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The Importance of the Makuleke Wetlands Ramsar Site as an Important Breeding Locality for Yellow-billed Stork *Mycteria ibis*

Duncan McKenzie PO Box 19787, The Village, Mbombela, 1218, South Africa

Abstract

The Yellow-billed Stork *Mycteria ibis* is considered an Endangered species in South Africa, with only one regular breeding locality present, situated at the Nsumo Pan in the iSimangaliso Park (Mkhuze section) in the KwaZulu-Natal Province. During the 2017 and 2021 seasons, two separate breeding colonies of this stork were studied within the Makuleke Wetlands Ramsar Site (Site No. 1687), within the Greater Kruger National Park, which appears to be unrecorded as a breeding locality for this species. The total number of immatures counted in Makuleke in September 2017 was 55 (from a minimum of 39 pairs), with 181 (from a minimum of 48 pairs) counted in July 2021. This highlights the importance of the Makuleke Wetlands Ramsar Site as a breeding locality of this species within South Africa, even if it is infrequent.

Keywords

Yellow-billed Stork, Mycteria ibis, breeding, pans, Makuleke, Kruger National Park, Red Data

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Introduction

The Yellow-billed Stork *Mycteria ibis* is a widespread sub-Saharan member of the Ciconiidae, ranging from the Zululand region of South Africa northwards through to Sudan and westwards to Senegal, with vagrants recorded in the Middle East and southern Europe (Birdlife International, 2016). It is a species that favours floodplain pans, riverine pools, artificial dams and other freshwater habitats for foraging, and riparian / pan-fringed forests for breeding (Elliott *et al.*, 2020).

It is resident in most of its range, sometimes with local movements, but was described by Hancock *et al.* (1992) as "facultatively nomadic". Numbers peak during Oct–Apr in several neighbouring countries, such as Mozambique, Zimbabwe, Botswana and Namibia, which suggests that it might be an intra-African breeding migrant. Elliot *et al.* (2020) considered it to be a non-breeding summer migrant to South Africa, and present from October to April.

Due to the wide spatial extent of occurrence, prevalence in protected areas and stable population, the Yellow-billed Stork is assessed as Least Concern by the International Union for the Conservation of Nature (IUCN). In contrast, BirdLife South Africa, in their 2015 avifaunal conservation assessment, rated this species as being Endangered (Taylor *et al.*, 2015) due to it apparently only regularly breeding at one locality in South Africa, namely the Nsumo Pan in the iSimangaliso Wetlands Park (Mkhuze section) in far north-eastern KwaZulu-Natal Province. Yellow-billed Stork was previously assessed as Near Threatened (Barnes, 2000) in South Africa. Appendix 1 presents the



Study Area

The Makuleke Wetlands Ramsar Site (No. 1687) is situated in the Makuleke Concession in the far northern portion of the Greater Kruger National Park (GKNP), Limpopo Province, South Africa (Figure 1). It covers an area of 7757 hectares encompassing both the Limpopo and Levuvhu Floodplains and is considered to be a fine example of a floodplain vlei type (RAMSAR 2022a). A variety of habitat types are found within these wetlands, including riverine forests, riparian floodplain forests, floodplain grasslands, river channels and flood pans (RAMSAR 2022b). According to this factsheet, 31 seasonally flooded pans are found in Makuleke.

Methods

The larger floodplain pans located in Makuleke were visited over a period of ten years between February 2012 and December 2021, and between one and six times a year. A total count of the breeding population of Yellow-billed Storks, if present, was performed at each visit. Counts were undertaken using either 10x42 binoculars or a 20-50 spotting scope. At each breeding event, the total number of juveniles and adults were carefully counted at least twice to obtain as accurate a total as possible.

It should be mentioned that these pans were not visited exclusively for the purposes of this study, but during scheduled avifaunal-related functions performed by the



author. A literature review of both the Makuleke Pan system and of the status of Yellow-billed Stork in South Africa was also performed.

Results and Discussion

Data from counts during the survey between February 2012 and December 2021 indicate that four breeding events took place in the Makuleke Wetlands at two of the 31 pans located in the Limpopo and Levuvhu floodplains (Table 1). This possibly indicates a low frequency of breeding rate. In September 2017 29 immature and 30 adults were counted at Spokonyole Pan on the Limpopo floodplain, while 26 immature birds and 62 adults were counted at Reedbuck Vlei on the Levuvhu floodplain. The 2017 breeding season therefore produced at least 55 chicks. In July 2021, after a period of high rainfall and both rivers bursting their banks, 26 immature birds were counted at Spokonyole Pan with 15 adults present and 155 immatures counted at Reedbuck Vlei with 80 adults present. This resulted in a minimum of 181 chicks counted in 2021, and a total count of at least 276 birds in total. Interestingly, by December 2021 only 11 adult birds were present at Reedbuck Vlei. The names of the pans visited, and survey totals are presented in Table 2.

The Status of Yellow-billed Stork in the Kruger National Park

Kemp (1974) described the Yellow-billed Stork as uncommon within the Kruger National Park (KNP), occurring as a summer nomad and with a high proportion of birds present as being immatures. The fieldwork component of Kemp's study was only performed over 30 months, and from a base in the central portion of the KNP; it can safely be deduced that very little data was obtained from the Makuleke Wetlands.



Fig. 1. Location of the Makuleke Concession



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Newman (1987) described the Yellow-billed Stork as an "uncommon species...usually seen in groups of half a dozen" but also stated that a flock of 170 was recorded somewhere in the Park (unknown date and locality). Barnes (2000) claimed that this figure was the largest ever recorded in South Africa. However, this figure was significantly exceeded in February 2012 during a CWAC count in St. Lucia Estuary (Coordinated Waterbird Counts, 2022) when 1360 birds were counted. Importantly though, Newman furthermore stated that the stork "occasionally breeds in the Park" mentioning the Engelhard Dam as a confirmed locality in 1971. Unfortunately, no numbers are supplied.

The results of a data query on the SABAP2 website reveal that, since 2007, Yellow-billed Stork has been atlased 3725 times at an average reporting rate of 19.4% within the GKNP. The monthly spread of records supports previous statements that Yellow-billed Stork is predominantly a summer visitor to the region (Table 3). However, birds are present year-round. This would indicate that, at least as a species, that Yellow-billed Stork is resident within the GKNP and will breed when conditions are suitable. Possible

reasons for this include food availability, protection and presence of immature birds.

Interestingly, Marnewick *et al.* (2015) do not regard Yellowbilled Stork as a trigger species for their justification of the Kruger National Park and Adjacent Areas as an Important Bird Area (IBA). The Park qualifies as a Global IBA under criterions A1, A2, A3 and A4i. This is based on numerous trigger species but excludes the Yellow-billed Stork. Based on these reports, the exact status of the bird within the KNP is therefore uncertain but it is at least an occasional breeding species with nomadic movements.

The justifications for the Makuleke Wetlands' inclusion as a wetland of international importance are based on four criteria (Ramsar 2022a, b), one of which states "A number of nationally threatened fauna species are present at the site." Unfortunately, no data are included in the application form regarding the actual numbers of pairs of nationally threatened waterbirds breeding in the Makuleke Wetlands Ramsar Site and it appears that no data were available. The literature review only revealed the presence of between five

Table 1. Summary of surveys conducted at selected pans in Makuleke between 2012 and 2021

Pan	Minimum No. of Visits	Total No. of Breeding Events					
Limpopo Floodplain							
Banyini	26	0					
Spokonyole	15	2					
Makwadzi	38	0					
Palm Vlei	59	0					
Mangqeba	50	0					
Nhlangalui	25	0					
Jachacha	15	0					
Gila	20	0					
Total	248	2					
Levuvhu Floodplain							
Nwambi	33	0					
Reedbuck Vlei	33	2					
Total	66	2					

Table 2. Summary of surveys conducted at selected pans in Makuleke between 2012 and 2021

Survey Date	Site	Max No. of Immatures	Max No. of Adults	Total Immatures	Total Adults
September 2017	Spokonyole Pan	29	15	55	77
	Reedbuck Vlei	26	62		//
July 2021	Spokonyole Pan	26	15	101	95
	Reedbuck Vlei	155	80	181	



and fifteen Yellow-billed Storks present in the Makuleke Ramsar Site, based on the results of six Coordinated Waterbird Counts (CWAC) surveys performed by SANParks between 2004 and 2008 (Coordinated Waterbird Counts 2022). The datasheets do not specify at which of the Makuleke pans the birds were located but, based on the low numbers counted, it is assumed that only one pan was surveyed each time.

Conclusion

Two previously undocumented breeding localities of Yellowbilled Stork were located within the Makuleke Wetland Ramsar Site within the Greater Kruger National Park. Breeding took place at both Spokonyole Pan in the Limpopo floodplain and Reedbuck Vlei in the Levuvhu floodplain in September 2017 and July 2021. The latter breeding event produced at least 181 juvenile birds, a significant number considering the paucity of information of this species' breeding in the last few decades in northern South Africa. The status of the bird within the Park should be "opportunistic breeding resident with nomadic movements" and not a non-breeding summer visitor as previously described. The Makuleke Wetlands should be added to the list of breeding localities in South Africa in the revision of the Roberts Birds of Southern Africa, and it is also suggested that a review of the conservation status of this species in South Africa be performed.

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Appendix 1. Distribution of Yellow-billed Stork Mycteria ibis in South Africa (map sourced from SABAP2)





Appendix 2. Photographs of Yellow-billed Stork Mycteria ibis breeding at Spokonyole Pan, September 2017





Appendix 3. Photographs of Yellow-billed Stork Mycteria ibis breeding at Reedbuck Vlei, July 2021



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