

BREEDING BEHAVIOR OF THE SUMMER TANAGER

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In the spring of 1968 the first male Summer Tanager (*Piranga rubra*) of the season appeared on 2 May in the wooded yard of our home 3.5 miles N of Zebulon, Wake County, N.C. Shortly thereafter another red-plumaged tanager arrived. The second bird was only a slightly less brilliant shade of scarlet-orange than the normal male Summer Tanager, apparently because of olive-green edges on feathers of the nape and back. The easiest way to distinguish the two tanagers was by bill color because the normal male had a predominantly yellow bill while the other bird had an olive-brown bill. Having satisfied ourselves that the strange bird was indeed a Summer Tanager in unusual plumage rather than some other species, my husband and I assumed it to be a young male. However, we could not understand why the normal male tolerated a rival in his territory, and we were puzzled by the apparent absence of a female in the yard.

On 24 June I discovered a Summer Tanager nest about 24 feet above ground level in a white oak (*Quercus alba*). The shallow cup of grasses was saddled on a horizontal limb extending over our carport, and a piece of nesting material about a foot long dangled beneath the nest. The incubating bird had red plumage, which surprised me because I was under the impression that male Summer Tanagers do not incubate eggs or brood young. While I was trying to determine which of our tanagers was on the nest, the normal male darted toward it to aid the incubating bird in driving away an unidentified bird. These two red-plumaged birds repeatedly engaged in courtship feeding while the eggs were being incubated, and two apparently normal young Summer Tanagers fledged from the nest. Although no specimen was taken, I am positive that the unusual bird was an adult female Summer Tanager in completely red plumage (Teulings, in press).

The fact that the female Summer Tanager in our yard was red prompted me to study the pair closely, particularly after I found that even Bent's *Life Histories* (1958) offered scant information on breeding behavior of the species and development of the young. In 1968 and 1970 I spent a total of 10 hours watching and taking notes on nesting activities of two pairs of Summer Tanagers for periods of 30 minutes to 2 hours at a time. These notes plus random observations from other nesting seasons indicate wide variations in the breeding behavior of Summer Tanagers.

NEST SITE SELECTION

Bent (1958) notes the species' propensity for locating nests on horizontal limbs overhanging roadways, and I have never seen a Summer Tanager nest that was not adjacent to some type of clearing in a wooded area. In 1966 tanagers built about 10 feet above ground at the top of a small bent-over sourwood (*Oxydendrum arboreum*) beside our driveway. On 3 June 1967 I found a tanager nest overhanging a wide woodland path just as it opened into a clearing beside Moccasin Creek in Franklin County, N.C. In the clearing was a large stump containing a beehive. The female's trips from the hive to the nest gave away its location. The 1968 nest, as I mentioned earlier, was in a white oak overhanging our carport; and the 1970 nest was in the same tree about 20 feet above ground on the side above the driveway. In 1971 I found no Summer Tanager nest, but in 1972 a tanager again built in the white oak above the driveway.

A male Summer Tanager held territory around the white oak and sang persistently throughout the 1969 nesting season even though the attempted nesting was not successful. A yellow-plumaged female was present and once carried nesting material into

an oak on the other side of the house where there is no sizable opening in the canopy. She never completed the nest, and I saw no evidence that the pair produced eggs or young. Apparently an inability to agree on a site, or perhaps the female's choice of an unsuitable site, prevented breeding.

NEST CONSTRUCTION

The earliest recorded date I have for the arrival of the Summer Tanager in spring is 20 April. Nests are generally completed by late May, and all I have seen were shallow and slipshod – even to the extent of having a foot-long strand of grass waving in the breeze. The 1966 nest was made entirely of bright yellow straw used to protect glass during shipment. The female made frequent trips from the carport where the packing cases were stored to the sourwood across the driveway, attracting the attention of the men building our house. Other nests were less colorful, but the two examined in hand were made of straw and grass. I have never seen a male Summer Tanager carrying nesting material. Females gather building material from the immediate vicinity of the nest and work mostly in the early morning hours.

INCUBATION

Audubon (1840) says that the “male and female sit upon [the eggs] alternately for twelve days.” This most certainly is not the case at Zebulon. I have seen several different females leave the nest repeatedly and return to it without being relieved by their mates. This agrees with Mengel (1965), who reports incubation by the female only. Audubon's figure of 12 days for incubation is widely accepted.

The 1968 female always sat on the nest facing SW. Although the male often flew near the nest in company with the returning female, to bring her food, or in pursuit of intruders, I never saw him touch the nest itself until after the young had hatched. The intervals at which the female left the nest to feed varied from about 10 minutes to nearly an hour; but she generally sought food about every 20 minutes. The longer intervals occurred when it had been necessary to defend the nest. Regardless of the length of time since her last feeding, the female rarely left her eggs unattended for as much as 5 minutes. If she became inattentive, the male would drive her back to the nest, sometimes hovering over her until she settled on the eggs.

Behavior of the 1970 female was quite different. She sat on the nest facing several directions, never made the least effort to drive away intruders, and sometimes stayed away from the nest so long that I thought it was abandoned.

HATCHING AND DEVELOPMENT

The first egg hatched on 7 June in the 1966 nest and between 4 and 10 June in the 1970 nest. The two young in the 1968 nest hatched on or about 2 July, a rather late date for our area. In 1966 I found a shell fragment under the nest, and in 1968 I found one about 125 feet from the nest.

The birds that hatched on 2 July 1968 were the only ones that fledged from the three nests in our yard that contained young. Adult tanagers were first seen feeding these chicks on 3 July, and by 6 July the nestlings could raise their heads above the rim of the nest. They left the nest either late in the ninth day after hatching or very early the next morning, probably as a result of the heavy rainfall the night of 11-12 July. Although the nest appeared undisturbed, I thought surely the young must have fallen to the roof of the carport and perished. On 14 July I heard the calls of young birds and found one juvenile tanager in the white oak that held the nest and another in a sourwood just across the driveway. Both young birds were in typical juvenile plumage, olive-yellow above and

dull yellow streaked with olive below. Their bills were large and yellow. Attended by both parents, they could barely flutter from one perch to another. On 15 July the young birds were flying better and had moved farther from the nest tree, though still within 100 feet of it. One softly sang a primitive version of the male song. On 16 July no tanagers could be found in the yard.

CARE OF NESTLINGS

Feeding. Male Summer Tanagers may or may not share responsibility for feeding nestlings, but I suspect they do help the female in nearly all successful nestings.

In 1968 the male helped feed his offspring. The morning of 3 July the female returned to the nest with food for the newly hatched young at 08:59 EDT. At 09:11 she left the nest, captured an insect, and fed the young. The male approached and called to her; she flew to his perch and fluttered her wings like a baby bird until he had fed her. They flew together toward the nest where she fed the food the male had given her to the young and began brooding them as the male departed. At 09:14 the male approached the nest. The female moved aside long enough for him to feed the young, but she stayed at the nest and immediately resumed brooding. The male had perched on the rim of the nest facing NE for what appeared to be his first attempt to feed the nestlings, but thereafter he perched facing SW as the female invariably did when feeding them. Actual times between feedings ranged from less than a minute to 24 minutes, with the average interval being about 10 minutes. The longer intervals took place when an intruder had approached the nest, and the shorter ones when both parents fed the young in rapid succession. The male and female usually alternated in bringing food to the chicks.

In 1970 the male refused to help feed the young although he had occasionally brought food to the incubating female when she begged. Once she left the nest with young in it and flew out of sight for 22 minutes, returned to feed the chicks, and immediately departed again. During her prolonged absence the male defended the nest from an Eastern Wood Pewee (*Contopus virens*) with flagging determination, but he made no attempt to feed or brood the baby birds.

Brooding. To the best of my knowledge only females brood the young. The 1968 female always sat on the nest facing SW while brooding, the same as she did during incubation. The 1970 female faced several directions. Both females tended to stay away from the nestlings longer in the middle of the day than in the cool early morning hours.

Nest sanitation. I have never seen a Summer Tanager carry a fecal sac from the nest. On several occasions the 1968 female poked her bill into the nest before leaving to forage for food. Once she made swallowing motions immediately after raising her head, and I assume she was swallowing a fecal sac.

COURTSHIP FEEDING

In 1968 the male Summer Tanager was particularly attentive to the incubating female during the early morning hours, but later in the day he spent most of his time singing and preening. Courtship feeding most often took place when the male perched on a bare limb beneath the nest and the female flew directly from the nest to him. If the male did not voluntarily bring food when the female wanted it, she flew to the favorite perch and cried like a baby bird. When the male approached, she assumed a begging posture and fluttered her wings. Usually he brought food in response to this behavior, but sometimes he merely drove her back to the nest. Occasionally he completely ignored the performance, whereupon she either found food for herself or returned to the nest without eating. Sometimes courtship feeding took place on various other perches near the nest tree, but the one nearest the nest was definitely preferred. The male was last seen feeding the female the morning of 3 July, immediately before he was first seen

feeding the young in the nest. On 6 July the female approached the male and begged, but he flew to the nest and fed the young instead of feeding his mate. The 1970 pair also engaged in courtship feeding, but not so frequently as did the 1968 pair.

SONG

Male Summer Tanagers usually sing persistently from the time they arrive on the nesting grounds until late July whether the nesting attempt is successful or not. An exception to this behavior appears to occur when the male loses his mate. The 1972 male had conspicuous yellow sides that marked him as an individual. His mate's nest in the white oak was found disturbed on 12 June, and she had disappeared. Although the yellow-sided male remained in the vicinity at least throughout June, I never heard more than an occasional "pi-tuck" following the loss of his mate.

TERRITORY AND NEST DEFENSE

In 1968 and 1970 the adult Summer Tanagers ranged in search of food over about 2 acres of mixed pine and deciduous woods as well as an approximately equal area of the adjoining fairway of the Zebulon Country Club.

The 1968 pair defended from intruders the nest tree, a peanut butter paste feeder about 20 feet from the nest, and some favorite perches about the same distance to the other side of the white oak. While the male usually responded promptly to his mate's cries of alarm, I never saw him drive away an intruder without her assistance. Blue Jays (*Cyanocitta cristata*) were chased from the nest tree or paste feeder almost daily during the period of observation. On one occasion the female drove a Carolina Chickadee (*Parus carolinensis*) from the nest tree, and on 3 July both parents pursued an adult male Cardinal (*Cardinalis cardinalis*) that had been attracted by the cries of the nestlings.

The 1970 male had complete responsibility for nest defense whether the female was on the nest or not. Once an Eastern Wood Pewee approached the nest after the female had been off it for 6 minutes. The male chased the pewee away and called nervously from a perch in the white oak. Eight minutes later the pewee returned, and the male tanager, still calling nervously, allowed the intruder to share his perch. Another 8 minutes elapsed before the female returned, fed the nestlings, and immediately departed again.

In both 1968 and 1970 the male bird frequently accompanied the female as she returned to the nest, always flying slightly below and behind her. Having escorted her to the branch holding the nest, he would fly away without actually alighting. In departing he made a great show of activity while the female crept along the branch toward the nest. This protective measure appeared to be moderately effective in diverting the eye of the observer from the 1968 female in spite of her bright plumage. It was highly effective when performed by the normally colored pair in 1970.

MAINTENANCE ACTIVITIES

Feeding. In general the tanagers fed in accordance with the published literature (Bent, 1958). They liked the peanut butter paste offered at one feeder, and they caught many bees on the wing or in the sourwoods. They often sought insects under the overhanging roof. Twice in 1968 I saw a tanager, apparently the female, feeding on the wing at night in the area illuminated by exterior lights attached to the carport.

Bill wiping. The 1968 female tanager wiped her bill on several occasions both after feeding on paste and after receiving unidentified food from the male. The 1968 male wiped his bill once after drinking water at the bird bath. The 1970 male wiped his bill once after returning to the nest area from the direction of the spring.

Plumage care. In 1968 both adults preened frequently during the incubation period, with the male devoting much more time to plumage care than did the female. Neither bird was seen preening while caring for young in the nest. Feather maintenance was certainly greatly reduced during this period if not completely discontinued. Although the male Summer Tanager frequently visited the bird bath to drink, I never saw him bathe. He sunbathed for about 4 minutes the morning of 26 June.

On 12 May 1972 I saw an adult male Summer Tanager bathing at 15:00. The bird had conspicuous yellow sides that marked him as an individual. He returned to bathe at the same bird bath on 13 May at 14:30. The next day he had attracted a mate. I did not see him bathe again during the rest of May or throughout the month of June even though the attempted nesting ended unsuccessfully on 12 June.

AFTER THE NESTING SEASON

Once the young can fly well enough, the Summer Tanager family moves away from the nesting site. I have never had an opportunity to watch a family party long enough to determine at what age the parents stop feeding the young. Some male Summer Tanagers continue singing until late July. After they stop singing they are inconspicuous and rarely use prominent perches the way they commonly do in the nesting season. Consequently I have few fall records for the species. On 9 September 1968 the red female Summer Tanager appeared briefly at the paste feeder with the bluebirds and their companions. Two juveniles were banded on 15 September 1970 during what appeared to be a major migratory movement through the area. Another juvenile banded on 26 September 1970 associated regularly with the bluebirds from then until mid-October, joining them as they feasted on poke and dogwood berries.

DISCUSSION

Of the five adult female Summer Tanagers that have attempted to nest in our wooded yard near Zebulon, N.C., one was all red and nearly as bright as the male. Three of the five females hatched young, but only the all-red one brought hers off the nest. Her mate was attentive to her during incubation, helped protect the nest from intruders, and shared in the feeding of the young but did not brood them. Another pair nested in the same tree 2 years later. Although this male defended the nest and occasionally fed the female when she begged, he did not help feed the young. The female did not assist him in driving away intruders. While I do not know whether the young starved to death or were taken by a predator, I am certain that the lack of cooperation between the parent birds contributed directly to the unsuccessful outcome of the nesting. Frequent courtship feeding apparently forms a strong pair bond and prepares the male for feeding the young, thus giving the nestlings a better chance of survival than those dependent upon the female alone for all their nourishment.

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