

## Migration and Breeding Season in *Sterna nereis* and *S. albifrons*

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In a recent review of the Fairy and Little Terns, W. B. Hitchcock ('Review of the Least Terns in Australian Waters, *South Australian Ornithologist*, 22, 87-106 + map, 1959) makes three points which I feel require further discussion:

- (1) The Fairy Tern (*Sterna nereis*) is 'relatively sedentary' in contrast to the 'highly migratory' Little Tern (*S. albifrons*);
- (2) both species tend to breed later with increasing latitude;
- (3) *albifrons* breeds a little earlier than *nereis* from similar latitudes.

In south-western Australia, the Fairy Tern is strictly migratory. My extreme dates for the Swan River estuary are September 10 to June 14, and for Rottnest Island (12 miles west of Fremantle), September 17 to May 17. Those dates, moreover, conceal the fact that the birds are much less plentiful in autumn than in summer. There would appear to be little difference in migratory behaviour between the local population of *nereis* and *albifrons* from the Sydney area.

At Lancelin Island, 70 miles north of Fremantle, the regime seems to be similar. But at the Houtman Abrolhos, a further 200 miles northward, the species is apparently sedentary, for in three recent trips to the Wallabi Group, Fairy Terns were found to be equally abundant in late April, late June and early September, *i.e.* at times when the terns are scarce or absent in the Swan River.

The Fairy Tern is thus migratory in the southern part of its range in Western Australia and sedentary in the north. While the status of the Little Tern of south-eastern Australia is well established, is the evidence conclusive that tropical populations are similarly migratory? Should it prove so, the intriguing question arises, where do they go?

Equally obscure are the movements of Fairy Terns in South Australia, where the species is local and uncommon. Out of the 54 occasions between 1946 and 1952 that the writer could reasonably have expected *nereis* (the main criterion being the occurrence of *S. bergii*), the species was in fact seen only 14 times. These observations were distributed thus—

October to February—Corny Point, Marion Bay, Lake Albert, Coorong (4 occasions), Robe (3).

March to September—Port Augusta, Ardrossan, Middle Beach, Lake Albert.

Meagre as they are, these data may indicate that the Terns winter in the heads of the gulfs and on the lakes at the mouth of the River Murray. By limited movements such as these, the Terns could escape the worst rigors of the Southern Ocean in winter, whereas a more distant migration would involve the birds in a flight of from one to two thousand miles before encountering appreciably better winter conditions.

The next claim I would question is that "going south from the equator the egg seasons of both start and finish progressively later, with *albifrons* showing more definite trends (smoother curves) than *nereis*". Several objections could be levelled at the procedure of basing egg season on first and last observations of eggs. One will suffice here: most of the data are ignored. If all the available dates are used, as in Table 1, the egg-season of *albifrons* breeding between 20° and 25° s is not demonstrably different from those between 25° and 30° s.

TABLE 1

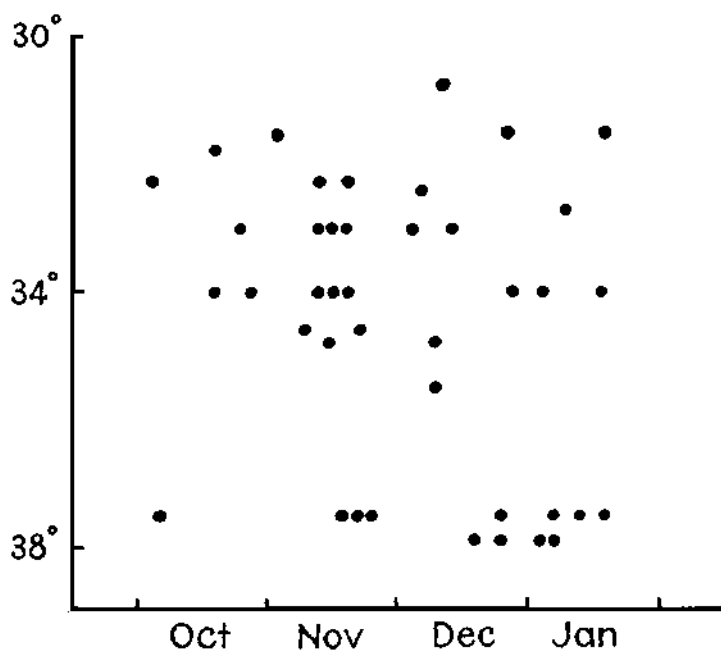
	August and September	October and November	December
20° - 25° s	2	10	0
25° - 30° s	3	8	1

Table 1.—Observations of eggs of *Sterna albifrons* in Eastern Australia north of latitude 30° s (from Hitchcock).

South of latitude 30° s the Little Tern undoubtedly breeds on average several weeks later. Again there is no evidence for progressive retardation of egg-laying. At least to as far south as Mallacoota (37½° s) the data have every appearance of being homogeneous (see figure, next page).

The egg dates for *nereis* are not nearly so well distributed latitudinally as those for *albifrons*. All that may be concluded from them is that *nereis* breeds considerably earlier in the far north than in the south. There is no evidence of progressive retardation over twelve or more degrees of latitude, the dates from the Abrolhos (28½° s) agreeing well with those from Tasmania (40° - 42° s). Indeed, the dates from Rottnest (32° s) are the latest of all, but these are almost certainly biased, since all of them fall in the period from New Year to resumption of school, when the island is most frequently visited. As the writer has visited Rottnest in various months for several years, his dates should provide a better estimate of the local egg season. They are November 2, 15, 16, 19, 24; December 23, 27, 28; January 10 (all these dates refer to different colonies in various years).

Finally, Hitchcock's contention that *nereis* breeds later than *albifrons* is not supported by the available data. The single egg date from the Dampier Archipelago ( $20\frac{1}{2}^{\circ}$  S) is considerably earlier than all six from Bowen ( $20^{\circ}$  S) and Mackay ( $21^{\circ}$  S). The Shark Bay dates come in the middle of the series from Bundaberg in approximately the same



Egg dates of *Sterna albifrons* in south-eastern Australia, plotted against latitude (data from Hitchcock).

latitude ( $25^{\circ}$ – $26^{\circ}$  S). At the Abrolhos ( $28\frac{1}{2}^{\circ}$  S) the egg season seems later than in northern New South Wales, but it is only south of latitude  $30^{\circ}$  S that the data are adequate for comparison. However, the differences between the species apparent in Table 2 are not statistically significant ( $P = 0.2$ ).

TABLE 2

	Before Dec. 1	After Dec. 1
<i>albifrons</i>	21	21
<i>nereis</i>	20	32

Table 2.—Observations of eggs south of latitude  $30^{\circ}$  S (including those of the author, cited earlier).