

REPLACEMENT OF CAVITY-HUNTING STARLINGS AND HOUSE SPARROWS AFTER REMOVAL

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As was demonstrated by Stewart and Aldrich (1951) and Hensley and Cope (1951) through work during two nesting seasons in a Maine spruce-fir forest, many non-breeding birds are often available in wild populations to replace lost breeding birds. The present paper gives data on replacement of cavity-hunting Starlings (*Sturnus vulgaris*) and House Sparrows (*Passer domesticus*) following continuous removal of birds visiting a nest box throughout the 1972 nesting season. The data were collected in a residential area of Oxford, North Carolina.

MATERIALS AND METHODS

During the period 25 January to 14 July 1972 I operated an automatic nest-box trap on the pole of my martin house in an effort to protect the Purple Martins (*Progne subis*) from competition with Starlings and House Sparrows. The captured birds were killed, thus removing them as potential nesting birds. The nest-box trap, earlier described (Stewart, 1971, 1972), was checked for captures each day at 07:45, noon, and more or less continuously during the period from 17:15 until darkness. Captures were limited to one bird per setting.

Starlings were sexed by the colors of their lower mandibles and eyes (Kessel, 1951).

RESULTS

Although the nest-box trap was set on 25 January, no captures were made until mid-February. Starlings, House Sparrows, and other birds sometimes perched on top of the nest-box trap, but birds not entering the box were assumed not to be exploring it for a nesting place. A pair of Starlings reared two broods in a crevice of a dwelling house about 20 m from the nest-box trap, indicating that the captured birds were non-breeding birds rather than birds from nearby nests.

Starling.—These birds visited the nest box during a period of 124 days from 16 February through 19 June, with a total of 56 birds captured. Captures were made on 51 different days, with two birds captured in three days and three in one day.

Of the 56 Starlings, 39 were males and 17 females. Twice a male and a female, assumed pairs, were captured during the same days, and eight times a male and a female were captured in the forenoons of successive days. Thus, with 10 probable mated pairs captured, the birds may have sometimes explored cavities as pairs; however, with 22 more males than females captured, males also explored cavities alone, presumably being unpaired.

Thirteen males and 12 females were captured in the morning before 07:45; 21 males and four females were captured between 07:45 and noon; five males and one female were captured in the afternoon. Thus, exploration of nest cavities was chiefly in the forenoon but sometimes in the afternoon.

Fledgling Starlings were first seen on 18 May, indicating completion of the first nesting. Cavity-hunting Starlings continued visiting the nest box 32 days after fledglings were first seen, and only six Starlings were captured after that date.

The four Starlings captured after 6 June were females, with two captured on 15 June and one each on 18 and 19 June; whereas, more males than females were earlier captured. It thus appears that cavity hunting persisted somewhat longer among females than males.

House Sparrow.—During the 137 days from 17 February through 3 July, 14 House Sparrows were removed from the nest-box trap. Captures were made on 11 different days. Three House Sparrows were captured the first day, 17 February, indicating an early effort to occupy available cavities. Also, two birds were later captured during the same day. Otherwise, the House Sparrows were captured at intervals of four to 21 days, with an average of about one bird every 13 days.

Six of the 14 House Sparrows were males, and eight were females. The first two birds, a male and a female, were captured only 15 min apart; thus they were presumably a mated pair. Likewise, on 8 April a male and a female were taken from the trap at 07:45 and noon, respectively, of the same day, presumably also a mated pair. However, two females were separated from males with longer intervals between captures, suggesting independent cavity hunting.

Captures were made chiefly in the forenoon, with only two birds, one male and one female, captured in the afternoon. Of the birds captured in the forenoon, five were captured before 07:45, and seven were captured between 07:45 and noon. None was captured in the afternoon after 17:15.

DISCUSSION

That adult Starlings and House Sparrows entered the nest-box trap only during the nesting season and never at roosting time is taken to indicate that the captured birds entered the box only to explore its suitability for a nest cavity. Presumably all of the 56 Starlings and 14 House Sparrows captured in the nest-box trap were seeking nest cavities. The capture of three House Sparrows on 17 February, the date when a capture of these birds was first made, indicated an early effort to find unclaimed cavities. Likewise, the capture of three Starlings on 28 February indicated that Starlings then made

a special effort to find unclaimed cavities. Probably few cavities were left unclaimed by the start of March. The continuous replacement of Starlings suggests the existence of a large number of non-breeding birds in the population.

With only 14 House Sparrows captured as compared with 56 Starlings, there may have been fewer non-breeding House Sparrows than Starlings. Perhaps the relatively small number of non-breeding House Sparrows resulted from the fact that, unlike Starlings, House Sparrows build nests outside of cavities as well as inside and thus have less of a shortage of acceptable nesting places.

Stewart and Aldrich (1951) and Hensley and Cope (1951) censused the birds on a 40-acre tract by spot mapping the singing males before and after collecting birds, thus noting with censuses changes or lack of changes in the population. While a much smaller sample, only one nest site, was used in the present study, the method of measuring replacement was much more precise. In the present study, replacements totaled 54 Starlings, including 38 males and 16 females, and 12 House Sparrows, including five males and seven females. Replacement was thus 27-fold among Starlings and six-fold among House Sparrows.

The rate of replacement of male Starlings was twice as high as that for females. With eight female and six male House Sparrows removed, more females than males were removed, but relatively few House Sparrows were removed. Stewart and Aldrich (1951) found that the number of replacement males was slightly more than twice the number of females. However, their method of removing the birds, shooting, may have biased the results, with a greater probability of their shooting the more conspicuous males.

Both Starlings and House Sparrows were captured chiefly in the forenoon, indicating that these birds search for nest cavities chiefly at this time of day. Stewart and Aldrich (1951) also noted that replacement of woodland birds was during the night or early morning.

SUMMARY

An automatic nest-box trap was operated at one site throughout a nesting season, with the captured birds continually removed. Seventy birds were captured, including 39 male and 17 female Starlings and six male and eight female House Sparrows. As indicated by captures in the nest-box trap, cavity hunting by Starlings continued from 16 February through 19 June, with captures on 51 days. Scattered captures of House Sparrows continued from 17 February through 3 July, with captures on 11 days. Starlings and House Sparrows explored the nest box both as pairs and unpaired individuals. Nest box visits were made chiefly in the forenoon, but some visits of both Starlings and House Sparrows were made in the afternoon. A reduction in nest box visits by Starlings started 10 days after fledged young were first seen, but scattered visits continued another three weeks.

LITERATURE CITED

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203 MOORELAND DRIVE, OXFORD, NORTH CAROLINA 27565, 16 OCTOBER 1972.



NEW LIFE MEMBER

A recent addition to the roster of Life Members of The Wilson Ornithological Society is Donald C. Alexander of Rowley, Massachusetts. Mr. Alexander, who joined the Society in 1937, is also a member of the AOU and several state and local bird clubs as well as an active member of the Nuttall Ornithological Club. He is a Certified Public Accountant and serves as the Assistant Treasurer for two business firms. His principal interests in birds are in observing ducks and shorebirds in the marshes near his home. His other hobbies include mountain climbing, and canoeing (the picture showing him on a portage during a canoe trip). He is married with two grown children.