

SOME OBSERVATIONS ON THE TIMING OF BREEDING OF SEABIRDS ON PELSAERT ISLAND, WESTERN AUSTRALIA

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Pelsaert Island, Houtman Abrolhos, Western Australia, was visited between August 1991 and February 1992. Observed and estimated laying dates reveal that most laying occurs between August and November.

INTRODUCTION

Pelsaert Island (28°56'00"S, 113°58'30"E) is the southernmost island of the Houtman Abrolhos, and lies 50 km west of Geraldton near the edge of the continental shelf. A number of visitors have reported on the activity of seabirds (Warham 1956; Ealey 1954; Sandland 1937; Serventy 1943), and Storr *et al.* (1986) have provided a detailed account of bird observations over the last 143 years. However, no previous papers have accurately reported times of egg-laying and chick hatching for an extended period over a single breeding season. Burbidge and Fuller (1989, 1991) and Fuller and Burbidge (1992) have documented the size, location and status of breeding seabird populations on Pelsaert Island. This paper provides information on breeding times of 10 species during 1991/92.

MATERIALS AND METHODS

Pelsaert Island was visited 11 times, for an average of eight days, between August 1991 and February 1992 to study the reproductive biology of the Lesser Noddy. Pelsaert Island was visited from 31 August to 2 September, 16-23 September, 28 September-10 October, 14-24 October, 28 October-3 November, 6-15 November, 20-27 November, 5-13 December, 16-23 December, 28 December-8 January, 29 January-2 February. Observations on other seabirds were collected opportunistically.

Egg-laying dates were obtained using three techniques: (i) estimation from known incubation periods; (ii) personal observations; and (iii) estimation from fledging periods.

RESULTS AND DISCUSSION

A summary of the observations collected are given below for each species. Table 1 presents data on the observed dates of laying and hatching, and the incubation periods.

Pacific Gull *Larus pacificus*: Two nests, each with two eggs, were located amongst grass in sheltered depressions. All but one egg hatched, the other was found to be addled. Three young survived to fledge in late November to mid-December 1991.

Caspian Tern *Sterna caspia*: Three nests were located on sand amongst grass tussocks. Two nests had clutches of two. Only three young survived to fledge from five eggs. One egg was infertile and another chick was overcome by ants soon after hatching.

Crested Tern *Sterna bergii*: Three pairs were observed copulating on the mid-west coast of Pelsaert Island on 23 October. A colony of about 20 nests, near Wader Lagoon, was abandoned by 2 November and all eggs had been taken by Silver Gulls *Larus novaehollandiae* breeding nearby. Another larger colony, of about 1 000 nests (Fuller and Burbidge 1992) was more successful, with eggs hatching around 23 November 1991.

TABLE 1

The incubation period, clutch size, observed dates of egg-laying and hatching and the estimated laying date of 10 species of seabirds on Pelsaert Island during the 1991/92 breeding season.

Species	Eggs first observed	Clutch size	Number of hatchlings	Observed hatching date	Incubation period (days)	Estimated laying date
Pacific Gull	1 Sept.	2	2	17 Sept.	29 ^a	16 Aug.
	19 Sept.	2	1	5 Oct.	29 ^a	6 Sept.
Caspian Tern	20 Sept.	2	2	17 Oct.	20–22 ^a	25 Sept.
	3 Sept.	2	1	22 Sept.	20–22 ^a	31 Aug.
Crested Tern	19 Oct.	1, 2	—	23 Nov.	28–30 ^b	24 Oct.
Sooty Tern	—	1	1	11 Nov.	30 ^b	14 Oct.
Bridled Tern	7 Nov.	1	1	6 Dec.	28–30 ^b	6 Nov.
Roseate Tern	20 Nov.	2, 3	—	10 Dec.	24 ^b	16 Nov.
Fairy Tern	24 Nov.	1, 2	—	—	20 ^c	22 Nov.
Brown Noddy	7 Oct.	1	1	23 Nov.	35 ^c	18 Oct.
Lesser Noddy	31 Aug.	1	1	30 Sept.	34 ^d	27 Aug.
Osprey	31 Aug.	3	1	1 Oct.	33–35 ^e	27 Aug.
	31 Aug.	3	2	—	33–35 ^e	24 July

^aSchodde and Tidemann (1990); ^bLangham (1984); ^cChardine and Morris (1989); ^dSurman (1992); ^eHollands (1984).

Sooty Tern *Sterna fuscata*: The first hatchlings were found on 12 November. Birds nesting at the northernmost parts of the colony were still incubating on 23 November. This colonization by Sooty Terns on Pelsaert Island has been documented by Lane (1986).

Bridled Tern *Sterna anaethetus*: Scarce on Pelsaert Island. Fuller and Burbidge (1992) recording only 60 nests. Earliest arrival date 15 October 1991. Eggs laid on or near 7 November. Newly hatched chicks were found on 6 December 1991.

Roseate Tern *Sterna dougalli*: Some birds attending nest scrapes on Jon Jim Island, off the southern tip of Pelsaert Island, on 9 November. By 12 November three eggs were located, two of which were broken. By 22 November the colony had shifted 50 m north, surrounding the south-eastern point of Pelsaert Island, where hundreds of nests were found containing clutches of 1 or 2. By 10 December eggs were hatching.

Fairy Tern *Sterna nereis*: Seven incubating birds were found on 24 November. No adults or eggs were seen 9 days previously.

Brown Noddy *Anous stolidus*: On 23 November 1991, most nests still contained eggs but some newly hatched chicks were also found.

Lesser Noddy *Anous tenuirostris*: Egg-laying began about 27 August 1991. The mean laying date was 30 September and some fresh eggs were still being found up until 6 December. The first chick hatched on 30 September and fledged around 10 November 1991 (Surman 1992).

Osprey *Pandion Haliaeetus*: A nest with young several weeks old, and one addled egg, was found on 31 August. Another nest, approximately 650 m north of the first, still contained a single egg on 29 September. This egg hatched some time on 1 October. The older chicks fledged some time between 23 and 28 October, and were still using the nest and nearby perches up to six weeks later. The younger chick fledged some time between 28 November and 4 December.

One might expect that temperate species of seabirds would be more likely to begin breeding earlier than tropical species breeding at the same temperate location. It is evident, however, that no such rule governs the laying chronology of these 10 species of seabirds breeding on Pelsaert Island. The complex intermixing of warm water from the Leeuwin Current and upwelling of cooler waters from the Westralian Current (Hatcher 1991) is most likely to determine when the favoured prey species for each species of seabird will be available and hence, determine when breeding adults will reach breeding condition.

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ALARM BEHAVIOUR OF LESSER NODDIES

Lesser Noddies *Anous tenuirostris melanops* are small, dark-plumaged, tropical terns that build elaborate nests on the branches of the White Mangrove *Avicennia marina*. The observations below were collected during field studies on Pelsaert Island (28°56'S, 113°58'E), the southernmost island in the Houtman Abrolhos, Western Australia. Observations were made in the field during the 1991/92 breeding season and further records were made in the early part of 1992/93.

During my study into the reproductive biology of the Lesser Noddy, it was necessary to trap and band individuals at the nest. A small hand net with fine mesh of about 25 cm diameter was used initially to capture adults. Many birds would remain on the nest when incubating, and with experience the most effective means of capture was by carefully surrounding the bird with both hands.

Initially, adult Lesser Noddies gave little reaction on being approached, occasionally passively pecking several times. If the approach was slow, capture would nearly always be successful. Adults previously handled would vigorously

peck, make alarm calls, and at the last moment leave the nest. This change in behaviour became apparent during 1991/92 and was useful in avoiding unnecessary recaptures, as bands could not always be seen on sitting birds. Thus stress to birds of the study could be minimized.

During a return visit in October 1992, I was concerned with locating individuals banded during the previous year by checking along last year's transects. Banded individuals began their defensive behaviour and thus facilitated the selection and recapture of last season's individuals, resulting in a more concentrated effort on the birds sought.

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