

CLIFF NESTING SEABIRD PRODUCTIVITY ON LUNDY 2008

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 2008. Average Kittiwake productivity was 0.13 per pair, average Guillemot productivity 0.35, and average Fulmar productivity 0.3 with little variation in species productivity between each study site. Predation was seen at two sites and rainfall was high during the season.

Keywords: *Fulmar, Kittiwake, Guillemot, productivity*

INTRODUCTION

Whole island censuses of cliff nesting seabirds have been conducted on Lundy since 1981 and most recently in 2008. Further to this, in 2007 the Landmark Trust, RSPB and Natural England began a joint project to determine the annual productivity of Lundy's cliff nesting seabirds (Dalrymple, 2008). This paper reports the results of the second year of study.

Lundy is an important seabird breeding site. The Lundy Site of Special Scientific Interest (SSSI) is notified for Guillemot, Razorbill, Puffin, Kittiwake and Manx Shearwater. As populations of many seabirds decline both nationally and locally, studies such as this will 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 the end of April to mid August 2008, the productivity of Black-legged Kittiwake *Rissa tridactyla*, Common Guillemot *Uria aalge*, and Northern Fulmar *Fulmaris glacialis* was surveyed at five sites on Lundy in 2008: St. Mark's Inlet (Kittiwake, Fulmar); Long Roost (Kittiwake, Guillemot); Jenny's Cove (Fulmar); Aztec Bay (Kittiwake) and Gannets' Rock (Fulmar).

METHOD

The methods used to survey the productivity of the three species in 2007 were replicated in 2008. These methods are detailed in Walsh *et al.* (1995), and are briefly summarised as follows: The colonies were photographed clearly in April, and on a laminated copy of the photograph each potential active breeding site or occupied nest was marked and numbered. From then, each site was visited twice a week where possible, and the development of each active site recorded until all chicks had fledged, or, in the case of Fulmar, a breeding attempt was considered successful if a large chick was present in early to mid-August.

RESULTS

Guillemot

The Guillemot colony observed in this study was at Long Roost, and is one of the largest on the island. It is an exposed colony, north facing and on the north-west coast of Lundy. It was spread over several ledges and held on average 210 individuals. The colony was interspersed with four nesting attempts by Kittiwake (documented in the following section). This site is referred to in Lundy's site register as G24 (Price, 2004).

Great Black-backed Gulls were observed hunting in the colony on every visit once chicks were present. The gulls were never seen to successfully take a Guillemot, but numerous attempted attacks on nesting ledges were observed and on one occasion, an attempted attack was witnessed resulting in an egg being knocked off a ledge.

The first eggs were seen at Long Roost on 27 May, followed by the first chicks recorded on 18 June. Jumping was estimated to have begun by the 13 July, and by 23 July five adults and four chicks remained at the site, of which only one was at a pre-jumping stage, a 'repeat lay' egg was also being incubated. By the 27 July the nest site was empty.

The final productivity for Long Roost was 0.35 per pair as from 57 nesting attempts 20 young were successfully raised.

Black-legged Kittiwake

Kittiwake productivity was surveyed at three markedly different sites - Long Roost, St Mark's Inlet and Aztec Bay. Long Roost comprised four nesting attempts scattered through a north facing Guillemot colony, (site G24 in the site register and as previously detailed), while the colony at St. Mark's Inlet which is referred to as site F16 in the site register, consisted of a total of 123 nesting attempts on a south facing, sheltered cliff face and cave. Aztec Bay showed 14 nesting attempts on the west face of the cliff in this relatively sheltered bay and is site F7 in the site register.

Long Roost

As in 2007 the Long Roost Kittiwake colony in 2008 had a very disappointing season. A total of nine Kittiwakes occupying five nests were first seen at the site on the 20 May. A total of seven nest sites were occupied at points during the survey and attendance rates at each visit varied considerably. Only four sites could reliably be considered to have apparently occupied nests (AON).

The total number of adult Kittiwakes varied between three and twelve at any one time and by 18 June only two pairs appeared to be incubating eggs although no eggs were sighted during the survey. By 3 July, all the nests had been abandoned and only one further adult was seen at the nest site on 6 July.

The final productivity for Kittiwakes at Long Roost was zero as from a total of four potential nest sites, no chicks were successfully raised.

St Mark's Inlet

The large colony north of St Mark's Stone covered the upper part of a south facing wall of a steep gully, and extended into a large cave. Because of the size and location of the

site, for this study it was split into plot 1 and plot 2. It was a very sheltered site and just above the Kittiwakes there was a small colony of Guillemots (around 30 individuals), and above them, a number of Herring Gulls (around 15-20 pairs) were nesting. Predation by Gulls was observed at this site.

The first eggs were seen in this colony on 27 May. The first young were seen on 17 June; however shortly after this sighting they were lost to predation by a Great Black-backed Gull and the next chick sighting at the site was on 19 June. Fledging was ongoing from 17 July until 29 July, when all nests were empty apart from two where the chicks had reached fledging size.

The final productivity of the Kittiwakes at north St. Mark's was 0.122 for the whole colony. From a total of 123 nesting attempts (49 in plot 1, 74 in plot 2) 15 young fledged (six in plot 1, nine in plot 2).

Aztec Bay

This small colony located just north of St Philip's Stone in Aztec Bay is scattered over the west face of the cliff. Compared with the previous two sites, the Kittiwakes at this site appeared to breed a little later in the season with the first eggs in the colony seen on 19 June, and first chicks on the 10 July with fledging occurring from 20 July onwards.

The final productivity of the Kittiwakes at Aztec Bay was 0.286 for the whole colony as from a total of 14 nesting attempts, only four young fledged.

Shutter Rock

A count of the Kittiwake colony at Shutter Rock by boat on the 10 May showed approximately 95 birds. There was no further opportunity to carry out further counts during the season. This is a large colony at the south-west point of Lundy. It is difficult to collect accurate data due to its location as many nests appear hidden even from the water. When possible, boat counts of the colony would be useful to maintain for yearly comparisons.

Fulmar

The three study sites comprised a large colony on Gannets' Rock (site I6 in the site register), a small colony scattered on the north facing wall of St Mark's Inlet (site F13 in the site register), and also a site on the south side of Jenny's Cove (site E1 in the site register).

Gannets' Rock

Gannets' Rock is a pinnacle of rock on the north-east coast of Lundy, and the Fulmar colony occupies a grassy cliff on the north face of the rock. Regular checks were made at this site and the population size varied from 60 apparently occupied sites (AOS) at the end of May to an average of 33 AOS held in June. No predation was seen at this site, despite a pair of Great Black-backed Gulls successfully raising two young within the Fulmar colony adjacent to two apparently occupied sites.

Fulmars incubate very tightly and consequently the first small chicks were not seen until 16 July, with the first fledging occurring from the 14 August onwards. By the 26 August all remaining 7 chicks had reached fledging size.

From a total of 32 nesting attempts eleven chicks were successfully raised giving a final productivity of 0.34 young fledged per regularly occupied site.

St Mark's Inlet

The Fulmar colony at St Mark's Inlet nested on the north facing wall of this narrow inlet, where there were also small numbers of breeding Razorbills *Alca torda*, Guillemot, Shag *Phalacrocorax aristotelis*, Lesser Black-backed Gull, and Herring Gull. From the ten nesting attempts, three were seen to contain chicks of fledging size.

The final productivity for Fulmar at St Mark's Inlet was 0.3 young fledged per regularly occupied site.

Jenny's Cove

This nest site at Jenny's Cove was situated on the south side of the cove, with nesting taking place on a combination of bare rock and grassy ledges. In June the colony held an average of 11 apparently occupied sites (AOS) and by early August four chicks were present with one well hidden in long grass. The last survey was carried out on 26 August where three chicks of fledging size were visible.

The final productivity for Fulmar at Jenny's Cove was 0.25 young fledged per regularly occupied site.

DISCUSSION

Guillemot, Kittiwake and Fulmar productivity continued to remain disappointingly low for a second consecutive season. Little variation in productivity was observed between breeding sites and the likely cause of the poor results could be attributable to predation especially at Long Roost and St Marks Inlet, together with poor weather conditions throughout the season. Unseasonably high rainfall was recorded in July as 95cm of rain fell, which is well above the long term average of 58.8cm. It occurred at a time when chicks would have been at a vulnerable stage of development and this may be a contributing factor to the low productivity seen throughout. There was no apparent lack of food as fish were regularly seen being delivered to chicks at the breeding sites although this cannot be ruled out until further feeding studies have been carried out.

Guillemot productivity, at 0.35 chicks fledged per pair is well below the overall UK long term mean of 0.69 (1986-2005), (Mavor, R.A. *et al.*, 2008). However, it is slightly greater than Lundy's 2007 average productivity of 0.27 chicks fledged per pair. However the numbers of Guillemots present at the sites were good. An average of 220 was recorded at Long Roost throughout June 2008, with similar numbers observed in the previous 2007 productivity study (average 193) and island counts carried out in 2004 (average 170). The 2008 island census shows a whole island increase in Guillemots (Booker, pers.comm.) and suggests the increase at Long Roost may be the result of 'new recruits' to the colony and not just a shift in the island's distribution.

Kittiwake productivity is particularly low with an average 0.13 chicks fledged per pair which is far below the national average. In 2006 an average of 0.54 was found (JNCC, 2007) and it is lower than that seen in 2007 when Kittiwake productivity was 0.3 chicks fledged per pair. The complete failure at the Long Roost breeding site for a

consecutive season and low productivity for the other two colonies at St Mark's Inlet and Aztec Bay, appears to be a continuing trend for Kittiwake productivity on the island, which may be attributable again to the presence of predatory Great Black-backed Gulls at the sites and the poor weather throughout the summer. This is not only an island declining trend, but nationally Kittiwake numbers have been declining in recent years (JNCC, 2007) and the poor success on Lundy could be a reflection of the low breeding throughout the UK.

32% and 29% of attempts failed at the chick stage, while 15% and 21% failed at the egg stage, at St Mark's Inlet and Aztec Bay respectively. At St Mark's Inlet the majority of failures, 41%, occurred while the adults were incubating which suggest that this happened at the egg stage or when the chicks were very small and could be attributed to the high amount of rainfall seen in July.

At St Mark's Inlet and Long Roost fewer nesting attempts were seen, with fewer birds occupying the cliffs at Long Roost - possibly due to the birds nesting elsewhere on the island, as there is a fair degree of mobility of Kittiwake populations from year to year. A contributory factor at Long Roost could be the small numbers and the fact that the sites were spread out. Colonial birds often have a threshold size level below which productivity tails off because there are not enough adults to see off predators and it is also reported that Kittiwakes do not appear to be able to breed without at least some social stimulation from neighbouring pairs (Furness & Monaghan, 1987).

At Shutter Rock of the only two counts that were made, in mid July 2007 there were 45 birds and in mid May 2008, an increase to 95 birds was seen; however this is not sufficient information to be conclusive of an increase in the population and further counts need to take place to assess if birds are relocating. Over the years most of the main sites on Lundy have experienced major variations in numbers, and with some sites declining and others increasing between breeding seasons it would appear that birds are relocating (Price, 1996).

Fulmar numbers at the Gannets' Rock colony have shown a slight fluctuation in recent years with 42 apparently occupied sites in 2004 to 23 in 2007 and 32 in 2008. The colony at St Mark's Inlet showed a small increase, with ten AOS in this study compared to six in 2007. A further colony on the southern edge of Jenny's Cove was also surveyed and found to hold 11 breeding attempts in 2008.

The average productivity of chicks fledged per AOS, does not compare favourably with the national averages for 2004 and 2005 of 0.52 and 0.49, respectively. There is a reduction from 0.54 chicks fledged per AOS in 2007 to 0.3 in 2008. This low productivity and slight fluctuation in numbers could be following the nationwide trend of Fulmar populations, which have shown a decline since the 1990s.

Causative factors for this decline in the UK are documented in Mitchell *et al.* (2004). In the North Sea the changes to whitefish fishing methods has led to a decline in the discharge of offal from these fishing fleets upon which the fulmar feed. It would be useful to compare fishing methods employed by the Irish Sea fishing fleets, Declining abundance of natural prey such as sand eel and of certain species of zooplankton in the North Atlantic are also seen as likely to have had a detrimental effect on UK populations.

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