

MANX SHEARWATERS ON LUNDY

By

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ABSTRACT

The breeding status and number of Manx Shearwaters on Lundy have never been satisfactorily determined. This paper describes the methods and results of a survey to seek to establish this information. In mid-May 2001 all potential burrows on the island were checked using tape recordings of the birds' calls to ascertain occupancy. In total 7,000 burrows were checked and from these 154 responses were obtained from sitting birds. This equates to an estimated breeding population of 166 pairs, – a disappointingly small total. The distribution of nest sites and potential reasons for this small population are discussed.

Keywords: *Lundy*, *Manx Shearwater*, *Nest sites*.

INTRODUCTION

Historically there has been uncertainty over the breeding status and number of Manx Shearwaters (*Puffinus puffinus*) on Lundy. Population estimates over the past 60 years have ranged from as low as 100 up to 7,000 pairs. Typically these figures were derived from observations of birds heard or seen in flight, and such observations are generally recognised as being difficult to interpret. In 1939 Perry (1940) made an estimate of 1,000 pairs, though admitted later that this may have been over-optimistic. In 1969 estimates for the Operation Seafarer survey amounted to 100 pairs, though it is apparent that there was difficulty in arriving at this figure (Britton, 1969). During the 1970s there were several counts of over 1,000 birds offshore during the day, but it wasn't until a series of surveys from 1976 to 1981 that more specific attempts were made to assess numbers nesting (Thomas, 1981). Based upon night observations of calling birds, and sampling

of certain areas of burrows, Thomas extrapolates up to an “*extreme upper limit of 2,800 - 7,700 pairs*”.

From 1979 and through the 80s, ringing studies and follow up work on occupied burrows by Taylor (1985, 1989), indicated that birds were faithful to particular sites and that there was also immigration from the large nearby colonies at Skokholm and Skomer off the Welsh coast. Whilst he found activity during May and June, he could not find any evidence of successful breeding at colonies later in the season, and suggests that “*while breeding is continually attempted, it is almost totally unsuccessful because of predation by rats*”. Based upon numbers seen offshore during this work he estimates a breeding population of around 1,200 pairs.

OBJECTIVES

In June 2000 we undertook a preliminary survey of breeding Manx Shearwaters as part of the National Seabird 2000 Survey, but this was somewhat limited in that it only covered certain areas of coast and was carried out on a sampling basis only. However, occupied burrows were found, proving that Manx Shearwaters were indeed attempting to nest on the island. Additionally two potential colonies were located but it was recognised that attempts to estimate the island's breeding population from the limited data would be very approximate.

The 2001 survey sought to take this work forward and improve on these results, and in this respect its main objectives were:

- to establish the actual number of breeding pairs of Manx Shearwaters on Lundy
- to determine the distribution of breeding birds around the island

METHODOLOGY

Manx Shearwaters are difficult birds to survey as they nest in burrows and only enter and leave these burrows at night. Assessing their breeding status through night observations is therefore extremely difficult, particularly on the steep Lundy sidings. It is however possible to ascertain whether burrows are occupied by nesting shearwaters through alternate means. The method employed for this is to use a small portable tape recorder and to play a tape of manx shearwater calls at the entrance to potential nesting burrows. If duetting calls of both male and female are used and if there is a bird within the burrow then in most cases this bird will call back in response (Brooke 1978; Walsh *et al*, 1995). (In approximately 1 in 12 cases no response will be obtained from an occupied burrow, but this can be accommodated in the analysis of results by including a factor of

1.08 in the calculations). This approach was most convenient as it allowed survey work to be carried out in the relative safety of daylight hours.

The survey was undertaken in the middle of May (19th - 26th), and this period was chosen as most birds would be in the middle of the incubation stage at this time. Using the tape playback method it was planned that all suitable areas should be totally covered by checking all holes and crevices, but that known colonies and more promising areas should be targeted first. The coastal sidings were therefore prioritised in terms of their potential suitability, and as part of this process certain areas were identified as being unsuitable. Such areas were therefore excluded from the survey and they comprised:

- improved grassland (effectively the enclosed field areas south of Quarter Wall)
- sheer cliffs or rock faces
- scree slopes
- dense rhododendron and woodland
- recently cleared rhododendron areas

Additionally other areas were excluded during the survey work because they were considered too steep and dangerous. (Lesser Black-backed Gull colonies were also avoided in the interests of personal safety!)

Whilst it was considered unlikely that birds would be nesting away from the coast on the top of the island it was felt important to check this out. In view of the large area involved it was proposed that this should be done on a sampling basis. Following this approach the first surveying in 2001 was undertaken on the east coast at a colony located in June 2000 just south of Tibbets Point. Surveying was carried out by first laying out 5m wide transects using pegs and lines vertical down the sidings. This allowed all holes within each transect to be accurately located and to be checked without fear of duplication or omission. However, the terrain made it very difficult to lay out the lines due to the thick vegetation, the presence of large rocks and the steepness of the slope, to the extent that in areas with few burrows it was actually taking longer to lay out the transects than it was to check the burrows within them.

In view of these difficulties, and to enable more efficient use of time, the method was subsequently adapted to use transects following the contour lines along the sidings without the use of lines to demarcate them. Surveyors walked approximately horizontal contour transects at 5 metre intervals across the sidings, each surveyor looking up the slope and covering the ground above their transect line to that of the next surveyor. With relatively low overall hole densities and careful surveying it was felt that this enabled virtually all holes to be checked and could be undertaken much more rapidly particularly in "blank" areas. In

some places (eg around Devil's Slide) where the sidings were discontinuous due to rocky outcrops and buttresses, small suitable areas of siding were surveyed as blocks rather than using linear transects.

All holes were checked by playing the taped calls at their entrance for up to 15 seconds. Surveyors recorded the number of holes checked along each transect or in each area, together with the number of burrows from which a response from a bird was obtained. Each occupied hole was marked on the ground with a small peg with a reference number on it, and it's position recorded on large scale maps.

RESULTS

In total just over 7,000 active holes were checked for nesting shearwaters during the week 19th - 26th May. From this total, responses were obtained in 154 cases - (ie an overall hit rate of 2.15%). Table 1 shows the breakdown of these figures in more detail, and Figure 1 shows the distribution of occupied holes located:

	Section	Holes Checked	Number of Responses
Coastal Sidings			
A	South Light to Shutter Point	1,010	7
B	Shutter Point to Old Light	481	7
C	Old Light to Battery Point	1,165	52
D	Battery Point to Needle Rock	223	28
E	Needle Rock to Pyramid (Jenny's Cove)	26	0
F	Pyramid to St James' Stone	1,204	16
G	St James' Stone to North West Point	982	4
H	North West Point to North East Point	243	9
I	North East Point to Gannets' Rock	201	6
J	Gannet's Rock to Brazen Ward	120	0
K	Brazen Ward to Halfway Wall	1,024	25
L	Halfway Wall to South Light	390	0
Top of Island			
	South of 1/4 Wall	0	0
	1/4 Wall to 1/2 Way Wall	28	0
	1/2 Way Wall to 3/4 Wall	54	0
	South of 1/4 Wall	4	0
	Overall Totals	7,155	154

Table 1. Occurrence of nesting Manx Shearwaters

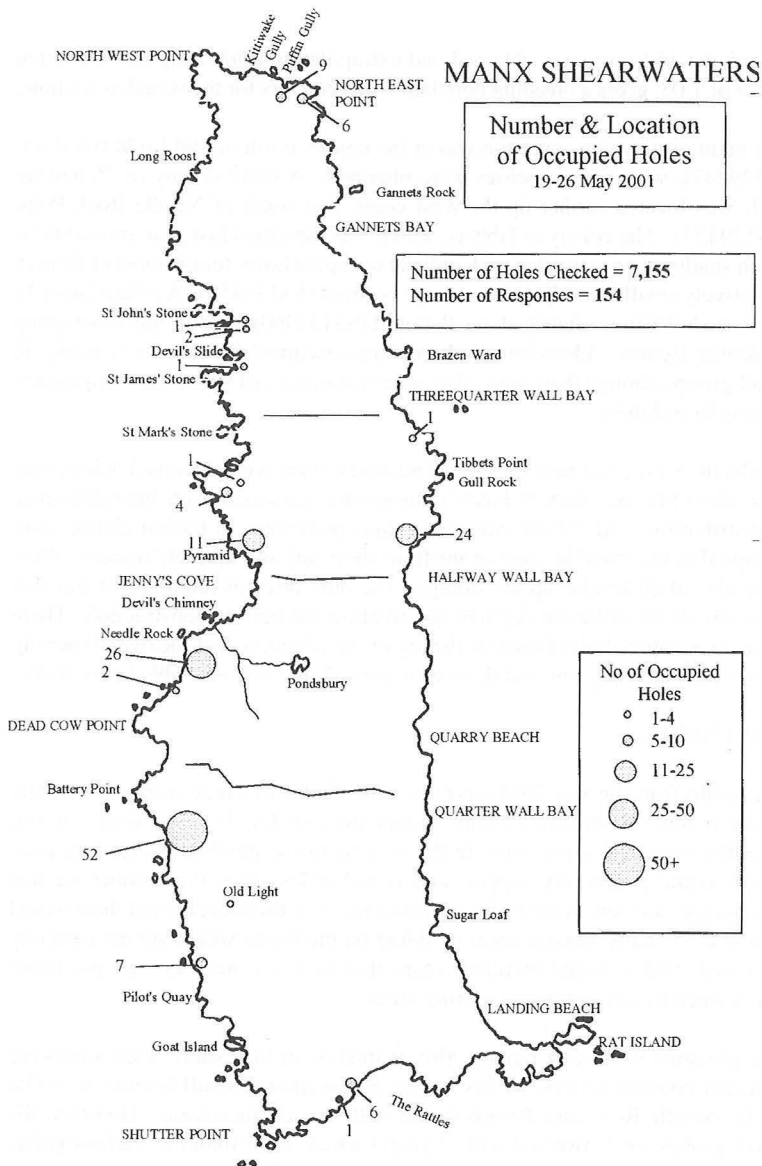


Figure 1. Distribution of located occupied holes.

Taking the 154 responses obtained and extrapolating it up using the correction factor of 1.08, gives a breeding population of 166 pairs for the island as a whole.

The main nesting concentration was at the colony north of Old Light (Grid ref: SS129447), where 52 responses were obtained. A small colony of 26 nesting birds was located further up the west coast, just south of Needle Rock Point (SS129453). The colony at Tibbets, which was identified last year, proved to be much smaller than estimated with only 24 occupied holes found, most of them in a relatively small area adjacent to a large buttress (SS138459). A collection of 11 occupied holes immediately above Pyramid (SS132460) was the only other group in double figures. Elsewhere the remaining occupied holes were typically in small groups, though there were also several instances of single pairs apparently nesting in isolation.

Whilst the west coast held the largest numbers, there were occupied holes on all four sides of the island (N, S, E & W), suggesting that aspect made little difference to distribution. Also there was no obvious preference in habitat choice, with occupied holes found in areas of thrift, in short turf and in thick bracken. They were also at all heights up the sidings. The only obvious requirement was that there should be sufficient depth of soil to allow for burrow construction. There were no occupied holes found on the top of the island, in fact the overall density of burrows was very low and there were remarkably few available holes at all.

DISCUSSION

The results from the May 2001 survey provide, for the first time, a reliable estimate of the number of breeding Manx Shearwaters on Lundy. The figure of 166 breeding pairs is disappointing in the context of the number of breeding pairs Lundy could potentially support and is rather less than the number we had anticipated. In view of the bird's catholic choice of breeding habitat there would appear to be many suitable areas of siding on the island which are not currently occupied, and it would therefore seem that breeding numbers are not being constrained by availability of nesting areas.

The grouping of nesting birds is also of interest in that Manx Shearwaters are typically colonial nesters. In this respect the location of small colonies near Old Light, Needle Rock and Tibbets fits in with this characteristic. However, the small groups (of between 4 and 11 pairs) which were found at various points around the island could hardly be called "colonies". The extensive distribution of such small groups and also the presence of single pairs is abstruse, and perhaps suggests that what we are seeing is a relict situation, where these small groupings are the remnants of once larger colonies.

In view of the huge colonies present on the relatively nearby islands of Skokholm and Skomer there must be other reasons for the paucity of breeding birds on Lundy. Evidence from other studies suggests that breeding productivity is very low, and several authors attribute this to predation, mainly by rats. (Studdy 1948, Taylor 1985 & 1989). Whilst we were not specifically searching for evidence of predation we did come across signs that the birds were vulnerable – with broken eggs at the entrance to holes, the eaten carcasses of adults and scatterings of feathers. Such evidence was particularly obvious at the Tibbets colony, but was also noted at Old Light, Pilot's Quay and Puffin Slope. Additionally, there were groups of holes from which no responses were obtained but which had all the visual outward signs of Manx Shearwater occupation and this may have indicated recent abandonment possibly due to predation.

The species is long-lived so birds are likely to return for several years even after experiencing poor breeding success. There is also ringing evidence of immigration from other colonies which may also be helping to maintain their presence on Lundy in the face of adverse conditions.

CONCLUSIONS

In overall terms the survey was very successful in achieving its principal aims, namely to establish the size of the breeding population and to identify the distribution of nest sites around the island. The main findings were:

Just over 7,000 active burrows were checked and responses from shearwaters were obtained from 154 of these (2.15%). From this figure for responses, the number of Manx Shearwaters nesting on Lundy in May 2001 was estimated at 166 pairs. The figure of 166 pairs represents a disappointingly small breeding population – particularly in the light of successful breeding of large numbers at nearby colonies off South Wales. The distribution of nesting birds appears to be confined to the coastal sidings. Birds are very catholic in their choice of nesting location – using all four coasts, occupying both bracken-covered areas as well as open turf and thrift, and occurring at all levels up the sidings. There would not appear to be any shortage of suitable habitat which is limiting further nesting on Lundy. The largest colony is just north of Old Light (which at 56 pairs holds a third of the total population); smaller colonies are present between Dead Cow Point and Needle Rock, and near Tibbets. Elsewhere birds are widespread usually nesting in small groups of four or more, though some singleton nesting pairs also occur. It is suggested that the fragmented pattern of distribution, particularly the existence of small groups around the island, indicates a remnant population from once larger and more extensive colonies. Predation was evident at several of the nesting sites in the form of broken eggs, carcasses of adults and scattered shearwater feathers. Though adult birds are relatively long-lived, and there is

evidence from ringing studies of immigration from other colonies, the current low number of breeding pairs and the rather fragmented nesting distribution suggests that the species is maintaining only a tenuous hold as a breeding bird on the island.

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