WHISKERED TERNS *CHLIDONIAS HYBRIDUS* BREEDING IN THE SOUTHEASTERN TRANSVAAL HIGHVELD, SOUTH AFRICA

D.G. ALLAN

Transvaal Division of Nature Conservation, Private Bag X209, Pretoria 0001, South Africa.

(Present address: Percy FitzPatrick Institute of African Ornithology, University of Cape Town, Rondebosch 7700, South Africa.)

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SUMMARY

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Six Whiskered Tern *Chlidonias hybridus* breeding colonies found in the Transvaal, South Africa are described. Breeding was associated with above average rainfall. Details are presented on breeding localities, colony sizes, nest structure, egg sizes and incubation behaviour. The African subspecies *C. h. delalandii* is compared with the nominate race *C. h. hybridus*.

INTRODUCTION

Whiskered Terns *Chlidonias hybridus* were first recorded breeding in southern Africa in the southwestern Cape by Dr Andrew Smith during 1827-29 (Roberts 1936). The first Transvaal breeding record was from Belfast in 1901 (Payn 1908). The Whiskered Tern is now known to breed widely but erratically across the Transvaal highveld biome (Tarboton *et al.* 1987). The breeding habits of the European subspecies of this tern are well-known (Cramp 1985) but the African subspecies has not received detailed attention.

This note reports on six breeding colonies found in the southwestern Transvaal highveld (Ermelo, Amersfoort and Wakkerstroom districts) in January and February 1984.

RESULTS & DISCUSSION

Breeding localities

The details for each colony are presented in Table 1. The precise locality of each colony is best not specified further than the relevant quarter-degree square.

All of the colonies were situated in flooded pans except for Colony 1 which was divided between two farm dams 700 m apart; one in square 2629DD (six nests) and the other in square 2729BB (one nest). One of the two eggs in this isolated nest was hatching when examined. Colony 3 was divided between two pans about 100 m apart. One had 16 nests with eggs; the other had six old nests, and one half-grown chick and another flying chick were seen here, suggesting that breeding was nearly complete at this latter pan. The chicks seen at Colony 6 were all about one-quarter grown and chicks from the five empty nests were probably hidden in the surrounding vegetation. The count at Colony 2 was incomplete.

The flooded pans were all characterized by a dense covering of emergent and floating vegetation

TABLE 1

DETAILS OF SIX WHISKERED TERN BREEDING COLONIES FOUND IN THE SOUTHEASTERN TRANSVAAL HIGHVELD, SOUTH AFRICA, JANUARY-FEBRUARY 1984

Colony	1	2	3	4	5	6
Square	2629DD/ 2729BB	2630CB	2630CB	2630CC	2630CD	2730AA
Surface area (ha)	31	11	11	10	10	28
Date	3 Jan	22 Feb	22 Feb	22 Feb	22 Feb	27 Feb
Nest contents						
Empty	2	-	6	-	-	5
1 egg	1	-	-	1	6	3
2 eggs	3	-	4	2	8	2
3 eggs	1	5	12	4	5	2
At least 1 chick	-	-	-	-	-	1
At least 2 chicks	-	-	-	-	-	1
3 chicks	-	-	-	-	-	1
Total	7	5	22	7	19	15

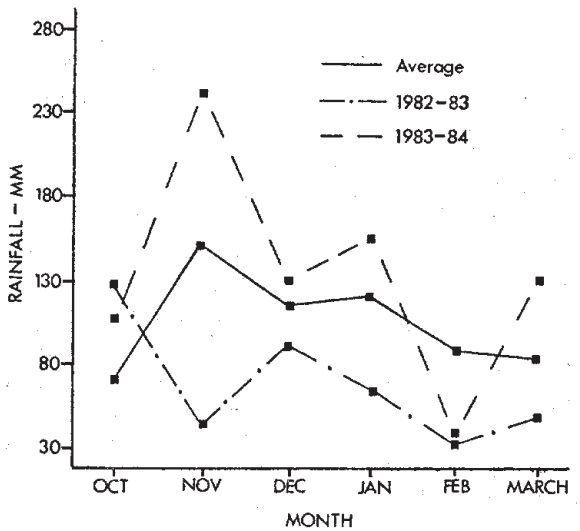

FIGURE 1

Monthly rainfall during the summer at the rainfall station closest to the six Whiskered Tern breeding colonies. The solid line connects the long-term averages for the station calculated over a period of more than 20 years.

(Cyperaceae, *Lagarosiphon muscoides*, *Nymphoides thunbergiana*, *Leersia hexandra*). The two farm dam sites were unusual as the only emergent vegetation was a thin covering of *Polygonum* sp. restricted to the edges of the dam and amongst which the tern nests were located.

Rainfall

Average annual rainfall at the rainfall station closest to the six colonies (Nooitgedacht-Ermelo) is 780 mm per annum, with most rain (82%) falling in the months October-March and with a peak in November-January (50%) (monthly weather reports published by the Weather Bureau, South African Department of Transport). Tarboton *et al.* (1987) show that egglaying by Whiskered Terns in the Transvaal is restricted to the rainy season, with all records from the period October-March (n=274) and with a marked February peak (57% of records). Egglaying at the six colonies described here occurred mainly in January and February. Figure 1 presents the rainfall figures for the area for the months immediately prior to, and during, the survey period. Rainfall during the months October 1983-January 1984 was 39% above average.

The wetlands where Colonies 1, 3, 4 and 6 were situated, were visited during the previous summer (1982-83). All were dry and no Whiskered Terns were present. Rainfall during the period October 1982-January 1983 was 29% below average in that summer (Fig. 1). The widespread breeding by Whiskered Terns in this area in the summer of 1983-84 was therefore associated with a period of above average rainfall in the early summer, which flooded wetlands that had stood dry during a period of below average rainfall the previous season. Tarboton *et al.* (1975) also found breeding to be associated with above average rainfall.

Colony sizes

The total number of pairs per colony varied between at least five and 22 pairs. The largest colony reported from the Transvaal was one of 27 nests found by Dean & Skead (1979) in the western Transvaal. The six wetlands used for breeding are depicted on the 1:50 000 topocadastral maps of the region and the surface area of each was calculated from these maps. There was no noticeable relation between the number of pairs in each colony and the surface area of the six wetlands (Table 1).

Nests

All of the nests were floating platforms of aquatic vegetation in water up to 1,5 m deep, except for one nest in Colony 5 which was built on a submerged log. At Colonies 1, 4 and 5 it was noticed that all the nests containing only one, and some of those containing only two, eggs were far less substantial structures than those containing three eggs. This suggests that these clutches were incomplete and that the birds continue building when there are eggs in the nest. The cup of the nest is built last and two nests with only one egg had no discernible cup. This phenomenon is reflected in the measurements taken from 21 nests:

1/2 eggs: Average nest length X width = 390 X 360 mm (140-700 X 140-700 mm; n=9).

3 eggs: Average nest length X width = 530 X 480 mm (230-1 300 X 230-1 200 mm; n=12).

1/2 eggs: Average cup length X width = 70 X 60 mm (0-100 X 0-100 mm; n=11).

3 eggs: Average cup length X width = 90 X 90 mm (80-100 X 70-100 mm; n=11).

Tarboton *et al.* (1975 and Craib (1982) report a similar finding at Whiskered Tern colonies found by them in the Transvaal. One extraordinary nest at Colony 2 measured 1 300 X 1 200 mm across, due to the very long strands of aquatic vegetation used in its construction.

Eggs

The average size of 49 eggs was 39,2 X 28,8 mm (35,3-42,1 X 26,5-30,8 mm). This is slightly larger, and with a wider range, than reported in Maclean

(1985) for 33 southern African Whiskered Tern eggs.

Behaviour during incubation

At Colony 4 a hide was erected to photograph a pair of terns at their nest with eggs. Both sexes incubated. The male, identified by his larger bill, brought a dragonfly for his mate to eat. During nest-relief, the arriving bird called before landing on the edge of the nest with its wings held up momentarily before folding them. It then stood with its head raised. The incubating bird called in answer to its inflying mate and crouched forward with the rear half of its body angled upwards before relinquishing incubation. The nest was fully exposed to the sun and the incubating adult would frequently walk to the edge of the nest to drink.

CONCLUSIONS

The observations described here are similar to those reported for the European subspecies *C. h. hybridus* (Cramp 1985). Breeding habitat, nests and egg-sizes are virtually identical and both subspecies will breed at man-made dams. The synchronized egglaying within the two sub-colonies at Colony 3 has also been reported for *C. h. hybridus*. Provisioning of the female by the male and the nest-relief ritual are common to both subspecies. The usual number of pairs per colony (5-30 pairs) is similar in both subspecies but breeding concentrations in excess of 50 pairs, and occasionally as large as several hundred pairs, are regularly reported for *C. h. hybridus*. Colonies of this size are unknown for the African subspecies *C. h. delalandii* in the Transvaal, or elsewhere in its range.

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