

## **Breeding success and causes of breeding failure of curlew *Numenius arquata* in Northern Ireland**

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### **ABSTRACT**

1. The present study investigated breeding success and causes of breeding failure of curlew, a species for which the UK holds internationally important breeding numbers. Studies were undertaken between 1993 and 1995 in two areas of Northern Ireland, where the species' breeding range has recently contracted and breeding numbers are declining. Avian nest predators were abundant in both areas, whereas foxes were abundant on the Antrim study area but generally were absent from the Lough Erne study area, which was mainly islands.

2. Productivity was estimated to be 0.14–0.26 fledglings per pair in Antrim and 0.20–0.47 fledglings per pair on Lough Erne. These figures are lower than most estimates of productivity from other studies of breeding curlew. The differences between the recorded productivity levels and those estimated to be required to maintain a stable population are sufficient to account for the observed decline in Northern Ireland's breeding curlew population.

3. Predation was the main proximate cause of breeding failure, with nest predation being of most importance in reducing productivity. Only 3.6–19.0% of all nests hatched on each study area in each year, with nest predation accounting for 85–97% of failures. Survival of chicks from hatching to 31 days of age was 38.5% in Antrim and 19.1–29.2% on Lough Erne. Predation accounted for 74% of chick mortality.

4. Nest failure rates were not related to the vegetation height around nests nor to clutch laying date on either study area. They differed among the islands and one shoreside site on Lough Erne. Almost all nest predation on Lough Erne was attributable to avian predators, but in Antrim foxes probably accounted for most nest predation. The likelihood of predation on chicks was not related to their hatching date, hatching weight or body condition.

5. The results from this study suggest that predation rates on curlew nests in Northern Ireland may have increased in recent decades. Levels of predator control in Northern Ireland have declined but there have also been considerable changes in land-use that could benefit generalist predator species or increase the vulnerability of curlew nests to predation. It is recommended that large-scale trials of legalized predator control and land-use manipulation should be undertaken to identify appropriate conservation management methods.