

# THE SUNBIRD

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## SEA BIRDS AND WADERS OF THE LIZARD ISLAND AREA

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### INTRODUCTION

The continental Lizard Island is in the northern part of the Great Barrier Reef of Australia (14°40'S, 145°28'E). The island is composed of granite and is well vegetated. It is 80 km north of Cooktown and lies 25 km offshore from Cape Flattery.

The Lizard Island area (Fig. 1) includes the adjacent Palfrey Island, South Island, and Bird Islet (unofficial name), all connected by fringing coral reef and enclosing a deep lagoon. Eagle Island is a coral cay 6 km west of Lizard Island. It is 1 km long and well vegetated. Notes on sea birds and waders of other nearby islands are also included.

This study is the result of observations made from October 1973 to November 1976. This study follows a more detailed work undertaken earlier on One Tree Island by Domm and Recher (1973).

Observations were made only on pelagic sea birds and waders that occur in significant numbers and which were consistently sighted, i.e. the most common species. No attempt was made to identify and catalogue every bird seen nor were the land birds considered in this study.

### THE YEARLY CYCLE

The yearly cycle begins with an increase in numbers among the sea birds which lay their eggs during the summer months, and a general increase in the number of waders. This occurs in October with the first appearance of the bridled terns, the first significant increase in the number of crested terns and an increasing abundance of waders. By November this trend is well advanced. December and January are the most important months, and April marks the end of the summer nesting season when the last of the bridled terns leave and the number of crested terns drops dramatically. April is also the beginning of the laying season for silver gulls and ospreys. After April the number of waders observed usually falls off rapidly, although throughout the year many species of waders are still observed in low numbers.

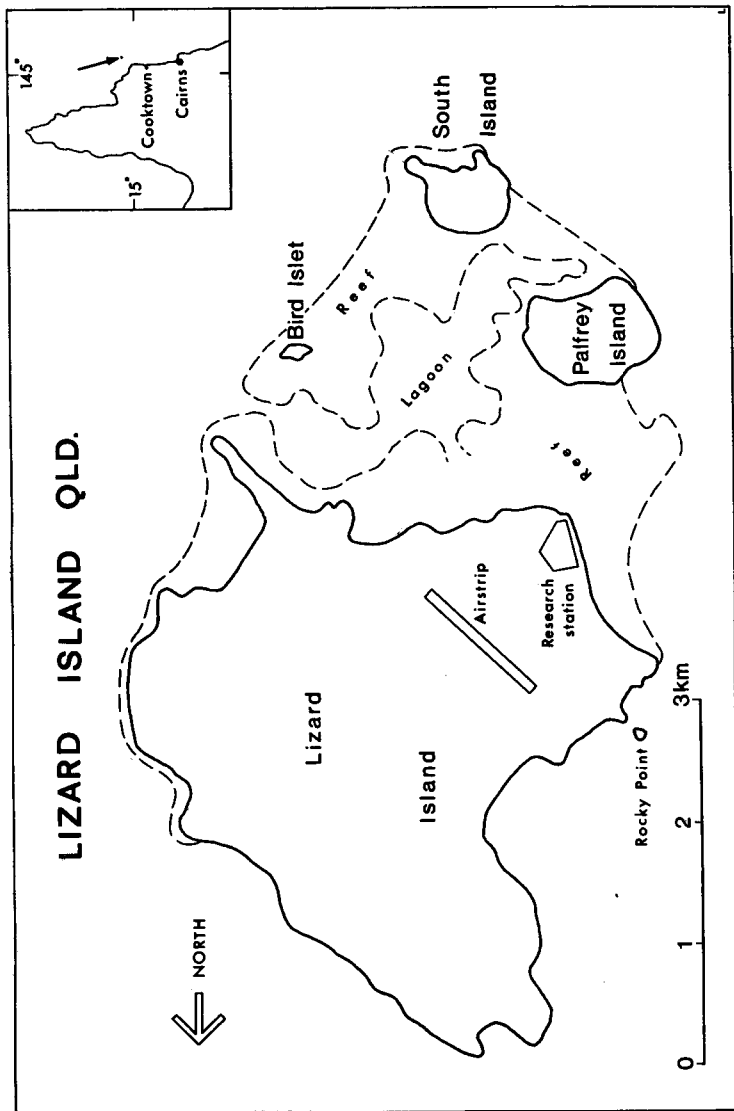


Figure 1. Map of Lizard Island area

## OBSERVATIONS

The yearly cycle of birds will be discussed species by species in decreasing order of abundance except for the terns which are listed in a group. In this section the discussion will be confined to birds of the Lizard Island area including Eagle Island.

Crested tern *Sterna bergii*

The crested tern is the most numerous of all birds observed. The major nesting site is Eagle Island. Crested terns are commonly seen throughout the year on both Eagle Island and the Lizard Island area.

Average monthly counts for the observation period show a yearly cycle of numbers. They are low in the winter months, June (2), July (6), sharply increasing to 250 in November prior to nesting. Numbers remain high in the summer months, December (1000), January (2000), and then gradually decline to winter numbers again.

The first eggs are usually seen in mid December with the first chicks appearing in late January. Shortly after the chicks have hatched they leave the nest and join others to form groups or creches. They remain in the creches until able to fly. Often just prior to flying the juvenile birds appear subject to high mortality, possibly due to starvation. During the month of March the author was usually absent and by April most crested terns, both juveniles and adults had dispersed.

During the 1973/74 nesting season crested terns occupied one major and two minor colonies on the southeast side of Eagle Island. During the 1974/75 season the terns nested in one large colony on the northwest beach area. During 1975/76 very few crested terns nested on the island and only 50 eggs were observed in a small colony towards the centre of the island. The reason for the paucity of nesting terns remains unknown, but it is interesting that each year the crested terns chose a different nesting site.

Bridled tern *Sterna anaetheta*

The bridled tern nests in considerable numbers on various islands in the vicinity of Lizard Island but is absent from the area when not nesting. The first bridled terns appear in October, and the numbers rapidly increase in November. The first eggs are usually observed in late November. Bridled terns nest on Eagle Island with an annual population of approximately 300 and on Bird Islet with an annual population of about 200.

When the bridled terns first appear they tend to congregate on sand banks or exposed parts of the island, but when their numbers have substantially increased and nesting is about to begin, they disperse throughout the island to construct simple nests in the grass and under low herbs. Hatchlings are grey, feathered chicks are mottled brown and blend in with surroundings. Soon after hatching they leave the nest to

seek cover nearby.

Black-naped tern *Sterna sumatrana*

Black-naped terns nest on Rocky Point (unofficial name, northwest Lizard Island) with an annual average of 40 birds, Bird Islet with an average for 1974 only of 40 birds and Eagle Island with an annual average of 20 nesting birds. On Eagle Island the black-naped terns nest on the eastern and western ends just above the spring high tide mark, while on both Bird Islet and Rocky Point they lay their eggs on bare rock.

During the period that observations have been made it appears that the black-naped terns have extended and somewhat varied their nesting times. On Eagle Island eggs have been observed during November, December, January and February. On Rocky Point eggs have been observed during December, January, September and October. On Bird Islet eggs have been observed during October and early November. Black-naped terns are always present in the Lizard Island area and are characteristic of lagoons and shallow reef areas.

Lesser crested tern *Sterna bengalensis*

This tern only nests on Eagle Island. Its yearly cycle is similar to that of the crested tern except it is seldom observed at times other than its nesting season in summer.

The lesser crested tern nests in association with the crested tern colonies but shows a tendency to segregate and sometimes even form their own subcolony. At other times they appear to be randomly mixed with the crested terns, their orange bills making them easy to distinguish. The maximum number of lesser crested terns observed was 400, although they usually number less.

Roseate tern *Sterna dougallii*

Relatively few roseate terns have been observed around Lizard Island. During December 1974, 10 adults, 10 eggs and 1 chick were seen on the eastern end of Eagle Island. This small colony was located between a colony of lesser crested terns and a much larger colony of crested terns. However by January both the roseate terns and lesser crested terns had disappeared.

White-capped noddy *Anous minutus*

These terns do not nest in the Lizard Island area, although small numbers are commonly observed throughout the year. During very windy weather up to 200 white-capped noddies have been seen resting on low trees on Bird Islet.

Silver gull *Larus novaehollandiae*

The silver gull is abundant throughout the year around Lizard Island. They nest on Bird Islet where laying may commence as early as January, but usually begins in April. During the nesting season the population is approximately 50.

Reef heron *Egretta sacra*

Reef herons in both the white and dark phase are common around Lizard Island. They nest on Bird Islet (population of about 10) and also on Eagle Island (population of about 15 to 20). Relatively few observations on reef heron nesting were made, but nests with eggs were observed on Bird Islet from February to May.

Osprey *Pandion haliaetus*

Ospreys are common in the vicinity of Lizard Island. There are at least 5 nests on Lizard Island plus one nest on Bird Islet, all of which are used each year. A large sea eagle's nest on Eagle Island which collapsed in 1974 has been partially rebuilt by either a pair of white-breasted sea eagles or ospreys. This nest has never been used although each year it appears to have been slightly rebuilt with the addition of more twigs.

The first osprey eggs are found in April, and usually by late July most chicks are at the flying stage. While ospreys are common throughout the year, their numbers increase during the nesting season, suggesting that many birds disperse to other islands when not nesting.

Pied oystercatcher *Haematopus ostralegus* and sooty oystercatcher *Haematopus fuliginosus*

Both of these species are common around Lizard Island. They have not been observed nesting.

Grey-tailed tattler *Tringa brevipes*

The grey-tailed tattler is the most common wader observed around Lizard Island. Although always present, their numbers increase during the summer months. Table 1 gives average monthly counts for 1973, 74 and 75 from Eagle Island.

TABLE 1

Average monthly counts of waders on Eagle Island, 1973-1975.

| Species               | J | J  | A  | S  | O   | N  | D  | J  | F  | M | A  | M  |
|-----------------------|---|----|----|----|-----|----|----|----|----|---|----|----|
| Grey-tailed tattler   | 2 | 13 | 35 | 50 | 100 | 70 | 70 | 40 | 30 | - | 45 | 10 |
| Turnstone             | 2 | 3  | 5  | 15 | 30  | 10 | 12 | 10 | 7  | - | 16 | 10 |
| Mongolian dotterel    | 0 | 1  | 6  | 10 | 30  | 15 | 15 | 15 | -  | - | 10 | 4  |
| Eastern golden plover | 0 | 2  | 2  | 2  | 10  | 3  | 4  | 7  | 20 | - | 5  | 2  |

Turnstone *Arenaria interpres*

Turnstones were usually observed on Eagle Island where they tend to be present throughout the year. As shown in Table 1 they are more numerous during the summer months.

Mongolian dotterel *Charadrius mongolus*

Only observed on Eagle Island. Table 1 shows the monthly averages

for the years 1973 to 1975.

Whimbrel *Numenius phaeopus*

Individuals or small groups observed on Eagle Island throughout the year, numbers usually less than 10.

Eastern golden plover *Pluvialis dominica*

These birds were usually observed on Eagle Island, although individuals were occasionally seen on the other islands. Monthly averages for the years 1973 to 1975 are shown in Table 1.

Eastern curlew *Numenius madagascariensis*

Relatively rare and usually only single birds observed on Eagle Island during summer.

Beach stone curlew *Esacus magnirostris*

Individuals or pairs commonly observed on Lizard Island and the adjacent South Island and Palfrey Island. Not observed nesting.

White-breasted sea eagle *Haliaeetus leucogaster*

Occasionally seen on Lizard Island and Eagle Island, but not seen nesting.

Knot *Calidris canutus*

Not common and only observed on Eagle Island in numbers of less than 10 during the summer.

Australian pelican *Pelecanus conspicillatus*

Observed on Eagle Island during the summer months of 1973/74. The maximum number was 8.

Brown booby *Sula leucogaster*

Occasional individuals observed on Eagle Island, mostly during the summer months.

COMMENTS ON THE SEABIRD AND WADER FAUNA ON OTHER NEARBY ISLANDS

Nymph Island

This island is 19 km northwest of Lizard Island. It is approximately 1 km long, a coral cay, and is located on a small platform reef. The island is covered by trees and low shrubs and is composed of a mixture of sand, coral rubble, and raised reef rock. The centre of the island consists of a large shallow lagoon, fringed by mangrove trees and provides sea birds and waders with a variety of habitats. Nymph Island has the greatest diversity of sea birds and waders of any island in this area that has been studied and deserves official protection. A count on 21 February 1975, which was not exhaustive, revealed the following species: pelican (9 seen), frigate bird (2), white-faced heron (3), mangrove heron (3), white egret (3), reef heron (10), white-breasted sea eagle (2), osprey (3), banded land rail (6), pied oystercatcher (2), sooty oystercatcher (1), golden

plover (2), whimbrel (3), eastern curlew (1), grey-tailed tattler (6), knot (2), bar-tailed godwit (2), beach stone curlew (2), silver gull (40), caspian tern (2), crested tern (50), sacred kingfisher (8).

On 12 January 1974 a turnstone, one black-naped tern and two bridled terns were seen on Nymph Island.

#### The 6 Islands of the Turtle Group.

This group of small islands is 6 km west of Nymph Island. All are coral cays possessing large areas of mangrove trees and are well vegetated. Most of the sea birds and waders observed in the Lizard Island area have been observed on these islands. During the summer months crested terns and bridled terns have been seen nesting.

#### Rocky Islets

This area is 19 km south of Lizard Island. It is slightly less than 1 km long and its features are a combination coral cay and continental island. It contains several outcrops of granite plus large accumulations of sand derived from the reef with which it is associated. Rocky Islets possesses three unique characteristics: i) it is the only island in the area on which the tree *Pisonia grandis* is found; ii) it is the only island in this area used by the wedge-tailed shearwater *Puffinus pacificus* for nesting; and iii) it is the only island frequented by large numbers of white-capped noddies.

The white-capped noddies have not been observed nesting on the island, but over 1000 birds return to the pisonia trees each night to roost. Between 1974 and 1976 six trips were made to this island, some being overnight. On every occasion wedge-tailed shearwaters were present and during the day trips there was evidence of activity around many shearwater burrows. Visits to Rocky Islets were made during February, June, August, September and October. It appears that wedge-tailed shearwaters use this island throughout the year, and since chicks were observed in February, they must nest here during the summer. The maximum population of wedge-tailed shearwaters in the summer would be in the vicinity of 1000.

This island is used by approximately 300 bridled terns for nesting each summer plus it contains a resident pair of white-breasted sea eagles. Rocky Islets also deserves official protection.

#### North Direction, South Direction, and High Rock Islands.

These are all located south of Lizard Island to a distance of approximately 10 km. With the exception of white-breasted sea eagles or ospreys few sea birds and waders have been observed on these continental islands.

#### DISCUSSION

The birds recorded in this study are all relatively common throughout the Great Barrier Reef, (Lavery and Grimes, 1971; Storr, 1973; Kikkawa, 1976). With the exception of the beach stone curlew and

osprey, all have been recorded from One Tree Island (Domm and Recher, 1973). Ospreys are more common than white-breasted sea eagles in the Lizard Island area, while the reverse occurs on the coral cays of the southern Great Barrier Reef. There does seem to be a tendency for ospreys to favour high or continental islands while white-breasted sea eagles favour coral cays; also white-breasted sea eagles may be more sensitive to the presence of human beings and this may influence their distribution.

In comparing the yearly nesting cycle of the terns, and wader abundance, with that occurring on One Tree Island (Domm and Recher, 1973) there is a close similarity but there is a tendency for nesting to begin later in the more northern Lizard Island.

The increase in numbers of Palaearctic waders during the summer months in the Lizard Island area parallels that observed on One Tree Island, and is what one would expect considering the relatively short distance between these islands compared to the distances normally travelled by these birds on their annual migrations.

The first eggs of the crested tern appear in mid November on One Tree Island, but it is not until about one month later that the first eggs are observed at Eagle Island in the Lizard Island area. Black-naped terns have similar nesting times in the two localities since in both areas eggs were observed in February, although in the northern area these terns appear to have an extended and somewhat variable nesting season. The return of the bridled terns to their nesting islands each year appears to be the same for both localities. The dates are remarkably consistent (6 October for the 2 years of observations on One Tree Island and 6 October and 23 October for the Lizard Island area). However, there is a tendency for eggs to appear later in the northern locality. The single observation of roseate tern eggs on Eagle Island in December is certainly later than those on One Tree Island which were observed in late October.

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## DAILY ATTENDANCE OF TERNS AND GULLS AT ONE TREE ISLAND

Kees HULSMAN

## SUMMARY

The attendance of terns and gulls on the island is generally correlated with the tidal cycle and height of the tide. However, the attendance of noddies is correlated with the time of day. The localities where terns rest is partly determined by the presence of other terns (same or different species) and speed and direction of the wind. Each species used a different combination of localities where they rested.

## INTRODUCTION

The tidal cycle has a large effect on the activity patterns of terns and gulls at One Tree Island. The tidal cycle affects:-

- (i) types of prey species caught by some species of tern;
- (ii) time of foraging and feeding rates of chicks;
- (iii) frequency of piracy (Hulsman 1976);
- (iv) rate of predation by silver gulls *Larus novaehollandiae* on eggs and chicks of terns;
- (v) number of silver gulls and some species of tern resting on the island.

In this paper, I describe where and when terns and gulls rest on the island.

## STUDY AREA AND METHODS

The study area has been described by Domm and Recher (1973) and is shown in Figure 1. An important feature of One Tree Reef is that the First and Second Lagoons are 0.3 m above sea level. Thus low tide in these two lagoons occurs from about three hours before to three hours after low tide along the outer margin of the reef (Kinsey 1972).

The number of silver gulls, black-naped terns *Sterna sumatrana*, roseate terns *S. dougallii*, lesser crested terns *S. bengalensis* and crested terns *S. bergii* were counted every hour between 08:00 and 19:00 on 7 November 1973, and between 06:00 and 19:00 on 15 and 17 November 1973 and 12 February 1974. I counted the number of white-capped noddies *Anous minutus*, only on 12 February 1974.

The census was started on the hour and it took 40 minutes to complete. Individuals of each species were counted in nine areas of the island. Birds on the reef near the island were not included in the final figures. Silver gulls, black-naped, roseate, lesser crested and crested terns resting on the western side of the island were counted from a dinghy without disturbing them. Those on the eastern side were counted from the reef crest during low tide and from the dinghy at high tide. I counted the number of birds at the pond from the top of a nearby *Pandanus* tree. Most birds remained in the same areas after a count, therefore most of them were counted once only.

## RESULTS

*Height of tide*

The reef crest, south of the island, was one of the first areas of the First Lagoon flooded during the rising tide. When the water

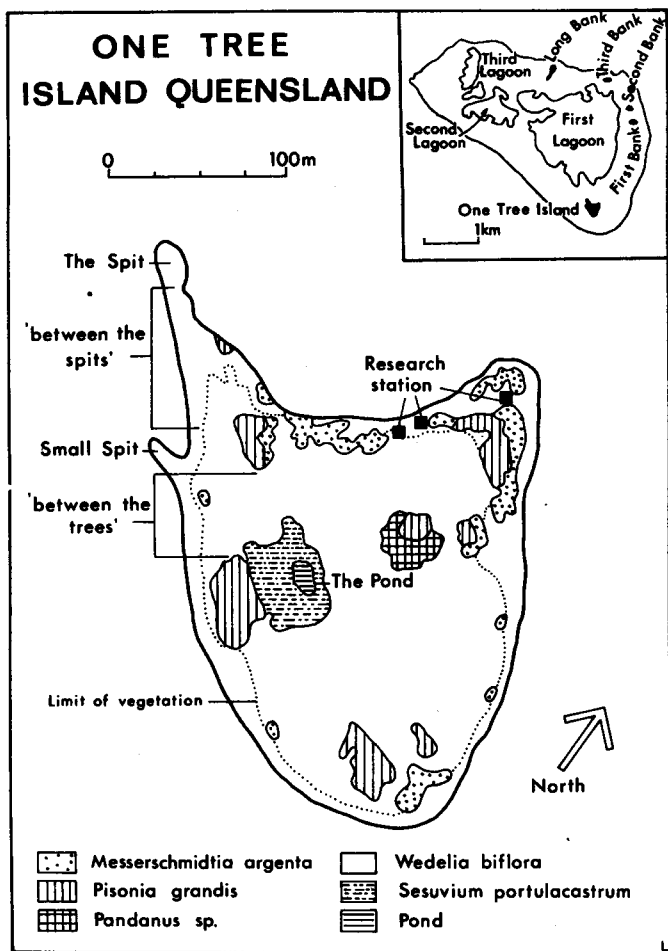


Figure 1. Map of One Tree Island and surrounding areas. Details of vegetation after Domm and Recher (1973).

level was 0.9 m on a stake which measured the amount of water covering the lowest part of the reef crest of the First Lagoon, parts of the eastern reef were flooded. Large areas of reef remained exposed north-east of the island and near the south-eastern corner. The highest part of the reef crest, near the south-east corner, was not covered until the water level on the stake was more than 1.2 m.

The height of the tide was 1.1 m on 7 November and 12 February, and more than 1.2 m on 15 and 17 November. Therefore parts of the reef remained exposed at high tide on 7 November and 12 February, whereas the entire reef was covered at high tide on 15 and 17 November. Some birds remained on the exposed parts of the reef on 7 November and 12 February but they were forced to rest on the island or rubble banks on 15 and 17 November. For example, on 12 February at the peak of the tide, 47 crested terns remained on the reef crest near the south-eastern corner. Thus the height of the tide affected the number of birds resting on the island.

#### *Speed and direction of wind*

Where terns rested may be influenced by the speed and direction of the wind. At wind speeds up about 15 knots, some terns stood on the windward side of the island, where they were in the full force of the wind. Noddies perched on the tops of trees along the north-western beach when the wind came from the north at less than 15 knots. On the other hand, when the wind came from the south-east at less than 15 knots, they perched on the trees at the south-eastern corner. In stronger winds (> 15 knots), most terns sought the sheltered parts of the island. The prevailing winds are the South-East Trade Winds which blow at 7 to 16 knots (Beaufort Force 3 to 4, Brandon 1973), and most terns stand on the western or leeward side of the island.

#### White-capped nodydy *Anous minutus*

The attendance of noddies on the island is correlated with the time of day and not with the tidal cycle. Therefore the pattern of their attendance is presented relative to the time of day.

Most noddies left the island in the early morning and some returned between 08:00 and 09:00. The maximum number of noddies on the island was between 14:00 and 15:00 (Fig. 2). After 15:00, noddies

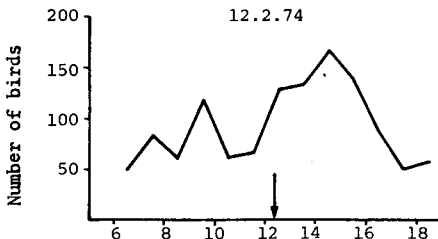


Figure 2. Showing time of day and number of white-capped noddies. Arrow denotes time of high tide.

left the island and they did not return until dusk. This pattern of attendance also applies to the noddies at Heron Island, at least when they are not feeding young.

At One Tree Island, most noddies roosted in the *Pisonia grandis* and *Messerschmidia argenta* along the north-eastern and south-eastern parts of the island. During the day, noddies perched on the tops and sides of trees and sunned themselves. Occasionally some noddies stood with other species of tern on the spit, the small spit or between the trees.

#### Black-naped tern *Sterna sumatrana*

Usually the greatest number of black-naped terns was on the island or rubble banks during high tide. The pattern of attendance of black-naped terns may change from day to day. For example, on 15 November, black-naped terns rested on the south-eastern corner during low tide. During the rising tide, they joined flocks of noddies foraging about 200 m off-shore. On 17 November, black-naped terns foraged as the tide rose and they congregated on the island after the peak of the tide, but on 12 February, they congregated on the island during the rising tide (Fig. 3). When black-naped terns nested, they congregated in their nesting areas during high tide. Black-naped terns often rested between the spits and on the south-eastern corner (Fig. 4).

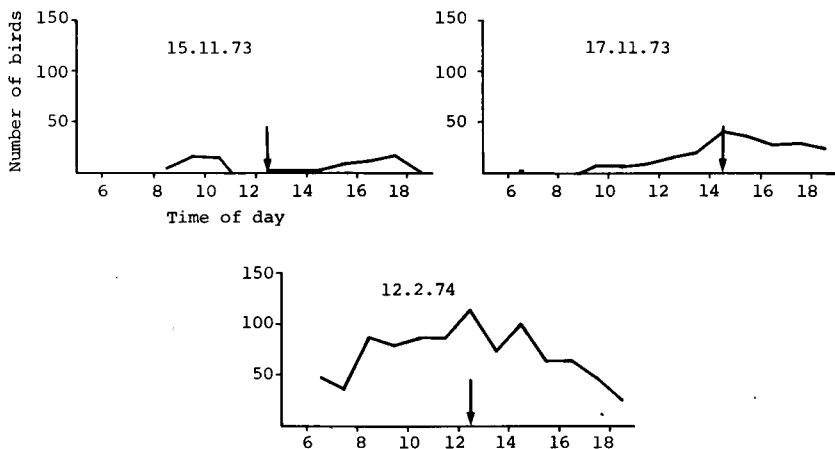


Figure 3. Showing time of day and number of black-naped terns. Arrows indicate high tide.

#### Roseate tern *Sterna dougallii*

Usually the greatest number of roseate terns was on the island in the late afternoon when the tide was falling (Fig. 5). During the

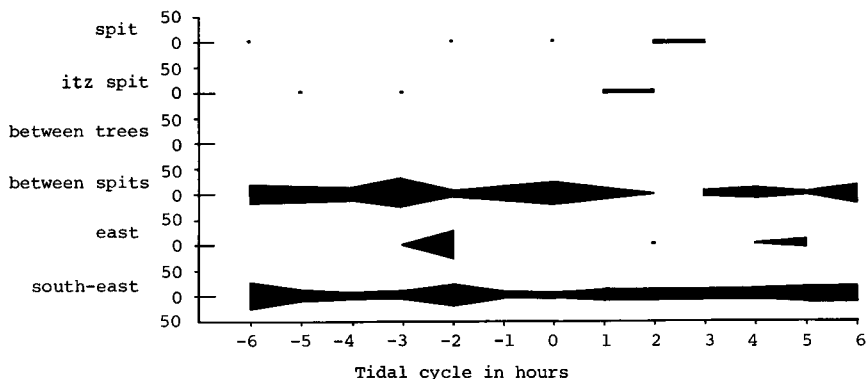


Figure 4. Showing influence of tidal cycle on resting areas for black-naped terns. O = high tide, itz = inter tidal zone.

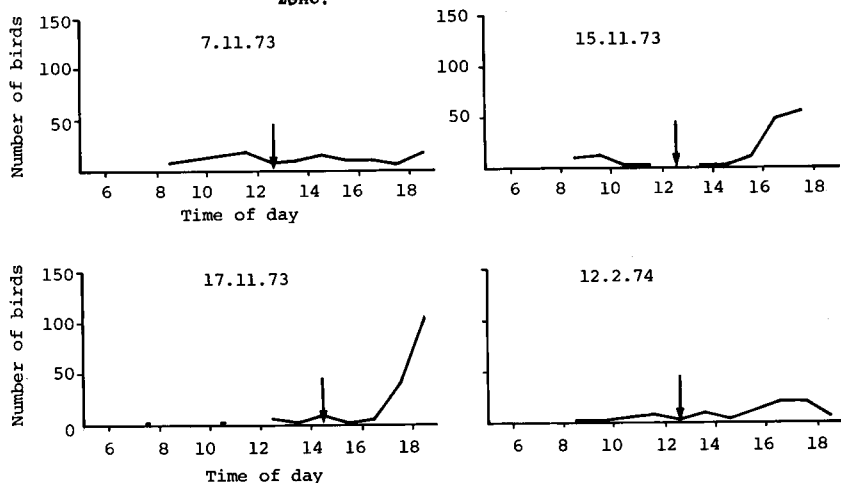


Figure 5. Showing time of day and number of roseate terns. Arrows indicate high tide.

rising tide, they foraged off-shore out from the south-eastern corner of the island. Roseate terns often rested with black-naped terns on the south-eastern corner, or with crested terns on the western side of the island (Fig. 6). During September and October 1974, roseate terns congregated in the nesting area of black-naped terns during high tide, particularly when high tide occurred at dusk.

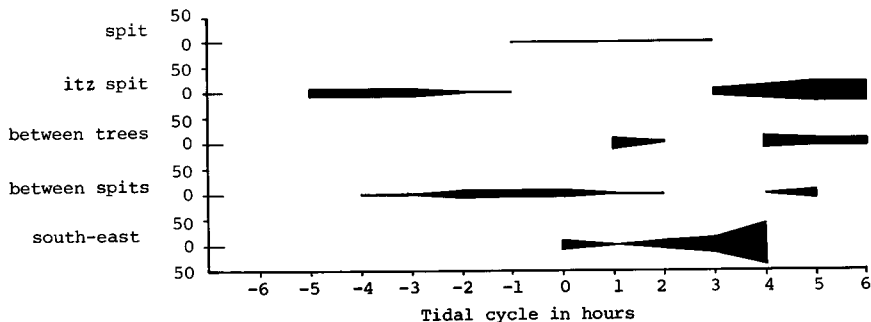


Figure 6. Showing influence of tidal cycle on resting areas for roseate terns. 0 = high tide, itz = intertidal zone,

Lesser crested tern *Sterna bengalensis*

Very few lesser crested terns rested on the island during November 1973 because most congregated near their creche at the First Bank. Lesser crested terns congregated on the island as the tide rose although many terns foraged at this time (Fig. 7). Generally, the maximum number of birds on the island was just before the peak of the tide. During the rising tide, lesser crested terns moved from the reef crest to the intertidal zone near the spit and between spits. When the tide began rising in the lagoon (i.e. -3 hours), most birds moved to the area between the trees where they stood with crested terns, or between the spits where whimbrels *Numenius phaeopus* also rested (Fig. 8).

As the tide fell, lesser crested terns moved to the reef crest near the south-eastern corner where they bathed and preened. However, some birds remained on the western side of the island and moved to the water's edge. During low tide, between foraging bouts, groups of lesser crested terns stood on the reef crest. When lesser crested terns nested, they congregated in the nesting area or near the creche during high tide.

Crested tern *Sterna bergii*

Crested terns congregated on the island during the rising tide (Fig. 9). Prior to their nesting at the pond, crested terns congregated on the small spit and between the trees on the western side of the island. However, when they nested, crested terns congregated in their nesting areas near the pond (Fig. 10). During low tide, some crested terns often stood on the reef crest south of the island, or on the intertidal zone of the spit or small spit. Others stood near the water's edge on the outer margin of the reef. The rising tide forced the terns off the low parts of the reef and intertidal zones, and they went to higher ground. During the falling tide, reef herons *Egretta sacra* lined the water's edge between the spits. The herons attacked and moved some crested terns. Most

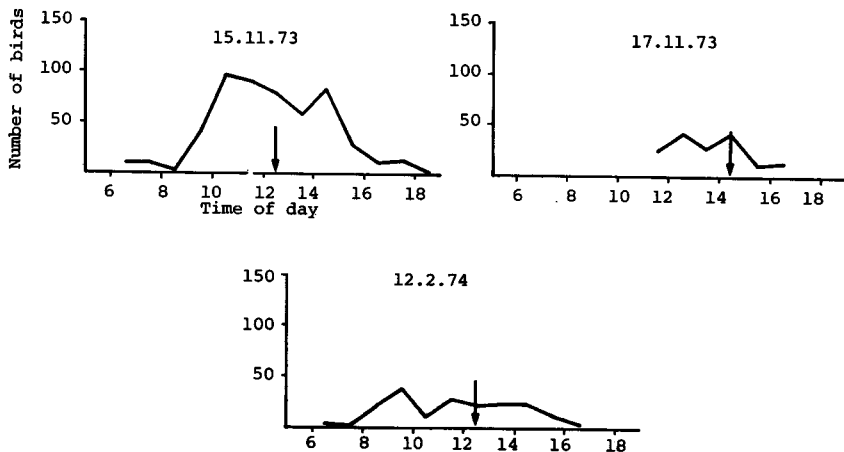


Figure 7. Showing time of day and number of lesser crested terns. Arrows indicate high tide.

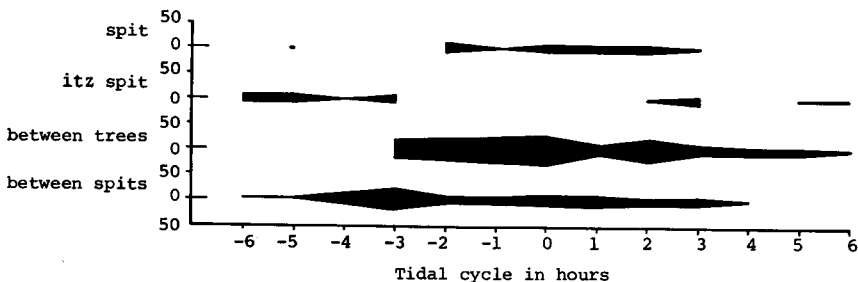


Figure 8. Showing influence of tidal cycle on resting areas for lesser crested terns. 0 = high tide, itz = inter tidal zone.

terns went to the reef crest near the south-eastern corner where they bathed and preened.

#### Silver gull *Larus novaehollandiae*

Gulls congregated on the island after the rising tide forced them off the reef crest (Fig. 11). Most gulls rested at the pond during tide (Fig. 12). After the peak of the tide, some gulls left the pond and went to the Research Station or the south-eastern corner where they bathed and preened.

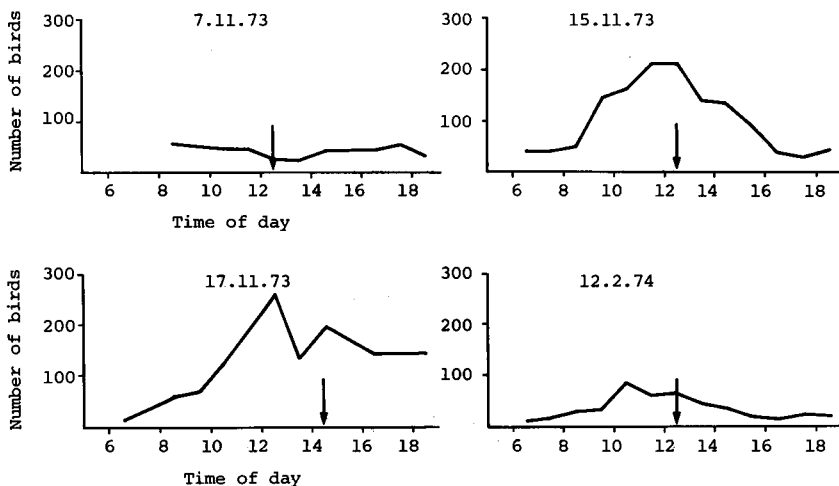


Figure 9. Showing time of day and number of crested terns. Arrows indicate high tide.

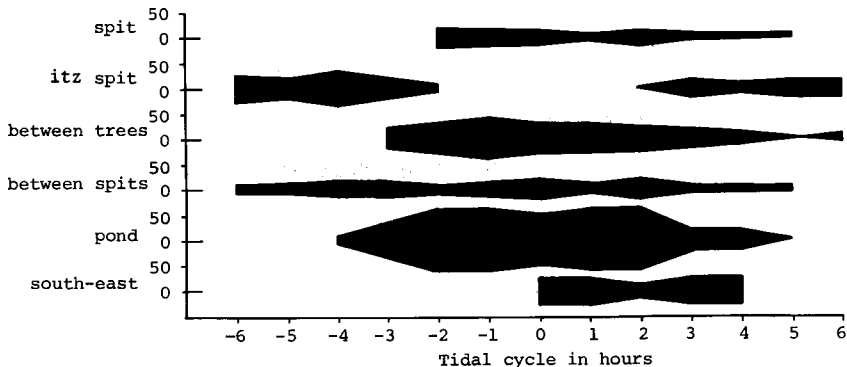


Figure 10. Showing influence of tidal cycle on resting areas for crested terns. 0 = high tide, itz = inter tidal zone.

During low tide, some gulls spent most of their time scavenging food around the research station but these birds joined the other gulls at the pond during the rising tide. Usually gulls slept during high tide and there was little activity at the pond when the crested terns were not nesting there. Occasionally, gulls threatened and chased one another but these incidents occurred infrequently compared to elsewhere on the island. Some gulls swam



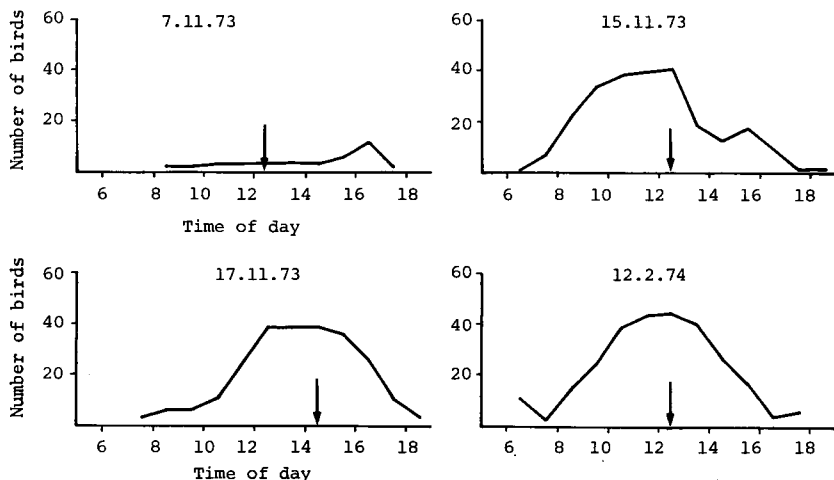


Figure 11. Showing time of day and number of silver gulls. Arrows indicate high tide.

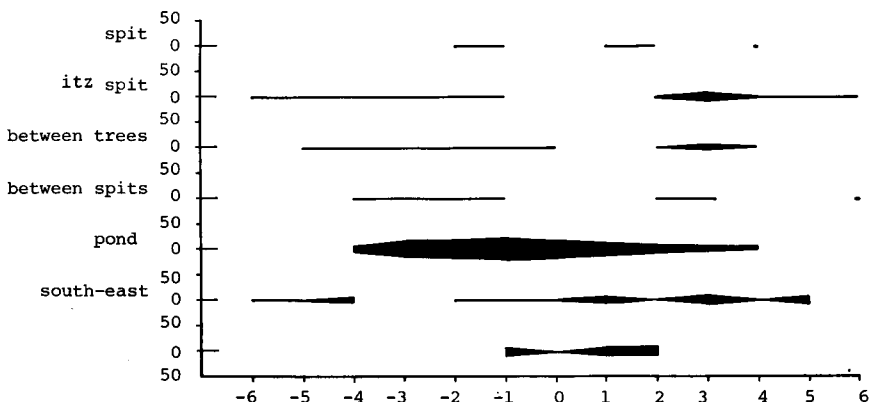


Figure 12. Showing influence of tidal cycle on resting areas for silver gulls. O = high tide, itz = inter tidal zone.

in the pond and foraged presumably on mosquito larvae and pupae.

#### DISCUSSION

The presence of silver gulls and most *Sterna* spp. on the island was correlated with the stage of the tidal cycle and height of the tide. The rising tide forced the birds off the reef crest and intertidal zones. Usually birds rested away from the research station such as on the south-eastern corner where they were less likely to be

disturbed by humans. However, during storms when the wind blew from the south-east, many birds sheltered along the north-western beach near the research station.

The presence of noddies on the island was correlated with the hottest part of the day (12:00 to 15:00), and not with the tidal cycle. Moul (1954 in Wiens 1964) found that the common noddy *A. stolidus* often rested and preened during the middle of the day. Although noddies were coming to and going from their colony throughout the day, the greatest movements of birds occurred in the early morning and late afternoon, this is more obvious at Heron Island which has a large population of noddies (cf. Moul 1954 in Wiens 1964; Cullen and Ashmole 1963). However, noddies need not return to the island to rest because they can sit on the water and rest often in "rafts".

The pond area was "common ground" for the gulls, i.e. no gull defended the area against other gulls, although there were some fights. Tinbergen (1953 in Bourget 1973) described such an area as a "club". Carrick and Murray (1964) found that there was less aggression shown towards other silver gulls when they were resting, preening, and bathing than at other times. Even when crested terns nested at the pond, gulls congregated at the water's edge where they showed very little agonistic behaviour towards other silver gulls. However, gulls at the nesting areas of crested terns (approximately 20 m from the pond) attacked other silver gulls that came near the nesting areas of the terns.

### *Sociality*

A tern was more likely to land in or near a group of terns even if they were a different species than to land where there were no terns. For example, roseate terns congregated in the nesting areas of black-naped terns even though there were other areas where they could rest. Black-naped and roseate terns were often seen standing together as were lesser crested and crested terns. In these mixed assemblages, each species usually stood near members of its own species than with other species, e.g. small groups of roseate terns may be scattered amid a large group of crested terns. Despite these associations, each species used different combinations of areas in which they rested.

Thus the time when terns and gulls rested was determined by the tidal cycle and the height of the tide. Where they rested was related to the height of the tide, presence of other birds and speed and direction of the wind.

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## NOTES ON THE STREAKED GRASS-WARBLER

ALLAN EY

The streaked grass-warbler *Cisticola juncidis* is common in the Ayr district, Queensland, from Cape Cleveland in the north and south to an area about 15 km north of Bowen (Lavery and Seton 1967; McGill 1976). The species is less common around Bowen and further south, and I have never seen it north of Cape Cleveland.

I first recognised *C. juncidis* in March 1953, having previously suspected that two species of *Cisticola* were present in the district. *C. juncidis* inhabits flat grassy country on the fringe of coastal saltpans mainly covered with sand couch *Sporobolus virginicus*, open fields and water meadows. I have not seen this species on farmlands or cultivated areas. *C. exilis* is common in the area also, but can be found in a wider variety of habitats including cane fields and other cultivated areas. *C. exilis* appears to be a permanent resident.

In the field the two species are particularly difficult to separate and the following points are relevant:

- i) For most of the year, both adult and immature *C. exilis* and *C. juncidis* are indistinguishable in the field. Neither male nor female has any distinguishing marks, calls or habits which separate the two species.
- ii) During the wet season (December to April), both species breed but only the male of *C. exilis* develops any distinguishing plumage, viz, a golden crown. The behaviour of both species remain indistinguishable, except for their calls (see iii), nests (iv) and eggs (v).
- iii) During the breeding season, the males of *C. juncidis* call with a distinctive note and it was this that led me to their discovery. The call is a 'tick-tick-tick' or 'click-click-click' without any preceding notes emitted four or five times at about half second intervals, similarly described by Crawford (1972). This appears to be a type of territorial call of *C. exilis*, viz, a buzzing followed by several 'yyyit-yyyit-yyyit' notes. The call is given while the bird is perched or flying. *C. juncidis* starts calling immediately after the first rains of the wet season. The species does not appear to call outside the breeding season. If it does, I have been unable to distinguish any of its calls from those of *C. exilis*. Another sound made by *C. juncidis* that I have not heard from *C. exilis*, is a 'thump' which is apparently produced by a bird hitting its wings against the side of its body while it hovers. During the breeding season, both *C. exilis* and *C. juncidis* fly high into the sky then suddenly dive steeply and land on the ground or on a low perch.
- iv) Although both species nest within 30 cm of the ground, the nest of *C. juncidis* is quite distinct from that of *C. exilis*. The nest is a deep cup and not dome shaped as that of *C. exilis*. Of the large number of nests of *C. juncidis*, that I have seen over 20 years or more, all have been open at the top which enables a view of

the contents from immediately overhead. The nest is always placed in thin upright grass, with the grass held together by cobwebs. The nest is usually lined with thin flat pieces of grass 2-5 cm long. *C. juncidis* starts laying before its nest has been fully lined; often the nest still having a ragged appearance. When a bird is flushed from a nest it returns with what appears to be a type of spider 'down'. The birds add material to line the nest throughout the incubation period causing a gradual shallowing of the nest. Early in the breeding season, many nests are damaged by the rapid growth of the supporting grass and are consequently deserted. I have recorded one pair who built three nests before laying.

I have not noticed any attempts by *C. juncidis* to 'sew' coarse grass or leaves into the nest as described by Cayley (1958).

Occasionally, a dominant male *C. juncidis* may control a territory holding four or more occupied nests, a habit more commonly seen in *C. exilis*. For example, on 2 April 1975, I found four occupied nests in a hundred metre strip of sand couch bordering a saltpan dominated by one male.

v) The eggs of *C. juncidis* are also quite distinct from those of *C. exilis*. They are almost lustreless compared to the lustrous surface of the eggs of *C. exilis*. They are a much paler blue than those of *C. exilis* and have smaller and lighter markings - mostly tiny pale brown flecks. The eggs are larger than those of *C. exilis* (see Lavery and Seton, 1967 for measurements).

The normal clutch size is five eggs but occasionally only four are laid. Lavery and Seton (1967), indicated smaller clutches of three to four eggs but it is possible that these clutches were incomplete or that there was some mortality with young. If the wet season starts early (before Christmas), two and sometimes three broods are raised.

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## A POSSIBLE HYBRID SOUTHERN FIGBIRD X YELLOW

## FIGBIRD IN BRISBANE

PIERRE BELAND

On the morning of 3 August 1975, in the Brisbane suburb of Chapel Hill (27°28'S, 153°02'E), I was making observations on a flock of southern figbirds *Sphecotheres vieilloti* in a tall eucalyptus tree. My attention was drawn to a male figbird with much bright yellow on the breast, unlike any other that I had seen in previous months. Having recently seen several skins of both the southern figbird and the yellow figbird *S. flaviventris* in the Queensland Museum, I immediately thought that this individual could be a possible hybrid. In addition to this 'hybrid' the flock consisted of four males and six females and/or immatures of the southern figbird. Two of the southern figbird males were in full breeding plumage. The other two were immatures, their rather dull plumage lacking the sharp contrasts between the black head and the red eye patch, as well as between the head, greyish throat and breast, and green back. Therefore, immediate comparisons could be made between the male 'hybrid' and males, in full plumage, or immature, of one of the parental species.

I was not able to observe the 'hybrid' for more than a few minutes and the bird was often partly hidden among the branches and leaves. It appeared to be a little smaller than the other males. There was a vivid contrast between the eye patch and the rest of the head. This eye patch was a bright (almost fluorescent) red, more so than that of the other full breeding males. The rest of the head was a definite soft grey (not the dull grey shown on the throat of the immature males), but the head just above the eye patch was black. The throat was the same grey. The breast was bright yellow in its upper and centre parts, becoming increasingly greyer lower down the sides. The belly and the underside of the tail were white, the latter being darker in the other adult males. The full breeding male southern figbird has a completely black head and throat, a grey breast and nape, and a greenish belly sometimes with a tinge of yellow. The breeding male yellow figbird is similar, but with a black nape and bright yellow throat and breast. Thus, it seems that the 'hybrid' was indeed a fully mature bird, with some of the characteristics of the males of both species.

Since the yellow figbird is not found so far south, this 'hybrid' may have come from an area north of Rockhampton, where it presumably flocked with possible migrating southern figbirds.

According to R.J. Grimes (pers. comm.) of the National Parks and Wildlife Service in Townsville, this observation seems convincing though one would have expected someone between Townsville and Rockhampton (or between Rockhampton and Brisbane) to have reported 'hybrids' previously. Yellow figbirds have been seen on the coast between Emu Park and Yeppoon (D. Gravatt, pers. comm.) but no hybrid has ever been formally reported south of Ayr. In the Townsville area, the two species (or forms as some suggest) hybridize and figbirds of various colour tones are seen, ranging from the clear-cut yellow form to the unmistakably southern form.

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## A RECORD OF THE RED-FOOTED BOOBY AND MASKED BOOBY FROM SOUTH-EASTERN QUEENSLAND

GREG ROBERTS

On 11 March, 1976, I found a beach-washed red-footed booby *Sula sula* on the ocean beach of North Stradbroke Island approximately eighteen kilometres south of Pt. Lookout.

The head and feet were deposited in the Queensland Museum (QM 016434). The bird was an intermediate phase adult with brown upperparts and wings. The tail, rump and underparts were white. The bill was of pale blue colouration with a pink base and the legs and feet were red.

Two wedge-tailed shearwaters *Puffinus pacificus* and six sooty terns *Sterna fuscata* were found beach-washed on the same day on the island. All birds were in an advanced state of decay at the time of discovery and were probably victims of Cyclone Colin. Fifty-knot south-south-easterly winds associated with the cyclone struck the coast of south-eastern Queensland eight days earlier on 3 March 1976.

On 29 February 1976, Chris Corben and I saw an adult masked booby *Sula dactylatra* offshore from Pt. Lookout. The white underwing with black trailing edge and black tail were noted. Conditions at the time of sighting were choppy seas with a ten-knot easterly wind and overcast sky.

Storr (1973) notes that the red-footed booby is "only casual south of 18°S and west of the Great Barrier Reef", and that the masked booby occurs from "Bramble Cay south to 22°S".

To my knowledge there are no published records of either species from south-eastern Queensland. Neither are there any specimens in the Queensland Museum from this region. Reported sightings of both species south of the Great Barrier Reef are extremely scanty.

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## DUSKY MOORHEN IN THE NORTHERN TERRITORY

H.A.F. THOMPSON

Both Slater (1970) and MacDonald (1973) indicate the distribution of the dusky moorhen *Gallinula tenebrosa* as extending along the north coast of Queensland up to the border of the Northern Territory. In Western Australia, the species is restricted to the south-west corner of the state and has apparently not been recorded in the Kimberley division (Serventy and Whittell 1967).

On 31 August 1976 I saw two dusky moorhen on the Little River, a feeder of the McArthur River, near its crossing with the Carpentaria Highway, about eleven kilometres west of Balbirini depot, N.T. The birds were swimming near the edge of the river which was flowing freely; most of the other watercourses and billabongs in the area, apart from the McArthur River itself were dry. These birds conformed to Slater's (1970) description, being predominantly blackish with white patches under the tail which ruled out any possibility of coot *Fulica atra* or black-tailed nativehen *Gallinula ventralis*. The absence of a white flank stripe eliminated the common moorhen *Gallinula chloropus* of Eurasia, a possible vagrant.

This species is not listed for the Northern Territory by Storr (1967), and a search of the literature has not uncovered any previous record.

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