INSTITUTE OF TERRESTRIAL ECOLOGY
(NATURAL ENVIRONMENT RESEARCH COUNCIL)
SNH (Southeast Region)/NERC CONTRACT 6F24/209 (previously 21/FSA/201/DAO1)
ITE PROJECT T08051h5

POPULATION TRENDS OF GULLS AND OTHER SEABIRDS ON THE ISLE OF MAY 1991-1993

M P HARRIS and J CALLADINE

Report to Scottish Natural Heritage

Hill of Brathens
Banchory Research Station
Banchory
Kincardineshire
AB31 4BY

August 1993

Recommendations to SNH for future funding

Background

There is a long history of research on the seabirds of the Isle of May NNR. Changes in numbers and breeding parameters of a range of species are better documented than at almost any other colony in Europe. The increasing exploitation of the North Sea (e.g. the new fishery for sandeels in the approaches to the Firth of Forth, oil developments) and increasing numbers of human visitors to the Isle of May makes it imperative that such studies continue.

Over the past 3 years Isle of May seabird studies by ITE have been funded by SNH (gulls, numbers of cliff-nesting seabirds, eider and terns), JNCC (monitoring of various biological parameters), BP Exploration (most research on puffins), DoE (general) and NERC (science vote for all "pure" research). The DoE contribution ceased in March 1993 and the contract with BP terminates at the end of the current financial year. ITE has just obtained a new contract from JNCC to fund the biological monitoring scheme until 1997.

Considerable care has been exercised to prevent double-funding of research (while ensuring that all organizations obtain copies of all data collected under all contracts). NCCS (as was) and now SNH has responsibility for funding:

> (a) All aspects of gull study, especially population counts, assessing annual breeding productivity and adult survival,
> (b) Monitoring the population, productivity and adult survival of oystercatchers,
> (c) Monitoring the breeding populations of cliff-nesting seabirds, and eider.

Recent events in Shetland (e.g. the sandeel shortage and the Braer Incident) have highlighted the vulnerability of marine birds to disasters - either natural or man-induced - and the importance of population monitoring for assessing the immediate and longterm effects of such episodes. Seabirds in the Firth of Forth are even more at risk to such disasters, given the large amount of shipping, industry and fisheries in the area. Therefore information on the seabirds breeding on the strategically placed Isle of May is needed for both monitoring the well-being of Scottish seabirds and the effective management of the NNR.

Recommendations

1. Gulls

There have been serious public relations problems concerning the desirable numbers and culling of herring and lesser black-backed gulls on the Isle of May. The sudden and marked (50%) increase in the number of nests of both species between 1992 and 1993 results in populations in excess of those recommended in the current Management Plan. A decision on whether or not measures to reduce the numbers of breeding gulls and/or their productivity

These management decisions require accurate and comprehensive demographic data for the two gull species (both on the Isle of May and other colonies in the Firth of Forth) for incorporation in population models to predict future population trends under different levels of intervention.

The following work should be undertaken as a matter of priority:

a) Annual census of the number of gull nests on the Isle of May.

b) Census all the other gull colonies in the Firth of Forth in 1994 to obtain an up-to-date estimate of the Firth of Forth population. This could, perhaps, form part of the Firth of Forth Project.

c) Estimate breeding success on Isle of May and as many other Forth islands as possible.

d) Search other colonies for Isle of May ringed gulls to provide estimates of the levels of non-breeding and emigration of birds with at least one year's breeding experience.

e) Incorporate these data into population models. Use these models to predict future population trends under different management regimes e.g. culling of adults, control of breeding output, etc.

2. Cliff-nesting seabirds

Accurate knowledge of population structure and dynamics is essential in assessing the interactions of seabirds and their prey. This knowledge can only come from the 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. SNH should continue to play its part.

At present seabirds have a very high public profile. Although the population studies on the Isle of May have been published widely in scientific journals, many of the results are not readily available to the general public. The number of visitors to the Isle of May NNR has been increasing rapidly in recent years and the majority of visitors are extremely interested in the wildlife. There would therefore seem to be a market for a "glossy" publication on the Isle of May seabirds to publicize SNH-funded studies, jointly produced by SNH and ITE for sale to visitors.

3. Other species

Oystercatchers now have a low breeding output, possibly due to the effects of increasing human recreational use of the island. Therefore the available data on the oystercatcher should be reviewed to determine whether or not the population is self-sustaining or is reliant on immigration.

Annual counts of eider nests should continue.

CONTENTS

SUMMARY

1 INTRODUCTION

2 SPECIES ACCOUNTS

2.1 Herring and lesser black-backed gulls

2.1.1 Gull nest count
2.1.2 Colour-ringing
2.1.3 Gull ringing and breeding output

2.2 Kittiwake
2.3 Guillemot
2.4 Razorbill
2.5 Shag
2.6 Eider
2.7 Oystercatcher
2.8 Great black-backed gull
2.9 Fulmar

4 PUBLICATIONS ON ISLE OF MAY SEABIRDS

5 TABLES

1. Details of the 1993 gull count
2. Counting efficiency
3. Counts of individual herring and lesser black-backed gulls
4. Calculated gull nest totals in 1993
5. Changes in numbers of gull nests 1992-93
6. Details of herring gulls colour-ringed
7. Details of lesser black-backed gulls colour-ringed
8. Gull ringing totals
9. Proportions of young gulls ringed in 1993
10. Whole island counts of shag, kittiwake, guillemot and razorbill
11. Kittiwake monitoring counts
12. Monitoring counts of guillemots
13. Changes in numbers of guillemots in monitoring plots
14. Monitoring counts of razorbills
15. Changes in numbers of razorbills
16. Weather conditions during the monitoring counts
17. Oystercatcher breeding 1993
18. Oystercatcher adult colour-rings
19. Population estimates of Isle of May seabirds, 1980-93.

6. MAP 1 Oystercatcher nests in 1993

SUMMARY

1. The 1993 estimates of the population of both herring and lesser black-backed gull nests (2059 and 1259, respectively) were 41% and 68%, respectively, above the 1992 estimates.

2. Adult survival of the herring gull (at *c.*80%) is now lower than in the 1960s and 1970s. The survival of adult lesser black-backed gulls appear to be slightly higher (*c.* 85%).

3. In 1993 breeding success of both the herring gull (1.04 young fledged per pair) and the lesser black-backed gull (0.81) was lower than average. In 1993, about 2150 young gulls were reared on the island.

4. The Isle of May appears to be very attractive for gulls looking for a colony to recruit to. The populations may well increase greatly.

5. Although slightly more kittiwakes bred in 1993 than had in 1992, the whole island count (7009 nests) was still lower than counts in 1988-90. The 1993 season appears to be the least productive on record. This, coming after a series of three poor seasons, causes concern for the future.

6. There was no significant change in the numbers of guillemot (17919 birds) in 1993 but the razorbill increased significantly and the count of 3022 birds was the highest ever. The population of the former appears to be stable, that of the latter is increasing.

7. The shag had a disastrous breeding season in 1993, with breeding being five weeks later than that predicted by weather and food availability. Many pairs failed to breed so the count of 715 nests does not indicate a reduction in the total population.

8. The count of eider nests in 1993 was 651. Numbers have increased at 9% per annum since 1980.

9. Thirty-five pairs of oystercatchers bred but reared a total of only six young. Adult survival was 91.5% which is close to the average for the previous ten years.

10. The fulmar population continues to increase.

1 INTRODUCTION

1.1 Following a request for 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 rates and breeding output and to continue making annual assessments of the numbers of breeding gulls on the Isle of May. Such long-term data are essential for the sensible management of the National Nature Reserve.

In 1989 NCC gave ITE a contract to (1) make annual counts of the gull nests, (2) estimate the annual survival of adult herring and lesser black-backed gulls, (3) ensure that adequate samples of young of both species were ringed, and (4) estimate breeding output.

1.2 Cliff-nesting seabirds (guillemot *Uria aalge*, razorbill *Alca torda*, Shag *Phalacrocorax aristotelis*, and kittiwake *Rissa tridactyla*) form an important part of the nature conservation interest of the island. Changes in the numbers of seabirds are good indicators of the health of the marine environment and the populations of the Isle of May are well documented. Continuing annual estimates of the total breeding populations together with sample monitoring counts are required.

Although there are few critical data, the numbers of eider *Somateria mollisima* and oystercatcher *Haematopus ostralegus* are thought to have declined when gull numbers were at their highest. Now that gull numbers have been reduced, eider and oystercatcher appear to have increased. The Isle of May is receiving increasing numbers of human visitors which might have an adverse influence on these birds. Annual counts of the breeding populations are required for monitoring purposes. Measurement of breeding success is required to relate to population levels.

In 1991 a new contract for an expanded programme of work was agreed which required the following.

1.2.1 Herring and lesser black-backed gulls

a) Organize whole island count of nesting gulls to establish population trends.
b) Report on annual changes in numbers.
c) Determine breeding success.
d) Ensure that adequate numbers of young gulls are ringed.

e) Report annually on the state of the populations.
f) Determine adult survival rates of both species.

1.2.2 Cliff nesting seabirds

a) Make total island annual counts.
b) Make annual monitoring counts on fixed sample plots.

1.2.3 Eider - Make whole island nest count annually.

1.2.4 Oystercatcher

a) Determine annual breeding population.
b) Determine breeding output.
c) Determine annual adult survival.

1.2.5 Set up and up-date annually a data base of counts of all species.

1.2.6 Collate counts and assess changes in numbers.

1.2.7 Publish the results of work funded by NCCS (now SNH).

1.2.8 Publicise the commitment of NCCS (now SNH) to seabird conservation and long-term population studies.

1.3 The puffin is excluded as this was the subject of a separate study funded by BP and NERC in the period 1991-93.

1.4 Data on breeding success and the food of chicks are covered by a separate contract and these results are presented in a separate report to JNCC.

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

1.6 Various people helped with the counts and they are acknowledged in the notes to the tables.

1.7 This report covers the 1993 field season but a brief summary of changes in numbers since 1981 is appended to each species. A note on the fulmar is also included for completeness (as that species is not covered by the contract).

1.8 For ease of comparison, the layout of the report follows past reports and layouts and numbering of the individual tables follow previous Summer Wardens' Annual reports.

2 SPECIES ACCOUNTS

2.1 Herring *Larus argentatus* and lesser black-backed gulls *Larus fuscus*.

2.1.1 Gull nest count

The count was carried out on 27-28 May 1993 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 found which has been marked during the count (Table 2). Overall, counting efficiency was 83%.

A total of 2789 nests and clutches were marked and the overall calculated total taking account of those missed was 3318. This calculated total was greatly (50%) in excess of the 1992 estimate (2213). This increase occurred in most parts of the colony but was most marked in flat areas where lesser black-backed gulls predominate (Table 5).

A change in numbers during the last 10 years has occurred on the Maidens - the only area where adults were never culled or eggs smashed. In 1984, there were 208 nests, in 1988 numbers peaked at 295 nests and the annual estimates then declined each year subsequently - 290 in 1989, 261 in 1990, 213 in 1991 and 182 in 1992: the 1993 estimate was 183.

The proportions of herring and lesser black-backed gulls nesting in each area were assessed by counts of individual gulls visible from vantage points after they had been disturbed (Table 3). About 36% of the individual gulls estimated to be present on the island were checked. Assuming that these herring:lesser black-backed gull ratios were representative, there were 2059 herring gull nests and 1259 lesser black-backed gull nests on the island (Table 4). The comparable 1992 totals were 1462 and 751 which suggests an increase of 41% in the herring gull numbers and an increase of 68% in the lesser black-backed gull population gull (Figure 1, Table 19). These increases were very obvious in the field.

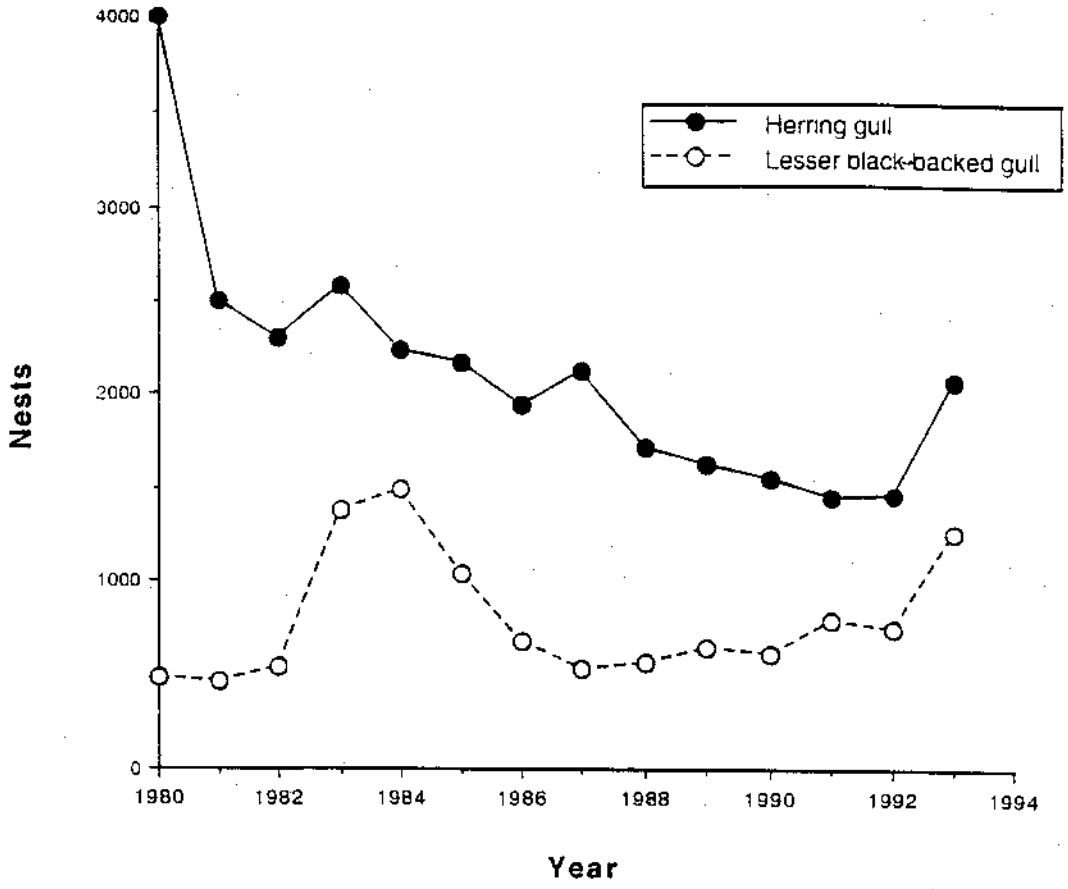


Figure 1. Changes in the numbers of gull nests on the Isle of May, 1980-1993.

2.1.2 Colour-ringing

Incubating adults were caught with walk-in traps. Each gull was given a unique colour-combination which always 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, 125, (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 155 herring gulls and 159 lesser black-backed gulls seen with colour-rings in 1992, 130 (84%) and 136 (86%) were resighted in 1993. The true survival rates may be slightly higher than this as some individuals may have been still alive and have either been over-looked or moved elsewhere. Indeed, one of the herring gulls not recorded on the Isle of May in 1993 was resighted only on Inchkeith. Therefore, these figures should not be used without reference to M P Harris. Some gulls present in earlier years but not seen in 1992 were resighted in 1993. These sightings increased the 1991-92 survival rates of the two species to 79% and 91% respectively. In 1993, 26 additional herring gulls and 27 additional lesser black-backed gulls were colour ringed.

Colony attendance of each colour-ringed individual was documented throughout the season. Some individuals were seen only very infrequently. Analysis of this data set, and incorporation of sightings in the coming winter will allow the calculation of more accurate survival rates, and also result in recommendations for future work.

Most previous studies including those on the Isle of May in the 1960s and 1970s have found adult survival of the herring gull to be 90% or more. The present findings continue to suggest that adult survival of Isle of May herring gulls has been substantially reduced. There are few previous data on the survival of lesser black-backed gulls.

The study was not aimed at determining the wintering ranges of these gulls but since the study started 11 breeding adult lesser black-backed gulls have been reported between September and February - in Cornwall (1), Worcester (3), Portugal (2), Spain (3) and Morocco (2). One of the birds in Portugal was caught in fishing gear and released - it survived to return and breed subsequently on the Isle of May. An adult ringed on a Worcester rubbish tup in December was caught and colour

ringed while breeding on the Isle of May the next summer. Breeding herring gulls were reported from the Wash in July, Lincolnshire in August and Holland in January.

2.1.3 Young gulls ringed and breeding output

Totals of 1451 young herring and 692 young lesser black-backed gulls were ringed (Table 8). Virtually all of these were well-grown and most are thought to have fledged. A survey of c. 38% of the total of fledged or nearly fledged young present found that 68% had been ringed (Table 9). This compared with 65%-71% in 1989-92. Assuming that this figure was representative of both species, 2134 young herring and 1018 young lesser black-backed gulls are predicted to have fledged in 1993; this is 1.04 and 0.81 chicks /nest, respectively. These figures compare with almost exactly one young fledged/pair by both species in 1989, 1.23 and 0.54 for herring and lesser black-backed gulls in 1990 and 1.88 and 0.98 in 1991 and 1.52 and 1.04 in 1992.

The increased numbers of gulls nesting in 1993 did not result in an increase in young herring gulls fledging, the 1992 total being 2222. There was, however, an increase in the numbers of lesser black-backed gulls fledging from 779 in 1992 to 1018 in 1993.

The reason for the constantly lower breeding success of lesser black-backed gulls is unclear.

2.1.4 Changes in the population

The total population of large gulls (here considered as a single unit) increased rapidly during the 1950s and 1960s to some 17-20,000 nests in 1972. High intensity culling then reduced the population to 3-4,000 pairs in 1980-83 and to 2,500-3,000 in 1986 (when the last major cull occurred). The annual estimate of herring gull nests continued to decrease until 1992 whereas that of the lesser black-backed gull bottomed out in 1987 and increased slightly during the period 1988-92 (Figure 1). The dramatic increase in the number of nests of both species between 1992 and 1993 was, therefore, unexpected.

Annual breeding output was drastically reduced until 1982. In 1982/3 at least 7000 chicks fledged. Output was then reduced again for a further four years. Since 1988, 1,-4,000 chicks have fledged each season.

The number of breeding adult herring and lesser black-backed

gulls increased from 4426 in 1992 to 6636 in 1993. Pooling data from the two species, about 16% of adults alive in 1992 should have died overwinter, which would have meant that 2918 birds recruited into the population - i.e. 6636 - (4426 x 0.84) to have brought about this increase. Herring and lesser black-backed gulls can breed when three years old, some breed at four but most probably at five (see Chabrzyk & Coulson, J. Anim. Ecol. 45 (1976), 187-203). About 1142 young fledged on the Isle of May in 1988 - far too few to explain the increase, regardless of post-fledging survival of young. Possibly birds from the 1982 and 1983 cohorts had joined the breeding population and maybe some of the 1989 cohort (3000 fledged). Or more probably there was considerable immigration.

Since 1988 10,500 young gulls have been reared on the Isle of May, and unknown, but undoubtedly very large numbers, fledged from other colonies in the Firth of Forth which together have at least as many gulls as does the Isle of May. The Isle of May may now be particularly attractive to recruiting gulls (e.g. they see large numbers of young being reared where there is plenty of room for colony expansion) compared to other colonies where gull control continues. Thus the population has the potential to increase very rapidly.

Thus it is imperative that

(a) This study continues to document changes in numbers, breeding and survival of these gulls,
(b) A survey is undertaken of the gulls at other colonies in the Firth of Forth so that the Isle of May results can by put in a broader perspective,
(c) Studies continue on other seabirds which could potentially be adversely affected from increased numbers of gulls,
(d) Serious thought is again given to how many gulls can be accommodated on the island. If it is deemed undesirable that gull numbers increase to the levels of the early 1970s, then moves will soon have to be made to make the island less attractive to gulls and to reduce the breeding output, e.g. by smashing eggs. This should reduce the chances of having to cull large numbers of gulls in future years.

2.2 Kittiwake *Rissa tridactyla*

The whole island count of 7009 nests was 1% higher than that recorded in 1992 (Table 10). This stability was also apparent in the counts of nests in the monitoring plots (Table 11). The population remains substantially lower than in 1988-90. Seven pairs bred at the newly

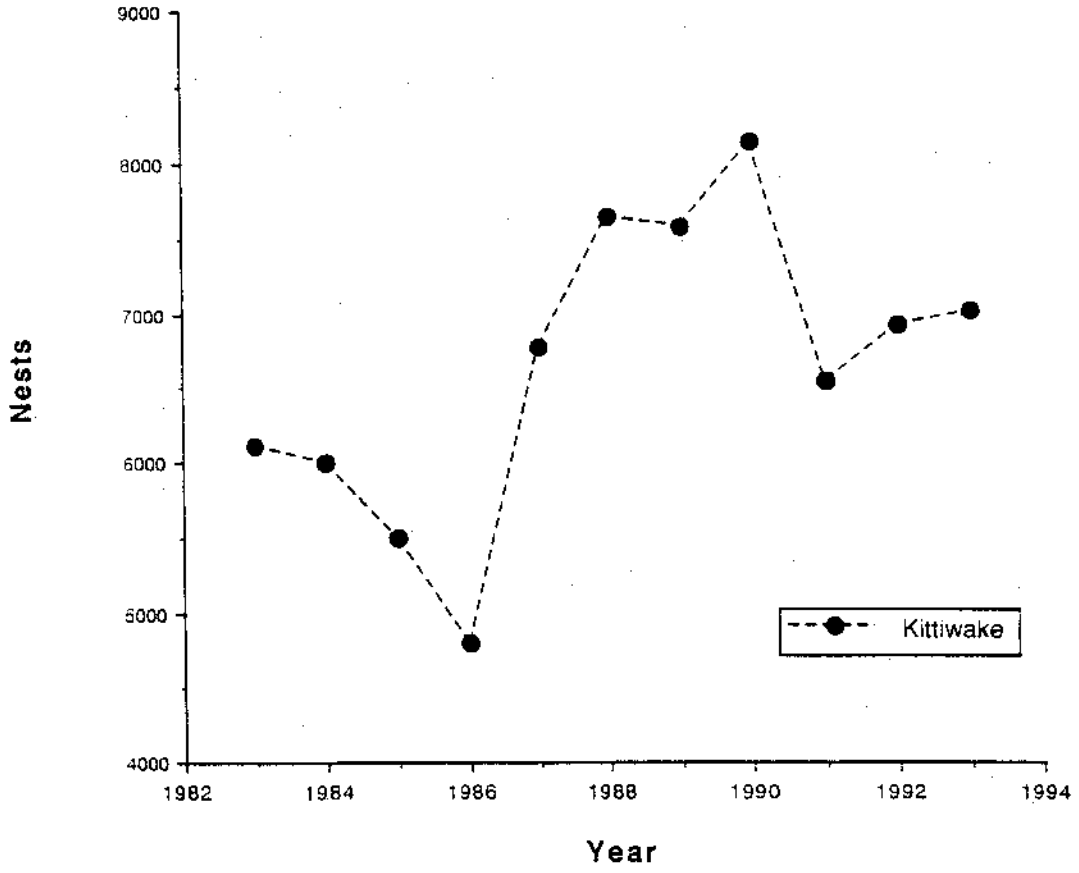


Figure 2. Changes in the numbers of kittiwake nests on the Isle of May, 1980-1993.

colonised area on SE Rona and more pairs bred in Ardcarran Gulley than had in recent years.

Breeding was disastrous and only a few hundred young were fledged, and many of these died subsequently.

The population appears to be maintaining its numbers at 7,-8,000 nests (Figure 2) but breeding output in recent years (measured under a JNCC-contract) has been poor:-

1986	1.33	young fledged per completed nest
1987	1.09	" " " " "
1988	0.82	" " " " "
1989	1.11	" " " " "
1990	0.17	" " " " "
1991	0.27	" " " " "
1992	0.61	" " " " "
1993	0.07	" " " " "

The annual monitoring of numbers should be continued in order to assess whether or not these low productions have any measurable effect on the Isle of May population.

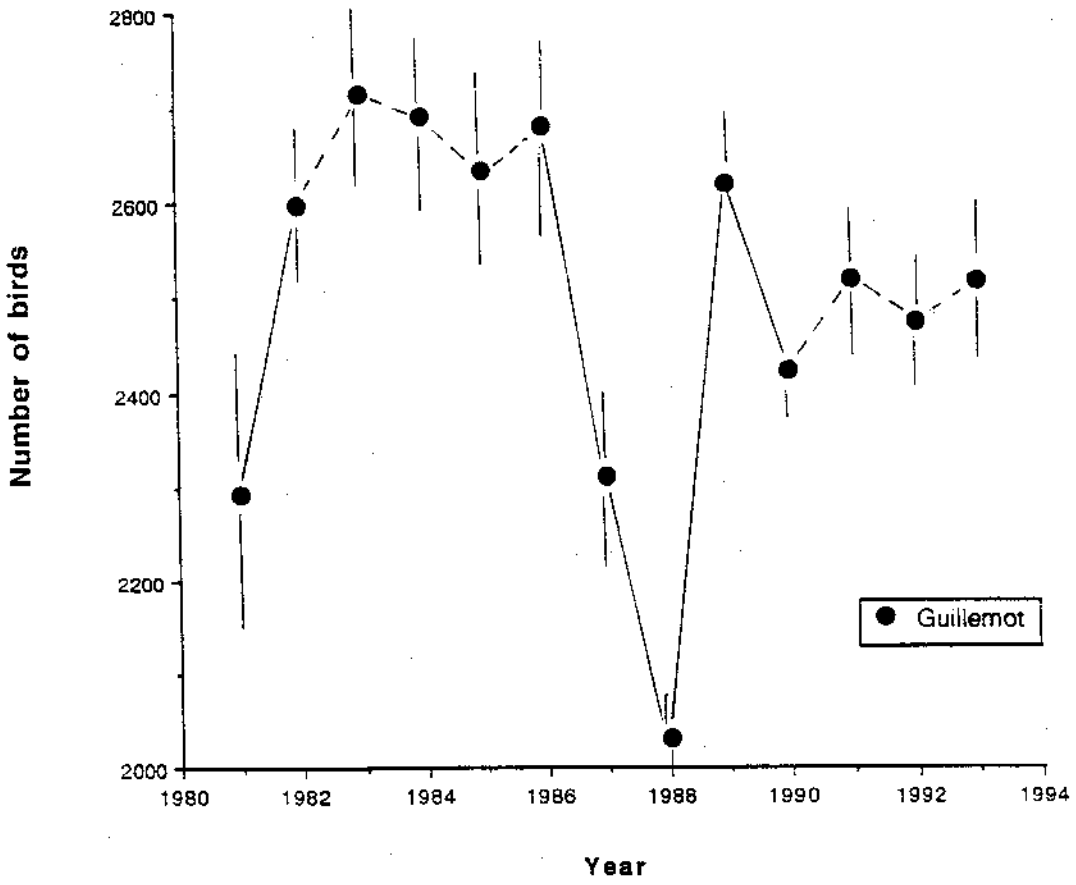


Figure 3. Changes in the numbers of individual guillemots in random-positioned monitoring plots, 1980-1993. Means and 95% confidence limits are shown. Means which are significantly different from each other (t-tests) are joined by solid-lines.

2.3 Guillemot *Uria aalge*

Breeding was slightly later than usual and so the monitoring counts were completed before the first major fledging night, although the earliest chicks left on the night of 17/18 June. The mean counts of individual birds in all 13 plots and the overall total were not significantly different from those in 1992 (Tables 12 and 13). The colonies on Greengates continue to expand up the cliffs and towards the Loch.

A similar trend was shown by the total island count of 17919 individuals which suggested a (2%) increase over the 1992 figure. After conversion of each individual area's count to pairs using a correction factor obtained from daily checks of the Cornerstone study area, the number of pairs breeding appeared to have increased by 8% (11511 in 1992 to 12418 in 1993) (Table 10).

Checks during the middle of the day between 1 June and 2 July to determine whether a chick was attended by one or both adults found that, on average, only 5% of chicks had 2 adults present. The corresponding figures in 1992, 1991 and 1990 were 10%, 24% and 12%, respectively. Thus is appears as though adults spent far less time at the colony in 1993 compared with recent seasons.

In 1981 a new scheme to monitor changes in the numbers of guillemots was instigated on the Isle of May. Eleven randomly positioned plots were delimited on the cliffs and numbers of individual birds present have been counted on 9-10 mornings 1-20 June in each year. Subsequently two additional plots have been added - on Chatterstanes and Rona to cover areas being colonised by guillemots. These plots are not considered at present as part of the long-term monitoring scheme (although the counts are presented in the annual reports). Such a random scheme gives a statistically reliable estimate of changes in the population. The mean annual counts (and the 95% confidence intervals) are shown in Figure 3. The population increased markedly between 1980 and 1982. Numbers remained stable for several years before declining signficantly in both 1987 and 1988. Numbers then recovered and have since remained more-or-less-stable. More detailed work carried out as part of a postgraduate study suggests that the decline was due to poor recruitment of chicks reared in the early 1980s and the subsequent recovery was brought about by very high survivals of chicks reared in 1986 and 1987.

2.4 Razorbill *Alca torda*

Although 10 monitoring counts were made, that on 2 June was excluded from the analysis as poor viewing conditions in driving rain made the count suspect. The remaining 9 daily totals showed

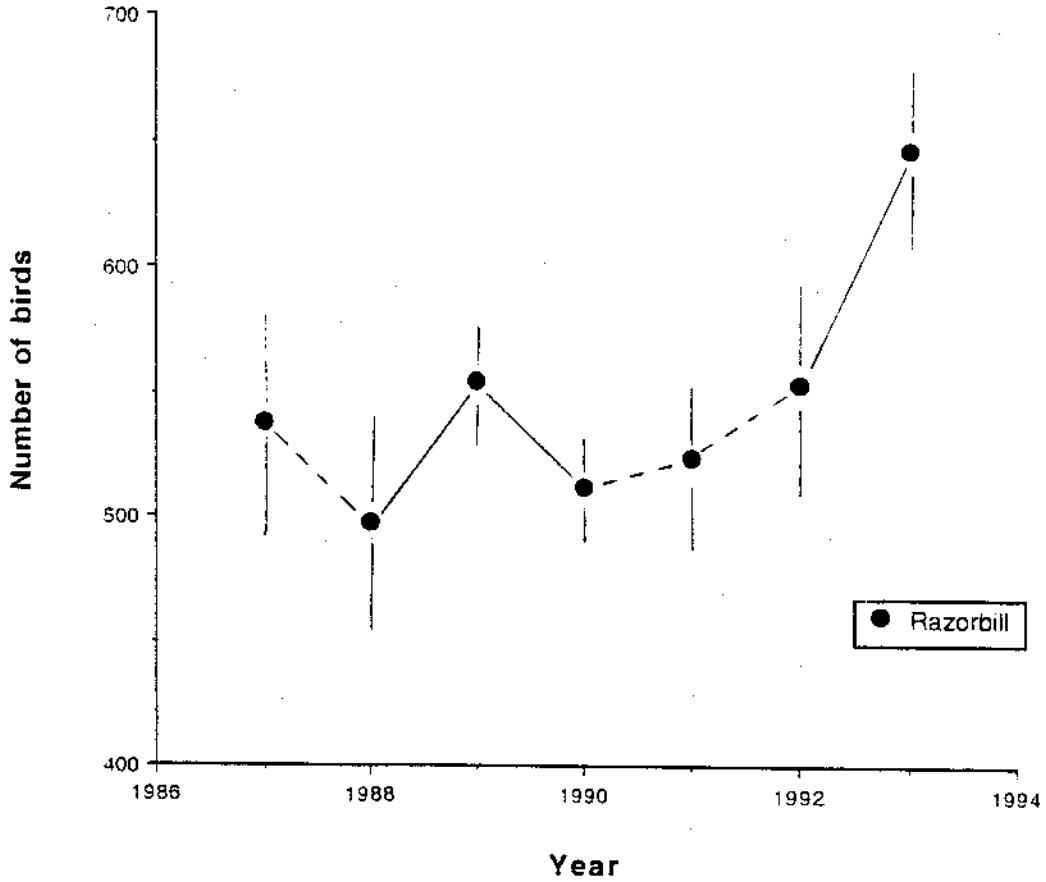


Figure 4. Changes in the numbers of individual razorbills in monitoring plots on the Isle of may, 1980-1993. Means and 95% confidence limits are shown. Means which are significantly different from each other (t-tests) are joined by solid-lines.

considerable variation ranging from 587-783 (Table 14). The 17% increase between 1992 and 1993 was statistically significant (Table 15). The whole island count of birds (3022) was also 17% up on the 1992 count, which was itself 38% up on that of 1991. After conversion to pairs (same method as for guillemots), the increase from 1992 to 1993 was estimated at 7% (Table 10). The 1993 whole island count was the highest ever.

The razorbill is a notoriously difficult species to monitor. It proved impossible to device an efficient random monitoring scheme and the current scheme (started by S Wanless in 1987) is based on the guillemot counting plots augmented by two more in the main razorbill nesting areas. In all, about 20% of the total population is included in the plots. Figure 4, like the whole island counts, indicates that the population has increased during the last one or two years.

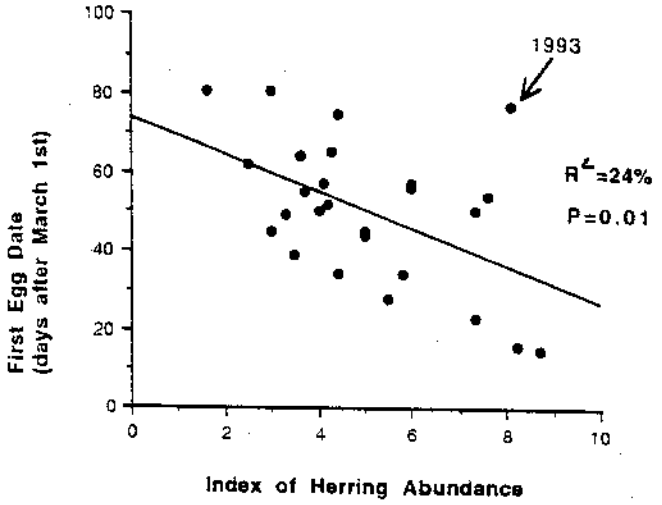
2.5 Shag *Phalacrocorax aristotelis*

This year was a bad season for shags on the Isle of May. Although adult survival remained high and large numbers of birds were present in the spring, breeding was greatly delayed and the first egg was not recorded until about 18 May (cf 16 March in 1992). Some pairs did not breed until July. Only in 1975 and 1976 was the first egg recorded later (22 May in both years); much more effort (by frustrated research workers) was put into searching for the first egg in 1993 than in earlier years and 1993 was probably by far the latest season in the last 30 years.

As is usual in such late years many birds did not lay, although most pairs occupied nest-sites. A count made 1-6 June found only 70 occupied nests but during a second count made 21-23 June there were 715 nests (plus 113 pairs with "trace" nests) (Table 10). This is the lowest annual nest-count since 1976, and under half that of 1992 (Figures 5). Other studies showed that 68% of nests built during this season were in existence during the second count, so possibly some 1050 pairs may have attempted to breed.

Our studies of individually marked birds indicated that adult survival between 1992 and 1993, was at least over 80%, (not markedly lower than usual). Thus the low nest count was associated with many birds not breeding. Similar large-scale nonbreeding events were recorded in 1974, 1975, 1976 1985 and 1986 (Aebischer & Wanless, Bird Study (1992) 39, 43-52).

Aebischer & Wanless reported that first egg dates of Shags on the Isle of May were significantly and negatively correlated with an index of the abundance of small herring in the adjacent seas during February such that the more herring there were, the earlier shags bred and



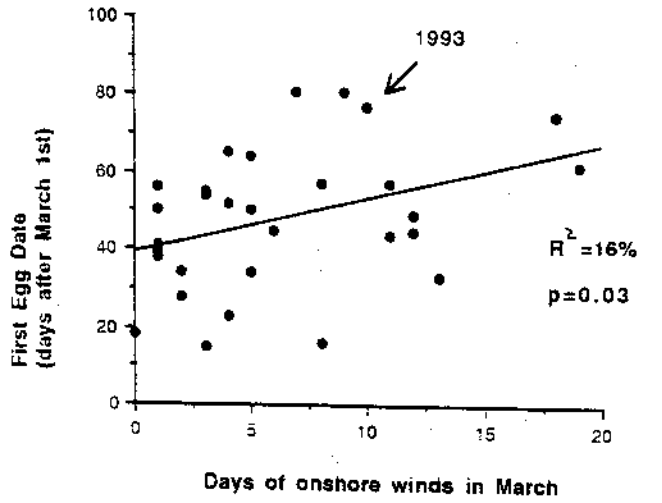


Figure 5. The relationship between first egg date and (a) an index of herring abundance and (b) the days in 1963-93 of easterly wind. Laying in 1993 was far later than predicted.

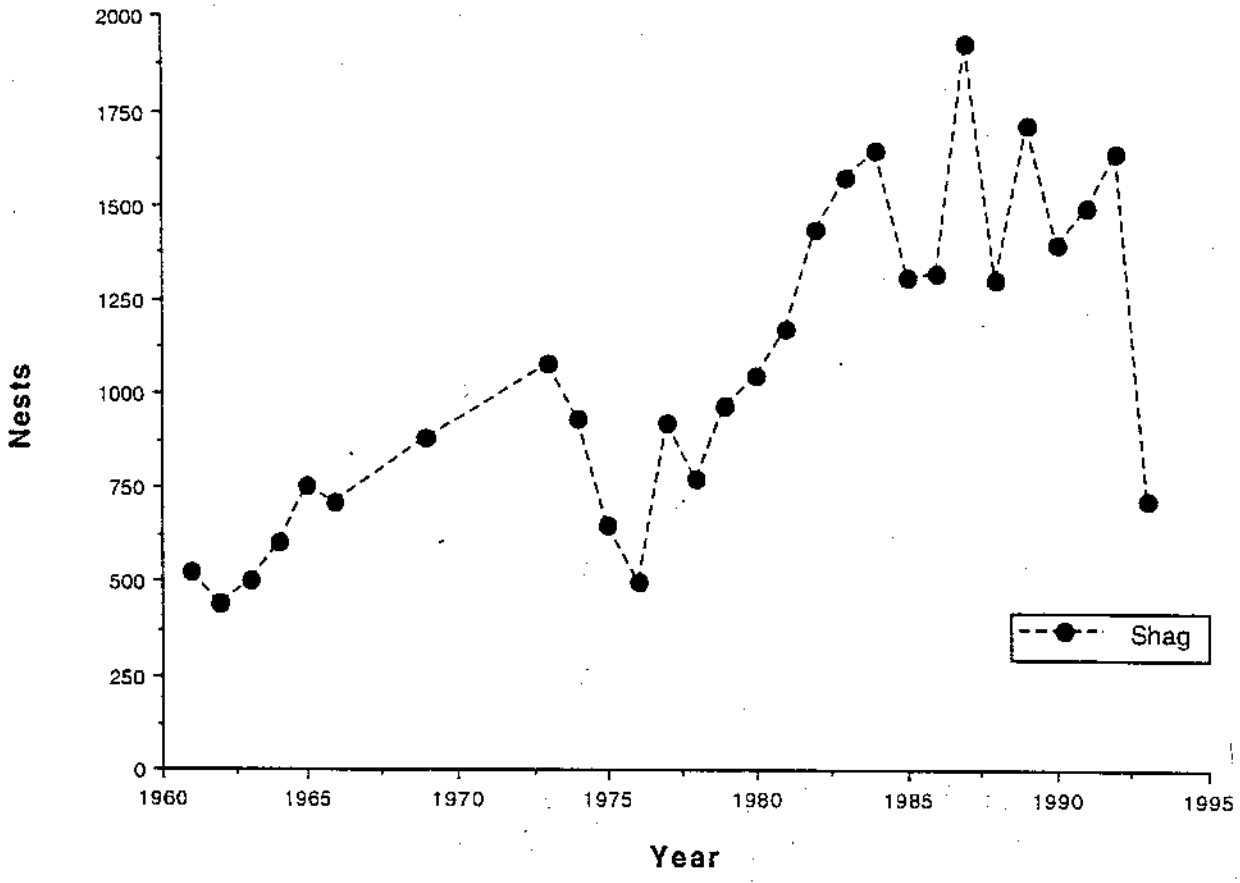


Figure 6. Changes in the numbers of shag nests on the Isle of May, 1961-1993.

significantly and positively correlated with the numbers of days of easterly winds in March (Figure 5). The two factors were not significantly correlated, and between 1973-87 together explained 70% of the variation in laying date with the equation:

First-egg date (days after 1 March) = -7.84 herring + 0.948 days of easterly wind + 75.

In 1993 the herring abundance was high (8.1) and there were 10 days of easterly winds at Leuchars, thus the predicted first egg date was 21 March, i.e. almost two months before the actual date. Some other factor must have been acting but what this might have been is, at present, unclear.

Annual nest counts presented in Figure 6 indicate that the colony is no longer increasing and that since 1984 numbers have fluctuated around 1500.

2.6 Eider *Somateria mollisima*

497 nests were recorded during the whole island count 1-6 June (excluding the beacon tern area). A subsequent visit to the tern area located an additional 50 nests. Counting efficiency was estimated at 84% (84 out of 100 previously marked nest found) suggesting a total of about 651 nests. This is lower than the 1992 estimate of 810 (which, as was considered at the time, may have been too high) but higher than that of 1991.

Clutch sizes of birds flushed off nests during the count were: c/0 (4), c/1 (8), c/2 (13), c/3 (19), c/4 (19), c/5 (10) and c/6 (1). Five nests had hatched and 24 had been predated.

Numbers have increased over three-fold since 1980 at an average rate of 9% per annum (Figure 7).

2.7 Oystercatcher *Haematopus ostralegus*

Thirty-two pairs were proved to breed, and three others almost certainly did so (Table 19). The population has increased at an average of 2% p.a. 1980-1993 (Figure 8).

One pair reared two young, and four reared single chicks. Thus breeding success was very low at 0.17 chicks fledged per pair. Details of breeding are given in Table 17 and the distribution of pairs in Map 1. Breeding oystercatchers have been caught in nest-traps for many years. Survival between 1992 and 1993 was 91.5% (54/59 birds) which is very similar to the overall annual mean for the previous 10 years (90.7 ± S.E. 1.2%). One new adult was colour-ringed in 1993.

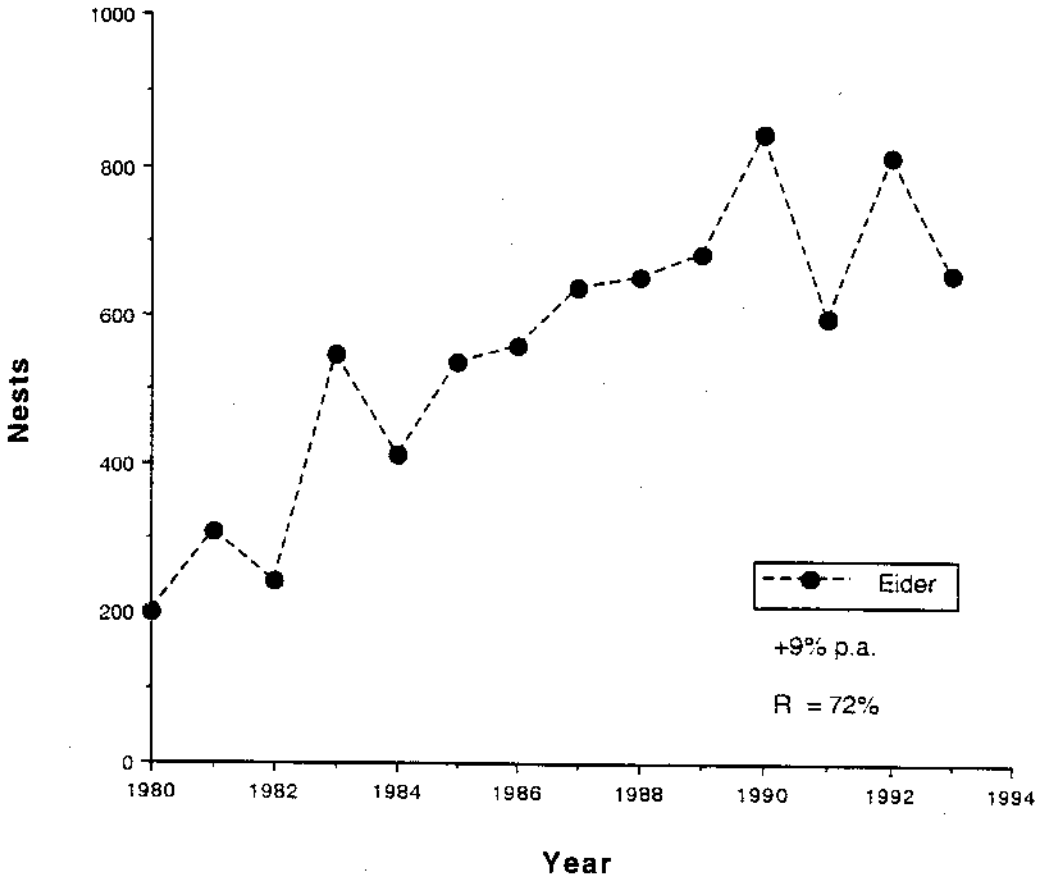


Figure 7. Changes in the numbers of eider nests on the Isle of May, 1980-1993.

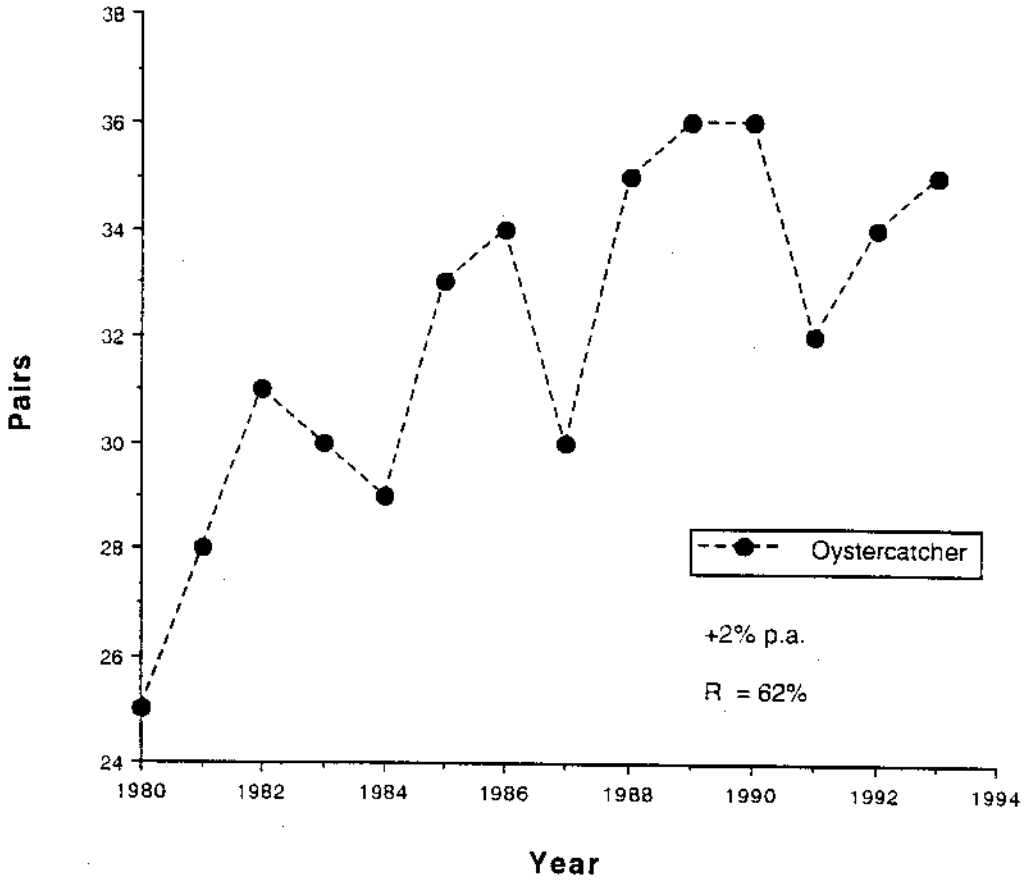


Figure 8. Changes in the numbers of breeding pairs of oystercatchers on the Isle of May, 1980-1993.

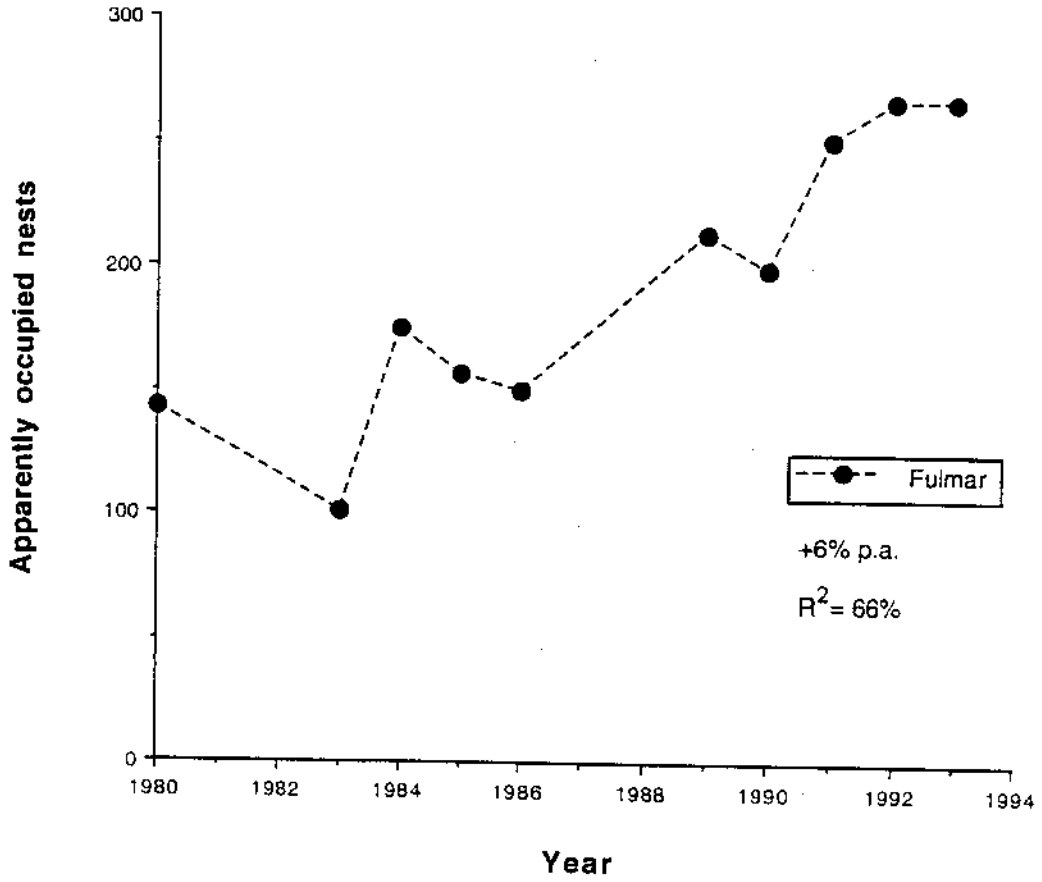


Figure 9. Changes in the numbers of apparently occupied nest sites of fulmars, 1980-1993.

years (90.7 ± S.E. 1.2%). One new adult was colour-ringed in 1993.

2.8 Great black-backed gull *Larus marinus*

Seven pairs bred, all but one rearing young. Twelve young are thought to have fledged. This is one pair down on the 1992 total but is close to the reserve's management plan's quota of 10 pairs.

2.9 Fulmar *Fulmarus glacialis*

The population continues to increase at about 6% p.a. (Figure 9).

3 THE FUTURE

3.1 The arrangement whereby one of the summer wardens worked under the direction of the contractor for much of the breeding season continued to be 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. Each year we both spent many hours each day looking for colour-rings.

3.3 Accurate knowledge of population structure and dynamics is essential in assessing the interactions of seabirds and their prey. This knowledge can only come from the 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. SNH should continue to play its part, and its monetary and logistic support are gratefully acknowledged.

3.4 The financial input to the Isle of May studies during the period of this contract came from SNH, JNCC, the Department of the Environment, BP Exploration (for puffins) and NERC. Hopefully this funding will continue and the Isle of May seabirds continue to get the attention they deserve.

3.5 In 1991 several foreign fishing boats were reported fishing for sandeels at the Cockenzie and Marr Banks, northeast of the Isle of May. Some Isle of May auks and kittiwakes will almost certainly feed in this area. Unconfirmed report from local fisherman in 1992 suggested a large increase in the numbers of these boats (to maybe 50) in July. Although there is no direct evidence that an industrial fishery for sandeels affects food availability for seabirds, any future development of this fishery must be of interest to those concerned with Isle of May seabirds.

3.6 Suggestions for future work are given at the start of this report.

4 PUBLICATIONS ON ISLE OF MAY SEABIRDS DURING THE THREE YEAR CONTRACT

Harris, M.P., Towll, H., Russell, A.F. and Wanless, S. 1990.
Maximum depths attained by four species of seabirds breeding on the Isle of May, Scotland. *Scottish Birds* 16: 25-28.

Harris, M.P. 1991.
Population changes in British common murres and Atlantic puffins, 1969-88.
In: *Studies of high-latitude seabirds. 2. Conservation biology of thick-billed murres in the northern Atlantic*, edited by A.J. Gaston & R.D. Elliott, 52-61. (Canadian Wildlife Service occasional paper no. 69). Ottawa: Environment Canada.

Harris, M.P. & Wanless, S. 1991.
The importane of the lesser sandeel *Ammodytes marinus* in the diet of the shag *Phalacrocorax aristotelis*.
Ornis Scandinavica, 22, 375-382.

Harris, M.P. & Wanless, S. 1991.
Population studies and conservation of Puffins, *Fratercula arctica*. In *"Bird Population Studies"* (eds. Perrins, Lebreton & Hirons).
Oxford Univ. Press. pp. 230-248.

Harris, M.P. Webb, A. & Tasker, M.L. 1991
Growth of young guillemots *Uria aalge* after leaving the colony.
Seabird, 13, 40-44.

Hislop. J.R.G., Harris, M.P. & Smith, J.G.M., 1991.
Variation in the calorific value and total energy content of the lesser sandeel (*Ammodytes marinus*) and other fish preyed on by seabirds.
Journal of Zoology, 224, 501-517.

Wanless, S., Burger, A.E. & Harris, M.P. 1991.
Diving depths of Shags *Phalacrocorax aristotelis* breeding on the Isle of May.
Ibis 133: 37-42.

Wanless, S., Harris, M.P. & Morris, J.A. 1991.
Foraging range and feeding locations used by Shags *Phalacrocorax aristotelis* during chick-rearing.
Ibis 133: 30-36.

Harris, M.P. 1992.

North Sea puffins
NERC News, no. 20, 8-9.

Harris, M.P. & Bailey, R.S. 1992.
Mortality rates of puffin *Fratercula arctica* and guillemot *Uria aalge* and fish abundance in the North Sea.
Biological Conservation, 60, 39-46.

Harris, M.P., Halley, D. & Wanless, S. (1992).
The post-fledging survival of young Guillemots *Uria aalge* in relation to hatching date and growth.
Ibis 134, 335-339.

Harris, M.P. & Wanless, S. (1992)
The diet of young and adult Shags *Phalacrocorax aristotelis* during the chick-rearing period assessed by three methods.
Bird Study.

Wanless, S. & Harris, M.P. (1992).
Activity budgets, diet and breeding success of Kittiwakes *Rissa tridactyla* on the Isle of May.
Bird Study, 39, 145-154.
Wanless, S. & Harris, M.P. (1992)
At-sea activity budgets of a pursuit-diving seabird monitored by radio-telemetry.
Wildlife Telemetry 591-598.

Halley, D.J. & Harris, M.P. 1993.
Intercolony movement and behaviour of immature Guillemots *Uria aalge*.
Ibis, 135, 264-270.

Harris, M.P. & Calladine, J. 1993.
A check on the efficiency of finding colour-ringed Kittiwakes *Rissa tridactyla*.
Ringing & Migration, 14,

Wanless, S., Corfield, T., Harris, M.P., Buckland, S.T. and Morris, J.A. (1993)
Diving behaviour of the shag *Phalacrocorax aristotelis* in relation to water depth and prey size.
Journal of Zoology.

Wanless, S., Harris, M.P. & Russell, A.F. (1993)
Factor influencing food load sizes brought in by Shags *Phalacrocorax aristotelis* during chick-rearing.

Ibis, 135, 19-24.

Harris, M.P., Halley, D.J. & Swann, R.L. in press.
Age at first breeding in the Common Murre.
Auk.

Harris, M.P. & Wanless, S. in press.
Ingested elastic and other artifacts found in puffins in Britain over a 24 year period.
Mar. Polln. Bull.

Table 1. Counts and contents of herring and lesser black-backed gull nests, 27-28 May 1993.

	Empty nest	Eggs 1	Eggs 2	Eggs 3	Contents unknown	Total	Counting efficiency %	Total nests present
Mars Rock	0	2	4	9	0	15	92	16
North Ness to Rocks	27	29	50	179	0	295	92	321
North Horn to Iron Bridge	8	9	27	68	3	115	93	124
Iron Bridge to Altarstanes	8	1	4	16	0	29	79	37
East Rona	37	51	117	389	0	594	93	639
Tarbet	10	14	35	100	3	162	93	174
Low Light to Tarbet	9	2	7	44	1	63	71	89
Low Light Rocks	3	7	7	18	5	35	66	53
Cleaver	0	0	0	0	2	2	100	2
Lady's Bed Stacks	0	0	0	0	7	7	100	7
South Ness Rocks	7	4	4	12	0	27	81	33
Ardcarran Rocks	3	0	1	5	0	9	81	11
Kirk Haven Rocks	0	0	0	0	1	1	100	1
Pillow	0	0	0	0	4	4	100	4
Burrian	32	17	59	96	0	204	97	234
Altarstanes to Horse Hole	8	1	4	16	0	29	79	37
Colm's Hole	5	2	5	18	0	30	87	34
Kettle to Colm's Hole	55	14	61	174	0	304	85	358
South Horn Cliffs	0	0	0	0	3	3	100	3
South Horn	8	0	8	11	0	27	81	33
Lady's Bed	23	13	24	67	0	127	81	157
Ardcarran to Kirk Haven	25	17	41	82	0	165	81	204
Three Tarn Nick-Horse Hole	25	25	61	201	0	312	66	473

Table 1. contd.

Horse Hole	1	1	3	15	0	20	79	25
Clett	0	0	0	0	0	0	100	0
Middens	2	1	2	2	0	7	100	7
South Lochside	0	0	0	0	2	2	100	2
Cornerstone to Pilgrims' Haven	0	0	0	0	1	1	100	1
South Plateau Cliffs	0	0	0	0	7	7	100	7
South Plateau	7	2	1	1	0	11	83	13
North Lochside	0	0	0	0	6	6	100	6
Three Tarn Nick to Lochside	1	1	0	0	15	17	66	26
Maidens								
(Inner)	6	16	21	8	3	54	83	65
(Outer)	9	17	27	23	8	84	84	100
(Sea rocks)	4	1	2	4	0	18	100	18
East Braes	0	0	1	2	0	3	83	4
Totals	**333**	**247**	**576**	**1567**	**71**	**2789**		**3318**

Notes: *includes 1 c/4

Counts were made by C. Wernham, Ian Johnstone, D, Orr, C. Fuller, M.A. Robinson and the authors

Table 2. Efficiency of counting gull nests during the whole island nest count, 27-28 May 1993.

	Sample checked	No. found to to be marked	%
North Ness	117	108	92
Iron Bridge to Altarstanes	14	11	79
East Rona	75	70	93
Tarbet	46	43	93
Low Light to Tarbet	39	28	71
Low Light Rocks	12	8	66
Burrian to Colm's Hole	82	71	87
Kettle to Colm's Hole	114	98	85
Lady's Bed	70	57	81
Ardcarran to Kirk Haven	74	60	81
Three Tarn to Horse Hole	103	68	66
Total	**746**	**622**	**83**

Table 3. Counts of individual herring (HG) and lesser black-backed gulls (LB) on 27 May 1993.

Area	Counted HG	Counted LB	Total	% HG	% LB
North Ness	146	113	259	56	44
Mars Rock	35	0	35	100	0
North Horn	44	48	92	48	52
North Horn to Bridge	42	6	48	88	12
Bridge to Altarstanes	27	1	28	96	4
Rona (east)	279	188	467	60	40
Tarbet	117	7	124	94	6
Tarbet to Low Light	41	9	50	82	8
Altarstanes to Horse Hole	19	0	19	100	0
Burrian	61	25	86	71	29
Colm's Hole	31	0	31	100	0
Kettle-Colm's Hole	114	151	265	43	57
South Horn	5	16	21	24	76
Lady's Bed	59	74	133	44	56
Ardcarran	59	27	86	69	31
North Plateau - North	112	283	395	28	72
South Plateau - South	1	2	3	33	67
South Plateau	4	16	20	20	80
South Ness	45	0	45	100	0
Mardens	135	0	135	100	0

Counts of nests

Mill Door - North side of Loch 7 HG
Lochside - North side 2 HG
Greenface 7 HG
Pillow 4 HG

Table 4. Calculated gull nest totals in 1993.

	Total nests present	Herring gulls %	Calculated nest total Herring gull	Lesser black-backed gull
Mars Rocks	16	100	16	0
North Ness to Rocks	321	56	180	141
North Horn to Iron Bridge	124	88	109	15
Iron Bridge to Altarstanes	37	96	36	1
East Rona	639	60	383	256
Tarbet	174	94	164	10
Low Light to Tarbet	89	82	73	16
Low Light Rocks	53	100	53	0
Cleaver	2	100	2	0
Lady's Bed Stacks	7	100	7	0
South Ness Rocks	33	100	33	0
Ardcarran Rocks	11	100	11	0
Kirk Haven Rocks	1	100	1	0
Pillow	4	100	4	0
Burrian	234	71	166	68
Altarstanes to Horse Hole	37	100	37	0
Colm's Hole	34	100	34	0
Kettle to Colm's Hole	358	43	154	204
South Horn Cliffs	3	100	3	0
South Horn	33	24	8	25
Lady's Bed	157	44	69	88
Ardcarran to Kirk Haven	204	69	141	63
Three Tarn Nick to Horse Hole	473	28	132	341

Table 4. contd.

Horse Hole	25	100	25	0
Clett	0	0	0	0
Middens	7	100	7	0
South Lochside	2	100	2	0
Cornerstone to Pilgrims' Haven	1	100	1	0
South Plateau Cliffs	7	20	7	0
South Plateau	13	20	3	10
North Lochside	6	100	6	0
Three Tarn Nick to Lochside	26	33	9	17
Maidens				
(Inner)	65	100	65	0
(Outer)	100	100	100	0
(Sea rocks)	18	100	18	0
East Braes	4	0	0	4
Totals	**3318**		**2059**	**1259**

Table 5. Changes in estimated numbers of gull nests in 1992-93. Small areas are excluded.

	1992 estimate	1993 estimate	% change
Kettle to Colm's Hole	171	358	+109
Colm's Hole	41	34	-17
Burrian	119	234	+97
Low Light Rocks	66	53	-20
Tarbet to Low Light	57	89	+56
Tarbet	121	174	+44
Rona-East	409	639	+56
North Ness and Mars Rocks	211	337	+60
Three Tarn to Horse Hole	339	473	+40
South Plateau and cliffs	16	20	+25
Lady's Bed and South Ness	108	201	+86
Maidens (all)	182	183	0
Lochside-Three Tarn Cliffs	28	32	+14
Ardcarran/Kirk Haven	126	204	+62
Total (incl. other areas)	**2218**	**3318**	**+50**

Table 6. Details of breeding herring gulls colour-ringed on the Isle of May in 1989-1993.

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

ZZZ = lost ring CYS = Cyst

BTO ring above joint on left leg
Sex: by bill-and-head length, M = male, F = female
Locality code (under year)

M	= Maidens	TAR	= Tarbet
A	= Ardcarran	CH	= Colm's Hole
K	= Kettle	R/RON	= Rona
LB	= Lady's Bed	NH	= North Horn
NP	= North Plateau	DED	= Found dead before that season
BUR	= Burrian	D	= found dead after being seen on island that season

Second column is for October of that year.

Bird No.	Ring No.	L. leg	R. leg	Sex	1989	1990	1991	1992	1993

1	GG58238	MMM-RED	RED-WHI	HG	F	M	-	M	-	-	-	M	-	-	-
2	GG58239	MMM-BLK	RED-WHI	HG	M	M	-	-	-	-	-	-	-	-	-
3	GG58240	MMM-GRN	RED-WHI	HG	F	M	-	M	-	M	-	M	-	-	-
4	GG58241	MMM-BLU	RED-WHI	HG	M	M	-	M	-	TAR	-	-	-	-	-
5	GG58242	MMM-YEL	RED-WHI	HG	M	M	-	M	-	M	-	M	-	-	-
6	GG58243	MMM-WHI	RED-WHI	HG	M	M	-	Y	-	M	-	M	-	M	-
7	GG58244	MMM-RED	RED-GRN	HG	F	K	-	K	-	-	-	K	-	-	-
8	GG58245	MMM-BLK	RED-GRN	HG	F	A	-	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	-	-	-	A	-	-	-
12	GG58249	MMM-WHI	RED-GRN	HG	F	A	-	A	-	A	-	A	-	A	-
13	GG58250	MMM-BLK	YEL-YEL	HG	M	M	-	M	-	M	-	-	-	A	-
14	GG58257	MMM-GRN	RED-BLK	HG	M	M	-	A	-	A	-	A	-	-	-
15	GG58258	MMM-YEL	RED-BLK	HG	F	M	-	A	-	-	-	-	-	-	-
16	GG58259	MMM-RED	RED-ZZZ	HG	M	CH	-	CH	-	CH	-	CH	-	-	-
17	GG58260	MMM-YEL	RED-BLK	HG	M	CH	-	-	-	-	-	-	-	-	-
18	GG58261	MMM-WHI	ZZZ-BLK	HG	F	CH	-	CH	-	CH	-	CH	-	CH	-
19	GG58262	MMM-RED	RED-BLU	HG	M	A	-	A	-	-	-	A	-	A	-
20	GG58263	MMM-BLK	RED-BLU	HG	M	A	-	A	-	A	-	LB	-	-	-
21	GG58264	MMM-GRN	RED-BLU	HG	M	A	-	A	-	A	-	-	-	-	-
22	GG58265	MMM-BLU	RED-BLU	HG	M	A	-	-	-	-	-	-	-	-	-
23	GG58266	MMM-YEL	RED-BLU	HG	M	A	-	A	-	A	-	-	-	-	-
24	GG58267	MMM-WHI	RED-BLU	HG	F	TAR	-	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	-	K	-	K	-	K	-
30	GG58273	MMM-WHI	RED-YEL	HG	F	TAR	-	TAR	-	TAR	-	TAR	-	TAR	-
31	GG58274	MMM-RED	BLK-RED	HG	F	TAR	-	TAR	D	-	-	-	-	-	-
32	GG58275	MMM-BLK	BLK-RED	HG	F	TAR	-	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	-	-	-	-	-	A	-
37	GG58280	MMM-RED	GRN-RED	HG	F	K	-	K	-	-	-	-	-	TAR	-
38	GG58281	MMM-BLK	GRN-RED	HG	F	TAR	-	M	-	TAR	-	TAR	-	TAR	-
39	GG58282	MMM-GRN	GRN-RED	HG	M	K	-	-	-	K	D	-	-	-	-
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	-	A	-	-	-	NH	-
43	GG58286	MMM-RED	BLU-RED	HG	F	A	-	NH	-	-	-	-	-	-	-
44	GG58287	MMM-BLK	BLU-RED	HG	M	M	-	M	-	M	-	M	-	TAR	-
45	GG58288	MMM-GRN	BLU-RED	HG	M	M	-	M	-	-	-	-	-	-	-
46	GG58289	MMM-BLU	BLU-RED	HG	M	M	M	M	-	M	-	M	M	M	-
47	GG58290	MMM-YEL	BLU-RED	HG	M	M	-	M	-	M	-	-	-	-	-
48	GG58291	MMM-WHI	BLU-RED	HG	F	M	-	A	-	A	-	BUR	-	M	-
49	GG58292	MMM-RED	YEL-RED	HG	M	A	-	A	-	-	-	-	-	-	-
50	GG58293	MMM-BLK	YEL-RED	HG	F	A	-	A	-	A	-	A	-	A	-
51	GG58294	MMM-GRN	YEL-RED	HG	F	A	-	A	-	A	-	A	-	A	-
52	GG58295	MMM-BLU	YEL-RED	HG	M	A	M	A	-	A	M	A	-	-	-
53	GG58296	MMM-YEL	YEL-YEL	HG	M	A	-	-	-	DED	-	-	-	-	-
54	GG58297	MMM-WHI	YEL-RED	HG	F	A	-	SN	-	NH	-	A	-	A	-
55	GG58298	MMM-RED	WHI-RED	HG	M	A	-	A	-	A	-	A	-	A	-
56	GG58299	MMM-BLK	WHI-RED	HG	M	A	-	A	-	A	-	-	-	T	-
57	GG58300	MMM-GRN	WHI-RED	HG	M	NH	-	NH	-	T	-	-	-	-	-
58	GG58301	MMM-BLU	WHI-RED	HG	F	TAR	-	TAR	-	TAR	-	TAR	-	-	-
59	GG58302	MMM-YEL	WHI-RED	HG	M	NH	-	-	-	NH	-	NH	-	NH	-
60	GG58303	MMM-WHI	WHI-RED	HG	F	NH	-	NH	-	NH	D	-	-	-	-
61	GG58304	MMM-RED	BLK-GRN	HG	F	A	-	-	-	-	-	-	-	-	-
62	GG58305	MMM-BLK	BLK-GRN	HG	F	A	-	A	-	A	-	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	-	-	-	LOW	-	LOW	-	LOW	-
67	GG58310	MMM-RED	BLK-BLU	HG	F	M	-	M	-	A	-	A	S	A	-
68	GG58311	MMM-BLK	BLK-BLU	HG	F	K	-	K	-	K	-	K	-	K	-
69	GG58312	MMM-GRN	BLK-BLU	HG	F	M	-	C	-	CH	-	CH	-	-	-
70	GG58313	MMM-BLU	BLK-BLU	HG	M	M	-	M	M	M	-	NP	-	-	-
71	GG58314	MMM-YEL	BLK-BLU	HG	M	M	-	M	-	M	-	-	-	-	-
72	GG58315	MMM-WHI	BLK-BLU	HG	M	M	L	M	-	M	-	-	-	M	-
73	GG58316	MMM-RED	BLK-YEL	HG	F	M	-	M	-	M	-	M	-	M	-
74	GG58317	MMM-BLK	BLK-YEL	HG	F	M	-	M	-	-	-	-	-	CH	-
75	GG58318	MMM-GRN	BLK-YEL	HG	F	A	-	A	-	M	-	-	-	M	-
76	GG58319	MMM-BLU	BLK-YEL	HG	M	A	-	-	-	-	-	-	-	-	-
77	GG58320	MMM-YEL	BLK-YEL	HG	F	TAR	-	TAR	-	TAR	D	-	-	-	-
78	GG58321	MMM-WHI	BLK-YEL	HG	M	TAR	-	-	-	-	-	-	-	-	-
79	GG58322	MMM-RED	BLK-WHI	HG	F	TAR	-	TAR	-	TAR	-	TAR	-	-	-
80	GG58323	MMM-BLK	BLK-WHI	HG	M	RON	-	RON	-	RON	-	-	-	RON	-
81	GG58324	MMM-GRN	BLK-WHI	HG	F	A	-	-	-	TAR	-	-	-	-	-
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	-	A	-	A	-	A	-
85	GG58328	MMM-RED	BLK-BLK	HG	F	M	-	A	-	A	-	-	-	-	-
86	GG58329	MMM-BLK	BLK-BLK	HG	M	M	-	M	-	M	-	M	M	SH	-
87	GG58330	MMM-GRN	BLK-BLK	HG	F	M	-	M	D	-	-	-	-	-	-
88	GG58331	MMM-BLU	BLK-BLK	HG	M	M	-	-	-	-	-	-	-	-	-
89	GG58332	MMM-YEL	BLK-BLK	HG	F	M	-	M	-	M	-	M	-	-	-
90	GG58333	MMM-WHI	BLK-BLK	HG	M	A	-	A	-	A	-	-	-	-	-
91	GG58334	MMM-RED	GRN-BLK	HG	M	RON	-	-	-	RON	-	RON	-	RON	-
92	GG58335	MMM-BLK	GRN-BLK	HG	M	CH	-	A	-	-	-	-	-	-	-
93	GG58336	MMM-GRN	GRN-BLK	HG	F	CH	-	CH	-	CH	-	-	-	CH	-
94	GG58337	MMM-BLU	GRN-BLK	HG	M	CH	-	CH	-	-	-	-	-	-	-
95	GG58338	MMM-YEL	GRN-BLK	HG	F	M	-	M	-	M	-	-	-	-	-
96	GG58339	MMM-WHI	GRN-BLK	HG	F	M	M	M	-	M	D	-	-	-	-
97	GG58340	MMM-RED	BLU-BLK	HG	M	M	-	-	-	-	-	-	-	-	-
98	GG58341	MMM-BLK	BLU-BLK	HG	F	M	-	M	-	M	-	M	M	M	-
99	GG58342	MMM-GRN	BLU-BLK	HG	F	M	-	M	-	M	-	M	-	AWY	-
100	GG58343	MMM-BLU	BLU-BLK	HG	F	M	-	K	-	-	-	-	-	-	-
101	GG58344	MMM-YEL	BLU-BLK	HG	M	M	-	M	-	M	-	-	-	-	-
102	GG58345	MMM-WHI	BLU-BLK	HG	M	M	M	M	M	M	M	M	M	M	-
103	GG58346	MMM-RED	WHI-BLK	HG	M	M	-	M	-	M	-	M	-	-	-
104	GG58347	MMM-BLK	WHI-BLK	HG	M	M	-	M	-	M	-	M	-	M	-
105	GG58348	MMM-GRN	WHI-BLK	HG	M	LB	-	A	-	-	-	A	-	-	-
106	GG58346	MMM-BLU	WHI-BLK	HG	F	LB	-	LB	-	-	-	A	-	LB	-
107	GG58350	MMM-YEL	WHI-BLK	HG	F	LB	-	LB	-	LB	-	LB	-	LB	-
108	GG58401	MMM-WHI	WHI-BLK	HG	F	TAR	-	TAR	-	NH	-	TAR	-	TAR	-
109	GG58402	MMM-RED	GRN-BLU	HG	F	CH	-	CH	-	CH	-	R	-	CH	-
110	GG58403	MMM-BLK	YEL-BLK	HG	F	TAR	-	TAR	-	-	-	-	-	-	-
111	0000000	MMM-RED	YEL-BLK	HG	M	TAR	-	TAR	-	TAR	A	TAR	-	TAR	-
112	GG58404	MMM-GRN	YEL-BLK	HG	M	NH	-	NH	-	NH	M	NH	-	NH	-
113	GG58405	MMM-BLU	YEL-BLK	HG	F	M	-	M	-	-	-	-	-	-	-
114	GG58406	MMM-YEL	YEL-BLK	HG	M	M	M	M	-	M	M	M	M	-	-
115	GG58407	BLK-BLU	ZZZ-CYS	HG	M	M	-	M	-	M	-	M	-	M	-
116	GG58408	MMM-WHI	YEL-BLK	HG	M	M	-	M	-	M	-	NH	-	-	-
117	GG01525	MMM-RED	GRN-GRN	HG	M	M	M	A	-	A	-	-	-	-	-
118	GG58409	MMM-BLK	GRN-GRN	HG	F	M	-	K	-	M	-	-	-	-	-
119	GG58410	MMM-GRN	GRN-GRN	HG	M	M	-	M	-	M	-	-	-	-	-
120	GG58411	MMM-BLU	GRN-GRN	HG	M	M	-	M	-	M	D	-	-	-	-
121	GG58412	MMM-YEL	GRN-GRN	HG	F	TAR	-	TAR	-	TAR	-	TAR	-	-	-
122	GG58413	MMM-WHI	GRN-GRN	HG	F	TAR	-	ARD	-	ARD	-	ARD	-	-	-
123	GG58414	MMM-BLK	GRN-BLU	HG	M	CH	-	CH	-	CH	-	CH	-	CH	-
124	GG58415	MMM-GRN	GRN-BLU	HG	M	CH	-	-	-	-	-	CH	-	-	-
125	GG58416	MMM-BLU	GRN-BLU	HG	F	CH	-	-	-	CH	-	CH	-	CH	-
126	GG58417	MMM-YEL	GRN-BLU	HG	M	LB	-	LB	-	-	-	LB	M	-	-

127	GG58418	MMM-ZZZ	GRN-ZZZ	HG	F	LB	-	A	-	LB	-	LB	-	LB	-
128	GG58419	MMM-RED	GRN-YEL	HG	F	NH	-	NH	-	NH	-	-	-	-	-
129	GG58420	MMM-BLK	GRN-YEL	HG	M	LB	-	A	-	LB	-	LB	-	-	-
130	GG58421	MMM-GRN	GRN-YEL	HG	F	LB	-	A	-	A	-	LB	-	LB	-
131	GG58422	MMM-BLU	GRN-YEL	HG	M	NH	-	NH	-	NH	-	NH	-	-	-
132	GG58423	MMM-YEL	GRN-YEL	HG	M	LB	-	A	-	LB	-	LB	S	LB	-
133	GG58423	MMM-WHI	GRN-YEL	HG	M	LB	-	LB	-	LB	-	LB	-	-	-
134	GG58425	MMM-RED	GRN-WHI	HG	F	LB	-	A	-	-	-	LB	-	LB	-
135	GG58426	MMM-BLK	GRN-WHI	HG	M	LB	-	A	-	NH	D	-	-	-	-
136	GG58427	MMM-GRN	GRN-WHI	HG	F	K	-	K	-	K	-	K	-	K	-
137	GG58428	MMM-BLU	GRN-WHI	HG	F	NH	-	NH	-	NH	-	NH	-	RON	-
138	GG58429	MMM-YEL	GRN-WHI	HG	M	CH	-	CH	-	CH	-	-	-	-	-
139	GG58430	MMM-WHI	GRN-WHI	HG	F	CH	-	CH	-	CH	-	CH	-	CH	-
140	GG58431	MMM-RED	BLU-GRN	HG	M	NP	-	-	-	-	-	-	-	-	-
141	GG58432	MMM-BLK	BLU-GRN	HG	M	R	-	R	-	R	-	R	-	R	-
142	GG58433	MMM-GRN	BLU-GRN	HG	F	R	-	-	-	R	-	R	-	-	-
143	GG58434	MMM-BLU	BLU-GRN	HG	M	K	-	K	-	K	-	K	-	K	-
144	GG58435	MMM-YEL	BLU-GRN	HG	F	R	-	-	-	NH	-	-	-	-	-
145	GG58436	MMM-WHI	BLU-GRN	HG	F	R	-	R	-	R	-	NH	-	NH	-
146	GG58437	MMM-RED	YEL-GRN	HG	F	R	-	-	-	NH	-	-	-	WT	-
147	GG58438	MMM-BLK	YEL-GRN	HG	M	NH	-	NH	-	NH	-	NH	-	NH	-
148	GG58439	MMM-GRN	YEL-GRN	HG	M	NH	-	NH	-	MH	-	-	-	-	-
149	GG58440	MMM-BLU	YEL-GRN	HG	M	NH	-	NH	-	NH	-	NH	T	NH	-
150	GG58441	MMM-YEL	YEL-GRN	HG	M	NH	-	-	-	-	-	-	-	-	-
151	GG58442	MMM-WHI	YEL-GRN	HG	F	NH	-	NH	-	NH	-	NH	-	NH	-
152	GG58443	MMM-RED	WHI-GRN	HG	F	NH	-	-	-	-	-	-	-	-	-
153	GG58444	MMM-BLK	WHI-GRN	HG	F	NH	-	NH	D	-	-	-	-	-	-
154	GG58445	MMM-GRN	WHI-GRN	HG	F	NH	-	NH	-	NH	-	NH	-	NH	-
155	GG58446	MMM-BLU	WHI-GRN	HG	F	NH	-	NH	-	-	-	-	-	-	-
156	GG58447	MMM-YEL	WHI-GRN	HG	M	NH	-	NH	-	NH	-	NH	-	NH	-
157	GG58448	MMM-WHI	WHI-GRN	HG	M	NH	-	NH	-	NH	-	NH	-	NH	-
158	GG58449	MMM-RED	YEL-WHI	HG	F	NH	-	-	-	NH	-	NH	-	NH	-
159	GG65506	YEL-WHI	MMM-WHI	HG	F	-	-	M	-	M	-	M	-	M	-
160	GG65507	MMM-GRN	YEL-WHI	HG	M	-	-	M	-	M	-	BUR	D	-	-
161	GG65508	MMM-BLK	YEL-WHI	HG	M	-	-	M	-	M	-	M	-	SH	-
162	GG65509	YEL-WHI	MMM-YEL	HG	M	-	-	M	-	M	-	M	-	M	-
163	GG65510	MMM-RED	WHI-BLU	HG	M	-	-	M	-	M	-	M	M	M	-
164	GG65511	MMM-BLU	YEL-WHI	HG	M	-	-	M	-	-	-	M	-	-	-
165	GG65512	MMM-WHI	WHI-BLU	HG	M	-	-	M	-	M	M	M	M	M	-
166	GG65513	MMM-GRN	WHI-BLU	HG	F	-	-	M	-	M	-	M	-	M	-
167	GG65514	MMM-BLK	WHI-BLU	HG	F	-	-	M	-	-	-	M	-	-	-
168	GG65515	MMM-BLU	WHI-BLU	HG	F	-	-	M	-	M	-	-	-	SN	-
169	GG65516	MMM-RED	WHI-YEL	HG	M	-	-	M	-	M	-	-	-	M	-
170	GG65516	MMM-GRN	WHI-YEL	HG	F	-	-	M	-	M	M	M	M	M	-
171	GG65518	MMM-BLK	WHI-YEL	HG	M	-	-	M	-	M	-	M	-	M	-
172	GG10995	MMM-WHI	WHI-YEL	HG	M	-	-	M	-	M	-	M	-	M	-
173	GG65519	MMM-BLU	WHI-YEL	HG	F	-	-	M	-	M	-	M	-	-	-
174	GG65520	MMM-YEL	WHI-YEL	HG	M	-	-	M	-	-	-	-	-	-	-
175	GG65521	MMM-RED	BLU-WHI	HG	F	-	-	M	-	M	-	LB	-	LB	-
176	GG65522	MMM-WHI	BLU-WHI	HG	?	-	-	M	-	-	-	-	-	-	-
177	GG65523	MMM-GRN	BLU-WHI	HG	M	-	-	M	-	M	-	M	-	-	-
178	GG65519	MMM-BLU	BLU-WHI	HG	M	-	-	M	-	-	-	-	-	-	-
179	GG65526	MMM-BLK	BLU-WHI	HG	F	-	-	M	-	M	-	M	-	M	-
180	GG65527	MMM-RED	YEL-YEL	HG	M	-	-	M	-	M	M	M	-	M	-
181	GG65531	MMM-YEL	BLU-WHI	HG	F	-	-	ARD	-	M	-	-	-	-	-
182	GG65534	MMM-RED	BLU-BLU	HG	M	-	-	ARD	-	ARD	-	ARD	-	ARD	-
183	GG65539	MMM-WHI	BLU-BLU	HG	M	-	-	NP	-	NP	-	NP	-	NP	-
184	GG07915	MMM-BLK	BLU-BLU	HG	M	-	-	NP	-	NP	-	NP	-	-	-
185	GG65543	MMM-GRN	BLU-BLU	HG	F	-	-	NP	-	NP	-	NP	-	NP	-
186	GG65546	MMM-BLU	BLU-BLU	HG	F	-	-	NP	-	NP	-	NP	-	NP	-
187	GG65563	MMM-YEL	BLU-BLU	HG	M	-	-	NP	-	NP	-	NP	-	NP	-
188	GG65567	MMM-RED	BLU-YEL	HG	F	-	-	NP	-	-	-	-	-	-	-
189	GG65576	MMM-WHI	BLU-YEL	HG	M	-	-	R	-	R	-	-	-	-	-

190	GG65577	MMM-GRN	BLU-YEL	HG	M	-	-	R	-	R	-	NH	-	NH	-
191	GG65578	MMM-BLK	BLU-YEL	HG	M	-	-	R	-	-	-	-	-	-	-
192	GG65581	MMM-BLU	BLU-YEL	HG	M	-	-	R	-	R	-	-	-	-	-
193	GG65583	MMM-YEL	BLU-YEL	HG	F	-	-	R	-	R	-	R	-	R	-
194	GG65591	MMM-RED	YEL-BLU	HG	F	-	-	R	-	R	-	R	-	R	-
195	GG65593	MMM-WHI	YEL-BLU	HG	F	-	-	R	-	R	-	NH	N	NH	-
196	GG67201	MMM-GRN	YEL-BLU	HG	F	-	-	-	-	M	M	M	-	M	-
197	GG67202	MMM-BLK	YEL-BLU	HG	M	-	-	-	-	M	-	M	-	M	-
198	GG76203	MMM-BLU	YEL-BLU	HG	M	-	-	-	-	M	-	M	-	M	-
199	GG67204	MMM-YEL	YEL-BLU	HG	F	-	-	-	-	M	M	M	M	M	-
200	GG67205	MMM-WHI	YEL-YEL	HG	F	-	-	-	-	M	M	M	M	M	-
201	GG67206	MMM-GRN	YEL-YEL	HG	F	-	-	-	-	M	-	M	-	CH	-
202	GG67207	MMM-YEL	YEL-YEL	HG	F	-	-	-	-	M	M	M	-	M	-
203	GG67218	MMM-RED	RED-RED	HG	M	-	-	-	-	R	-	R	-	R	-
204	GG67222	MMM-WHI	RED-RED	HG	F	-	-	-	-	NH	-	NH	-	NH	-
205	GG67223	MMM-GRN	RED-RED	HG	F	-	-	-	-	R	-	R	-	R	-
206	GG67225	MMM-BLK	RED-RED	HG	F	-	-	-	-	NH	-	NH	S	NH	-
207	GG67227	MMM-BLU	RED-RED	HG	F	-	-	-	-	TAR	-	TAR	-	TAR	-
208	GG67230	MMM-YEL	RED-RED	HG	F	-	-	-	-	TAR	-	TAR	-	TAR	-
209	GG67239	MMM-RED	WHI-WHI	HG	F	-	-	-	-	NP	-	NP	-	NP	D
210	GG67240	MMM-WHI	WHI-WHI	HG	M	-	-	-	-	NP	-	NP	M	NP	-
211	GG67241	MMM-GRN	WHI-WHI	HG	F	-	-	-	-	NP	-	NP	-	-	-
212	GG67245	MMM-BLK	WHI-WHI	HG	M	-	-	-	-	NP	-	NP	-	NP	-
213	GG67246	MMM-BLU	WHI-WHI	HG	M	-	-	-	-	TAR	-	TAR	-	TAR	-
214	GG67247	MMM-YEL	WHI-WHI	HG	F	-	-	-	-	TAR	-	TAR	-	TAR	-
215	GG67248	MMM-RED	RED-ORN	HG	F	-	-	-	-	TAR	-	TAR	-	TAR	-
216	GG82732	MMM-BLK	RED-ORN	HG	M	-	-	-	-	-	-	K	-	K	-
217	GG82735	MMM-BLU	RED-ORN	HG	M	-	-	-	-	-	-	K	-	K	-
218	GG82736	MMM-GRN	RED-ORN	HG	F	-	-	-	-	-	-	K	-	-	-
219	GG82738	MMM-WHI	RED-ORN	HG	M	-	-	-	-	-	-	K	-	K	-
220	GG82741	MMM-YEL	RED-ORN	HG	M	-	-	-	-	-	-	K	-	K	-
221	GG82744	MMM-ORN	GRN-ORN	HG	F	-	-	-	-	-	-	K	-	K	-
222	GG82745	MMM-BLK	BLK-ORN	HG	F	-	-	-	-	-	-	K	-	K	-
223	GG82747	MMM-BLU	BLK-ORN	HG	M	-	-	-	-	-	-	ARD	-	ARD	-
224	GG82740	MMM-RED	BLK-ORN	HG	M	-	-	-	-	-	-	ARD	-	ARD	-
224	GG82748	MMM-GRN	BLK-ORN	HG	M	-	-	-	-	-	-	ARD	-	ARD	-
226	GG82689	MMM-WHI	BLK-ORN	HG	M	-	-	-	-	-	-	ARD	-	ARD	-
227	GG82691	MMM-YEL	BLK-ORN	HG	F	-	-	-	-	-	-	ARD	-	ARD	-
228	GG82694	MMM-ORN	BLK-ORN	HG	M	-	-	-	-	-	-	TAR	-	TAR	-
229	GG82695	MMM-BLK	BLU-ORN	HG	M	-	-	-	-	-	-	TAR	-	TAR	-
230	GG82696	MMM-BLU	BLU-ORN	HG	M	-	-	-	-	-	-	TAR	-	TAR	-
231	GG82697	MMM-GRN	BLU-ORN	HG	F	-	-	-	-	-	-	TAR	-	TAR	-
232	GG82698	MMM-RED	BLU-ORN	HG	F	-	-	-	-	-	-	TAR	-	TAR	-
233	GG82699	MMM-WHI	BLU-ORN	HG	M	-	-	-	-	-	-	TAR	-	TAR	-
234	GG82700	MMM-YEL	BLU-ORN	HG	M	-	-	-	-	-	-	TAR	-	TAR	-
235	GG82751	MMM-ORN	BLU-ORN	HG	F	-	-	-	-	-	-	TAR	-	TAR	-
236	GG82752	MMM-BLK	RED-ORN	HG	F	-	-	-	-	-	-	R	-	TAR	-
237	GG82753	MMM-GRN	RED-ORN	HG	F	-	-	-	-	-	-	R	-	R	-
238	GG82754	MMM-BLU	RED-ORN	HG	M	-	-	-	-	-	-	R		R	-
239	GG82785	MMM-RED	RED-ORN	HG	F	-	-	-	-	-	-	R	-	R	-
240	GG82759	MMM-WHI	RED-ORN	HG	M	-	-	-	-	-	-	R		R	-
241	GG82762	MMM-YEL	RED-ORN	HG	F	-	-	-	-	-	-	NP	-	NP	-
242	GG82764	MMM-ORN	RED-ORN	HG	F	-	-	-	-	-	-	NP	-	NP	-
243	GG82766	MMM-BLK	WHI-ORN	HG	F	-	-	-	-	-	-	NP	-	NP	-
244	GG82767	MMM-BLU	WHI-ORN	HG	M	-	-	-	-	-	-	NP	-	NP	-
245	GG84730	MMM-BLK	WHI-ORN	HG	F	-	-	-	-	-	-	-	-	K	-
246	GG84733	MMM-GRN	WHI-ORN	HG	F	-	-	-	-	-	-	-	-	CH	-
247	GG84734	MMM-RED	WHI-ORN	HG	F	-	-	-	-	-	-	-	-	CH	-
248	GG84735	MMM-WHI	WHI-ORN	HG	F	-	-	-	-	-	-	-	-	CH	-
249	GG84736	MMM-YEL	WHI-ORN	HG	M	-	-	-	-	-	-	-	-	CH	-
250	GG84737	MMM-ORN	WHI-ORN	HG	M	-	-	-	-	-	-	-	-	CH	-
251	GG84738	MMM-BLK	YEL-ORN	HG	F	-	-	-	-	-	-	-	-	CH	-
252	GG84740	MMM-GRN	YEL-ORN	HG	M	-	-	-	-	-	-	-	-	CH	-

253	GG84741	MMM-BLU	YEL-ORN	HG	F	- -	- -	- -	- -	CH	-
254	GG84742	MMM-RED	YEL-ORN	HG	F	- -	- -	- -	- -	TAR	-
255	GG84743	MMM-WHI	YEL-ORN	HG	F	- -	- -	- -	- -	TAR	-
256	GG84744	MMM-YEL	YEL-ORN	HG	F	- -	- -	- -	- -	TAR	-
257	GG84745	MMM-ORN	YEL-ORN	HG	F	- -	- -	- -	- -	TAR	-
258	GG84746	BLK-MMM	BLK-BLK	HG	M	- -	- -	- -	- -	TAR	-
259	GG84747	BLK-MMM	BLK-BLU	HG	F	- -	- -	- -	- -	TAR	-
260	GG84748	BLK-MMM	BLK-GRN	HG	M	- -	- -	- -	- -	TAR	-
261	GG84749	BLK-MMM	BLK-RED	HG	F	- -	- -	- -	- -	TAR	-
262	GG84750	BLK-MMM	BLK-WHI	HG	M	- -	- -	- -	- -	RON	-
263	GG84753	BLK-MMM	BLK-YEL	HG	F	- -	- -	- -	- -	TAR	-
264	GG84754	BLK-MMM	BLK-ORN	HG	F	- -	- -	- -	- -	RON	-
265	GG84760	BLK-MMM	BLU-BLK	HG	M	- -	- -	- -	- -	NH	-
266	GG84761	BLK-MMM	BLU-BLU	HG	M	- -	- -	- -	- -	NH	-
267	GG84763	BLK-MMM	BLU-GRN	HG	F	- -	- -	- -	- -	NH	-
268	GG84770	BLK-MMM	BLU-RED	HG	M	- -	- -	- -	- -	NH	-
268	GG84767	BLK-MMM	BLU-WHI	HG	M	- -	- -	- -	- -	NH	-

Table 7. Details of breeding lesser black-backed gulls colour-ringed on Isle of May in 1989-1993.

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

ZZZ = lost ring CYS = Cyst

BTO ring above joint on left leg
Sex: by bill-and-head length, M = male, F = female
Locality code (under year)

M	= Maidens	TAR	= Tarbet
A/ARD	= Ardcarran	CH	= Colm's Hole
K	= Kettle	R/RON	= Rona
LB	= Lady's Bed	NH	= North Horn
NP	= North Plateau	DED	= Found dead before that season
BUR	= Burrian	D	= found dead after being seen on island that season

Second column is for October of that year.

Bird No.	Ring No.	L. leg	R. leg	Sex	1989	1990	1991	1992	1993

1	GG58351	MMM-RED	BLU-RED	LBBG	F	NH	-	NH	-	NH	-	NH	-	-	-
2	GG58352	MMM-BLK	BLU-RED	LBBG	M	R	-	R	-	NH	-	R	-	R	-
3	GG58353	MMM-GRN	BLU-RED	LBBG	M	LB	-	A	-	LB	-	LB	D	-	-
4	GG58354	MMM-BLU	BLU-RED	LBBG	M	LB	-	A	-	LB	-	LB	D	-	-
5	GG58355	MMM-WHI	BLU-RED	LBBG	F	R	-	-	-	-	-	-	-	-	-
6	GG58356	MMM-RED	BLU-GRN	LBBG	M	NH	-	NH	-	NH	-	-	-	NH	-
7	GG58357	MMM-RED	BLU-BLK	LBBG	M	LB	-	A	-	A	-	A	-	A	-
8	GG58358	MMM-BLK	BLU-BLK	LBBG	M	NH	-	RON	-	NH	-	NH	-	NH	-
9	GG58359	MMM-GRN	BLU-BLK	LBBG	F	NH	-	NH	-	NH	-	NH	-	NH	-
10	GG58360	MMM-BLK	BLU-GRN	LBBG	F	LB	-	RON	-	LB	-	LB	-	LB	-
11	GG58361	MMM-BLU	BLU-BLK	LBBG	F	NH	-	NH	-	-	-	NH	-	NH	-
12	GG58362	MMM-WHI	BLU-BLK	LBBG	F	K	-	K	-	K	-	-	-	K	-
13	GG58363	MMM-GRN	BLU-GRN	LBBG	F	LB	-	A	-	NH	-	-	-	LB	-
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	-	NP	-	NP	-	NP	-
17	GG58367	MMM-BLK	BLU-BLU	LBBG	M	NP	-	NP	-	NP	-	-	-	NP	-
18	GG58368	MMM-GRN	BLU-BLU	LBBG	M	K	-	NH	-	K	-	K	-	K	-
19	GG58369	MMM-BLU	BLU-BLU	LBBG	F	NP	-	A	-	-	-	NP	-	SH	-
20	GG58370	MMM-WHI	BLU-BLU	LBBG	M	NK	-	NP	-	NP	-	NP	-	NP	-
21	GG58371	MMM-RED	BLU-WHI	LBBG	F	NP	-	NP	-	NP	-	NP	-	NP	-
22	GG58372	MMM-BLK	BLU-WHI	LBBG	M	NP	-	-	-	-	-	NP	-	-	-
23	GG58373	MMM-GRN	BLU-WHI	LBBG	F	NP	-	NP	-	NP	-	NP	-	-	-
24	GG58374	MMM-BLU	BLU-WHI	LBBG	M	NP	-	NP	-	NP	-	NP	-	NP	-
25	GG58375	MMM-WHI	BLU-WHI	LBBG	M	LB	-	A	-	A	-	LB	-	LB	-
26	GG58376	MMM-RED	RED-BLU	LBBG	F	LB	-	LB	-	LB	-	LB	-	-	-
27	GG58377	MMM-BLK	RED-BLU	LBBG	M	LB	-	LB	-	LB	-	LB	-	LB	-
28	GG58378	MMM-GRN	RED-BLU	LBBG	M	LB	-	A	-	LB	-	LB	-	LB	-
29	GG58379	MMM-BLU	RED-BLU	LBBG	F	NP	-	-	-	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	-	-	-	K	-	-	-	NP	-
33	GG58383	MMM-GRN	BLK-BLU	LBBG	F	K	-	K	-	K	-	K	-	K	-
34	GG58384	MMM-BLU	BLK-BLU	LBBG	M	K	-	K	-	K	-	K	-	K	-
35	GG58385	MMM-WHI	BLK-BLU	LBBG	M	K	-	K	-	K	-	K	-	K	-
36	GG58386	MMM-RED	GRN-BLU	LBBG	M	LB	-	-	-	LB	-	LB	-	LB	-
37	GG58387	MMM-BLK	GRN-BLU	LBBG	M	NP	-	NP	-	K	-	K	-	K	-
38	GG58388	MMM-GRN	GRN-BLU	LBBG	F	NP	-	A	-	LB	-	LB	-	-	-
39	GG58389	MMM-BLU	GRN-BLU	LBBG	F	K	-	A	-	A	-	LB	-	LB	-
40	GG58390	MMM-RED	WHI-BLU	LBBG	F	LB	-	-	-	-	-	NP	-	-	-
41	GG58391	MMM-WHI	GRN-BLU	LBBG	F	K	-	K	-	K	-	K	-	-	-
42	GG58392	MMM-BLK	WHI-BLU	LBBG	M	K	-	K	-	-	-	-	-	-	-
43	GG58393	MMM-GRN	WHI-BLU	LBBG	F	NP	-	-	-	NP	-	NP	-	NP	-
44	GG58394	MMM-BLU	WHI-BLU	LBBG	F	NP	-	NP	-	NP	-	NP	-	NP	-
45	GG58395	MMM-WHI	WHI-BLU	LBBG	M	NP	-	-	-	-	-	-	-	-	-
46	GG58396	MMM-RED	GRN-GRN	LBBG	F	NP	-	NP	-	-	-	NP	-	NP	-
47	GG58397	MMM-BLK	GRN-GRN	LBBG	F	NP	-	NP	-	NP	-	NP	-	NP	-
48	GG58398	MMM-GRN	GRN-GRN	LBBG	F	LB	-	LB	-	LB	-	LB	-	LB	-
49	GG58399	MMM-BLU	GRN-GRN	LBBG	F	LB	-	LB	-	LB	-	-	-	-	-
50	GG58400	MMM-WHI	GRN-GRN	LBBG	M	K	-	K	-	K	-	K	-	-	-
51	GG58451	MMM-RED	GRN-RED	LBBG	M	R	-	R	-	R	-	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	-	NP	-	-	-	NP	-
55	GG58455	MMM-WHI	GRN-RED	LBBG	F	NP	-	NP	-	NP	-	NP	-	NP	-
56	GG58456	MMM-RED	GRN-BLK	LBBG	M	NP	-	-	-	-	-	-	D	-	-
57	GG58457	MMM-BLK	GRN-BLK	LBBG	M	K	-	K	-	K	-	K	-	K	-
58	GG58458	MMM-GRN	GRN-BLK	LBBG	F	K	-	K	-	K	-	K	-	K	-
59	GG58459	MMM-BLU	GRN-BLK	LBBG	F	K	-	-	-	K	-	-	-	-	-
60	GG58460	MMM-WHI	GRN-BLK	LBBG	F	K	-	K	-	K	-	K	-	K	-
61	GG58461	MMM-RED	GRN-WHI	LBBG	F	R	-	R	-	NH	-	NH	-	R	-
62	GG58462	MMM-BLK	GRN-WHI	LBBG	F	R	-	R	-	R	-	R	-	R	-
63	GG58463	MMM-GRN	GRN-WHI	LBBG	F	R	-	R	-	R	-	R	-	R	-

64	GG58464	MMM-BLU	GRN-WHI	LBBG	M	NP	-	NP	-	NP	-	NP	-	NP	-
65	GG58465	MMM-WHI	GRN-WHI	LBBG	F	NP	-	NP	-	NP	-	NP	-	NP	-
66	GG58466	MMM-RED	RED-GRN	LBBG	M	NP	-	NP	-	NP	-	-	-	-	-
67	GG58467	MMM-BLK	RED-GRN	LBBG	F	R	-	R	-	R	-	-	-	-	-
68	GG58468	MMM-GRN	RED-GRN	LBBG	F	R	-	R	-	R	-	R	-	R	-
69	GG58469	MMM-BLU	RED-GRN	LBBG	F	R	-	-	-	NH	-	NH	-	NH	-
70	GG58470	MMM-WHI	RED-GRN	LBBG	F	K	-	-	-	K	-	K	-	K	-
71	GG58471	MMM-RED	BLK-GRN	LBBG	F	K	-	K	-	K	-	K	-	K	-
72	GG58472	MMM-BLK	BLK-GRN	LBBG	M	K	-	K	-	K	-	K	-	K	-
73	GG58473	MMM-GRN	BLK-GRN	LBBG	M	NP	-	RON	-	NP	-	NP	-	NP	-
74	GG58474	MMM-BLU	BLK-GRN	LBBG	M	R	-	R	-	-	-	NH	-	-	-
75	GG58475	MMM-WHI	BLK-GRN	LBBG	M	NP	-	NP	-	NP	-	NP	-	NP	-
76	GG58476	MMM-RED	WHI-GRN	LBBG	M	R	-	NP	-	NP	-	NP	-	NP	-
77	GG58477	MMM-BLK	WHI-GRN	LBBG	M	R	-	R	-	-	-	-	-	-	-
78	GG58470	MMM-GRN	WHI-GRN	LBBG	M	NP	-	NP	-	NP	-	-	-	NP	-
79	GG58479	MMM-BLU	WHI-GRN	LBBG	M	K	-	AWY	-	K	-	-	-	K	-
80	GG58480	MMM-WHI	WHI-GRN	LBBG	F	NP	-	NP	-	NP	-	NP	-	-	-
81	GG58481	MMM-RED	BLK-BLK	LBBG	F	R	-	A	-	LB	-	-	-	-	-
82	GG58482	MMM-BLK	BLK-BLK	LBBG	M	R	-	R	-	NH	-	NH	-	NH	-
83	GG58482	MMM-GRN	BLK-BLK	LBBG	M	NP	-	NP	-	NP	-	LB	-	NH	-
84	GG58484	MMM-BLU	BLK-BLK	LBBG	M	NH	-	R	-	-	-	NH	-	NH	-
85	GG58485	MMM-WHI	BLK-BLK	LBBG	F	NH	-	R	-	-	-	-	-	-	-
86	GG58586	MMM-RED	BLK-RED	LBBG	M	NH	-	NH	-	NH	-	NH	-	NH	-
87	GG58487	MMM-BLK	BLK-RED	LBBG	M	NH	-	-	-	K	-	-	-	-	-
88	GG58488	MMM-GRN	BLK-RED	LBBG	F	K	-	K	-	K	-	-	-	-	-
89	GG58489	MMM-BLU	BLK-RED	LBBG	M	K	-	-	-	K	-	K	-	K	-
90	GG58490	MMM-WHI	BLK-RED	LBBG	F	NH	-	NH	-	-	-	-	-	-	-
91	GG58491	RED-MMM	BLK-GRN	LBBG	M	NH	-	NH	-	NH	-	NH	-	NH	-
92	GG58492	BLK-MMM	BLK-GRN	LBBG	M	NH	-	NH	-	-	-	-	-	-	-
93	GG58493	GRN-MMM	BLK-GRN	LBBG	F	NH	-	NH	-	NH	-	NH	-	NH	-
94	GG58494	BLU-MMM	BLK-GRN	LBBG	M	NH	-	-	-	-	-	-	-	-	-
95	GG58495	WHI-MMM	BLK-GRN	LBBG	M	NH	-	NH	-	NH	-	NH	-	NH	-
96	GG58496	RED-MMM	BLK-BLU	LBBG	M	NH	-	NH	-	NH	-	NP	-	NH	-
97	GG58497	BLK-MMM	BLK-BLU	LBBG	M	NH	-	NH	-	-	-	NH	-	NH	-
98	GG58498	GRN-MMM	BLK-BLU	LBBG	M	NH	-	NH	-	NH	-	NH	-	NH	-
99	GG58499	BLU-MMM	BLK-BLU	LBBG	M	NH	-	NH	-	NH	-	NH	-	NH	-
100	GG58500	WHI-MMM	BLK-BLU	LBBG	M	K	-	K	-	K	D	-	-	-	-
101	GG58551	MMM-RED	BLK-WHI	LBBG	M	K	-	-	-	K	-	K	-	K	-
102	GG58552	MMM-BLK	BLK-WHI	LBBG	M	NH	D	-	-	-	-	-	-	-	-
103	GG58553	MMM-GRN	BLK-WHI	LBBG	F	NH	-	NH	-	R	-	-	-	-	-
104	GG58554	MMM-BLU	BLK-WHI	LBBG	M	NH	-	-	-	-	-	-	-	-	-
105	GG65528	MMM-RED	RED-RED	LBBG	M	-	-	LB	-	A	-	LB	-	LB	-
106	GG65529	MMM-BLK	RED-RED	LBBG	M	-	-	LB	-	NP	-	-	-	NH	-
107	GG07221	MMM-GRN	RED-RED	LBBG	M	-	-	LB	-	-	-	-	-	LB	-
108	GG65530	MMM-BLU	RED-RED	LBBG	M	-	-	LB	-	LB	-	LB	-	LB	-
110	GG65534	MMM-WHI	RED-RED	LBBG	F	-	-	LB	-	LB	-	LB	-	LB	-
111	GG65535	MMM-RED	RED-BLK	LBBG	F	-	-	LB	-	LB	-	-	-	-	-
112	GG65536	MMM-BLK	RED-BLK	LBBG	F	-	-	NP	-	NP	-	NH	-	-	-
113	GG65537	MMM-GRN	RED-BLK	LBBG	F	-	-	NP	-	NP	-	NP	-	NP	-
114	GG65538	MMM-BLU	RED-BLK	LBBG	F	-	-	NP	-	NH	-	NH	-	NH	-
115	GG65540	MMM-WHI	RED-BLK	LBBG	M	-	-	NP	-	NP	-	-	-	NP	-
116	GG65541	MMM-YEL	RED-BLK	LBBG	F	-	-	NP	-	-	-	-	-	-	-
117	GG65542	MMM-RED	RED-WHI	LBBG	M	-	-	NP	-	NP	-	-	-	NP	-
118	GG65544	MMM-GRN	RED-WHI	LBBG	F	-	-	NP	-	NP	-	NP	-	NP	-
119	GG65545	MMM-BLK	RED-WHI	LBBG	F	-	-	NP	-	NP	-	NP	-	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	-	K	-	K	-	K	-
123	GG65550	MMM-RED	RED-YEL	LBBG	?	-	-	K	-	K	-	K	-	K	-
124	GG65551	MMM-BLK	RED-YEL	LBBG	F	-	-	K	-	K	-	-	P	-	-
125	GG65552	MMM-GRN	RED-YEL	LBBG	F	-	-	K	-	K	-	K	-	K	-
126	GG65553	MMM-BLU	RED-YEL	LBBG	F	-	-	K	-	-	-	-	-	-	-
127	GG65554	MMM-WHI	RED-YEL	LBBG	M	-	-	K	-	K	-	K	-	K	-

64	GG58464	MMM-BLU	GRN-WHI	LBBG	M	NP	-	NP	-	NP	-	NP	-	NP	-						
65	GG58465	MMM-WHI	GRN-WHI	LBBG	F	NP	-	NP	-	NP	-	NP	-	NP	-						
66	GG58466	MMM-RED	RED-GRN	LBBG	M	NP	-	NP	-	NP	-	-	-	-	-						
67	GG58467	MMM-BLK	RED-GRN	LBBG	F	R	-	R	-	R	-	-	-	-	-						
68	GG58468	MMM-GRN	RED-GRN	LBBG	F	R	-	R	-	R	-	R	-	R	-						
69	GG58469	MMM-BLU	RED-GRN	LBBG	F	R	-	-	-	NH	-	NH	-	NH	-						
70	GG58470	MMM-WHI	RED-GRN	LBBG	F	K	-	-	-	K	-	K	-	K	-						
71	GG58471	MMM-RED	BLK-GRN	LBBG	F	K	-	K	-	K	-	K	-	K	-						
72	GG58472	MMM-BLK	BLK-GRN	LBBG	M	K	-	K	-	K	-	K	-	K	-						
73	GG58473	MMM-GRN	BLK-GRN	LBBG	M	NP	-	RON	-	NP	-	NP	-	NP	-						
74	GG58474	MMM-BLU	BLK-GRN	LBBG	M	R	-	R	-	-	-	NH	-	-	-						
75	GG58475	MMM-WHI	BLK-GRN	LBBG	M	NP	-	NP	-	NP	-	NP	-	NP	-						
76	GG58476	MMM-RED	WHI-GRN	LBBG	M	R	-	NP	-	NP	-	NP	-	NP	-						
77	GG58477	MMM-BLK	WHI-GRN	LBBG	M	R	-	R	-	-	-	-	-	-	-						
78	GG58470	MMM-GRN	WHI-GRN	LBBG	M	NP	-	NP	-	NP	-	-	-	NP	-						
79	GG58479	MMM-BLU	WHI-GRN	LBBG	M	K	-	AWY	-	K	-	-	-	K	-						
80	GG58480	MMM-WHI	WHI-GRN	LBBG	F	NP	-	NP	-	NP	-	NP	-	-	-						
81	GG58481	MMM-RED	BLK-BLK	LBBG	F	R	-	A	-	LB	-	-	-	-	-						
82	GG58482	MMM-BLK	BLK-BLK	LBBG	M	R	-	R	-	NH	-	NH	-	NH	-						
83	GG58482	MMM-GRN	BLK-BLK	LBBG	M	NP	-	NP	-	NP	-	LB	-	NH	-						
84	GG58484	MMM-BLU	BLK-BLK	LBBG	M	NH	-	R	-	-	-	NH	-	NH	-						
85	GG58485	MMM-WHI	BLK-BLK	LBBG	F	NH	-	R	-	-	-	-	-	-	-						
86	GG58586	MMM-RED	BLK-RED	LBBG	M	NH	-	NH	-	NH	-	NH	-	NH	-						
87	GG58487	MMM-BLK	BLK-RED	LBBG	M	NH	-	-	-	K	-	-	-	-	-						
88	GG58488	MMM-GRN	BLK-RED	LBBG	F	K	-	K	-	K	-	-	-	-	-						
89	GG58489	MMM-BLU	BLK-RED	LBBG	M	K	-	-	-	K	-	K	-	K	-						
90	GG58490	MMM-WHI	BLK-RED	LBBG	F	NH	-	NH	-	-	-	-	-	-	-						
91	GG58491	RED-MMM	BLK-GRN	LBBG	M	NH	-	NH	-	NH	-	NH	-	NH	-						
92	GG58492	BLK-MMM	BLK-GRN	LBBG	M	NH	-	NH	-	-	-	-	-	-	-						
93	GG58493	GRN-MMM	BLK-GRN	LBBG	F	NH	-	NH	-	NH	-	NH	-	NH	-						
94	GG58494	BLU-MMM	BLK-GRN	LBBG	M	NH	-	-	-	-	-	-	-	-	-						
95	GG58495	WHI-MMM	BLK-GRN	LBBG	M	NH	-	NH	-	NH	-	NH	-	NH	-						
96	GG58496	RED-MMM	BLK-BLU	LBBG	M	NH	-	NH	-	NH	-	NP	-	NH	-						
97	GG58497	BLK-MMM	BLK-BLU	LBBG	M	NH	-	NH	-	-	-	NH	-	NH	-						
98	GG58498	GRN-MMM	BLK-BLU	LBBG	M	NH	-	NH	-	NH	-	NH	-	NH	-						
99	GG58499	BLU-MMM	BLK-BLU	LBBG	M	NH	-	NH	-	NH	-	NH	-	NH	-						
100	GG58500	WHI-MMM	BLK-BLU	LBBG	M	K	-	K	-	K	D	-	-	-	-						
101	GG58551	MMM-RED	BLK-WHI	LBBG	M	K	-	-	-	K	-	K	-	K	-						
102	GG58552	MMM-BLK	BLK-WHI	LBBG	M	NH	D	-	-	-	-	-	-	-	-						
103	GG58553	MMM-GRN	BLK-WHI	LBBG	F	NH	-	NH	-	R	-	-	-	-	-						
104	GG58554	MMM-BLU	BLK-WHI	LBBG	M	NH	-	-	-	-	-	-	-	-	-						
105	GG65528	MMM-RED	RED-RED	LBBG	M	-	-	LB	-	A	-	LB	-	LB	-						
106	GG65529	MMM-BLK	RED-RED	LBBG	M	-	-	LB	-	NP	-	-	-	NH	-						
107	GG07221	MMM-GRN	RED-RED	LBBG	M	-	-	LB	-	-	-	-	-	LB	-						
108	GG65530	MMM-BLU	RED-RED	LBBG	M	-	-	LB	-	LB	-	LB	-	LB	-						
110	GG65534	MMM-WHI	RED-RED	LBBG	F	-	-	LB	-	LB	-	LB	-	LB	-						
111	GG65535	MMM-RED	RED-BLK	LBBG	F	-	-	LB	-	LB	-	-	-	-	-						
112	GG65536	MMM-BLK	RED-BLK	LBBG	F	-	-	NP	-	NP	-	NH	-	-	-						
113	GG65537	MMM-GRN	RED-BLK	LBBG	F	-	-	NP	-	NP	-	NP	-	NP	-						
114	GG65538	MMM-BLU	RED-BLK	LBBG	F	-	-	NP	-	NH	-	NH	-	NH	-						
115	GG65540	MMM-WHI	RED-BLK	LBBG	M	-	-	NP	-	NP	-	-	-	NP	-						
116	GG65541	MMM-YEL	RED-BLK	LBBG	F	-	-	NP	-	-	-	-	-	-	-						
117	GG65542	MMM-RED	RED-WHI	LBBG	M	-	-	NP	-	NP	-	-	-	NP	-						
118	GG65544	MMM-GRN	RED-WHI	LBBG	F	-	-	NP	-	NP	-	NP	-	NP	-						
119	GG65545	MMM-BLK	RED-WHI	LBBG	F	-	-	NP	-	NP	-	NP	-	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	-	K	-	K	-	K	-						
123	GG65550	MMM-RED	RED-YEL	LBBG	?	-	-	K	-	K	-	K	-	K	-						
124	GG65551	MMM-BLK	RED-YEL	LBBG	F	-	-	K	-	K	-	-	P	-	-						
125	GG65552	MMM-GRN	RED-YEL	LBBG	F	-	-	K	-	K	-	K	-	K	-						
126	GG65553	MMM-BLU	RED-YEL	LBBG	F	-	-	K	-	-	-	-	-	-	-						
127	GG65554	MMM-WHI	RED-YEL	LBBG	M	-	-	K	-	K	-	K	-	K	-						

128	GG65555	MMM-YEL	RED-YEL	LBBG	M	-	-	NP	-	NP	D	-	-	-	-
129	GG65556	MMM-RED	WHI-RED	LBBG	F	-	-	NP	-	NP	-	NP	-	NP	-
130	GG65557	MMM-BLK	WHI-RED	LBBG	M	-	-	NP	-	NP	-	NP	-	NP	-
131	GG65558	MMM-GRN	WHI-RED	LBBG	M	-	-	NP	-	NP	-	NP	-	Y	-
132	GG65559	MMM-BLU	WHI-RED	LBBG	M	-	-	K	-	-	-	-	-	-	-
133	GG65560	MMM-WHI	WHI-RED	LBBG	M	-	-	K	-	-	-	-	-	NP	-
134	GG65561	MMM-BLK	WHI-BLK	LBBG	F	-	-	K	-	K	-	-	-	K	-
135	GG65562	MMM-GRN	WHI-BLK	LBBG	M	-	-	NP	-	NP	-	NP	-	NP	-
136	GG65564	MMM-BLU	WHI-BLK	LBBG	F	-	-	NP	-	NP	-	NP	-	NP	-
137	GG65565	MMM-WHI	WHI-BLK	LBBG	M	-	-	NP	-	NP	-	NP	-	-	-
138	GG65566	MMM-YEL	WHI-BLK	LBBG	F	-	-	NP	-	NP	-	NP	-	-	-
139	GG65568	MMM-RED	WHI-WHI	LBBG	F	-	-	NP	-	NP	-	NP	-	NP	-
140	GG65569	MMM-BLK	WHI-WHI	LBBG	M	-	-	NP	-	NP	-	NP	-	NP	-
141	GG65570	MMM-GRN	WHI-WHI	LBBG	M	-	-	R	-	R	-	-	-	-	-
142	GG65571	MMM-BLU	WHI-WHI	LBBG	F	-	-	R	-	-	-	-	-	NP	-
143	GG65572	MMM-WHI	WHI-WHI	LBBG	F	-	-	R	-	NH	-	NH	-	R	-
144	GG65573	MMM-YEL	WHI-WHI	LBBG	F	-	-	R	-	R	-	R	-	R	-
145	GG65574	MMM-RED	WHI-YEL	LBBG	F	-	-	R	-	R	-	-	-	-	-
146	GG65575	MMM-BLK	WHI-YEL	LBBG	F	-	-	R	-	R	-	NH	-	-	-
147	GG65579	MMM-GRN	WHI-YEL	LBBG	M	-	-	R	-	R	-	R	-	NH	-
148	GG65580	MMM-BLU	WHI-YEL	LBBG	F	-	-	R	-	R	-	R	-	K	-
149	GG65582	MMM-WHI	WHI-YEL	LBBG	M	-	-	R	-	R	-	-	-	-	-
150	GG65583	MMM-YEL	WHI-YEL	LBBG	F	-	-	R	-	R	-	-	-	K	-
151	GG65585	MMM-RED	BLK-YEL	LBBG	F	-	-	R	-	R	-	R	-	NH	-
152	GG65586	MMM-BLK	BLK-YEL	LBBG	M	-	-	R	-	-	-	-	-	-	-
153	GG65587	MMM-GRN	BLK-YEL	LBBG	M	-	-	R	-	NH	-	NH	-	NH	-
154	GG65588	MMM-BLU	BLK-YEL	LBBG	M	-	-	R	-	R	-	R	-	-	-
155	GG65589	MMM-WHI	BLK-YEL	LBBG	M	-	-	R	-	NH	-	NH	-	NH	-
156	GG65590	MMM-YEL	BLK-YEL	LBBG	F	-	-	R	-	-	-	K	-	-	-
157	GG65592	MMM-RED	GRN-YEL	LBBG	M	-	-	R	-	NH	-	R	-	R	-
158	GG65594	MMM-BLK	GRN-YEL	LBBG	M	-	-	R	-	-	-	-	-	-	-
159	GG65595	MMM-GRN	GRN-YEL	LBBG	M	-	-	R	-	R	-	NH	-	NH	-
160	GG65596	MMM-BLU	GRN-YEL	LBBG	M	-	-	R	-	R	-	NH	-	NH	
161	GG65597	MMM-WHI	GRN-YEL	LBBG	F	-	-	R	-	R	-	NH	-	R	-
162	GG65598	MMM-YEL	GRN-YEL	LBBG	F	-	-	R	-	NH	-	NH	-	NH	-
163	GG65599	MMM-RED	BLU-YEL	LBBG	M	-	-	R	-	R	-	R	-	R	-
164	GG67208	MMM-BLK	BLU-YEL	LBBG	M	-	-	-	-	K	-	K	-	-	-
165	GG62709	MMM-GRN	BLU-YEL	LBBG	F	-	-	-	-	K	-	K	-	K	-
166	GG62710	MMM-BLU	BLU-YEL	LBBG	M	-	-	-	-	K	-	K	-	K	-
167	GG67211	MMM-WHI	BLU-YEL	LBBG	F	-	-	-	-	K	-	K	-	K	-
168	GG67212	MMM-YEL	BLU-YEL	LBBG	F	-	-	-	-	K	-	K	-	K	-
169	GG67213	MMM-RED	YEL-RED	LBBG	F	-	-	-	-	K	D	-	-	-	-
170	GG67214	MMM-BLK	YEL-RED	LBBG	F	-	-	-	-	K	-	K	-	K	-
171	GG67215	MMM-BLU	YEL-RED	LBBG	F	-	-	-	-	R	-	R	-	NP	-
172	GG67216	MMM-GRN	YEL-RED	LBBG	F	-	-	-	-	K	-	R	-	R	-
173	GG67217	MMM-WHI	YEL-RED	LBBG	M	-	-	-	-	R	-	K	-	R	-
174	GG67219	MMM-YEL	YEL-RED	LBBG	F	-	-	-	-	R	-	K	-	K	-
175	GG67220	MMM-RED	YEL-BLK	LBBG	F	-	-	-	-	R	-	NP	-	NP	-
176	GG67221	MMM-BLK	YEL-BLK	LBBG	F	-	-	-	-	R	-	R	-	R	-
177	GG67224	MMM-GRN	YEL-BLK	LBBG	F	-	-	-	-	R	-	SN	-	-	-
178	GG67226	MMM-BLU	YEL-BLK	LBBG	F	-	-	-	-	NH	-	NH	-	NH	-
179	GG67228	MMM-WHI	YEL-BLK	LBBG	M	-	-	-	-	NH	-	NH	-	NH	-
180	GG67229	MMM-YEL	YEL-BLK	LBBG	M	-	-	-	-	NH	-	NH	-	NH	-
181	GG67231	MMM-RED	YEL-GRN	LBBG	M	-	-	-	-	R	-	R	-	R	-
182	GG67232	MMM-BLK	YEL-GRN	LBBG	F	-	-	-	-	NH	-	NH	-	NH	-
183	GG67233	MMM-GRN	YEL-GRN	LBBG	F	-	-	-	-	NH	-	NH	-	NH	-
184	GG67234	MMM-BLU	YEL-GRN	LBBG	F	-	-	-	-	R	-	R	-	R	-
185	GG67235	MMM-WHI	YEL-GRN	LBBG	F	-	-	-	-	NH	-	NH	-	-	-
186	GG67236	MMM-YEL	YEL-GRN	LBBG	F	-	-	-	-	NH	-	NH	-	NH	-
187	GG67237	MMM-RED	YEL-BLU	LBBG	M	-	-	-	-	NP	-	NP	-	NP	-
188	GG67237	MMM-BLK	YEL-BLU	LBBG	F	-	-	-	-	NP	-	NP	-	NP	-
189	GG67242	MMM-GRN	YEL-BLU	LBBG	M	-	-	-	-	NP	-	-	-	NP	-
190	GG67243	MMM-BLU	YEL-BLU	LBBG	M	-	-	-	-	NP	-	NP	-	NP	-

189	GG67242	MMM-GRN	YEL-BLU	LBBG	M	-	-	-	-	NP	-	-	-	NP	-
190	GG67243	MMM-BLU	YEL-BLU	LBBG	M	-	-	-	-	NP	-	NP	-	NP	-
191	GG67244	MMM-WHI	YEL-BLU	LBBG	F	-	-	-	-	NP	-	NP	-	NP	-
192	GG82725	MMM-YEL	YEL-BLU	LBBG	F	-	-	-	-	-	-	K	-	K	-
193	GG82726	MMM-BLK	YEL-WHI	LBBG	M	-	-	-	-	-	-	K	-	K	-
194	GG82727	MMM-BLU	YEL-WHI	LBBG	M	-	-	-	-	-	-	K	-	K	-
195	GG82728	MMM-GRN	YEL-WHI	LBBG	M	-	-	-	-	-	-	K	-	-	-
196	GG82729	MMM-RED	YEL-WHI	LBBG	F	-	-	-	-	-	-	K	-	K	-
197	GG82730	MMM-WHI	YEL-WHI	LBBG	M	-	-	-	-	-	-	K	-	K	-
198	GG82731	MMM-YEL	YEL-WHI	LBBG	M	-	-	-	-	-	-	K	-	K	-
199	GG82723	MMM-BLK	YEL-YEL	LBBG	M	-	-	-	-	-	-	K	-	K	-
200	GG82734	MMM-BLU	YEL-YEL	LBBG	F	-	-	-	-	-	-	K	-	K	-
201	GG82737	MMM-GRN	YEL-YEL	LBBG	M	-	-	-	-	-	-	K	-	K	-
202	GG82739	MMM-RED	YEL-YEL	LBBG	F	-	-	-	-	-	-	K	-	K	-
203	GG82740	MMM-WHI	YEL-YEL	LBBG	F	-	-	-	-	-	-	K	-	K	-
204	GG82742	MMM-YEL	YEL-YEL	LBBG	M	-	-	-	-	-	-	K	-	K	-
205	GG82743	BLK-MMM	BLK-BLK	LBBG	M	-	-	-	-	-	-	K	-	K	-
206	GG82746	BLK-MMM	BLK-RED	LBBG	M	-	-	-	-	-	-	K	-	-	-
207	GG82749	BLK-MMM	BLK-WHI	LBBG	M	-	-	-	-	-	-	ARD	-	ARD	-
208	GG82688	BLK-MMM	BLK-YEL	LBBG	F	-	-	-	-	-	-	ARD	-	-	-
209	GG82690	BLK-MMM	BLU-BLK	LBBG	F	-	-	-	-	-	-	ARD	-	ARD	-
210	GG82692	BLK-MMM	BLU-BLU	LBBG	M	-	-	-	-	-	-	ARD	-	ARD	-
211	GG82693	BLK-MMM	BLU-GRN	LBBG	F	-	-	-	-	-	-	ARD	-	ARD	-
212	GG82756	BLK-MMM	BLU-RED	LBBG	M	-	-	-	-	-	-	RON	-	R	-
213	GG82757	BLK-MMM	BLU-WHI	LBBG	F	-	-	-	-	-	-	RON	-	R	-
214	GG82758	BLK-MMM	BLU-YEL	LBBG	F	-	-	-	-	-	-	RON	-	R	-
215	GG82760	BLK-MMM	GRN-BLK	LBBG	F	-	-	-	-	-	-	NP	-	NP	-
216	GG82761	BLK-MMM	GRN-BLU	LBBG	M	-	-	-	-	-	-	NP	-	-	-
217	GG82723	BLK-MMM	GRN-GRN	LBBG	M	-	-	-	-	-	-	NP	-	NP	-
218	GG82765	BLK-MMM	GRN-RED	LBBG	M	-	-	-	-	-	-	NP	-	-	-
219	GG84729	BLK-MMM	GRN-WHI	LBBG	M	-	-	-	-	-	-	-	-	K	-
220	GG84731	BLK-MMM	GRN-YEL	LBBG	F	-	-	-	-	-	-	-	-	K	-
221	GG84732	BLK-MMM	RED-BLU	LBBG	F	-	-	-	-	-	-	-	-	K	-
222	GG84751	BLK-MMM	RED-BLK	LBBG	F	-	-	-	-	-	-	-	-	RON	-
223	GG84752	BLK-MMM	RED-GRN	LBBG	F	-	-	-	-	-	-	-	-	RON	-
224	GG84755	BLK-MMM	RED-RED	LBBG	M	-	-	-	-	-	-	-	-	RON	-
225	GG84756	BLK-MMM	RED-WHI	LBBG	F	-	-	-	-	-	-	-	-	NH	-
226	GG84757	BLK-MMM	RED-YEL	LBBG	M	-	-	-	-	-	-	-	-	NH	-
227	GG84758	BLK-MMM	WHI-BLK	LBBG	M	-	-	-	-	-	-	-	-	NH	-
228	GG84759	BLK-MMM	WHI-BLU	LBBG	F	-	-	-	-	-	-	-	-	NH	-
229	GG84762	BLK-MMM	WHI-GRN	LBBG	F	-	-	-	-	-	-	-	-	NH	-
230	GG84764	BLK-MMM	WHI-RED	LBBG	M	-	-	-	-	-	-	-	-	NH	-
231	GG84765	BLK-MMM	WHI-WHI	LBBG	F	-	-	-	-	-	-	-	-	NH	-
232	GG84766	BLK-MMM	WHI-YEL	LBBG	M	-	-	-	-	-	-	-	-	NH	-
233	GG84768	BLK-MMM	YEL-BLK	LBBG	M	-	-	-	-	-	-	-	-	NPL	-
234	GG84769	BLK-MMM	YEL-BLU	LBBG	M	-	-	-	-	-	-	-	-	NPL	-
235	GG84771	BLK-MMM	YEL-GRN	LBBG	F	-	-	-	-	-	-	-	-	NPL	-
236	8884772	BLK-MMM	YEL-RED	LBBG	M	-	-	-	-	-	-	-	-	NPL	-
237	GG84773	BLK-MMM	YEL-WHI	LBBG	F	-	-	-	-	-	-	-	-	NPL	-
238	GG84774	BLK-MMM	YEL-YEL	LBBG	F	-	-	-	-	-	-	-	-	NPL	-
239	GG84775	BLU-MMM	BLK-BLK	LBBG	F	-	-	-	-	-	-	-	-	NPL	-
240	GG84776	BLU-MMM	BLK-RED	LBBG	F	-	-	-	-	-	-	-	-	NPL	-
241	GG84777	BLU-MMM	BLK-WHI	LBBG	M	-	-	-	-	-	-	-	-	NPL	-
242	GG84778	BLU-MMM	BLU-BLK	LBBG	M	-	-	-	-	-	-	-	-	NPL	-
243	GG84779	BLU-MMM	BLK-YEL	LBBG	M	-	-	-	-	-	-	-	-	NPL	-
244	GG84780	BLU-MMM	BLU-BLU	LBBG	M	-	-	-	-	-	-	-	-	NPL	-
245	GG84781	BLU-MMM	BLU-GRN	LBBG	M	-	-	-	-	-	-	-	-	NPL	-

Table 8. The numbers of herring and lesser black-backed gulls ringed on the Isle of May in 1993 prior to the 10 August.

	Herring gull	Lesser black-backed gull
North Ness	147	43
North Horn	16	42
Rona	407	165
Altarstanes	21	0
Tarbet	148	6
Horse Hole	20	0
Tarbet to Low Light	47	7
North Plateau	107	99
Burrian	77	30
South Plateau	4	0
Colm's Hole	18	0
Kettle to Colm	169	118
Ardcarran	92	13
Lady's Bed and South Ness	97	64
South Horn	1	5
Maidens	80	0
Total	**1451**	**692**

Table 9. Proportion of juvenile gulls which had rings at the end of the breeding season on 1993.

Area	No. checked	% with rings
Maidens	26	81
Lady's Bed/South Ness/ Ardcarran/Pillow	253	65
Kirkhaven to Colm's Hole	54	82
Burrian	51	61
Tarbet to Low Light	50	55
Rona and North Ness	273	69
North Plateau	95	69
Altarstanes to Horse Hole	10	60
Total	**812**	**68**

Notes: No attempt was made to separate the two species
Checks made 10 August

Table 10. Whole island counts of shags, kittiwakes, guillemots, razorbills and fulmars on the Isle of May 1993.

	Shag (nests)	Kittiwake (nests)	Guillemot (birds)	Guillemot (pairs)	Razorbill (birds)	Razorbill (pairs)	Fulmar (sites)
A Rona (W)	129 (36)	264	937	621	119	70	12
B Altarstanes - Peregrine's Nest	51 (13)	1385	1959	1373	551	323	40
C Greengates	14 (8)	1367	3805	2690	646	451	48
D South Plateau	38 (17)	1053	5764	3822	723	426	36
E Cornerstone-Pilgrims' Haven	19 (12)	1167	3617	2627	641	532	22
F Pilgrims' Haven - Lady's Cave	90 (45)	551	683	497	130	87	18
G The Maidens - Inner	11 (7)	10	0	0	1	1	0
The Maidens - Outer	26 (19)	61	200	150	13	10	4
H South Ness and Lady's Bed	74 (45)	201	395	264	66	44	1
I South Ness - Colm's Hole	133 (71)	42	0	0	0	0	12
J Colm's Hole - Low Light	29 (20)	337	170	114	34	23	20
K Tarbet - Low Light	98 (32)	329	389	260	98	78	27
L Rona (N and E)	3 (1)	7	0	0	0	0	0
Lochside (S)	0	111	0	0	0	0	26
Lochside (N)	0	124	0	0	0	0	0
1993 Total	715	7009	17919	12418	3022	2045	266
1992 Total	1634	6916	17515	11511	2581	1909	266
% Change	**-56**	**+1**	**+2**	**+8**	**+17**	**+7**	**0**

Notes:

(1) Counts were made 1-6 June except for shags (21-23 June).

(2) The figures for shags in brackets are the number of empty, but attended, nests included in the total nest figures. There were an additional 113 "trace" shag nests not included in the count.

(3) Counts of auks converted to pairs using correction factors based on study colonies at Cornerstone.

(4) Counts made by J. Calladine, C. Wernham, A. Robinson, J. Graves, S. Wanless.

(5) Figures not to be used before checking with M.P. Harris.

Table 11. Counts of occupied kittiwake nestsin the non-random plots on 7 June 1993.

Plot	Nests 1993	% Change 1992-93
1	35	+17
2L	48	-24
2R	54	+15
3	47	-22
4	155	-17
7+7b	116	-6
8,9,9 extra	64	+0
10	209	+33
Total	**728**	**0**

Table. 12. Counts of guillemots in monitoring plots on the Isle of May, 1 to 20 June 1993.

Date	Chatter-stanes	A	B	D	E	F	G	H	I	J	Rona	Corner-stone	Colony 4 Old area	Colony 4 New area	Total
1 June	492	214	210	314	178	429	209	385	166	96	162	190	246	331	3376
2 June	436	219	228	288	147	436	173	344	136	47	118	168	224	288	3028
4 June	521	227	231	319	180	484	173	382	175	74	161	190	266	342	3459
7 June	486	235	252	335	180	496	202	401	187	94	209	214	277	368	3659
9 June	446	221	228	286	162	453	150	342	227	86	162	178	261	333	3274
11 June	588	215	241	309	164	416	165	334	160	91	175	188	264	346	3392
13 June	392	209	187	314	145	408	172	355	169	81	132	161	227	289	3014
16 June	426	197	198	277	132	426	194	366	160	80	156	170	217	271	3053
18 June	385	197	190	265	135	404	156	344	129	74	143	165	213	274	2861
20 June	454	193	188	244	124	437	160	316	129	70	191	170	216	284	2960
Mean	462	213	215	295	155	439	175	357	164	79	161	179	241	313	3208
S.D.	61	14	24	28	21	31	20	26	30	14	27	16	24	35	260

Note: The total users Colony 4 (New area)

Table 13. Summary of changes in the numbers of individual guillemots in plots on the Isle of May, 1992-93.

Plot	1993 Mean	SE	% Change from
Chatterstanes	462	19.4	+9
A	213	4.4	-1
B	215	7.5	+1
D	295	8.9	+4
E	155	6.6	+7
F	439	9.7	-3
G	175	6.3	+2
H	357	8.3	+5
I	164	9.4	-8
J	79	4.6	0
Rona	161	8.5	-10
Cornerstone	179	5.1	+3
Colony 4 (new)	313	11.1	-6
Total	**3208**	**82**	**+2**

Table 14. Counts of razorbills in 9 plots on the Isle of May, 1 to 20 June 1993.

	Greenface	Peregrine's Nest	A	B	Greengates	Bishop	Horse	Cornerstone	C4 (Old)	C4 (New)	Total
June 1	132	76	34	44	172	62	4	60	27	50	634
June 2	60	51	26	20	123	45	1	39	24	38	403
June 4	135	79	43	51	188	87	4	75	31	59	721
June 7	153	78	52	38	223	82	6	83	32	68	783
June 9	70	73	40	33	151	96	3	61	34	86	613
June 11	78	74	52	35	165	79	3	64	28	58	608
June 13	81	80	43	42	167	79	1	72	26	57	622
June 16	137	60	41	32	158	75	3	56	20	58	620
June 18	107	64	40	43	150	76	4	49	24	54	587
June 20	95	57	61	36	169	82	5	60	28	65	630
Mean	**110**	**71**	**45**	**39**	**171**	**80**	**4**	**64**	**28**	**61**	**646**
SD	**30**	**9**	**8**	**6**	**23**	**9**	**1**	**10**	**4**	**11**	**63**

Notes:
Counts by M.P. Harris except for Peregrine's Nest and Bishops Cove (A. Robinson)
Total uses C4 (New)
Data for 2 June are excluded in the calculation of the annual means due to very poor viewing condition (see Table 16).

Table 15. Summary of changes in the number of individual razorbill in 9 plots on the Isle of May, 1992-3.

	1993 mean	SE	% change from 1992	Significance
Greenface	109.8	10.1	+16	n.s.
Peregrine's Nest	71.2	2.9	+21	P <0.01
A	45.1	2.8	+9	n.s.
B	39.3	2.1	+13	n.s.
Greengates	171.4	7.5	+19	P <0.01
Bishop Cove	79.8	3.1	+20	P<0.01
Horse Hole	3.7	0.5	(+37)	n.s.
Cornerstone	64.4	3.5	+23	P<0.01
C4 (New)	61.7	3.5	+6	n.s.
Total	**646.4**	**21**	**+17**	**P<0.01**

Note: Means were compared using t-tests

Table 16. Weather conditions during seabird monitoring counts in 1993.

Date	WIND		Sea state	Cloud cover	Visibility
	Direction	Beaufort force			
June					
1	N	3	Slight	8/8	Good
2	NE	6	Rough	8/8	Poor, driving rain late
4	S	3-4	Calm	8/8	Moderate
7	W	3-4	Calm	3/8	Haze
9	E	2	Calm	3/8-fog	Poor to very poor
11	NE	4	Slight	2/8	moderate
13	N	4	Moderate	4/8	Excellent
16	SW	4	Slight	5/8	Excellent
18	Calm	0	Calm	8/8	Exceptionally good
20	W	3	Slight	8/8	Exceptionally good

Table 17. Details of oystercatcher pairs breeding in 1993.

No.	Place	Date of laying	Clutch (eggs)	Brood (chick)	Repeat laying	Fledged (young)	Adult numbers	
1	West Braes	30/4	3	3	-	1	94	10
2	Mouse Knoll	1/5	?	-	8/6	0	12	107
3	Coal Shed	5/5	1+	Yes	-	0	98	13
4	Loggan's Road	12/5	3	0		1	11	12
5	South Ness	(25/5)	2	1		0	68	108
6	Gulley Trap (E)	(25/5)	2+	Yes	-	2	29	30
7	Gulley Trap (W)	27/5	1+	-	by 14/6	1	82	116
8	Burrian	14/5	2	2	-	0	5	69
9	North Ness (E)	(28/3)	3	0	0	0	50	109
10	North Horn	27/5	1+	-	18/6	0	UR	BTO
11	Rona Spa	27/5	1+	-	yes	0	11	97
12	Silver Sands	(26/5)	2+	0	yes	0	95	UR
13	Sewer Rocks	by 28/5	?	0	25/6	0	81	104
14	West Braes (top)	by 28/5	2	2	-	0	62	101
15	Helipad	27/5	2+	2	-	0	61	64
16	St Andrew's Well	by 27/5	2+	yes	-	0	88	113
17	Three Tarn	by 27/5	3	1	-	1	51	77
18	Kettle (N)	by 25/5	3	0	(13/6)	0	99	BTO
19	Three Tarn	by 25/5	3	?	-	0	27	42
20	Rona spa/pipe	30/5	1+	0	23/6	0	26	84
21	North Ness (W)	by 30/5	?	0	-	0	33	34
22	Cross Park	*c* 29/5	?	0	-	0	36	57
23	Altarstanes	*c* 29/5	2+	0	-	0	UR	UR
24	Silver Sands	7/6	3	yes	-	0	102	103

Table 17. contd.

25	Lookout	7/6	2+	?	-	0	38	58
26	North Plateau	3/6	1+	0	?	0	89	100
27	Beacon (N)	by 18/5	1+	1+	-	0	71	UR
28	South Plateau	late/5	?	0	-	0	106	BTO
29	Beacon (centre)	(5/6)	2+	0	-	0	UR	?UR
30	Byres/Kettle	7/6	1+	0	-	0	79	91
31	N Plateau (S)	7/6	2+	2	-	0	110	114
32	North Horn	?	?	0	-	0	25	92
33	Fuel Tanks	?	?	yes	-	0	48	115
34	Fuel Tanks	?	?	0	-	0	105	BTO
35	Fuel Tanks	?	?	0	-	0	111	?

Table 18. Details of colour-ringed oystercatchers on the Isle of May 1991-93.

NB or T = did not breed

DED = found dead

1,2, 3 etc. = nest number that year

Bird No.	Ring. No.	L. leg	R. leg	Sex	1991	1992	1993

1	FR24897	ZZZ-BTO	YEL-TRI	OYC	F	-	-	-	-	-	-
2	FR24885	RED-TRI	RED-BTO	OYC	M	-	-	-	-	-	-
3	FV95991	TRI-YEL	WHI-BTO	OYC	M	-	-	-	-	-	-
4	FV95911	BLK-BTO	BLK-TRI	OYC	F	-	-	-	-	-	-
5	FR24886	BLU-TRI	ZZZ-BTO	OYC	M	21	-	27	-	-	-
6	FR24970	RED-TRI	YEL-BTO	OYC	M	-	-	-	-	-	-
7	FR24893	ZZZ-ZZZ	ZZZ-BTO	OYC	M	-	-	-	-	-	-
8	FC22407	RED-BTO	GRN-TRI	OYC	F	27	-	28	-	-	-
9	FR24878	YEL-TRI	WHI-BTO	OYC	?	-	-	-	-	-	-
10	FR24867	YEL-TRI	YEL-BTO	OYC	F	1	-	1	-	-	-
11	FR24868	GRN-TRI	YEL-BTO	OYC	F	16	-	15	-	-	-
12	FR24864	DEF-ZZZ	TRI-BTO	OYC	M	16	1	-	1	-	-
13	FR24877	WHI-TRI	WHI-BTO	OYC	F	17	-	13	-	-	-
14	FV95910	BLK-BTO	WHI-TRI	OYC	M	-	-	-	-	-	-
15	FV95912	BLU-BTO	GRN-TRI	OYC	F	-	-	-	-	-	-
16	FR24895	GRN-BTO	RED-TRI	OYC	F	-	-	-	-	-	-
17	FR24889	RED-TRI	BLU-BTO	OYC	M	-	-	-	-	-	-
18	FV95987	TRI-YEL	RED-BTO	OYC	M	-	-	-	-	-	-
19	FR24873	BLU-TRI	BLK-BTO	OYC	M	-	-	-	-	-	-
20	FR24871	YEL-TRI	BLK-BTO	OYC	F	-	-	-	-	-	-
21	FV95905	WHI-BTO	GRN-TRI	OYC	M	-	-	-	-	-	-
22	FR24879	BLK-TRI	WHI-BTO	OYC	F	-	-	-	-	-	-
23	FR24896	GRN-BTO	WHI-TRI	OYC	M	-	-	-	-	-	-
24	FR24875	BLK-TRI	YEL-BTO	OYC	F	-	-	-	-	-	-
25	FV95915	BLU-BTO	GRN-TRI	OYC	F	-	-	34	-	-	-
26	FR76189	TRI-YEL	YEL-BTO	OYC	M	-	-	19	-	-	-
27	FR24900	YEL-BTO	YEL-TRI	OYC	M	19	-	35	-	-	-
28	FV95914	ZZZ-BTO	BLU-TRI	OYC	M	-	-	-	-	-	-
29	FR24872	BLK-TRI	BLK-BTO	OYC	M	20	-	23	-	-	-
30	FR24894	GRN-BTO	GRN-TRI	OYC	F	20	1	23	1	-	-
31	FR24874	GRN-TRI	BLK-BTO	OYC	F	-	-	-	-	-	-
32	FR24876	WHI-TRI	BLK-BTO	OYC	M	-	-	-	-	-	-
33	FV95903	TRI-WHI	BLK-BTO	OYC	M	31	-	24	-	-	-
34	FV95908	BLK-TRI	ZZZ-TRI	OYC	F	31	-	24	-	-	-
35	FA26971	TRI-BLK	YEL-BTO	OYC	M	28	D	16	-	-	-
36	FR24866	GRN-TRI	GRN-BTO	OYC	F	29	-	14	-	-	-
37	FR24881	GRN-TRI	WHI-BTO	OYC	M	24	-	17	-	-	-
38	FR24887	GRN-TRI	RED-BTO	OYC	F	24	-	17	-	-	-
39	FV95913	BLK-BTO	BLU-TRI	OYC	F	14	-	-	-	-	-
40	FR24865	WHI-TRI	GRN-BTO	OYC	M	-	-	-	-	-	-
41	FR24898	GRN-BTO	BLK-TRI	OYC	M	-	-	-	-	-	-
42	FV95906	WHI-BTO	ZZZ-TRI	OYC	F	19	-	35	-	-	-
43	FR24890	BLU-TRI	BLU-BTO	OYC	M	-	-	-	-	-	-
44	FR24891	GRN-TRI	BLU-BTO	OYC	F	23	-	34	-	-	-
45	FV95902	YEL-BTO	BLU-TRI	OYC	M	-	-	-	-	-	-
46	FR24869	WHI-TRI	YEL-BTO	OYC	M	-	-	-	-	-	-
47	FR24882	BLU-TRI	YEL-BTO	OYC	F	18	-	-	-	-	-
48	FV95988	TRI-YEL	GRN-BTO	OYC	F	NB	-	21	-	-	-
49	FV95903	YEL-BTO	WHI-TRI	OYC	M	10	1	-	-	-	-
50	FV95909	YEL-BTO	TRI-YEL	OYC	F	10	1	25	-	-	-
51	FV95989	WHI-BTO	TRI-YEL	OYC	F	26	-	5	-	-	-
52	FV95990	BLU-BTO	TRI-YEL	OYC	M	-	-	-	-	-	-
53	FV95907	WHI-BTO	YEL-TRI	OYC	M	-	-	-	-	-	-
54	FV95904	ZZZ-BTO	GRN-TRI	OYC	F	-	-	-	-	-	-
55	FR24888	WHI-TRI	RED-BTO	OYC	?	-	-	-	-	-	-
56	FR24892	WHI-TRI	BLU-BTO	OYC	F	-	-	-	-	-	-
57	FR24884	YEL-TRI	RED-BTO	OYC	M	29	1	14	-	-	-
58	FV95986	TRI-GRN	BTO-GRN	OYC	M	-	1	-	-	-	-
59	FV10975	GRN-BTO	TRI-GRN	OYC	F	-	-	-	-	-	-
60	FR24899	GRN-BTO	BLU-TRI	OYC	F	15	1	-	-	-	-
61	FR72579	GRN-BTO	TRI-YEL	OYC	M	30	-	33	-	-	-
62	FR72577	RED-BTO	TRI-YEL	OYC	M	15	-	9	-	-	-
63	FR72578	BLU-BTO	TRI-YEL	OYC	F	-	-	-	-	-	-

64	FV81985	WHI-BTO	WHI-TRI	OYC	F	30	-	33	-	-	-
65	FV81986	WHI-TRI	WHI-BTO	OYC	?	98	-	-	-	-	-
66	FV81987	WHI-BTO	BLU-TRI	OYC	F	-	-	-	-	-	-
67	FV81988	WHI-BTO	BLK-TRI	OYC	M	-	-	-	-	-	-
68	FV81989	WHI-BTO	TRI-WHI	OYC	F	6	-	2	-	-	-
69	FV81990	WHI-BTO	TRI-RED	OYC	F	21	1	27	1	-	-
70	FV81991	WHI-BTO	TRI-BLK	OYC	M	-	-	-	-	-	-
71	FV81992	TRI-WHI	WHI-BTO	OYC	?	14	-	18	-	-	-
72	FV81993	WHI-BTO	GRN-TRI	OYC	M	-	-	-	-	-	-
73	FV81994	TRI-RED	WHI-BTO	OYC	F	-	-	-	-	-	-
74	FA26957	WHI-BTO	RED-TRI	OYC	M	4	-	-	-	-	-
75	FV81996	WHI-BTO	TRI-BLU	OYC	F	-	-	-	-	-	-
76	FV81997	TRI-BLU	WHI-BTO	OYC	F	3	-	31	-	-	-
77	FR76006	TRI-GRN	WHI-BTO	OYC	M	26	1	5	1	-	-
78	FR76010	TRI-WHI	RED-TRI	OYC	M	-	-	-	-	-	-
79	FR76011	TRI-GRN	RED-BTO	OYC	F	5	-	30	-	-	-
80	FR76081	RED-BTO	TRI-WHI	OYC	M	-	-	-	-	-	-
81	FR76099	RED-TRI	GRN-BTO	OYC	?	8	-	3	-	-	-
82	FR76187	YEL-BTO	RED-TRI	OYC	M	-	-	16	-	-	-
83	FR76188	YEL-BTO	TRI-WHI	OYC	F	-	-	-	-	-	-
84	FR76190	YEL-BTO	TRI-GRN	OYC	F	-	1	19	-	-	-
85	FR76191	YEL-BTO	TRI-RED	OYC	M	-	-	-	-	-	-
86	FV95998	RED-BTO	RED-TRI	OYC	?	-	-	-	-	-	-
87	FC22406	RED-BTO	BLK-TRI	OYC	F	-	-	-	-	-	-
88	FC22408	RED-BTO	WHI-TRI	OYC	?	-	-	12	-	-	-
89	FC22405	RED-BTO	YEL-TRI	OYC	?	2	-	7	-	-	-
90	FC22404	RED-BTO	TRI-RED	OYC	F	-	-	-	-	-	-
91	FC2240?	RED-BTO	TRI-BLK	OYC	M	5	-	30	-	-	-
92	FC22488	BLK-BTO	TRI-WHI	OYC	?	11	-	22	-	-	-
93	FC22489	BLK-BTO	TRI-YEL	OYC	?	12	-	-	-	-	-
94	FC22493	BLK-BTO	TRI-BLK	OYC	?	1	-	1	-	-	-
95	FA26910	TRI-GRN	BLK-BTO	OYC	M	23	-	6	-	-	-
96	FA26911	TRI-RED	BLK-BTO	OYC	M	12	1	NB	-	-	-
97	FA26912	TRI-WHI	YEL-BTO	OYC	F	11	-	22	-	-	-
98	FA34480	TRI-GRN	YEL-BTO	OYC	M	3	-	13	-	-	-
99	FA26953	TRI-WHI	RED-BTO	OYC	M	7	-	20	-	-	-
100	FA26954	TRI-RED	RED-BTO	OYC	?	2	1	8	1	-	-
101	FA26955	TRI-BLK	RED-BTO	OYC	F	4	-	9	-	-	-
102	FA26956	TRI-BLU	RED-BTO	OYC	F	9	-	7	-	-	-
103	FA26958	RED-BTO	TRI-BLU	OYC	M	9	-	7	-	-	-
104	FA26959	RED-BTO	TRI-GRN	OYC	M	8	-	3	-	-	-
105	FA26960	TRI-BLK	WHI-BTO	OYC	M	22	-	-	-	-	-
106	FA26961	TRI-BLK	RED-BTO	OYC	F	7	-	20	-	-	-
107	FA26972	TRI-BLK	BLU-BTO	OYC	F	28	-	32	-	-	-
108	FA26974	TRI-BLK	GRN-BTO	OYC	M	27	1	28	1	-	-
109	FC45849	BLK-BTO	TRI-GRN	OYC	F	23	-	25	1	-	-
110	FA26981	TRI-BLK	YEL-BTO	OYC	?	25	-	10	-	-	-
111	FA26986	TRI-BLK	BLK-BTO	OYC	F	22	1	4	1	-	-
112	FA41117	TRI-WHI	GRN-BTO	OYC	?	-	-	2	-	-	-
113	FA41118	GRN-BTO	TRI-TRI	OYC	?	-	-	12	-	-	-
114	FA41119	TRI-TRI	WHI-BTO	OYC	?	-	-	10	-	-	-
115	FA41127	TRI-WHI	BLU-BTO	OYC	?	-	-	21	-	-	-

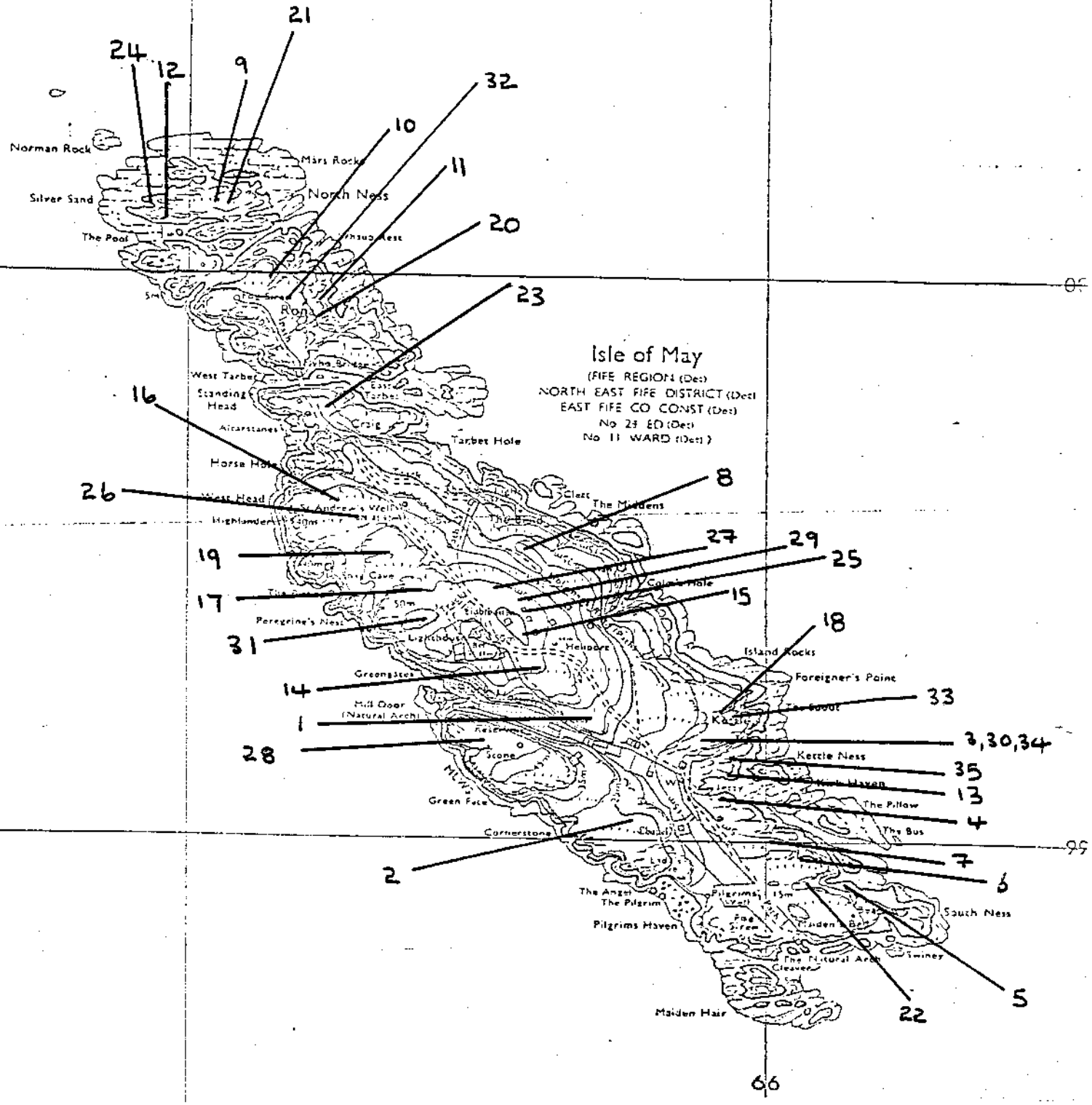
Table 19. Population estimates of Isle of May seabirds 1980-93.

	Fulmar (sites)	Shag (nests)	Herring gull (nests)	Lesser black-backed gull (nests)	Kittiwake (birds)	Guillemot (birds)	Razorbill (birds)	Elder (nests)	Oystercatcher (pairs)
1980	143	1041	c.4000	(490)	n.c.	n.c.	n.c.	c.200	25
1981	n.c.	1163	c.2500	(470)	n.c.	16300	2086	309	28
1982	n.c.	1425	2300	c.550	n.c.	n.c.	n.c.	241	31
1983	101	1567	2578	1385	(6115)	22550	2220	545	30
1984	175	1639	2230	1488	6012	19005	2051	413	29
1985	156	1524	2165	1033	5510	18390	1825	535	33
1986	150	1310	1943	682	4801	19151	1864	557	34
1987	n.c.	1916	2117	534	6765	17546	1887	636	30
1988	n.c.	1290	1711	563	7638	16791	2128	650	35
1989	212	1703	1629	643	7564	18328	2613	680	36
1990	198	1386	1551	618	8129	16778	2368	841	36
1991	250	1487	1447	788	6535	16834	1633	592	32
1992	266	1634	1462	751	6916	17512	2581	810	34
1993	266	715	2059	1259	7009	17919	3022	652	35

Oystercatcher

ISLE OF MAY NNR

FIFE 1993 MAP 1



NATURE CONSERVANCY COUNCIL
SCALE 1:10000