

FEEDING ECOLOGY OF COMMON GUILLEMOT CHICKS ON LUNDY

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Following a long period of decline, several guillemot *Uria aalge* populations in the south Irish Sea have recently shown an upward trend in numbers. At present the reason for this change in fortunes is not known, but one possibility is that a change in the marine environment has made food more available to guillemots. As part of an attempt to examine this, we have compared several aspects of the guillemot's feeding ecology at three Irish Sea colonies during the chick rearing period. Information has been collected from Skomer Island, Dyfed, Great Saltee, Co. Wexford and from Lundy. Here we present the results from Lundy made between 17-28th June 1985 about 100m south of St. Mark's Stone on the west coast of the island. All observations were made between 1400-1800h BST.

The aim of the study was to determine the species of fish fed to guillemot chicks, the rate at which the chicks were fed and the length of time it took parent birds to obtain a fish for their chick.

235 fish brought to chicks were identified: 190 (81%) were sandeels *Ammodytes*, 44 (19%) were clupeids (probably sprats *Sprattus sprattus*, or herring *Clupea harengus*), and one was a mackerel *Scomber scombrus*. Guillemots without chicks perform a fish presentation display: a total of 30 display fish were recorded during feeding observations and the relative numbers of the two main prey types were similar to those fed to chicks: 18 (60%) sandeels, 11 (37%) clupeids and 1 butterfish *Pholis*.

The average rate at which chicks were fed varied from day to day, from 0.62 feeds/chick/4h to a maximum of 1.15 feeds/chick/4h, with an average rate of 0.87 feeds/chick/4h. This value is slightly (but not significantly) higher than that recorded on Skomer Island at the same time of day by Birkhead (1977). During the present study persistent bad weather prevented diurnal observations of chick feeding rates being made, but if we made a few reasonable assumptions we can estimate the daily feeding rate. If we assume that the diurnal pattern of chick feeding on Lundy is similar to that on Skomer, then about 20% of all feeds occur during the period 1400-1800h, and the average daily feeding rate was therefore 4 or 5 meals. This figure is higher than that recorded on Skomer (3 feeds/chick/day) recorded by Birkhead (1977), but the difference is probably explicable in terms of the size and species of fish fed to chicks — the sandeels at Lundy being smaller than the sprats fed to guillemot chicks on Skomer.

The time interval between a parent bird leaving the colony and returning with a fish to feed a chick (referred to here as a feeding trip), provides an estimate of the length of time it takes a parent to obtain a fish or the distance it has to travel. This estimate of trip duration is crude because parent birds may perform other activities while they are away from the colony. Nonetheless, we can compare such estimates between colonies to obtain some idea of how far birds have to travel to feed. The median duration of 77 trips recorded was 26 min. This figure is markedly shorter than that recorded on Skomer Island (72 min), indicating that Lundy guillemots feed relatively close to the colony. With a flight speed of 70 km/h (Vaughan 1937) and assuming it took 5 min to locate and catch a fish, with no time spent resting, foraging birds spent 21 min in flight on a round trip, and foraged within 12km of the Lundy colony.

Weather conditions were generally poor during the observation period with high winds, heavy seas and often heavy rain. It has been shown previously that guillemot chick feeding rates are generally low during such conditions (Birkhead 1976). Although there was a negative relationship between sea conditions (Beaufort Scale) and feeding rates ($r = -0.309$, 8 d.f.) this was not significant, possibly because feeding conditions were consistently poor throughout the period of observation.

Observations made at the same time as those reported here showed that at Skomer Island, most chicks were fed on sprats, whereas at Great Saltee approximately half the diet consisted of sprats, the other half of sandeels. The differences between the diets and the very short trip durations at Lundy, suggest that these three colonies had mutually exclusive feeding areas.

REFERENCES

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