

CRESTED TERNS *Sterna bergii* ON SOUTHERN GREAT BARRIER REEF ISLANDS, 1985-1986

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INTRODUCTION

The Crested Tern *Sterna bergii* is one of the most commonly observed terns around the coast of Australia. Information on the distribution and breeding on islands on the southern half of the Great Barrier Reef is presented here for the 1985-1986 breeding season. There have been no previous surveys attempting to cover this area although there are reports of nesting on the Capricorn, Bunker and Swain Reefs groups of islands (Kikkawa 1976, Walker and Jones 1986).

METHODS

Approximately 150 continental islands and rocks between Holbourne Island (19°43'S) and the Keppel Group (23°15'S) were surveyed at least once between October 1985 and March 1986 (Figure 1). All 23 coral cay islands except for Riptide Cay were surveyed two to four times between December 1985 and May 1986.

In addition other less extensive surveys have been carried out from 1983 to 1987 in local regions of the southern Great Barrier Reef. The only known tern nesting site that was not visited was Riptide Cay where Crested Terns were reported nesting in November 1976 (Limpus and Lyon 1981).

RESULTS

Crested Terns were present throughout the whole of the survey area. They were the most

commonly observed species of tern and on most of the rocky islands they were the only species seen. Nesting was observed on two rocky islands (Eshelby Island, East Rock) and nine coral islands (Table 1). As well as this, a Crested Tern

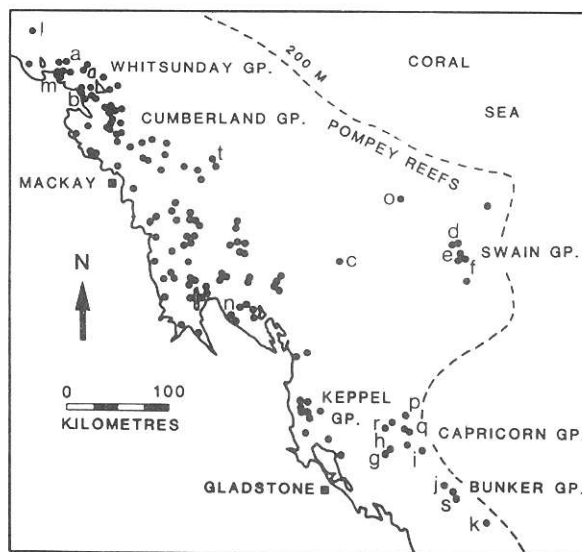


Figure 1. Locality map showing the positions of all islands and groups of islands (●) Islands a-k correspond to those listed in Table 1; l, Holbourne I.; m, Little Grassy I.; n, Pelican Rock.; o, Riptide Cay; p, North Reef I.; q, Wilson I.; r, North West I.; s, Lady Musgrave I.; t, Tern I.

TABLE 1

Crested Tern nesting sites in the 1985-1986 breeding season.

Island	Date	Sites	Terns Present	Number of Clutches	Clutch Stage	Associated Nesting Species
a Eshelby	24 Dec.	multiple	>7 000	3 560	E	BT
b East Rock	27 Dec.	all over	>400	243	E,C	BNT
c Bell Cay	14 Feb.	east end	285	97	E,C,U	CN
	6 Apr.	east end	>400	200	E,C	CN
d Bacchi Cay	17 Feb.	east end	1 000	200	U	BB,LCT
e Frigate Cay	6 Apr.	west end	20	1	E	CN,RT
f Price Cay	19 Feb.	east end	1 400	329	U,E	CN,BB,LCT
	6 Apr.	east end	?	38	E	CN,BB
g Masthead	11 Dec.	north side	116	58	E	RT,BNT,LCT
h Erskine	10 Dec.	north side	>100	80	E	BT
i One Tree	14 Dec.	southwest side	>700	457	E	BT
j Fairfax (east)	8 Jan.	west end	200	60	C	BB
k Lady Elliot	31 Dec.	northeast side	>5 000	3 500	E,C	BT,CN,BNT,SG

Abbreviations: E, eggs; C, downy chicks; U, unfledged feathered juveniles; BB, Brown Booby; BT, Bridled Tern; SG, Silver Gull; RT, Roseate Tern; LCT, Lesser Crested Tern; BNT, Black-naped Tern; CN, Common Noddy.

eggshell was found in a Black-naped Tern *Sterna sumatrana* colony on North Reef Island (5 February 1986) and a Crested Tern eggshell was found in a Black-naped Tern colony at Holbourne Island (24 December 1985). Observations from flights over the area suggested that nesting might have occurred on Tern Island, east of Mackay. This island could not be visited for confirmation in 1985-1986 but a deserted Crested Tern egg was found there on 19 January 1987.

DISCUSSION

Crested Terns have previously been found to be abundant in some regions of the southern Great Barrier Reef (for references see Kikkawa 1976). The present survey is in agreement with these observations and extends the distribution to large regions that have not previously been examined. The only disagreement is in the Whitsunday Group where Crested Terns were classified as a rare species in the summer of 1933-1934 by Marshall (1934). Two other bird surveys of the Whitsunday and Cumberland Islands (Brown 1949, Roberts 1957) recorded Crested Terns as being common. In fact Crested Terns were the only species of tern seen in June 1948. In 1985-1986 they were the most frequently observed seabird throughout this area. Comparison of abundance of other seabird species in the Whitsunday

area (Lesser Crested Tern *Sterna bengalensis*, shearwaters *Puffinus* sp., Brown Booby *Sula leucogaster* and Frigatebirds *Fregata* sp.) suggests that a change has occurred in seabird populations since Marshall's visit in 1933-1934 (Marshall 1934).

Nesting occurred in 1985-1986 on the southern offshore coral cays and on nearshore rocky islands in the north of the survey area. This nesting distribution is similar to that of Black-naped Terns and Roseate Terns *Sterna dougalli* (Walker 1986, 1988). In contrast with these species Crested Terns were also observed well away from known nesting sites. It is probable therefore that some small to moderate sized Crested Tern breeding colonies on rocky islands were not located. Two further minor nesting sites were identified in the following season (1986-1987) on Pelican Rock in Shoalwater Bay (30 terns and four nests with eggs on 5 November 1986) and on Little Grassy Island north of the Whitsunday Group (20 terns and two nests with eggs on 22 November 1986).

Breeding in the Capricorn-Bunker region (Table 1, g-k) and on the rocky islands (Table 1, a&b) is highly seasonal and occurs between November and March. Each island has basically a single nesting of Crested Terns during a season

(or none at all) although there may be some re-laying by unsuccessful birds. There can be more than one colony present with overlapping nesting dates but as a rule once nesting is completed on an island it does not occur again until the following year.

In contrast, nesting colonies may be found throughout the year on islands in the Swain Reef region (Table 1, c-f) though numbers are lower in winter (Walker and Jones 1986). The explanation for this difference between regions may be related to seasonal changes in abundance of food or to seasonal changes in temperature. Annual variations in seawater temperature are greater at islands near to the mainland than at the Swain Reefs (Brandon 1973).

The number of nests on Swain Reefs islands at any time was lower than in the Capricorn-Bunker and north Whitsunday regions (Table 1) but because of the year-round breeding at the Swains Group the annual difference between the regions is not as great as the data suggest.

On coral cay islands nesting turtles may crawl through tern colonies causing considerable damage in summer. It is notable that the two largest Crested Tern colonies on cays were at Lady Elliot Island and One Tree Island where the least interference from turtles occurs (turtles cannot dig nests in the shingle on these cays). Birds nesting outside of the turtle nesting season in the Swains Groups avoid such disturbance.

Prior to the 1985-1986 season, Crested Tern nesting had not been reported on East Rock, Eshelby Island, Bacchi Cay or Erskine Island. The first three of these islands probably support regular nesting each year. Erskine Island did not have any colonies in the three years prior to the 1985-1986 season but nesting occurred again in the following 1986-1987 season.

There were three islands in the Swain Group, Thomas, Bylund and Gannet islands, where nesting has previously been reported (Walker and Jones 1986) but where nesting was not found in the present survey. These islands could have had colonies at times other than on the dates for which they were surveyed in February and April. There were also four islands in the Capricorn Bunker Groups where nesting has been observed previously but where nesting was not found in the present survey. These islands, Lady Musgrave

(MacGillivray 1928), Wilson (MacGillivray 1926), North Reef (Walker and Domm 1986), and North West (Embury 1933) were regularly visited throughout the year and nesting would not have been overlooked.

North West Island is of particular interest because unlike other islands in the Capricorn and Bunker Groups it has feral cats and does not support colonies of ground-nesting terns. Embury (1933) described how wild cats ravaged large colonies of Crested Terns on 'southern Barrier Reef islands' in the late 1920's. North West Island is the only known southern Great Barrier Reef island with feral cats and, as Embury led ornithological expeditions to this island (MacGillivray 1931) and made claim to holding a lease there (Old. Govt. Archives), it is apparent that this is the island to which his observations refer. The cats were eradicated in 1985 (except for one that escaped capture until 1987) but Crested Terns did not return to nest in 1985-1986 or in 1986-1987. This may take time because of present nesting site fidelity to nearby islands or it may be discouraged by the large numbers of campers (up to 150) that now visit North West Island.

It is possible using the survey results to make an appraisal of the total summer population of Crested Terns on the southern Great Barrier Reef during 1985-1986. There appeared to be 9 000 birds in the Capricorn-Bunker region, 8 000 in the Eshelby Island region, 5 000 in the Swain Reefs region and maybe 2 000 elsewhere on the inner shelf giving a total of 24 000 birds.

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INTRODUCTION

In recent decades the populations of the Roseate Tern *Sterna dougalli* have declined precipitously in Europe, South Africa and North America where it is considered to be a threatened species (Nisbet 1980). In Australia, Roseate Terns nest on islands off the western coast of Western Australia and off the eastern coast on the Great Barrier Reef. Breeding records on these islands are relatively few and there has not previously been a widespread regional survey. Some islands appear to be preferred for nesting but large yearly variations in sites and numbers of birds occur (Hulsman 1984).

STUDY AREA AND METHODS

Approximately 150 continental islands and rocks between Holbourne Island (19°43'S) and the Keppel Group (23°15'S) were surveyed at least once between October 1985 and March 1986. The region is shown in Figure 1. All 23 coral cay islands except for Riptide Cay were surveyed two to four times between December 1985 and May 1986. Included amongst the surveyed islands were all known tern nesting sites except for Riptide Cay, Reid Island and Creek Rock (Kikkawa 1976). There are no records of Roseate Tern nesting on these three islands.