

CLIFF NESTING SEABIRD PRODUCTIVITY ON LUNDY 2007

by

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ABSTRACT

The productivity of black-legged kittiwake *Rissa tridactyla*, common guillemot *Uria aalge*, and northern fulmar *Fulmaris glacialis* was surveyed at four sites on Lundy in 2007. Average kittiwake productivity was 0.3 per pair, average guillemot productivity 0.27, and average fulmar productivity 0.54 but there were some differences between each study site. There was little evidence of food shortages, but high predation was seen at one site and weather conditions were poor throughout the season.

Keywords: *Fulmar, Kittiwake, Guillemot, Productivity*

INTRODUCTION

Although whole island censuses of cliff nesting seabirds has been conducted several times on Lundy since 1981 (most recently in 2004), there have been no detailed studies known of the productivity of cliff nesting seabirds on the island. To address this, the Landmark Trust, RSPB and Natural England began a joint project to determine the productivity of Lundy's cliff nesting seabirds. This paper reports the results of the first year of study.

Lundy is an important seabird breeding site, and as populations of many seabirds decline both nationally and locally, this detailed study should help to provide a better understanding of the issues affecting breeding birds on Lundy, as well as establishing a detailed baseline against which future studies can be compared.

From mid May to mid August 2007, the productivity of black-legged kittiwake *Rissa tridactyla*, common guillemot *Uria aalge*, and northern fulmar *Fulmaris glacialis* was surveyed at four sites on Lundy in 2007: St. Mark's (kittiwake, guillemot, fulmar); Long Roost (kittiwake, guillemot); Jenny's Cove (fulmar); and Gannet's Rock (fulmar).

Alongside this study, an attempt was made to collect diet data on the food brought in by adult guillemots to their chicks. Poor weather prevented much direct diet data collection, but that which was collected (in addition to general observations throughout the season), suggested that there were no shortages of good food for any species, with plenty of sandeels and clupeid fish brought in to guillemot colonies, and no sightings of any pipefish.

METHOD

The methods used to survey the productivity of the three species is that detailed in Walsh et al (1995), briefly summarised as follows: The colonies were photographed clearly in early May, and on a laminated copy of the photograph each potential active breeding site (in the case of guillemots, apparently occupied sites (AOS)) or occupied

nest (in the case of fulmars and kittiwakes, apparently occupied nests (AON)) marked and numbered. From then, each site was visited at least twice a week, where possible, and the state of each active site recorded until all chicks had fledged, or, in the case of fulmar, a breeding attempt will be considered successful if a large chick is present in early to mid August.

Sites were not visited in heavy rain or strong winds, but despite this, the high frequency of visits and the large amount of time spent on each visit has resulted in a highly accurate record of the guillemot, kittiwake and fulmar productivity on Lundy in 2007.

Table 1: Dates of first and last survey at each site.

Site	Date of first survey	Date of final survey
Fulmar, Gannet's Rock	21.05.2007	16.09.2007
Fulmar, Threequarter Wall inlet	22.05.2007	19.08.2007
Kittiwake, Long Roost	25.05.2007	09.07.2007
Kittiwake, North St. Mark's	28.05.2007	18.07.2007
Guillemot, St. Mark's Inlet	22.05.2007	18.07.2007
Guillemot, Long Roost	30.05.2007	15.07.2007

RESULTS

Guillemot

The two guillemot colonies on the island observed in this study, St. Mark's Stone and Long Roost, are two of the largest on the island.

The first, on the north-east facing edge of St. Mark's Stone, the larger part of a colony that extends to the landward, east facing, side of the stone, numbered an average of 216 individuals in early and mid June, of which 1.16% (average 2.8 individuals, maximum 4) were bridled. This colony is noticeably sheltered, facing away from the ocean and into the narrow Threequarter Wall inlet.

No gull or peregrine (*Falco peregrinus*) predation was witnessed at this colony, although all three gulls (herring *Larus argentatus*, lesser black-back *Larus fuscus* and great black-backed *Larus marinus*) nest nearby, and a peregrine was often spotted flying over the bay. A major disturbance was thought to have occurred between site visits on 10 and 13 June as the upper ledges of the colony showed large disruption on the 13 June, with one ledge abandoned by 10 pairs and a further 3 pairs disrupted on the ledge below, with at least two eggs lost. No replacement eggs were laid on these ledges.

Egg laying at St. Mark's Stone colony began 22 May, when the first egg was seen belonging to a pair of bridled birds. The first young was seen on 7 June, and estimated to be only a day or two old, and by 23 June most pairs appeared to have young. Poor weather prevented the direct observation of the young leaving the colony - 'jumping' - but almost half of young and their parent birds had left the colony at some point between the 2 and 7 of July, and by 13 July five young remained, all over 15 days old.

Note: Bridled guillemots have a white line circling the eye and extending to the back of the head and are a genetic morph of the common guillemot and not a separate species. They are able to

breed with the unbridled form. Studies show that the percentage of bridled birds in a guillemot colony increases with latitude, from zero in Mediterranean colonies to almost 50% in the Arctic (Harris et al., 2003). The number and percentage of bridled birds in the Lundy colonies therefore may be of interest to future studies.

Final productivity for the St. Mark's Stone guillemot colony is as follows: From 72 breeding attempts, 24 successfully raised young, giving a productivity of 0.33 per pair.

The second colony, at Long Roost, was spread over several ledges and numbered an average of 193 individuals of which 1.04% (average 2 individuals, maximum 4) were bridled. This was a more exposed colony, north facing and on the north-west coast of Lundy. Interspersed within the colony were 13 nesting attempts by kittiwake (see following section).

A pair of great black-backed gulls were frequently observed hunting in the colony once chicks were present. The birds were never seen to successfully take a guillemot, but one was noted eating an adult guillemot at sea just off Long Roost. Peregrine were frequently seen and heard calling over the site, but no attempts on the guillemot colony were observed.

The first egg was seen at Long Roost on 30 May, followed by the first chick seen on 12 June. Jumping was estimated to have begun by the 9 July, and by 15 July four young remain of which only one remains at a pre-jumping stage.

Final productivity for Long Roost: from 70 nesting attempts, 17 young were successfully raised, a productivity of 0.24 per pair.

Black-legged Kittiwake

Two very different colonies of kittiwake were monitored in 2007. Long Roost comprised 13 apparently occupied nests (AON) scattered through a north-facing guillemot colony, as detailed above, while the colony at North St. Mark's consisted of a total of 103 AON on a south facing, sheltered cliff face and cave.

The Long Roost kittiwake colony had a disappointing season, suffering from both poor weather and heavy great black-backed gull predation. Initially promising, with eggs laid by 25 May, the first of these were lost by 4 June. Two small young were first seen in a nest on 18 June, and despite 10 out of the 13 AON seen to contain eggs or young at some point, all but two were either empty or abandoned by 29 June, and on 3 July the second last chick was taken by a great black-backed gull, and on 9 July only the corpse of a small sized chick remained in one nest, and no adults were present.

Final productivity for kittiwakes at Long Roost: 0.

Although predation seemed to be a major cause of the failure of this colony, at least one nest was seen to have been washed out by the heavy rainfall, suggesting that the the poor weather throughout June and July is also a contributing factor.

The large colony at North St. Mark's, as mentioned, covered the upper part of a south-facing wall of a steep gully, and extended into a large cave. For this study because of the size and location of the site, it was split into plot 1 and plot 2. A very sheltered site, just above the kittiwakes was a small colony of guillemots (around 30 individuals), and, above them, a number of herring gulls (around 15-20 pairs) nesting. Although a close flight by a herring gull would often spark alarm calls and flights by the kittiwakes, no predation was seen by either gulls or peregrine.

First eggs were seen in this colony on 31 May, and the first small young seen 13 June. By 23 June most nests were seen to have either chicks or be empty, with few dead chicks seen suggesting most failures occurred at the laying stage or were due to egg loss. By 13 July all chicks had either fledged or were at a fledging size.

Final productivity of the kittiwakes at North St. Mark's: from a total of 106 AON (38 in plot 1, 68 in plot 2) 37 young fledged (9 in plot 1, 31 in plot 2) gave an average productivity of 0.35 for the whole colony (0.24 in plot 1, 0.46 in plot 2).

On the 12 of July the weather cleared sufficiently to permit a brief boat trip around the island during which the kittiwake colony on the seaward south-west face of Great Shutter Rock was briefly observed. This is a small island off the south-west coast of Lundy, and on this date it was estimated that around 40 birds were seen, suggesting young were present. From the guano on the rocks and remains of nests, it is possible that Great Shutter Rock is holding a large kittiwake colony, and would benefit from future observation.

Fulmar

Fulmars have a much longer breeding season than the guillemots or kittiwakes, so in this study final productivity was not ascertained until late August.

Two sites were studied for fulmar productivity: A large colony on Gannet's Rock and a small colony scattered on the north facing wall of Threequarter Wall inlet. A third site, at Jenny's Cove, was surveyed but time constraints prevented a return visit to collect productivity data.

Gannet's Rock is a pinnacle of rock just off the north-east coast of Lundy, and the fulmar colony occupies the grassy cliff on the north face of the rock. The colony held an estimated 23 apparently occupied nests (AON) in June, a good indication of the number of breeding attempts as non-breeders frequently occupy sites for short periods in fulmar colonies. No predation was seen at this site, despite a pair of great black-backed gulls successfully raising two young on a ledge above the fulmar colony. 13 chicks of fledgable size were present on site during checks made on 9 and 16 of August.

Final Productivity of fulmar on Gannet's Rock: 0.57 young fledged per AOS.

The fulmar at Threequarter Wall inlet nested on the north-facing wall of this narrow inlet, where also present breeding were small numbers of razorbills *Alca torda*, guillemot, shag *Phalacrocorax aristotelis* (5 nests), lesser black-backed gull (4 pairs) and herring gull (8 pairs). The number of apparently occupied fulmar nests for this site was 6, with one egg seen 13 June and one seen 2 July. The site was re-checked on 15 and 19 of August, with one nest containing the freshly killed remains of a chick. From the six AON, three were seen to contain chicks of fledging size.

Final productivity for fulmar at Threequarter Wall inlet: 0.50 young fledged per AON.

DISCUSSION

Guillemot productivity, at 0.24 and 0.33, is low, below the national average of breeding success seen in 2005 (0.46 chicks fledged per pair) and 2006 (0.48 chicks fledged per pair) and well below the overall UK long term mean of 0.69 (JNCC 2007). Poor weather and high predation are the most probably cause of such low productivity on Lundy. The numbers of guillemots present at the two sites, however, is good, with 193 at Long Roost

similar to that seen in the 2004 census (av. 170) and the 216 at St. Mark's Stone an increase on the 140 present in 2004. It would, of course, require a whole island census to determine whether this is an increase due to movement of birds from elsewhere on the island or a whole island increase in guillemots.

Kittiwake productivity was also low, with the complete failure of one site and a productivity of 0.35 for the St. Mark's colony, a low figure for a bird that is capable of raising more than one young in a nest. Kittiwake numbers have been decreasing nationally (JNCC 2007) and the low success of birds on Lundy is possibly a continuation of low breeding success seen nationally in 2005 (national average 0.6 chicks fledged per pair) and 2006 (average 0.54 chicks fledged per pair) (JNCC 2007). 19.5% of breeding attempts at North St Mark's and 25% of attempts at Long Roost were known to have failed at the egg stage, while 36.9% and 33.3% respectively were seen to have failed at the chick stage. Those failures occurring while the adult was still incubating suggest that the 'unknown' failures (43.7% at North St Mark's and 41.7% at Long Roost) occurred at the egg stage or while the chicks were still small.

The failure of the colony at Long Roost can definitely be attributed to great black-back gull predation and poor weather; this may also have affected the St. Mark's colony. Food shortages cannot be ruled out, however.

The numbers of kittiwake breeding attempts in the two colonies studied on Lundy show a slight increase at St. Mark's (average 96 AON compared to an average of 73 in 2004), but a decrease at Long Roost from 22 AON in 2004 to the 13 in this study. It is also interesting to note the long term decline at Long Roost, with 81 AON in 1996, compared to the increase at St. Mark's from 35 AON in 1996.

Poor weather during the breeding season may have contributed to low productivity for both guillemot and kittiwake, with unseasonably high winds, low temperatures and heavy rain throughout June and July, but despite this, there was an increase in the numbers of breeding attempts at some colonies when compared to previous years. This can be seen in Figure 1.

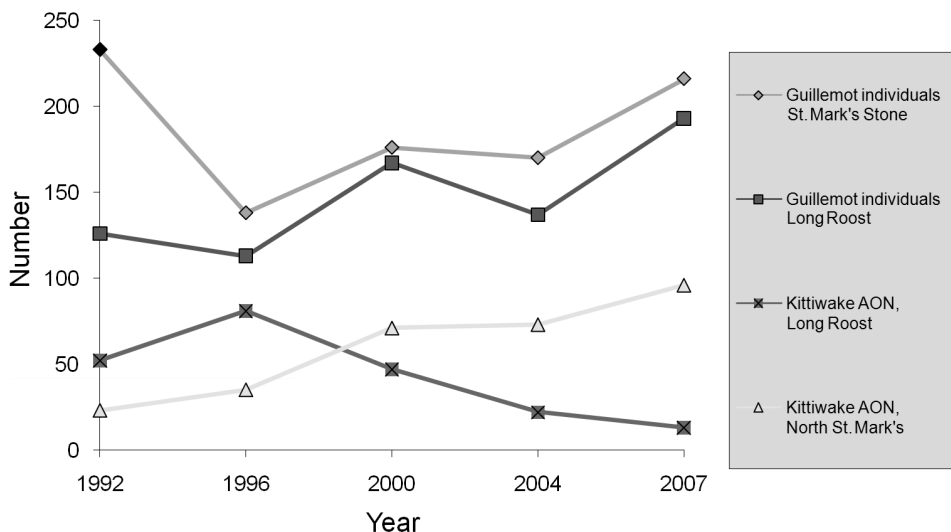


Figure 1: Long term trends in numbers of individual guillemot and kittiwake apparently occupied nests (AON).

Fulmar numbers of apparently occupied nests showed a decrease at the large Gannet's Rock colony, down from 42 in 2004 to 23 in this study, and the colony at Threequarter Wall inlet showed a small increase, with 6 AON in this study compared to 5 in 2004. A further colony on the southern edge of Jenny's Cove was also checked and found to hold 7 AON in 2007.

Large numbers of non-breeding birds were present on every visit at each, highlighting the difficulty in accurately assessing the state of fulmar sites early in the season. However, counting the possible breeding sites occupied on three consecutive visits in early June provided an accurate estimate of breeding attempts, as frequent visits throughout the June and July showed that other sites were only occupied sporadically.

Predation was observed directly once at Threequarter Wall inlet, with the freshly killed remains of one chick seen at a breeding site on the 18 August, when a medium-sized chick had been present four days earlier.

The average productivity, 0.53 chicks fledged per AON, compares favourably with the national averages for 2004 and 2005 of 0.52 and 0.49, respectively.

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