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SHORT NOTE

PREDATION ON STARLINGS *(Sturnus vulgaris)* IN NEST BOXES IN HAWKE'S BAY

In Hawke's Bay nearly 2000 wooden nest boxes were erected along fences to investigate whether or not it was possible to increase starling numbers for grass grub control. The nest boxes, 205 x 105 mm and 305 mm high, as described by Moeed & Dawson (1979, NZ J. Zool. 6: 613-618) were nailed to vertical wooden battens (7.5 x 5.0 cm) attached to the top of concrete or wooden fence posts about 1 m high. The bottom of each box was 50 cm above the top of the post. The centre of the entrance hole was 25 cm above the bottom of the box and 6 cm from the top and side.

Two study areas 5 km apart are referred to as Gull Rd and Poporangi Rd (Table 1). Up to 19 October 1976 all boxes were examined each week, then a group (A) of only 97 boxes at Gull Rd and another 101 at Poporangi Rd examined regularly. All Gull Rd boxes were examined once at night between 29 October and 1 November, except for group A. By 29 November, when it was obvious that a predator, probably a stoat, was visiting boxes over an increasing area, all boxes at Gull Rd were again examined weekly (Table 1).

On 19 October, 49% of 41 boxes on a particular fence (group B) at Gull Rd and 60% of the remaining 387 boxes at Gull Rd had eggs. However, by the end of the month only 7% of group B boxes were occupied (1 or more eggs or young). Eggs in these occupied boxes were broken and empty and the expected young were missing. By comparison, 47% of group A boxes and 46% of the rest of Gull Rd boxes (group C) were occupied (Table 1). Group A boxes also

TABLE 1 — Occupancy of nest boxes during the breeding season.

	No. of boxes	Percentage occupancy									
		October			November				December		
		19	26	31	8	15	22	29	6	13	20
Gull Road:											
A	97	52	56	47	42	23	19	13	22	5	2
B	41	49	-	7	-	-	-	2	2	0	0
C	290	63	-	46	-	-	-	27	18	6	0
Total	428	59	-	43	-	-	-	22	18	5	0
Poporangi Rd	101	30	37	38	43	45	31	31	43	42	25

became affected by predation during the next three weeks. Of 46 boxes occupied at the beginning of November, 59% failed completely, as shown by the disappearance of nest contents before the young were 17 days old. Only 13% of the 38 occupied boxes at Poporangi Rd failed completely.

From 29 November to 20 December the area affected by predation increased to include all fences at Gull Rd over an area of about 1 km^2. Percentage occupancy declined rapidly relative to Poporangi Rd ($X^2 = 48.6$: $P << 0.001$) and was only 5% on 13 December compared with 42% at Poporangi Rd. However, at this time occupancy rate was still high (45%) in the boxes at Gull Rd, furthest (0.7 km) from where the predator was first active.

It is not known how many predators were visiting the nest boxes at Gull Rd. However, on 20 December an adult male stoat was found in a nest box that had fallen to the ground a week before. In December 1979 a litter of stoats was found in a standard nest box at Gull Rd. Stoats show great agility while climbing to nests of native birds in trees (P. J. Moors, pers. comm.) and also, remarkably, to starling nests which are 4 m from the ground in vertical concrete walls (J. E. C. Flux, pers. comm.). Boxes put up to attract starlings can obviously attract local predators as well. Predation can greatly reduce the breeding success of the starlings and thereby negate the purpose for which the boxes were provided. It is also likely that predator populations may increase locally and seek other prey when the starlings have finished breeding. To protect breeding starlings from mammalian predators, sheet metal or perhaps polythene could be fitted snugly over each support batten and stretched down tightly over the top of the fence post to prevent a stoat jumping from that point.

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