

## Short Communication

# Birds and conservation significance of the Namib Desert's least known coastal wetlands: Baia and Ilha dos Tigres, Angola

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The Ilha dos Tigres of Angola is the only sandy island off the coast of the 2 000km-long Namib Desert and it remains the least known coastal wetland on a desert coast rich in shorebirds. Two surveys of the Baia dos Tigres region in 1999 and 2001 indicated a rich wetland bird diversity consisting of 25 species, with a total of 11 000 birds, at a density of 33 birds km<sup>-1</sup> of beach. We established breeding by three species of seabirds — two cormorants and the great white pelican *Pelecanus*

*onocrotalus* — and confirmed northward range extensions for two of these species. The region supports seven regionally threatened Red Data birds. Several threatened marine turtles occur at the nearby Cunene River mouth, and given the possibility that turtles and other Red Data birds may breed at Ilha dos Tigres, it is recommended that it should become an integral part of the Iona National Park on the adjacent mainland.

**Keywords:** coastal wetland, Iona National Park, marine turtles, Namib Desert, seabirds, shorebirds

## Introduction

The 2 000km-long coast of the Namib Desert is enriched by the Benguela upwelling system, and supports hundreds of thousands of shorebirds in the austral summer (Sakko 1998). Most of this coast falls within Namibia, where the largest wetlands at Sandwich Harbour and Walvis Bay support long-distance and intra-African shorebirds. Up to 500 000 wetland birds congregate at these two embayments (Williams 1987, Simmons *et al.* 2001, Wearne and Underhill 2006). Smaller wetlands occur at the ephemeral river mouths, the Lüderitz embayment and the only two perennial rivers that cross the Namib: the Orange and Cunene rivers (Braine 1990, Simmons *et al.* 1993, Anderson *et al.* 2003). Whereas the importance of Namibia's coastal wetlands as shorebird habitat has been appreciated for some time (Underhill and Whitelaw 1977, Ryan *et al.* 1984, Williams 1986, Braine 1990, Noli-Peard and Williams 1991, Simmons *et al.* 1993), the 200km stretch of Namib Desert coast that falls within Angola has received scant attention. This coastline, between the Curoca and Cunene rivers, is arid, largely uninhabited and inaccessible. It falls within the Iona National Park, the largest national park in Angola, and has an annual rainfall of <15mm (IUCN 1992, Dean 2001). It is characterised by gently sloping sandy

beaches backed by mobile dunes or sandstone cliffs. Although updated checklists exist for the birds of Iona National Park (Dean 2001) and for the birds of Angola (Dean *et al.* 2002), almost no field work has been undertaken in southern Angola since 1974 when Angolan independence saw the advent of a civil war. To determine the conservation significance of the island and adjacent bay in terms of the shorebirds and turtles that use it, we focused on the wetland area known as Baia dos Tigres (Bay of Tigers) and the adjacent island of the Ilha dos Tigres in Angola.

## Study Area and Methods

The Baia dos Tigres is located at 16°26'S, 11°43'E, some 30km north of the Cunene River mouth, and comprises a bay approximately 60km long with a 25km-long machete-shaped sandy island (Ilha dos Tigres) about 15km offshore (Figure 1). The island is <10km wide at its widest northern part and is probably formed from sand and sediment washed down the Cunene River and northwards by the Benguela Current. Prior to the 1970s, it was joined to the mainland and was inhabited by fishers who lived at Armacão village on



**Figure 1:** Baia dos Tigres (Bay; 16°26'S, 11°43'E) and Ilha dos Tigres (Island), Angola, as they appeared on 2 November 2004. Shorebird surveys occurred along the mainland desert shoreline in 1999 and over the island in 2001. The island itself is approximately 25km long and the image does not show the entire study area. True north follows the line of the coastline. Image courtesy of NASA Johnson Space Centre, Number STS55 from NASA website

the north-eastern end of the island. In about 1973, the sand-spit joining the south of the island to the mainland was washed away (Figure 1), and the pipeline supplying freshwater from the Cunene River mouth was destroyed. The resident fishers left Ilha dos Tigres shortly thereafter. Feral dogs remained around the jetty and buildings until about 1996/1997 (A Schoeman, Fly-In Safaris, pers. comm.). Since then, the island has been free of terrestrial predators up to 2005 when a police post with dogs appeared. It is unique in being the only sandy island along the entire Namib Desert coast. The mainland is backed by sand dunes, leaving a narrow coastal sandy beach.

Two surveys of the area were undertaken to determine the importance of the island and the bay formed between the island and the mainland. The first survey, undertaken by AS, took place by vehicle from 20 December 1998 to 4 January 1999. The area was divided into three sections. The northern section stretched from the town of Tombua (16°00'S) to northern Baia dos Tigres (16°30'S), a distance of 111km. The central section extended the length of Baia dos Tigres (16°30'S to 16°50'S), a distance of about 64km. This area was driven more slowly and all large flocks of birds were observed with binoculars to distinguish individual species. The southern section stretched from the southern point of Baia dos Tigres (16°50'S) to the Cunene River mouth, a distance of about 30km. The habitat of all three sections is predominantly shallow sandy beaches, with <5%

rocky shore. The only truly sheltered flats are north of the remaining spit that once joined the mainland to the island (see Figure 1). A second survey, undertaken by JP, was from a high-wing single-engine aircraft on 9 September 2001. It flew over Ilha dos Tigres, and all larger species of seabirds and seals that were visible were counted. The island was not inhabited by people, dogs or black-backed jackal *Canis mesomelas* during the aerial survey.

## Results

A total of 25 species was recorded during the mainland survey (Table 1). Species diversity was greatest in the central section (Baia dos Tigres), where 18 species were recorded. Bird densities were also greatest in this section, and roosts of terns in particular, as well as the presence of large numbers of kelp gulls *Larus dominicanus vetula*, contributed to a density of 42.5 birds km<sup>-1</sup> of beach. The overall abundance of birds for all areas was 6 677, at a density of 33 birds km<sup>-1</sup>. That density is over fourfold higher than shorebird densities just south of the Cunene River, where shorebirds of nine different species average 7 birds km<sup>-1</sup> (Ryan *et al.* 1984, Tarr and Tarr 1987).

Seven species that are regionally threatened in Namibia or South Africa (Barnes 2000, Simmons and Brown 2006) were included in these totals (Table 1), of which African black oystercatchers *Haematopus moquini*, comprising 73 individuals, were unexpected. In the northernmost 175km, 280 globally near-threatened Damara terns *Sterna balae-narum* were recorded at a density of 1.6 birds km<sup>-1</sup>. Royal terns *Sterna maxima*, which are rarely recorded from Namibia's Cunene River mouth (Simmons *et al.* 1993, Anderson *et al.* 2001), were most abundant in the bay and to the north where the 349 birds occurred at a density of 2.0 terns km<sup>-1</sup>.

During the aerial survey of Ilha dos Tigres, great white pelicans *Pelecanus onocrotalus* were seen breeding on the Island (Table 2). At least 80 flightless brown birds were seen in two creches at the southern end of the island. Assuming one chick per pair, at least 160 adult or 240 pelicans in total were present on the Island in September 2001. Near Threatened Cape cormorants *Phalacrocorax capensis* were observed sitting on nests on the ground in small groups with up to 200 nests per group, along the southwestern shoreline. A total of around 2 000 nests was estimated. Among the Cape cormorant nests were fewer than 300 white-breasted cormorant *P. carbo* nests (Table 2). Although there are no previous records of white-breasted cormorants breeding on the ground on Ilha dos Tigres, they have been reported to breed on the remains of the jetty near the old fish factories (Dean *et al.* 2002). No marine turtles were observed during these surveys, but large numbers of Cape fur seals *Arctocephalus pusillus pusillus* were seen along the western side of the island and numbered tens of thousands of individuals.

## Discussion

This study provides the first systematic surveys of birds at Ilha and Baia dos Tigres. The surveys recorded more than

**Table 1:** Shorebird numbers from surveys of the coast of Iona National Park (20 December 1998–4 January 1999). Species in bold are globally or regionally threatened Red Data species. Numbers in brackets are the number of birds 10km<sup>-1</sup> for selected species

Common name	Species	Number of birds			Total (203km)
		Location			
		Tombua to north of Baia dos Tigres (111km)	Baia dos Tigres area (64km)	South end of Baia dos Tigres to Cunene River (28km)	
		Sandy beach, some rocky shore	Large sheltered bay plus lagoon	Sandy beach backed by dunes	
<b>White pelican V</b>	<b><i>Pelecanus onocratalus</i></b>	55 (5)	116 (18)	–	171
White-breasted cormorant	<i>Phalacrocorax lucidus</i>	13 (1)	40 (6.3)	4 (1.4)	57
<b>Cape cormorant NT</b>	<b><i>Phalacrocorax capensis</i></b>	70 (6.3)	570 (89)	5 (1.8)	645
Grey heron	<i>Ardea cinerea</i>	26	8	2	36
Goliath heron	<i>Ardea goliath</i>	–	–	1	1
Little egret	<i>Egretta garzetta</i>	3	–	1	4
<b>Lesser flamingo V</b>	<b><i>Phoenicopterus minor</i></b>	347 (31.3)	40 (6.3)	12 (4.3)	399
Osprey	<i>Pandion haliaetus</i>	2	–	–	2
<b>African black oystercatcher NT</b>	<b><i>Haematopus moquini</i></b>	38 (3.4)	35 (5.5)	–	73
Grey plover	<i>Pluvialis squatarola</i>	4	2	–	6
Common ringed plover	<i>Charadrius hiaticula</i>	5	–	–	5
White-fronted plover	<i>Charadrius marginatus</i>	10	3	–	13
Common whimbrel	<i>Numenius phaeopus</i>	2	3	–	5
Greenshank	<i>Tringa nebularia</i>	0	2	–	2
Ruddy turnstone	<i>Arenaria interpres</i>	10	5	–	15
Sanderling	<i>Calidris alba</i>	1 340 (120.7)	120 (18.8)	300 (107.1)	1 760
Curlew sandpiper	<i>Calidris ferruginea</i>	110 (1.0)	55 (8.6)	–	165
Ruff	<i>Philomachus pugnax</i>	5	–	–	5
Kelp gull	<i>Larus dominicanus</i>	497 (45)	940 (147)	590 (211)	2 027
<b>Hartlaub's gull V</b>	<b><i>Larus hartlaubii</i></b>	5 (0.5)	–	–	5
<b>Caspian tern V</b>	<b><i>Sterna caspia</i></b>	2 (0.2)	–	3 (1)	5
Common tern	<i>Sterna hirundo</i>	47 (4.2)	450 (70)	–	497
<b>Damara tern NT</b>	<b><i>Sterna balaenarum</i></b>	160 (14)	120 (19)	–	280
Sandwich tern	<i>Sterna sandvicensis</i>	50 (4.5)	100 (16)	–	150
Royal tern	<i>Sterna maxima</i>	239 (22)	110 (17)	–	349
Density (birds 10km <sup>-1</sup> )		273	425	327	6 677 birds

V = Vulnerable

NT = Near Threatened

**Table 2:** Large birds present and breeding on Ilha dos Tigres, Angola, recorded during the aerial survey on 9 September 2001

Species	Birds	Nests	Comments
White pelican	Min. 240	80 chicks	Two groups, southern tip
White-breasted cormorant	600	<300	Among the Cape cormorants
Cape cormorant	>4 000	2 000	
Approximate totals	5 000	2 350	

11 000 birds of 25 species, of which seven species are regionally threatened (Tables 1 and 2). This abundance is higher than that of the nearest coastal wetland at the Cunene River mouth, which supports up to 4 000 birds, but more species (72) than the Tigres area (Simmons *et al.* 1993, Anderson *et al.* 2001). The presence of 73 African black oystercatchers at the northern limit of their global range in Angola (Martin 1997) represents a significant increase in sightings in this region (Dean 2000). The linear density of Damara terns at 1.6 birds km<sup>-1</sup> is also higher than the combined inland and coastal density of 0.3 birds

km<sup>-2</sup> recorded just south of the Cunene River during the breeding season (Simmons *et al.* 1998). This probably arises from prime habitat offered by the bay in which these and other terns prefer to plunge dive. The observation of great white pelicans breeding on the island confirms previous suggestions that pelicans breed on the island (Dean 2000), an important addition for this Vulnerable (Namibia) or Near Threatened (South Africa) species. Our finding of Cape cormorants breeding on the island confirms reports by PD Morant (in Dean 2000) of probable breeding of this species on the Ilha dos Tigres in 1996, at about the time

the feral dogs are estimated to have disappeared from the island. This is a northward extension of 300km from their known breeding range (Dean *et al.* 2002).

The Baía dos Tigres region in southern Angola is thus clearly an important and overlooked habitat for shorebirds and it may support many more breeding birds than reported here. Ground surveys in the November–February window will probably reveal breeding plovers and possibly terns on the island. The mainland sections of the coast surveyed in this study fall within Angola's largest national park — Iona National Park — and are recognised as part of the Angola's Important Bird Area network AOO12 (Dean 2001). However, Ilha dos Tigres is not part of the National Park and falls instead within a marine reserve, which extends two miles offshore between Ponta Albina and the mouth of the Cunene River. This marine reserve does not prohibit occupation of the island, and recently fishers (and some dogs) have again become resident on the island and have commenced regular fishing activities, possibly placing the breeding birds at risk (AS pers. obs.). It is recommended that protective measures be introduced in light of the unique position this wetland occupies on the remote desert coast of southern Angola.

Other wildlife that would benefit from increased monitoring and protection include green turtles *Chelonia mydas*, which frequently emerge in the summer months at the Cunene River mouth (Tarr 1987, Simmons *et al.* 1993). However, they were not seen during our surveys, possibly because they rarely beach during daylight hours and they are known to be killed near the Cunene River mouth when they do so (JP pers. obs., M Morais, Angola, pers. obs.). The island may be an important refuge, given that densities of nesting green and leatherback turtles *Dermochelys coriacea* reached 613 nests along 150km of beach near Luanda (Huntley 1974) and five species are known to breed on Angolan beaches, mainly north of the Iona National Park (Carr and Carr 1991). Turtles are killed and eaten by fishers, who catch them at sea along most of the Angolan coast and collect their eggs (Fretey 2001, M Morais, pers. obs.). This was confirmed by observations of local inhabitants carrying turtle carapaces and parts to the Foz do Cunene (JP and RES pers. obs.).

This unique island and the adjacent mainland desert coast warrant further study, with a view to establishing conservation measures that will ensure the long-term suitability of these habitats for shorebirds and other wildlife. In addition, it may be pragmatic to motivate for the inclusion of Ilha dos Tigres in the nearby Iona National Park in order to enhance the status of this island as a breeding site for local fauna. An essential part of this move would be research and monitoring of the island when both turtles and shorebirds may be breeding late in the year. Human disturbance at such times should be kept to a minimum.

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