

cons of the world, 1: 176) mention a single bird that was "observed to come to a river to drink at the same time each afternoon" and "groups" that "may assemble at sandbars," but in their considerable discussion of roosts they say nothing about roosts on the ground. George M. Sutton informs me that he has observed "many Turkey Vulture roosts, . . . most of them in trees, some in cliff country, none on a sandbar" (letter of 14 August 1975).

ROUTE 2, BOX 164A, YALE, OKLAHOMA 74085, 1 SEPTEMBER 1975

A LATE NESTING OF THE CARDINAL

BY MYRTLE KELLEY

Oklahoma bird students continue to believe that the Cardinal (*Cardinalis cardinalis*) sometimes rears three broods a season in this part of its range. Proof of three-broodedness will require marking individual birds, of course, not to mention careful observation. The species certainly starts nesting early and continues late in Oklahoma. Sutton (1967, Oklahoma birds, Univ. Oklahoma Press, Norman, p. 572) mentions a "partly built nest" observed in Cleveland County on 27 March 1964, and "young out of nest receiving food" in Tulsa County on 26 September 1948 and 26 September 1952.

At my home in a "wild" part of southern Tulsa County (on 101st Street between Mingo and Memorial avenues, within corporate Tulsa), on 27 August 1973, I observed a female Cardinal inspecting, then remodeling, a nest that Cardinals had used more than a year before (spring of 1972). The nest was 4 feet up in a holly bush almost under the awning for a bedroom window. From this window, which was only about 3 feet from the nest, my sister Frances and I made observations daily from 27 August to 24 September.

As far as we know, the female started her remodeling at about 0730 on 27 August. The nest had a flattened, shoddy appearance at first, but presently the fresh lining gave it a cuplike appearance. We did not see the male bird anywhere near the nest that day. The following day (28 August) the female again started work about 0730 and she stopped at about 1030. During this period the male looked on and sang from time to time, though he carried no material and did no work on the nest. On 29 August the female started work at about 0730 and stopped about 1030. The remodeling was completed that day.

The first egg was laid on 30 August, the second on 31 August, the third between 0720 and 0800 on 1 September. At 0800 on 1 September the female left the nest. She returned for a brief visit at 0845 but was away from the nest the rest of the day. She did not spend that night on the nest. On 2 September she came to the nest at 0655 and was on it all day except for three or four feeding periods. We did not observe her continuously, of course, nor did we keep a record of her off-the-nest periods.

During the incubation period, which continued through part of 15 September, the female spent the night on the nest and she was on the eggs throughout the day, too, except for what seemed to us to be brief feeding

periods. As a rule her first feeding period after a full night on the nest began at about 0700. On 6 September, during an all-day rain, she brooded the eggs almost continuously. On the morning of 8 September she was obviously sleepy; after yawning, she left the eggs at 0650, to be gone half an hour. On the morning of 12 September, at two separate times before 0800, we saw her turn her eggs with her bill. That day we did not see her leave the nest. On 13 September she left the nest as usual, to feed, but was quiet about it. We heard no chirping from her as she came and went.

We did not see much of the male bird during the incubation period. On 4, 5, and 8 September, however, we saw him in shrubbery not far from the nest, and we often heard him singing. Not once did we see him feed his mate at the nest.

Hatching of the three chicks may or may not have required two full days. We know that at least one egg started to hatch on 14 September; that on the morning of the 15th one chick, one partly hatched egg, and one apparently unpipped egg were in the nest; and that by evening on the 15th there were three dry chicks. We did not see the mother bird carrying off eggshells.

On the morning of the 15th we watched the female as she left the nest to find food. At first only two chicks seemed to be lifting their heads and opening their mouths. The mother fed them slowly and carefully, squeezing juice from caterpillars (and possibly other insects) into their mouths. The air was cool, so she brooded them after each feeding. Later in the day we perceived that all three chicks begged for food. We did not see the male bird at or near the nest that day.

On the 16th, the female continued to feed the chicks. The feeding process seemed to be principally a squeezing of liquid from insects of various sizes, but we saw her give "bite-size" parts of caterpillars, too, from time to time. If food was not promptly swallowed by a chick, she lifted it out carefully and offered it again, at times to another chick. At 1950 she made her last food-trip to the nest for the day, at that time feeding what appeared to be the smallest of the chicks. Again we did not see the male bird at the nest.

The 17th was cold and rainy, with north wind. The female brooded her chicks much of the time. She left on her first food-finding trip at 0830. The male did not, so far as we know, come at all close to the nest that day.

On 18 September the male visited the nest at least once, but brought no food. So far as we could tell, only the female fed the chicks that day. From the 19th on, however, the male brought food and carried off fecal sacs regularly. On the 20th he came with food about as often as the female did. His plumage was somewhat ragged.

On 22 September another cold front brought wind and rain. The female covered her brood while the storm lasted. At 0930 the rain stopped and the female left the nest to find food. One of the chicks had become wet, but it soon

dried off. All three chicks were now preening their plumage vigorously. When they lifted their crown feathers we could see that they had little crests.

On the 23rd, the chicks stood up while being fed. Food brought to them now included fair-sized grasshoppers, which they swallowed whole. The brood so filled the nest that one of them sometimes perched on the rim. That night the mother bird did not stay at the nest — it was simply too full for her. One of the brood slept on the rim.

On the 24th, all three chicks left the nest. Departure started about 0930. By noon two chicks had moved well off — first to the farther part of the holly bush, then to trees beyond the yard. They flew fairly well. So far as we could tell, the male parent was not with them. The last to leave — presumably the youngest — flew weakly from the holly bush when my sister stuck her head out the window. Unable to go far, it "landed" on the ground near a fence about 30 feet away. The mother seemed to want it to go to the trees in which its two siblings were, but when it finally did fly, it returned to the holly bush. It spent the night there.

During the following three weeks (until 18 October) we often saw two young birds with an adult female, but never with a male, so we assumed that "our" male was caring for the third chick well away from the house or that he and the third chick had been killed. On the evening of 23 October we saw three dark-billed young birds and an adult female heading for a blackjack oak about 30 feet from the holly nest-bush. We believed that the foursome roosted there, but we had no way of knowing for sure that they were "our" birds.

Throughout the observation period discussed above a second pair of Cardinals lived in the vicinity of our house. We occasionally saw or heard these two birds, but were not sure that they had a nest. On 8 October we saw a male Cardinal feeding an almost full-tailed chick that appeared to be considerably more mature than the brood we had been watching.

In any event, we were happy to realize that "our" birds had been successful in fledging a late brood. We could not help wondering whether the female that we had watched had reared one or two other broods earlier in the season.

ROUTE 1, BOX 971, BROKEN ARROW, OKLAHOMA 74012. 25 OCTOBER 1973

GENERAL NOTES

Late nesting of Pied-billed Grebe in Oklahoma.—On 10 August 1975, while banding nestling Great-tailed Grackles (*Quiscalus mexicanus*) at Rose Lake, Canadian County, central Oklahoma, I was startled by a loud splash nearby, followed by the loud alarm notes of a Pied-billed Grebe (*Podilymbus podiceps*). Upon close investigation, I discovered a grebe nest containing four warm eggs. The nest was a floating platform of cattail leaves about 10 feet in from the edge of an extensive dense stand of cattails in water 3 feet deep. Evidently I had surprised the incubating adult, for it had not taken the time to cover its eggs with vegetation before departing.

On 17 August I returned to the nest, finding it completely covered with warm, damp