

## LUNDY SEABIRD MONITORING SITES

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### INTRODUCTION

Lundy has long been famed for its breeding seabirds. It is clear, however, from accounts of visits to the island in the 1930's, 1940's and early 1950's that the numbers of most of the seabird species breeding on Lundy then were very much larger than at present. In 1939, for instance, Perry estimated there to be 3,500 pairs of Puffins breeding on Lundy and a staggering 19,000 pairs of Guillemots (Perry, 1940). Recent counts indicate that present totals may be nearer 100 Puffins and approximately 2,000 individual Guillemots. Whatever the confidence one has in such figures, undoubtedly a drastic decline has taken place; but what of the outlook today? Are numbers continuing to decline or have they reached some sort of stability?

Counting seabirds accurately is a difficult business and attempts to quantify absolute breeding populations and determine current population trends are fraught with problems, not the least of which is that of simply counting large numbers of birds crowded together on narrow ledges. Detailed studies in recent years have indicated even more difficulties, with the discovery of marked diurnal and seasonal variations in colony attendance and varying numbers of non-breeding birds coming ashore at different periods.

Seabirds are however, very valuable as indicator species for detecting changes in the state of the marine environment. They are at the top of the marine food chain and monitoring their numbers is therefore particularly important and useful.

In 1971 the Royal Society for the Protection of Birds, in conjunction with the Seabird Group, established an Annual Seabird Census, following in the wake of Operation Seafarer in 1969, which had attempted to map and count all the breeding seabird colonies in the British Isles. Realising that to repeat a survey such as Operation Seafarer annually was (to say the least!) out of the question, the Annual Seabird Census aimed to establish a population index rather than an absolute total. Counting techniques have improved enormously over the years and standardisation of techniques to facilitate comparison between sites and between years has greatly increased the confidence with which such comparisons may be made.

Since 1971 the R.S.P.B. has continued to expand the Annual Seabird Census network and monitoring sites have been set up at various colonies throughout Britain. Many of these have now been counted regularly for up to 10 years. However, sites in Southern England are still relatively few, and in 1980 it was therefore decided to establish a series of such sites on Lundy. This paper gives details of count methodology, the sites selected, and the results for 1980 and 1981.

### METHODOLOGY

The methods used were those standardised for the Annual Seabird Census. These methods, as they pertain to auks, are discussed in detail in the Seabirds' Group's recently published "Auk Censussing Manual" (1981).

The Annual Seabird Census relies on the establishment of fixed study plots, with the same sites being counted in detail each year.

On Lundy each study plot was photographed in monochrome from a fixed position and the boundary of the site then clearly defined on the photograph for reference on each subsequent count, to ensure that *exactly* the same area of cliff was counted. Each count was made from exactly the same viewpoint, and reference photographs of the observer's position were taken. It is hoped in the near future also to mark the count positions on the ground with small stakes.

The selection of study plots was guided by a set of strict conditions which on Lundy greatly limited the choice. All counts were made from the land and it was obviously important to ensure that the counting positions were in safe locations without risk of life or limb to the observer. The counting position needed to be sufficiently distant from the birds so as not to cause disturbance, but close enough to ensure that individual birds could be clearly distinguished and counted using

binoculars. It was important that the study plots did not include any dead ground (i.e. hidden ledges or areas into which birds could disappear from sight from the chosen view-point) since this could clearly lead to much greater count variability. Most of the study plots were viewed from slightly above or on the same level as the birds. The boundaries were selected using clearly defined topographical features and irregularities in the cliff.

A detailed written description was taken of the cliffs at each study plot, and the location and nature of the colony defined. Distinct occupied ledges were also marked on the photograph and numbered separately.

Five counts were made each year during June. Early to mid-June is the ideal time, particularly for Guillemots and Razorbills, since most non-breeding individuals do not come ashore until later in the month. Also most birds are on eggs or tending young at that time and colony attendance is at its least variable. All counts were made between 0800 and 1600 B.S.T. to minimise known marked diurnal variations in colony attendance.

Note was taken of prevailing weather and sea conditions at the time of each count, but no counts were made on days with heavy rain, mist or winds of more than Beaufort Force 4, since these factors are known to affect colony attendance and counting accuracy.

At each visit to the study plots, each species was counted twice and the second figure taken as the definitive count. If the two counts differed by more than about 5% the counts were repeated until the difference between the last two counts came within this range. For Guillemots, Razorbills and Puffins the number of individual birds (excluding chicks) present on the cliff was counted, but for Kittiwakes, Shags and Fulmars the number of apparently occupied nests (A.O.N.) was counted. Birds in flight or on the sea nearby were excluded. Birds arriving on the cliff during the course of a count were ignored if that point of the cliff has already been counted or included if it had not. Departures were similarly treated. All counts were made by M. Davies.

The first priority was considered to be the selection of suitable study plots to monitor the Guillemot population, and this is reflected in the sites chosen. Guillemots are particularly vulnerable to oil pollution, and therefore the species most likely to show up any effect pollution may be having on long-term population trends. Also the Razorbill population is much more widely scattered along the coast of Lundy, with relatively few areas holding sufficient concentrations of birds to give a meaningful sample. Puffins are particularly difficult to count accurately as they nest out of sight underground (on Lundy, mostly in deep rock crevices) and the number of birds seen standing outside the nest sites can vary enormously throughout the day and season. On Lundy the are now unfortunately also rather scarce.

Shags, Fulmars and particularly Kittiwakes are mainly colonial nesting species and whilst the study plots chosen do include small numbers of pairs of each, it is hoped in the near future to establish one or two additional study plots specifically to monitor these species.

## RESULTS

Figure 1 shows the location of the seven study plots chosen on Lundy, and Plate 1 is a photograph of study plot 1 from the count position and showing the site boundary. Copies of the photographs for all seven study plots and their respective count positions have been deposited with the R.S.P.B. (Sandy, Bedfordshire) and the Lundy Field Society.

### THE STUDY PLOTS

#### **Study Plot 1 — North Light**

Sheer south-west facing cliff, just south of North Light. Viewed looking north from near base of steep grassy slope above Old Copper Mine. 3 Guillemots ledges — half to two-thirds way up the cliff (see Plate 1). Razorbills in the two areas in block cliff and crevices between Guillemot ledges 2/3 and on right hand side.



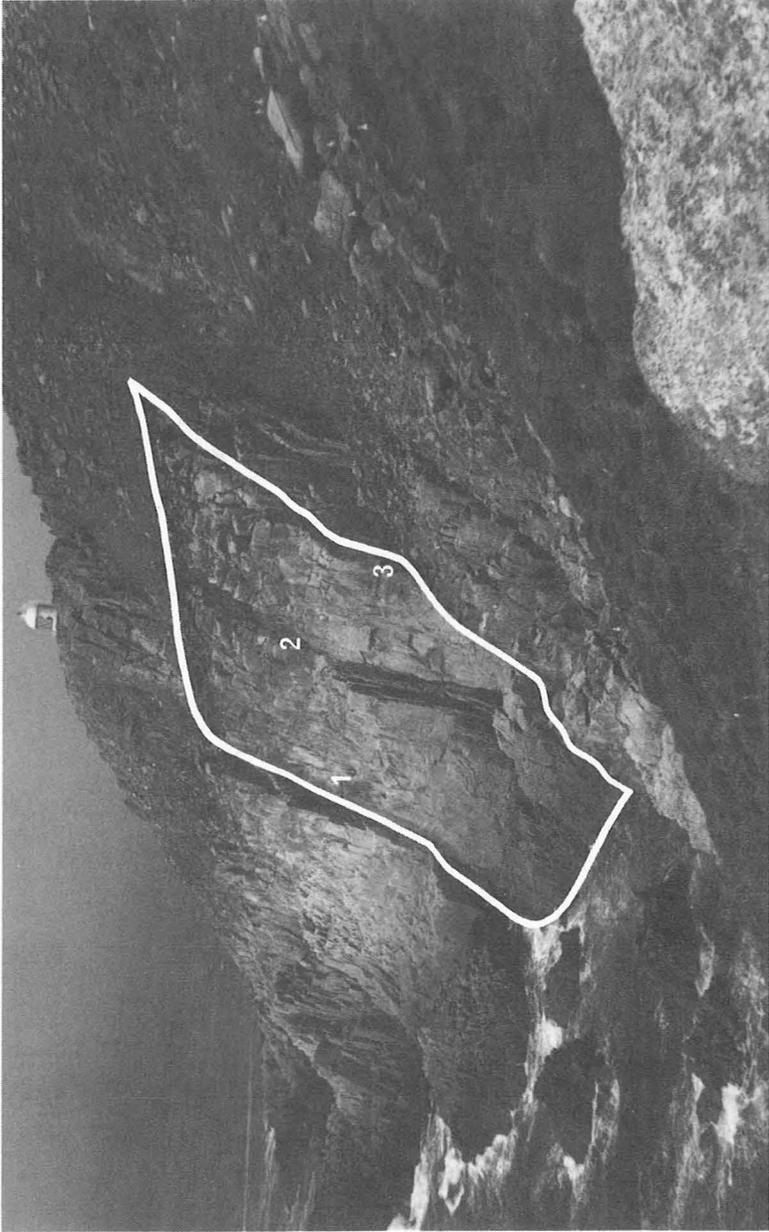


PLATE 1. Study Plot 1 — North Light

### **Study Plot 2 — Long Roost**

Sheer north facing cliff. Viewed looking south from Old Copper Mine (same counts position as for Study Plot 1). Many small ledges with nesting Guillemots, Razorbills and Kittiwakes scattered from top of cliff to almost three-quarters of the way down, mainly on R.H.S. (seaward end). Puffins in broken grassy ledges on top R.H.S.

### **Study Plot 3 — St. Mark's Stone**

Inner (landward) face of St. Mark's Stone. Viewed looking south-west from half-way down sloping gully side to north of small inlet, approached from just north of Threequarter Wall. Stepped cliff with 4 Guillemot ledges, three inter-connecting, circa two-thirds of the way up St. Mark's Stone.

### **Study Plot 4 — St. Mark's**

North facing slope of inlet, east and just north of St. Mark's Stone. Top section sheer (not included in the study plot), middle section fallen blocks, lower stepped and grooved rocks. Viewed from same site as Study Plot 3. Razorbills in scattered groups, mainly in block area in middle, some towards seaward end (R.H.S.). Shags in middle left of block area, between and under large boulders. Guillemots in small groups on lower right hand quarter of the face.

### **Study Plot 5 — Jenny's Cove North**

Sheer fluted cliff — seaward (westward) facing wall of rock at back of Jenny's Cove, below the Cheeses. Viewed from two-thirds of the way down steep grass and bracken-covered slope on north side of cove, just up from the Pyramid. Five Guillemot ledges circa half-way up the cliff.

### **Study Plot 6 — Jenny's Cove South**

Steep sheer cliff with few ledges, seaward (westward) facing wall of rock at back of Jenny's Cove, to south of deep cleft which separates it from Study Plot 5. Also bounded by another deep cleft on R.H.S. Broken area of boulders and grassy patches on upper part of cliff. Viewed from grassy spur on south side of Jenny's Cove, just to the west of Devil's Chimney. Guillemot ledges on sheer cliff in diagonal line from top L.H.S. to bottom R.H.S. half-way up the cliff. Puffins and Razorbills scattered in crevices and under boulders in broken boulder scree area near the top of the cliff. Fulmars on rock ledges in broken area above Guillemots.

### **Study Plot 7 — Battery Point**

Northwest facing sheer cliff north of Battery Point. Viewed looking south from half-way down steep south facing bracken slope of Dead Cow Point. Guillemots on three small ledges half to two-thirds of the way up cliff. Razorbills and Puffins in block scree on L.H.S. and in crevices near the top of the cliff on the R.H.S.

### **The 1980 and 1981 Seabird Counts**

Copies of the detailed counts for both 1980 and 1981 for each study plot (including separate counts for each distinct ledge) have been deposited with the R.S.P.B. (Sandy, Bedfordshire) and the Lundy Field Society. These counts are summarised in Table 1. Table 2 shows the overall totals (totalling together Study Plots 1-7) for each of the five count dates each year.

Comparing the averages and range of the five count totals for each year it can be seen that there is no indication of dramatic changes in numbers between the two years, particularly for Guillemot, Puffin, Kittiwake and Shag. Certainly there is variation in numbers at separate sub-colonies, but the details of this is probably best examined as future years' data accrue. The overall Razorbill figures appear to show a 20% increase in 1981 and the number of apparently occupied Fulmar sites has increased by 66%. However, the main purpose of the annual Seabird census is the monitoring of long-term trends, and since many factors (notably weather) can cause variations in the counts on any one day, apparently dramatic year to year changes should be regarded with some caution. Meaningful indications of long-term trends are almost certainly only detectable from count data over several years. Now that monitoring sites have been established on Lundy, it is important that regular annual counts can be continued for many years to come.

Additional work is currently in progress mapping and photographing all the known seabird breeding sites on Lundy to form a basis for long-term comparisons of site occupation.

#### REFERENCES

Perry, R. — 1940. Lundy, Isle of Puffins. London.

#### ACKNOWLEDGEMENTS

I would like to thank the Lundy Field Society for a grant towards the costs of this work.

### LUNDY SEABIRD MONITORING

TABLE 1 Count Details

	16th	17th	June 1980			9th	11th	June 1981		
			19th	20th	22nd			16th	18th	19th
<b>Study Plot 1</b>										
Razorbill	13	16	12	8	12	8	3	13	2	10
Guillemot	78	97	82	93	76	72	68	63	77	75
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<b>Study Plot 2</b>										
Fulmar	2	2	1	1	1	3	3	3	2	2
Kittiwake	58	55	56	55	57	54	54	54	52	51
Razorbill	15	14	14	15	12	9	11	15	13	14
Guillemot	131	114	112	118	140	123	137	106	124	121
Puffin	12	13	12	5	12	5	8	6	5	13
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<b>Study Plot 3</b>										
Guillemot	79	79	68	77	75	73	74	66	72	74
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<b>Study Plot 4</b>										
Razorbill	53	58	47	46	43	58	64	52	57	75
Guillemot	37	54	52	41	35	53	56	40	56	63
Shag	5	4	4	7	6	7	5	5	5	6
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<b>Study Plot 5</b>										
Fulmar	0	0	0	0	0	0	0	0	1	1
Razorbill	1	0	0	0	0	0	0	0	0	0
Guillemot	123	123	124	129	103	132	129	129	141	127
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<b>Study Plot 6</b>										
Fulmar	2	2	2	2	1	3	3	3	3	3
Razorbill	17	14	16	10	11	22	30	22	26	37
Guillemot	90	91	95	86	84	96	106	121	108	122
Puffin	4	8	11	9	6	7	15	10	7	12
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<b>Study Plot 7</b>										
Razorbill	19	17	15	15	19	8	26	14	26	21
Guillemot	72	70	73	87	92	54	52	55	56	61
Puffin	1	3	6	3	1	0	2	0	0	7

TABLE 2 Overall Totals (Study Plots 1-7)

1980

	16/6	17/6	19/6	20/6	22/6	$\bar{X}$
GUILLEMOT	615	628	606	631	605	617.0
RAZORBILL	118	119	104	94	97	106.4
PUFFIN	17	24	29	17	11	19.6
KITTIWAKE	58	55	56	55	57	56.2
SHAG	5	4	4	7	6	5.2
FULMAR	4	4	3	4	3	3.6

1981

	9/6	11/6	16/6	18/6	19/6	$\bar{X}$
GUILLEMOT	603	622	580	634	643	614.4
RAZORBILL	105	134	116	124	157	127.2
PUFFIN	11	25	16	12	32	19.2
KITTIWAKE	54	54	54	52	51	53.0
SHAG	7	5	5	5	6	5.6
FULMAR	6	6	6	6	6	6.0

(N.B. See Note below)

N.B. All figures for Guillemots, Razorbills and Puffins are for Individual Birds. All figures for Kittiwakes, Fulmars and Shags are for apparently occupied Nests.

## CELIA FIENNES AND THE BIRD OF LUNDY

BY F. L. LOVERIDGE

In September 1698 Celia Fiennes, riding through Cornwall and Devon wrote: "I saw Hartly Poynt . . . and just by I saw the Isle of Lundy which formerly belonged to my Grandfather Willian Lord Viscount Say and Seale which does abound with fish and rabbets and all sorts of fowles: one bird that lives partly in the water and partly out and so may be called an amphibious creature, its true that one foote is like a turky the other a gooses foote, it lays its eggs in a place the sun shines on and sets it so exactly upright on the small end, and there it remains till taken up and all the art and skill of persons cannot set it up soe againe to abide".

The existence of a bird with such asymmetrical feet was an old tradition referred to 500 years earlier by Giralduus Cambrensis in his *Topographica Hibernica*, 1188. There he mentions the 'aurifrisius', with one foot clawed and the other webbed, and recognizably describes the fishing style of the osprey. Alexander Neckham, *De Naturis Rerum*, c.1200, cites the same bird, which 'has one foot armed with hooked claws, and the other suitably webbed for swimming'. About fifty years later Bartholomew Anglicus in *De Proprietatibus Rerum* notes: "The sea eagle hath one fote close and hoole as the fote of a gandar and therewith she ruleth herself in the water, when she cometh downe by cause of her praye. And her other fote is a clove fote with full sharp clawes with the which she taketh her pray". (Raven, 1947, 27, 7, 15). This description seems to lapse for nearly 300 years. Then William Turner in *De Historia Avium*, 1544, writes of: "Haliaetus, in English and osprey . . . known to Englishmen because it empties their fishponds". (Evans, 1903, 35, 37). He says nothing about its feet, and Pierre Belon, *De La Nature des Oiseaux*, 1555, gives a picture of haleaetus with two clawed feet. A little later Conrad Gesner of Zurich, *Historia Animalium*, 1570, writes that aurifrisius is ossifrage, and he had heard the story about its odd feet from 'certain Englishmen'. (Raven, 1947, 143, 7, 194). But in *De Animalium* published the same year, John Caius says "Haliaetus is that kind of eagle which seeks its prey from the sea and lakes . . . yet it is cloven on each foot, not webbed on one as the vulgar think . . . They are abundant with us on the sea coasts and in the Isle of Wight: our people call it an osprey". (Evans 1903, 191, 193).