

First Record of Greater and Lesser Flamingos Breeding in Botswana

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Introduction

On 28 June 1978, while flying over the great Makgadikgadi Salt Pans in Botswana, one of us (P.G.J.) observed breeding colonies of Greater and Lesser (*Phoeniconaias minor*) (*Phoenicopterus ruber*) flamingos on Sua Pan. Creches of Greater flamingo juveniles, not able to fly, were observed from the air as were Greater and Lesser flamingos occupying nests. Aerial photographs were taken from which counts of birds were made. The significance of this discovery is discussed below.

Locality

Nesting birds were distributed along the margins of two elongate islands near the eastern shore of Sua Pan (20°53'S;26°12'E). Sua, or Nata Pan, is one of the largest expanses of water forming part of the Makgadikgadi Salt Pans (Fig. 1). These pans are at the centre of the Kalahari Basin and form a significant area of inland drainage (Campbell and Child, 1971). The Nata River is the main source of water flowing into the Sua Pan. The river and its tributaries flow through hypersaline soils and, in some places, beds of rock salt (Smithers and Paterson, 1959). Consequently the Nata River and, more so, the Sua Pan are intensely saline. Allen (1956) and Jenkin (1957) emphasize the importance of strongly saline conditions as they are indicative of high food concentrations favourable to flamingos. The food concentrations fluctuate widely, both temporally and spatially, so contributing to the characteristic nomadic nature of these birds (Pennycuick and Bartholomew, 1973).

Methods

The chick creches and the birds occupying nest sites were spaced out along the shoreline of the two elongate islands. Between 1600 and 1800 hours, a fixed-wing aircraft was flown over the colony in a north-south direction at a height of 450 metres. (Flying any lower would have caused a major disturbance of the colony). Using a 110 mm lens, colour slides of size 60 mm x 60 mm were taken of each creche separately and of the birds attending nests. These slides were projected against white cardboard, and using a tally counter and a pencil, each chick in each creche was marked off on the cardboard and simultaneously tallied. Some of the creches were extremely dense so that counting was difficult at times but still possible. The adults at nest sites were counted in the same way. Actual nests could not be distinguished separately for counting, so the number of adults counted is possibly in excess of the number of nests actually present. Adults were recognized specifically by their colour; Greater flamingos appearing white and Lesser flamingos pink. The juveniles in the creches were all taken to be those of Greater flamingos as only parent birds of this species were on the perimeters of the creches.

Results

The results of the counts are given in Tables 1 and 2. A total of 17 183 *P. ruber* juveniles was counted and a total of 1 335 birds of both species occupied nest sites. No juvenile *P. minor*

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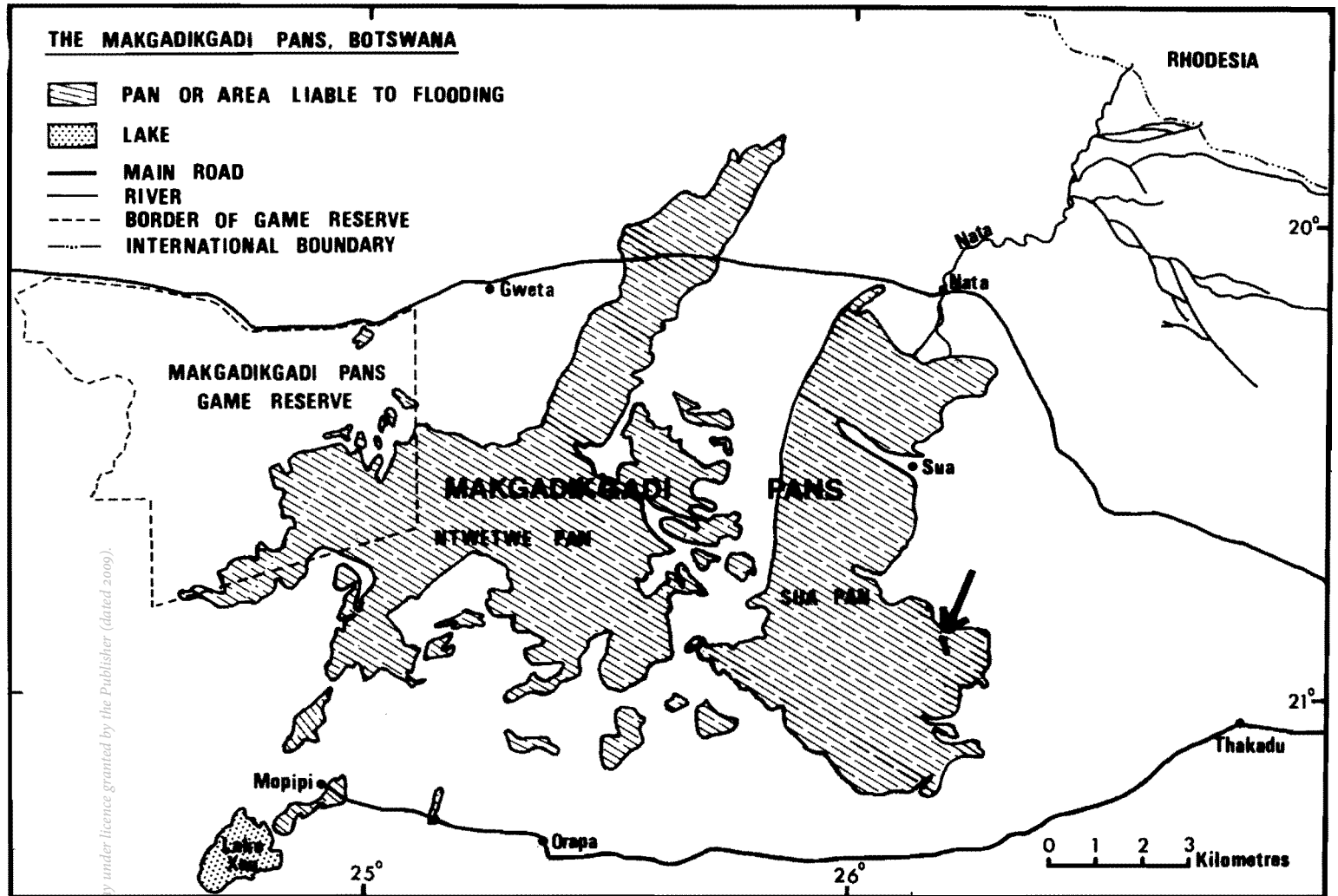


Fig. 1: Map of Makgadikgadi pans, Botswana. An arrow indicates the two adjacent islands where Greater and Lesser flamingos bred in 1978.

were identified. It is estimated that the *P. ruber* breeding population was approximately 35 000 birds and the *P. minor* population, approximately 1 500 birds.

TABLE 1

Number of juvenile Greater flamingos *Phoenicopterus ruber* in creches, Sua Pan
28 June 1978

Creche	No.
1	377
2	899
3	331
4	16
5	759
6	3 432
7	3 569
8	1 716
9	2 364
10	2 325
11	1 395
Total	17 183

TABLE 2

Numbers of flamingos at nests; Sua Pan 28 June 1978

Species	No.
Greater Flamingo <i>Phoenicopterus ruber</i>	548
lesser Flamingo <i>Phoeniconaias minor</i>	787

DISCUSSION

This is the first confirmed record of both species breeding in Botswana. Roberts (1935), while on the Vernay-Lang Kalahai expedition, recorded nesting of *P. minor* in the Makgadikgadi area but examination of his original field notes shows that he was referring to pelicans (Smithers and Paterson, 1959). Bushmen who have lived in this area for many years have described flamingo nest mounds and they reputedly hunt young flamingos with dogs, but this anecdotal evidence has also been rejected in favour of pelicans (Davison and Smithers in Brown, 1959). Unsuccessful attempts on the ground and by air have been made to find evidence of breeding (Smithers, 1964). Ginn (1976) notes that juvenile flamingos in loose association with *P. minor* adults were present along the Nata River in August 1974. He does not comment on numbers or whether they were fledged juveniles. Flamingos have in the past been recorded in large numbers on the Makgadikgadi pans. Smithers and Paterson (1959) give a rough estimate of between 75 000 and 100 000 for October. Smithers (1964) states that "hundreds of thousands" of *P. ruber* may be seen on the Nata River — usually from October/November — as well as large numbers of *P. minor*. *P. minor*, though, is never as numerous as *P. ruber*. Ginn (1976) states that both *P. ruber* and *P. minor* may gather in large numbers in the Nata area depending on the suitability of water levels.

Besides being the first breeding record of *P. ruber* in Botswana, it is the largest, single, documented breeding attempt of this species in Africa. Larger colonies occur outside Africa: at Sebokra de Sidi-el-Hani in Tunisia (35°33'N;10°25'E) a total of 20 000 birds bred in 1972 (Kahl, 1975). In East Africa the two main lakes on which breeding of *P. ruber* takes place are Lake Elmenteita (0°24'S;36°13'E) and Lake Natron (2°25'S;36°00'E). The largest breeding recorded on Lake Elmenteita was in 1968 when about 15 700 eggs were laid, of which an estimated 9 500 hatched (Brown *et al.*, 1973). The largest breeding attempt recorded on Lake Natron was in 1962 when 11 000 eggs were laid of which 9 350 hatched (*Ibid.*) The flamingos in East Africa are considered to be a separate population from those in southern Africa (Berry, 1975). At Etosha Pan (19°S;16°E) Namibia, in 1971, there were an estimated 27 000 breeding birds (Berry, 1972).

The sizes of the above-mentioned breeding colonies are all less than that recorded for Sua Pan, Botswana. Three other breeding sites of *P. ruber* have been recorded in southern Africa. Breeding occurred on the farm, Reinerskraal, in Bredasdorp (34°31'S;20°23'E) during 1960 and 1961, when not more than 800 eggs were laid and approximately 350 young fledged. In November 1963 a small colony was found on the farm, Melckamer, which is adjacent to Reinerskraal. Fewer than 25 of the 50 chicks that hatched survived (Uys *et al.*, 1963, Uys and Macleod, 1967). *P. ruber* bred at Lake St Lucia (27°30'S;32°30'E) in 1972. There were an estimated 6 000 nests, from which about 4 000 chicks were raised (Porter and Forrest, 1974). A total of 724 unfledged *P. ruber* chicks was counted at Van Wyksvlei, South Africa (30°24'S;21°47'E) in February 1978. These chicks had been abandoned by their parents because the water had dried up; 613 of them were successfully rescued (Boshoff, in press).

Unlike *P. ruber*, the *P. minor* colony of Sua Pan in 1978 was very small in comparison to other breeding sites in Africa. Kahl (1975) gives a brief review of the documented breeding of this species in Africa. The largest concentrations are in East Africa where in the decade 1953 — 1962 inclusive, 130 000 to 140 000 chicks were reared on average per year (Brown, 1973). In southern Africa Etosha Pan is the main breeding site of *P. minor*. About 54 000 adults bred there in 1971 (Berry, 1972). *P. minor* bred in small numbers in 1978 at Britten salt pan, Transvaal (27°45'S;25°19'E) (Gillard, 1979). The success of breeding of Lesser flamingos on Sua Pan is uncertain as breeding was still at a relatively early stage when examination of the colony took place.

Flamingos have been known to breed in the Etosha Pan since 1957. 1971 was a good year for breeding as there was extensive flooding of the pan which attracted large numbers of both species (Berry, 1972). In the first half of September 1978 Berry (pers. comm.) counted about 1 500 *P. ruber* juveniles that were nearly fledged. He considered that not more than 5 000 *P. ruber* adults bred in 1978, a low figure compared to that of 1971. Berry (1972) remarked that movement of both species of flamingo between Etosha, Lake Ngami (20°37'S;22°40'E) and the Makgadikgadi pans seemed likely. In light of the low *P. ruber* breeding figures for 1978 at Etosha and the high breeding figures on the Makgadikgadi pans there is a possibility that some of the birds that normally breed at Etosha bred on Sua Pan in 1978.

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