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Problem Solving by a Pair of Nesting Starlings

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On 24 May 1970, near Oxford, N.C., a pair of Starlings (*Sturnus vulgaris*) was observed carrying food to their 5 or 6 day-old nestlings inside a barn about 8 feet above the ground where a hole had been drilled by a Yellow-shafted Flicker (*Colaptes auratus*). In an effort to get some information on the Starling's problem-solving capability, I attached to the side of the barn a sheet of plywood, 3 feet by 1½ feet, containing 13 holes. The holes were 1¼ inches in diameter, slightly too small for access by the parent birds. A 1-inch board was placed between the plywood and the wall of the barn to enhance the appearance that all holes through the plywood opened into cavities. However, when the face of the plywood was viewed from a right-angle position, the cavity entrance appeared as a dark hole; whereas, the barn wall could be seen through the other holes in the plywood. The parent birds were not marked, and it was thus impossible to relate the observations to individual birds.

Twenty minutes later, after the Starlings had several times flown near the nest entrance and away without alighting, one alighted on the plywood. It examined two holes, one after another, seemingly at random, and then flew away only to circle back to the hole on the extreme left in the upper row of holes. The bird examined the three upper holes, one after another, left to right, and then moved down to the next lower row of holes and examined them, right to left, until the nest entrance was found at the third hole from the extreme right. The Starling making the second visit to the nest, presumably the other bird of the pair, examined only two incorrect holes before going to the correct one. In 18 visits to the nest during the following hour, the Starlings went directly to the correct hole all except four times when one and two incorrect holes were earlier examined.

The plywood sheet was then moved so the nest entrance was aligned with a different hole. Then both returning birds went first to the hole which was formerly the correct one and then examined two and three holes, respectively, before going to the correct one. Thereafter, the birds went directly to the correct hole in all but one of eight visits, and then they examined only one incorrect hole prior to making the correct choice. The plywood was twice later changed so that the nest entrance was aligned with different holes, and the birds flew directly to the correct hole in each of the return visits.

I then changed the position of the plywood and made a second hole in the side of the barn aligned with a hole in the plywood about 8 inches above the one over the nesting hole. In 14 following visits the parent birds went first to the correct hole, and in 12 they went to the incorrect hole. The nestlings were then removed from the nest, and the visiting parents later checked six and nine holes through the plywood, respectively, after

first checking those over the holes through the side of the barn. The parent birds then went to the roof of the barn and did not return to the nest in the following 15 minutes that I watched.

These Starlings appeared to be guided to their nest by the cavity appearance of the hole and by the calls of the nestlings, and they improved in efficiency at finding the nest with added experience. Their nest attentiveness quickly waned when there were no young in the nest to guide them to the nest or to furnish search-stimulating calls.

Wintering Blue Grosbeaks And Yellowthroats at Chapel Hill, N.C.

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14 July 1970

Two Blue Grosbeaks (*Guiraca caerulea*) spent the Winter of 1969-1970 near Chapel Hill, N.C., on the Mason Farm, a wildlife preserve of the University of North Carolina. First observed on 14 December 1969, they were seen again on at least 20 dates extending through March.

The birds, in brown plumage, frequented an area characterized by hedges of multiflora rose surrounded by large open fields of sorghum and soybean stubble. They were easily found at almost every attempt because of a tendency to perch in a "preferred zone" in the hedge, usually less than 100 feet in length. In the course of the winter, however, the zone drifted along the hedgerow, first 300 feet to the north and then 1,000 to the west.

At all times, the birds seemed healthy and fully active, this despite the fact that January temperatures averaged 9 degrees F below the 30-year mean, with weekly averages as much as 18 degrees below normal (*Monthly Weather Review* 98, 329). Solid precipitation was light, however, with just one severe ice storm which thawed quickly and no substantial snow. The birds were seen to feed (often with Cardinals) in the sorghum stubble and, once, in giant ragweed. They probably utilized the abundant rose hips as well.

The two birds were easily separated by individual plumage characteristics. Primarily, Bird A had rather thin, whitish wing bars and a rich brown crown, while the bars of Bird B were tan and the crown and nape duller with a blue-gray cast. These differences tended to become less distinct as the season progressed. On 15 February Bird A was found with a 1-inch diameter blue patch on the lower abdomen. By 15 March the blue covered a region from upper belly to vent. Plumage changes of Bird B, during this time, were much more subtle, with no patches of blue. Presumably Birds A and B were male and female respectively. On 29 March, the first soft songs were heard from Bird A. The birds had always been closely, but passively, associated. On this date, for the first time, they were frequently seen to chase each other over the fields. Unfortunately, attempts to band these birds were unsuccessful, so it is uncertain whether they joined the general fringillid exodus of early April or remained with the local breeding population.

I am aware of only one other winter record for this species in North Carolina. One was listed on the Stanly County Christmas count in 1966 (*Chat*, 31:22). Such records appear to be quite unusual for the United States as a whole. The Bent volumes on finches (US Natl. Mus., Bull. 237, p. 74) mention only that the species has been found to winter rarely in Louisiana and casually in Connecticut.

In view of the severity of the weather, it is odd that one or more Yellowthroats (*Geothlypis trichas*) also chose to winter on the Mason Farm this year. A banded male was found on 7 December and again on 17 January. An unbanded male, presumably a different bird, was seen on 1 and 8 March, and a female on 15 March. Migrating Yellowthroats normally reach Chapel Hill during the last week in March, and winter records are uncommon. The above sightings were all made in or near wet, weedy fields in which the Swamp Sparrow (*Melospiza georgiana*) was characteristic.