

# Numbers of waders at two sites in Mozambique, April 1999

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## INTRODUCTION

The information available on wader populations in Mozambique is still limited, with only a small number of papers published in recent years, mostly concerning numbers of overwintering birds in Bazaruto and Inhaca areas during the northern winter (Wetlands International 1997, Parker 1999).

In April 1999, we had the opportunity to organize counts at two different coastal areas in Mozambique, Bazaruto Island and Inhambane Bay. Bazaruto was visited in the course of a mission for the Ministry for Coordination of Environmental Affairs (MICOA) and the Inhambane survey was undertaken during a holiday trip to Mozambique and had the support of Wetlands International. The aim of these counts was to assess the importance of these two areas for wader populations at this time of the year.

## STUDY AREA AND METHODS

The Bazaruto archipelago is located at Inhambane province, South Mozambique (Figure 1), divided over the Vilanculos and Inhassoro districts (between 21°30' and 22° 10'S, and 35° 22' and 35° 30'E). Covering 600 km<sup>2</sup>, the archipelago consists of Bangue, Magaruque, Benguerua, Bazaruto and Santa Carolina Islands. The western coast of Bazaruto Island includes a vast area (approximately 10,500 ha) of intertidal flats. Sand and muddy sand dominate the intertidal habitats. The eastern side of the island is a sandy and open coastal area with the prevailing wind blowing from the Indian Ocean. The western side is more sheltered as it is protected by a sand dune belt, with an extensive area of shallow waters. Large areas of the flats are covered by seagrass and have a very rich invertebrate fauna. The counts were carried out at low tide on the west side, the richest area in terms of waders populations.

Inhambane Bay (Figure 1) is a large wetland, also located in Inhambane Province (23° 58' S ; 35° 28' E) and includes the estuaries of the rivers Mutamba and Inhambane. The bay has large sheltered areas in the south and northwest and more open areas on the east side. Sand and muddy sand are the dominant substrates of the intertidal area in the areas visited. The eastern and southern parts of the bay have significant areas of mangrove. Counts were carried out at four different sites, between the town of Inhambane and Barra (Figure 2), during low tide as it would have been impossible to find roosting sites in the time available for this survey. The area surveyed and the total area of intertidal flats was estimated from a detailed navigation map (RPM-MDN 1985). Counts were carried out from 2 - 5 April at Inhambane and from 2 - 4 April at Bazaruto.

## RESULTS

Table 1 shows the results of the counts at the two areas. The species composition was different between the two sites. At Bazaruto, a total of 1,495 waders of nine species were counted and *Calidris ferruginea*, *Pluvialis squatarola* and *Charadrius marginatus* were the commonest species. This number was considerably less than the total of 43,943 waders counted there in January 1997 by Koehler & Koehler (Wetlands International 1997) suggesting that most birds had already left their wintering grounds to return to their Palearctic breeding areas.

The area surveyed at Inhambane Bay had a total of 1,017 waders of 12 different species, with *Pluvialis squatarola*, *Arenaria interpres* and *Tringa cinereus* being the commonest (Table 1). For this area, no data were available for the boreal winter period but, according to local information, numbers then are much higher than in April. At Inhambane, the total area of intertidal flats, as measured from the navigation map referred to above, was estimated at 16,000 ha of which 1,349 ha were





Figure 1 left – Map of Mozambique showing the location of Inhambane Bay and Bazaruto Island. (picture obtained at [www.sdn.org.moz](http://www.sdn.org.moz))

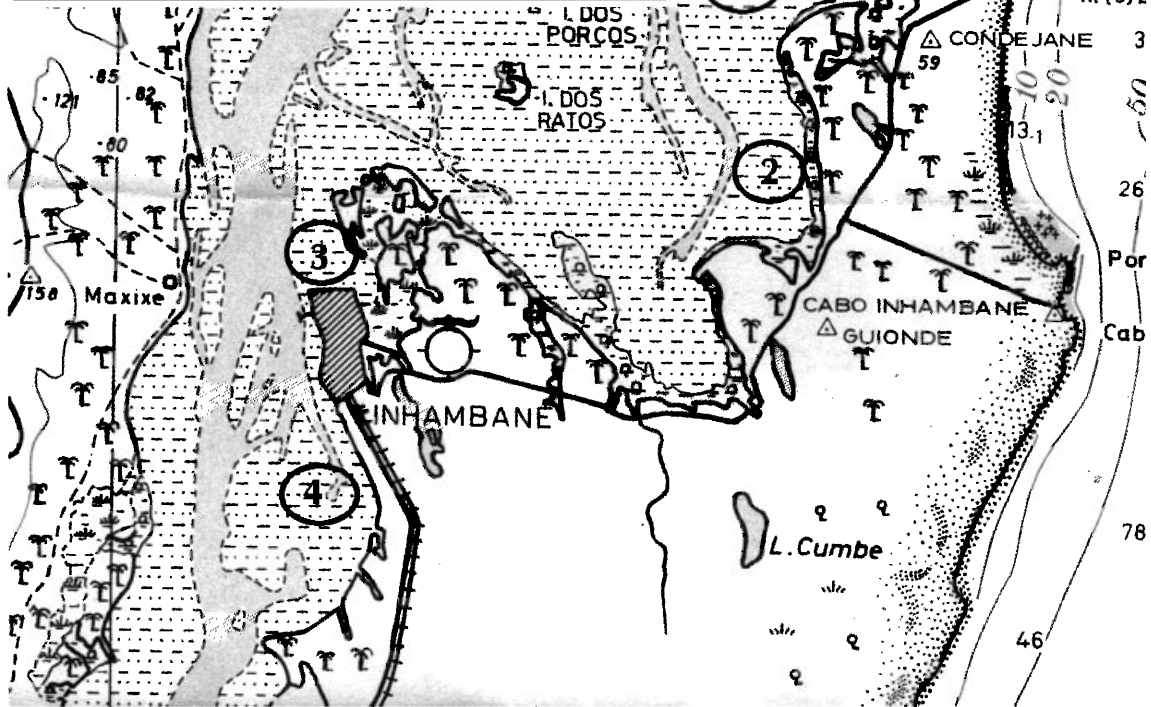


Figure 2 – Detail of Inhambane Bay (copied from map 'Barra Falsa to Ponta Závora, Instituto Hidrográfico, Lisboa. 1966 (correct. 1987) with the four areas counted.

actually surveyed. Wader density in the surveyed areas was estimated at 0.75 birds / ha. This figure was much lower than those recorded by Zwarts (1988) for areas in South and West Africa, which range from 5.2 birds / ha in Yawri bay, Sierra Leone, to 41.6 birds / ha at the Banc d'Arguin, Mauritania. However, de Boer & Longamane (1996) recorded April densities of 2.6 birds / ha at Inhaca Bay, Mozambique, and suggest that these comparatively



Table 1 Numbers of waders counted at Bazaruto and Inhambane

<i>Species</i>	<i>Bazaruto Island (individuals)</i>	<i>Inhambane Bay (individuals)</i>
<i>Pluvialis squatarola</i>	162	178
<i>Charadrius hiaticula</i>	20	41
<i>Charadrius tricollaris</i>	16	-
<i>Charadrius marginatus</i>	157	11
<i>Charadrius leschenaultii</i> *	-	50+
<i>Limos lapponica</i>	-	15
<i>Numenius phaeopus</i>	112	267
<i>Numenius arquata</i>	-	5
<i>Tringa nebularia</i>	127	5
<i>Tringa cinereus</i>	-	123
<i>Arenaria interpres</i>	69	159
<i>Calidris alba</i>	265	48
<i>Calidris ferruginea</i>	567	115
<b>TOTAL</b>	<b>1495</b>	<b>1017</b>

low densities were a consequence of high levels of human disturbance.

## DISCUSSION AND CONCLUSION

The wader surveys from 1996, 1997 (Wetlands International 1997) and 1999 in the Bazaruto Archipelago, show that the area supports a large population of Palearctic migrant bird species such as *Pluvialis squatarola*, *Charadrius leschenaultii*, *Numenius phaeopus*, *Arenaria interpres*, *Tringa nebularia* and *Tringa cinereus*. In 1997 the most important species (in Bazaruto Archipelago) were *Pluvialis squatarola* (2,029 ind.) and *Limosa lapponica* (3,587 ind.). The intertidal area of the Bazaruto Archipelago held 14,600 waders in January 1996 and 43,943 waders in January 1997 (Wetlands International 1997).

Most of these species breed in the Northern Hemisphere, in northern Eurasia, during the boreal spring and summer. After the breeding season they migrate to the Southern Hemisphere. The Bazaruto Archipelago is used as a wintering area as well as a migratory stopover for the large population of Palearctic waterbirds migrating to and from Southern Africa.

The small and temporary streams exposed during the low tide and the bays along the Bazaruto Island provide ideal feeding conditions for *Tringa nebularia*, *Calidris ferruginea*, *Pluvialis squatarola* and other species. The sheltered sandbanks are used as roosts by large flocks of waders during the high tide. The western coast of Bazaruto Island is where most of the wader habitat is found.

According to Summers *et al.* (1987) in east Africa the onset of return migration of Palearctic waders only takes

place in mid April for most species. Yet, the numbers we counted at Bazaruto Island and Inhambane Bay suggest that wader populations wintering on the east coast of Africa start their northward migration before the beginning of April. At Bazaruto Island winter numbers of boreal waders, as seen above, are much higher than those counted in April and at Inhambane information collected locally refers much larger numbers in January, thus supporting the idea that most birds had left their wintering grounds by April. The observations made in April also showed that, by then, many bird species (*Pluvialis squatarola*, *Charadrius leschenaultii*, *Calidris alba* and *C. ferruginea*) were already showing breeding plumage.

The calculated wader densities at Inhambane Bay were much lower than those referred to by Zwarts (1988) for wintering waders in South and West Africa wetlands, probably because most birds had left. This low density of birds may also be associated with the very high disturbance levels registered in the area as pointed out by de Boer & Langamane (1996) for the Inhaca Bay.

Nationally, the areas surveyed have great importance for the natural biodiversity of the country. Both of the areas support large populations of resident and migratory birds. Moreover, they support numerous rare and vulnerable species, and provide habitat for many waterbird species during a critical period, when they are preparing for the migratory journey to their breeding grounds. Part of the Bazaruto Archipelago is a Marine National Park that includes Bangué, Magaruque and Benguerua Islands (plus a 5 Km belt around them). Bazaruto and Santa Carolina have been designated as a 'special vigilance zone'. The park was created to protect endangered species, such as dugong, turtles and waders



(Lundin & Linden, 1996). Inhambane Bay has no protection status. There is a need to create more sanctuaries along the East African migration route in order to protect the wintering grounds and migration staging posts for a large number of waders and other waterbirds that depend on the coastal wetlands of this region.

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