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A SURVEY OF PELAGIC BIRDS IN THE WESTERN CORAL SEA AND GREAT BARRIER REEF

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Little is known of the distribution of seabirds in the Western Coral Sea, i.e. the area west of 155°E longitude and north of 25°S latitude nominated by Pickard *et al.* (1977). Most of the area is within the Coral Sea Islands Territory of Australia which extends west to 157°10′ longitude, north to 12° and south to 24° latitude.

Although Serventy (1959) summarised what is known of the birds of Willis Island, where there is a manned lighthouse, many of the small cays and islands have only been visited once by ornithologists, in 1961/1962 (Hindwood *et al.* 1963). In the winters of the same years Norris (1967) made the most comprehensive observations yet available on pelagic birds in the area.

The cays and islands in Figure 1 have automatic weather stations or lighthouse installations and have been surveyed at least once and usually twice per year since 1979 by the Australian National Parks and Wildlife Service (ANPWS) which is developing a nature conservation programme for the Coral Sea Islands Territory. The results discussed in this paper were obtained during the course of one survey.

THE SURVEY

We surveyed a section of the Coral Sea and Great Barrier Reef between 15 to 26 May 1981 (Figure 1). A total of 50 hours 45 minutes was spent on watch from the M.V. *Cape Pillar*.

No weather details were recorded, but although occasional squalls passed over, the watch was usually conducted in rain-free conditions on smooth to moderate seas.

Observations were virtually continuous during daylight steaming. Sightings were made from the Flying Bridge about 15 m above the sea surface. 8 x 40 binoculars were used by Stokes and 10 x 50 by Corben. Identifications were principally by Corben. Field notes on unidentified species were taken. These notes were later checked with museum skins, photographs and text descriptions and the record amended where necessary. Though every effort was made not to recount birds that disappeared from view and reappeared elsewhere it is probable that some were recounted.

The seabird records are summarised in Table 1 and Figure 1. The sightings are based on the ship's position by 'Dead Reckoning'. No allowance is made for the distance of the bird from the ship.

Figure 1 is plotted onto a 30′ grid of latitude and longitude. The relevant grid squares have been identified by letters which are used in Table 1. The duration of observations in each grid is given in Table 1.

The scientific names of species mentioned in the text are in Table 1. The names of cays are those used by Hindwood *et al.* (1963).

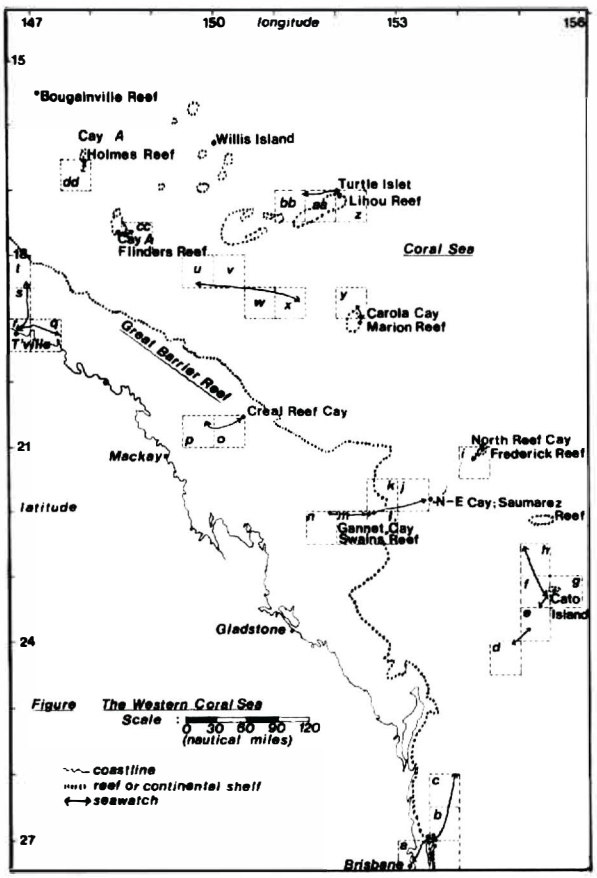

Figure 1. *Map showing locations of reefs and cays referred to in text.*

DISCUSSION

Many of the observations of large numbers of a species in a grid square relate to congregations on nearby cays or islands some of which are identified in Figure 1.

Two exceptions are the flocks of birds seen in squares j, k and l near the edge of the Great Barrier Reef, and the large numbers of Hutton's or Fluttering Shearwaters in the vicinity of Gannet Cay.

The more interesting records are discussed below.

The Herald Petrel has been recorded on a few occasions in the western Coral Sea and eastern Australian waters in January, February and May (Izzard and Watson 1980). Corben also saw one fly over Turtle Islet (grid 'z') during this trip in daylight on 24 may 1981 and the bird must be considered a regular but rare species inthe area.

Sightings of Tahiti Petrels were concentrated in grid squares outside the Great Barrier Reef. Norris (1967) and Hindwood *et al.* (1963) also recorded the species from western Coral Sea waters in July and October to November. Holmes (1981a) identifies the Hindwood *et al.* (1963, p.8) unidentified records as belonging to this species and lists more recent records from central eastern Australian waters. He interprets oceanographic data to imply that the species moves south with warm Coral Sea waters in January and February.

Certainly the Tahiti Petrel appears to be relatively common over western Coral Sea waters

TABLE 1

Numbers and distribution of Seabirds (Grid squares are located on the Figure. Numbers in species columns = number of individuals recorded. ? = Identification possible but uncertain. + = others present; M = many present).

	Date (Day in May 1981)	15			16					17	18		18-19	19		20		21				22				23	24			25	26
	Grid Letter	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	aa	bb	cc	dd
	Duration of Observation per grid (hours:minutes)	5:00	3:10	0:15	0:45	1:45	2:50	1:00	2:20	0:35	4:45	1:30	0:35	1:20	0:30	3:00	0:30	1:00	1:00	1:30	0:20	1:30	2:00	3:30	2:30	2:45	0:45	2:00	0:20	0:45	1:00
	Herald Petrel (dark-phased) *Pterodroma arminjoniana*								1																						
	Tahiti Petrel *Pterodroma rostrata*				1	1	3		5													2		5	6	2		1			
	Gould's Petrel (subspecies unknown) *Pterodroma leucoptera*								1																						
	Black-winged Petrel *Pterodroma nigripennis*			1?																											
	Unidentified Petrel				1		1				2																				
	Wedge-tailed Shearwater *Puffinus pacificus*						1	2				30	24	M		2						2		1	6		6	43			
	Sooty Shearwater *Puffinus griseus*		1?																												
	Hutton's or Fluttering Shearwater *P. huttoni* or *P. gavia*	1									5	33	8	676	129																
	Wilson's Storm-Petrel *Oceanites oceanicus*														1?	9	2			1		1		1							
	White-faced Storm Petrel *Pelagodroma marina*					2								1									2	13	18						
	Black-bellied Storm-Petrel *Fregetta tropica*																							1							
S	White-bellied Storm-Petrel *Fregetta grallaria*			1			2		2		1?											1	2	1	5	2					
	White- or Black-bellied Storm Petrel																					5	3	14	4	1				1	
P	Unidentified Storm-Petrel													2		5	2					3	6	27	18	2					
	Australasian Gannet *Morus serrator*	1	3																												
E	Red-footed Booby *Sula sula*									3	6											1	4	20	5	2	17	46	9		14
	Masked Booby *Sula dactylatra*						14	3				1	2	5												7	4	4			1
C	Brown Booby *Sula leucogaster*	3	9			2	22	4	7	6	3	13	12		1	5		9	2	23				1	1	3	8	34		9	5
	Pied Cormorant *Phalacrocorax varius*	11+	7																												
I	Little Pied Cormorant *Phalacrocorax melanoleucos*	5																													
	Great Frigatebird *Fregata minor*																										1				
E	Least Frigatebird *Fregata ariel*									1								4		2		1		1				1		1	2
	Unidentified Frigatebird						3											5	2		1	9	2	3	6		2	15			1
S	Red-tailed Tropicbird *Phaethon rubricauda*																					1		1							
	White-tailed Tropicbird *Phaethon lepturus*													1																	
	Turnstone *Arenaria interpres*							1																							
	Pomarine Jaeger *Stercorarius pomarinus*		1																												
	Unidentified Jaeger											1																			
	Silver Gull *Larus novaehollandiae*	+										4																			
	Caspian Tern *Hydroprogne caspia*	3																													
	Common Tern *Sterna hirundo*	14														2															
	Roseate Tern *Sterna dougallii*													3																	
	White-fronted Tern *Sterna striata*		1?																												
	Black-naped Tern *Sterna sumatrana*											3																			
	Roseate or Black-naped Tern											1																			
	Sooty Tern *Sterna fuscata*				2		M																								
	Sooty or Bridled Tern BT=*S. anaethetus*						37	61	33	8												17	10	113	25		160+	419+	29	7	5
	Little Tern *Sterna albifrons*	6	75																												
	Crested Tern *Sterna bergii*	5+	100								1	4	2			10		8	1												
	Crested or Lesser Crested Tern LC=*S. bengalensis*											4				4	3	16		2											
	Common Noddy *Anous stolidus*						229+	36	10		53	213		M												4	311+	588+	28	62	26
	Black Noddy *Anous minutus*											6		1		98											3	31	5	9	1
	White Tern *Gygis alba*										2																				
	Unidentified Tern or Noddy								1													23	1		20	1					
	Tree Martin *Cecropis nigricans*																	5						1							

from May to November and many of the birds would presumably originate from breeding colonies on Chesterfield Reef islands in the eastern Coral Sea. Further observations are necessary to distinguish the relative numbers and distribution in the area of the two forms identified by Holmes (1981a). We did not distinguish forms.

Little is known of the dispersal of Gould's Petrel from its breeding grounds (Serventy *et al.* 1971, Pizzey 1980). The nominate subspecies breeds only on Cabbage Tree Island, New South Wales, and there are regular sightings and beach-washed specimens from central to eastern Australia between November to March, its breeding season (Ingram 1975, Gosper 1981, Holmes 1981b). Gibson and Sefton (1957) thought that the species ". . . shows a predilection for warmer seas in the winter months" which Cox (1976) supported. However Pizzey (1980) admits that its movements are little known and there are few records outside the breeding season.

A different subspecies of Gould's Petrel breeds on New Caledonia from where it appears to forage in the Tasman Sea and migrates to the south-west Pacific Ocean (Imber and Jenkins 1981). It is possible that breeding birds also forage in the Coral Sea.

A fresh Sooty Shearwater carcass was found on Gannet Cay on 19 May. It and the bird at sea if correctly identified, would have been migrating north (Phillips 1963, Serventy *et al.* 1971).

The movements of Wedge-tailed Shearwaters from their breeding islands off eastern Australia are uncertain but there are indications that the population from the coastal islands of New South Wales regularly migrate north, perhaps entirely into the northern hemisphere (Purchase 1974, Rogers 1975, Marchant 1977, Milledge 1977). Norris (1967) suggests that at least some birds from the Coral Sea island colonies do likewise as he recorded few over the Coral Sea in July and September. Studies are required to determine the composition and status of birds in the area from May to September.

Our sightings of Hutton's or of Fluttering Shearwaters were concentrated near Swains Reef. Despite extensive comparative research by Corben, since the voyage, into the plumages of both species it has not been possible to separate with certainty the specimens reported in this paper. Corben *et al.* (1974) first recorded Hutton's Shearwaters from Queensland waters and thought that it was a regular but rare visitor to the south-east coast and accidental in the north. Pizzey (1980) agrees and adds that both species often flock together.

Wilson's Storm-Petrels were seen principally over the Great Barrier Reef supporting the Serventy *et al.* (1971) statement that they are essentially birds of continental shelf waters. The other Storm-Petrels were more common in the northern grid squares over waters outside the Reef. A White-faced Storm-Petrel was seen near Gannet Cay; this is notable for a bird that 'seems to be markedly pelagic in habit' (Serventy *et al.* 1971). The White-bellied Storm-Petrel records are further evidence that it is common in the area (Hindwood *et al.* 1963, Norris 1967, Serventy *et al.* 1971). The Black-bellied Storm Petrel record is somewhat north of the 30°-60°S latitude range which it is said to frequent while wintering off Australia (Serventy *et al.* 1971) and appears to be the northern most record from waters off the Queensland coast (Roberts 1973).

Tree Martins are frequently windswept over the ocean off eastern Australia, apparently while on migration. Apart from the two records in Table 1, one was blown across the unvegetated sandy Cay A, Flinders Reef, on 25 May 1981 and a carcass was found by ANPWS staff on 29 April 1980 on the unvegetated North Reef Cay of Frederick Reef. Serventy (1959) and Warham (1961) also report specimens from the virtually treeless Raine and Willis Islands, respectively.

Many of the remaining species seen during the survey are common breeding birds in the area but little is known of their foraging range or non-breeding dispersal from the islands. However, complex currents operate in the area with a 'flushing' effect on parts of the Great Barrier Reef (Pickard *et al.* 1977) and, with upwellings of cold water, probably affect seabird distribution.

Recently proclaimed nature reserves in the Herald, Coringa and Magdelaine Islands and Lihou Reef will assist the conservation of the birds.

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