

SELECTED LONGEVITY RECORDS FOR BRIDLED TERNS *Sterna anaethetus* BREEDING ON PENGUIN ISLAND, WESTERN AUSTRALIA

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INTRODUCTION

In south-western Australia Bridled Terns *Sterna anaethetus* are a breeding migrant normally arriving at their nesting colonies on numerous offshore islands in early October and departing in early April. The terns breeding in this region 'winter' offshore in the north-west Sulawesi Sea between 4° and 7°N (Dunlop and Johnstone 1994; Dunlop and Rippey 2006).

Bridled Terns were first banded on Penguin Island, Western Australia (32°18'S, 115°41'E) in January 1983 (Dunlop *et al.* 1988a) and mark, release, recapture operations were undertaken in every season from 1986/87 to 2006/07 with some variation in effort. Over 5000 terns have now been banded on Penguin Island. In 1983 the Bridled Tern colony consisted of 200 – 300 pairs in two distinct sub-colonies on the northern and southern tips of the island. The colony expanded steadily over the study period (Dunlop and Jenkins 1994) and today there are 3000-4000 established pairs occupying every available area of rocky and vegetated habitat (Dunlop and Rippey 2006).

As 2006/07 was the twentieth consecutive year of Bridled Tern banding on Penguin Island it was considered an appropriate time to review the database for longevity records. Such records involve the relatively recent (since 2000) recapture of terns banded during the 1986/87, 1987/88 and 1988/89 breeding seasons.

METHODS

A description of Penguin Island is provided in Dunlop *et al.* (1988a). All banding between 1983 and 1989/90 was undertaken in the northern plateau study area (Dunlop and Jenkins 1992, 1994). The area of operations expanded to other sub-colonies from 1990/91 as the colony expanded.

Adult Bridled Terns, pulli and fledglings were captured by night-lighting with headlamps and where necessary with the use of a long-handled net. Terns were captured within a previously determined area (study sub-colony) but were not targeted at specific nest sites. Unmarked terns were banded with an individually numbered alloy metal ring supplied by the Australian Bird and Bat Banding Scheme. The band numbers of all recaptures were recorded.

Experienced terns were more likely to be captured early in the season from October to December before the arrival of prospecting, pre-breeders in January. Most Bridled Terns returned to their natal sub-colonies in their third year (Dunlop and Jenkins 1992). Unmarked captures from January onwards would include a significant proportion of pre-breeding adult plumage terns.

RESULTS

The 20 records giving the longest elapsed period between banding and recapture were selected from the banding data for individuals marked in adult plumage early in the study, i.e. between November 1986 and December 1989. These results are presented in Table 1.

Previous analyses have indicated that terns captured in the colony in adult plumage will generally be three years of age (3+) (Dunlop and Jenkins 1992, 1994). Three years have therefore been added in assigning an age class to each longevity record. Breeding seasons straddle years over the summer period and therefore banding and recovery years are assigned to the year the season started (eg. January 1988 would be assigned to 1987). Time between banding and the latest recapture is given as days elapsed. The number of times an individual was recaptured since banding is also shown.

The records in Table 1 include intervals from banding to the latest recapture of between 4879 and 7233 days, or 13.4 to 19.8 years. The projected age classes for these terns ranged from 16+ to 23+ years. No individual was recaptured in more than four seasons and the mean intervals between ranged between 4.76 and 17 years. Table 2 presents information from 10 records selected in the same way for Bridled Terns banded as pulli or fledglings and recaptured within the northern sub-colony study area, i.e. natal recruits. The intervals between banding and the latest recapture ranged from 5385 to 6885 days or 14.7 to 18.9 years. The known ages for these terns ranged from 15 and 19 years. No individual was recaptured in more than three seasons and the mean intervals between banding and recapture ranged from 5.7 and 14.8 years.

TABLE 1

Banding date, number of times recaptured, latest date of recapture, time in days between banding and latest recapture and projected age class for 20 Bridled Terns banded in adult plumage in the colony on Penguin Island

Band No	Banding date	Number of times recaptured	Latest recapture date	Period in days	Age Class
23364	01/11/86	1	15/12/01	5523	18+
23367	01/11/86	3	24/11/01	5502	18+
23388	01/11/86	2	18/11/01	5496	18+
23393	01/11/86	2	11/03/00	4879	16+
23431	22/11/86	1	24/11/01	5481	18+
23443	01/01/87	3	21/10/06	7233	23+
23474	02/02/87	2	18/11/01	5415	18+
23475	07/02/87	2	21/10/06	7196	23+
23498	07/02/87	1	17/11/01	5621	18+
65538	28/03/87	3	17/11/01	5573	18+
65605	21/11/87	2	15/12/01	5138	17+
76026	11/12/87	4	27/12/06	6956	22+
76056	12/12/87	2	19/12/04	6217	20+
76089	02/01/88	3	21/10/06	6859	22+
76248	17/11/88	3	07/01/06	6260	20+
77362	18/03/88	2	19/12/04	6120	20+
81095	10/02/89	2	12/02/05	5846	19+
81151	03/03/89	3	26/12/05	6142	20+
83954	28/10/89	2	14/11/06	6226	20+
84078	28/12/89	1	27/12/06	6208	20+

TABLE 2

Banding date, number of times recaptured, latest date of recapture, time in days between banding and latest recapture and age class for 10 Bridled Terns banded as pulli or fledglings in the colony on Penguin Island

Band No	Banding date	Number of times recaptured	Latest recapture date	Period in days	Age Class
19039	18/01/83	2	24/11/01	6885	19
19057	20/01/83	2	16/12/00	6540	18
65481	26/02/87	2	24/11/01	5385	15
65524	28/03/87	2	12/02/05	6521	18
76191	11/02/88	1	09/11/02	5385	15
76300	06/12/88	2	16/12/06	6584	18
79937	18/12/88	3	25/02/06	6278	17
79940	18/12/88	2	27/12/06	6583	18
81099	10/02/89	2	27/12/06	6529	18
81179	24/03/89	2	25/02/06	6182	17

DISCUSSION

Hitherto the oldest published age for the Bridled Tern appears to be 18 years (Higgins and Davies 1996). Clearly the data presented show that a proportion of Bridled Terns live longer than this; certainly in excess of 23 years. The infrequency at which individuals that are known to be alive have been recaptured using the night-lighting method on Penguin Island suggests that older terns will be recaptured or recovered in future years.

The Bridled Tern is an offshore, continental shelf forager (Dunlop *et al.* 1988b; Dunlop 1997). It lays a single egg, has a nine-week fledging period, breeding rest years and a moderately delayed age of first breeding at four years (Dunlop and Jenkins 1992, 1994), at least in established colonies. These are all demographic characteristics that would be complemented by longevity (Hamer *et al.* 2002).

Longevities recorded in similar sized, littoral feeding tern species include 24 years in the Royal Tern *S. maxima*, 25 years in the Roseate Tern *S. dougallii*, 20 years in the White-fronted Tern *S. striata*, 25 years in the Common Tern *S. hirundo* and 34 years in the Arctic Tern *S. paradisaea* (Schreiber and Burger 2002). The slightly larger oceanic feeding terns such as the Brown Noddy *Anous stolidus* (27 years) and Sooty Tern *S. fuscata* (36 years) tend to reproduce more slowly with longer delays in reaching maturity (Morris and Chardine 1995; Harrington 1974), have non-breeding years (Dunlop 2005) and have slightly greater longevities. The Bridled Tern's foraging niche over the continental shelf (Dunlop *et al.* 1988b; Dunlop 1997) is intermediate between the coastal and oceanic tern species and similar to the smaller Black Noddy *A. minutus* and Lesser Noddy *A. tenuirostris*. The Black Noddy has a longevity record of 25 years (Schreiber and Burger 2002).

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