River. They are known for their aggressiveness in this area (Schoeman, 1984). The Cunene is also the southern-most limit of the freshwater prawn *Macrobrachium bollenhovei* (B. Curtis, pers. comm.) and it supports no less than seven species of endemic fish (van Zyl, 1991). Its warm, nutrient-rich waters therefore provide an oasis for several organisms found nowhere else in Namibia as well as small groups of the desert dwelling elephant *Loxodonta africana*.

While the last 40 km of the Cunene River lies within the Iona National Park of Angola, and Namibia's Skeleton Coast Park, it has recently been threatened by a series of dams proposed for the Epupa Falls area. This scheme is set to provide more than the total energy needs of Namibia via hydroelectric turbines. Filling the dam, which is expected to extend 75 km upstream, may take as much as 4 years (R. Jagau, pers. comm.), and it seems unlikely that any water will reach the mouth during this filling stage. This is a major concern to this ministry and prompted the present surveys. Future research will continue the long-term bird-ringing (R. Braby, pers. comm.) and turtle tagging programmes will be undertaken in order to obtain precise population estimates.

Walvis Bay wetlands

Walvis Bay, presently administered by South Africa, is a large modern town and the region's only major port. It is built near the delta of the Kuiseb River, approximately halfway down the Namibian coast (22°59'S; 14°31'E). The river probably never reached the sea, but it is renowned for its ability in keeping at bay the spread of the huge Namib Sand Sea to the south. Two of Namibia's most important wetlands occur in close proximity here - the Walvis Bay lagoon protected by a north-south finger of sand about 10 km long and its associated salt works; and the Sandwich Harbour wetlands 55 km to the south.

Walvis Bay is both the largest (c. 40 km²) and best studied wetland along the Namib coast, and regular bird counts since 1977 (Underhill and Whitelaw, 1977; Hockey and Bosman, 1983; Williams, 1987) have shown that numbers of wetland birds vary from 37,000 to 79,000 individuals. These totals comprise about 50% inter-African migrants and 45% palearctic migrants, with the remainder being resident breeding species. Combining all peak numbers it is estimated that the lagoon and salt works may hold up to 136,000 birds (Williams, 1987; Table 1).

Significant numbers of several Red Data species such as 50% (6,900 individuals) of the world population of Chestnut-banded Plovers *Charadrius pallidus*, 60% (33,000 birds) of the southern African subcontinental population of Lesser Flamingos and 38% (23,000 birds) of the region's Greater Flamingos, have provided good reasons for designating the area a Ramsar site of major international importance. In all, 11 Red Data species in need of urgent conservation attention are regular visitors to Walvis Bay (Williams, 1987).

Table 1 Peak numbers and the Red Data component of waterbirds at the five major wetlands along the Namibian coast. Data from various sources as shown

Wetland	Peak abundance of all wetland birds	Species richness	Number of Red Data species	Source
Lüderitz	7,270	?	?	1
Cunene River mouth	8,547	74	14	2,3,4
Cape Cross	11,000	28	7	5
Walvis Bay	136,000	40	11	6
Sandwich Harbour	195,000	47	8	7

Sources:

1. Noli-Peard and Williams, 1991;
2. Simmons and Braby, unpublished;
3. National Bird Atlas data;
4. Braine, 1990;
5. Williams, 1991;
6. Williams, 1987;
7. Simmons, 1991

Note:

The total numbers of birds exclude Cape Cormorants which generally outnumber all other birds, particularly where guano platforms are provided

Natural threats to the system include a large silt load present in the ocean in and around the mouth of the lagoon, which may or may not lead to the eventual death of the system. The entire wetland falls within a newly proclaimed reserve administered by the Cape Provincial Administration.

Sandwich Harbour

Sandwich Harbour comprises two wetlands: a vegetated freshwater northern wetland, some 5 km long by 300 m wide, protected from the ocean by a narrow barrier beach, and a southern portion of tidal mudflats about 20 km², with no vegetation. The northern portion, well-studied since 1971 by Berry and Berry (1975), is unique in that its freshwater component is provided by a massive underground aquifer which occurs under the Namib Sand Sea (Hellwig, 1988). This potable water, up to 7,000 years in age, slowly seeps through to the wetland and there supports lush but ever-decreasing stands of emergent vegetation such as *Phragmites australis* and *Typha latifolia*

(Robinson, 1976). Ocean currents and natural erosion of the lagoon have combined to narrow the vegetation band from about 1 km in width in the 1960s to about 300 m today. In five years the wetland may no longer exist.

Waterbirds in this freshwater wetland are concentrated and comprise at least 37 species. Counts of ducks, waders and other waterbirds in 1991 (totalling just over 4,000 birds), reflect the decreasing area of wetland. For example, in comparison of numbers recorded in the same area 20 years previously by Berry and Berry (1975), Simmons (1991) noted decreases in 10 of 11 different species. The only species gained in that time was a small breeding unit of Black-crowned Night Herons *Nycticorax nycticorax*.

Few attempts have been made to count the less accessible southern mudflats, prompting a team of counters to visit the area in February 1991. They discovered the mudflats to be more extensive than envisioned and the number of birds present were beyond expectations. Some of the first density estimates computed for Namibia showed that mainly palearctic waders reached numbers as high as 7,000 birds/km² - higher than most other localities reported from Africa and Europe (Simmons, 1991). Extrapolation to the rest of the area (briefly surveyed by bike) gave numbers of Charadrii, terns, pelicans and flamingos up to 195,000, making it the most important wetland on the Namib coast. Possible reasons for the high numbers include its isolated nature, and more importantly its proximity to the rich upwellings provided by the cold Benguela Current. Sampling of the invertebrate fauna - food for the resident waders - revealed mainly polychaete worms and high densities of other small and unidentifiable fauna. In these respects Sandwich Harbour parallels the tidal flats of the Banc d'Arguin in Mauritania, with its massive shorebird populations adjacent to the cold Canary Current from the north (Zwarts and Piersma, 1990).

Bird species richness for Sandwich Harbour was 47 and 8 Red Data species were recorded, including 93 Caspian Terns *Hydroprogne caspia*.

The fact that Sandwich Harbour falls within the Namib-Naukluft Park, that it is Namibia's only protected marine reserve and that line fishermen have recently been banned from the nearby beaches, lends it exceptional protection. However, the natural erosion and re-alignment of the entire lagoon (once deep enough to provide anchorage for a whaling industry in the 1890s) means that the northern wetlands at least have an uncertain future. Meanwhile further research on the birds and their prey in the southern mudflats will continue.

Discussion

Despite the abundance of resident and palearctic birds in the five major coastal wetlands in Namibia, almost no breeding occurs. The main exceptions among coastal shorebirds are White-fronted Plovers *Charadrius marginatus* and Damara Terns both of which breed well in dispersed and cryptic nest sites. The chief constraint appears to be the presence along the entire coastline of Jackals *Canis mesomelas* which survive by scavenging dead Cape Fur seals and other sea-borne material such as crabs, fish and some wetland birds. Where species find refuge from this constant predation

pressure, they nest in profusion as witnessed by the massed breeding of cormorants on man-made bird guano islands and ship wrecks along the coast.

In conclusion, Namibia's main coastal wetlands support a high diversity of birds - mainly palearctic waders and inter-African migrants, and in certain cases e.g. Cunene, are associated with a unique tropical herpetofauna. For the two largest and most productive wetlands their conservation status is high, while the Cunene River mouth remains the most threatened and may suffer drastic changes within the next 20 years.

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