Probability of Two Populations of Crested Terns Breeding Together in Tasmania

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Recoveries of young Crested Terns, banded on islands off the north-east tip of Tasmania, are analysed. In December, 1962, a major influx of terns bred on Pelican Island, off Cape Portland: all seven recoveries of birds banded on this island on 28 December 1962, are from New South Wales or Victoria. The other five recoveries of terns banded at other times and/or on other islands are all from Tasmania. It is postulated that two groups of terns are involved: a sedentary population which produced the Tasmanian recoveries, and a nomadic population which produced the New South Wales and Victorian recoveries.

A brief account of the breeding of the Crested Tern (*Sterna bergii*) on the islands off the north-east tip of Tasmania has been published (Liddy, 1964). A total of 1,400 young Crested Terns was banded on these islands, and 12 recoveries (0.9 percent) of these birds have eventuated. Banding and recovery data are summarised below.

Breeding Island	Date	Number Banded	Number Recovered
Baynes	7. 1.61	100	1
Pelican	2.12.61	79	1
,,	28.12.61	52	—
,,	1.12.62	140	2
,,	28.12.62	994	7
Little Waterhouse	8.12.62	35	1
		1,400	12

The banding and recovery localities are shown on Figure 1.

The methods of recovery are typical for Crested Terns in Eastern Australia; most were picked up dead on beaches, with one (and possibly two) caught on fishing lines. One bird, 070-56140, was found injured: the right wing was amputated by an officer of the Victorian Fisheries and Wildlife Department, and the bird was later sent to the Melbourne zoo.

The recoveries conform to the expected pattern with regard to age; most recoveries eventuated during the first year of life, with decreasing numbers of recoveries in later years.

Details of the 12 recoveries are:

Band No.	Banding data Date	Banding data Island	Recovery Data Date	Recovery Data Locality	Distance (miles)	Direction	Method
070-41322	7.1.61	Baynes	21.10.61	Ulverstone, Tas	80	ESE	Fishing line
-39705	2.12.61	Pelican	20.11.66	Marion Bay, Tas.	142	S	Alive
-39894	1.12.62	Pelican	27.5.64	Arthur River, Tas.	173	W	Dead
-39904	1.12.62	Pelican	1.4.63	Richmond, Tas.	145	SW	Dead
-39984	8.12.62	Little Waterhouse	9.3.63	Swansea, Tas.	102	SSE	Dead
-54944	28.12.62	Pelican	22.9.66	Marlo, Vic.	210	N	Dead
-56140	28.12.62	Pelican	13.1.64	Cheltenham, Vic.	240	NW	Injured
-56184	28.12.62	Pelican	15.8.64	Tuggerah Lakes, N.S.W.	560	NNE	Dead
-56217	28.12.62	Pelican	15.3.65	Port Stephens, N.S.W.	615	NNE	Dead
-56231	28.12.62	Pelican	—.5.63	Yamba, N.S.W.	850	NNE	Dead
-56266	28.12.62	Pelican	15.10.64	Mornington, Vic.	235	NW	Dead
-56591	28.12.62	Pelican	18.6.63	Rye, Vic.	240	NW	Dead

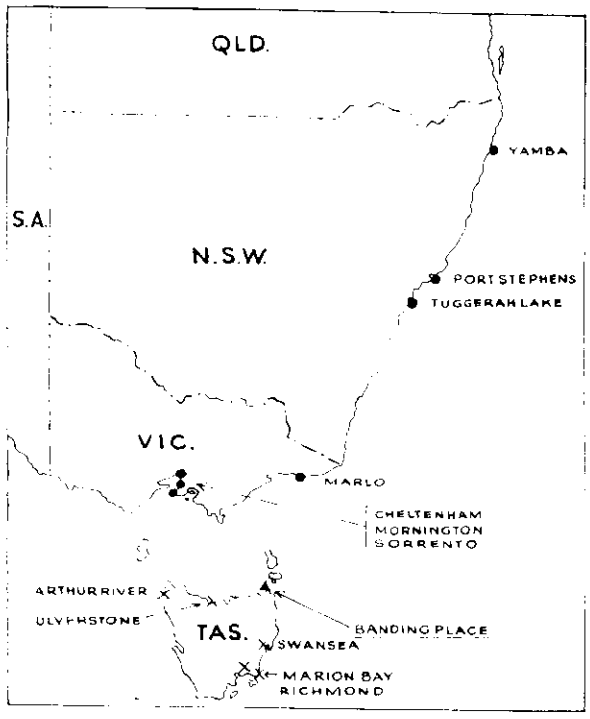

Figure 1. *Recoveries of Crested Terns banded on Pelican Island on 28 December, 1962 (solid circles), and those banded on islands off north-east Tasmania at other times (crosses).*

Age	Number Recovered
First year	6
Second year	3
Third year	1
Fourth year	1
Fifth year	1
Sixth year	nil to date

The recoveries, as a group, show superficial resemblance to the dispersion expected from Crested Tern colonies (Carrick et alii, 1957), with recoveries from Tasmania (five), Victoria (three) and N.S.W. (four). However such lumping obscures the fact that all seven recoveries from Victoria and N.S.W. are from birds banded on Pelican Island on 28 December 1962, while there are no recoveries from Tasmania for the group of terns banded at this time. Conversely the five recoveries of terns banded other than on Pelican Island on 28 December 1962, are all from Tasmania. Although the total sample of recovered birds is small, the differences in the recovery localities of the two groups are significant, and it is highly probable that two populations of terns were involved. This conclusion is supported to some extent by observations of the terns breeding on the island at Cape Portland. These islands have been described briefly (Liddy, 1963). They were visited during three successive summers, and the number of breeding pairs on each island was estimated as follows:

Breeding Island	Summer	Estimated Breeding Pairs
Baynes	1960-61	about 300
Pelican	1961-62	about 200
Pelican	1962-63	about 1400

Conversations with several fishermen who have visited the islands off Cape Portland for many years indicated that the terns bred annually on one or other of these islands, but information regarding the number of breeding birds was lacking.

Two features of the 1962-63 breeding on Pelican Island caused considerable speculation amongst the banding party:

(1) the origins of the very large increase in the number of breeding terns.

(2) the absence of breeding Silver Gulls (*Larus novaehollandiae*), which usually seem to breed on the periphery of the tern colonies, as on Pelican Island in 1961-62.

To account for the variation in localities of recoveries of the two groups of terns, and also for the large increase in the numbers breeding in December 1962 the following hypotheses are postulated:

- Several hundred local Tasmanian terns breed annually on one or other of the islands off Cape Portland, and also on Little Waterhouse Island. These birds are relatively sedentary, and spend their lives in or near Tasmanian waters. The young of this population were banded on Baynes Island, Little Waterhouse Island, Pelican Island during December 1961, and on Pelican Island on 1 December 1962.
- During the early summer of 1962-63, the local breeding population of terns on Pelican Island was augmented by some 1,100-1,200 pairs of nomadic (?) terns, possibly originating from coastal New South Wales or eastern Victoria. These terns bred around the periphery of the local tern colony. The Silver Gulls, which normally breed adjacent to the terns, were forced out by these nomadic terns, and the gulls moved to the

less suitable Foster Island to breed. After breeding, the 'nomadic' terns and their progeny left Tasmanian waters in early 1963 for the coasts of south-eastern Victoria and New South Wales.

It has been shown (Milne and Robertson 1965) that Eider Ducks (*Somateria mollissima*) breeding on the Sands of Forvie, Scotland, consist of two distinct populations: these avoid interbreeding because the migrating birds pair before they return to the breeding area. It is entirely possible that similar conditions prevailed for the Crested Terns on Pelican Island in December, 1962. The local birds bred ahead of the nomadic group, and relatively few local birds would be available to interbreed with the influx. The tendency to interbreed would be further reduced if the nomadic group had paired before arriving in the vicinity of the breeding island. Any interbreeding between the two populations would occur late in the season, and eggs from late breeders tend to be deserted. There was thus a high probability that effective interbreeding between the two populations was minimal.

To prove that two populations of terns, one local and the other nomadic, breed jointly on an island is difficult. A nomadic population, paired and searching for a breeding island, would be expected to breed around the periphey of an established colony. If banding of the colony was carried out over the breeding season, differences (if any) in the dispersion of the two populations should be detectable. It is highly probable that this situation occurred on Pelican Island in December 1962, and by mere chance was exploited by banding at suitable times. Analysis of recovery data from other Crested Tern colonies, to determine if there are differences in recovery data between early and late-hatched young, would be worthwhile.

REFERENCES

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Notice of Meeting

The Annual General Meeting of The Bird Banders' Association of Australia will be held in The National Herbarium, Birdwood Avenue (Botanic Gardens, near the Shrine), Melbourne, Victoria, at 2 p.m. on Saturday, 4 January, 1969.

The agenda will include:

1. Official Opening by Mr A. Dunbavin Butcher.
2. Reports.
3. Election of Officers.
4. General Business.

A Scientific Meeting will follow the General Meeting. Visitors and friends will be welcome.

An informal evening has been arranged also; details will be announced at the meeting.

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