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POPULATION TRENDS OF GULLS AND CLIFF-NESTING  
SEABIRDS ON THE ISLE OF MAY

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Following a request from the Isle of May Bird Observatory in the early 1970s, NCC put considerable effort into reducing the numbers of herring gulls Larus argentatus and lesser black-backed gulls L. fuscus breeding on the Isle of May NNR, Fife during the 1970s and the 1980s. The British populations of both species are now declining and there is a need to obtain up-to-date information on adult survival rate and breeding output and to continue making annual assessments of the numbers of breeding gulls on the Isle of May. Such information is needed for modelling the population dynamics of these species. NCC has, therefore, given ITE a contract to undertake the following work annually.

- 1.1 Count the gull nests
- 1.2 Estimate the annual survival of adult herring and lesser black-backed gulls
- 1.3 Ensure that adequate samples of young gulls are ringed
- 1.4 Estimate breeding output

The senior author has incorporated this contract into his ongoing multi-species study of the island seabirds. This report covers the 1990 breeding season.

For convenience, we include details of ITE/NCC's schemes for monitoring the changes in numbers of the cliff-nesting seabirds which was not part of this contract.

The second author was a NCC summer warden on the Isle of May with responsibility for carrying out much of this work.

Various people helped with the counts and they are acknowledged in the notes to the tables. For ease of comparison, the layouts of the individual tables follow those in the previous Summer Wardens' Annual reports.

### 2.1 Gull nest count

The count was carried out on 27-30 May 1990 by a team of people systematically searching the island and recording and marking all clutches and well-formed but empty nests (Table 1). The efficiency of counting was assessed by a single observer visiting an area immediately after the nests there had been counted and recording the proportion of nests and clutches which has been marked during the count (Table 2).

In all, 1821 nests and clutches were marked and the overall calculated total taking account of those missed was 2169. This total was very similar to the 1988 count (2274) and 1989 count (2270). However, subtotals for various sections of the colony showed some substantial increases and declines in different parts of the colony.

The proportions of herring and lesser black-backed gulls nesting in the various areas were assessed by counts of individual gulls visible from vantage points after they had been disturbed (Table 4). About 30% of the individual gulls estimated to be present on the island were checked. Assuming that the ratios of herring:lesser black-backed gulls were representative, there were 1551 herring gull nests and 618 lesser black-backed gull nests. The comparable 1989 totals were 1629 and 643 which suggests an increase of 5% in the herring gull total and a decrease of 4% in the lesser black-backed gull total. In reality there had probably been little change.

### 2.2 Colour-ringing

Incubating adults were caught with walk-in traps. Each gull was given a unique colour-combination which included a green ring with a large engraved M (as a colony specific ring). Each gull had its overall head and bill-length measured which enabled it to be sexed after the cumulative frequency distribution curve had been plotted (see Coulson *et al.* *Ibis*, 1:5 (1983); 549-557). The head and bill lengths separating the larger males from the smaller females for herring and lesser black-backed gulls were 120 and 116 mm, respectively.

Of 158 herring gulls and 105 lesser black-backed gulls colour-ringed in 1989, 127 (80.4%) and 83 (79%) were resighted in 1990. The true survival rates would be higher than this as some individuals may have been still alive and have either been over-looked or moved elsewhere. Therefore, these figures should not be used without reference to M P Harris. One Isle of May adult lesser black-backed gull was seen on Craighleith in May (R. Ascroft pers. comm.). In 1990, 37 additional herring gulls and 57 lesser black-backed gulls were ringed.

Most previous studies including those on the Isle of May in the 1960s and 1970s have found adult survival to be 90% or more for these species. The present findings suggest that reduced adult survival rather than reduced breeding output is likely to be causing the present changes in gull numbers in Britain.

### 2.3 Gulls ringed and breeding output

Totals of 1361 young herring and 235 young lesser black-backed gulls were ringed (Table 8); virtually all of these were a half or more grown as it was essential to identify the species and the bulk are thought to have fledged. After ringing had been completed, a survey of c. 25% of the total of fledged or nearly fledged young present found that c. 71% had been ringed (cf 67% in 1989). Assuming that this figure was representative of both species, then c. 1917 young herring and c. 331 young lesser black-backed gulls fledged, or 1.23 and 0.54/nest, respectively. These figures compared to almost exactly one young/pair fledged by both species in 1989. Although some nests were predated during nest-trapping the losses incurred by lesser black-backed gulls were insufficient to explain this reduced success which was also recorded where no trapping had occurred (e.g. Burrian). The reason for the low success of lesser black-backed gulls is unknown.

### 2.4 Counts and monitoring of other species

Shag: The count of 1386 nests was 23% down on the 1989 count (Table 10), but the population had probably changed little. The apparent decline was due to (a) many pairs not laying, and (b) some nests washed away by a gale on 6 June just prior to the count.

Kittiwake: The count of 8129 nests indicated a 7% increase (Table 10). The increase in numbers of nest monitoring plots was a more modest 3% (Table 11).

Guillemot: Both the total and the monitoring counts indicated a decrease of 8-10% in the numbers of birds present (Tables 10, 12-16). Numbers declined significantly in 12 of the 13 monitoring plots.

Razorbill: The total count (2368 birds) was 9% down on the 1989 figure (2613). As is usual in this species, the monitoring counts were extremely variable (Tables 14-15). The biggest changes were at Peregrine's Nest and Bishop's Cove where there had been a change of counter, but still the results indicated an overall decline. The increase at Greengates was brought about by a spread of birds eastwards towards the Dam.

Fulmar: There was little change in numbers with 198 occupied sites being counted.

3 THE FUTURE

3.1 The arrangements whereby one of the summer wardens worked under the direction of the contractor for much of the breeding season was very successful and should be continued.

3.2 It is relatively easy to mark large samples of birds for the estimation of survival rates but much greater effort is needed to ensure adequate levels of resighting for survival estimates. Changes of only a few percent in the survival rates of these long-lived species have a highly significant effect in demographic terms. In 1990 we both spent many hours each day looking for colour-rings, a task not made any easier by the confusing array of colour-rings used by other schemes which are also present. The time spent by the summer warden on this work cannot be reduced without an unacceptable loss of accuracy.

3.3 Additional studies, which are the subject of a separate report to NCC under contract HF3-03-430 show that 1990 was a poor breeding season for terns, kittiwake, fulmar, shag and puffin on the Isle of May. The puffin population on the island has now stabilized after several decades of rapid expansion. The 1990s may well see marked changes in the numbers and breeding of seabirds in the North Sea.

3.4 Accurate knowledge of population structure and dynamics is essential in assessing the interactions of seabirds and their prey. This knowledge can only come from long-term studies. Very few such studies are now being started which increases substantially the value of ongoing ones. It is imperative that those on the Isle of May continue. NCC should continue to play its part, and thus monetary and logistic support from NCC (SE Scotland) is gratefully acknowledged.



4 PUBLICATIONS ON ISLE OF MAY SEABIRDS

The following have either been published within the last 12 months or are in press.

- Harris, M.P. & Wanless, S. 1990. Molt and autumn colony attendance of auks. *British Birds* 83:55-66.
- Harris, M.P. & Wanless, S. 1990. Breeding success of British kittiwakes Rissa tridactyla in 1986-88: evidence of changing conditions in the northern North Sea. *J. Applied Ecology* 27:172-187.
- Harris, M.P. & Wanless, S. 1989. Fall colony attendance and breeding success in the Common Murre. *Condor* 91:139-146.
- Harris, M.P. & Wanless, S. 1989. The breeding biology of Razorbills Alca torda on the Isle of May. *Bird Study* 36:105-114.
- Harris, M.P. 1989. Variations on the correction factor read for converting counts of individual Guillemots Uria aalge into breeding pairs. *Ibis* 131:85-93.
- Johnstone, J.G. Harris, M.P., Wanless, S. & Graves, J.A. 1990. The usefulness of pellets for assessing the diet of adult shags Phalacrocorax aristotelis. *Bird Study* 37:5-11.
- Wanless, M.P. & Harris, M.P. 1989. Kittiwake attendance patterns during chick-rearing on the Isle of May. *Scottish Birds* 15:156-161.
- Harris, M.P. & Wanless, S. in press. Population studies and conservation of Puffins Fratercula arctica. In 'Bird Population Studies' (eds. Perrins, Lebreton & Hiron). Oxford Univ. Press.
- Harris, M.P. in press. Population changes in British Common Murres and Common Puffins 1969-1988 in 'Management of auk populations'.
- Wanless, S., Burger, A.E. & Harris, M.P. in press. Diving depths of Shags Phalacrocorax aristotelis breeding on the Isle of May. *Ibis*.
- Wanless, S., Harris, M.P. & Morris, J.A. 1990. A comparison of feeding areas used by individual Common Murres, Razorbills and a Puffin during the breeding season. *Colonial Waterbirds* 13:16-24.
- Wanless, S. Harris, M.P. & Morris, J.A. in press. Foraging range and feeding locations used by Shags Phalacrocorax aristotelis during chick-rearing. *Ibis*.
- Harris, M.P., Towll, H. & Russell, A.F. in press. Maximum depths attained by four species of seabirds breeding on the Isle of May, Scotland. *Scottish Birds*.

Table 1. Counts and contents of herring and lesser black-backed gull nests, 27-30 May 1990

	Empty nest	Eggs			Unknown contents	Total	Counting efficiency (%)	Total nests present
		1	2	3				
Mars Rock	2	1	2	3	0	8	58	14
North Ness/rocks	26	12	35	96	5	174	85	205
North Horn-Iron Bridge	0	2	5	13	1	21	83	25
Iron Bridge-Altarstanes	1	3	3	13	0	20	83	24
East Rona	32	25	60	221	1	339	93	365
Tarbet	26	5	24	70	1	126	84	150
Low Light-Tarbet	7	0	18	34	1	60	68	88
Low Light rocks	6	2	15	20	0	43	70	61
Cleaver	0	0	0	0	6	6	83	7
Lady's Bed Stacks	0	0	0	0	5	5	83	6
South Ness Rocks	8	2	6	7	0	23	83	28
Ardcarran rocks	0	1	4	4	0	9	83	11
Kirkhaven rocks	0	0	2	2	0	4	83	5
Pillow	0	0	0	0	1	1	100	1
Burrian	2	8	26	63	11	110	76	145
Altarstanes-Horse Hole	0	0	4	6	0	10	83	12
Colm's Hole	5	1	12	22	1	41	82	50
Kettle to Colm's Hole	35	17	48	91	3	194	98	198
South Horn cliffs	2	0	1	2	6	11	83	13
South Horn	2	1	2	4	0	9	83	11
Lady's Bed	5	6	14	43	0	68	83	82
Ardcarran-Kirkhaven	0	5	24	32	5	86	62	139
Three Tarn Nick-Horse Hole	36	12	46	80	1	175	88	199
Horse Hole	2	4	2	8	0	16	83	19
Clett	1	0	0	2	0	3	100	3
Middens	1	3	3	2	0	9	100	9
South Lochside	0	0	0	0	2	2	100	2
Cornerstone-Pilgrims	0	0	0	0	2	2	100	2
South Plateau Cliffs	0	0	0	0	11	11	100	11
South Plateau	3	0	0	2	0	5	83	6
North Lochside	0	0	0	0	6	6	83	7
Three Tarn Nick-Lochside	2	0	0	0	6	8	83	110
Maidens Inner	3	9	38	51	2	103	83	124
Maidens Outer	6	15	15	55	0	91	83	110
Maidens Sea Rocks	2	1	5	14	0	22	83	27
Totals						1821		2169

Counts were made by P. Kinnear, J. Calladine, R. Payne, S. Pritchard, L. Tarder and M.P. Harris

Table 2. Counting efficiency of gull nests during the whole island nest count, 27-30 May 1990.

	No. marked	No. unmarked	% marked
Iron Bridge-Altarstones	13	1	93
Horse Hole-Altarstones	9	4	69
North Ness-North Horn	64	11	85
Mars Rocks	7	5	58
Tarbet-Low Light	32	15	68
Tarbet	69	13	84
Rona east	117	9	93
Rona west	10	2	83
Burrian	54	17	76
Colm's Hole	23	5	82
Kettle	80	2	98
Ardcarran	18	11	62
North Plateau	22	3	88
Low Light Rocks	14	6	70
Total	532	104	81

Mean = 79.2%

Table 3. Counts of individual herring and lesser-black backed gulls on 26 May 1990.

	Number counted			%	
	HG	LB	Total	HG	LBBG
North Ness	68	34	102	67	33
North Ness-Horn	55	27	82	67	33
North Horn-Bridge	14	3	17	82	18
Bridge-Altarstones	24	0	24	100	0
Rona Plot	73	53	126	58	42
Tarbet	104	8	112	93	7
Tarbet-Low Light	29	7	36	81	19
Low Light	19	0	19	100	0
Altarstones-Horse Hole	29	2	31	94	6
Burrian	67	33	100	67	33
Colm's Hole	35	0	35	100	0
Kettle	81	70	151	54	46
South Horn	4	10	14	29	71
Lady's Bed	9	7	16	56	44
Ardcarran	28	11	39	72	28
Ardcarran/Kirkhaven	31	0	31	100	0
North Plateau	40	98	138	29	71
South Plateau	13	3	16	81	19
Other areas					
Mill Door North	HG 6		Greenface	HG 11	
Loch Side-North	HG 6		South	HG 2	

Table 4. Calculated gull nest totals in 1990.

	Nest estimate	% Herring Gulls	Herring Gull nests	Lesser Black-backed Gull nests
Mars Rock	14	100	14	0
North Ness/rocks	205	67	137	68
North Horn-Iron Bridge	25	82	20	5
Iron Bridge-Altarstanes	24	100	24	0
East Rona	365	58	211	154
Tarbet	150	93	140	10
Low Light-Tarbet	88	81	71	17
Low Light rocks	61	100	61	0
Cleaver	7	100	7	0
Lady's Bed Stacks	6	100	6	0
South Ness Rocks	28	100	28	0
Ardcarran rocks	11	100	11	0
Kirkhaven rocks	5	100	5	0
Pillow	1	100	1	0
Burrian	145	67	97	48
Altarstanes-Horse Hole	12	94	12	0
Colm's Hole	50	100	50	0
Kettle to Colm's Hole	198	54	107	91
South Horn cliffs	13	100	13	0
South Horn	11	29	3	8
Lady's Bed	82	56	46	36
Ardcarran-Kirkhaven	139	72	100	39
Three Tarn Nick-Horse Hole	199	29	58	141
Horse Hole	19	100	19	0
Clett	3	100	3	0
Middens	9	100	9	0
South Lochside	2	100	2	0
Cornerstone-Pilgrims	2	100	2	0
South Plateau cliffs	11	100	11	0
South Plateau	6	83	5	1
North Lochside	7	100	7	0
Three Tarn Nick-Lochside	10	100	10	0
Maidens Inner	124	100	124	0
Maidens Outer	110	100	110	0
Maidens Sea Rocks	27	100	27	0
Total			1551	618

Table 5. Changes in estimated numbers of gull nests in 1989-90.  
Small areas are excluded.

	1989 estimate	1990 estimate	% change
Kettle-Colm's Hole	141	198	+40
Colm's Hole	40	50	+25
Burrian	206	145	-30
Low Light Rocks	73	61	-16
Tarbet-Low Light	110	88	-20
Tarbet	94	150	+60
Rona-east	389	365	-6
Rona-west	21	25	+19
North Ness/Mars Rocks	145	219	+50
North Plateau	190	199	+5
South Plateau/cliffs	28	19	
Lady's Bed/South Ness	169	116	-32
Maidens (all)	315	261	-17
Lochside-Three Tarn Cliffs	25	16	-36
Ardcarran/Kirkhaven	123	139	+15
Total (incl. other areas)	2272	2169	-4%

Table 6. Details of breeding herring gulls colour-ringed on the Isle of May in 1989.

Colour rings: All below joint, M = Green engraved with a white M

BTO ring above joint on left leg

Sex: by bill and head length

Locality code (under year)

M - Maidens	TAR = Tarbet
A - Ardcarron	CH = Colms Hole
K - Kettle	R/Ron = Rona
LB - Ladies Bed	NH = North Horn
NP - North Plateau	DED = Found dead later in the season

RING No.	L.LEG	R.LEG	SEX	1989	1990
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1	GG58238	MMM-RED	RED-WHI	HG	F	-	-	M	-	M	-
2	GG58239	MMM-BLK	RED-WHI	HG	M	-	-	M	-	-	-
3	GG58240	MMM-GRN	RED-WHI	HG	F	-	-	M	-	M	-
4	GG58241	MMM-BLU	RED-WHI	HG	M	-	-	M	-	M	-
5	GG58242	MMM-YEL	RED-WHI	HG	M	-	-	M	-	M	-
6	GG58243	MMM-WHI	RED-WHI	HG	M	-	-	M	-	Y	-
7	GG58244	MMM-RED	RED-GRN	HG	F	-	-	K	-	K	-
8	GG58245	MMM-BLK	RED-GRN	HG	F	-	-	A	-	A	-
9	GG58246	MMM-GRN	RED-GRN	HG	F	-	-	A	-	A	-
10	GG58247	MMM-BLU	RED-GRN	HG	F	-	-	A	-	A	-
11	GG58248	MMM-YEL	RED-GRN	HG	F	-	-	M	-	A	-
12	GG58249	MMM-WHI	RED-GRN	HG	F	-	-	A	-	A	-
13	GG58250	MMM-BLK	RED-BLK	HG	M	-	-	M	-	-	-
14	GG58257	MMM-GRN	RED-BLK	HG	M	-	-	M	-	A	-
15	GG58258	MMM-YEL	RED-BLK	HG	F	-	-	M	-	A	-
16	GG58259	MMM-RED	RED-BLK	HG	M	-	-	CH	-	CH	-
17	GG58260	MMM-YEL	RED-BLK	HG	M	-	-	CH	-	-	-
18	GG58261	MMM-WHI	RED-BLK	HG	F	-	-	CH	-	CH	-
19	GG58262	MMM-RED	RED-BLU	HG	M	-	-	A	-	A	-
20	GG58263	MMM-BLK	RED-BLU	HG	M	-	-	A	-	A	-
21	GG58264	MMM-GRN	RED-BLU	HG	M	-	-	A	-	A	-
22	GG58265	MMM-BLU	RED-BLU	HG	M	-	-	A	-	-	-
23	GG58266	MMM-YEL	RED-BLU	HG	M	-	-	A	-	A	-
24	GG58267	MMM-WHI	RED-BLU	HG	F	-	-	TAR	-	TAR	-
25	GG58268	MMM-RED	RED-YEL	HG	F	-	-	TAR	-	TAR	-
26	GG58269	MMM-BLK	RED-YEL	HG	F	-	-	TAR	-	TAR	-
27	GG58270	MMM-GRN	RED-YEL	HG	M	-	-	M	-	-	-
28	GG58271	MMM-BLU	RED-YEL	HG	F	-	-	M	-	-	-
29	GG58272	MMM-YEL	RED-YEL	HG	F	-	-	K	-	K	-
30	GG58273	MMM-WHI	RED-YEL	HG	F	-	-	TAR	-	TAR	-
31	GG58274	MMM-RED	BLK-RED	HG	F	-	-	TAR	-	TAR	-
32	GG58275	MMM-BLK	BLK-RED	HG	F	-	-	TAR	-	TAR	-
33	GG58276	MMM-GRN	BLK-RED	HG	F	-	-	TAR	-	TAR	-
34	GG58277	MMM-BLU	BLK-RED	HG	M	-	-	K	-	K	-
35	GG58278	MMM-YEL	BLK-RED	HG	M	-	-	K	-	-	-
36	GG58279	MMM-WHI	BLK-RED	HG	F	-	-	K	-	K	-
37	GG58280	MMM-RED	GRN-RED	HG	F	-	-	K	-	K	-
38	GG58281	MMM-BLK	GRN-RED	HG	F	-	-	TAR	-	M	-
39	GG58282	MMM-GRN	GRN-RED	HG	M	-	-	K	-	-	-
40	GG58283	MMM-BLU	GRN-RED	HG	M	-	-	A	-	-	-
41	GG58284	MMM-YEL	GRN-RED	HG	M	-	-	A	-	A	-
42	GG58285	MMM-WHI	GRN-RED	HG	M	-	-	A	-	A	-
43	GG58286	MMM-RED	BLU-RED	HG	F	-	-	A	-	NH	-
44	GG58287	MMM-BLK	BLU-RED	HG	M	-	-	M	-	M	-
45	GG58288	MMM-GRN	BLU-RED	HG	M	-	-	M	-	M	-
46	GG58289	MMM-BLU	BLU-RED	HG	M	-	-	M	M	M	-
47	GG58290	MMM-YEL	BLU-RED	HG	M	-	-	M	-	M	-
48	GG58291	MMM-WHI	BLU-RED	HG	F	-	-	M	-	A	-
49	GG58292	MMM-RED	YEL-RED	HG	M	-	-	A	-	A	-
50	GG58293	MMM-BLK	YEL-RED	HG	F	-	-	A	-	A	-
51	GG58294	MMM-GRN	YEL-RED	HG	F	-	-	A	-	A	-
52	GG58295	MMM-BLU	YEL-RED	HG	M	-	-	A	M	A	-
53	GG58296	MMM-YEL	YEL-RED	HG	M	-	-	A	-	-	-
54	GG58297	MMM-WHI	YEL-RED	HG	F	-	-	A	-	SN	-
55	GG58298	MMM-RED	WHI-RED	HG	M	-	-	A	-	A	-
56	GG58299	MMM-BLK	WHI-RED	HG	M	-	-	A	-	A	-
57	GG58300	MMM-GRN	WHI-RED	HG	M	-	-	NH	-	NH	-
58	GG58301	MMM-BLU	WHI-RED	HG	F	-	-	TAR	-	TAR	-
59	GG58302	MMM-YEL	WHI-RED	HG	M	-	-	NH	-	-	-
60	GG58303	MMM-WHI	WHI-RED	HG	F	-	-	NH	-	NH	-
61	GG58304	MMM-RED	BLK-GRN	HG	F	-	-	A	-	-	-
62	GG58305	MMM-BLK	BLK-GRN	HG	F	-	-	A	-	A	-
63	GG58306	MMM-GRN	BLK-GRN	HG	M	-	-	M	-	M	-
64	GG58307	MMM-BLU	BLK-GRN	HG	F	-	-	M	-	LOW	-
65	GG58308	MMM-YEL	BLK-GRN	HG	M	-	-	M	-	M	-
66	GG58309	MMM-WHI	BLK-GRN	HG	F	-	-	M	-	-	-
67	GG58310	MMM-RED	BLK-GRN	HG	F	-	-	M	-	M	-



68	GG58311	MMM-BLK	BLK-BLU	HG	F	-	-	K	-	K	-
69	GG58312	MMM-GRN	BLK-BLU	HG	F	-	-	M	-	C	-
70	GG58313	MMM-BLU	BLK-BLU	HG	M	-	-	M	-	M	-
71	GG58314	MMM-YEL	BLK-BLU	HG	M	-	-	M	-	M	-
72	GG58315	MMM-WHI	BLK-BLU	HG	M	-	-	M	L	M	-
73	GG58316	MMM-RED	BLK-YEL	HG	F	-	-	M	-	M	-
74	GG58317	MMM-BLK	BLK-YEL	HG	F	-	-	M	-	M	-
75	GG58318	MMM-GRN	BLK-YEL	HG	F	-	-	A	-	A	-
76	GG58319	MMM-BLU	BLK-YEL	HG	M	-	-	A	-	-	-
77	GG58320	MMM-YEL	BLK-YEL	HG	F	-	-	TAR	-	TAR	-
78	GG58321	MMM-WHI	BLK-YEL	HG	M	-	-	TAR	-	-	-
79	GG58322	MMM-RED	BLK-WHI	HG	F	-	-	TAR	-	TAR	-
80	GG58323	MMM-BLK	BLK-WHI	HG	M	-	-	RON	-	RON	-
81	GG58324	MMM-GRN	BLK-WHI	HG	F	-	-	A	-	-	-
82	GG58325	MMM-BLU	BLK-WHI	HG	F	-	-	A	-	-	-
83	GG58326	MMM-YEL	BLK-WHI	HG	M	-	-	A	-	-	-
84	GG58327	MMM-WHI	BLK-WHI	HG	M	-	-	A	-	A	-
85	GG58328	MMM-RED	BLK-BLK	HG	F	-	-	M	-	A	-
86	GG58329	MMM-BLK	BLK-BLK	HG	M	-	-	M	-	M	-
87	GG58330	MMM-GRN	BLK-BLK	HG	F	-	-	M	-	M	-
88	GG58331	MMM-BLU	BLK-BLK	HG	M	-	-	M	-	-	-
89	GG58332	MMM-YEL	BLK-BLK	HG	F	-	-	M	-	M	-
90	GG58333	MMM-WHI	BLK-BLK	HG	M	-	-	A	-	A	-
91	GG58334	MMM-RED	GRN-BLK	HG	M	-	-	RON	-	-	-
92	GG58335	MMM-BLK	GRN-BLK	HG	M	-	-	CH	-	A	-
93	GG58336	MMM-GRN	GRN-BLK	HG	F	-	-	CH	-	CH	-
94	GG58337	MMM-BLU	GRN-BLK	HG	M	-	-	CH	-	CH	-
95	GG58338	MMM-YEL	GRN-BLK	HG	F	-	-	M	-	M	-
96	GG58339	MMM-WHI	GRN-BLK	HG	F	-	-	M	M	M	-
97	GG58340	MMM-RED	BLU-BLK	HG	M	-	-	M	-	-	-
98	GG58341	MMM-BLK	BLU-BLK	HG	F	-	-	M	-	M	-
99	GG58342	MMM-GRN	BLU-BLK	HG	F	-	-	M	-	M	-
100	GG58343	MMM-BLU	BLU-BLK	HG	F	-	-	M	-	K	-
101	GG58344	MMM-YEL	BLU-BLK	HG	M	-	-	M	-	M	-
102	GG58345	MMM-WHI	BLU-BLK	HG	M	-	-	M	M	M	-
103	GG58346	MMM-RED	WHI-BLK	HG	M	-	-	M	-	M	-
104	GG58347	MMM-BLK	WHI-BLK	HG	M	-	-	M	-	M	-
105	GG58348	MMM-GRN	WHI-BLK	HG	M	-	-	LB	-	A	-
106	GG58346	MMM-BLU	WHI-BLK	HG	F	-	-	LB	-	LB	-
107	GG58350	MMM-YEL	WHI-BLK	HG	F	-	-	LB	-	LB	-
108	GG58401	MMM-WHI	WHI-BLK	HG	F	-	-	TAR	-	TAR	-
109	GG58402	MMM-RED	GRN-BLU	HG	F	-	-	CH	-	CH	-
110	GG58403	MMM-BLK	YEL-BLK	HG	F	-	-	TAR	-	TAR	-
111	0000000	MMM-RED	YEL-BLK	HG	M	-	-	TAR	-	TAR	-
112	GG58404	MMM-GRN	YEL-BLK	HG	M	-	-	NH	-	NH	-
113	GG58405	MMM-BLU	YEL-BLK	HG	F	-	-	M	-	M	-
114	GG58406	MMM-YEL	YEL-BLK	HG	M	-	-	M	M	M	-
115	GG58407	BLK-BLU	ZZZ-CYS	HG	M	-	-	M	-	M	-
116	GG58408	MMM-WHI	YEL-BLK	HG	M	-	-	M	-	M	-
117	GG01525	MMM-RED	GRN-GRN	HG	M	-	-	M	M	A	-
118	GG58409	MMM-BLK	GRN-GRN	HG	F	-	-	M	-	K	-
119	GG58410	MMM-GRN	GRN-GRN	HG	M	-	-	M	-	M	-
120	GG58411	MMM-BLU	GRN-GRN	HG	M	-	-	M	-	M	-
121	GG58412	MMM-YEL	GRN-GRN	HG	F	-	-	TAR	-	TAR	-
122	GG58413	MMM-WHI	GRN-GRN	HG	F	-	-	TAR	-	ARD	-
123	GG58414	MMM-BLK	GRN-BLU	HG	M	-	-	CH	-	CH	-
124	GG58415	MMM-GRN	GRN-BLU	HG	M	-	-	CH	-	-	-
125	GG58416	MMM-BLU	GRN-BLU	HG	F	-	-	CH	-	-	-
126	GG58417	MMM-YEL	GRN-BLU	HG	M	-	-	LB	-	LB	-
127	GG58418	MMM-WHI	GRN-BLU	HG	F	-	-	LB	-	A	-
128	GG58419	MMM-RED	GRN-YEL	HG	F	-	-	NH	-	NH	-
129	GG58420	MMM-BLK	GRN-YEL	HG	M	-	-	LB	-	A	-
130	GG58421	MMM-GRN	GRN-YEL	HG	F	-	-	LB	-	A	-
131	GG58422	MMM-BLU	GRN-YEL	HG	M	-	-	NH	-	NH	-
132	GG58423	MMM-YEL	GRN-YEL	HG	M	-	-	LB	-	A	-
133	GG58423	MMM-WHI	GRN-YEL	HG	M	-	-	LB	-	LB	-
134	GG58425	MMM-RED	GRN-WHI	HG	F	-	-	LB	-	A	-

135	GG58426	MMM-BLK	GRN-WHI	HG	M	-	-	LB	-	A	-
136	GG58427	MMM-GRN	GRN-WHI	HG	F	-	-	K	-	K	-
137	GG58428	MMM-BLU	GRN-WHI	HG	F	-	-	NH	-	NH	-
138	GG58429	MMM-YEL	GRN-WHI	HG	M	-	-	CH	-	CH	-
139	GG58430	MMM-WHI	GRN-WHI	HG	F	-	-	CH	-	CH	-
140	GG58431	MMM-RED	BLU-GRN	HG	M	-	-	NP	-	-	-
141	GG58432	MMM-BLK	BLU-GRN	HG	M	-	-	R	-	R	-
142	GG58433	MMM-GRN	BLU-GRN	HG	F	-	-	R	-	-	-
143	GG58434	MMM-BLU	BLU-GRN	HG	M	-	-	K	-	K	-
144	GG58435	MMM-YEL	BLU-GRN	HG	F	-	-	R	-	-	-
145	GG58436	MMM-WHI	BLU-GRN	HG	F	-	-	R	-	R	-
146	GG58437	MMM-RED	YEL-GRN	HG	F	-	-	R	-	-	-
147	GG58438	MMM-BLK	YEL-GRN	HG	M	-	-	NH	-	NH	-
148	GG58439	MMM-GRN	YEL-GRN	HG	M	-	-	NH	-	NH	-
149	GG58440	MMM-BLU	YEL-GRN	HG	M	-	-	NH	-	NH	-
150	GG58441	MMM-YEL	YEL-GRN	HG	M	-	-	NH	-	-	-
151	GG58442	MMM-WHI	YEL-GRN	HG	F	-	-	NH	-	NH	-
152	GG58443	MMM-RED	WHI-GRN	HG	F	-	-	NH	-	-	-
153	GG58444	MMM-BLK	WHI-GRN	HG	F	-	-	NH	-	-	-
154	GG58445	MMM-GRN	WHI-GRN	HG	F	-	-	NH	-	NH	-
155	GG58446	MMM-BLU	WHI-GRN	HG	F	-	-	NH	-	NH	-
156	GG58447	MMM-YEL	WHI-GRN	HG	M	-	-	NH	-	NH	-
157	GG58448	MMM-WHI	WHI-GRN	HG	M	-	-	NH	-	NH	-
158	GG58449	MMM-RED	YEL-WHI	HG	F	-	-	NH	-	-	-
159	GG65506	MMM-WHI	YEL-WHI	HG	F	-	-	-	-	M	-
160	GG65507	MMM-GRN	YEL-WHI	HG	M	-	-	-	-	M	-
161	GG65508	MMM-BLK	YEL-WHI	HG	M	-	-	-	-	M	-
162	GG65509	MMM-YEL	YEL-WHI	HG	M	-	-	-	-	M	-
163	GG65510	MMM-RED	WHI-BLU	HG	M	-	-	-	-	M	-
164	GG65511	MMM-BLU	YEL-WHI	HG	M	-	-	-	-	M	-
165	GG65512	MMM-WHI	WHI-BLU	HG	M	-	-	-	-	M	-
166	GG65513	MMM-GRN	WHI-BLU	HG	F	-	-	-	-	M	-
167	GG65514	MMM-BLK	WHI-BLU	HG	F	-	-	-	-	M	-
168	GG65515	MMM-BLU	WHI-BLU	HG	F	-	-	-	-	M	-
169	GG65516	MMM-RED	WHI-YEL	HG	M	-	-	-	-	M	-
170	GG65516	MMM-GRN	WHI-YEL	HG	F	-	-	-	-	M	-
171	GG65518	MMM-BLK	WHI-YEL	HG	M	-	-	-	-	M	-
172	GG10995	MMM-WHI	WHI-YEL	HG	M	-	-	-	-	M	-
173	GG65519	MMM-BLU	WHI-YEL	HG	F	-	-	-	-	M	-
174	GG65520	MMM-YEL	WHI-YEL	HG	M	-	-	-	-	M	-
175	GG65521	MMM-RED	BLU-WHI	HG	F	-	-	-	-	M	-
176	GG65522	MMM-WHI	BLU-WHI	HG	?	-	-	-	-	M	-
177	GG65523	MMM-GRN	BLU-WHI	HG	M	-	-	-	-	M	-
178	GG65519	MMM-BLU	BLU-WHI	HG	M	-	-	-	-	M	-
179	GG65526	MMM-BLK	BLU-WHI	HG	F	-	-	-	-	M	-
180	GG65527	MMM-RED	YEL-YEL	HG	M	-	-	-	-	M	-
181	GG65531	MMM-YEL	BLU-WHI	HG	F	-	-	-	-	ARD	-
182	GG65534	MMM-RED	BLU-BLU	HG	M	-	-	-	-	ARD	-
183	GG65539	MMM-WHI	BLU-BLU	HG	M	-	-	-	-	NP	-
184	GG07915	MMM-BLK	BLU-BLU	HG	M	-	-	-	-	NP	-
185	GG65543	MMM-GRN	BLU-BLU	HG	F	-	-	-	-	NP	-
186	GG65546	MMM-BLU	BLU-BLU	HG	F	-	-	-	-	NP	-
187	GG65563	MMM-YEL	BLU-BLU	HG	M	-	-	-	-	NP	-
188	GG65567	MMM-RED	BLU-YEL	HG	F	-	-	-	-	NP	-
189	GG65576	MMM-WHI	BLU-YEL	HG	M	-	-	-	-	R	-
190	GG65577	MMM-GRN	BLU-YEL	HG	M	-	-	-	-	R	-
191	GG65578	MMM-BLK	BLU-YEL	HG	M	-	-	-	-	R	-
192	GG65581	MMM-BLU	BLU-YEL	HG	M	-	-	-	-	R	-
193	GG65583	MMM-YEL	BLU-YEL	HG	F	-	-	-	-	R	-
194	GG65591	MMM-RED	YEL-BLU	HG	F	-	-	-	-	R	-
195	GG65593	MMM-WHI	YEL-BLU	HG	F	-	-	-	-	R	-

Table 7. Details of breeding lesser black-backed gulls colour-  
ringed and resighted on the Isle of May in 1989 and 1990

Colour rings: All below joint, M = Green engraved with a white M

BTO ring above joint on left leg

Sex: by bill and head length

Locality code (under year)

M	- Maidens	TAR	= Tarbet
A	- Ardcarron	CH	= Colms Hole
K	- Kettle	R/Ron	= Rona
LB	- Ladies Bed	NH	= North Horn
NP	- North Plateau	DED	= Found dead later in the season

RING No.	L.LEG	R.LEG	SEX	1989	1990
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1	GG58351	MMM-RED	BLU-RED	LBBG	F	-	-	NH	-	NH	-
2	GG58352	MMM-BLK	BLU-RED	LBBG	M	-	-	R	-	R	-
3	GG58353	MMM-GRN	BLU-RED	LBBG	M	-	-	LB	-	A	-
4	GG58354	MMM-BLU	BLU-RED	LBBG	M	-	-	LB	-	A	-
5	GG58355	MMM-WHI	BLU-RED	LBBG	F	-	-	R	-	-	-
6	GG58356	MMM-RED	BLU-GRN	LBBG	M	-	-	NH	-	NH	-
7	GG58357	MMM-RED	BLU-BLK	LBBG	M	-	-	LB	-	A	-
8	GG58358	MMM-BLK	BLU-BLK	LBBG	M	-	-	NH	-	RON	-
9	GG58359	MMM-GRN	BLU-BLK	LBBG	F	-	-	NH	-	NH	-
10	GG58360	MMM-BLK	BLU-GRN	LBBG	F	-	-	LB	-	RON	-
11	GG58361	MMM-BLU	BLU-BLK	LBBG	F	-	-	NH	-	NH	-
12	GG58362	MMM-WHI	BLU-BLK	LBBG	F	-	-	K	-	K	-
13	GG58363	MMM-GRN	BLU-GRN	LBBG	F	-	-	LB	-	A	-
14	GG58364	MMM-BLU	BLU-GRN	LBBG	F	-	-	LB	-	LB	-
15	GG58365	MMM-WHI	BLU-GRN	LBBG	F	-	-	NP	-	NP	-
16	GG58666	MMM-RED	BLU-BLU	LBBG	M	-	-	NP	-	NP	-
17	GG58367	MMM-BLK	BLU-BLU	LBBG	M	-	-	NP	-	NP	-
18	GG58368	MMM-GRN	BLU-BLU	LBBG	M	-	-	K	-	NH	-
19	GG58369	MMM-BLU	BLU-BLU	LBBG	F	-	-	NP	-	A	-
20	GG58370	MMM-WHI	BLU-BLU	LBBG	M	-	-	NK	-	NP	-
21	GG58371	MMM-RED	BLU-WHI	LBBG	F	-	-	NP	-	NP	-
22	GG58372	MMM-BLK	BLU-WHI	LBBG	M	-	-	NP	-	-	-
23	GG58373	MMM-GRN	BLU-WHI	LBBG	F	-	-	NP	-	NP	-
24	GG58374	MMM-BLU	BLU-WHI	LBBG	M	-	-	NP	-	NP	-
25	GG58375	MMM-WHI	BLU-WHI	LBBG	M	-	-	LB	-	A	-
26	GG58376	MMM-RED	RED-BLU	LBBG	F	-	-	LB	-	LB	-
27	GG58377	MMM-BLK	RED-BLU	LBBG	M	-	-	LB	-	LB	-
28	GG58378	MMM-GRN	RED-BLU	LBBG	M	-	-	LB	-	A	-
29	GG58379	MMM-BLU	RED-BLU	LBBG	F	-	-	NP	-	-	-
30	GG58380	MMM-WHI	RED-BLU	LBBG	F	-	-	NP	D	-	-
31	GG58381	MMM-RED	BLK-BLU	LBBG	M	-	-	NP	-	-	-
32	GG58382	MMM-BLK	BLK-BLU	LBBG	F	-	-	K	-	-	-
33	GG58383	MMM-GRN	BLK-BLU	LBBG	F	-	-	K	-	K	-
34	GG58384	MMM-BLU	BLK-BLU	LBBG	M	-	-	K	-	K	-
35	GG58385	MMM-WHI	BLK-BLU	LBBG	M	-	-	K	-	K	-
36	GG58386	MMM-RED	GRN-BLU	LBBG	M	-	-	LB	-	-	-
37	GG58387	MMM-BLK	GRN-BLU	LBBG	M	-	-	NP	-	NP	-
38	GG58388	MMM-GRN	GRN-BLU	LBBG	F	-	-	NP	-	A	-
39	GG58389	MMM-BLU	GRN-BLU	LBBG	F	-	-	K	-	A	-
40	GG58390	MMM-RED	WHI-BLU	LBBG	F	-	-	LB	-	-	-
41	GG58391	MMM-WHI	GRN-BLU	LBBG	F	-	-	K	-	K	-
42	GG58392	MMM-BLK	WHI-BLU	LBBG	M	-	-	K	-	K	-
43	GG58393	MMM-GRN	WHI-BLU	LBBG	F	-	-	NP	-	-	-
44	GG58394	MMM-BLU	WHI-BLU	LBBG	F	-	-	NP	-	NP	-
45	GG58395	MMM-WHI	WHI-BLU	LBBG	M	-	-	NP	-	-	-
46	GG58396	MMM-RED	GRN-GRN	LBBG	F	-	-	NP	-	NP	-
47	GG58397	MMM-BLK	GRN-GRN	LBBG	F	-	-	NP	-	NP	-
48	GG58398	MMM-GRN	GRN-GRN	LBBG	F	-	-	LB	-	LB	-
49	GG58399	MMM-BLU	GRN-GRN	LBBG	F	-	-	LB	-	LB	-
50	GG58400	MMM-WHI	GRN-GRN	LBBG	M	-	-	K	-	K	-
51	GG58451	MMM-RED	GRN-RED	LBBG	M	-	-	R	-	R	-
52	GG58452	MMM-BLK	GRN-RED	LBBG	F	-	-	R	-	R	-
53	GG58453	MMM-GRN	GRN-RED	LBBG	M	-	-	R	-	TAR	-
54	GG58454	MMM-BLU	GRN-RED	LBBG	F	-	-	NP	-	NP	-
55	GG58455	MMM-WHI	GRN-RED	LBBG	F	-	-	NP	-	NP	-
56	GG58456	MMM-RED	GRN-BLK	LBBG	M	-	-	NP	-	-	-
57	GG58457	MMM-BLK	GRN-BLK	LBBG	M	-	-	K	-	K	-
58	GG58458	MMM-GRN	GRN-BLK	LBBG	F	-	-	K	-	K	-
59	GG58459	MMM-BLU	GRN-BLK	LBBG	F	-	-	K	-	-	-
60	GG58460	MMM-WHI	GRN-BLK	LBBG	F	-	-	K	-	K	-
61	GG58461	MMM-RED	GRN-WHI	LBBG	F	-	-	R	-	R	-
62	GG58462	MMM-BLK	GRN-WHI	LBBG	F	-	-	R	-	R	-
63	GG58463	MMM-GRN	GRN-WHI	LBBG	F	-	-	R	-	R	-
64	GG58464	MMM-BLU	GRN-WHI	LBBG	M	-	-	NP	-	NP	-
65	GG58465	MMM-WHI	GRN-WHI	LBBG	F	-	-	NP	-	NP	-
66	GG58466	MMM-RED	RED-GRN	LBBG	M	-	-	NP	-	NP	-
67	GG58467	MMM-BLK	RED-GRN	LBBG	F	-	-	R	-	R	-

68	GG58468	MMM-GRN	RED-GRN	LBBG	F	-	-	R	-	R	-
69	GG58469	MMM-BLU	RED-GRN	LBBG	F	-	-	R	-	-	-
70	GG58470	MMM-WHI	RED-GRN	LBBG	F	-	-	K	-	-	-
71	GG58471	MMM-RED	BLK-GRN	LBBG	F	-	-	K	-	K	-
72	GG58472	MMM-BLK	BLK-GRN	LBBG	M	-	-	K	-	K	-
73	GG58473	MMM-GRN	BLK-GRN	LBBG	M	-	-	NP	-	RON	-
74	GG58474	MMM-BLU	BLK-GRN	LBBG	M	-	-	R	-	R	-
75	GG58475	MMM-WHI	BLK-GRN	LBBG	M	-	-	NP	-	NP	-
76	GG58476	MMM-RED	WHI-GRN	LBBG	M	-	-	R	-	NP	-
77	GG58477	MMM-BLK	WHI-GRN	LBBG	M	-	-	R	-	R	-
78	GG58470	MMM-GRN	WHI-GRN	LBBG	M	-	-	NP	-	NP	-
79	GG58479	MMM-BLU	WHI-GRN	LBBG	M	-	-	K	-	AWY	-
80	GG58480	MMM-WHI	WHI-GRN	LBBG	F	-	-	NP	-	NP	-
81	GG58481	MMM-RED	BLK-BLK	LBBG	F	-	-	R	-	A	-
82	GG58482	MMM-BLK	BLK-BLK	LBBG	M	-	-	R	-	R	-
83	GG58482	MMM-BLK	BLK-BLK	LBBG	M	-	-	NP	-	-	-
84	GG58484	MMM-BLU	BLK-BLK	LBBG	M	-	-	NH	-	R	-
85	GG58485	MMM-WHI	BLK-BLK	LBBG	F	-	-	NH	-	R	-
86	GG58586	MMM-RED	BLK-RED	LBBG	M	-	-	NH	-	NH	-
87	GG58487	MMM-BLK	BLK-RED	LBBG	M	-	-	NH	-	-	-
88	GG58488	MMM-GRN	BLK-RED	LBBG	F	-	-	K	-	K	-
89	GG58489	MMM-BLU	BLK-RED	LBBG	M	-	-	K	-	-	-
90	GG58490	MMM-WHI	BLK-RED	LBBG	F	-	-	NH	-	NH	-
91	GG58491	RED-MMM	BLK-GRN	LBBG	M	-	-	NH	-	NH	-
92	GG58492	BLK-MMM	BLK-GRN	LBBG	M	-	-	NH	-	NH	-
93	GG58493	GRN-MMM	BLK-GRN	LBBG	F	-	-	NH	-	NH	-
94	GG58494	BLU-MMM	BLK-GRN	LBBG	M	-	-	NH	-	-	-
95	GG58495	WHI-MMM	BLK-GRN	LBBG	M	-	-	NH	-	NH	-
96	GG58496	RED-MMM	BLK-BLU	LBBG	M	-	-	NH	-	NH	-
97	GG58497	BLK-MMM	BLK-BLU	LBBG	M	-	-	NH	-	NH	-
98	GG58498	GRN-MMM	BLK-BLU	LBBG	M	-	-	NH	-	NH	-
99	GG58499	BLU-MMM	BLK-BLU	LBBG	M	-	-	NH	-	NH	-
100	GG58500	WHI-MMM	BLK-BLU	LBBG	M	-	-	K	-	K	-
101	GG58551	MMM-RED	BLK-WHI	LBBG	M	-	-	K	-	-	-
102	GG58552	MMM-BLK	BLK-WHI	LBBG	M	-	-	NH	D	-	-
103	GG58553	MMM-GRN	BLK-WHI	LBBG	F	-	-	NH	-	NH	-
104	GG58554	MMM-BLU	BLK-WHI	LBBG	M	-	-	NH	-	-	-
105	GG65528	MMM-RED	RED-RED	LBBG	M	-	-	-	-	LB	-
106	GG65529	MMM-BLK	RED-RED	LBBG	M	-	-	-	-	LB	-
107	GG07221	MMM-GRN	RED-RED	LBBG	M	-	-	-	-	LB	-
108	GG65530	MMM-BLU	RED-RED	LBBG	M	-	-	-	-	LB	-
110	GG65534	MMM-WHI	RED-RED	LBBG	F	-	-	-	-	LB	-
111	GG65535	MMM-RED	RED-BLK	LBBG	F	-	-	-	-	LB	-
112	GG65536	MMM-BLK	RED-BLK	LBBG	F	-	-	-	-	NP	-
113	GG65537	MMM-GRN	RED-BLK	LBBG	F	-	-	-	-	NP	-
114	GG65538	MMM-BLU	RED-BLK	LBBG	F	-	-	-	-	NP	-
115	GG65540	MMM-WHI	RED-BLK	LBBG	M	-	-	-	-	NP	-
116	GG65541	MMM-YEL	RED-BLK	LBBG	F	-	-	-	-	NP	-
117	GG65542	MMM-RED	RED-WHI	LBBG	M	-	-	-	-	NP	-
118	GG65544	MMM-GRN	RED-WHI	LBBG	F	-	-	-	-	NP	-
119	GG65545	MMM-BLK	RED-WHI	LBBG	F	-	-	-	-	NP	-
120	GG65547	MMM-BLU	RED-WHI	LBBG	F	-	-	-	-	K	-
121	GG65548	MMM-WHI	RED-WHI	LBBG	M	-	-	-	-	K	-
122	GG65549	MMM-YEL	RED-WHI	LBBG	M	-	-	-	-	K	-
123	GG65550	MMM-RED	RED-YEL	LBBG	?	-	-	-	-	K	-
124	GG65551	MMM-BLK	RED-YEL	LBBG	F	-	-	-	-	K	-
125	GG65552	MMM-GRN	RED-YEL	LBBG	F	-	-	-	-	K	-
126	GG65553	MMM-BLU	RED-YEL	LBBG	F	-	-	-	-	K	-
127	GG65554	MMM-WHI	RED-YEL	LBBG	M	-	-	-	-	K	-
128	GG65555	MMM-YEL	RED-YEL	LBBG	M	-	-	-	-	NP	-
129	GG65556	MMM-RED	WHI-RED	LBBG	F	-	-	-	-	NP	-
130	GG65557	MMM-BLK	WHI-RED	LBBG	M	-	-	-	-	NP	-
131	GG65558	MMM-GRN	WHI-RED	LBBG	M	-	-	-	-	NP	-
132	GG65559	MMM-BLU	WHI-RED	LBBG	M	-	-	-	-	K	-
133	GG65560	MMM-WHI	WHI-RED	LBBG	M	-	-	-	-	K	-
134	GG65561	MMM-BLK	WHI-BLK	LBBG	F	-	-	-	-	K	-
135	GG65562	MMM-GRN	WHI-BLK	LBBG	M	-	-	-	-	NP	-

136	GG65564	MMM-BLU	WHI-BLK	LBBG	F	-	-	-	-	NP	-
137	GG65565	MMM-WHI	WHI-BLK	LBBG	M	-	-	-	-	NP	-
138	GG65566	MMM-YEL	WHI-BLK	LBBG	F	-	-	-	-	R	-
139	GG65568	MMM-RED	WHI-WHI	LBBG	F	-	-	-	-	R	-
140	GG65569	MMM-BLK	WHI-WHI	LBBG	M	-	-	-	-	NP	-
141	GG65570	MMM-GRN	WHI-WHI	LBBG	M	-	-	-	-	R	-
142	GG65571	MMM-BLU	WHI-WHI	LBBG	F	-	-	-	-	R	-
143	GG65572	MMM-WHI	WHI-WHI	LBBG	F	-	-	-	-	R	-
143	GG65573	MMM-YEL	WHI-WHI	LBBG	F	-	-	-	-	R	-
145	GG65574	MMM-RED	WHI-YEL	LBBG	F	-	-	-	-	R	-
146	GG65575	MMM-BLK	WHI-YEL	LBBG	F	-	-	-	-	R	-
147	GG65579	MMM-GRN	WHI-YEL	LBBG	M	-	-	-	-	R	-
148	GG65580	MMM-BLU	WHI-YEL	LBBG	F	-	-	-	-	R	-
149	GG65582	MMM-WHI	WHI-YEL	LBBG	M	-	-	-	-	R	-
150	GG65583	MMM-YEL	WHI-YEL	LBBG	F	-	-	-	-	R	-
151	GG65585	MMM-RED	BLK-YEL	LBBG	F	-	-	-	-	R	-
152	GG65586	MMM-BLK	BLK-YEL	LBBG	M	-	-	-	-	R	-
153	GG65587	MMM-GRN	BLK-YEL	LBBG	M	-	-	-	-	R	-
154	GG65588	MMM-BLU	BLK-YEL	LBBG	M	-	-	-	-	R	-
155	GG65589	MMM-WHI	BLK-YEL	LBBG	M	-	-	-	-	R	-
156	GG65590	MMM-YEL	BLK-YEL	LBBG	F	-	-	-	-	R	-
157	GG65592	MMM-RED	GRN-YEL	LBBG	M	-	-	-	-	R	-
158	GG65594	MMM-BLK	GRN-YEL	LBBG	M	-	-	-	-	R	-
159	GG65595	MMM-GRN	GRN-YEL	LBBG	M	-	-	-	-	R	-
160	GG65596	MMM-BLU	GRN-YEL	LBBG	M	-	-	-	-	R	-
161	GG65597	MMM-WHI	GRN-YEL	LBBG	F	-	-	-	-	R	-
162	GG65598	MMM-YEL	GRN-YEL	LBBG	F	-	-	-	-	R	-
163	GG65599	MMM-RED	BLU-YEL	LBBG	M	-	-	-	-	R	-
109	GG65532	MMM-YEL	RED-RED	LBBG	M	-	-	-	-	LB	-

Table 8. The numbers of herring and lesser black-backed gulls ringed on the Isle of May in 1990.

	Herring gull		Lesser black-backed gull	
	Ringed	Calculated nest total	Ringed	Calculated nest total
North Ness	72	151	28	68
Rona	248	231	29	159
Tarbet/Low Light	143	211	4	27
Low Light Rocks	94	61	4	0
Lady's Bed/Ardcarran/				
South Ness	220	192	27	75
Burrian	108	109	6	48
Al tarstones	20	12	0	0
Colm's Hole	41	50	3	0
Colm's Hole-Kirkhaven	92	112	24	91
South Horn	0	3	3	8
North Plateau	51	68	55	141
Horse Hole	5	19	0	0
South Plateau	6	18	1	1
Lochside/West Braes	3	9	1	0
Maidens	162	261	0	0
Total	1361	1551	235	618

Note: The totals included gulls ringed without details of location and nests in areas where no chicks were ringed (e.g. The Cleaver).

Table 9. Proportion of ringed juvenile gulls at the end of the breeding season in 1990.

Area	No. checked	% with rings
Maidens	66	91
Lady's Bed/South Ness/Ardcarran/ Pillow	163	59
Kirkhaven/Colm's Hole	84	77
Burrian	20	50
Tarbet/Rona/North Ness	127	76
North Plateau	25	72
Total	485	71

Note: No attempt was made to separate the two species



Table 10. Whole island counts of shags, kittiwakes, guillemots, razorbills and fulmars on the Isle of May, 1990.

Area	Shag (nests)	Kittiwake (nests)	Guillemot (birds) ('pairs)	Razorbill (birds) ('pairs)	Fulmar (sites)
A Rona (W)	227	388	463	60	9
B Al tarstones-Peregrine's Rest	88	1562	2579	353	26
C Greengates	101	1249	2922	561	34
D South Plateau	8	1638	6074	629	43
E Cornerstone-Pilgrim's Haven	27	1291	3676	557	24
F Pilgrim's Haven-Rubbish Tip	125	668	380	68	8
G The Maidens	132	130	300	10	3
H Lady's Bed	169	173	154	51	13
I South Ness - Colm's Hole	167	47	0	0	7
J Colm's Hole - Low Light	170	326	70	40	8
K Tarbet	171	383	160	39	9
L Rona (N and E)	1	0	0	0	0
Lochside (S)	0	150	0	0	14
Lochside (N)	0	124	0	0	0
TOTAL 1990	1386	8129	16778	2368	198
TOTAL 1989	1703	7564	18328	2613	212
% change 1989-90	-23	+7	-8	-9	-7

- Notes: 1. Kittiwakes and fulmar count 29 May - 3 June except back of Maidens in early July; Shag 7-10 June.  
2. Guillemot/razorbill count 1-3 June, except back of Maidens in mid June. Counts of birds converted to 'pairs' using a correction factor obtained from the Cornerstone study area.  
3. Counts made by J. Calladine, D. Halley, C. Wernham, L. Tardier, J. Graves and M.P. Harris.  
4. Figures provisional and not to be used before consultation with M.P. Harris

Table 11. Single counts of occupied kittiwake nests in the non-random plots on 5 June 1990.

Plot	Nests	% change 1989-90
1	30	-3
2L	77	+3
2R	103	+77
3	57	-16
4	186	+8
7+7b	114	-13
8,9,9extra	66	-21
10	213	+8
Total	846	+2.7

Table 12. Counts of guillemots in monitoring plots on the Isle of May, June 1990.

Date	Chatter-	A	B	D	E	F	G	H	I	J	Rona	Corner-	Old	New	Total
3	337	210	199	308	160	394	212	376	176	71	179	153	239	303	3078
4	360	195	187	294	144	361	186	379	150	64	179	143	233	319	2961
6	370	223	211	291	162	370	183	367	139	71	128	158	241	309	2982
8	361	227	257	296	179	388	174	360	145	94	192	166	258	335	3174
9	314	220	225	301	181	376	177	344	122	83	121	158	254	319	2941
11	344	219	203	292	130	393	181	390	138	70	130	152	234	279	2921
12	406	222	225	308	130	369	162	368	127	93	109	149	253	304	2972
16	426	216	203	281	169	411	175	334	158	89	166	160	237	296	3084
17	367	216	209	289	116	417	193	379	159	92	140	172	242	296	3046
19	394	185	194	279	115	372	174	344	139	78	93	154	235	293	2814
Mean	367.9	213.3	211.3	293.9	148.6	385.1	181.7	364.1	145.3	80.6	143.7	156.5	242.6	305.3	2997
S.D.	33.4	13.3	20.1	9.9	24.9	18.7	13.5	18.3	16.1	11.3	33.4	8.3	9.11	16.0	101.3

Notes: The total used C new

Table 13. Summary of changes in the number of individual guillemots in plots on the Isle of May 1989-90

Plot	1990 mean	SE	% Change from 1989	Significance
Chatterstones	367.9	10.6	-8	n.s.
A	213.3	4.2	-8	$P < 0.001$
B	211.3	6.4	-21	$P < 0.001$
D	293.9	3.1	-6	$P < 0.001$
E	148.6	7.9	-15	$P < 0.01$
F	385.1	5.9	-5	n.s.
G	181.7	4.3	-3	n.s.
H	364.1	5.8	+2	n.s.
I	145.3	5.1	-10	$P < 0.01$
J	80.6	3.6	-11	$P < 0.01$
Rona	143.7	10.6	-22	$P < 0.001$
Cornerstone	156.5	2.6	-8	$P < 0.001$
C (New)	305.3	5.1	-13	$P < 0.01$
Total	2997.3	32.0	-9	$P < 0.001$

Note: The means were compared using 't-tests'

**Table 14.** Counts of razorbills in 9 plots on the Isle of May, June 1990.

June	Greenface	Peregrines	A	B	Greengates	Bishops	Horse	Cornerstone	C	C	Total
		Nest				Cove	Hole		(Old)	(New)	
3	105	43	38	26	149	80	2	41	20	50	534
4	87	44	39	35	138	49	1	43	18	35	471
6	73	39	31	35	139	64	4	36	24	51	472
8	77	39	49	39	136	51	5	37	24	48	481
9	83	34	45	42	123	64	3	38	22	53	490
11	105	43	45	42	180	72	2	48	31	62	599
12	99	35	44	36	165	52	1	47	18	48	527
16	81	35	45	45	119	69	1	49	27	54	498
17	86	39	45	48	147	68	3	51	27	59	546
19	103	43	35	37	131	58	1	48	22	50	506
Mean	89.9	39.4	41.6	38.5	143.3	62.7	2.3	43.8	23.3	51.0	512.4
SD	12.1	3.8	5.6	6.2	18.1	10.1	1.4	5.5	4.2	7.3	40.0

Notes: Counts by M P Harris except for Peregrines Nest and Bishops Cove (J Calladine)

Total uses C (New)

Table 15. Summary of changes in the number of individual razorbills in 9 plots on the Isle of May, 1989-90.

	1990 mean	SE	% change from 1989	Significance
Greenface	89.9	3.8	+4	n.s.
Peregrine's Nest	39.4	1.2	-36	$P < 0.001$
A	41.6	1.8	+12	n.s.
B	38.5	2.0	+1	n.s.
Greengates	143.3	5.7	+15	$P < 0.02$
Bishop's Cove	62.7	3.2	-22	$P < 0.001$
Horse Hole	2.3	0.5	-	-
Cornerstone	43.8	1.7	+3	n.s.
C (New)	51.0	2.3	-13	$P < 0.02$
Total	512.4	12.6	-7.6	$P < 0.05$

Table 16. Weather conditions for seabird monitoring counts in June 1990

Date	Wind		Sea state	Cloud Cover	Visibility
	Direction	Beaufort scale			
June					
3	W	4	moderate	8/8	excellent
4	W	4	slight	6/8	excellent
6	S	4	slight	6/8	excellent
8	N	2	calm	6/8	excellent
9	W	1	calm	2/8-6/8	excellent
11	N	3	moderate	2/8	moderate
12	N	3	moderate	8/8	excellent
16	W	2	calm	1/8	excellent
17	W	2	calm	2/8	moderate
19	W	3	slight	4/8	excellent

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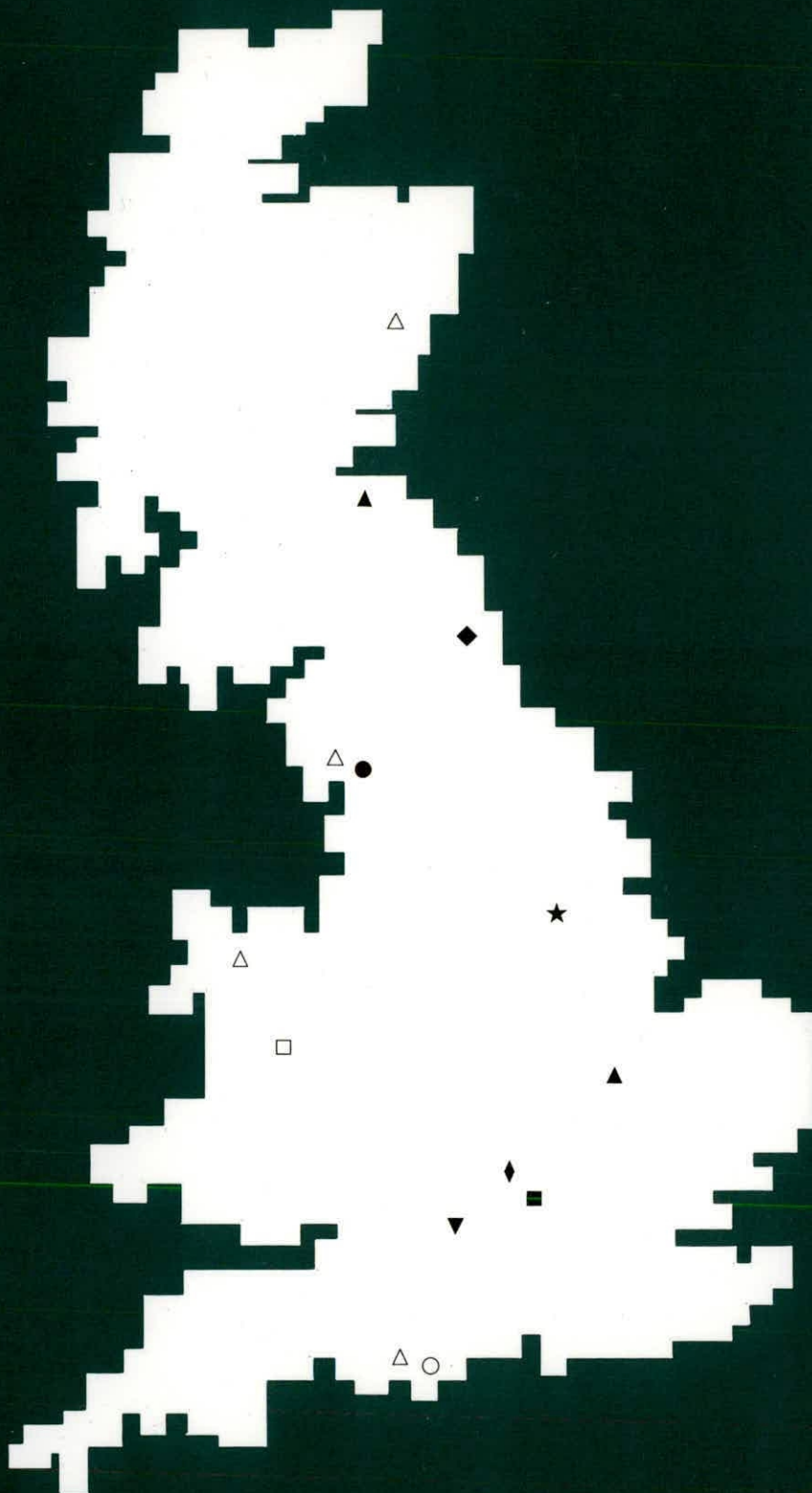
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