ROOSTING BEHAVIOR OF STARLINGS IN NORTH CAROLINA

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During the period 1965-1973 I made observations on the roosting behavior of Starlings (*Sturnus vulgaris*) in northcentral North Carolina, particularly in Henderson and Oxford and in the surrounding farm areas. Some of these observations contribute toward improvement in understanding the roosting behavior of these birds and are herewith reported. This report involves Starlings roosting in association with Rock Doves (*Columba livia*) and House Sparrows (*Passer domesticus*). The roosting behavior of Starlings in association with congregations of American Robins (*Turdus migratorius*), Red-winged Blackbirds (*Agelaius phoeniceus*), Common Grackles (*Quiscalus quiscula*), and Brown-headed Cowbirds (*Molothrus ater*) will be considered in a separate paper.

METHODS

This paper is based chiefly on observations obtained simply by watching and following the birds at appropriate times. A Gossen Panlux Foot-candle Meter was used in determining light intensities for correlation with times of entering and leaving roosts. Light meter readings were made with the sensitive probe aimed directly toward the zenith.

DEGREES OF GREGARIOUSNESS

Large roosting congregations of Starlings are so prevalent, so conspicuous, and so much publicized that it is easy to suppose that these birds roost only in large congregations. However, I found Starlings roosting individually and in small groups even when others roosted nearby in small groups or in large congregations, respectively. For example, several Starlings roosted individually in separate crevices of old buildings in Oxford during September 1972 when a small group of 15 to 20 Starlings roosted on the water tower less than 200 yards away. At the same time a mixed group of blackbirds and Starlings roosted less than a mile from the group on the water tower. Another group of 5 to 10 Starlings roosted in a dense tree with a group of 20 to 25 House Sparrows less than a half mile from the mixed congregation. Still another two Starlings roosted at the same time in association with 15 to 20 House Sparrows in a tree at a farmstead 6 miles from Oxford and the roosting congregation. Starlings rarely roosted individually, except in cavities or crevices. However, late in the evening of 21 September 1973 a Starling left other birds on the Oxford tower and went to an exposed perch on a church steeple about 600 yards from the tower, and it remained for the night on the steeple. Davis (1970) noted that Starlings in Illinois roosted during the winter in small groups in natural cavities and in buildings.

The birds sometimes went to two roosting sites the same night, usually but not always remaining with the larger number of birds. Thus, during the late summers of 1972 and 1973 when 5,000 to 10,000 Starlings roosted at Henderson with a mixed congregation of blackbirds, many more Starlings regularly came to the Oxford tower than remained there. The birds leaving the tower usually flew in the direction of Henderson, 12 miles away. At least a small group of Starlings remained throughout the year to roost on the Oxford tower. The visiting of two roosting sites the same evening suggests that nightly selections of roosting sites were made by at least some birds. This is in marked contrast with observations made by Kalmbach (1932), indicating that even the same perches were used by Starlings on successive nights.

ROOSTING ASSOCIATES

Except when roosting alone, usually in crevices of buildings, I always found Starlings roosting during the late summer, fall, and winter in association with other species of birds. At two sites already mentioned, Starlings roosted in association with House Sparrows. Rock Doves were roosting associates in three groups, including the small group regularly using the Oxford tower. Two other Rock Dove-Starling congregations roosted in old buildings, one in an unused tobacco curing shed at the edge of Oxford and one in an unused factory building in Henderson. The Oxford site was used during the spring and summer by as many as several hundred Starlings; the Henderson site was used during the winter by about 5,000 Starlings. I found no species other than Starlings roosting in association with Rock Doves.

In roosting congregations of mixed species, Starlings always appeared to be followers, with birds of another species leaders. The leader species normally could be recognized by its being first in spring and summer evenings to enter roosting sites or by its more consistent use of sites throughout the year. Two roosting sites used in association with Rock Doves were used much more consistently by Rock Doves than by Starlings; hence, Rock Doves were responsible for perpetuating use of the sites and thus for initiation of seasonal congregations of Starlings. In one case where a tree was used by Starlings in association with a small group of House Sparrows, the sparrows used the tree for roosting before being joined by the Starlings.

Although Starlings always seemed to be followers in use of roosting sites, they sometimes greatly outnumbered the species acting as leader. During the winter of 1965-1966 the 5,000 Starlings roosting in the old factory building in Henderson were led by about 125 Rock Doves. In that Starlings follow Rock Doves in use of roosting sites, there is presumably some attraction to the Starlings in the presence of the Rock Doves. However, on the Oxford water tower the Starlings roosted separately, the Rock Doves roosting exposed on side rails above a ledge around the bottom of the tower and the Starlings roosting somewhat concealed on the metal posts supporting the tank. Some Starlings thus roosted 5 or more yards from the Rock Doves. Thus, the Starlings were attracted by the presence of the pigeons but forced to find appropriate roosting perches apart from the Rock Doves.

ENTRANCE INTO ROOST

With small groups of Starlings, going to roost was an extremely casual event, early entrance into the roost not being strongly separable from other movements. In eight evenings during the late summer of 1973, Starlings first went to the Oxford tower and entered their roosting places 95 to 138 (mean 119.5) minutes before sunset. Other scattered individuals and groups of several birds soon followed after entrance of the first bird. Often the first birds to go to their roosting perches did not remain there but later flew to the ground where they fed or to nearby perches where they merely waited. However, some birds usually remained on the tower after arrival of the first bird. Thus, at these roosts that ultimately came to contain only a few birds, actual entrance into the roost normally started about 2 hours before sunset. During six evenings the birds largely discontinued going to the tower 40 to 21 (mean 32.4) minutes before sunset; thereafter, they moved about on the tower seeking roosting perches or left the tower, flying toward the Henderson roost.

ENTRANCE INTO ROOST RELATIVE TO LIGHT INTENSITY

With Starlings' entrance into the roost spread over more than an hour, during part of which time the light intensity was steadily declining, it is difficult to comprehend how this activity can be correlated with light intensity. Also, light measurements showed that some birds entered their roosts at light intensities from 3,200 to 20 foot-candles, with most entering between 3,200 and 340 foot-candles. Nice (1935) and Jumber (1956)

reported close correlation with light intensity and entrance into their roosts by Starlings, but these authors worked with large congregations in which individuals had their behavior influenced by roost associates. In such congregations entrance into the roost is greatly delayed by pre-roost gatherings outside the roost, with entrance into the roost finally somewhat forced by impending nightfall. Starlings being of diurnal habits normally enter their roosts before nightfall, giving added correlation of entrance into the roost and light intensity.

VOCALIZATION AT ROOST

Even with only 10 to 20 Starlings in a roosting group, some vocalizations were given both in the morning and evening. The vocalizations involved only single birds at any one time, given mostly in the evening after the birds had settled on their roosting perches. Vocalization of roosting Starlings thus is not confined to birds in large congregations. However, because of the large numbers of voices involved in large congregations, vocalization with them is a very conspicuous feature.

DEPARTURE FROM ROOST

On six days the first Starling left its roosting place on the Oxford tower 2 to 17 (mean 8.5) minutes before sunrise. Although only a few birds were involved, departure of all birds extended over a relatively long period. On 21 September 1973, the first bird left the Oxford tower at 06:45 (DST), and the last bird left at 07:08, with 23 minutes required for departure of only 11 birds. Ten to 16 Starlings spent 14 to 29 (mean 20.4) minutes in full evacuation of the roost.

The first Starlings left their roosting perches on the Oxford tower at light intensities from 9.5 to 16.0 (mean 13.7) foot-candles. By the time the last bird had left, the light intensity had increased to 88 to 124 (mean 109.5) foot-candles. Thus, the light intensity varied from 9.5 to 124.0 foot-candles during the time birds were leaving their roosts. As with the entrance into the roosts in the evening, morning departure of Starlings showed no close correlation with light intensity.

SUMMARY

Throughout the year Starlings were found roosting individually and in small groups apart from large congregations of blackbirds. The birds often went first to sites used by only a few birds but left before nightfall to join large congregations. However, some birds normally remained to form small groups. Except when they roosted alone, Starlings always roosted as followers in association with another species as a leader. Rock Doves and House Sparrows were leaders at some sites. Rock Doves as leaders were sometimes greatly outnumbered by Starlings as followers. Entrance into the roost started about 2 hours before sunset, birds at first doing much going to and from their roosting perches or cavities. Entrance into the roost was largely completed about 30 minutes before sunset. Even with only about a dozen birds in a roosting group, departure of all birds extended over about 20 minutes. During entrance into the roost, incident light intensity declined from 3,200 to 20 foot-candles, with most birds entering the roost at light intensities above 340 foot-candles. During departure from the roost light intensity increased from 9.5 to 124.0 foot-candles. With entrance into and departure from the roost proceeding through a wide range of light intensities, lack of correlation with roosting movements and light intensity was strongly indicated. Limited vocalization took place even at roosts containing fewer than a dozen birds.

LITERATURE CITED

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203 Moreland Drive, Oxford, N.C. 27565, 24 September 1973.

CBC Roundtable

... with Louis C. Fink

Doomsday for the Bald Eagle?

I visited Lake Mattamuskeet Wildlife Refuge to film the Bald Eagle, and the trip proved futile. John Davis, Refuge Manager, explained that there was not a pair of Bald Eagles nesting in the current year. There were two eagles nesting in 1971, but only one bird returned to the Refuge in 1972. An authority at the Pea Island Wildlife Refuge reports no nests in Dare County for several years.

Apparently, Bald Eagles are either transient visitors to eastern North Carolina, or they nest on private land. The danger of this is revealed by the report of eagles discovered by a logging crew. Tracked down, the crew foreman said that he had cut down the tree containing the nest.

The Backbay Wildlife Refuge in Virginia reports that the eagles are losing their foothold there.

It has been suggested that DDT is the largest factor in the reduction of the Bald Eagle population. Surely, destruction of its natural habitat is second in line. –JAMES F. HOLLINGSWORTH JR., Goldsboro, N.C.

No Bald Eagle Nests Here?

The annual survey by the Fish and Wildlife Service indicates 627 active nests of the Bald Eagle producing 500 young in 1973. No active nests were found in North Carolina; two in South Carolina produced one young bird. The survey covered the 48 States (eliminating Alaska); allowing for nests not found, there may be 1,000 active nests in the territory.

Additions to Wilderness Areas

Hearings have been held on the desirability of including in the National Wilderness Preservation System: 660 acres within the Mattamuskeet National Wildlife Refuge; 9,000 acres within Swanquarter Refuge; 180 acres within Cedar Island; and 180 acres within Pea Island. Wilderness does not alter an area's status as a Wildlife Refuge.