

Waterbird colony count at Lake Urema, Gorongosa National Park 25 March 2021

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#### Summary

- A detailed count of the waterbird colony at the edge of Lake Urema was conducted on 25 March 2021. The count took place in the same area and according to the same procedures as previous counts in 2014 and 2019.
- The colony was located at the south-east corner of Lake Urema (Fig.1) and extended across a distance of 1.7 km from 18.89996 S; 34.49986 E to 18.91217 S; 34.51104 (covering approximately 15 ha). This year it extended about 100 m further southeast and included 70 more trees with nests in this expanded area.
- To date, four systematic counts of this waterbird colony have been documented. Two counts were realized in 2019 to compare the number of nests pre- and post- Cyclone Idai.



Fig. 1. Map of Gorongosa National Park, Moçambique, showing the location of Lake Urema and the waterbird breeding colony (Stalmans et al. 2014).





#### Summary- continued

- On 25 March 2021, a total of 4,382 nests of 9 species were counted.
- On 16 April 2019, a total of 3,791 nests of 7 different species were counted.
- This represents an increase in 592 nests from the April 2019 count.

Table 1: Side-by-side comparison of the numbers of waterbirdnests in the same colony between April 2019 and March 2021.

Species	Aprr-19	Mar-21
African Darter Anhingg rufg	671	412
	071	712
African Openbill Anastomus lamelligerus	1034	1502
African Sacred Ibis Threskiornis aethiopicus	0	10
African Spoonbill Platalea alba	0	8
Great Egret <i>Egretta alba</i>	99	801
Grey Heron Ardea cinerea	42	65
Reed Cormorant Phalacrocorax africanus	741	150
White-breasted Cormorant P. lucidus	308	153
Yellow-billed Stork <i>Mycteria ibis</i>	896	1281
Total nests (all species)	3791	4382



#### Summary - continued

- However, there were 621 fewer nests counted in March 2021 compared to the first survey in April 2014, with the lower numbers again mostly the result of fewer Reed cormorants being present.
- In April 2014 there were 5,003 nests counted in 463 trees compared to the 4,382 nests found in 523 trees during the March 2021 count.
- The most numerous species observed in 2019 and 2021 were the African openbill, while in 2014 there were far more Reed cormorant than any other species.
- The waterbird colony on Lake Urema continues to represent one of the most important conservation values of Gorongosa National Park.

Table 2: Side-by-side comparison of the numbers of waterbirdnests in the same colony between April 2014 and March 2021.

Species	Aprr-14	Mar-21
African Darten Ankinga sufa	F 47	412
African Darter Ann <i>inga ruja</i>	547	412
African Openbill Anastomus lamelligerus	531	1502
African Sacred Ibis Threskiornis aethiopicus	24	10
African Spoonbill Platalea alba	0	8
Great Egret Egretta alba	330	801
Grey Heron Ardea cinerea	82	65
Reed Cormorant Phalacrocorax africanus	2276	150
White-breasted Cormorant P. lucidus	230	153
Yellow-billed Stork Mycteria ibis	983	1281
Total nests (all species)	5003	4382



## 1. Survey methodology

All nests were individually counted per nesting tree and per species to the extent possible. In some cases trees were grouped together when difficult to discern the differences between nests on branches within close proximity to each other. Nests were counted from a boat within ca 20 – 100 m of the colony. The team consisted of 5 members who had all participated in at least one of the 2019 counts.



Fig. 3. Representative view of the Lake Urema waterbird breeding colony. Species pictured include Openbill stork, Yellow-billed stork, and Great egret.



Fig.4. Boat used to visit waterbird breeding colony.



## 2. Results

## 2.1 Numbers of nests recorded

Table 3. Results of count of colonial waterbirds breeding at Lake Urema, Gorongosa National Park, on 25 March, 2021.

Species	No. of nests	No. of trees with nests	Average nests/tree	Max. nests per tree
African Darter Anhinga rufa	412	101	4.1	21
African Openbill Anastomus lamelligerus	1502	257	5.8	29
African Sacred Ibis Threskiornis aethiopicus	10	5	2.0	4
African Spoonbill Platalea alba	8	7	1.1	2
Black-headed Heron Ardea melanocephala	0	0	0	0
Great Egret Egretta alba	801	193	4.2	15
Grey Heron A. cinerea	65	51	1.3	3
Reed Cormorant Phalacrocorax africanus	150	48	3.1	9
White-breasted Cormorant P. lucidus	153	40	3.8	16
Yellow-billed Stork Mycteria ibis	1281	330	3.9	17
Total (all species)	4382	523	8.4	41



## **2.2 Species-by-species results**



There were over 2,000 fewer Reed cormorant nests counted in 2021 than were first recorded in 2014.

This species appears to have more nests in April than March and is classified as Least Concern on the IUCN red list, yet the overall pattern of decrease should be monitored.

Perhaps timing or the increase in other species is playing a role in the decrease of Reed cormorant nests.



(photo Tara Massad)





African openbills are the only species to have shown consistent growth in their number of nests with each count.

The number of openbill nests increased by 45% from the April 2019 count and represented the species with the highest number of nests in both of the last two counts.







The number of Yelllow-billed stork nests have consistently increased by 43% between each of the last three counts since March 2019.

While Yellow-billed stork nests have never been the most numerous in number, the species has been the 2<sup>nd</sup> most populous in the colony during every count.







The most significant increase in number of nests occurred with the Great egrets. The number of nests increased by 8 times the number counted in April 2019.







African darter nests were the most numerous in March 2019 but in 2021 had been outnumbered by three other species.

The number of darter nests decreased by approximately 39% since April 2019, while in March of 2019 they reached their peak and had the most numerous nests of all species.







The number of White-breasted cormorant nests decreased by almost exactly half the number present in April 2019.

Of the six waterbird species consistently present during each count, the White-breasted cormorants tend to undergo less drastic fluctuations but are one of the least populous species found.







The number of Grey heron nests increased by almost 55% from April 2019.

The species has been present with nests in all but the March 2019 survey.





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**Black-headed Heron Nests** 

Black-headed herons were not observed within the colony again in March of 2021. Nine Blackheaded heron nests were only observed in March of 2019.



(photo Lee Bennett)





Ten African sacred ibis nests were recorded during the 2021 count. Twenty-four African sacred ibis nests had been observed during the first count in 2014, but they were absent during each count of 2019.



(photo Tara Massad)





While only 8 nests were counted for this species it represents the first count in which African spoonbill nests were observed.





## **2.2.** Additional species observations

African fish eagles (Fig. 5), as well as their calls, were observed near or passing through the colony.

Several crocodiles were waiting below trees for an opportunity to prey on any fledglings that drop into the open water (Fig. 6)

Baboons were notably present as predators during both 2019 counts, but absent during this survey.



Fig. 5. African fish eagle (Lee Bennet).



Fig. 6. Crocodile waiting below Great egret nests.



#### 3. Discussion

During the most recent survey a maximum of six nesting species were recorded per breeding tree. The maximum number of nests recorded for a single tree was 41, mostly African openbill.

While more trees were used for nests in 2021 than any previous count, there were over 600 more nests counted in 2014. However, this count included almost 600 more nests than the previous April 2019 count.

No. of bird species per tree	Frequency of trees (%)
1	35.3
2	36.8
3	17.2
4	8.1
5	2.1
6	0.4

Table 4. Number of bird species per nesting tree.

Table 5. Total waterbird nests and trees with nests counted ineach survey for the same colony.

Total (all species) by survey	No. of nests	No. of trees with nests	Average nests/tree	Max. nests per tree
7 Apr-14	5003	463	10.8	58
12 Mar-19	2432	434	5.6	45
16 Apr-19	3791	383	9.9	70
25 Mar-21	4382	523	8.4	41

Assuming that each nest represented a pair of birds, the Urema colony contained approximately just over 8,700 breeding waterbirds in March 2021, which is more than both counts in 2019, but less than the approximately 10,000 in April 2014.

While a few species have experienced drastic fluctuations, the number of nests counted for all species in relation to trees with nests has remained relatively stable as demonstrated by the graphs in Figure 7.





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Fig. 7. Changes in nests counted in relation to trees with nests.

Some distinct partitioning of species was observed as indicated by the three areas displayed in Figure 8. While the area shaded in blue contained at least one nest of all species recorded, abrupt changes were noted for some species occupying the areas shaded in white and yellow.



The area in white was completely absent of Great egret nests, while almost 72 percent of the African darter nests were counted in the trees of this area. The trees in this area were separated from the longer section of trees shaded in blue by approximately 150 meters.

While the trees in the areas shaded blue and yellow were not distinctly separated, abrupt changes of nesting species were observed here as well. The area indicated in vellow was occupied exclusively by African openbills Yellow-billed and storks. Approximately 15 percent of the nests counted for both of these species were found in the yellow area.



Fig. 8. Observed partitioning zones by species for nesting.

Reed cormorants once again showed significant decreases, while Great egrets increased by almost exactly 700 nests. Figure 9 shows the various fluctuations amongst those species which have been consistently present during each count.



Fig. 9. Comparison of nests recorded for major waterbird species by count event.



For the first time since the 2014 count, the number of African darter nests of 412 (equating to 824 birds) did not exceed the 1% Ramsar threshold for this species in southern and eastern Africa (1000 birds; Wetlands International 2012). However, there was an increase in the count of Yellow-billed stork nests to 1281 nests (equating to 2,562 birds); this number far exceeds the 1% Ramsar threshold for sub-Saharan Africa (1,100 birds; Wetlands International 2012).

It is important to note that each of the counts represents a small, but important snapshot in time. The number of nests recorded overall and by species depends very much on the timing of reaching the colony by boat. Indeed, we had hoped to revisit the colony in April particularly to ascertain the status of Reed cormorants, but were challenged by hippos blocking the already narrowing channels. This points to the need and importance of regular counts to evaluate the status of this waterbird breeding colony and the significance of Gorongosa National Park as a conservation area.





#### 4. References

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### 5. Acknowledgements

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