

# MONITORING OF CAPE BARREN GOOSE POPULATIONS IN SOUTH AUSTRALIA III. THE 1990 BREEDING SEASON AND THE RE-ESTABLISHMENT ON REEVESBY ISLAND

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## SUMMARY

Counts of egg and chick production by Cape Barren Geese on the islands of the Sir Joseph Banks Group revealed that 1990 like 1985 and 1987 was a poor breeding year compared with 1974 and 1979. This is considered to be due to low rainfall in April, May and June, the critical months for producing food for breeding birds. Helicopter counts of the summering population around the Murray mouth revealed a 20% decline in 1990 compared with counts in 1979 and 1985. One possible explanation for this is a decline in breeding habitat on the small islands of the Sir Joseph Banks Group. This potential loss however seems to be more than compensated by the now well established breeding on the large areas of grassland on Reevesby Island.

## INTRODUCTION

The South Australian NPWS has conducted ecological studies of the Cape Barren Goose *Cereopsis novaehollandiae* in its breeding habitat in 1974, 1979, 1985 and 1990 and has done three surveys of its summering habitat in 1979, 1985 and 1990. These surveys have involved counts of adults, chicks, eggs and nests in the major breeding habitat of the Cape Barren Goose on the Sir Joseph Banks Group islands offshore from Port Lincoln, and the monitoring of the summering habitat around Lakes Alexandrina and Albert. Details have been reported in Robinson *et al.* (1982), Robinson and Delroy (1986) and Delroy *et al.* (1989).

In nesting surveys on the islands of the Sir Joseph Banks Group rainfall was less than average before counts in 1985, 1987 and 1990. In addition, poor weather during the 1990 survey meant that (as in 1987) not all islands in the group could be visited. Despite this, the series of counts is beginning to reveal population trends in this important wildlife species in South Australia.

A cat eradication program on Reevesby Island in 1989 has provided an opportunity to make more detailed observations on the Cape Barren Goose population than had been possible during previous single monitoring trips. These visits provided some indication of the progress of the 1989 breeding season on Reevesby Island where breeding was first recorded in 1984 (Robinson and Delroy 1986).

## METHODS

### Breeding island surveys

Methods used were as close as possible to those used in previous surveys. From 10 to 12 July 1990 four observers landed on 10 islands in the Sir Joseph Banks Group and systematic counts of adults, chicks and eggs of Cape Barren Geese on each island were undertaken as described in Delroy *et al.* (1989). Marum and Dalby Island, missed in the July count, were surveyed on 1 August 1990.

### Reevesby Island

Geese were counted on the following dates: 9-10 August, 5-6 September, 4-12 October and 8-17 November 1989. Although a variable search effort was employed on each visit, the count still provided a good indication of the progress of the 1989 breeding season on Reevesby Island.

### Summering area survey

The major Cape Barren Goose summering areas around Lakes Alexandrina and Albert were surveyed on 19 December 1990 at an altitude of 200-300 m from a Hughes 300 helicopter. The flight path taken closely followed that shown in Robinson and Delroy (1986). Because the helicopter was smaller than that used in the 1985 survey only a single observer was used and the pilot also spotted geese from his side of the aircraft. The route followed the edge of the lakes and geese were easily seen using this technique. Total flying time was nine hours. About 40% of the geese observed were disturbed by the helicopter but double counting was unlikely as they soon settled back in the area from which they were initially disturbed.

## RESULTS

### Breeding island surveys

The distribution of nests and groups of chicks of Cape Barren Geese on 10 of the islands in the Sir Joseph Banks Group in July is shown in Figure 1. Details of actual counts of adults, chicks, eggs and nests counted in 1987 and 1990 are shown in Table 1.

Table 1. Counts of adult birds, chicks and eggs of Cape Barren Geese on the islands of the Sir Joseph Banks Group in 1987 and 1990. The corresponding counts for 1974, 1979 and 1985 are in Table 1 of Robinson and Delroy (1986). Reevesby Island was not counted in 1987 and, because breeding had just begun there, it was not included in the calculation of a value for the mean density for the island group. The figures in brackets for 1990 are from counts conducted in August 1990, and those indicated \* are estimates.

Island	Eggs		Chicks		Eggs plus chicks		Nests		Adults	
	1987	1990	1987	1990	1987	1990	1987	1990	1987	1990
Blyth	0	0	0	0	0	0	0	0	0	10
Boucaut	2*	7*	9*	2*	11*	9*	8*	4*	30*	15*
Dalby	2	2*(20)	7	1*(0)	9	3*(20)	5	1*(7)	35	6*(12)
Duffield	1*	0	4*	4	5*	4	4*	3*	15*	3*
English	0	0	0	0	0	0	0	0	0	11
Hareby	5	8	0	1	5	9	15	3	29	60
Kirkby	0	12*	4	3*	4	15*	2	7*	32	30*
Langton	0	7	92	5	92	12	12	7	76	25
Lusby	0	20	1	0	1	20	7	4	19	10
Marum	0	4*(42)	1(0)	0		5*(42)	8	3*(18)	76	10*(-)
Partney	0	41	46	2	46	43	33	20	234	90
Reevesby south end	--	33	--	6	--	39	--	13	--	150
Roxby	27	34	26	8	53	42	28	23	82	100
Sibsey	3	28	7	15	10	43	25	27	74	40
Stickney	8*	4	41*	0	50*	4	34*	8	147*	25
Winceby	0	13*	7	3*	7	16*	26	8*	30	30*
Reevesby north end	--	22*	--	4*	--	26*	--	9*	--	100*
<b>Totals</b>	<b>48</b>	<b>235</b>	<b>245</b>	<b>54</b>	<b>293</b>	<b>290</b>	<b>207</b>	<b>140</b>	<b>879</b>	<b>715</b>

This can be compared with previous distributions in: June 1979, Figure 8, Robinson *et al.* (1982); July 1985, Figure 1, Robinson and Delroy (1986); and July 1987, Figure 1, Delroy *et al.* (1989). Data from Delroy *et al.* (1989) have been adjusted for islands when no counts were carried out by taking the mean number of nests, eggs, chicks and adults/hectare for all counted islands and then calculating values for uncounted islands. This has been done for uncounted islands in both the 1987 and 1990 counts. It is likely to underestimate the actual numbers of nests as the

counts on Marum and Dalby Islands in August after the main July count are significantly higher than the estimated values (Table 1).

The 1990 count must have been conducted earlier in the breeding cycle than that in 1987 because of the reversed ratio of eggs to chicks (48:245 in 1987 compared with 235:54 in 1990). Total production in the two years is much the same. Both counts, however, show a continuing decline since 1985, and are less than 20% of the maximum productivity recorded in 1979.

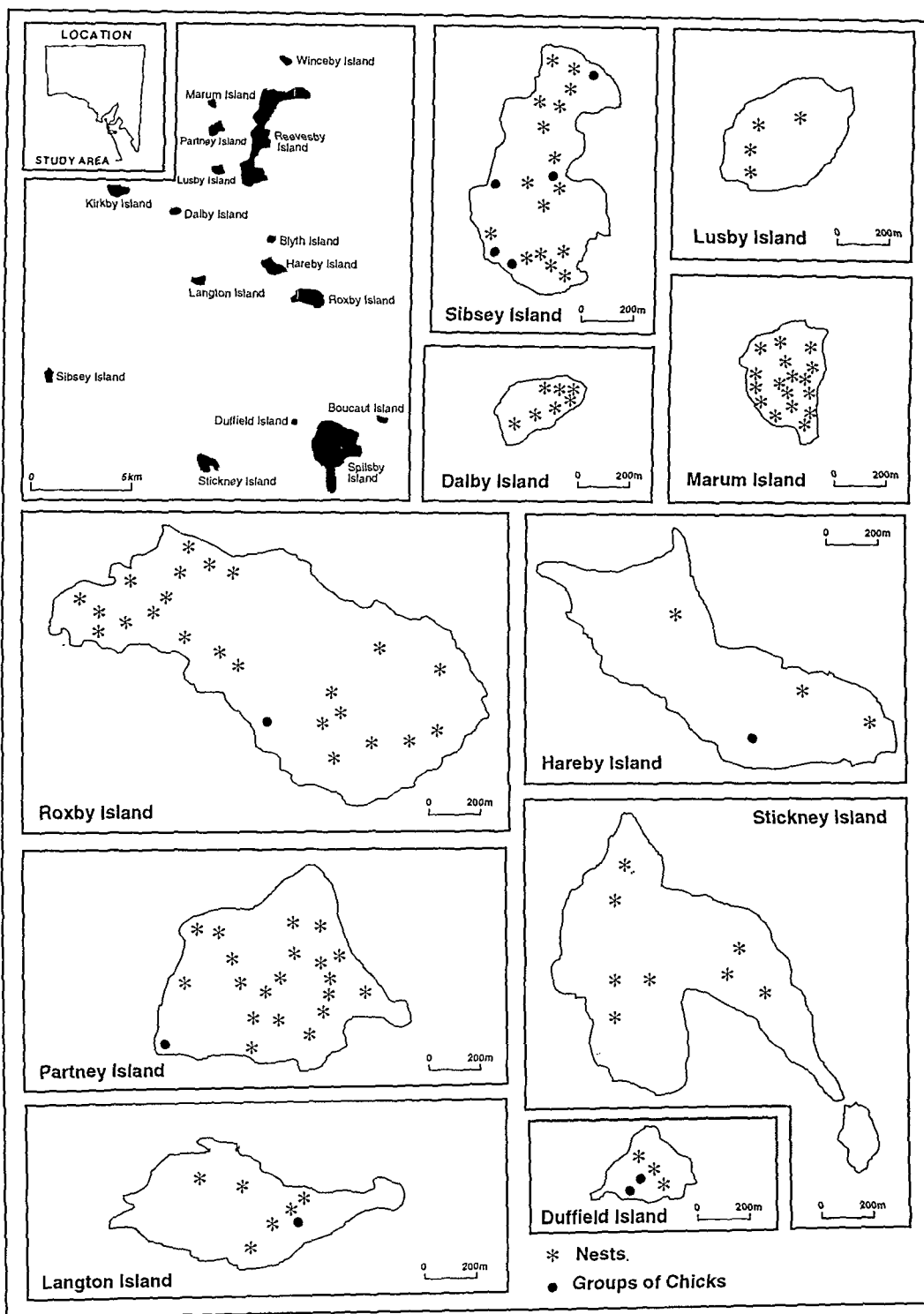


Figure 1. The distribution of Cape Barren Goose nests and groups of chicks on the islands of the Sir Joseph Banks Group in July 1990

### Reevesby Island

Counts of adults, chicks, eggs and nests on Reevesby Island are presented in Table 2, and the geographic distribution of these records for 1989 and 1990 is shown in Figure 2.

Cape Barren Goose breeding has increased significantly since it was first recorded systematically on Reevesby Island in 1985 (Robinson and Delroy 1986). As only the southern end of Reevesby Island was counted in 1990 the total figures shown in Table 2 were calculated on an area basis. The actual counts for the southern part of the island were 76 eggs and chicks in 1989 and 39 in 1990.

The progress of the 1989 breeding on Reevesby Island is known in some detail. In August, 41 pairs of birds had produced nine eggs and 169 chicks (Table 2). In September, breeding was slowing with

only 26 pairs of birds still together with 104 chicks but only a single nest with four eggs. By October only five pairs were still associated with newly fledged chicks. The final count in mid-November

Table 2. Breeding records for Cape Barren Geese on Reevesby Island, 1974-1990.

Year	Eggs	Chicks	Eggs & chicks	Nests	Adults
1974	0	0	0	0	0
1979	0	0	0	0	0
1985	18	16	34	5	100
1987*	—	—	—	—	—
1989	9	169	178	3	291
1990	55	10	65	22	250

\*not counted in 1987

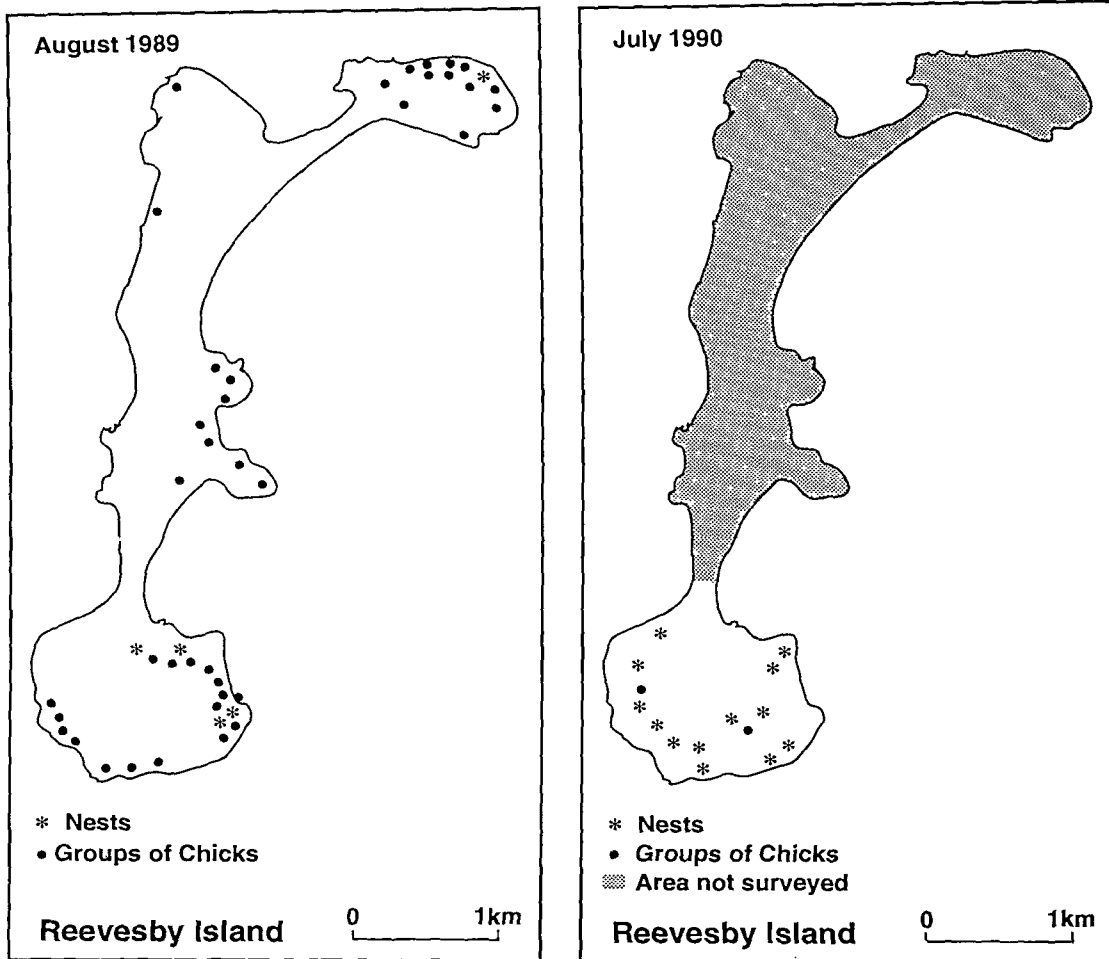


Figure 2. A comparison of the distribution of Cape Barren Goose nests and groups of chicks on Reevesby Island in August 1989 and July 1990

revealed only 17 immature and 16 adult birds remaining on the island. It appears that the timing of the breeding cycle on Reevesby Island in 1989 was similar to that described by Robinson *et al.* (1982). The typical cycle was described from observations during the 'good' breeding seasons of 1974 and 1979 rather than the more recent 'poor' seasons of 1985, 1987 and 1990.

### Summering area survey

The areas of concentration of Cape Barren Geese found during the helicopter survey are shown in Table 3.

Table 3. A comparison of the number of Cape Barren Geese sighted around Lakes Alexandrina and Albert during helicopter surveys in December 1979, 1985 and 1990.

Area	1979	1985	1990
Mundoo Island - Tauwitchere	95	233	251
Hindmarsh Island	0	181	219
'Campbell Park'	615	900	377
Lake Albert & Waltowa Swamp	508	230	330
'Yulkuri'	540	514	190
'Mulgundawa'	197	166	197
Mosquito Point	234	0	58
Dog Lake	35	0	12
Point Sturt	22	164	265
'Poltalloch'	0	53	34
Narrung	0	101	42
<b>Totals</b>	<b>2246</b>	<b>2542</b>	<b>1975</b>

The distribution of birds was generally similar to that recorded in 1979 and 1985 but the total numbers were reduced by 20% from the maximum count recorded in 1985. There appears to have been an increase in the numbers of birds using Hindmarsh and Mundoo Islands and the Point Sturt area. Less birds were using the 'Campbell Park', 'Yalkuri' and Narrung areas.

### DISCUSSION

A comparison of counts of egg and chick production on the islands of the Sir Joseph Banks Group indicate that 1985, 1987 and 1990 were poor breeding years relative to 1974 and 1979. Good opening rains at the beginning of the growing season are needed to provide the new growth grass and herbs which both adults and chicks eat through their island breeding cycle. Comparative rainfall figures for 1985 and 1987 were given in Delroy *et al.* (1989). Rainfall for Port Lincoln in 1990 is shown in Table 4.

The combined rainfall for April, May and June, the critical months for producing food for breeding birds, was 7% above the mean in 1974, 8% above in 1979, 17% below in 1985 and 12% below in 1987 (Delroy *et al.* 1989). In 1990, rainfall for these months was only 3% below the average but the majority of this rain fell in June producing a significantly later break to the season. That 1990 was again a relatively poor, or at least late starting, breeding year shows in the comparison of 1989 production of eggs and chicks on Reevesby Island compared with that for 1990 (Table 2). These figures are for August 1989 and July 1990. They were not collected as systematically on the larger Reevesby Island as on the smaller islands which have been regularly monitored. Figures for the southern part of the island, which was counted in each year, showed a 50% drop in productivity, supporting the contention that 1990 was again a relatively poor breeding year throughout the Sir Joseph Banks Group.

Even though 1990 may have been a poor breeding season on the islands, there is also a 20% decline in the summering population from 1979 and 1985 to 1990. This may not be a significant difference. The helicopter had to cover a wide area and a few large flocks may not have been found. It is possible, however, that we are recording a gradual decline in the summering flock round the mouth of the River Murray. This decline may be explained in two ways.

Table 4. Monthly rainfall (mm) for Port Lincoln in 1990 and the mean monthly rainfall for that station (Source: Bureau of Meteorology, Adelaide)

	J	F	M	A	M	J	J	A	S	O	N	D
1990	21	19	2	19	24	107	134	122	34	42	3	78
Mean	13	15	20	38	58	75	78	67	49	35	22	18

a) More geese produced on the islands of the Sir Joseph Banks Group are spending the summer on the southern Eyre Peninsula mainland (where no systematic counts are made) rather than flying to the Murray Mouth Lakes.

b) There could be a gradual reduction in Cape Barren Goose Breeding habitat on the islands of the Sir Joseph Banks Group as the grassland areas are being recolonised by shrubs following the removal of sheep in 1967 (Delroy *et al.* 1989). This potential loss of habitat on the smaller islands would, however, seem to be more than compensated for by the beginning of breeding and its continuing annual increase on the extensive grassland areas of Reevesby Island. Reevesby Island was presumably an important breeding area before European settlement but few or no birds were able to breed there during its farming history. Even though the island was made a Conservation Park in 1967 geese were not recorded breeding there until 1985.

Continued monitoring is clearly required to investigate these points and it is to be hoped that there is an average or above average break to the season before the next monitoring period in 1995.

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