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Position preference by Starlings (*Sturnus vulgaris*)

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ABSTRACT: Twenty adult starlings (*Sturnus vulgaris*) were introduced one after the other into an aviary in which food (chick starter crumbs) had been placed in six different positions to test for preferred feeding position. Twenty test sessions lasting from 1600h to 1000h were carried out in all. Analysis of variance showed that food intake varied significantly with position. Position number 6 was found to be more preferred when the positions were compared against each other by Student's t-test.

Key Words: Feeding position preference; Starlings (*Sturnus vulgaris*); Aviary.

Introduction

The position where an animal feeds in relation to its surrounding is of vital importance in terms of safety and profitability for the animal. Rodents have been reported to depredate crops mostly at the centre of farms (1). This is believed to be the best position that would give them time to escape whenever there is an intruder. Birds, on the other hand, prefer to feed at the edges of farms (2-6). According to these authors, hedges or shrubs at the edges of farms provide the birds with a quick refuge in case of a disturbance or attack. They also serve as a safety base for foraging on the farm from time to time.

European starlings have been reported to feed mostly on the upper parts of blueberry bushes (7), possibly to be able to see an approaching predator. Bullfinches (*Pyrrhula pyrrhula*), on the other hand, damage fruit buds predominantly on the plantation rows nearer woodlands which provide them with cover (8). Feeding position studies are also important because birds in flocks have been reported to feed faster than solitary ones (9). This may be because animals in groups devote less time to having to watchout for predators and those at the centre are protected most (10).

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The aim of the present study was to determine whether or not starlings have preferred feeding positions in an aviary situation. This would be useful for the farmer in planning crop protection measures on his

farm in terms of being able to influence the behaviour of the pest species if their preferred feeding positions are known. The farmer would also be target specific when applying pesticides if the preferred feeding position of the pest is known. This would mean less dosage of the pesticide would be used, thereby costing the farmer less money and resources. It would also provide greater protection for non-target species (11).

Materials and Methods

The experiment was conducted in an aviary measuring 3.75 x 1.76 x 2.44m using 20 adult starlings of mixed sexes. The birds were kept in another aviary measuring 3.75 x 2.48 x 2.44m for 2 weeks to acclimatize before the commencement of the experiment.

The food consisted of chick starter crumbs made by BOCM Silcock Ltd., Basingstoke, Hampshire, U.K. provided in six ceramic bowls (10.5cm diameter and 5.5cm high). These were placed in six selected positions inthe aviary during the experiment (Fig. 1). The same type of food and water were given *ad libitum* during the acclimatisation period.

The experiment was conducted in test sessions, each of which ran from 1600h to 1000h in order to cover the evening and morning periods when birds are known to feed most (12). One hundred grams of the food was provided in each bowl per test session. Birds were then introduced individually into the experimental aviary per test session, since animals are known to learn from each other when in group (13,14). Each bird was allowed a further 6 hours acclimatisation period in the experimental aviary when transferred from the 'home' aviary in order to check neophobia before commencing each test session (i.e. 100h - 1600h).

The amount of food consumed per position was determined at the end of each test session by subtracting the remnant food plus spillages, from the initial weight provided. One way analysis of variance (ANOVA) was used to test for differences in food intake between the 6 positions. The position with the highest mean food intake was then compared to the others by Student's t-test.

Results and Discussion

The results showed that food intake varied significantly with position ($P < 0.01$) and more food was eaten at position 6 than all the other five positions (Fig. 2), except position 5. There was no significant difference in food consumption at positions 5 and 6 ($P > 0.05$). These results reveal that effective protection of farm crops could be achieved by concentrating efforts at the most vulnerable parts of the farm, especially when using bird repellent chemicals which the birds avoid through leaning (15). For example, starlings have been reported to feed mostly on the upper parts of cherry trees while American Robins (*Turdus migratorius*) prefer the lower parts of the trees (7). It has also been reported (16) that spot-treatment of sorghum heads was the most effective against quelea (*Quelea quelea*) birds because they have an irregular feeding pattern in the field. Position preference experiments such as this is therefore important for planning crop protection strategies since attention can then be focussed on the preferred points.

Quelea birds are important pests of cereal crops in the semi-arid areas of Nigeria. Therefore, knowing their preferred feeding position on the field would mean being selective when applying pesticides. Selective chemical treatment of field crops has the advantages of being less expensive because less quantities of the pesticides will be used, less hazardous to non-target animals and the environment generally, since the chemical is applied to restricted areas only, and more of the pest species are likely to come into contact with the pesticide or repellent at any given time, since they feed in groups (17,18). the pest species are therefore likely to learn to avoid the entire field more quickly.

Position 6 in this experiment was located between sides C and D of the aviary (Fig. 1) which was more secure for the birds. This position could be likened to farms located near woods and forests which have been reported to provide birds with the insect components of their diet (19). The other positions were more exposed since sides A and B of the aviary were covered by wire mesh only, instead of plywood, in the case

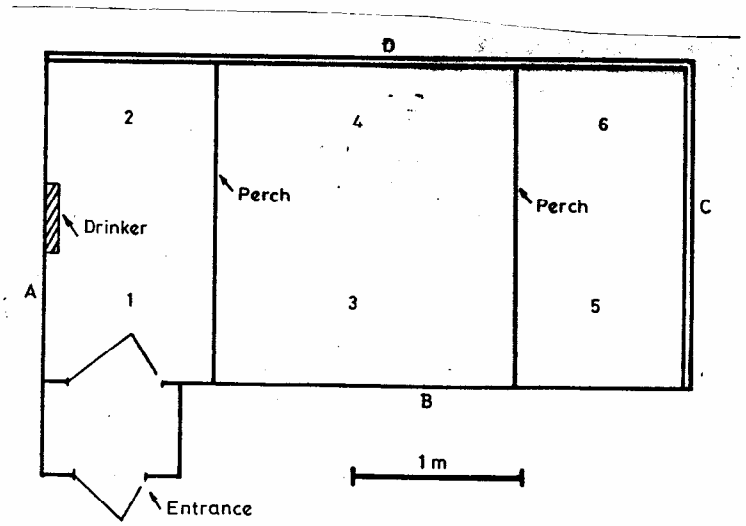

Fig. 1: Diagram of experimental aviary showing the six positions. Sides A & B were covered with wire mesh only and C & D with plywood.

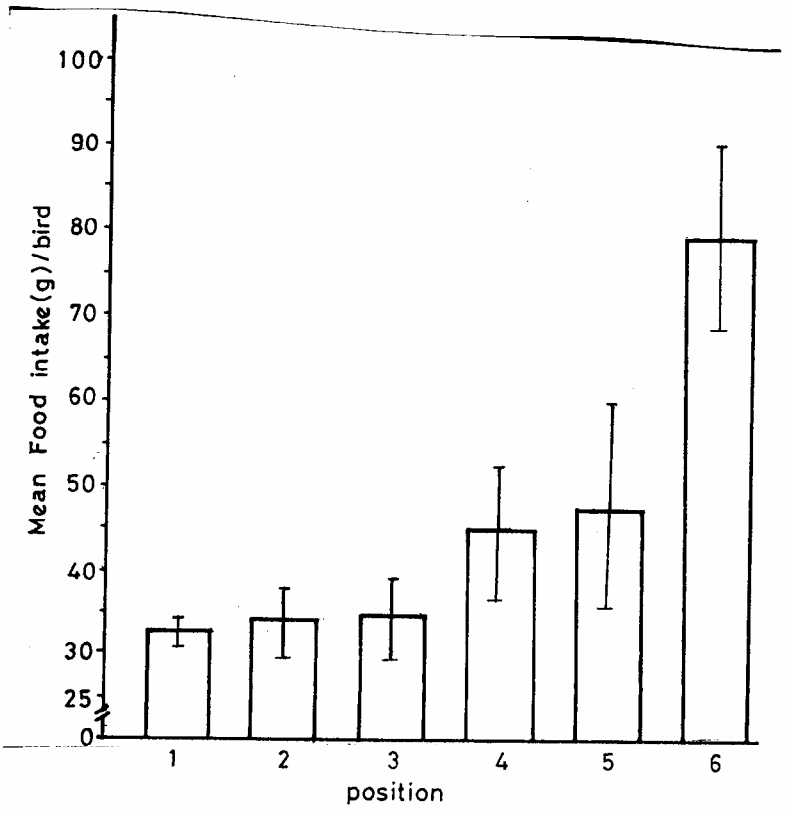

Fig. 2: Mean food intake (g) per bird per position for 20 trials. Vertical bars = S.E. of the means.

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of sides C and D. Similar findings have been reported (7) on how edge-effect affects the feeding position of birds. Cornfields adjacent to hedgerows or woodlots have also been reported to sustain higher bird damage than those further away (5). Any protection measures taken at these positions would, therefore, have greater impact.

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