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A REPORT FOR ENGLISH NATURE

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1 INTRODUCTION

1.1 This report was prepared for the South-West Regional Office of English Nature - contract No. F2B/279 "1993 Scilly Seabird Survey - Projects I & II", issued in furtherance of English Nature's ongoing Seabird Monitoring Programme for the islands. The contract called for the following action during 1993:

- (A) Collate distribution of Cormorant colonies in Eastern Isles;
- (B) Collate distribution of Lesser Black-backed Gull on Samson;
- (C) Collate distribution of all Kittiwake colonies on Scilly;
- (D) Collate distribution of all tern species on Scilly;
- (E) Collate distribution of auk colonies not monitored in 1992;
- (F) Collate distribution of all breeding seabird species on Annet;
- (G) Describe movement and productivity for (A) to (F);
- (H) Outline problems associated with predation or disturbance and recommend management measures or access controls necessary to restrict these;
- (I) Recommend any control measures necessary on Annet;
- (J) Provide information on Storm Petrel movements and populations obtained through the collation of ringing activities;
- (K) Highlight requirements for further survey work;
- (L) Review success of rat control programme on Samson.

1.2 Some additional, non-contracted, survey work was carried out during the course of the above activities, e.g. counts of large gulls and re-counts of auk colonies monitored in 1992. Some information gained by this means is included in this report, in support both of contracted data and recommendations for future survey needs.

1.3 This report should preferably be read in conjunction with the report BREEDING SEABIRDS IN THE ISLES OF SCILLY 1992 (Robinson 1992).

1.4 Census-year population totals (where known) for work undertaken since 1974 are shown in Appendix I (together with the 1967 totals for Kittiwake and the three auks species).

2 SUMMARY

2.1 As in 1992, population findings for 1993 are based mainly on counts of nests or 'apparently occupied nests'. Inter-island transport was mainly via the English Nature launch Malza. Bad weather and or inappropriate tides again prevented completion of a minority of contracted work.

2.2 All three tern species had a poor year, despite early-season improvements to two regular breeding sites and the introduction of Roseate Tern nest boxes; three pairs of Roseate Terns laid eggs, fledging two young and utilising two nest boxes. Between 92 and 120 pairs of Common Terns fledged perhaps fewer than twenty young. Though the two improved sites attracted more pairs and resulted in more hatched eggs than in 1992, gull predation of small young increased proportionally. Three late Sandwich Tern nests failed. In the Eastern Isles, disturbance of breeding Cormorants may be a problem.

2.3 Though Kittiwake nest counts were down on past years more young fledged and the first three-egg clutches for three years were recorded; Great Black-backed Gull predation was a problem at one group and limited rat control was carried out again at two groups. Auk numbers again appeared stable. Fulmars continued their increase and a ringed breeding adult of Irish origin was controlled. However, counts of all three large gulls indicate declines of up to 30% since the last full survey in 1987. On Annet, numbers of all species appeared unchanged since 1992; serious breeding disruption among Lesser Black-backed Gulls invalidated the year's count and was believed attributable to a unauthorised helicopter landing. As in previous years, proving levels of productivity in large gull species proved difficult.

2.4 A total of 1,270 Storm Petrels were ringed, mostly at the two known main breeding sites, bringing the total to 2,470 over three years. Four French and four British or Irish birds were controlled. 1993 population estimated for the two main breeding sites are not yet available, but are thought likely to indicate a higher population than was estimated in 1992. This population appears to have been largely ignored during recent national and international reviews and some estimated quoted may be seriously inadequate.

2.5 Rat control work on Samson during winter 1992/93 removed a substantial part of the population. Although constant testing was carried out, little if any evidence of continued rat presence was noted during numerous visits to the island. It never the less must be anticipated that some animals survived initial baiting. Baiting commenced on St Helen's in September.

2.6 Although Scilly now has an annual seabird monitoring programme, the islands lack an integrated, multi-organisational species management plan capable of effectively implementing the programme's findings.

2.7 Recommendations are included under individual headings and some recommendations contained in the 1992 report await action.

3 FULMAR

3.1 Annet

3.1.1 Numbers and Productivity. In recent years Fulmars on Annet have been restricted to Annet Head and Carn Irish - a total of 16 birds laid eggs on Annet in 1992 (Robinson 1992).

Although birds were visible sat in the Annet Head area during mid-March and early April, none were present there or at Carn Irish during a visit to the island on 11th May and no eggs were found. On 25th May 11 eggs were found, increasing to 13 on 29th June (Annet Head 10, Carn Irish 3). On 7th July the first eggs were hatching, giving a suggested first laying date of around 16th May (five days after the first visit).

Five young birds ringed on 4th August compares with 8 young birds found on 21st July 1992.

3.1.2 Population Increase and Ringing. A total of 31 Fulmars (27 adult and 5 young) were ringed in Scilly in 1993 (Table 1). An incubating adult controlled on Gorregan on 2nd July had been ringed as a chick on Little Saltee, Wexford, Eire in 1980 - 250 kilometres north. Breeding was first proved on Scilly in 1951, but numbers remained around or below ten pairs until at least the late 1960's (Penhallurick 1969) - Allen found a total of only 14 occupied sites throughout the whole of Scilly in 1974. There seems no doubt this species is continuing its increase on Scilly; 29 eggs were located on Round Island alone in late June and pairs prospected several new sites, e.g. Bow Rock St Agnes, Cow and Calf St Agnes and the south-east corner of Samson.

Adult Fulmars proved unexpectedly easy to catch and ring during visits to islands on other survey activities. In view of its continuing increase (Appendix I) and the evidence, now, of recruitment from elsewhere, ringing has the potential to provide worthwhile data on the future population dynamics of this species in Scilly.

TABLE 1

FULMARS RINGED IN SCILLY - 1993

Date	28/6	29/6	2/7	6/7	7/7	4/8
Annet		6			5	5(Y)
Round Island	3			5		
Gorregan			1*			
Mincarlo				7		

* plus one control

3.2 Recommendations

None.

4 MANX SHEARWATER

4.1 Annet

4.1.1 Estimating Numbers. We continue to hold little information on the Scillonian Manx Shearwater population. Current data derive mainly from night-time ringing visits to Annet and Round Island during 1992 and 1993, plus observations of pre-dusk rafts off shore. The reliability of evening raft counts as a means of assessing numbers of breeding pairs is uncertain. It seems probable pre-dusk gatherings may be weather-dependent, with greater numbers of birds present during unsettled weather (when they are least likely to be observed).

A more reliable estimate of the size of the Manx Shearwater population on Annet (and elsewhere in Scilly) may eventually be gained from calculations based on numbers of birds caught and ringed and the percentage of re-traps subsequently handled (Bibby *et al* 1992). Unlike Storm Petrel, this species does not regularly call below ground and on Annet counts of occupied burrows are confused by the terrain and the presence of rabbits.

Working with this species is further complicated by difficulties in predicting nights when birds will come ashore. On several nights when Storm Petrels were caught in large numbers, few if any shearwaters were seen or heard. However, when the weather turned unexpectedly wet on the night of 25th May, there was an immediate rush of birds coming to ground around the trapping site.

A total of 30 Manx Shearwaters were caught and ringed on Annet in 1993 (Table 2). A bird controlled on Annet on the night of 29th June had been ringed as an adult on Lundy Island, Devon, on 23rd July 1992.

TABLE 2

NUMBERS OF MANX SHEARWATERS RINGED ON SCILLY - 1992/93

Year	1992	1993
Annet	3	30
Round Island	7	7
Gugh	1	1

4.1.2 Habitat. On Annet, Bracken continues to seriously invade the dominant Thrift *Armaria maritima* carpet in the south-western portion of the island, increasingly rendering breeding areas inaccessible to Manx Shearwaters, Storm Petrels and the three large gulls.

4.2 Recommendations

4.2.1 The long-term delay in implementing the agreed Environmental Trust/English Nature programme of bracken control for Annet should be resolved and work should commence summer 1994. Arrangement to have someone qualified in bracken spraying available at the appropriate time should be agreed during winter 1993/94, failing which arrangements should be put in place now for either English Nature's Boatman/Estate Worker or the Environmental Trust's Field Officer to receive urgent training.

4.2.2 Additional effort should be made in 1994 to carry out a count of pre-fledged young during late summer.

5 STORM PETREL

5.1.1 Ringling - Numbers Involved. Work on Storm Petrels was limited to ringling and restricted to sites investigated in 1992 (Annet, St Agnes, Gugh and Round Island), although an additional, one-night trapping session was carried out on Peninnis, St Mary's, in early August. A total of 1,270 new birds were caught at five sites during ten night-time sessions, bringing the over-all Storm Petrel ringling total to 2,470 in three years (Appendix II - "Accumulative Seabird Ringling Totals for Scilly 1991-93"). Storm Petrel ringling totals for individual sites are shown in Appendix III "Island Storm Petrel Ringling Totals 1991-93".

The approach of treating birds frequenting Annet, St Agnes and Gugh as a 'loose' colony, separate to the Round Island population, was continued in 1993 and is based on evidence of limited (6.9%) retrap movement between these two areas. Accumulative site re-trap totals are shown in Appendix IV.

5.1.2 Ringling - Interpreting the Data. Though ringling alone is unlikely to provide adequate information on the number of pairs of Storm Petrels breeding at individual sites, it will hopefully form a baseline estimate against which to assess calculations obtained using other means, e.g. birds calling underground (Bibby *et al* 1992). However, a reliable means of quantifying numbers of occupied burrows has still to be perfected (RSPB *pers com*) and is likely to prove time-consuming, inhibitive expensive and labour-intensive.

Doubts surrounding the use of re-trap ringling data as a means of assessing likely numbers of breeding pairs include the probability of 'visiting' birds being involved. A notable feature of the Scillonian Storm Petrel retrap data so far, though, is that accumulative retrap percentage remain consistently between 7 and 7.5% for the Annet group and 5.5 and 6% for Round Island. Less than 10% of ringed Storm Petrels caught were non-Scillonian birds (14 out of 144).

It is known that complex factors surround the attendance of Storm Petrels at colonies and that tape-luring away from colonies probably samples an independent, non-breeding population (P Harris *et al* 1993). Although tape-luring in colonies concentrates birds around the net, it is unclear whether the number of birds present increases as a consequence of the tape being used, particularly in large colonies such as Annet or Round Island.

5.1.3 Population Estimates. Birds on Annet appear to breed mainly in boulder-beaches, with smaller numbers scattered away from beaches. Boulder-beaches are not a feature of Round Island and birds there are more generally distributed. Birds on St Agnes are also thought to associate with boulder-beaches. The situation on Gugh is unclear; Cat *Felis domesticus* predated remains prove birds go ashore there but proof of breeding has still to be established.

On Annet an estimate was made of birds calling from within a 26 x 4 metre boulder beach on 25th/26th May. At least one bird was considered present within each square metre, giving a total of 104 calling birds (Robinson *pers obs*) and suggesting that in the order of 300 pairs occupy this one small stretch of beach (RSPB/JNCC in prep). An estimation of the total suitable available boulder-beach should provide an additional means of calculating likely over-all numbers of pairs involved on this island.

Sixteen birds were caught during a two hour tape-lure session on Peninnis, St Mary's, on 6th August. Although none were re-trapped one was subsequently killed by a Cat on Gugh and the ring recovered on 3rd September. None of these birds was carrying food and the evidence points to an absence of breeding Storm Petrels on Peninnis.

Analysis of the 1993 data is still incomplete. However, it is thought probably population estimates may be higher than suggested in 1992 (Robinson 1992). The presence of this population appears rather to have been overlooked during recent national and international reviews and, where it is referred to, figures given may seriously understate the true situation, e.g. in "Important Bird Areas in the United Kingdom including the Channel Islands and the Isle of Man" (Pritchard *et al*) the figure of 1,000 pairs is quoted for Scilly as a whole.

5.1.4 Controls - On and Off Scilly. Fourteen Storm Petrels ringed elsewhere were controlled on Scilly over the two years 1992 - 1993 (Appendix V).

Four 1992 French controls were ringed at a colony on Banneg Island, Brittany. Though ringing details for the four 1993 French birds are outstanding it seems likely they were ringed at the same colony. Whether any were Scillonian breeding birds ringed in France, or vice versa, is unknown at this stage; at least one controlled on Annet regurgitated food and all eight were caught at breeding colonies - similarities in ringing and recapture dates offer little help with this question. Judged on age, five of the remaining six birds seem unlikely to have been wanderers.

Only one recent Scillonian-ringed Storm Petrel is so far known to have been controlled away from the islands and details are still awaited.

5.2 Recommendations

5.2.1 The agreed Bracken control programme for Annet must commence in 1994 (see Manx Shearwater).

5.2.2 Calculations of total suitable boulder beach areas on Annet may assist in assessing the size of that population.

6 CORMORANTS

6.1 Scilly Generally

As in past years, the Cormorant breeding population was distributed between the Eastern Isles and the Western and Northern Rocks. A combined total of 60 nests compares favourably with overall numbers for previous survey years (Table 3a) (Appendix I). The proportional distribution of pairs between island groups also compares favourable with past surveys (Table 3b).

TABLE 3a

NUMBERS OF CORMORANT NESTS/PAIRS RECORDED IN SCILLY

Year	Nest/Pairs	Source
1903	100+	Harvey 1983
1945	60	" "
1954	50	" "
1969	50	Cramp et al 1974
1974	61	Allen 1974
1977	50	" 1977
1983	49	Harvey 1983
1987	51	Smith & Birkin 1987
1992	61	Robinson 1992
1993	60	

mean number nests/pairs per last 9 survey-years (including 1993) = 54.66

TABLE 3b

NUMBERS AND DISTRIBUTION OF CORMORANT NESTS - SCILLY 1993

Eastern Isles	- Great Innisvouls	11	
	- Ragged Island	5	16
Northern Rocks	- Castle Bryher	15	
	- Mincarlo	12	27
Western Rocks	- Melledgen	17	17

TABLE 3c

NUMBER OF CORMORANT NESTS IN THE THREE BREEDING GROUPS (total nest-islands per group in bracket)

Year	Eastern Isles	Northern Rocks	Western Rocks	Total Nests	Source
1974	4(1)	36(2)	21(1)	61	Allen 1974
1983	12(2)	27(2)	10(1)	49	Harvey 1983
1987	18(3)	25(1)	8(1)	51	Smith & Birkin 1987
1992	21(2)	24(2)	16(1)	61	Robinson 1992
1993	16(2)	27(2)	17(1)	60	

In the Northern Rocks, a visit to Castle Bryher on 13th May found a minimum of 33 large young, some close to fledging. Of the 15 nests located, none still contained eggs. Brood size was assessed at a minimum of 2.2 young per total nest. In the Mincarlo colony on the same date,

eight of the 12 nests still contained eggs and the oldest young found were estimated at 10 days.

On Melledgen on 11th May breeding was found to be at about the same stage as on Mincarlo.

6.2 Eastern Isles

In the Eastern Isles this year Cormorants breed on Ragged Island (5 nests) and Great Innisvouls (11 nests). The latter site was listed by Harvey (1983) and Smith & Birkin (1987) but was not used in 1991 or 1992. Few un-hatched eggs remained in the Great Innisvouls colony by 10th May and the estimated age of 35 young gave a likely hatching date for this site of 16th March and a first-laying date around mid-February. First-laying on Ragged Island was estimated at around the same time.

The population of Cormorants in the Eastern Isles presents a particular problem. This group of islands is more readily accessible than either the Northern or Western Rocks and none of them are closed to the public during the breeding season. Cormorants are particularly vulnerable to disturbance by humans; un-attended nests are liable to predation by Great Black-backed Gulls and adults are slow to return once the disturbance ends (pers obs).

Whilst the solution may be closure of appropriate islands during the breeding season, there are complicating factors. Firstly, birds moved islands between 1992 and 1993 and may do so in subsequent years. Secondly, eggs may be laid in the Eastern Isles during February, two weeks before any annual island closures come into effect. Whilst the second of these may perhaps be overcome by earlier closure, the former may necessitate the closure of islands subsequently uninhabited by Cormorants that year and such an approach may appear excessive. 'Last-minute' closures though are unlikely to be either as effective or as widely appreciated as long-term annual closure.

6.3 Recommendations

6.3.1 Early-season closure of those Eastern Isles used by breeding Cormorants in recent years.

7 SHAG

7.1 Nests and Clutch Size. A full nest-count of Shags was carried out on Annet on 11th May, around first hatching and 3 days earlier than in 1992. A total of 142 nests was found, an increase of 11.8% over the 1992 total and 25.1% above the mean for previous surveys (Table 4). Mean clutch size was 2.92 (2.99 in 1992); three predated and three empty nests were excluded. Calculations based on estimated age of young (4 nests) gave a first laying date of around 1st April.

The Annet Shag population therefore increased by 73% during the last three years, but is below its 1987 high of 160 nests (Table 4). However, as no data are available for other islands it not possible to say whether inter-island movement of the breeding population is involved. Interestingly, a brood of 3 young were located on Round Island on 6th June, possibly the first recorded breeding on this island. Scilly is clearly an important breeding site for this species (Appendix I).

TABLE 4
NUMBERS OF SHAGS NEST ON ANNET

Year	Number	Source
1967	45	Allen 1974
1974	95	" "
1976	129	" "
1977	130	Allen 1977
1978	150	
1983	117	Harvey 1983
1987	160	Birkin & Smith 1987
1990	82	W Wagstaff pers com
1991	101	Robinson & Wagstaff unpublished
1992	127	Robinson 1992
1993	142	

Mean number of nests per survey-year = 116.1

7.2 Brood Size and Chick Mortality. No checks on Shag brood size were carried out on Annet prior to ringing on 29th June and 7th July. A total of 174 large young were ringed (104/70) - 1.22 young per total nests; however, as a number of broods had already fledged by the first ringing visit and as a few were too small to be ringed on the second visit, this is clearly an underestimation of productivity for this site.

It has been suggested that Shags (and presumably Guillemots) nest beneath large boulders in Scilly in direct response to predation by Great Black-backed Gulls (Robinson 1992). Three unusually exposed clutches had already been predated by 11th May. Though the predation of eggs appears low, no information appears to be available on predation of young Shags on Annet during the nestling period. An accumulation of 10 or so predated carcasses of large chicks was found during a visit in early August. Four were ringed birds from adjacent nests and all kills were thought to be the work of an individual Great Black-backed Gull. Considering that 121 Great Black-backed Gull nests were located on Annet, evidence of Shag predation is slight; a greater number of predated young Shags was found on Rosevear (cc25), which has fewer pairs of both species.

7.3 Post-fledging Dispersal and Mortality. The Isles of Scilly Seabird Group (Scillonian Ringing Group) re-commenced seabird ringing on Scilly in

1992 (Robinson 1992). Although the Group scheduled Shag for ringing on Annet alone some young were ringed on Gorregan in 1992. Recoveries of Shags ringed in Scilly during 1992/93 are shown in Appendix I, together with causes of mortality, where known. Two out of six Shags recovered away from the breeding colonies are known to have been associated with fishing-net incidents. Recoveries confirm a post-fledging dispersal along the south coast of England and the north coast of France, as far as the Channel Islands.

7.4 Recommendations

7.4.1 Full, all-island nest count in 1994.

8 LESSER BLACK-BACKED GULL

8.1 Samson

8.1.1 Numbers. Cold easterly winds were a feature of spring 1992, consequently laying among Lesser Black-backed Gulls was protracted - in Scilly this species seems particularly affected by cold easterly winds during May (pers obs). A full count of Lesser Black-backed Gull nests was not carried out on Samson until 1st June, when a total of 1,132 occupied nests was found. The distribution of nests was:

north-west corner of North Hill	44
west side of North Hill	101
below wall on north side of South Hill	44
inside wall on south side of North Hill	44
east, south and west sides of South Hill	899

The vast majority of nests were situated in dense and often high vegetation, e.g. Fox Gloves *Digitalis purpurea* or Bracken, making them difficult to locate. Never the less, counts were believed accurate to 95%+; marker canes were used and the area worked in transects.

8.1.2 Productivity. Dense vegetation made it difficult locating young and no count was carried out. Searches of the colony for signs of rat presence and rat predation in the area of South Hill proved negative (as elsewhere on the island - see Rat Control). Vegetation growth in this area was vigorous, (particularly *Digitalis*) but a connection was not established with any decrease in rat population. One 'by-product' of this increased plant growth, though, was the exclusion of day visitors from parts of the colony formerly liable to human disturbance.

Small numbers of large young were found during subsequent visits to the island but counts were considered unrepresentative of the true number present. Estimation of productivity was also hampered by the late presence of newly hatched broods and un-hatched clutches, both of which were liable to trampling.

The current nest total represents a marked (38%) reduction on the 1987 count. Totals for previous survey years are:-

Allen 1974	1,551
Harvey 1983	2,047
Birkin & Smith 1987	1,840
1993	1,132

7.2 Annet

8.2.1 Numbers. A full count of Lesser Black-backed Gull nests was carried out on Annet on 25th May. Transect counts were combined with individual temporary nest identification in order to avoid double-counting (Aspinal 1993). A total of 1,107 nests were found (Table 5). The colony was divided into two; the larger group (972 nests) in the centre of the island 100 metres south of its narrow neck, the other (135 nests) in the centre of the island 150 metres north of the neck.

Although nests at both sites were situated in areas of extensive Bracken, there was a marked differential in the height of Bracken growth between sites. The northern site was located in high, dense and mostly continuous Bracken, whilst Bracken at the southern site was lower,

fragmentary and appeared inhibited by Yorkshire Fog *Holcus lanatus*; the siting of nests here was fairly evenly divided between Bracken and *Holcus*.

TABLE 5

NUMBERS OF LESSER BLACK-BACKED GULL PAIRS ON ANNET/SCILLY

Year	Annet	Scilly	Source
1967	7/800		Allen 1974
1974	541	2973	Allen 1974
1976	181		Bailey (in Allen 1974)
1977		3070	Allen 1977
1969		2500	Birkin & Smith 1987
1983	898	4050	Harvey 1983
1987	1000	3778	Birkin & Smith 1987
1991	900		W Wagstaff pers com
1992	799		Robinson 1992
1993	(1107)		

() unreliable figure

The 1993 data appear to suggest an increase on Annet. However, the count included an unusually high proportion of empty nests, abandoned clutches, or incomplete fresh clutches, with a noticeable difference in occurrence between groups. Although clearly built during the current season, many empty nests in the southern group had remained unused for some time; it was noticeable too that many abandoned nests were immediately adjacent to freshly built nests. In contrast, incubation in the northern group appeared coordinated, there were few incomplete clutches and any empty nests were recognisably freshly built.

The evidence points to the southern group having undergone a serious trauma two to three weeks prior to 25th May, causing considerable desertion. Although cold winds around laying might have a similar effect, this can be discounted; there was no parallel disruption on other islands, or in the breeding group 250 metres away. It also seems unlikely this scale of desertion could be occasioned by human disturbance and Annet is closed to visitors at this time. One, perhaps two private helicopters made an unauthorised landing on the south end of Annet around the time in question (Devon & Cornwall Police pers com) and it seems reasonable to attribute the disruption to that event.

Whatever the cause, it was not possible to reliably assess numbers of breeding pairs of Lesser-black Backed Gulls on Annet in 1993.

8.2.2 Productivity. Twenty-eight young Lesser Black-backed Gulls were ringed on Annet on 4th August. Birds were found during searches of both nest groups and no young were located in addition to those ringed. However, the timing of the visit was late and, as a large proportion of young were known to have already fledged at other colonies, e.g. Gugh, many birds were doubtless missed (see also Great Black-backed Gull).

8.3 Scilly Generally

8.3.1 Unlike for Great Black-backed Gull, random nest counts were not carried out during other survey work and the only additional 1993 Lesser Black-backed Gull figures available are for Samson and for Gugh (where the count was 850 nests). Regardless of this, the impression gained during survey work in both 1992 and 1993 is of fewer Lesser Black-backed Gulls on

many islands where they were well represented in 1987, e.g. White Island St Martin's, Tean, Shipman Head Bryher, Scilly Rock, Menawethan and the two Ganillys.

Assuming a 1993 over-estimate for Annet in the order of 25% to 33%, the combined Lesser Black-backed Gull total for what are now the three main colonies (Annet, Samson and Gugh) is in the region of 2,812 to 2,723 pairs - around 1,000 pairs below the 1987 total. As the presence elsewhere in 1993 of a combined 1,000 pairs seems unlikely (pers obs), it follows that there has been a decline in the population of this species in Scilly since 1987, albeit not as marked as Great Black-backed Gull (Appendix I)

8.4 Recommendations

8.4.1 Full, all-island nest count.

9 GREAT BLACK-BACKED GULL

9.1 Annet

9.1.1 Nest Numbers and Clutch Size. A total of 121 Great Black-backed Gull nests were located during a full search of Annet on 11th May (Table 6). Of these, 20 were empty and one was hatching. Mean clutch size was 2.45 per nests with eggs/young (the same as 1992), or 2.02 per total nests. Estimated first date of laying was 13th April.

TABLE 6

Recorded Numbers of Great Black-backed Gulls on Annet and Scilly
(known nest counts indicated by *)

Year	Annet	Scilly	Source
1913	130		Allen 1974
1924		300	" "
1933		6/800	" "
1963	150		" "
1965	200		" "
1967	330		" "
1969		1200	" "
1973	400		" "
1974	375*	1583	" "
1976	352		Bailey (in Allen 1974)
1977		1450	Allen 1977
1983	231*	1478	Harvey 1983
1987	147*	992	Birkin & Smith 1987
1990	104*		Wagstaff pers com
1991	102*		" " "
1992	118*		Robinson 1992
1993	121*	(704)	

() estimated figure

9.1.2 Productivity and Ringing. Estimating productivity levels for the three large gulls proved difficult, as in previous years; young move away from the nest and hide while still quite small. A total of 34 young Great Black-backed Gulls were ringed on Annet during visits on 28th June and 4th August; many were undoubtedly missed. A calculation based on this figure suggests a productivity for this species on Annet of 0.28 young per nest (0.33 per nest with egg/young), but actual productivity may have been higher. Productivity still seemed low however. Various productivity estimates based on capture/recapture ringing of young are available for use with large gulls (RSPB/JNCC in prep), but are costly in terms of time and effort.

9.2 Scilly Generally

9.2.1 Scilly is an important site for this species. There are reports of up to 2,000 pairs in the mid-1960's (Cornwall Bird Reports) and the islands have held up to 65% of the English and Welsh population (Cramp *et al* 1974). Allen found over 1,500 pairs in 1974 and numbers were only slightly lower in 1983 (Harvey 1983). However, Birkin & Smith found under 1,000 pairs by 1987. Although no all-island survey has been carried out since 1987 the evidence points to this decline having continued (Table 7) (Appendix I).

The earlier commencement of the decline on Annet (Table 6) is difficult to explain but the data suggest the population may now have stabilised on that island. However, nest counts from fourteen islands during 1993 were compared with 1983 and 1987 totals for those same islands (Table 7). In 1983 they held a total of 886 pairs/nest (Harvey 1983) but by 1987 the figure stood at 612 (Birkin & Smith 1987) - a decline of 31%. By 1993 the figure stood at 434, 29% down on 1987 and 51% down on 1983 (equivalent to a reduction of 5% per year).

TABLE 7
NUMBERS OF GREAT BLACK-BACKED GULLS ON RANDOM ISLANDS

	<u>1983</u>	<u>1987</u>	<u>1993</u>
<u>Western Isles</u>			
Annet	231	147-	121-
Gugh	3	8+	2-
<u>Northern Isles</u>			
Shipman Head	3	2-	2
Castle Bryher	11	8-	2-
Gweal	84	44-	57+
Illiswilgig	32	14-	10-
Mincarlo	42	26-	19-
Samson	9	9	6-
White Island (SM)	7	24+	4-
White Island (Sa)	41	34-	32-
<u>Eastern Isles</u>			
Great Innisvouls	119	85-	62-
Little Innisvouls	33	24-	19-
Menawethan	215	163-	79-
Ragged Island	56	24-	19-
<u>Totals</u>	<u>886</u>	<u>612</u>	<u>434</u>

+ - increase/decrease

Using the above counts, it is possible to extrapolate the current approximate all-island total. As Birkin & Smith's 1987 figure of a known 992 pairs is within 3% of a theoretical 31% reduction from 1983, it seems reasonable to suggest a 1993 population of about 704 pairs (29% below the 1987 figure). If correct, then Annet now holds 17% of the Scilly Great Black-backed Gull population. Without further work it is not possible to say whether this decline is related to low productivity, or whether the decline has now bottomed out.

Failure at some sites has been attributed to rat predation, e.g. Menawethan and Samson, but reductions also occurred at sites where rats are absent, e.g. Annet, or are believed absent, e.g. Mincarlo and Illiswilgig. It seems probable, therefore, that additional factors are or were operating. It should be noted also that Herring Gull, Lesser Black-backed Gull and Kittiwake declined in Scilly over the same period.

9.3 Recommendations

9.3.1 Full, all-island nest count.

9.3.2 Annual re-check of nest numbers on islands listed in Table 7.

10 HERRING GULL

10.1 A marked national decline in recent years means this is no longer our most abundant large gull (Lloyd *et al* 1991) and the species has even been suggested as a contender for Red Data Book status (RSPB pers com). The decline in the Scilly population noted in 1983 (10%) and 1987 (30%) is believed to have continued, however no all-island count has been carried out for six years now (Appendix I).

Despite the decline, productivity in Scilly appears high. Breeding Herring Gulls on Scilly are now mainly confined to boulder beaches, with limited intrusion by Lesser Black-backed Gulls (Robinson 1992). A study commenced at a Gugh Herring Gull colony in 1991 was continued into its third year and productivity continues to improve annually (Table 9).

10.1 Annet

10.1.1 Numbers and Productivity. Counts of numbers of Herring Gulls (pairs or nests) on Annet and Scilly generally are shown in Table 8. Although 1993 estimates of the Annet population were confused by a minority of pairs nesting among Lesser Black-backed Gulls, a minimum of 43 nests were found during a full count on 11th May, 21 of which were empty. Of 22 nests containing eggs, nearly half were thought to hold incomplete clutches and it was assumed laying had not finished by this date.

Numbers of large young were not counted, mainly owing the possibility of confusion with young Lesser Black-backed Gulls, plus the need to handle individual birds to obtain identification. Four large young were positively identified (and ringed) in the Lesser Black-backed Gull nesting areas during a ringing visit in early August.

TABLE 8

Year	Annet	Scilly	Source
1960	500		Allen 1974
1974	234	2249	Allen 1974
1977		2235	Allen 1977
1983	140	1995	Harvey 1983
1987	84	1273	Birkin & Smith 1987
1992	30/50		Robinson 1992
1993	43	(800)	

() estimated figure

10.3 Scilly Generally

10.3.1 Distribution and Numbers. Main concentrations of breeding Herring Gulls now appear confined to sites on Gugh, Tean, Tresco, Samson and Daymark and White Island St Martin's, which between them hold less than 600 pairs. Counts at eight other islands, e.g. Scilly Rock, Ragged Island, Gweal and White Island Samson, produced less than 70 nests and it seems unlikely the Scilly total exceeds 800 pairs. If true, the Scilly population decreased by 37% in eight years.

10.3.2 Productivity. The two largest breeding groups in 1993 were on Samson (229 nests) and Gugh (120 nests).

Numbers were thought to have increased on Samson, where the 229 nests were distributed around the south and west sides of the island, all on boulder beach. It was not possible to say if any increase in Herring Gulls

was associated with the reduction in rats on this island. Mean Herring Gull clutch size on Samson was 2.46 per nest with eggs, or 2.00 per total nests (very close to Great Black-backed Gull on Annet). A count of young was not considered feasible but the presence of good numbers of young was noted later.

10.3.3 Gugh. On Gugh, a breeding study commenced in 1991 was continued into its third year, with 49 (48%) out of a total of 102 nests marked for individual identification (Table 9).

TABLE 9
HERRING GULL PRODUCTIVITY ON GUGH - 1991/93

	1991	1992	1993
Number of Marked Nests	63	58	49
Number of Clutches	63	58	46
Mean Clutch Size	2.82	2.62	2.67
Percentage of Clutches Hatched	70.9%	72.4%	84.7%
Minimum Young Hatched Per Clutch Laid	1.30	1.20	1.52
Minimum Young Fledged per Clutch Laid	0.54	0.63	0.80
Minimum Young Fledged per Clutch Hatched	0.77	0.88	0.94
Minimum Productivity per Total Nests	0.54	0.63	0.75

As at other colonies, productivity estimates for large young in the Gugh colony must be considered minimal - one young per active nest was assumed unless more were found. The data appear to indicate a continued upward trend in productivity, perhaps suggesting a possible reversal of the recent decline, at least on Scilly.

10.3.4 Tresco (Gimble Porth). An estimate of productivity of large young was possible at the Tresco Gimble Porth site. Gull nests here are restricted to a 600 metre stretch of boulder beach, backed by a Head cliff and with no surrounding pairs. A search of this site on 14th June produced a combined total of 83 nests (64 Herring and 19 Lesser Black-backed Gull); the majority of Herring Gull nests contained small young and most Lesser Black-backed Gull nests contained eggs. On 31st July, 100+ large young were counted, either on the beach or close offshore, all of which were treated as belonging to this colony - a productivity per total nest of 1.2 young.

10.3.5 Conclusion. Productivity figures suggest a healthy output of young, regardless of any decrease in breeding adult numbers. An investigation of productivity findings for sites away from Scilly might indicate whether this is unusually high. The main question arising from this work, though, is why a population capable of such productivity levels should be in decline? It may be, of course, that the decline recently bottomed-out and that this population is now on the increase.

10.4 Recommendations

10.4.1 A full all-island survey to be carried out in 1994.

11 KITTIWAKE

11.1.1 Summary. The 262 apparently occupied nests (ADN's) located in 1993 represent a 12.7% reduction on the 1992 total of 300 and continue the decline in the Scilly population which commenced somewhere between 1978 and 1983 - the population is now back to where it was 35 years ago (Table 10) (Appendix I). Although three or more sites failed completely, the possible maximum of 54 young fledged exceeded the 1992 total of 37 by over 31% and productivity per ADN improved from 0.12 in 1992 to 0.20 (Table 11). No rat predation was recorded on Samson but a Great Black-backed Gull took up to 27 clutches from one nest group on that island. Rat predation was temporarily halted in the breeding Gugh group but was thought responsible for eventual losses none the less. Two three-egg clutches (Samson and Gugh) were the first recorded since at least 1990.

11.1.2 Distribution. Strictly speaking, it may be more correct to treat each breeding group of Kittiwakes in Scilly as a separate colony, particularly as some are several kilometres removed from their nearest group. However, that approach takes no account of either the regular formation of new groups or the 'apparent' frequent inter-site movement of individual birds and may be inappropriate at present. This discussion treats the Scilly population as a single, loose colony and assumes an as-yet unknown level of bird movement between groups/years.

The distribution of birds within breeding groups is shown in Table 11. Five groups are known to have failed in 1993: Annet A and B, Gorregan, White Island St Martin's and Men-a-Vaur. The final outcome of the St Martin's Daymark group is unknown and it is possible a few young may have been reared. Although searches of previously known and likely nesting areas were carried out throughout the season, the possibility remains that additional nests went un-recorded; e.g. Hanjague is a former breeding site but was not visited during 1992 or 1993.

11.1.3 Productivity - Eggs. Counts of apparently occupied nests carried out at the end of May and beginning of June included part-built nests with at least one bird in attendance (RSPB/JNCC in prep). Nests built later were excluded owing to the possibility of 'prospecting' birds being involved.

Counts of clutches of eggs in the Samson A and Gugh study groups were mostly confined to marked study nests, where minimum mean clutch sizes per nest with eggs were 1.83 (n=36) and 1.65 (n=40) respectively.

The first three-egg Kittiwake clutches laid on Scilly since the author commenced examination of all nests in 1991 were found in the Gugh and Samson A colonies (1 each); three-egg clutches ought to indicate the presence in a population of experienced adult female Kittiwakes (Coulson & White 1958).

A sub-adult Great Black-backed Gull was observed removing perhaps as many as 27 clutches of eggs from the Samson A group in mid-June. This was particularly disappointing as the early success of rat control work during winter 1992/93 offered the possibility that this group would be particularly productive in 1993.

11.1.4 Productivity - Young. Three of the four groups newly formed in 1992 (Shipman Head, Gimble Firth and Samson B) were the most productive, between them contributing over half the total number of young (31) fledged.

Importantly, although the number of nesting pairs was less than in recent years, both the number of young fledged and productivity per nest increased. Given that young Kittiwakes do not breed until about four years of age, it may perhaps take a few years before the results of any turnaround in the fortunes of this population are reflected in numbers of breeding pairs.

There was a slight difference in both 1991 and 1992 in the way numbers of fledged Kittiwakes were calculated, compared with that recommended by RSPB/JNCC. The comparative ease of access to nests in Scilly, plus the level of attention currently given this species, made it possible to exclude young known to have failed at a late stage. The recommended procedure involves counts of all young around the time the of first fledging; adherence to this procedure should have produced a productivity level marginally greater than that shown above.

11.1.5 Site Movement and Group Establishment. Seeking explanations for the decline in Scillonian Kittiwake numbers involves a degree of guesswork and several factors may be at work. Typically, three 1993 sites were first occupied late in the 1992 season. The establishment of these late-season sites appears to involve the joint activities of failed breeders and site-prospecting 'sub-adults', one or both of which are assumed to then breed at the site the following season.

Active Kittiwake colonies are visited during the breeding cycle by 'prospecting' sub-adults, which either build nests, take over unoccupied nests or even 'squat' nests containing young. These inexperienced birds are "assessing the environmental quality" of particular breeding sites and represent the colony's future (Monnat *et al* 1990). Because prospectors are attracted by breeding activity and (perhaps particularly) by the presence of young (Danchin *et al* 1991) (Robinson 1992 & *pers obs*) the earlier in the season a colony fails the less its ability to attract recruits. Failed adults appear to move either to a new site or another (still-active) group, where they may build a 'frustration' nest. Consequently, prospecting sub-adults are attracted away from failed or failing sites and towards surviving or frustration sites, inspired by nest-building activity and the presence of unfledged young; several years of successive failure signalling the end of a group.

Normally, prospecting pre-breeders might wait several seasons before acquiring control of prime nest site within a colony, typically situated in the more productive centre. Early or mid-season failure by prime-site holding and experienced pairs renders that nest site vulnerable to occupation by inexperienced (and perhaps initially unproductive) pairs, thereby hastening the colony's decline.

Root cause of colony decline, then, appears to be breeding failure and a resultant lack of pair recruitment. Breeding failure though may be attributable to various causes, e.g. rat or gull predation, extensive nest falls, or excessive water run-off (Robinson 1992). If correct, then the establishment of predator-free, stable and productive Kittiwake breeding groups offers the greatest chance of reversing the recent decline in this population.

11.2 Recommendations

11.2.1 Preparations should be made during winter 1993/94 for a possible need to control one or more individual large gulls at specific colonies in 1994, e.g. through the use of stupefying baits under a licence obtained in advance.

11.2.2 Extra effort should be made in 1994 to check for the presence of Kittiwakes at sites not checked in 1992 or 1993, e.g. Manjague.

11.2.3 Searches for new breeding groups should be continued into late summer

11.2.4 Rat control work to continue on Samson and St Helen's; Samson currently holds the second largest Kittiwake breeding group, whereas St Helen's is a former main breeding site. Although there seems no possibility of eliminating rats from Gugh completely, comparatively minor quantities of rat bait are significantly beneficial in terms of numbers of young produced from this group; currently the largest in the islands.

TABLE 10
RECORDED KITTIWAKE TOTALS - SCILLY

Year	Total	Unit	% change	Source
1938	6	pairs	-	Penhallurick
1945	32/45	nests	+81.3/86.7	"
1946	47	nests	+32.0/4.3	"
1958	258+	nests	+549.0	"
1967	360+	pairs	+28.4	Allen 1974
1974	500	pairs	+28.0	"
1977	575 5	pairs	+13.3	Allen 1977
1983	861 6	breeding pairs	+33.4	Harvey 1983
1987	584 35	pairs	-32.2	Birkin & Smith 1987
1991	283	AON	-51.6	Robinson unpublished
1992	300 10	AON	+5.7	Robinson 1992
1993	262	AON	-14.0	

AON = apparently occupied nests (late May/early June counts)

TABLE 11
KITTIWAKE SITE PRODUCTIVITY - SCILLY 1993

Nest Group	AON*	Clutches	Young		%
			Max	Flew	
Annet A	4	Nil	-	-	0.0
Annet B	4	Nil	-	-	0.00
Gorregan	10	Nil?	-	-	0.0
Gugh	125	41+a	14+	12	0.09
Man-a-Vaur	1	Nil?	-	-	0.0
Samson A	57	36+a	13+	11	0.19
Samson B	8	5	6	6	0.75
Shipman Head	31			18	0.58
Daymark St Martin's	13	?	?	?	?
White Is St Martin's	1	Nil	-	-	0.00
Tresco Gimble Porth	8	8	7	7	0.87
	262	85+	40+	54	00.206%

* = Apparently Occupied Nests a = only marked study nests counted
% = productivity of fledged young per total number nests in group

12 TERMS - GENERAL

12.1 In Scilly in recent years all three breeding tern species have been adversely effected by several factors, e.g. inadequate site choice, predation by rats and disturbance by Cats and man (Robinson 1992). The combined result has been frequent colony failure and inter-site movement. Though population monitoring remained the prime activity, work in 1993 included exploratory attempts at nest-site improvement. Rat control on some islands may also benefit breeding terns, e.g. on Samson and St Helen's.

12.1.1 Nest Box Provision. The provision of Roseate tern nests boxes and similar cover for breeding birds is a high priority issue (RSPB annon 1991). Thirty-two nest boxes were constructed during winter 1992/93, mainly with funds provided by RSPB and the Environmental Trust's Field Officer assisted with construction. Boxes were deployed as follows:-

Green Island Tresco	3 (6th May)
Green Island Samson	4 (6th May)
Merrick Island	3 (6th May)
Tresco Appletree Banks	10 (6th May)
Samson North Hill	12 (3rd June)

On Green Island Tresco, Green Island Samson and Merrick Island, boxes were weighted down and 'camouflaged' with large stones. On Samson North Hill and Tresco Appletree Banks boxes were secured by short restraining wires. Boxes at the latter two sites were located on short-heather areas preferred by terns in past years, whereas boxes on the three island sites were located on bare rock.

Boxes were constructed from plywood, measure 30x30x10 mm and have a 10x10 mm entrance hole (Avery & Del Nevo 1991). They were treated with an all-weather preservative.

A box on Green Island Tresco was utilised by a Roseate Tern pair and two young are believed to have fledged. Young from another clutch of two eggs utilised a second box soon after hatching. No common terns were recorded showing interest in boxes, except as a vantage point by a non-incubating bird on Merrick Island.

12.1.2 Sand Application. Quantities of shell sand were applied to areas of Green Island Tresco and Merrick Island in spring, in an effort to minimise the substantial bad-weather losses of tern eggs experienced in previous years. Sand was taken from nearby areas at low tide.

Though this activity resulted in an increased number of clutches and an improved hatch ratio, success was marred by a major loss of young terns, presumably to predation by large gulls.

A (unexpected) benefit of sand application to these rocky, bare and exposed islets was the invasion of vegetation. By August, areas of Green Island Tresco were covered in young Thrift *Armeria maritima* plants, whereas a similar sized area on Merrick Island had been invaded by Orich *Atriplex* sp.

Unless a means of stabilising the sand can be found fresh applications are likely to be required each year. The use of sand-bags as a core base should be tested in 1994. Cover must also be provided for young terns, to prevent or at least limit predation by gulls. In Brittany (and perhaps elsewhere) Roseate Terns nest successfully beneath flat stones placed for

that purpose and their use on sanded tern islands might benefit all three species.

12.1.3 Anti-disturbance Signs. Green Island Tresco held three pairs of Roseate Terns in 1993 and is accessible from Tresco at low tide; there are past incidents of human disturbance here (e.g. Robinson 1992). Among various Information or Management signs supplied by English Nature in 1993 was one warning against disturbance of terns at breeding islands. Robert Dorien-Smith kindly agreed to the siting of one on Tresco beach, opposite the access point to Green Island. There were no recorded incidents of tern disturbance here (or elsewhere) in 1993.

Signs carrying a more general warning of likely damage to ground nesting seabirds, including terns, were sited on Samson's main landing beach and on the approach to Gugh.

12.1.4 Rat Control. Rat eradication work on Samson and St Helen's should benefit nesting terns. The former was used by terns in 1991, 1992 and 1993, whilst the latter was used in 1991; rats may have been the primary cause of failure at both in the first two years. Green Island Tresco is accessible from Tresco at low tide (cc50 metres) and is therefore presumed vulnerable to rat predation (Robinson 1992). A small amount of proprietary rat bait was applied to the island on 24th June. It was not possible to say whether the carcass of an adult tern found on Green Island Tresco resulted from rat predation, although it appeared to have been dragged into a cleft in the rocks.

12.1.5 Peregrine Falcons. A pair of Peregrine Falcons have frequented the Round Island and Men-a-Vaur area since early 1992. In May 1993 one, probably the male, was being mobbed by terns over the Samson North Hill colony. The bird left on a direct line for Round Island but it was not known if it was carrying prey. Round Island was subsequently checked and a scrape found near the top of the south facing slope. This appeared not to have held young in 1993 but it was not possible to tell if eggs had been laid.

12.2 Recommendations

12.2.1 Sanding of off-shore rocks to continue in 1994 and to include Great Cheese and Half Tide Rocks.

12.2.2 The use of sand bags or other sand stabilising agents to be tested in 1994.

12.2.3 Consideration should be given to seeding sanded islands, e.g. with Thrift or Tree Mallow *Levatera arboria*.

12.2.4 Protective cover for young tern chicks to be provided on off-shore rocks.

12.2.5 Extra nest boxes to be provided on off-shore rocks.

12.2.6 Checks on any Peregrine Falcon breeding site to be carried out under licence (obtained in advance), to assess prey species involved.

12.2.7 Break-back rat traps to be deployed (under cover) on Green Island Samson, where even a single rat could do serious damage to nesting terns before succumbing to an available supply of bait.

13 SANDWICH TERM

13.1 No Sandwich Terns attempted to breed in Scilly in 1992 and none was found breeding in 1993, until three fresh clutches of eggs (1xc3 and 2xc1) were located among ten pairs of Common Terns on Green Island Samson on 1st July. All Sandwich Tern incubation at this site had ceased four days later and all Common Terns had left by 12th. Part reason for desertion may have been the single pair of Lesser Black-backed Gulls that already had young in the centre of this small island (in the middle of the tern colony). Though late, the date of laying was within the range for this species and there seem no reason why these birds might not otherwise have successfully reared young.

Despite repeated failures this species persists in its attempt to recolonise Scilly. It seems reasonable to expect that efforts to establish a viable and stable Common Tern colony will provide this species with the breeding environment it seeks.

13.2 Recommendations

13.2.1 Remove gull nests from known preferred off-shore Sandwich Tern nesting islands, e.g. Green Island Samson.

14 ROSEATE TERN

14.1 As in 1992, the possible movement of birds between nest sites made assessment of the number of pairs uncertain, but a minimum of 4 and maximum of 6 pairs were believed involved. The occupation of two nest boxes on Green Island Tresco resulted in the successful production of two young and significantly reduced inter-site movement - if not eliminating it altogether.

14.2 Site A - Green Island Tresco

14.2.1 Three pairs were present by 28th May (one copulating), at least three weeks after the first Common Terns arrived back at this site. All three nest boxes had previously been sited low down on the west side of the island, adjacent to the only two or three small patches of thrift and in the area preferred by Roseate Terns in past years. Activity on 28th May was concentrated here.

14.2.2 On 3rd June three pairs of Roseate Terns were on eggs; 1xc1 in Box 2, 1xc1 immediately behind Box 1, and 1xc1 midway between Boxes 1 and 2 (cc 3 metres apart). All three birds were incubating and a fourth pair was suspected. On 8th June two additional birds were observed and a bird was seen entered the unoccupied Box 1. On 15th June all three nests contained 2 eggs but Box 1 remained empty.

14.2.3 On 24th June an egg from the nest between the two boxes was hatching; forty-two Common Tern nests on the same island held 64 eggs and 27 young. The source of five predated eggs was unknown but Lesser Black-backed Gull predation of a small chick was observed.

14.2.4 On 1st July only three Common Tern chicks remained (presumed gull predation). Box 2 contained two small Roseate Tern young. The two eggs behind Box 1 had hatched and the two small young were now inside the box. The third nest contained one warm egg but no chick. One Roseate Tern chick from each brood was ringed with BTO metal rings (left leg) and RSPB special rings (right leg).

14.2.5 By 7th July both broods were intact and the remaining two young were ringed. The third pair were still incubating a single egg. On 12th July the two young in Box 2 were well feathered (primary feathers medium and long - the oldest having a noticeable rosy flush on the breast). The two young from Box 1 could not be found and the third pair were still incubating a single egg (presumably from the initial clutch).

14.2.6 No further visits were made until the 31st July, when all activity had ceased.

14.3 Site B - Merrick Island

14.3.1 One to two pairs have nested on this island in past years. By 15th June 47 clutches of Common Tern eggs were present. Though the island was periodically checked for the presence of Roseate Terns none was recorded. There were, however, unconfirmed reports of birds from other sources.

14.3.2 On 1st July, two pairs of Roseate Terns were 'defending' the island during Common Tern ringing. No additional evidence of breeding was found and the birds may have been part of a roosting flock which was using the island by that time.

14.4 Other Breeding Sites

14.4.1 Season-long checks were carried out at all previously known or likely breeding site but no birds were found.

15 COMMON TERN

15.1.1 Numbers and Distribution. Calculating numbers of Common Terns in the islands proved particularly difficult in 1993, regardless of the priority given them and despite protracted concentrations of birds at two 'improved' islands (see TERNS - GENERAL).

The best estimate of total numbers of pairs for 1993 is in the order of 92 to 120 pairs. At least ten pairs less than the 1992 total and with fewer pairs proved to have laid eggs.

Between 110 and 120 pairs of birds may have been present at the two improved sites during early May, with a total of at least 92 nests on or nearby those islands in mid-June. By 1st July pairs were more widely scattered (following failure of improved sites) but a minimum of 84 active nests were found; calculations based on numbers of adults observed during 'flush-counts' (RSPB/JMCC in prep) at these sites suggest up to 103 pairs may have been involved at this time, with perhaps a further 10 to 15 pairs scattered about the islands.

15.1.2 Productivity. Common Terns are believed to have fledged young at only two sites in 1993. On St Agnes in early July a single pair in the Browarth area fledged at least one young, whilst a group of about ten pairs on the south end of Pentle Bay, Tresco, had 3 young of ringable size on 1st July and were still bringing food to the site on 31st.

Improvements carried out to Merrick Island and Green Island Tresco early 1993 resulted in greatly reduced egg losses and an improved hatch - 84 clutches of eggs were being incubated at these two sites on 15th June (mean clutch sizes of 2.38 and 2.83 respectively).

Forty-two nests on Green Island Tresco on 24th June contained a minimum of 27 young and 64 eggs. Five apparently predated eggs could have been attributable to one of several sources; this island's usual single pair of breeding Oystercatcher increased to two in 1993 (perhaps in response to improved nest-site availability) and the possibility of this species predated tern eggs cannot be discounted. The first indication of a possible gull-predation problem on this island was witnessed on 24th June, when a Lesser Black-backed Gull removed a tern chick from the top of the island as the monitoring party was leaving.

No young Common Terns are believed to have fledged from either Merrick Island or Green Island Tresco in 1993, regardless of the numbers of clutches laid. This is thought attributable to greatly increased gull predation, perhaps in response to increased prey-availability; in this respect the survival of two Roseate Terns in a nest box is particularly interesting, as was the adoption of a box by two newly-hatched Roseate Terns.

The likelihood of increased gull activity was not anticipated and losses were doubtless facilitated by the near absence of cover for young terns. Action will be taken in 1994 to provide suitable cover for young terns.

15.1.3 General Observations. Early and mid-season breeding activity was centred on the two sanded islands. This concentrated activity probably drew birds away from surrounding sites used in previous years, e.g. Samson North Hill, Tresco Appletree Banks and Great Cheese and Half-tide Rocks. Breeding was attempted on both Great Cheese and Half-tide Rocks but, as in past years, failed due to the inability of these sites to adequately hold clutches of eggs. Plans are in hand to add sand to both sites in 1994.

Ten fresh clutches of eggs were found on Samson North Hill on 3rd June, the same day the colony was observed mobbing a male peregrine. It was not possible to tell if the falcon was carrying prey. (see TERMS - GENERAL). The site had been abandoned by the time of a visit on 15th June and predated eggs shells were apparent.

Ten fresh clutches of eggs on Green Island Samson in early July could have involved failed pairs from Samson North Hill or from elsewhere. The disappearance of these and three fresh clutches of Sandwich Tern eggs within days was assumed to have been connected with the presence on this small island of a single pair of breeding Lesser Black-backed Gulls.

15.1.4 Recommendations

See Terns - General.

16 GUILLEMOT

16.1 The minimum estimate of 111 pairs compares closely with Birkin and Smith's 1987 estimate of 109, though there may have been some recent re-distribution of birds.

16.2 Men-a-Vaur

This site was not checked in 1992 and a full search of the west and east stacks was carried out on 7th June. A total of 27 eggs and 21 chicks were located but a number of nests sites were inaccessible. Up to fifty birds were visible on the water at any time and a further nineteen were on the inaccessible centre stack. Birds were returning to nests behind the searchers and the view was that in the order of 90 pairs were involved at this site.

16.3 Scilly Rock

This island was also searched on 7th June. No reasonable estimate of the number of adults could be made but 6 eggs and 11 chicks were located.

16.4 Gorregan

Gorregan was searched on 1st July. Four adults were counted and 4 young found. One adult and one chick were ringed.

16.5 Recommendations

16.5.1 A well-timed visit to Men-a-Vaur in 1994 could result in more than half the season's available Guillemot young being ringed during one session.

17 RAZORBILL

17.1 On Scilly this species nests exclusively beneath large boulders and though nest areas are often easily located, individual nests sites are frequently inaccessible. Nests are also more scattered than in Guillemot. Although several known breeding sites remained unchecked in 1993, e.g. Ragged Island, Men-a-Vaur, Great Innisvouls and Melledgan, the total of around 163 pairs at those that were suggests an approximate overall population level of about 200 pairs - midway between the 1983 and 1987 totals.

17.2 Men-a-Vaur

This island was not visited in 1992. A full search of the east and west stacks on 7th June produced a total of 39 eggs and 5 chicks and up to 70 adults were visible at one time. The total population for this island was judged to be around 100 pairs.

17.3 Annet

Four eggs were being incubated on the west coast on 11th May, at least two of which subsequently hatched.

17.4 Mincarlo

In mid-May 20 birds were counted leaving nest sites and 5 eggs were found.

17.5 Scilly Rock

A search on 7th June produced 13 eggs and 3 chicks. No reliable count of adults could be attempted.

17.6 Castle Bryher

Eight adults were counted leaving the island mid-May.

17.7 Illiswilgig

In mid-May 2 eggs were found and 11 adults counted.

17.8 Gorregan

Twenty adults were counted and 4 young located on 1st July.

17.9 Recommendations

17.9.1 A well-timed visit to Men-a-Vaur in 1994 could result in more than half the season's available Razorbill young being ringed in one session.

18 PUFFIN

18.1 Annet

18.1.1 The size of the Annet Puffin population remains uncertain, regardless of the season-long attention it receives from visitors and local boatman. Up to about twenty-five birds were to be seen around the north-east coast during most visits and this area is believed to hold the bulk of pairs at this colony. It seems unreasonable though to expect all off-duty birds to be visible during all visits, in which case the population must surely be higher. A few pairs are also scattered down the island's west coast. The impression gained is that the Annet population remains around the lower range estimated during previous surveys, i.e. 50 to 60 pairs.

Although an acceptable count based on a search for occupied burrows ought to be possible, the majority of pairs on Annet occupy holes in the upper metre of cliff-face. These are difficult to view from land and check physically for signs of positive occupation. One method worth considering is that employed for Kittiwakes on the mainland - accumulative totals using over-laid black and white photographs showing all holes where birds are observed. Observation from a boat would produce best result.

18.2 Scilly Generally

18.2.1 The contract did not require counts at sites checked the previous year and Men-a-Vaur was the main omission in 1992. Nest here are mainly situated beneath extremely large boulders (as elsewhere) and the nature of the island makes nest searching both difficult and dangerous; estimates of likely breeding pairs must therefore be based on numbers of visible birds, (as is the case at most other sites) and counts of birds in the vicinity of this island are additionally confused by the presence of cc 20 pairs on nearby St Helen's. Counts of up to 20 birds on or close to the island were obtained early season, but a full search of the main (west) stack on 7th June produced 4/5 birds on the water and no eggs or young. The result of the 1993 survey for this island was therefore inconclusive.

TABLE 12

MAXIMUM ESTIMATED NUMBERS OF PUFFIN PAIRS IN SURVEY YEARS

SITE	1967	77	83	87	92*	93*
Annet	100	71	79	60	c50	25+
Castle Bryher	2	4	2?	2	?	?
Foreman Isles	-	2	-	-	-	-
Gt Innisvouls	5	-	-	-	-	-
Melledgan	-	1	1	-	-	-
Men-a-Vaur	1	9	10	6+	?	4/5
Mincarlo	12	18	15	4	?	20
Menawethan	8	2	2	-	-	-
Roseyear	1	3	4	4	20	?
Scilly Rock	4	9	10	4	7	?
St Helen's	8	11	14	12	10	-
TOTAL	141	140	139	92	87	?

* not full population count

18.2.2 A search of Scilly Rock on 7th June produced two eggs and a single bird and on Mincarlo on 13th May cc 20 birds were counted and 1 egg found.

18.2.3 The situation on St Helen's is clearer. Counts of up to fourteen birds were obtained and an estimated 20 pairs were believed to be occupying the ten or so holes, some of which must presumably be multi-chambered (Robinson 1992). Fresh excavation appeared to have taken place at one or two of the holes artificially manufactured in 1992 (Robinson 1992).

18.3 Recommendations

18.3.1 Nest counts on Annet to be attempted using photograph over-lays.

19 RAT CONTROL

19.1.1 Summary. Rat control commenced on Samson winter 1992/93 and St Helen's September 1993. The project aims at total removal of these animals from targeted islands. Additional islands may be included later. Though a high proportion of an island's rat population can be removed within a single season, detecting and eliminating the 'residue' is the greatest difficulty facing those involved (Moors 1985). It is important therefore that the project does not over-reach itself. The project, which is run by the Isles of Scilly Seabird Group, has the support of and is primarily funded by Cornwall Birdwatching and Preservation Society, English Nature, the Isles of Scilly Environmental Trust and the RSPB. English Nature also supply the majority of inter-island transport. Advice was obtained from the Ailsa Craig Working Group; Ailsa Craig was successfully cleared of rats within two years (B Zonfrillo *in lit*).

Rat removal is being accomplished through the application of a proprietary 0.05% dressing of warfarin on chopped or whole grain. Few dead rats are found following application and most are assumed to die below ground. Warfarin is not normally harmful to birds or other animals through secondary poisoning. Bait is applied under cover, whilst all seabirds are absent and few granivorous bird species present. The only non-target mammals at risk are Rabbit *Oryctolagus cuniculus*, Lesser White-toothed (Scilly) Shrew *Crocidura suaveolens* and House Mouse *Mus domesticus*.

The initial 'kill' on Samson and two adjacent small islands (White and Puffin) was in the order of 95%+. No visible signs of rat presence were detected during 1993, though there was an unconfirmed sighting of two animals. Terns did not breed successfully on Samson in 1993 but neither Lesser Black-backed Gulls or Kittiwakes were known to have suffered rat predation. Plant growth in and around the gull colony may have been more prolific in 1993. A pair of Kestrels bred on Samson for the first time, rearing four young from a ground-level site and a pair of Canada Geese successfully reared young on White Island.

19.1.2 Preparation. Though the presence of Brown Rats *Ratus norvegicus* in Scilly has long been known the extent of their predation on breeding seabirds became apparent only recently (Robinson 1992). In 1991 and 1992 rats caused failure of Kittiwake and tern colonies and it is likely this occurred beforehand. Though the dearth of comment on rat presence by past seabird workers may appear surprising, not all surveys included checks on productivity. Rats are reportedly responsible for the disappearance of Manx Shearwater from White Island (St Martin's) and may be at least partly responsible for recent low fledging successes (and perhaps recent declines) among large gulls (Robinson 1992).

Time in 1992 was spent looking for evidence of rat predation in all tern and Kittiwake colonies, as part of the survey programme (Robinson 1992). In 1991 and 1992 predation was noted at two main Kittiwake colonies (Gugh and Samson) and a main tern colony (Samson), commencing mid-June. Predation of Kittiwakes was characterised by the disappearance of eggs and young sequentially from one end of the colony, but with no predated carcasses or eggs evident. Some part-eaten remains of young were located in the tern colony. Rat presence at these three sites was confirmed using the "chew-stick" method advised by the Ailsa Craig Study Group.

Menawethan, Eastern Isles, is a favoured breeding site of Great Black-backed Gull but numbers have declined in recent years. A check of this island in 1991 soon after hatching revealed few young gulls but abundant evidence of rat presence. In 1992 rat presence was confirmed here (and on

adjacent Ragged Island) using chew-sticks. A total of 74 Great Black-backed Gull nests was noted on 29th May that year, 62 of which contained eggs, with a further 12 hatching or judged to have hatched. Average clutch size of 2.48 compares favourably with findings for Annet. A search of the island on 15th June revealed a maximum of ten chicks.

The Samson Kittiwake colony tested positive for rat presence following the onset of predation there in 1992. Predation was temporarily halted by the application (within the colony) of two kilograms of bait. Predation in the Gugh Kittiwake colony was similarly halted for a time by a comparable application of bait.

Information acquired in 1992 therefore pointed strongly to rats significantly limiting productivity in several seabird species and rat predation may also partly account for recent population declines in some species, e.g. Herring, Great and Lesser Black-backed Gulls; however, these declines effected Annet too and rats are believed absent from that island. Rat presence is also doubted on several off-shore rocks favoured by breeding terns and they are doubtless absent from islands washed over by winter seas, e.g. Scilly Rock, Gorregan.

19.1.3 Clearance Work - Samson. Samson and its two close neighbours, White and Puffin Island, were selected for initial attention. Though Samson is the largest uninhabited island (95 ha) it has major colonies of terns, Kittiwake and Lesser Black-backed Gull and has breeding potential for Manx Shearwater, Storm Petrel and Puffin. Samson also remains comparatively accessible during winter weather.

Little information was available on the location or habits of the Samson rat population prior to the project commencing. Rats were known to visit both the Kittiwake colony (on a low cliff above a boulder beach) and the tern colony (on dry heath on the summit of North Hill) and were also presumed to predate a colony of about 1,000 pairs of Lesser Black-backed Gulls occupying the slopes of South Hill.

Examination of Samson mid-November 1992 showed current visible rat activity restricted to five areas of sandy soil immediately above the shoreline. There was considerable evidence of recent rat excavation and upwards of 500 apparently active holes were found. Although areas occupied in summer by Lesser Black-backed Gulls were extensively undermined, these did not show signs of recent rat occupation. The impression gained was of a marked shift to winter tide-line foraging by this population.

Forty 25 kilogram bags (1 tonne) of bait were acquired, transported to Samson mid-November and temporarily stored under canvas. Application of bait continued intermittently until mid-January 1993.

Bait was applied directly to all holes, in and out of rat colonies, whether apparently occupied or not. A second baiting was applied one week later, by which time rat activity had ceased at a substantial percentage of holes - judged by the extent of vegetation re-growth in and around holes and runs. Holes showing signs of continued activity were re-baited. In addition to direct baiting, a number of covered "bait stations" were established in various parts of the island, particularly where rat activity was unpredictable, e.g. boulder beaches.

The first dead rats were noted during a visit 6 days after initial baiting. Few were found in total, however, and most are assumed to have died below ground - flies were seen entering many inactive holes. Baiting coincided with a prolonged period of wet weather and this may have favoured

the operation, with rats offered a ready food source during a period of stress. A maximum of four or five rabbit carcasses were subsequently noted, but with visible indications of fresh rabbit activity well after baiting; bait was not applied to obvious rabbit holes and much of the rabbit population on this island appears to live in areas of dense bramble and bracken, which were not baited.

Any effect on the resident population of Lesser White-toothed Shrew on Samson is unknown at this stage, though it is considered unlikely.

At the conclusion of baiting all holes on the island were systematically filled in, hopefully rendering new excavations obvious during subsequent inspection. A total of 166 man-hours were involved in clearance operations during winter 1992 - 1993.

Visible inspection and chew-stick monitoring continued through summer 1993 but no signs of rat presence were detected. There was a single reported sighting of two rats in a boulder beach on the western side of the island but these were not seen by the project team. In past years local youth groups staying on Samson overnight reported major rat activity but no rats were reported by these groups in 1993.

19.1.4 Clearance Work - St Helen's. St Helen's was selected as the second site for clearance, mainly because it holds an active Puffin colony and was known to be heavily infested. Baiting commenced mid-September 1993. Although there was abundant evidence of rat presence throughout the island few rat holes were found and it seems possible this population may lead a different life-style to that on Samson; early impressions are that rats here may exist above ground to a greater extent. Rats were feeding extensively on the fruits of Hottentot Fig *Carpobrotus edulis*, which is more widespread here than on Samson and the possibility of rats on St Helen's being partially dependent upon this plant may warrant investigation.

19.2 Recommendations - Samson

19.2.1 Checks for rat presence to continue, including physical searches, chew-sticks and break-back traps.

19.2.2 Permanent bait-stations to be maintained throughout the year.

19.3 Recommendations - St Helen's

19.3.1 Baiting of the whole island to continue through winter 1993 - 1994, accompanied by chew-stick and break-back trap testing and the establishment of main bait-stations.

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APPENDIX I

	1967	1974	1977	1983	1987	1992	1993	Britain & Ireland Pairs (1985/87)
Fulmar		14*	25	75	91	nc	nc	570,000
Manx Shearwater		900+	500	nc	nc	nc	nc	250/300,000
Storm Petrel		1800***	1500***	nc	nc	nc	4250**	70/250,000
Cormorant		61	50	49	51	61	60	11,700
Shag		950	1470	1225	1200	nc	nc	47,000
LBB Gull		2973	3070	4050	3778	nc	nc	64,400
GBB Gull		1583	2235	1478	992	nc	704*	23,300
Herring Gull		2249	1450	1995	1273	nc	800*	190,900
Kittiwake	360	498	575	861	584	300	262	543,500
Sandwich Tern				Nil	20	Nil	3	18,400
Roseate Tern			9	9	4/8	4/8	4/6	<50 (Britain)
Common Tern		108	140	210	175	124	115	14,700
Guillemot	50	36	80	104	109	N/C	111*	1,203,100
Razorbill	320	134	280	225	177	N/C	200*	181,900
Puffin	116	89	115	115	87	N/C	N/C	428,300

* Estimated Count nc No Count *** Annet Only
 ** Estimated Minimum Count (Annet, St Agnes, Gugh, Round Island only)

1967 (in Allen 1974)
 1974 (Allen 1974)
 1977 (Allen 1977)
 1983 (Harvey 1983)
 1987 (Birkin & Smith 1987)
 1992 (Robinson 1992)
 1985/87 status (Lloyd et al 1991)

APPENDIX II

SEABIRD RINGING TOTALS - SCILLY 1991/2/3

<u>Species</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>				<u>Total</u>
			<u>W1</u>	<u>W2</u>	<u>W3</u>	<u>W4</u>	
Fulmar	-	23	-	11	17	(28)	51
Storm Petrel	100	1100	3	456	301	510 (1270)	2470
Manx Shearwater	-	11	15	23	-	- (38)	49
Shag	-	123	-	107	70	- (177)	300
Cormorant	-	23	-	-	7	- (7)	30
Kittiwake	2	75	-	3	6	5 (14)	91
LBB Gull	7	31	-	11	22	31 (64)	102
Herring Gull	-	10	-	65	1	6 (72)	82
GBB Gull	-	7	-	30	3	3 (36)	43
Common Tern	15	66	-	9	-	- (9)	90
Roseate Tern	-	2	-	2	2	- (4)	6
Razorbill	-	2	-	3	-	- (3)	5
Guillemot	-	-	-	5	-	- (5)	5
Puffin	-	-	-	1	-	- (1)	1
<u>Total Seabirds</u>	124	1473	18	726	429	555 (1728)	3325

APPENDIX III

STORM PETREL COMBINED RINGING TOTAL - 1991/2/3

Annet

1991			
2nd	100	100	6.97% of Annet 3-year total 100% of 1991 combined island total
1992			
14th July	200		
21st July	214	414	28.8% of Annet 3-year total 37.63% of 1992 combined island total
1993			
5th May	3		
29th June	268		
7th July	209		
4th August	440	920	64% of Annet 3-year total 72.44% of 1993 combined island total
Annet 3-year total	1434		58.05% of combined island 3-year total

Gugh

1992			
12th July	111		
19th July	57	168	49.85% of Gugh 3-year total 15.27% of 1992 combined island total
1993			
27th June	69		
4th July	46		
1st August	54	169	50.14% of Gugh 3-year total 13.30% of 1993 combined island total
Gugh 3-year total	337		13.64% of combined island 3-year total

St Agnes

1992			
15th July	15		
17th July	70		
20th July	16	101	95.28% of Agnes 3-year total 9.18% of 1992 combined island total
1993			
1st July	5	5	4.71% of Agnes 3-year total 0.39% of 1993 combined island total
St Agnes 3-year total	106		4.29% of combined island 3-year total

Round Island

1992			
16th July	200		

23rd July	217	417	72.27% of Round Island 3-year total
			37.90% of 1992 combined island total

1993

28th June	114		
6th July	46	160	27.72% of Round Island 3-year total
			12.59% of 1993 combined island total

Round Island 3-year total	577	23.36% of combined island 3-year total
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Peninnis

1993

6th August	16	16	100% of Peninnis total
			1.25% of 1993 combined island total

Peninnis 3-year total	16	0.64% of combined island 3-year total
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Annual Combined Island Totals

1991	100	4.04%
1992	1,100	44.53%
1993	1,270	51.41%
	<u>2,470</u>	

APPENDIX IV

STORM PETREL

ROLLING TOTAL OF BIRDS RINGED - RETRAPS IN BRACKETS

ANNET-AGNES-GUGH GROUP

<u>Island</u>	<u>Date</u>	<u>Session Total</u>	<u>Accumulative Total</u>	<u>Retrap %</u>
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1991

Annet	2.7	100(7)	-	7.00
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1992

Gugh	12.7	111 (7)	211 (14)	6.63
Annet	14.7	200(14)	411 (28)	6.81
Agnes	15.7	15 (3)	426 (31)	7.27
Agnes	17.7	70 (6)	496 (37)	7.27
Gugh	19.7	57 (4)	553 (41)	7.45
Agnes	20.7	16 (1)	569 (42)	7.38
Annet	21.7	214(14)	783 (55)	7.15

1993

Annet	25.5	3 (1)	786 (57)	7.25
Gugh	27.6	69(12)	855 (69)	8.07
Annet	29.6	268(20)	1123 (89)	7.92
Agnes	1.7	5 (1)	1128 (90)	7.97
Gugh	4.7	46 (2)	1174 (92)	7.83
Annet	7.7	209 (8)	1383(100)	7.23
Gugh	1.8	54 (4)	1437(104)	7.23

ROUND ISLAND

<u>Date</u>	<u>Session Total</u>	<u>Accumulative Total</u>	<u>Retrap %</u>
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1992

16.7	200(23)	-	11.50
23.7	217 (3)	417(26)	6.23

1993

28.6	114 (5)	531(31)	5.83
6.7	46 (1)	577(32)	5.54

APPENDIX V

SEABIRD CONTROLS ON SCILLY

Status codes:- RT=Retrap, DD=Dead, FNET=Fishing Net, CT=Control
GPP=Gull Predated Pulli, CAP=Cat Predation
PLT=Gull Pellet, BDG=Breeding

Ringing Scheme = UK unless otherwise stated

Species	Ringing Details		Retrap Details				
	No	Site	Date	Site	Date		
KITWA	EB91984	Farne Is	4.7.80	Annet	28.6.91	BDG	UK
CORMO	5084450	Antrim, NI	17.6.77	Porthloo	31.5.92	DD	UK
STOPE	SA779486	Banneg Is	3.8.89	Round Is	16.7.92	CT	French
STOPE	2422524	Blaskets					
		Eire	2.7.92	Round Is	16.7.92	CT	Irish
STOPE	SA777043	Banneg Is	25.7.89	Annet	21.7.92	CT	French
STOPE	SA779410	Banneg Is	31.7.89	Annet	21.7.92	CT	French
STOPE	SAB30120	Banneg Is	8.8.91	Round Is	23.7.92	CT	French
STOPE	2293698	Marloes,					
		Dyfed	14.6.84	Round Is	23.7.92	CT	UK
STOPE	2229232	Calf of Man	28.7.82	Round Is	28.6.93	PLT	I O Man
STOPE	SA549534	???	???	Round Is	28.6.93	CT	French
MANSH	FC37618	Lundy Is	23.7.92	Annet	29.6.93	CT	UK
FULMA	FV46967	Lt Saltee	(re-ringed FA61411)				
		Wexford Eire	26.7.80	Gorregan	2.7.93	CT	Irish
STOPE	2255149	Gt Saltee					
		Wexford Eire	27.6.83	Round Is	6.7.93	CT	Irish
STOPE	SA773404	???	???	Annet	4.8.93	CT	French
STOPE	2293725	???	???	Annet	4.8.93	CT	
STOPE	2301511	???	???	Annet	4.8.93	CT	
STOPE	SA549557	???	???	Annet	4.8.93	CT	French
STOPE	SA776921	???	???	Annet	4.8.93	CT	French

LOCAL SEABIRD RECOVERIES

SHAG	1227137	Annet	23.6.92	G Ganilly	23.2.93	DD	
SHAG	1319513	Annet	29.6.93	Annet	4.8.93	GPP	
SHAG	514	Annet	29.6.93	Annet	4.8.93	GPP	
SHAG	515	Annet	29.6.93	Annet	4.8.93	GPP	
SHAG	517	Annet	29.6.93	Annet	4.8.93	GPP	
STOPE	2427381	Gugh	1.8.93	Gugh	4.8.93	CAP	
LBBGU	GF23848	Gugh	27.6.93	Gugh	24.8.93	DD	
SHAG	1319600	Annet	27.7.93	HATS Bouy			
				Scilly	28.8.93	FNET	
STOPE	2427832	Peninnis	6.8.93	Gugh	3.9.93	CAP	
LBBGU	GF24468	Annet	4.8.93	Annet	1.9.93	DD	
LBBGU	474	Annet	4.8.93	Annet	1.9.93	DD	

SCILLONIAN-RINGED CONTROLS AWAY FROM SCILLY

COMTE	SX06437	Merrick Is	3.7.91	Ghana	2.12.91	CT	
CORMO	5162918	L Ganinnick	12.5.92	Penzance	7.9.92	DD	
SHAG	1227146	Annet	23.6.92	Meadfoot,			
				Devon	23.10.92	DD	
SHAG	1227054	Gorregan	23.6.92	Torquay	27.10.92	DD	
SHAG	1311019	Annet	23.6.92	Finistere	28.12.92	FNET	

SHAG	1227141	Annet	23.6.92	Prawle Pt, Devon	30.12.92	DD
SHAG	1227100	Gorregan	23.6.92	Gurnsey	14.12.92	DD
STOPE	2427048	Annet	29.6.93	???	???	

