

A Survey of Beach-washed Seabirds near Ballina, New South Wales

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A survey of seabirds beach-washed near Ballina in northern N.S.W. was undertaken from January 1976 to December 1979. A total of 504 individuals of 29 species was found. Short-tailed Shearwaters *Puffinus tenuirostris* comprised 75% of all birds. Seabirds were found beach-washed at a rate of 1.2 birds per kilometre. There is some evidence that fewer birds are beach-washed in northern N.S.W. than further south and that the proportion of Short-tailed Shearwaters in the beach-washed assemblage is also lower.

Systematic patrolling of beaches in N.S.W. for beach-washed seabirds has received little attention (Morris 1972). Published results have mainly concerned casual patrolling. Best documented are those of the N.S.W.F.O.C. beach patrol scheme (Morris 1972, 1973, 1974; Morris and Sawyer 1973; Holmes and Morris 1975; Holmes 1976; 1977).

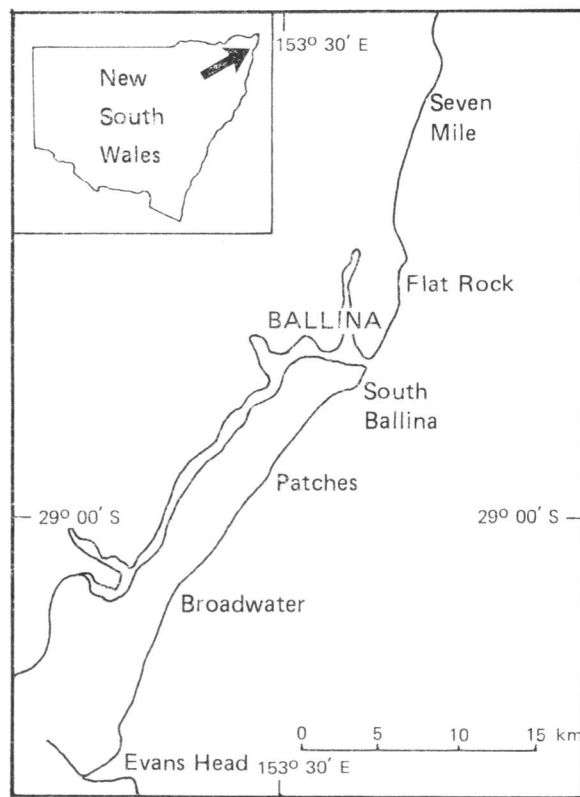
This paper reports the results of regular rather than opportunistic patrolling of beaches. It is also based on patrolling in a limited area rather than extensive (and irregular) localities.

Methods

Patrols of sections of beach near Ballina in northern N.S.W. were undertaken from January 1976 to December 1979. An attempt was made to patrol from Patches Beach to South Ballina Beach (Fig. 1) once each month. However in one month each year no patrol was made whilst additional patrols of alternative beaches were occasionally carried out (see Table 1). Timing of patrols each month was random. It was not possible to adjust the timing of patrols to coincide with specific conditions, for example, to follow storms.

The main survey beach (termed Patches for brevity) was a 9 km section of an uninterrupted beach extending from Evans Head to Ballina. Other beaches occasionally examined are referred to by name in the text (see Fig. 1 for location). Beaches were patrolled on foot. All birds were inspected and measured on the beach. Procellariiformes, other than Short-tailed Shearwaters, *Puffinus tenuirostris*, were placed in plastic bags for subsequent examina-

tion. All uncommon species were kept. Short-tailed Shearwaters showing extremes in measurements or other unusual features were also retained. Discarded bodies were disposed of by throwing over the fore-dune or in some instances by burying.



• Figure 1. Map of survey area.

Subsequent determinations of specimens were made in conjunction with W. Watson and/or G. Fraser. Unusual specimens were lodged with The Australian Museum, whilst the remainder were retained. These were examined by G. Holmes.

The results of the survey are summarised in the Systematic List and Tables 1, 2 and 3. The following abbreviations are used.

ANWC BS Australian National Wildlife Collection Bird Skeleton.

AM The Australian Museum.

SYSTEMATIC LIST

Grey-headed Albatross *Diomedea chrysostoma*

One complete and in good condition Patches 26 June 1976. Remains of a different *Diomedea* species found on same patrol.

Southern Giant-Petrel *Macronectes giganteus*

One fresh Patches 24 July 1977. Single weathered *Macronectes* species Patches 23 October 1976 and Seven Mile 2 December 1979 had both probably been on the beach for some time.

Cape Petrel *Daption capense*

One fresh Patches 7 July 1979.

Great-winged Petrel *Pterodroma macroptera*

Single birds Patches 13 January 1976, South Ballina 7 July 1979, Seven Mile 25 May 1976 and 2 December 1978.

White-headed Petrel *P. lessonii*

One Broadwater 29 December 1978.

Providence Petrel *P. solandri*

Two Patches 21 May 1976, one April 1979.

Mottled Petrel *P. inexpectata*

One Seven Mile 14 January 1976 (ANWC BS 2107).

Gould's Petrel *P. leucoptera*

One Seven Mile 2 December 1978, one Flat Rock 13 April 1979, both specimens in good condition.

Antarctic Prion *Pachyptila desolata*

One fresh, complete Patches 21 May 1976; an unidentified prion Patches 24 July 1977.

Flesh-footed Shearwater *Puffinus carneipes*

Small numbers picked up all years from October to May (none February). On Seven Mile, Patches and Evans Head; total birds recovered 14; extreme dates 29 October (fresh) and 21 May (weathered).

Wedge-tailed Shearwater *P. pacificus*

Few found all years October, December-March and May at Seven Mile, Patches and Evans Head; total birds recovered 19; extreme dates 29 October (fresh) and 23 May (fresh, including recently fledged young with traces of down).

Sooty Shearwater *P. griseus*

Found irregularly in summer, total of 14 birds picked up as follows: single birds Patches and Seven Mile 13-14 January 1976, one Patches 18 March 1978, six freshly washed up Patches 5 November, two Seven Mile 2 December and two Broadwater 29 December 1978; one Patches 3 November 1979.

Short-tailed Shearwater *P. tenuirostris*

Most common species, regularly beach-washed in summer on all beaches, numbers highest from late October to January (Table 2); on 21 May 1976, 34 were found on Patches including many juveniles; total birds recovered 378; extreme dates 16 October (fairly fresh) and 24 July (weathered); apart from a single bird found on 13 April 1979 (considered a fledgling by the presence of down on the body and a very short wing measurement of 221 mm) none was picked up in March or April.

Fluttering Shearwater *P. gavia*

Three Patches 7 February 1976, one 21 May 1976 and 24 July 1977, one Flat Rock 4 February 1978.

Hutton's Shearwater *P. huttoni*

One (AM O. 47949) considered this species Patches 6 October 1979.

Little Shearwater *P. assimilis*

One Patches 17 June 1976; one fresh Patches 4 February 1978.

Wilson's Storm-Petrel *Oceanites oceanicus*

One Patches 16 April 1976 (see Holmes 1977).

Australian Pelican *Pelecanus conspicillatus*

One Evans Head 29 October 1977.

Australasian Gannet *Morus serrator*

Small numbers found March to November all years except 1977 at Flat Rock and Patches; total birds recovered 19, of which 16 were immature; extreme dates 18 March and 5 November with numbers distributed fairly evenly through the year.

Red-footed Booby *Sula sula*

One Patches 13 January 1976 (ANWC BS 1910), first mainland record for N.S.W. (Rogers 1977).

Brown Booby *S. leucogaster*

One Patches 5 November 1978 (AM 047459).

Great Cormorant *Phalacrocorax carbo*

One Seven Mile 2 December 1979.

Pied Cormorant *P. varius*

Two Evans Head 29 October; one Patches 5 November; two 7 July 1979; one Seven Mile 2 December 1978.

Little Black Cormorant *P. sulcirostris*

One Patches 24 July 1979.

Little Pied Cormorant *P. melanoleucos*

One Patches 24 July 1977.

White-tailed Tropicbird *Phaethon lepturus*

One Patches 13 January 1976, adult in good condition.

Silver Gull *Larus novaehollandiae*

Two Seven Mile 23 May 1976, one juvenile Patches 19 February 1977.

Sooty Tern *Sterna fuscata*

Single juveniles Patches 8 April 1977 and 18 December 1978.

Crested Tern *S. bergii*

Single birds Patches 19 February, 22 March 1977, two 4 February 1978.

Discussion

Seabirds of 29 species were found beach-washed during the survey. Of the 504 birds

found 378 (75%) were Short-tailed Shearwaters (Tables 2 and 3). Only four other species were found frequently; Wedge-tailed Shearwater (19), Australasian Gannet (19), Flesh-footed Shearwater (14) and Sooty Shearwater (14). Only two prions were found although prions and the Short-tailed Shearwater are the species most frequently found beach-washed in N.S.W. (Holmes 1977).

The mean number of seabirds found beach-washed per kilometre patrolled over the four year period was 1.2 birds per kilometre. The rate ranged from 0.53 birds per kilometre in 1979 to 1.40 birds per kilometre in 1978 (Tables 1 and 2).

Greatest numbers of birds were found beach-washed from October to January and were main-

ly Short-tailed Shearwaters. Few birds were found from March to September (except in May 1976) with almost none in August and September. No birds were found over the five consecutive months from May to September 1978 (Tables 1 and 2).

Species number was highest in December which was also the month in which most birds were found. Secondary peaks occurred in May and July and were followed by a decline to a minimum in August-September (Table 2).

The rates at which seabirds were found beach-washed near Ballina from 1976 to 1979 were generally lower than the overall rates recorded by the N.S.W.F.O.C. beach patrol scheme in N.S.W. (Morris 1972 *et. seq.*). However, the

TABLE 1

Monthly rates of seabirds found beach-washed near Ballina, N.S.W. 1976-1979.

YEAR		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1976	Birds	27	7	0	1	57	4	1	1		8	5	19	
	km	24	9	9	9	15	9	9	9		9	9	9	
	Birds/km	1.13	0.78	0.0	1.11	3.80	0.44	0.11	0.11		1.0	0.56	2.11	X=0.92
1977	Birds	25	4	2	1		3	6	0	0	38	16	57	
	km	14.5	9	9	9		9	9	9	9	12.5	9	9	
	Birds/km	1.72	0.44	0.22	0.11		0.33	0.67	0.0	0.0	3.04	1.78	6.33	X=1.33
1978	Birds	20	17	4	1	0	0	0	0	0		49	82	
	km	9	9	9	9	4.5	9	9	9	9		9	15.5	
	Birds/km	2.22	1.89	0.44	0.11	0.0	0.0	0.0	0.0	0.0		5.44	5.29	X=1.40
1979	Birds	5	2	4	6		2	5	1	1	3	13	6	
	km	9	9	9	9		9	10.5	5	9	9	9	5	
	Birds/km	0.56	0.22	0.44	0.67		0.22	0.48	0.20	0.11	0.33	1.44	1.20	X=0.53

TABLE 2

Summary: Seabirds found beach-washed near Ballina, N.S.W. 1976-1979.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS
Total Birds	77	30	10	9	57	9	12	2	1	50	83	164	504
Total Species	8	6	6	7	10	5	10	1	1	8	6	12	29
Total km	56.5	36	36	36	19.5	36	37.5	32	27	30.5	36	38.5	421.5
Birds/km/Month	1.36	0.83	0.28	0.25	2.92	0.25	0.32	0.06	0.03	1.63	2.30	4.26	1.19

TABLE 3

Numbers of Short-tailed Shearwaters found beach-washed near Ballina, N.S.W. 1976-1979.

YEAR		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1976	* <i>P. tenuirostris</i>	19	3			39	1				7	5	18	92
	+ %	70	43			68	25				78	100	95	70
1977	<i>P. tenuirostris</i>	17					2	1			32	15	54	121
	%	68					67	17			84	94	95	79
1978	<i>P. tenuirostris</i>	19	12									40	72	143
	%	95	71									82	88	82
1979	<i>P. tenuirostris</i>	5			1						1	11	4	22
	%	100			17						33	85	67	46
Totals	<i>P. tenuirostris</i>	60	15	0	1	39	3	1	0	0	40	71	148	378
	%	77	50	0	11	68	33	8	0	0	80	85	84	75

* Number of Short-tailed Shearwaters found.

+ Proportion of Short-tailed Shearwaters in beach-washed assemblage.

rates were highly consistent with the results obtained in mid-north coastal N.S.W. for 1974-77 (Holmes pers. comm.). The proportion of Short-tailed Shearwaters in the beach-washed assemblage was also generally lower in the Ballina area than has been found farther south (Morris 1972 *et. seq.*, Holmes pers. comm.).

These results may be explained at least in part by a combination of real differences in the actual number of seabirds inhabiting seas along the N.S.W. coast (and therefore likely to be beach-washed) and bias in the methods of collecting data on beach-washed seabirds. It is known that seabird density decreases northward in N.S.W. (Holmes 1977 and pers. comm.). It could therefore be expected that fewer seabirds would be found beach-washed on the far north coast of N.S.W. In the present survey regular (i.e. monthly) as opposed to opportunistic, patrolling of beaches was attempted. This reduced the bias resulting from most patrolling being carried out from October to February when large numbers of beach-washed birds, primarily Short-tailed Shearwaters, are likely to be found. Similarly no extra patrols were made after storms or when seabird wrecks were known to have occurred.

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