SEABIRD ISLANDS No. 66

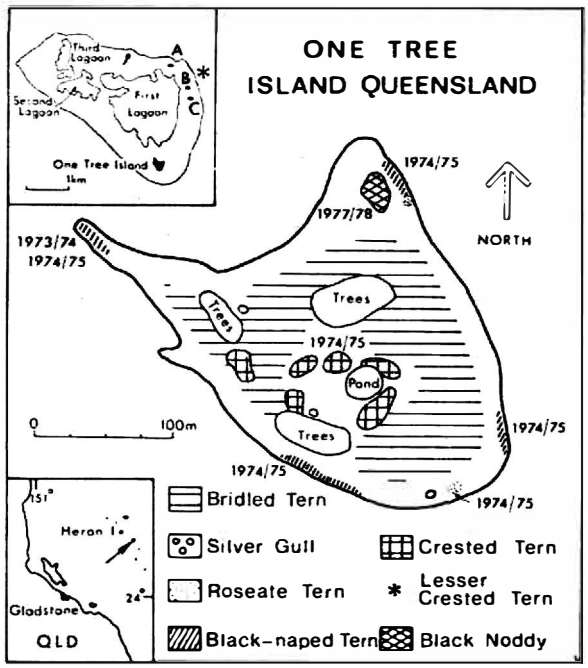
One Tree Island, Queensland

Location: 23° 31′ S., 152° 05′ E.; in the Capricorn Group; 92 km north-east of Gladstone, Qld and 19 km south-east of Heron Island.

Status: A sanctuary under the Fauna Conservation Act of 1952 (At present the University of Sydney runs a research station on the island.)

Description: 3-4 ha; 250 m at its longest and 150 m at its widest. The island is a coral-rubble cay on the windward (south-east) side of the reef. The cay is about 2 m above the mean high-water mark. Low shrubs *Wedelia biflora* cover most of the island; a few scattered clumps of trees *Pisonia grandis* and *Tournefortia argentea* are on the periphery. Just off the centre is a clump of palm tree *Pandanus* sp. and a shallow tidal pond that is surrounded by a low succulent plant *Sesuvium portulacastrum*[3,5].

One Tree Reef (4.7 km x 2.7 km) encloses three lagoons that contain a network of patch reefs. Two of the lagoons are 0.3 m above the mean level of low tide[11]. There are at least six rubble banks on the reef crest: First, Second, Third, Long and Wreck Banks plus an unnamed one on the edge of the Third Lagoon. These banks are not vegetated and are built up and eroded by currents and wave action.



* A, B, and C on insert (top left) refer to First, Second and Third Banks where breeding occurred as follows: A – Lesser Crested Tern 1976/77; B – Roseate Tern 1974/75, Lesser Crested Tern 1973, Black-naped Tern and Lesser Crested Tern, 1973/74 and 1974/75; C – Black-naped Tern and Crested Tern 1974/75.

Landing: Safe entry into the lagoons and hence the island can be made at high tide only. Permission to land should be obtained from the Executive Officer of One Tree Island Research Station, Zoology Building, School of Biological Sciences, University of Sydney, Sydney. 2006. N.S.W.

Ornithological History: Period summarised — 1843 to 1977. In January 1843, Professor J. B.

Jukes, naturalist aboard HMS *Fly*, landed on the island. He noted that terns were nesting around the pond, an eagle's nest, herons, oystercatchers and curlews[8]. Despite the many visits by ornithologists to the Capricorn Group (e.g. MacGillivray [13,14]; Cooper[2]) none published notes about the birds of One Tree Island.

From 1966 to 1970, The Australian Museum made scientific expeditions to One Tree Island. H. Heatwole and his colleagues recorded some of the activities of the birds and censused them between May 1968 and March 1971. A checklist and notes on the yearly cycle and feeding ecology of birds on the island were compiled by S. Domm and H. F. Recher[4]. K. Hulsman studied the feeding and breeding biology of terns on the island between May 1973 and February 1976[4,5,6,7,8]. A. E. and J. Chilvers kept record of the nesting birds on the island and banks from 1973 up to at least 1977.

Breeding Seabirds and Status

Egretta sacra Eastern Reef Egret — There were 200 to 275 reef egrets on the island between 1968 and 1972[3]; between 1973 and 1976 there were at least 175 present. They nest usually from August or September to January.

Haematopus fuliginosus Sooty Oystercatcher — Two pairs bred during 1974, one on the island and the other on Second Bank. The pair which nested on the bank reared one chick to fledging. The pair which nested on the southern side of the island did not raise any young between 1973 and 1976.

Larus novaehollandiae Silver Gull — The population of gulls varied from 14 to 101 between 1968 and 1970 (Heatwole and Cameron, pers. comm.) and 20 to 66 between 1973 and 1976. Usually the smallest number of gulls is present during June and July, and the maximum number is present during December and January when the Crestern Terns are feeding young. In 1974 nine pairs nested during December; others nested in May 1976 (Chilvers and Chilvers, pers. comm.). The nests were well separated under *W. biflora* and *Messerschmidtia* trees.

Sterna dougallii Roseate Tern — during 1973-74 and 1974-75 there were 180 and 365 individuals respectively on the island. About 50 pairs nested during 1974-75[5]. Nesting occurs between October and December but does not occur every year.

Sterna sumatrana Black-naped Tern — These birds do not nest on the island each year. The number of nesting pairs varied from 70 to 138 between 1973 and 1976[5]. Egg laying may occur at any time between September and February, though some nested during July 1974 at Heron Island.

Sterna fuscata Sooty Tern — One chick, near fledging, was found on the western side of the island among the *Wedelia* in February 1974. At least three Sooty Terns were on the island during 1974-75, and a pair nested where the chick had been found during the previous February. Chilvers and Chilvers (pers. comm.) recorded that the Sooty Terns arrived at night during the last days of August or early September.

Sterna anaethetus Bridled Tern — Some 250 to 400 pairs nest on the island annually; at least 326 pairs nested during 1974-75. The increase in the number of Bridled Terns on the island during January may be non-breeding birds visiting the colony. The first Bridled Terns arrive at night during mid-September; they are not seen on the island during the day until the second week of October [3,8]. Egg laying occurs between late October and mid-December. Adults leave with their young during the last week of March or early April, although stragglers may be seen until late April (Chilvers and Chilvers, pers. comm.).

Sterna bergii Crested Tern — These birds nest around the pond. Egg laying occurs between mid-November and early December. The number of pairs nesting at One Tree Island varies from year to year, e.g. 181 pairs during 1973-74 and 432 pairs during 1974-75. Most adults and their young have left the area by the end of February.

Sterna bengalensis Lesser Crested Tern — Nests irregularly at One Tree Island generally on the Banks (see map insert top left); 120 pairs nested

• *One Tree Island from the air (looking south-east).*

• *The beach on the northern side showing the research station huts.*

Photos: Robina Cummins

on Second Bank during September 1973 and 24 pairs nested on Third Bank during September 1976 (Chilvers and Chilvers, pers. comm.). In 1973 adults left with their young during November.

Anous minutus Black Noddy — Before 1973, Black Noddies built nests on One Tree Island but apparently laid no eggs. During December 1974, Hulsman saw a pair building a nest but no eggs were laid. During the summers of 1976 and 1977 noddies were courting. In 1977 more were courting than in previous years (Chilvers and Chilvers, pers. comm.). In 1978, noddies laid eggs and raised young on the island for the first time (Chilvers and Chilvers, pers. comm.).

Factors Affecting Status

Silver Gulls prey on eggs and chicks of all species of tern at One Tree Island, particularly those of the Black-naped and Roseate Terns. Black-naped Terns lose many eggs because their nest areas are often flooded. All the terns except Bridled Terns and noddies often change colonies from year to year. The nesting of the Lesser Crested Terns on the island is probably associated with the abundance of its main prey, the atherinid *Pranesus capricornensis*. Possibly the Lesser Crested Terns that nest at One Tree Island are from the population that usually nests at Masthead Island (also in the Capricorn Group) maybe this small population breeds alternately on these two islands.

The population of noddies on One Tree Island is possibly an overflow from nearby colonies and it has taken these birds several years to initiate breeding at this new site; this is typical of seabirds.

Buff-banded Rails *Rallus philippensis* occur and undoubtedly predate some eggs of the nesting seabirds.

The effect of human occupation of the island on the breeding of the birds has not been fully determined. Initially the reef egrets deserted their nests within a radius of 50 m of the reseach station[3]. Since about 1975 some have nested within 10 m of the cabins and successfully raised young.

Human inhabitation of the Capricorn Group and the increasing human population in Gladstone may be partly responsible for the increase in the number of gulls in the region. Some gulls commute between the islands and Gladstone on the mainland. Gulls which visit the ponds near the aluminium plant (at Gladstone), get dyed by bauxite; these gulls have been seen at Heron and One Tree Islands. Large numbers of gulls frequent Heron Island during the non-breeding season and feed on the garbage, offal thrown from fishing boats and peanuts in the bar. Certainly the garbage dump of Gladstone could provide gulls with a supply of food during the winter months. This problem still requires investigation.

Other Seabirds Recorded

Diomedea exulans	Wandering Albatross (derelict)[3]
Phoebetria fusca	Sooty Albatross (derelict)[1]
Pachyptila desolata	Antarctic Prion (derelict)[1]
Puffinus pacificus	Wedge-tailed Shearwater
Pelecanus conspicillatus	Australian Pelican
Sula dactylatra	Masked Booby
Sula leucogaster	Brown Booby
Phalacrocorax carbo	Great Cormorant
Phalacrocorax varius	Pied Cormorant
Phalacrocorax sulcirostris	Little Black Cormorant
Phalacrocorax melanoleucos	Little Pied Cormorant
Fregata minor	Great Frigatebird
Fregeta ariel	Least Frigatebird
Phaethon rubricauda	Red-tailed Tropicbird
Sterna albifrons	Little Tern

Banding

Period covered — December 1973 to June 1977.

E. sacra — 173 "adults", 22 nestlings; 10 recovered at banding place.

S. anaethetus — 25 "adults", 18 nestlings banded; 4 recovered at banding place.

A. minutus — 19 adults banded.

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