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A COURTING CAROLINA WREN BUILDING OVER NESTLINGS

BY AMELIA R. LASKEY

A pair of Carolina Wrens, *Thryothorus ludovicianus* (Latham), banded June 1945 at my home in Nashville, Tennessee, remained as a resident pair until late January, 1948 when the male disappeared. This is the pair that I watched in 1946 (1948, Laskey). They were color-banded later. The unusually severe weather and deep snows of January and early February 1948 greatly decimated the Carolina Wren population, as did a similar period of low temperatures and snow in January 1940. In both years, Carolina Wrens became scarce during the entire nesting season.

However, in 1948, Green, as the female is called, acquired another mate. On May 1, she was carrying loads of material into one of several bluebird-type nest boxes (on posts) leaning against the garage, awaiting repairs. The unbanded male sang nearby and took a small amount of material into the box. He was soon trapped and banded with aluminum and color bands, thus becoming "Pink". Green laid her first egg on May 3, completing the set of six on May 8. All eggs hatched on May 23. That day while Pink was at the nest-box with food for the young, loud songs from the east verified my surmise that a second male Carolina Wren was in the vicinity. During the next few days, on several occasions, I heard two singing simultaneously from opposite directions, sometimes antiphonally as if answering each other.

At noon on May 29 as I passed the nest-box, a Carolina Wren came toward me in swift flight, carrying a load of dry leaves in his bill, apparently headed for the nest-box. Here was an extraordinary and puzzling situation: a brood of six-day-old young and a nest-building adult! I spent the remainder of the day and many additional hours in watching.

During that afternoon in seven hours of watching the nest from noon until dark, I found that an unbanded male, apparently the singer of the previous observations, was courting Green, the mate of Pink and mother of the six nestlings. This unbanded male followed Green persistently, indulging in the typical courting behavior of Carolina Wrens: loud singing and nest-building. But instead of depositing the material of his "courtship-nest" in one of the empty boxes still standing near the occupied box, he was placing it on top of the nestlings, apparently because that was the one in which the female was already interested.

From 12:12 to 12:18 p.m., I counted thirteen hurried trips into the nest-box by Courting Male, carrying various materials, a dead leaf, grass and stems, two of which were several inches long. Twice in this interval, Green, the mother bird, had gone inside with food. Then I looked into the box. The nestlings made no movement; they were crouched low with heads bent downward, but were still visible through the mat of material. I removed the loose stuff. By 12:34, Courting Male had returned, to resume his courtship. In ten minutes, he had

taken in at least a dozen loads of material and I was experimenting with methods to catch him. Soon a heavy shower interfered with nest building and he left. Once more, I removed the material from the young. During this interlude, the mother bird became very active in feeding, particularly when the downpour slackened. From 1:21 to 2:12 p.m., she took nine meals into the box and carried fecal sacs out twice. At 2:33 p.m., Pink, the father, came with a larva, fed the young and removed a sac. This was his first appearance at the box during my watch (two hours and twenty-one minutes had elapsed). At that moment, Courting Male was evidently following Green as loud songs came from the west wood and at 2:56, she came from that direction, followed by Courting Male. As they hopped along the drive across the front of the garage, he turned in at the open door, then to a wood-pile near the nest and down to the ground as if seeking nest material, all of which was still very damp.

At 3:00 p.m. Green was back with a large feeding of several larvae. After half a minute in the nest-box, she flew to a fence behind the garage where Courting Male joined her, following her as she flew west. Songs came from there. At 3:26 Pink fed the young, but as he clung to the nest-box entrance, Courting Male arrived. Pink flew east toward the house, then veered, pursued by Courting Male beyond the house. While Pink scolded with rasping notes there, Courting Male flew to the top of the nest-box, leaned forward to look into the entrance hole, *churred* and rasped as he hopped about in excitement. He quieted momentarily as the female arrived and fed the young, but he resumed his scolding as soon as she flew. At 3:45 he again started nest building. As he brought the second load, a Blue Jay, *Cyanocitta cristata* (Linnaeus), that was nesting nearby, arrived. He dropped the material to *churr* and rasp. Five minutes later, he was about to enter the box with another load when Green arrived. He showed excitement, he dropped the nest material and flew to various perches below and around her, spreading his tail and giving short vocal notes. She flew at him once during this display. As a Chipmunk appeared on the ground below him, he darted three times at the rodent, then flew to a feeding shelf about eighteen feet from the nest for a quick meal of American cheese. A few minutes later, he was back in the nest-box vicinity and flew at a Downy Woodpecker, *Dendrocopos pubescens* (Linnaeus).

About 4:20 p.m., Courting Male resumed his nest-building activity for a brief period, taking in five loads in thirteen minutes. At 4:55, after he had flown, loud songs came from the west for three minutes.

At 5:02, Pink slipped in quietly to feed the young and remove a sac, as the loud singing continued in Westwood. Both parents fed in quick succession. At 5:26 Courting Male returned to the nest-box vicinity and stopped at the feeding shelf for more cheese. Just then Pink arrived and fed the young, but before he had left the box entrance, Courting Male flew at him. Pink flew east with the other in pursuit. Again it was Courting Male that returned to the nest-box, to look inside from the entrance. Before flying north to resume singing, he stopped to eat suet. During this absence, Pink brought four meals in twenty minutes,

then he stopped at the feeding shelf and entered a banding trap. I released him immediately.

The following morning, May 30, at 6:00 a.m. while Courting Male was hopping about the nest-box, gathering material, and singing in a loud voice, I removed all food from the feeding shelves and baited traps there with cheese. At 6:15 he was in the trap. I marked him with aluminum and red celluloid bands and deported him by automobile to Radnor Lake, releasing him among the wooded hills there, about three and a half miles south-east of my home. Although this area is favored Carolina Wren habitat, I had heard none singing there this spring and hoped that Courting Male would find a mate.

During the previous afternoon when Courting Male (now Red) was taking possession of the box, driving off Pink, the latter was so intimidated that in nearly seven hours, he came to the nest only ten times with food. (Six of these meals were brought after five o'clock when Red had flown elsewhere.) Despite the confusion, the mother bird had labored well, bringing in food twenty-six times. But neither parent had attempted to remove any of Courting Male's material from the nest. The six young survived.

But after my return from Radnor Lake about 8:30 a.m., I found that Pink and Green had resumed normal activities. Pink sang often and exuberantly. They spent considerable time together near the nest. In a seventy-five minute watch period, he brought five feedings and Green eight. On the following days, they shared about equally in the feeding task. On June 3, as I watched from 5:15 until dusk, I found Green near the box and heard a lengthy song from the foliage nearby; then another period of loud singing, from a tree about twenty feet from the nest, lasted for thirteen minutes. In the meantime, Green brought eleven meals to the young and Pink had not appeared. Then I discovered that the concealed singer was Red, the Courting Male. As he perched near the nest-box to preen, his bands revealed his identity. He started again in a lengthy song—usually *dée-ry*, repeated four times, and a final *durr*. In three minutes, he repeated the five-part song twenty-four times. Mother bird continued to bring in food until dusk.

Early the following morning, June 4, Red was again captured in the cheese-baited trap on the feeding shelf. This time he was deported 18.5 miles (by the car speedometer) south-west and released at a country home where he flew singing into a thicket. Even as Red was in the trap, Pink came to his family with food. During my watch periods later in the day, he brought thirteen meals while Green brought eleven.

On June 5 at 3:31 p.m., the first nestling flew from the box and at 3:35, the sixth left. In four minutes the entire brood of six young, now thirteen days old, had flown about six feet from the nest-box to a woodpile. The parents led them south-west into a thicket. Within fifteen minutes, they made the hundred-foot trip by a series of low, short flights and hops. In flight, they covered about five to eight feet, and during ground travel, they sometimes stumbled over the uneven places. They spent the night in the thicket, then disappeared. On June 24, the group re-appeared in the garden. In early July, three of

the juveniles entered banding traps. They weighed 19.2, 19.9, 20.2 grams at 44, 48, and 44 days of age respectively. At that time, at least one sang the typical, formless songs of juvenal Carolina Wrens.

The pair, Pink and Green, were diligently building another nest on July 19 in a bluebird-type box set on a post on our front lawn. The nest appeared complete on the following day. The first egg was laid July 23; the clutch of four was completed on July 26. After laying the first egg, Green spent each night in the nest like the Arkansas Carolina Wren (1948, Nice and Thomas). With three eggs, she was on the nest before 4:30 p.m. Full time incubation did not begin until the set of four was complete.

The first egg had hatched on August 8 before 10:00 a.m., the second hatched by afternoon. At 6:00 p.m. two eggs were still not hatched. On August 9 at 6:00 a.m., the nest contained three young and one unpipped egg, the latter hatching at 12:20 p.m.

The young left the nest-box on August 21, the first at 9:44 a.m. and the last at 11:07, their ages varying from twelve to thirteen days.

In both of the 1948 nests (as in the one of 1946), Green ceased all brooding of the young after they were four days old.

DISCUSSION

At present, I know of no observation parallel to the one just described. Apparently the basic reason for the abnormal behavior of Courting Male (Red) was the low level of Carolina Wren population during the spring of 1948. With the month of May coming to a close, he was still unsuccessful in acquiring a mate and sought new territory. He wandered into that occupied by the mated pair, Pink and Green, and because he was an aggressive individual, he became dominant over the more retiring Pink. He appeared to have usurped Pink's territory although he had not been successful in permanently driving the owner away.

Red proceeded to court the female in the typical manner of Carolina Wrens by following her, singing in a loud voice, and carrying nest material into a possible nest site. Among wren species that have been studied, nest-building by the male has been found to be a very important feature of courtship. Since Pink did not drive off the interloper, or was unsuccessful in any efforts that he may have made, it appeared that Red had some chance of success, and he was doing his utmost to win a mate by building in a box which this female was already showing interest.

The bizarre behavior of Red in depositing material over the living nestlings may possibly be explained in the theory advanced by Howard (1929: 32-56) concerning the inherited pattern of the nesting cycle, which he divides into four phases. He describes these phases or stages as: (1) taking territory, (2) courting a mate, (3) nesting, (4) raising young. Normally a male bird passes through the earlier stages before becoming physiologically ready to function in the final stage. To Red, still in the early phase of the cycle, the quiescent nestlings were merely extraneous items in the nest site in which the female was at that time

interested. At his stage (second phase), the presence of baby birds did not stimulate him to hunting food for them. On the other hand, Pink and Green had progressed to the fourth stage, and they attempted to fulfill the exigencies of the situation despite disturbing factors. Although Pink was definitely cowed, he watched for opportunities to slip into the nest-box with food and to clean the nest. It seems significant that Red, upon his return from Radnor Lake, made no attempt to place material over the nestlings, for at that date, they were nearly ready to leave the nest and were very active.

In experiments with Tri-colored Red-wings, *Agelaius tricolor* (Audubon), Emlen (1941: 216-217) found that while the pair was in the nest-building stage, neither sex responded to the food calls of the young that had been placed in the nest by the experimenter. But during the egg-laying and incubation stages, they fed introduced nestlings. He says (1941: 217): "Apparently neither sex responds to young in the nest during the nest-building stage . . . the strange nestlings were merely disregarded and became lost or partially buried in the lining as construction proceeded. These observations suggest that sexual activity inhibits the feeding response to nestlings. It should be noted, however, that birds building for the second cycle were simultaneously feeding recently fledged young of the first brood." Tinbergen (1939: 45) has noted a similar incompatibility between sexual activity and the response to nestlings in a male Snow Bunting, *Plectrophenax nivalis* (Linnaeus), and suggests that males of that species may not be able to feed young and pair with a female at the same time.

It is well-established knowledge that in second or later nestings of a season, many species of birds come into a new cycle while still feeding young of an earlier brood. In several species, numerous instances are on record of unmated birds helping a pair of their own species to feed nestlings and fledglings. Most of these helpers are young of an earlier brood that remained with the parents through subsequent nesting cycles. Skutch (1935: 270 and 1940: 312) reports this behavior for the Banded Cactus Wren, *Heleodytes zonatus* (Lesson), which is, in his experience, the most social member of the wren family, feeding and roosting in groups.

Nice (1932: 49) reports a male Song Sparrow, *Melospiza melodia* (Wilson), that joined a widowed female and helped her to raise a family. She writes (1937: 86): "Only once has a new male appeared and joined a female that was trying to raise a young family alone (79M)." However, in this "mate replacement" case, the situation differs from that of my Carolina Wrens. The female Song Sparrow needed and evidently desired a mate. She probably encouraged the male to join her by a "courtship" type of behavior. Mrs. Nice (1943: 187) described this behavior from an observation of another widowed female Song Sparrow that unsuccessfully "courted" a male.

The question arises: what would have happened if Red had been allowed to proceed without interference from me? The nestlings would probably have smothered as neither parent removed any of the material. Would aggressive Red have won Green for his mate for her next nest-

ing attempt, or would the pair, Pink and Green, leave and nest in a new territory?

This discussion merely emphasizes the fact that, to attain an understanding of bird behavior and to arrive at a plausible explanation of unusual episodes, much is yet to be learned of the habits of common birds in their natural habitat.

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1521 Graybar Lane, Nashville 4, Tennessee.

SUCCESSIVE NEST SITES OF INDIVIDUAL BIRDS OF EIGHT SPECIES

By HERVEY BRACKBILL

Finding that in woodland and bush-grown countryside the density of bird nests is greatest at ground level and falls off rapidly with height, whereas in suburban areas of "perpetual alarms" the density is greatest above the ground, Preston and Norris (1947: 268-269) have suggested that the suburban bird population may be formed by the elimination, through attrition pressure, of individuals within a species that practice low nestings. They suggest the possibility "that within a given species, some individuals persistently nest high and others low, and that an individual does not vary its nesting height over the whole range used by the species." They also suggest that "there is at least a partial tendency for the young to follow the nesting behavior of their parents."

Several years' observation of color-banded birds in suburban sections of Baltimore—areas of detached homes and a bit of scrubby wild land—has yielded data on successive nestings of birds of eight species; observed nestings by single birds range up to six in number, and nestings by the same pairs range up to four. The data on these are presented below as a contribution toward an evaluation of the Preston-Norris